Collaborator

User's and Administrator's Guide

SMARTBEAR

Collaborator v9.5.9501 Manual

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1 General Information

Collaborator is a code and document review tool that helps you deliver higher quality code to QA as well as to your customer.

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1.1 Collaborator Overview

What is Code Review?

Code Review, or Peer Code Review, is the act of consciously and systematically convening with one's fellow programmers to check each other's code for mistakes, and has been repeatedly shown to accelerate and streamline the process of software development like few other practices can.

Code Review is an integral process of software development that helps identify bugs and defects before the testing phase. Code review is often overlooked as an ongoing practice during the development phase, but countless studies show it's the most effective quality assurance strategy. Meetings end up taking more time than intentionally planned. Not having a set process in place means you don't actually know if your code reviews are effective or are even happening.

Collaborator is a code review and document review tool that helps development, testing and management teams work together to produce high quality code. It allows teams to peer review code, user stories and test plans in a transparent, collaborative framework — instantly keeping the entire team up to speed on changes made to the code. By enabling team members to work together to review their work, Collaborator can help you catch bugs before your software hits the market.

Main features of Collaborator:

- Multiple, simultaneous reviewers
- Workflow supporting reviewers/authors separated by many time zones
- Version control integration 414: Git, Perforce, Subversion, Mercurial, Team Foundation Server, ClearCase and more
- Cross-platform clients: web client 227, GUI clients 327, command-line clients 348 and IDE plug-ins
- Defect-tracking 303 with severity, type, classification, checklists, and external issue-tracker integration
- Full-featured metrics 683, reports 317, and data-export 324
- Project- and role-based rules 205 and reporting
- Command-line and web-service API 592 for integrations, extensions, automations, and triggers

Supported formats of review materials:

- Text files 271 (all source code files and any other text-based formats)
- Microsoft Word files 277 (.DOC and .DOCX)
- Microsoft Excel files 280 (.XLS and .XLSX)
- Images 284 (.JPG, .JPEG, .PNG, and .GIF)
- PDF files 287 (.PDF, and any other document types converted to PDF format)
- URL's 291 (HTTP and HTTPS)

1.2 About Collaborator Editions

Starting from version 10.0 Collaborator is distributed in three editions: Collaborator Community, Collaborator Team and Collaborator Enterprise.

Collaborator Community is the lightweight edition of Collaborator, designed especially for small development groups with simpler needs. Collaborator Community is offered free of charge and includes the basic features necessary for code review.

Collaborator Team is designed for medium development groups with moderate needs and small budgets. Collaborator Team includes the majority of features necessary for code review without the extra cost of the enterprise level features found in Collaborator Enterprise.

Collaborator Enterprise is the full featured edition of Collaborator, designed especially for large development groups.

The remainder of this section will describe the differences between the three products.

Set Up and Licensing

All three editions of Collaborator are shipped within the same installer that can be found on our downloads page. The products are differentiated only by the license codes installed. During a trial installation, the product option will be given in the First-Run Initialization 32 phase. After installation, you can easily switch from one edition to another, by changing out the license code with a new one provided by your account manager.

Collaborator Feature Summary by Edition

The table below will help you assess the functional differences between Collaborator editions:

System Administration			
Feature	**Collaborator Community**	**Collaborator Team**	**Collaborator Enterprise**
Licenses 82	Fixed licenses only	Fixed licenses only	Fixed and concurrent licenses available
Licence Model 82	Perpetual	Subscription	Subscription or Perpetual
Database Back-Ends	Embedded 54	Embedded 54, MySQL 55	MySQL 55, SQL Server 58, Oracle 61

LDAP/ ActiveDirectory Authentication 102	Not supported	Supported	Supported
Single Sign-On 117	Not supported	Not supported	Supported
Number of users	Up to 10	Up to 25	Unlimited
Technical support	No	Yes	Yes

Server Configuration Options			
Features	**Collaborator Community**	**Collaborator Team**	**Collaborator Enterprise**
Subscriptions 152	Supported	Supported	Supported
Bug Tracking Integration 159	Supported	Supported	Supported
User Statistics 165	Supported	Supported	Supported
Email 184	Supported	Supported	Supported
Server-Side Version Control 188	Supported	Supported	Supported
System Status 225	Supported	Supported	Supported
Groups 169	Not Supported	Not Supported	Supported
Review and Uploads Access Restrictions 153	Not Supported	Not Supported	Supported
Review Custom Fields 192	Not Supported	Limited. Only 2 fields.	Unlimited
Participant Custom Fields 196	Not Supported	Not Supported	Supported
Defect Custom Fields 192	Not Supported	Limited. Only 2 fields.	Unlimited

Multiple Role Configurations 198	Not Supported	Not Supported	Supported
Workflow Configurations 205	Not Supported	Supported	Supported
Server-Side Triggers 208	Not Supported	Supported	Supported
Customizable Notifications 209	Not Supported	Not Supported	Supported
Automatic Links 219	Not Supported	Not Supported	Supported
Archiving Reviews 133	Not Supported	Not Supported	Supported
Review Checklists 196	Not Supported	Supported	Supported
Electronic Signatures 158	Not Supported	Not Supported	Supported

Clients and Version Control Integrations			
Client/VCS	**Collaborator Community**	**Collaborator Team**	**Collaborator Enterprise**
Web GUI 230	Supported	Supported	Supported
GUI Client 338	Supported	Supported	Supported
External Diff Viewer Launcher 406	Supported	Supported	Supported
Eclipse Plugin 366	Supported	Supported	Supported
Visual Studio Plugin 402	Supported	Supported	Supported
Command Line Client 348	Supported	Supported	Supported
Tray Notifier 404	Supported	Supported	Supported

Print To Review 409	EOL	EOL	EOL
Version Control Integration	Git 436, Subversion 568, GitHub 632	CVS 426, Git 436, Mercurial 510, Perforce 537, Subversion 568, Team Foundation Server 517, GitHub 632	CVS 426, Git 436, Mercurial 510, Perforce 537, Subversion 568, AccuRev 415, PTC Integrity 525, ClearCase 454, Rational Synergy 476, Rational Team Concert 484, Team Foundation Server 517, GitHub 632

Reports

The table below compares the fields and metrics available in different editions of Collaborator.

Reports			
Column/Field	**Collaborator Community**	**Collaborator Team**	**Collaborator Enterprise**
Customizable Review Reports			
ID	Not Supported	Supported	Supported
Review Title	Not Supported	Supported	Supported
Review Creation Date	Not Supported	Supported	Supported
Review Completion Date	Not Supported	Supported	Supported
Workflow	Not Supported	Supported	Supported
Phase	Not Supported	Supported	Supported
Review is Private	Not Supported	Supported	Supported
Creator Login	Not Supported	Supported	Supported
Creator Full Name	Not Supported	Supported	Supported

Author Login	Not Supported	Supported	Supported
Author Full Name	Not Supported	Supported	Supported
Moderator Login	Not Supported	Supported	Supported
Moderator Full Name	Not Supported	Supported	Supported
Reviewer Login	Not Supported	Supported	Supported
Reviewer Full Name	Not Supported	Supported	Supported
Observer Login	Not Supported	Supported	Supported
Observer Full Name	Not Supported	Supported	Supported
Defect Count	Not Supported	Supported	Supported
Open Defect Count	Not Supported	Supported	Supported
Overview	Not Supported	Supported	Supported
Group	Not Supported	Supported	Supported
Defects per Hour	Not Supported	Supported	Supported
Comment Count	Not Supported	Supported	Supported
Last Comment	Not Supported	Supported	Supported
Idle for	Not Supported	Supported	Supported
File Count	Not Supported	Supported	Supported
LOC	Not Supported	Supported	Supported
LOC Changed	Not Supported	Supported	Supported
LOC Added	Not Supported	Supported	Supported
LOC Removed	Not Supported	Supported	Supported
LOC Modified	Not Supported	Supported	Supported
LOC Delta	Not Supported	Supported	Supported

Review Wall-Clock Duration	Not Supported	Supported	Supported
Total Person-Time	Not Supported	Supported	Supported
Reviewer Time	Not Supported	Supported	Supported
Author Time	Not Supported	Supported	Supported
Number of Participants	Not Supported	Supported	Supported
Average Participant Time	Not Supported	Supported	Supported
Custom Fields	Not Supported	Supported	Supported
Review Detail Reports			
Overview			
ID	Supported	Supported	Supported
Status	Supported	Supported	Supported
Title	Supported	Supported	Supported
Creator	Supported	Supported	Supported
Created On	Supported	Supported	Supported
Finished On	Supported	Supported	Supported
Wall-Clock Time	Supported	Supported	Supported
Number of Defects	Supported	Supported	Supported
Number of Comments	Supported	Supported	Supported
Overview	Supported	Supported	Supported
Total Person Time	Not Supported	Supported	Supported
Total Reviewer Time	Not Supported	Supported	Supported

LOC All Version (Uploaded/ Changed)	Not Supported	Supported	Supported
LOC Final Version (Uploaded/ Changed)	Not Supported	Supported	Supported
Document Pages (Final)	Not Supported	Supported	Supported
Custom Fields	Not Supported	Supported	Supported
Participants			
Name	Supported	Supported	Supported
Role	Supported	Supported	Supported
Person-Hours	Not Supported	Supported	Supported
Per Participant Custom Fields	Not Supported	Not Supported	Supported
Defect Log			
ID	Not Supported	Supported	Supported
Creator	Not Supported	Supported	Supported
File	Not Supported	Supported	Supported
Location	Not Supported	Supported	Supported
Text	Not Supported	Supported	Supported
Defect Custom Fields	Not Supported	Supported	Supported
Materials Summary			
Num Files	Supported	Supported	Supported
Num Code Files	Supported	Supported	Supported
Num Images	Supported	Supported	Supported
Num Other Binaries	Supported	Supported	Supported

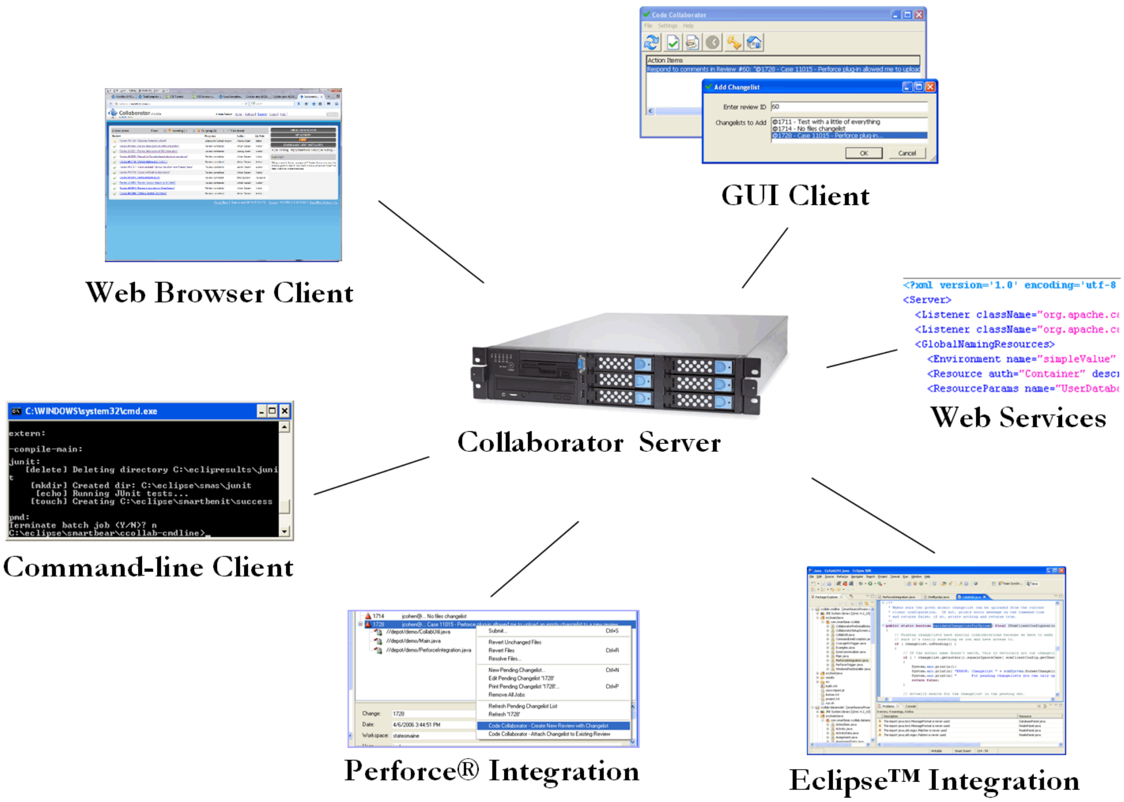
Num Changelists	Supported	Supported	Supported
LOC (Uploaded)	Supported	Supported	Supported
LOC (Changed)	Supported	Supported	Supported
Num Documents	Not Supported	Supported	Supported
Num URL's	Not Supported	Supported	Supported
Document Pages	Not Supported	Supported	Supported
Inspection Rate (Uploaded)	Not Supported	Supported	Supported
Inspection Rate (Changed)	Not Supported	Supported	Supported
Document Inspection Rate	Not Supported	Supported	Supported
Image Inspection Rate	Not Supported	Supported	Supported
URL Inspection Rate	Not Supported	Supported	Supported
Binary Inspection Rate	Not Supported	Supported	Supported
Code Defect Density (Uploaded)	Not Supported	Supported	Supported
Code Defect Density (Changed)	Not Supported	Supported	Supported
Document Defect Density	Not Supported	Supported	Supported
Image Defect Density	Not Supported	Supported	Supported
Materials Detail			
Path	Supported	Supported	Supported
Version	Supported	Supported	Supported

Annotation	Supported	Supported	Supported
LOC	Supported	Supported	Supported
LOC Changed	Supported	Supported	Supported
# Comments	Supported	Supported	Supported
Defects	Supported	Supported	Supported
Overall Review Conversation			
Speaker	Supported	Supported	Supported
Text	Supported	Supported	Supported
Customizable Defect Reports			
Defect ID	Not Supported	Supported	Supported
Review ID	Not Supported	Supported	Supported
State	Not Supported	Supported	Supported
Review Title	Not Supported	Supported	Supported
Review Creation Date	Not Supported	Supported	Supported
Review Completion Date	Not Supported	Supported	Supported
Created	Not Supported	Supported	Supported
Creator Login	Not Supported	Supported	Supported
Creator Full Name	Not Supported	Supported	Supported
File	Not Supported	Supported	Supported
File Version	Not Supported	Supported	Supported
Changelist ID	Not Supported	Supported	Supported
Changelist Date	Not Supported	Supported	Supported
Changelist Author	Not Supported	Supported	Supported

Changelist Comment	Not Supported	Supported	Supported
SCM Type	Not Supported	Supported	Supported
Location	Not Supported	Supported	Supported
Comment	Not Supported	Supported	Supported
Review Group	Not Supported	Supported	Supported
Defect Custom Fields	Not Supported	Supported	Supported
User Reports			
ID	Not Supported	Supported	Supported
Login	Not Supported	Supported	Supported
Name	Not Supported	Supported	Supported
E-mail	Not Supported	Supported	Supported
Phone	Not Supported	Supported	Supported
Last Login	Not Supported	Supported	Supported
Last Activity	Not Supported	Supported	Supported
Last Logout	Not Supported	Supported	Supported
System Admin	Not Supported	Supported	Supported
Enabled	Not Supported	Supported	Supported
User Activity	Not Supported	Supported	Supported

1.3 Collaborator Components

Collaborator includes a server component, and a variety of clients, 3rd-party integrations, and client protocols.



Collaborator Server 51

As with most enterprise-class software systems, a server process acts as the hub, manager, and controller of information. The server has a web-based user interface where users and administrators can do everything — create and perform reviews, configure personal and system-wide settings and run reports. The server uses a database to store all data and configuration.

Web Client 228

The web browser client is used by entering an external URL in a web browser to connect to the Collaborator server. This is where most of the review will take place, where you edit, view, configure the reviews. The Web Client supports any modern browser.

Command-line Client 348

Developers will typically install the cross-platform client. This tool includes a Command-Line Client that lets you upload local files (and file-changes) into new and existing reviews. The Command-Line Client also includes scripting commands for implementing custom behavior and integrating with external systems.

There are many reasons why you might want to integrate Collaborator with other systems. An issue-tracker integration point might let you synchronize Collaborator "defects" with issue-tracker "issues," or you might want to mirror review data (metrics/comments/file-differences) into the associated ticket. A reporting integration point might let you mirror Collaborator metrics into your existing reporting system (examples: defects/kLOC, defects/man-hour, kLOC/man-hour, number of defects found of different types or severities, etc).

GUI Client 338

The cross-platform client install includes a graphical client to complement the web-based user interface already provided by the server. The GUI client is a cross-platform client available for Windows, Mac, and Unix/Linux users.

Eclipse Integration 366

The Eclipse Plug-in gives users the ability to upload files and perform reviews from within any Eclipse-based application. A variety of applications are supported.

Visual Studio Integration 402

The Visual Studio Add-in gives users the ability to upload files and perform reviews from within Microsoft Visual Studio.

Version Control Integration 414

Collaborator integrates with many popular Version Control Systems. Integrations include command-line, graphical, and Eclipse plug-in clients and Version Control triggers. Server integration is supported for selected Version Control Systems and requires that a properly configured client be configured on the Collaborator server.

Perforce Integration 537

Perforce users will probably want to install the Perforce Client Integration tools. These are included in the client installer 329.

Integration with P4V and P4Win lets users upload changelists into new or existing reviews just by right-clicking on the changelist. This works on both "pending" and "submitted" changelists.

We also supply a special tool for use as a Perforce server trigger. For example, you can use this to enforce a rule like "Every submit on this branch requires a review". You can also use this to automatically upload all submitted changelists into Collaborator so that you can review files after they have been checked in. This can be especially useful with off-shore development groups.

Tray Notifier 404

In addition to uploading files, the GUI Client gives you a taskbar icon that updates to show you whether you have any pending tasks in Collaborator. This is called the Tray Notifier and is available to Windows and Unix/Linux users. This allows users to easily access pertinent reviews and alerts the user of any new activity in reviews without being actively involved in the web browser client.

External Integrations 592

Besides that, you can integrate Collaborator with any other external tool by using scripts, or SOAP or JSON web services.

1.4 Review Workflow and Phases

This section describes a typical review and its phases.

Review Creation

Any of the following actions will create a review:

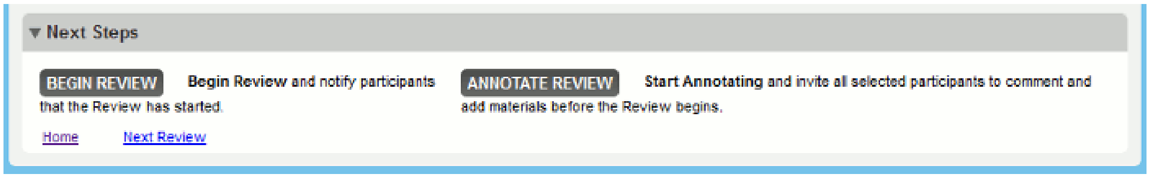
- Clicking the "Create New Review 243" menu option in the Web Client Home page.
- Adding new materials to a new review through the GUI Client 338, Command-Line Client 348, Eclipse Plug-in 383, Visual Studio Add-in 402, or Perforce Plugins 557.
- Using the ccollab admin review create command in the Command-Line Client.
- Triggering a script 638 that creates a new review.

Once a review is created it goes into the Planning phase.

Planning Phase

In the Planning phase, only the review creator is active to customize the review using the Review Creation Wizard 243. Here the creator enters review attributes including the title, custom fields 190, attaches review materials 246, and assigns participants 245 to the review.

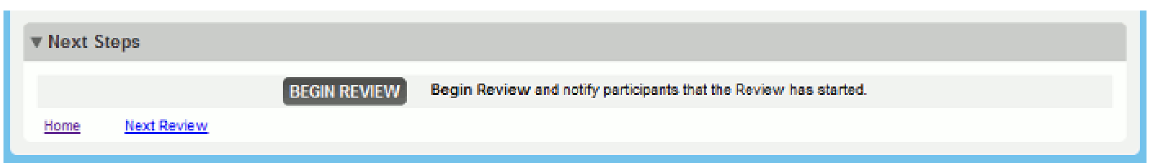
Using the "Begin Review" and "Annotate Review" buttons of the Next Steps 250 section, you can save your current information and move the review to another phase.



Annotating Phase

The Annotating phase is an optional phase that an author may select before the Inspection begins. It provides the opportunity for other participants to add comments [299], review materials [246] or open defects [303] prior to the Inspection phase. When a review is moved to Annotating, Collaborator will send notifications to all selected participants [245] inviting them to participate in the review. Like Planning, Collaborator will not automatically move the review from the Annotating phase.

The Next Steps [250] section includes a "Begin Review" button for moving the review to the Inspection phase.



Inspection Phase

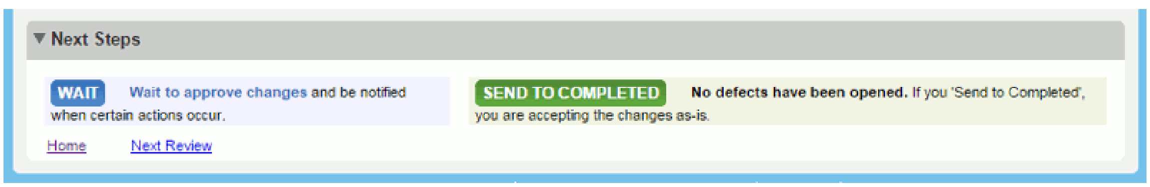
Once the review has begun, Collaborator activates all roles and notifies the participants that their actions are required in the review. Participants are presented [250] with the files, file-differences [273], and other review material. Everyone can make comments on individual lines of a file or on entire documents.

Comments 299 work a bit like "instant message" chat and a bit like "newsgroups". If everyone is chatting at the same time, you have a real-time "instant message" environment so the review can progress swiftly. If one or more participants are separated by many time zones or just are not currently at the computer, the chat looks like a newsgroup where you post comments and receive e-mails when someone responds. This means Collaborator works equally well no matter where your developers or reviewers are located.

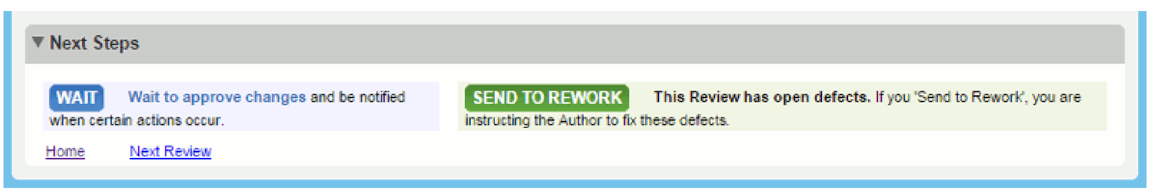
If reviewers find problems, they open defects 303 right from the Web Client, associated with the file and line number if applicable. Defects are tracked through Collaborator and can optionally be mirrored 306 into an external issue-tracking system.

Once all required 202 participants have indicated that they are finished with the current phase, the review moves to the next phase, which will depend on whether open defects 303 remain in the review.

If there are no defects or all defects have been marked external 306 or fixed 305, the review moves to the Completed phase.

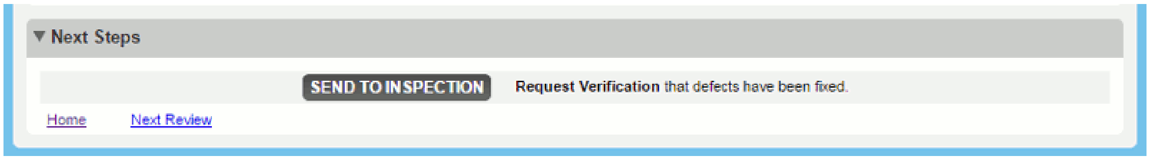


If the review contains any open defects, the review moves on to the Rework phase.



Rework or Fix Defects Phase

In the Rework phase, the authors are the only roles active so that they may fix the defects found in the Inspection phase. When the authors are satisfied with their fixes, the fixes are uploaded into the review. The authors then indicate they are ready for the fixes to be validated by clicking the "Send to Inspection" button.



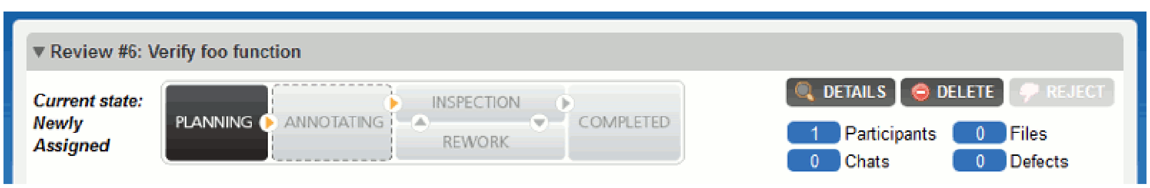
For validation, the review moves back to the Inspection phase, where reviewers have access to the new changes as well as the original changes and comments.

Completed Phase

Only when no open defects remain and all required participants have approved the review during inspection, then the review goes to the Completed phase.

Cancelled Phase

Depending on the Allow Deleting/Cancelling Reviews 156 administrative setting, there may be an option for the author or creator to cancel 250 a review. In this case, the "Delete" or "Cancel" button become enabled on the top right of the "General Information" box:

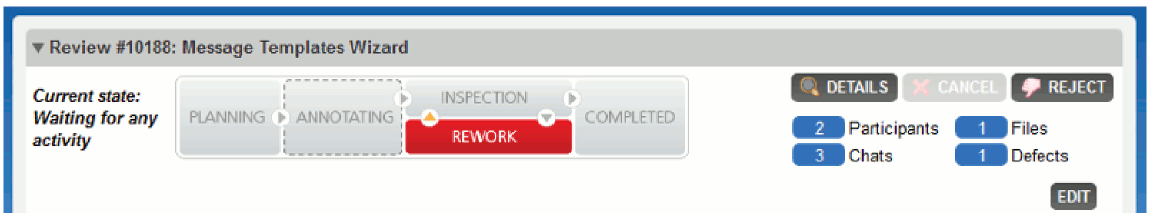


Clicking the "Delete" button removes the review from the database. You can only delete a review that is in the Planning phase. A deleted review can never be restored.

Clicking the "Cancel" button moves the review to the Cancelled phase. A cancelled review can only be re-activated by an administrator.

Rejected Phase

Depending on the Allow Reject Review 157 administrative setting, there may be an option for reviewers to reject 252 a review. In this case, the "Reject" button becomes enabled on the top right of the "General Information" box:



Clicking the "Reject" button invokes a dialog where you can specify reject reason and then moves the review to the Rejected phase. A rejected review cannot be re-opened by anyone, even by an administrator.

1.5 How Do I?

This section is included as a quick help to get you introduced to some basic tasks in Collaborator. This section is formatted in a series of questions and answers focused on describing how to use Collaborator. While the rest of the manual will serve as the ultimate reference manual, explaining each part or component of Collaborator in detail, this section will be useful if you are new to Collaborator and want to learn how to perform tasks in a quick and easy way. The following questions may not include all your questions, so if you find yourself in need of help, please contact our support team whose information is listed in the Contact Us 29 section.

1.5.1 How Do I Get Started?

- See a typical code review in action? 20
- Get started with Collaborator? 20
- Experiment with Collaborator without installing the product? 20
- Make sure code reviews are worth the effort without taking too much time out of my work day to try them out? 21
- Perform my first review? 21

See a typical code review in action?

To get introduced to Collaborator, we recommend viewing a demo to see how it works and how a typical review is done.

You can also attend a webinar (either live or recorded), where we go through a more in-depth demo and also answer your individual questions in real time!

Get started with Collaborator?

If you are new to Collaborator, we have heaps of reference materials that help you use and understand the product.

If you want to start evaluating Collaborator or get a quick start with the basics, we suggest the Getting Started guides. Getting Started with Collaborator Server helps system administrators install and configure the main Collaborator server, while Getting Started with the Collaborator Client helps developers get started conducting code reviews with Collaborator.

System Administrators 30

Developers 38

We also have the User's manual that serves as a reference manual for everything you want to know about Collaborator. It is divided into sections for installation and server administration, web reviews and the web browser client, the specific integrations, and external integrations.

And if you still have questions, you can always contact us 29. We would be happy to assist you with any specific questions about Collaborator.

Experiment with Collaborator without installing the product?

We have a demo server waiting for you to try! The demo server is an already set up Collaborator server, so you do not have to hassle with administrating a server.

1) Visit our demo server at http://demo.smartbear.com.

2) Create a new account by supplying a login name and password of your choice under "Create a new User" and jump right into Collaborator.

Note: The demo server is publicly available to everyone. Do NOT post confidential information and/or materials.

For more detailed information on how to get started with the demo server, visit our blog entry here.

3) Read our Getting Started Guide for Developers 38 to quickly get caught up with the basic code review steps, or explore around by clicking random links to learn by trial and error.

Make sure code reviews are worth the effort without taking too much time out of my work day to try them out?

We think code reviews are awesome, but we understand you might be skeptical. And why invest in something you are not sure of? We put together some tips on how to minimize your time evaluating the code review process. This document, Is Code Review for You?, explains how to try code review for a week, how to see if it delivers solid, measurable results for your team, and how to get your team on board.

Perform my first review?

So you have been assigned your first review, and you are not sure what the next steps are. We'll guide you through so you can jump right in. Just read our blog post here.

1.5.2 How Do I Do Reviews?

- Know what parts I really need? What are all these parts? 22
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Know what parts I really need? What are all these parts?

Every organization needs a Collaborator Server installed and set up. (Read the Getting Started for Server Administrators 30 for instructions.) The server process acts as the hub, manager, and controller of information. (Download the Server Installer for this component.)

To connect to the server, you use the Web Browser Client 228 by entering a URL (provided by your Collaborator server administrator) into your web browser. The Web Browser Client is where users and administrators can do everything — create and perform reviews, configure personal and system-wide settings and run reports.

The following clients are all optional but very useful. Which one works best for you depends on your version control system, code review environment, and/or personal preferences. Just read the descriptions, and choose what you need or want to use.

The Command-Line Client 348 is a cross-platform client interface to the Collaborator server. It can be used for uploading files, integrating with version control, and querying the server, or as a part of an automated script in a sophisticated ALM / build system.

The GUI Client 338 is a cross-platform graphical client to complement the web-based user interface already provided by the server. Use it to upload materials to a new or existing review easily by integrating with any or a combination of the following Version Control Systems: AccuRev, ClearCase, CVS, PTC Integrity, Perforce, Rational Synergy, Rational Team Concert, Subversion, and Team Foundation Server. (If you use a different VCS, you can always use the Command-Line Client.)

The Tray Notifier 404 is a taskbar icon that shows whether you have any pending tasks in Collaborator. This icon allows you to easily access pertinent reviews and alerts you of any new activity in reviews without requiring active involvement in the web browser client.

The Perforce P4V/P4Win plug-ins 557 integrate with the Perforce GUI clients and allows you to upload changelists into new or existing reviews just by right-clicking on the changelist.

The Eclipse Plug-in 366 lets you upload files and create reviews from within any Eclipse-based application.

The Visual Studio Add-in 402 gives you the ability to upload files and create reviews from within Visual Studio.

Create a new review?

In the Web Browser Client 228, creating a new review is as simple as clicking on the **Create New Review** button at the top right of the action items section of the Collaborator home page and filling out the information in the next screen.

Wait, your **Create New Review** link is disabled? Congratulations, you are the Collaborator administrator. By default, we do not allow admins to participate in reviews, so the link at the top right does not show up. You can change this setting by going to the **Admin** link on the menu bar at the top of the screen. Once you are at the Admin menu, scroll down to the "Review Process Options" and set the *Allow System Administrator to Perform Reviews* setting to *Yes*.

In the Command-Line Client, use the command: `ccollab admin review create` to create a new review.

You can also create a new review when adding review materials from the GUI Client, the Eclipse Plug-in, the Visual Studio plugins, and the P4V plugins.. The client will give the option to add the material to a new review or an existing review. Be sure to select *Create New Review* if you want a new review.

Get around having to *Read* all comments?

In the default configuration, you must *Read* all comments. But you can change this! As the system administrator, you can change this setting; go to the **Admin** menu, look under the sub-category **Roles**, select a Role "set", and change *Required to Read All Comments* to *No*. This setting is configurable for each role, so you can ensure that all comments are read by someone, but not everyone.

When this setting is configured to *Yes*, a review participant cannot click the Finish button if the review contains unread comments. When set to *No* for a role, this setting allows a review participant to click the Finish button even if there are unread comments. Also, you will not be brought back to a review if some other participant has commented after your clicked the Finished button. Read our extended blog entry about this feature here.

But my system administrator will not change this setting...

You'll have to mark all comments read, but you can do this easily by clicking the super **Mark All Comments as Read** button at the top left of the Diff Viewer. You will still have to click it for every file (hey, we have to make sure you are looking at the files) but it saves you clicks in the end.

Figure out what "Accept" means?

We get this question often, and the short answer is: "Accept" means whatever you want it to mean, so you do not even have to use it if you do not want to. "Accept" does not have an explicit meaning in Collaborator; it is used differently in different environments. So, you can use this feature however you think best suits your review environment. Once this button is clicked, a green checkmark appears to notify participants that a comment has been Accepted.

Know why (or when) was (or will I be) I brought back to a review?

You may have been brought back into a review because of your *Required to Read All Comments* setting (See above). Read more about this here.

Put a review on pause?

If you cannot continue or finish reviewing because you are waiting for more information (For example,, an answer to a question you posed in a comment), you can put the review on hold by using the **Wait** button in the Next Steps section. "Wait" keeps you deactivated from the review until the action option you have selected occurs. So the **Wait** button is for when you want to come back to a review at a later time. If you don't return and the selected activity does not occur, the review will not be marked finished, so to prevent a review from stalling, be sure to come back and finish it.

Finish a review/Clear an action item?

So you want to finish your part of the review. If you are in a role that has the ability to mark reviews finished, it is pretty simple. First, defects must be marked resolved: either *fixed*, *deleted* or *tracked externally*. Then, under the "Next Steps" section, select **Send to Completed**. If you are not the only reviewer, a list of actions will appear. You can select an action to indicate that you are finished with the review *unless* the selected action occurs. If you are required to read all comments, make sure all comments have been marked read before clicking **Send to Completed**. You will also be brought back to the review if another comment is made after you have approved a review.

Finish a stalled review? Perhaps someone left for vacation, and now the review cannot be completed.

Several things may prevent a review from being marked *Complete*. If an open defect is keeping you from closing a review, have a system administrator resolve the defect, and you will be able to finish the review. If the absent participant is the only person who has the ability to complete reviews, simply change that participant's role in the review so that they are assigned to a role that is not required to complete the review. For more detailed information, read the blog post, "Ending a Review Now", here.

Indicate file review order?

You can use the "General Chat" and the "Notes" areas to annotate files and give instructions on suggested file review order. For detailed step-by-step instructions, read our blog post here.

Remove a participant from a review?

Removing a participant from a review simply requires clicking the red 'X' next to their name.

Change my notification level?

You can change the frequency at which you receive notification emails by going to your **Preferences** menu and then setting the *Notification Level* in the **Notifications** tab. When your individual preferences are set to the default setting, *Minimal*, you only get notifications resulting from other users' actions. You can also change the setting to *None* or *All*.

Remove a file?

Once a review has started, removing a file is only possible if there are no comments or defects linked to the file. To remove a file, click the **Edit** button on the "Review Materials" section of the review summary screen. You should see a **[Delete]** link to the left of the file or changelist, in which case click the link to delete the file. You may need to set the "View As:" option to "Separate" in order to be able to see the specific version of the file you wish to remove.

If you do not see the link, it indicates that comments or defects are linked to the file or changelist; you will not be able to delete the file because it would orphan comments.

Compare files or choose which version of a file to look at?

To view different versions of the file you are reviewing in the Diff viewer, click on **Compare** at the top of the Diff viewer. Collaborator shows you a list of all available versions that you can choose from. Use the radio buttons for the right and left side of the Diff Viewer to select the versions. To view only one version, set both left and right sides to the same version.

You can also compare a current version to the latest Accepted version, which is detailed here.

Change the diff viewer? I don’t like the diff viewer.

You cannot change the aesthetics of our Diff Viewer, but if you prefer other Diff Viewer software, we do support an External Diff Viewer launcher, which you can use to review diffs in a separate diff viewer of your preference. To configure this capability, please visit the owner's manual here 406.

Find out how much time I have spent on each review?

Beginning with Collaborator v6.0, user oriented reports allow you to view your own statistics even if you are not an administrator. View our blog post here.

Do code review in Eclipse?

With the Eclipse Plug-in, you can now review code within Eclipse. To get caught up with the new changes, visit our blog here.

Add files to a review from Visual Studio?

Beginning with Collaborator v6.0, the Visual Studio Add-in offers support for adding files to Collaborator from Visual Studio. To learn more about this add-in and feature, visit our blog here.

Review Office Documents?

Collaborator has native support for Microsoft Office Word (.doc and .docx) 277 and Excel (.xls and .xlsx) 280 documents. To review other types of Microsoft Office Documents you will need to convert them to PDF format 287 first.

Delete/redact a comment?

While we still don’t allow the deletion of comments, we do provide a way to indicate that a comment is now irrelevant and should not be considered for the review. Detailed steps and screenshots are available here.

Compare ClearCase files that are on two different branches?

To compare file versions that are on two different branches in ClearCase you have to specify the specific ClearCase version identifiers. Beginning with v6.0 of Collaborator you can use our GUI Client to do that; detailed steps are available here.

1.5.3 How Do I Do Setup or Administrate the Server?

- Switch from internal authentication to LDAP? 27
- Reset my password? 27
- Upgrade to a new version of the Collaborator server? 27
- Change administrative control (especially in LDAP)? 28
- How do I view metrics and reports? 28
- Collect data from each review participant? 28
- Find metrics for non-text documents? 29
- Define groups of users? 29

Switch from internal authentication to LDAP?

The easiest way to change authentication options is to re-run the installer again. There is no need to uninstall, just run the installer over the existing installation. From there, you can choose "LDAP Authentication" when asked and provide your LDAP credentials.

Reset my password?

Sorry, you will have to ask your Collaborator system administrator about this one.

Upgrade to a new version of the Collaborator server?

1) Back up first! 89

2) Note your Support and Upgrades date by going to **Admin>Licensing** . In the Current Licensing box, take note of the date next to the *Upgrades Expire On:* field. Make sure the version you want to upgrade to was released before this date. You can find this information by looking at the dates next to the version numbers in our Version History 695.

3) Run the new version installer over your existing installation and choose *Existing Configurations* when prompted.

Note: Be sure to fully read the Server Upgrades 76 *section.*

Change administrative control (especially in LDAP)?

Administrative Access can be given to individual users by an existing administrator. Just have an administrator go to **Admin>Users** and edit the account you would like to give administrative control to. On the **Editing** page, set the **Is Administrator** field to Yes. Administrative Access allows a user to access to all reviews, reports, and also edit any review.

The Special Administrator Account is a privileged account that is always allowed to login regardless of how many licenses are in use. With Internal Authentication, the special administrator account is always "admin". This cannot be changed.

With LDAP, there is one user assigned as the "System Administrator". If you would like to change this assignment, go to the ROOT.xml configuration file at `$INSTALLDIR/tomcat/conf/Catalina/localhost/ROOT.xml`. Near the bottom of that file is a line:

```
<Parameter description="The name of the Collaborator system
administrator who is always allowed to log in". name="system-
administrator" override="false" value="admin"/>
```

Change the value to the login name you would like to set the account to:

```
<Parameter description="The name of the Collaborator system
administrator who is always allowed to log in". name="system-
administrator" override="false" value="XXXXXXXXXXXX"/>
```

where XXXXXXXXXXXX is the login name of the System Administrator. Then stop and restart the service.

How do I view metrics and reports?

Collaborator provides built-in reports that allow you to view detailed metrics by reviews 321, defects 322, and users 323. To view these reports, you must have access to reports by enabling the Reports Access 152 setting in the **Admin** menu. Once you have access, you may view built-in reports by clicking the **Reports** button that will appear at the top right menu of the Collaborator screen.

Collect data from each review participant?

Participant Custom Fields 196 allow administrators to collect data. To learn about enabling and utilizing this feature, please view our blog post here.

Find metrics for non-text documents?

Additional metrics for binary files, such as images and PDFs, can be viewed in v6.0 and newer. To view these metrics for a single review, visit the Reports[317] section (provided you have access) and view a Review Detail Report[321]. Our blog post here includes a helpful view of the new metrics to look for.

Many of our customers use our custom reporting[594] features to obtain reports tailored to their needs. Learn how to create custom SQL reports here[603] or learn about our database schema here[594].

Define groups of users?

You can either set up user groups manually or by syncing them automatically to externally defined groups.

To set up user groups manually, view our owner's manual here[171].

To learn how to sync, view the Group page here[175].

We have also provided some examples of how to use groups that may help you in deciding how to fully utilize this feature here[171].

1.6 Contact Us

If you have questions or feature requests, drop us a line.

For Technical Support:

support@smartbear.com

For Sales:

sales@smartbear.com

More Resources

These links might also be helpful:

- To get acquainted with the product faster, watch **video tutorials** and **screencasts** on our web site:
  http://support.smartbear.com/screencasts/collaborator/

- You can ask questions, search for answers, exchange comments and suggestions on our **forums**:
  http://community.smartbear.com

- Learn more about using Collaborator from **technical papers** and **blogs** published at:
  http://support.smartbear.com/articles/collaborator/
  http://blog.smartbear.com

- Make sure you regularly visit our web site, http://smartbear.com, where you will find -

  - News

  - Downloads

  - Articles, Case Studies, Webinars

  - Updated support options

2 Getting Started

This section will briefly guide you through the steps of getting started with Collaborator. It is intended for users who want to jump right into Collaborator and start using the basic features. If you would like more detailed instructions on how to use Collaborator, please visit the appropriate sections of this manual.

We have divided this section into several guides.

The Getting Started For System Administrators 30 shows you how to install and configure the Collaborator server.

The Getting Started For Developers 38 describes how to work with Collaborator as a regular user. It consists of three stages:

- Creating Reviews 38 tells how to create reviews as an author.

- Participating in Reviews 43 tells how to take part in reviews as a reviewer or observer.

- Reworking Defects 48 tells how to get notified about the defects found by other participants and how to make corrections to your reviews.

2.1 Getting Started For System Administrators

In order to use Collaborator, you must first install and configure the server side of the Collaborator.

1. Download the Collaborator Server

Navigate to SmartBear Downloads Center: http://support.smartbear.com/downloads/collaborator/ and download the "Server Installer" that corresponds to a platform of your server.

2. Install the Collaborator Server

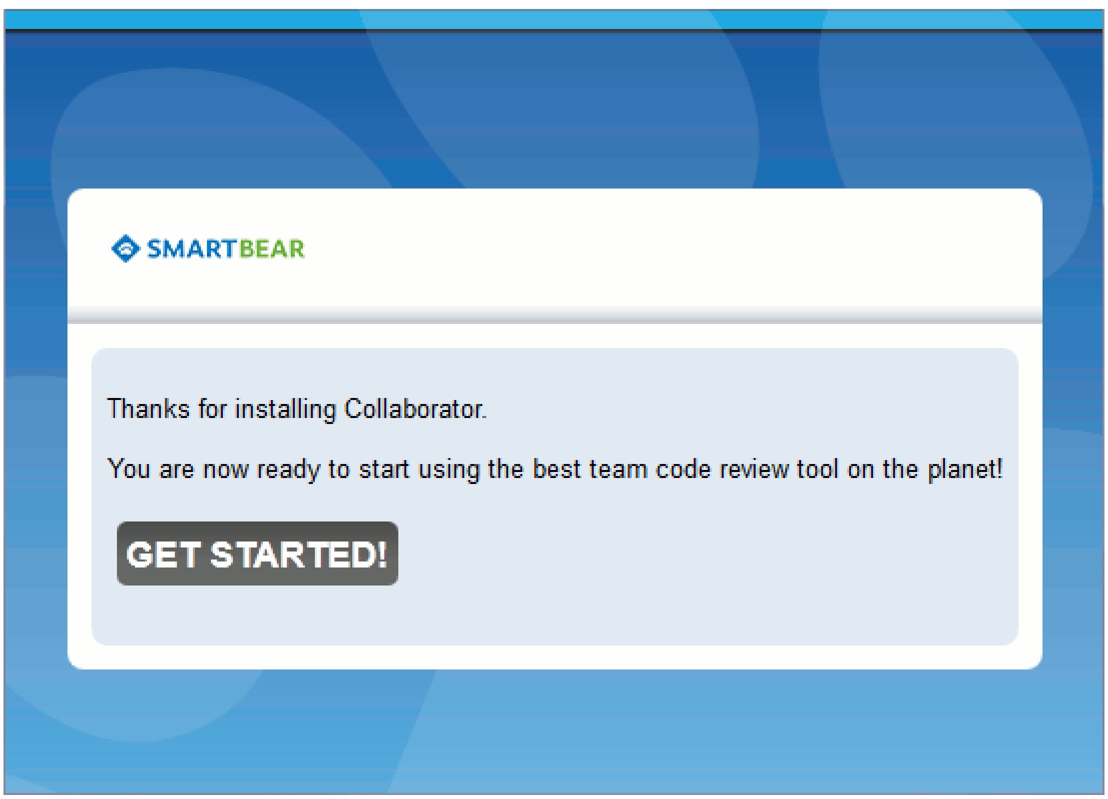
Launch server installer and go through the wizard 63 to complete the installation.

Note: During the installation you may configure advanced settings for the Collaborator server: server port, authentication type, database type and so on. For first-time and evaluation installations we suggest that you leave the default values for these settings.

Once the installation is finished, your default browser will start and open the Collaborator's Web User Interface. The rest of the configuration and administration process is done using the Web User Interface.

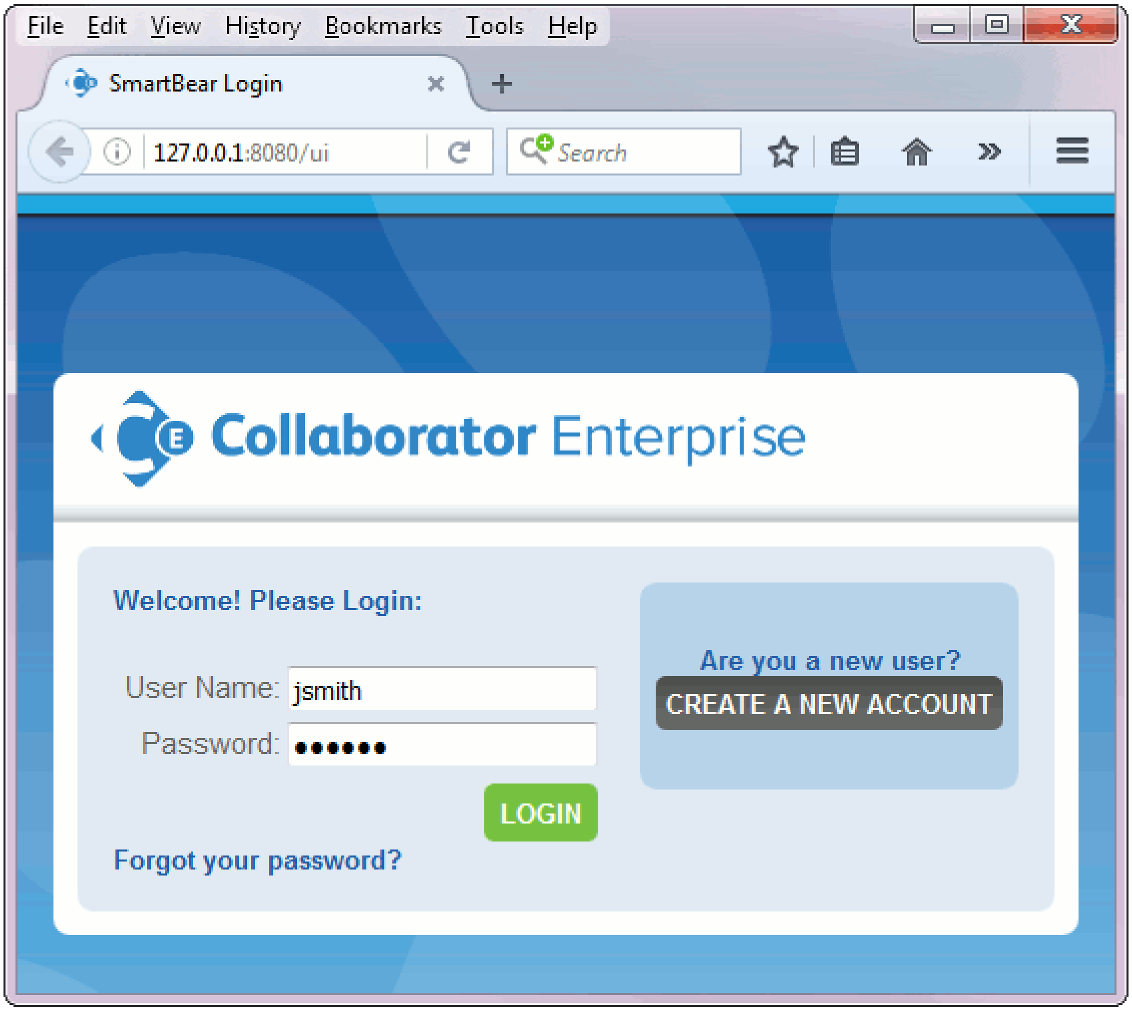
3. Initialize Database

When opening the Web User Interface for the first time after installing the Collaborator server, the database initialization screen is displayed. Click **Get Started** to continue.



4. Log Into the Web User Interface Client

If you have chosen the default values for advanced settings or chosen "*Internal Authentication*" during the installation process, then specify the same username and password that you have provided during the installation. Click **Login**.

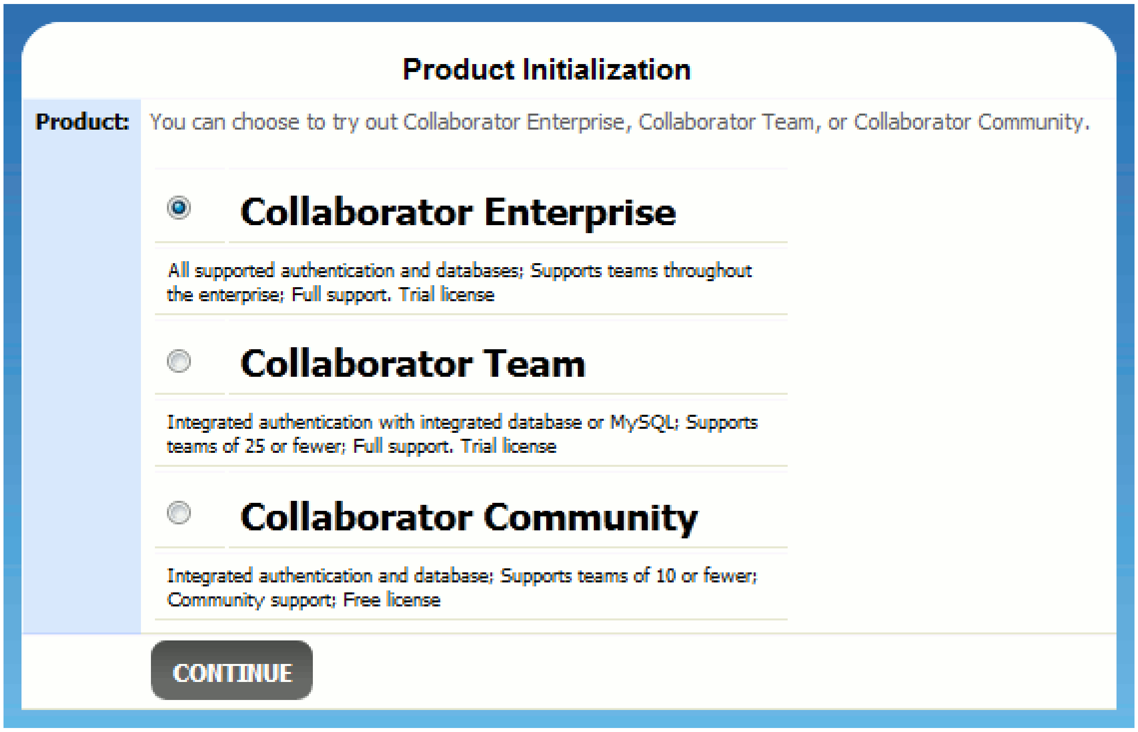


If you have chosen the "*LDAP Authentication*" during the installation process, then specify the same username and password that you have provided when configuring your LDAP integration. Please see LDAP Authentication 102 for more information.

5. Perform First-Run Initialization

Once you have logged in as the admin, you will be redirected to the First-Run Initialization page. This page is displayed only once after the installation and asks you to provide necessary information to set up the Collaborator server.

In the Product Initialization section you will need to choose which product you would like to use: Collaborator Community, Collaborator Team or Collaborator Enterprise.



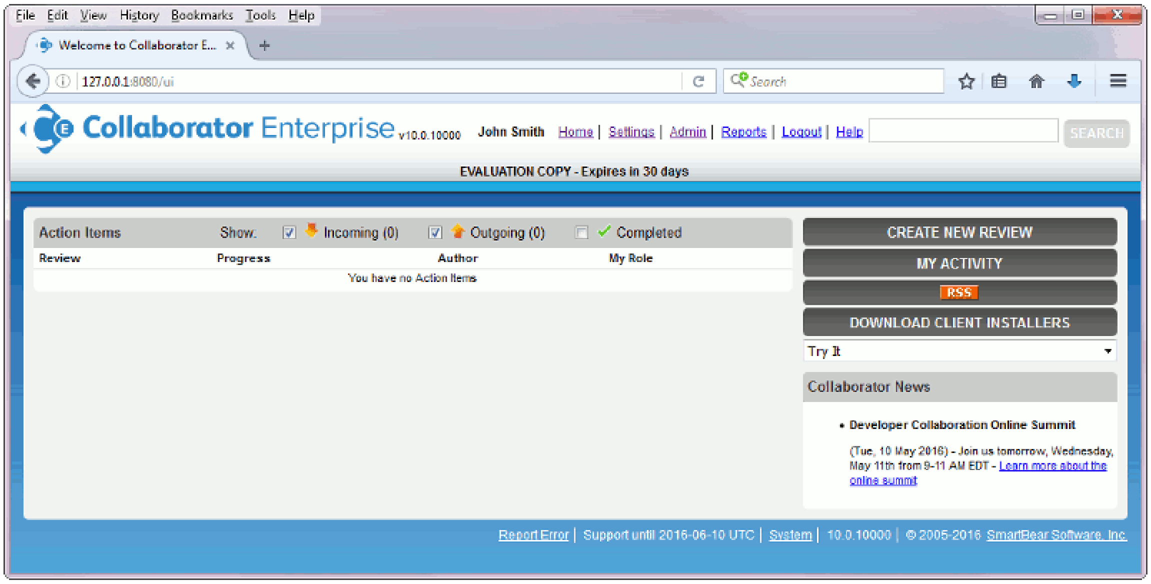
All products have the same goal, to make your peer review process easier and more effective, but provide different sets of features. Collaborator Community is intended for small developer groups, Collaborator Team is for medium groups and Collaborator Enterprise is for large enterprise level companies. To view all differences between Collaborator editions, please read this page 3.

Click **Continue** once you have selected which product you would like to use.

6. Get Familiar With Web Client Home Page

After the first-run initialization, you are redirected to the Home page. This will be the starting page for administrating and working with Collaborator. Later on, after logging in you will start your work with Collaborator from the Home page.

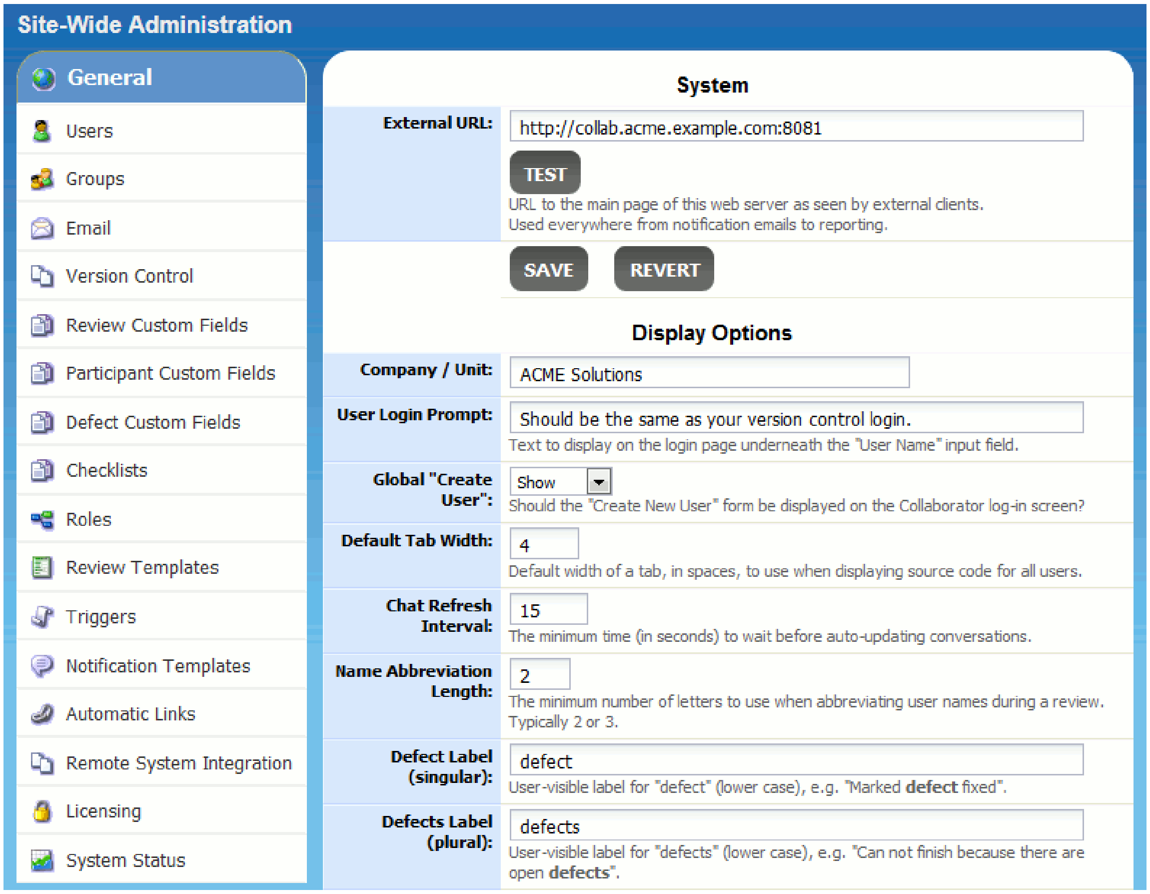
This page looks much the same as your average Collaborator user's home page. For the administrators the page additionally displays the Admin link on the top menu bar, the System link in page footer.



As the Collaborator administrator, you would like to familiarize yourself with the administration settings, so click the **Admin** link in header menu.

7. Configure Site-Wide Administration Settings

The Site-Wide Administration Settings section is where you can configure the settings of your Collaborator server.



The administration settings are grouped into a number of categories: General, Users, Groups and so on. You can read the detailed description of each setting in the Collaborator Settings 146 section.

When configuring a Collaborator server for the first time, pay your attention to the following settings from the General category:

- *External URL* – Enter the full URL to the main page of the web server on which Collaborator was installed, as it would be seen by external clients.

- *Global "Create User"* ‼ When you are starting out, and you do not want to manually create usernames for all users, mark this field as "Show" so the users can create their own username and password. Mark it as "Hide" if you want to control the creation of users and usernames.

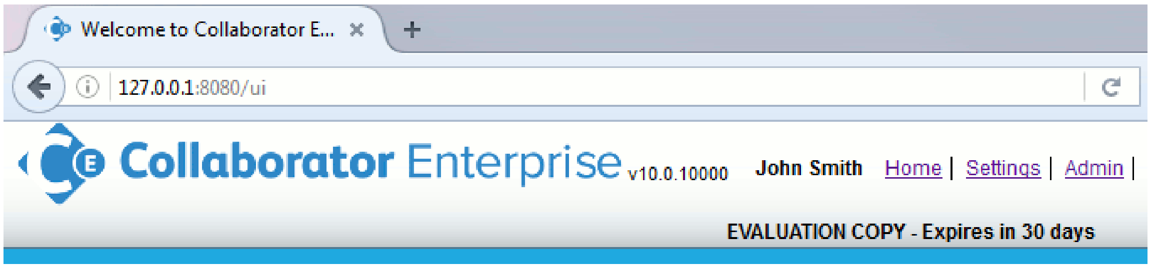
- *Access Restrictions* – Control who has access to reviews, reports, subscriptions, and systems information.

- *Review Process Options* – Control what users can or cannot do during the review process.

- *Bug-Tracking Integration* – Add the URL for creating a new bug in your bug tracking system. See Bug-Tracking Integration 612 for more information.

8. Activate Your Licence

If you have an external internet connection, Collaborator will attempt to contact our licensing server so that we can automatically set you up with a **30-day trial license**. Your licensing status is denoted by a description in the top toolbar.

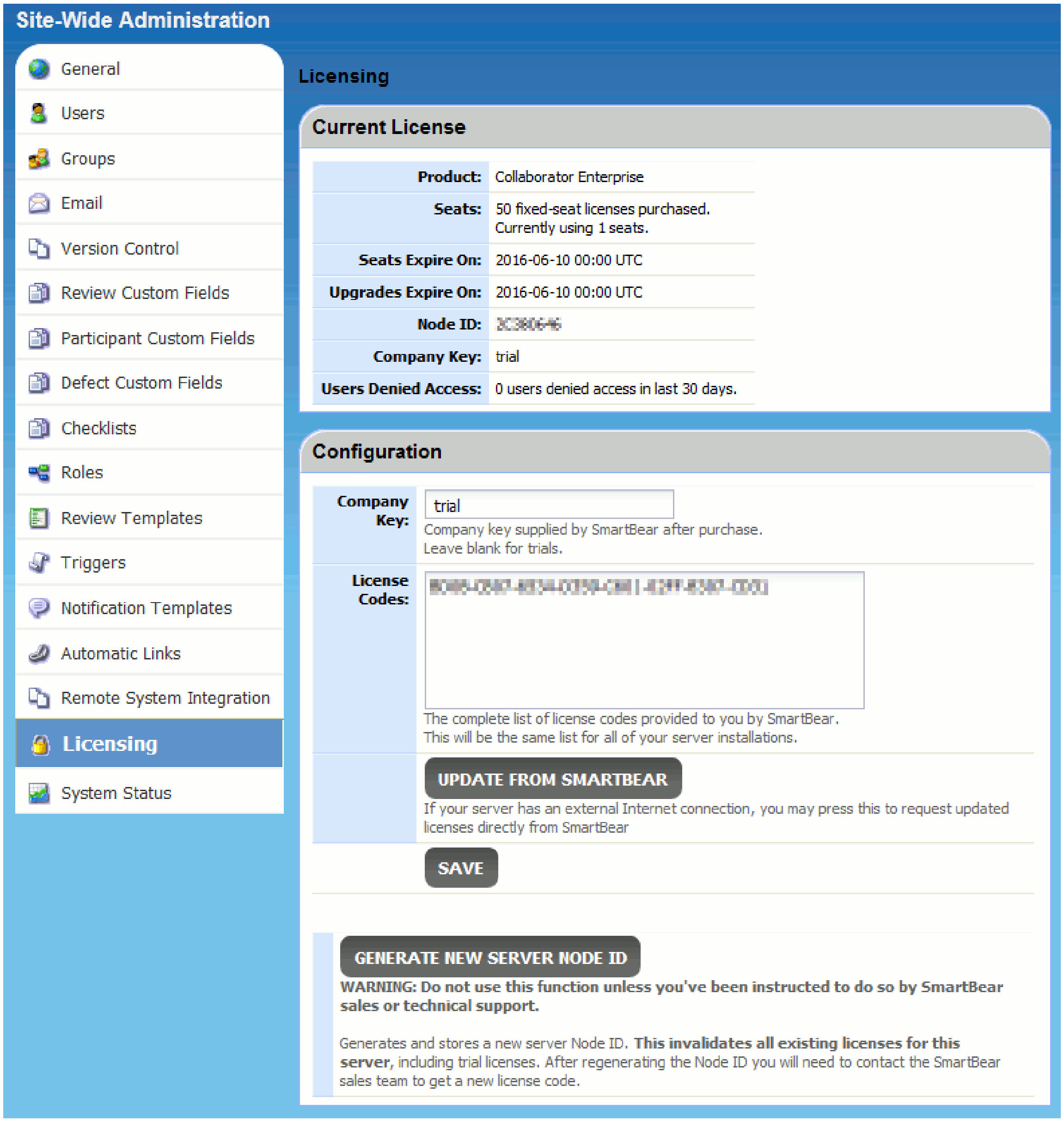


If you do not have an external connection, or if a firewall prevents access to our licensing server, you need to obtain a license code manually.

If you want to obtain and enter **a permanent license code**, you can follow the same instructions.

Click **Licensing** category of the Admin section.

This will open a page that gives you information regarding the licensing, such as when the license expires, when the support and upgrades expire, how many seats you have and so forth.



Find the "Node ID" field in the "Current License" pane. The Node ID is an 8-character value that is unique to every installation. Node ID is tied to every license code we generate.

Copy an 8-character value of Node ID and send it to your Account Manager to activate your license. If you do not know who your Account Manager is, just send the Node ID to sales@smartbear.com.

After you send us the Node ID, you will receive an e-mail with a company key and license code. The company key is "trial" for temporary licenses and a word or phrase for permanent licenses. The license code will be a 32-character code. Enter the company key and the license code in their respective fields, and click **Save**.

That is all. Collaborator server is installed, configured and ready for operation.

Where to Go Next

To get detailed information about the server, its configuration and maintenance, read Server Administration 51 section.

To learn how to upgrade an existing Collaborator server, read Server Upgrades 76 section.

To learn about using Collaborator in a daily work, see Getting Started For Developers 38 and Web User's Guide 228 sections.

2.2 Getting Started For Developers

Peer review process includes three major types of activity: creating reviews as an author, participating in someone else's reviews as a reviewer or observer and improving your work according to comments and defects found by another participants.

This guide explains how to use Collaborator for to perform all these steps.

- Creating Reviews 38
- Participating in Reviews 43
- Reworking Defects 48

> These guides assume that your Collaborator server has already been installed and configured 30 by your system administrator.

2.2.1 Creating Reviews

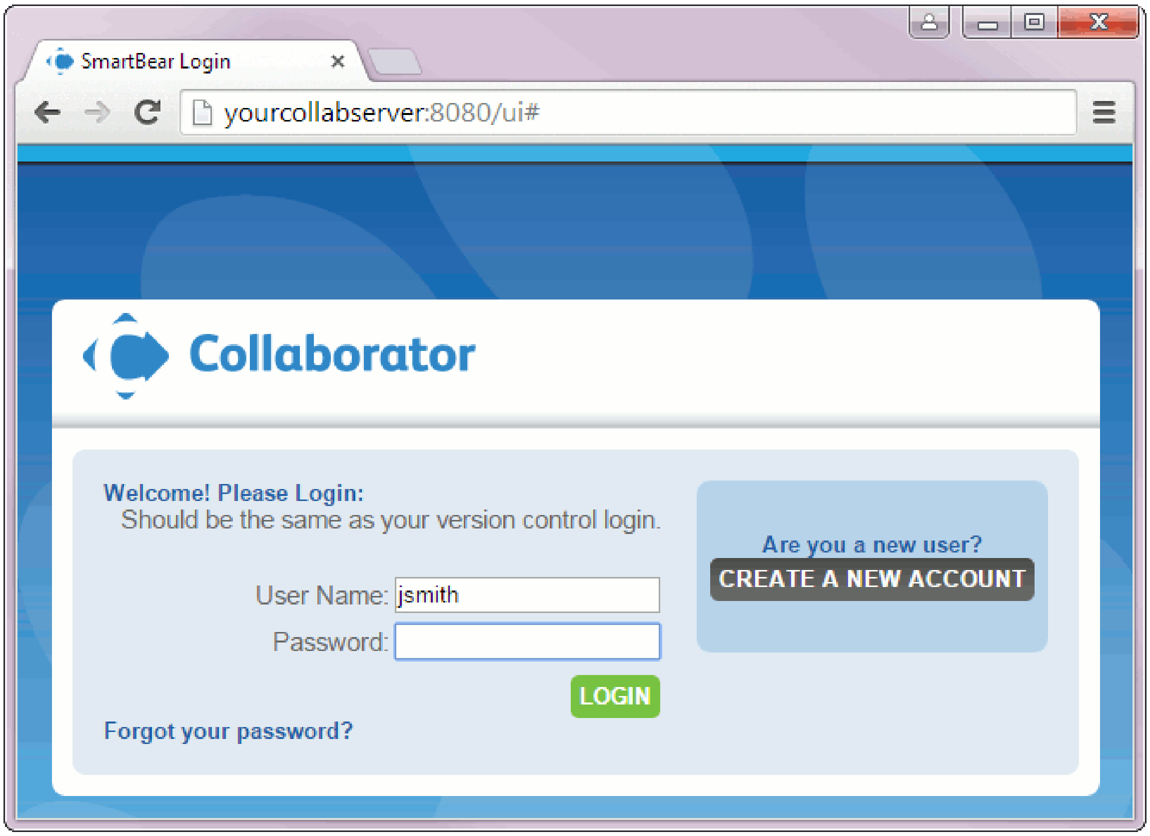
You have several options for creating a review: via Collaborator Web Client, via GUI Client or via Command-Line Client. Besides you can reviews directly from Eclipse, Visual Studio or from P4V or P4Win clients for Perforce. To ease you into the process, we will start with the Web Client 228. It does not need any client components except for web browser.

1. Open Collaborator Web Client

Start your favorite web browser and navigate to the URL of the Collaborator Web Client. If you do not know the URL, ask your Collaborator administrator. The URL is defined by the External URL 147 setting.

2. Log Into the Web User Interface

You will be redirected to the login screen.



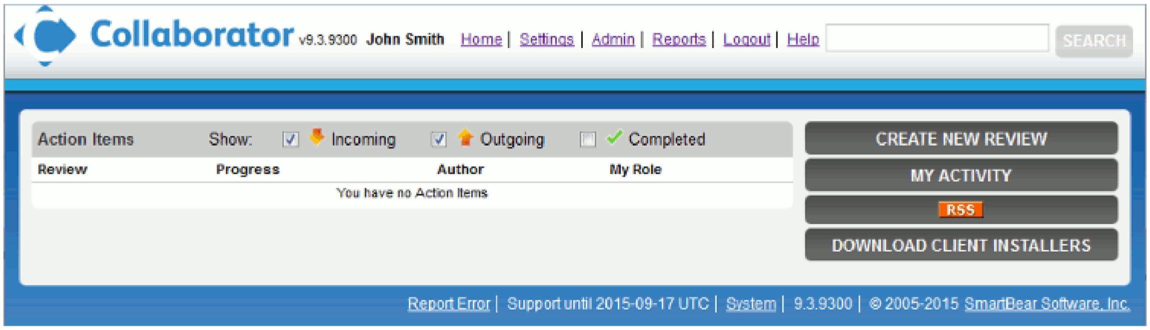
Enter your user name and password and click **Login**. The username and password is typically supplied by the administrator 164.

If you use LDAP or ActiveDirectory 102 for authentication in your company, you can use that username/password with Collaborator and it will automatically create your user account.

If your administrator allows user created logins, a "Create New Account" form appears on the login page where you can create your own login name and password. In this case we recommend that your account in Collaborator be identical to your version control system account.

3. Get Familiar With Web Client Home Page

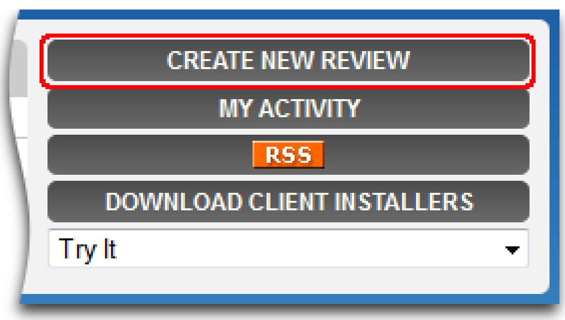
Once you log in, you will be redirected to the Home page. This page is a starting point for most of peer review process.



On Home page you can check your Action Items[241] to see if you have any assigned reviews. You can also edit and change your settings and preferences by clicking Settings[232] in the menu bar on the top right of the screen.

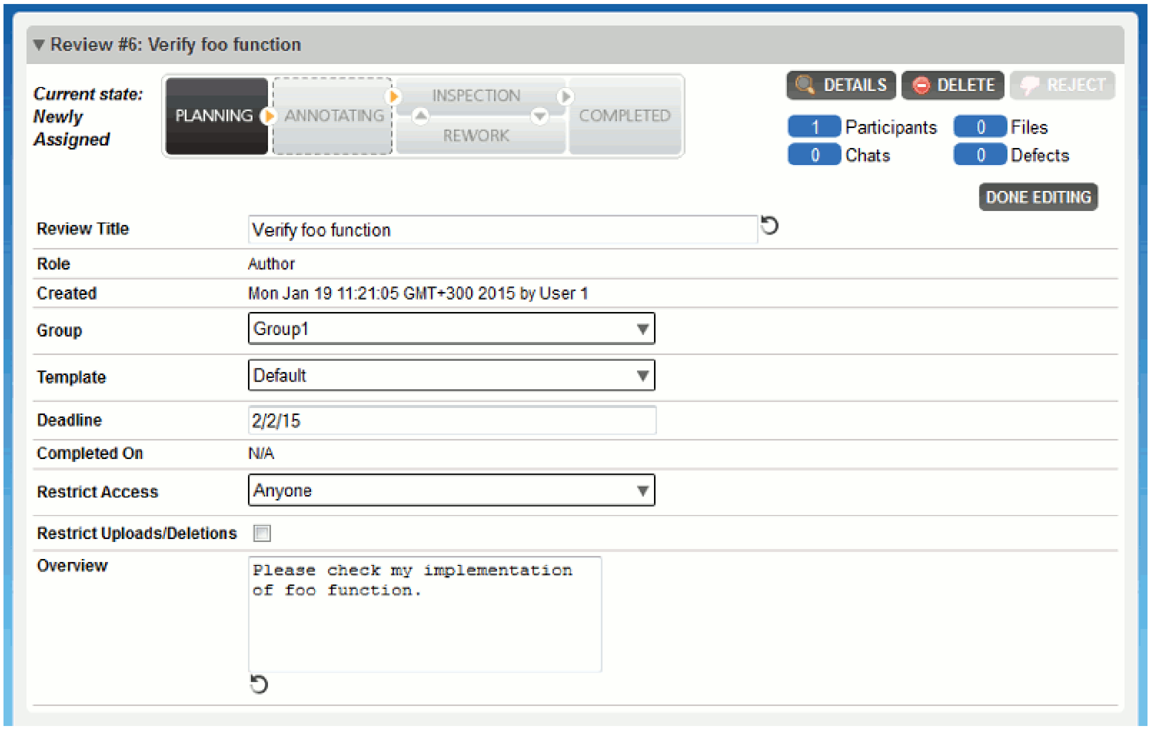
4. Create a New Review

To create a new review, click **Create New Review** on the Home screen.



You will see a Create Review Screen[243] where you can specify information about the newly created review.

5. Specify General Information About a Review

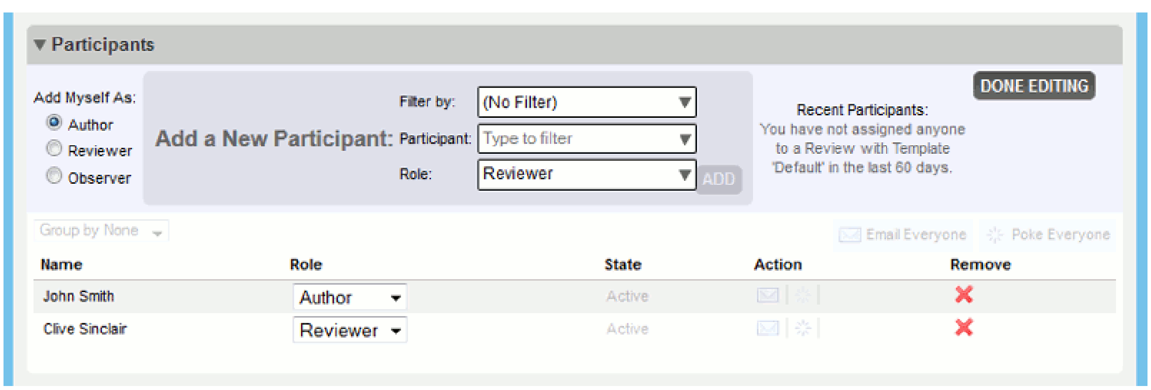


Enter a brief description for the review to the **Review Title** field. The title is used all over the place -- in Action Items, in notification emails, in web page titles, and so forth.

All other fields of the General Information section are optional, so you may skip them.

6. Add Review Participants

The next step in creating a review is to invite people to the review, and give each of them a role to play.



1. Add yourself as Author 198.

2. Add one or more of your colleagues as Reviewers 198.

You can select each user and role individually through the drop-down menu, or start typing the name of the user in the appropriate field to narrow down the user list. User/role combinations you have used recently will also appear under "Recent Participants". This makes it easy and fast to select common combinations.

7. Add Review Materials

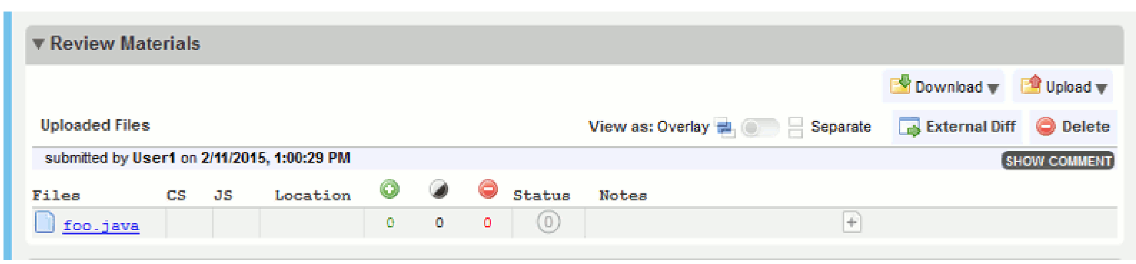
Review materials is what you are asking to review. From the Web Client you can upload the following types of content:

- Arbitrary files from your computer: text files, Word documents, Excel tables, PDF's, images and so on.
- Links to Web sites
- Changes committed to a pre-configured 188 version control system

Let's upload some text file to a review.

1. Scroll to the Review Materials section.
2. Click the **Upload** button.
3. Select **Files** from the drop-down list.
4. In the ensuing dialog, choose one or more files you want to attach and then click **Upload**.

Once you have attached anything to a review, it will be listed in the Review Materials section.



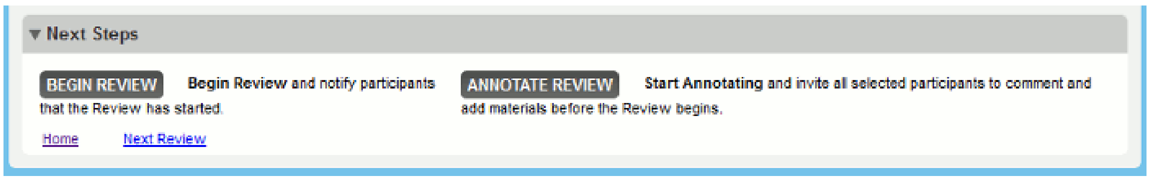
Most Collaborator users do not use the Web Client for attaching source files, reserving it for adding supporting documents. Instead, most of our users opt to use the GUI Client, the Command-Line Client, or add source files directly from Eclipse, Visual Studio or from P4V or P4Win clients for Perforce.

These clients need to be installed on your computer and properly configured, however they provide an extensive integration with Source Control Systems and/or IDEs.

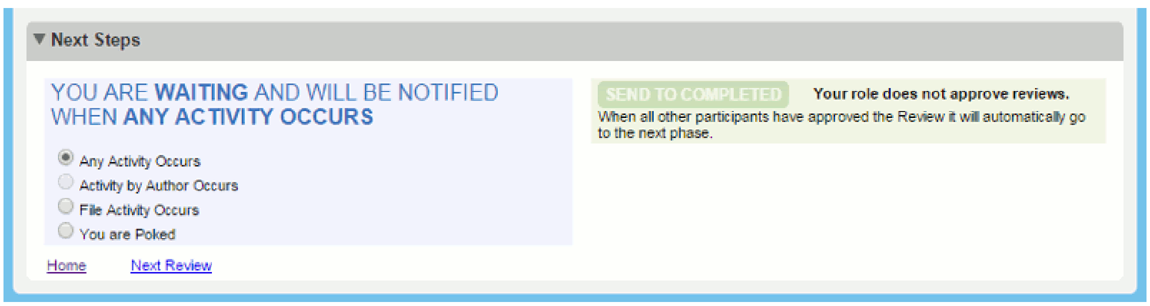
To learn how to add review materials via these clients, please read the respective sections in the manual: GUI Client 338, Command-Line Client 348, Eclipse Plug-in 366, Visual Studio Add-in 402 or P4V / P4Win Integration 557.

8. Start the Review

Click Begin Review to start a review.



In the ensuing list select when Collaborator should re-invite you to the review.



Other participants will receive notifications about your new review, and it will be displayed in their Action Items 241 list.

Where to Go Next

To learn how to take park in someone else's reviews as a reviewer or observer, see Participating in Reviews 43.

To learn how to get to know about the issues other participants have found in your review, see Reworking Defects 48.

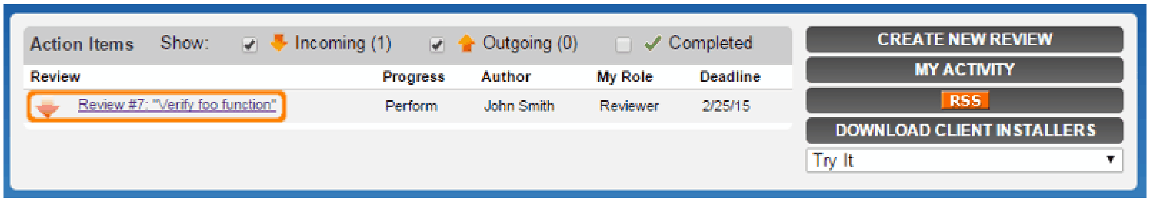
2.2.2 Participating in Reviews

When someone invites you to a review, you receive an email notification. To take part in this review you need to open Collaborator Web Client.

1. Log Into the Web User Interface

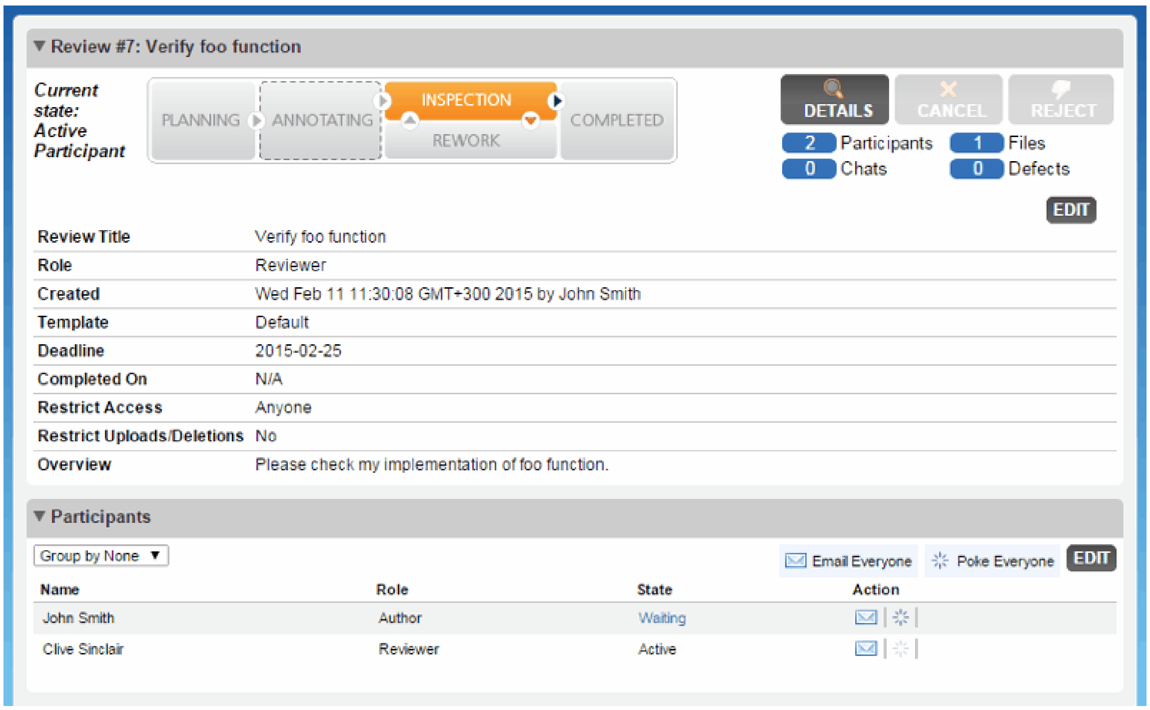
Start your favorite web browser and navigate to Collaborator Web Client URL. If asked, enter your user name and password in the login screen.

In the Action items list on the Home screen, you will see a new incoming review.



2. Open Review Summary Screen

Click the review in the Action items list to open it in the Review Summary [250] screen where you can see the details about this review.



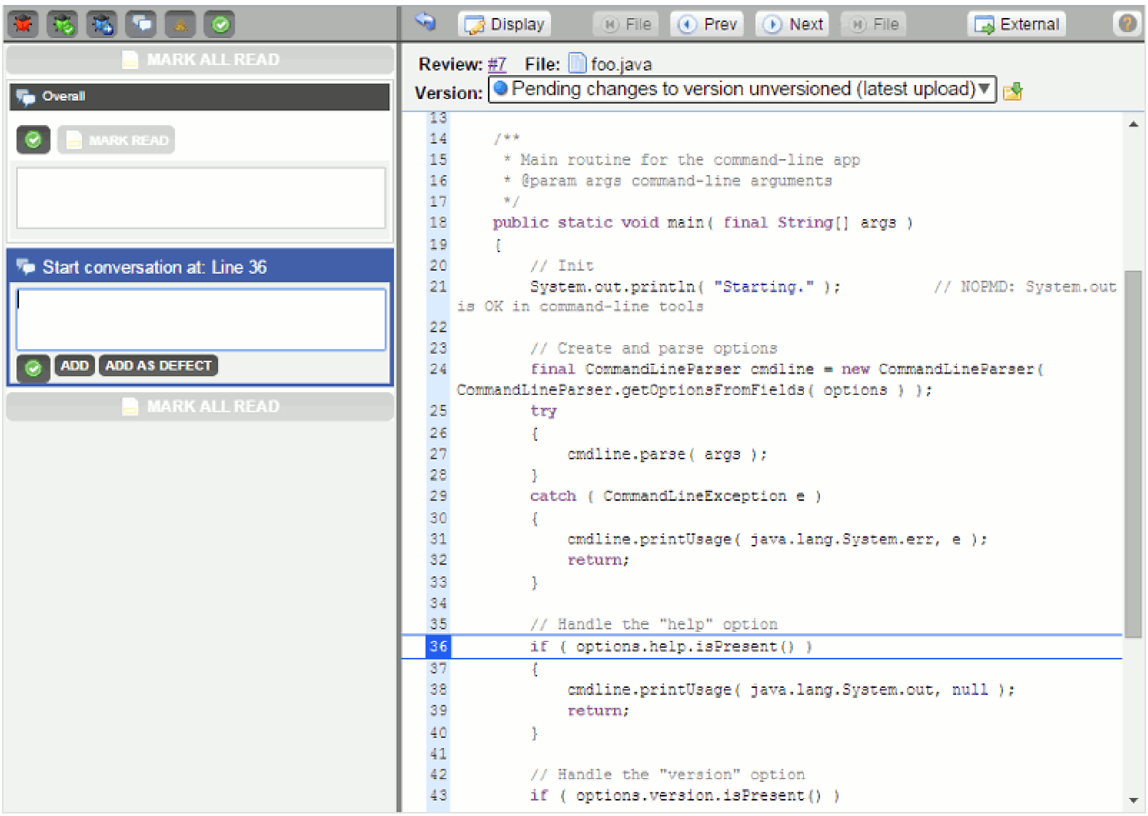
Notice that you are the active participant of this review and the review is in the Inspection phase.

3. Inspect Review Materials

Scroll to the Review Materials section and click the uploaded file (or the first of several uploaded files). The Diff Viewer [264] will open.

Diff Viewer displays the contents of the chosen file and allows to add your comments and defects on this file. The Viewer appearance changes a little depending on a type of the current file.

If a version history is available for the file (for example, when it was added from a source control system or when it was reworked by the author), the Viewer shows the current and previous versions of the file and highlights the differences between them.

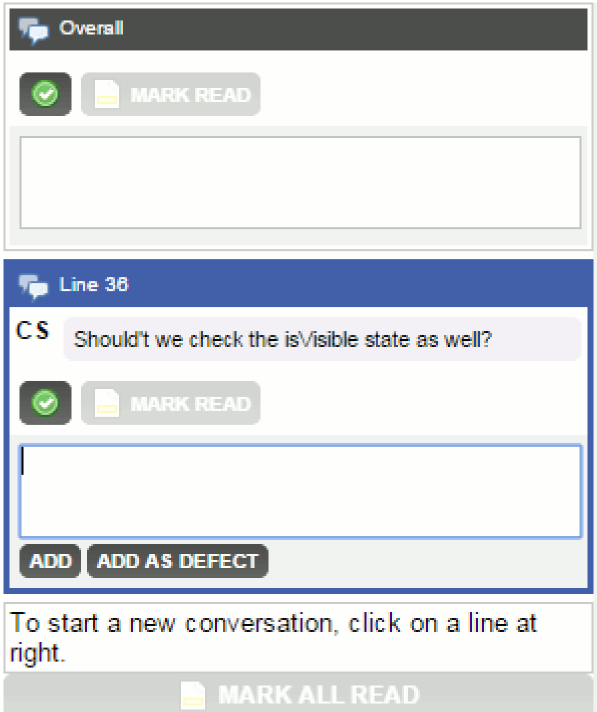


4. Add Your Comments, Look for and Verify Defects

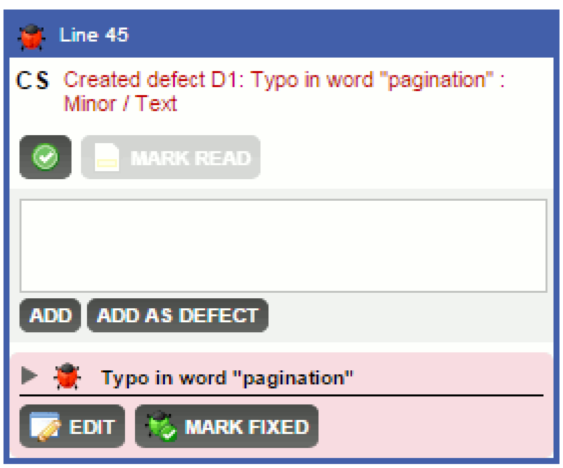
While reviewing, you most likely find some issues with the materials or would like to ask or tell something to the author. For this purpose you can add comments and defects.

If you are reviewing a file that has already been reworked, then you will need to verify whether the defects have been fixed.

- To add a comment, click on the line (in text files) or area (in supporting docs) you want to comment on, type your comment and click Add. Comments are threaded into a conversation that stays tied to a specific line or area.



- To add a defect, click on the line (in text files) or area (in supporting docs) to which you want to attribute the defect, enter issue description and click Add as Defect. In the ensuing pane specify defect severity level and type and click Add Defect.



- To mark a previously found defect as fixed, scroll to the line (in text files) or area (in supporting docs) where the defect was found, and press Mark Fixed.

Besides creating comments and defects that relate to a specific line or area you can also create comments and defects that relate to entire files (in the Overall section of Diff Viewer) as well as comments and defects that relate to the whole review (in the Chat section of the Review Summary screen). See Review Chats 299 for more information on making conversation during reviews.

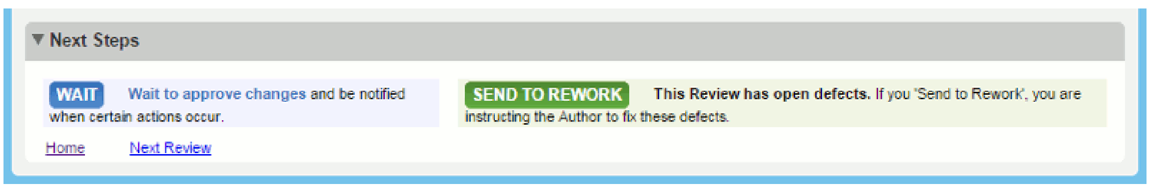
When you have examined the current file, you can proceed to another file that was uploaded to the review (if any). To view the next or previous files, you may use the File navigation buttons on the Diff Viewer toolbar:

To return back to Review Summary screen, click **Back** button on the Diff Viewer toolbar.

5. Finish Inspection

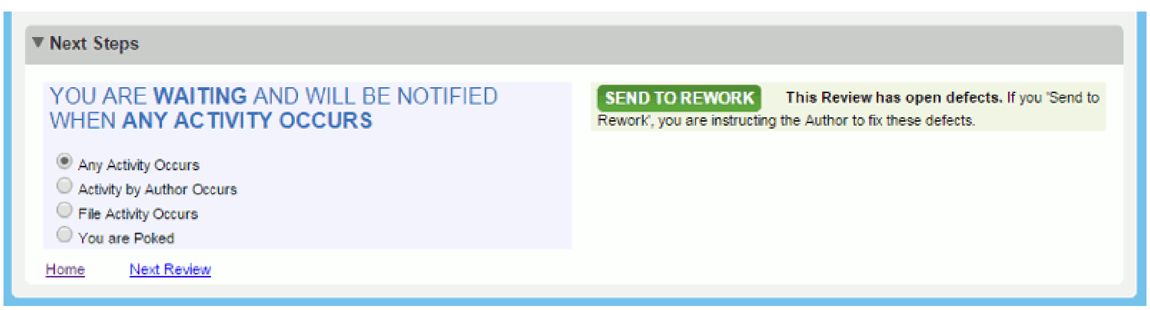
Having inspected all the files that were uploaded to the review, scroll to the Next Steps section of the Review Summary screen.

In this section you need to indicate whether you are finished with the inspection or waiting on further actions from other participants.



- To signal other participants that you have temporarily stepped out from the review but plan to return, press **Wait.**

In the ensuing list select when Collaborator should re-invite you to the review.



Wait Options

- To signal other participants that you have inspected the uploaded files, press green button. The exact caption of the button varies depending on the phase the review will move to.

If you have created any defects, then the button caption will be "**Send to Rework**" and pressing it will return the review back to author to fix the found defects. Otherwise, the caption will be "**Send to Completed**" and pressing it will indicate that you approve the changes in the uploaded materials. A review cannot be completed until all defects are resolved: either marked as fixed, deleted, or tracked externally 306.

Where to Go Next

To learn how about correcting the found defects as an author, see Reworking Defects[48].

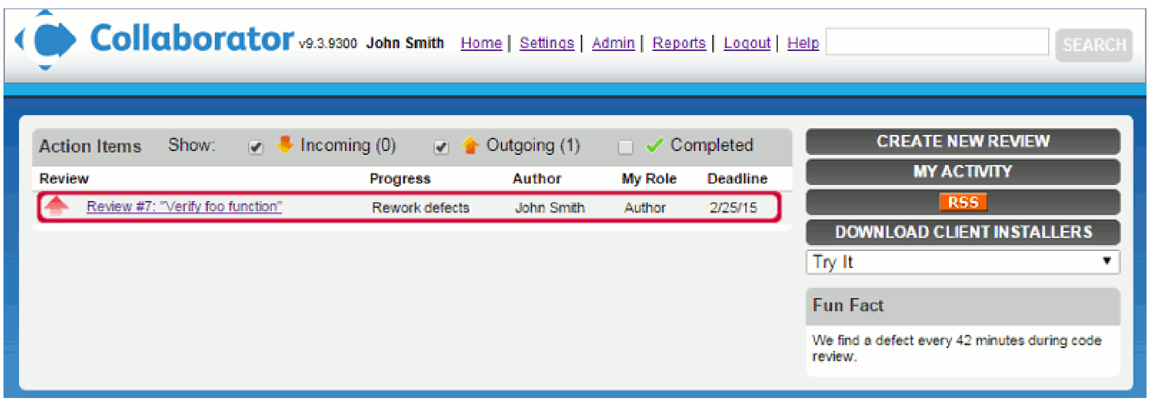
2.2.3 Reworking Defects

When one of review participants has noticed some issues with your work and created defects, the review is returned back to you.

1. Log Into the Web User Interface

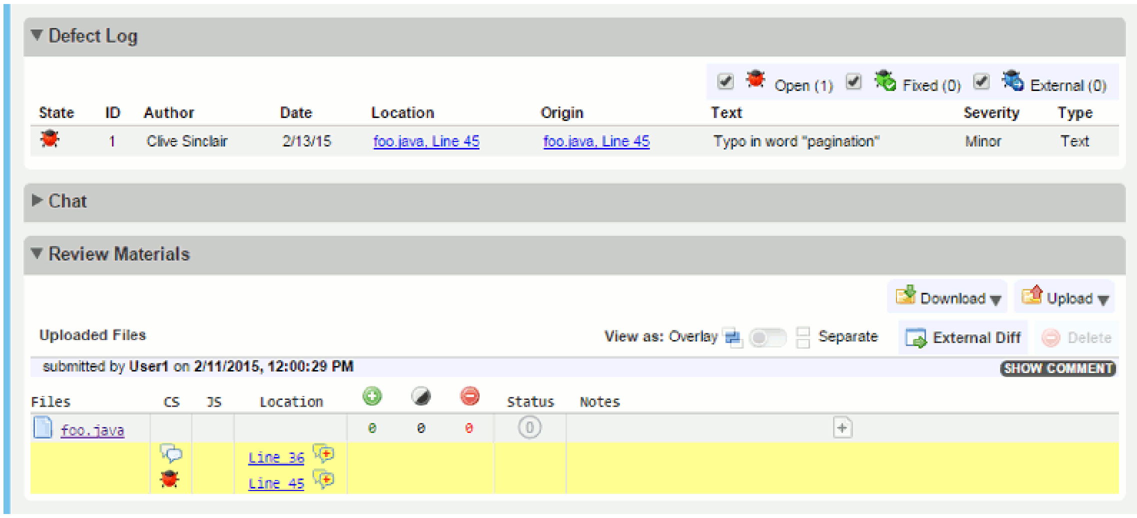
Start your favorite web browser and navigate to Collaborator Web Client URL. If asked, enter your user name and password in the login screen.

In the Action items list on the Home screen, you will see your review that was returned. It will have the "Rework defects" state. You will need to fix the defects found by other participants.



2. Open Defect Log of the Review Summary Screen

Click the review to open the Review Summary screen and scroll to the Defect Log section.

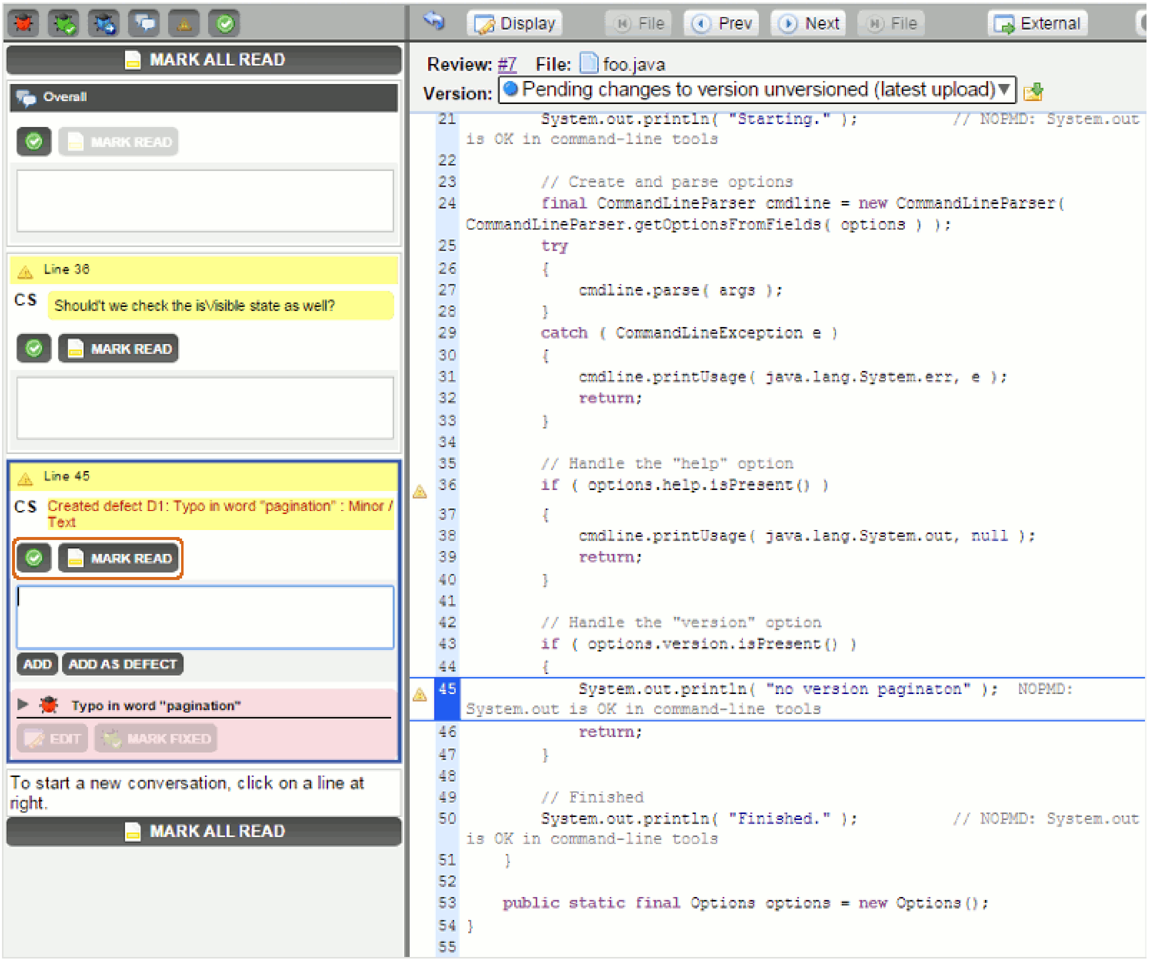


This section lists all found defects, their location and description. The Review Materials section also displays information about defects and comments, however groups it per files.

3. Get Information About a Particular Defect

Click the Location link in the Defect Log or in the Review Materials sections.

This will open the Diff Viewer and navigate to the defect.



Read descriptions of the defects and reviewer comments. Reply if needed.

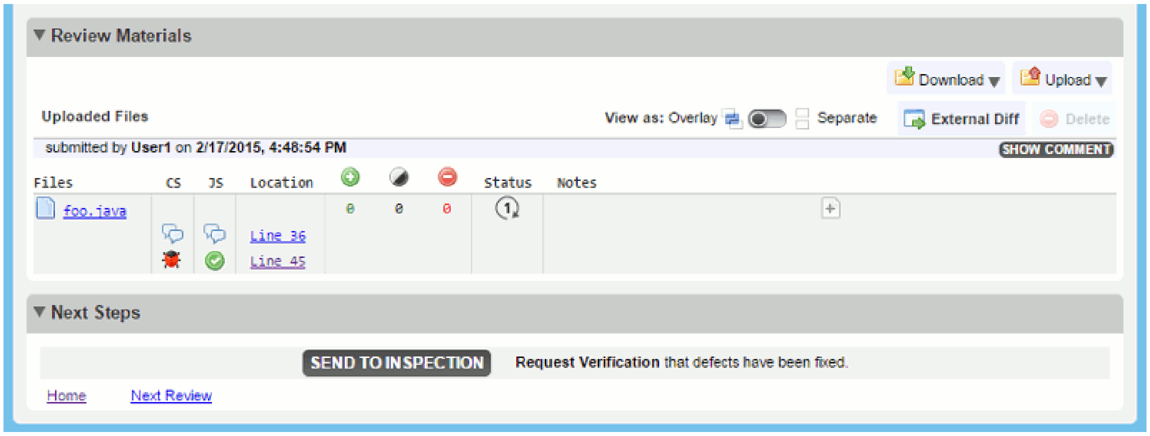
To denote that you agree with the defect or comment, press "Mark Accepted". To indicate that you have read the comment or defect description, press "Mark Read".

When you have examined the current file, you can proceed to another file (if any). To view the next or previous files, you may use the File navigation buttons on the Diff Viewer toolbar:

To return back to Review Summary screen, click Back button on the Diff Viewer toolbar.

4. Upload The Reworked Files

Correct the defects on your computer and then upload the corrected version of the file(s) to the review.



The Status column in the Review Materials for the uploaded file will increase to indicate that the files was reworked.

5. Request To Verify Your Corrections

When you have uploaded the corrected versions for all files, press the **Send to Inspection** button in the Next Steps section. Other review participants will be notified that you have reworked the review materials and want them to verify your changes.

A review can go through multiple inspection and rework phases before it is completed.

3 Collaborator Server

This chapter describes how to setup and manage the server component of Collaborator. It is useful for system administrators. Regular users of Collaborator should refer to Web Client 227 or Desktop Clients 327 sections instead.

Collaborator server process acts as the hub, manager, and controller of information. The server has a web-based user interface where users and administrators can do everything — create and perform reviews, configure personal and system-wide settings and run reports. The server uses a database to store all data and configuration.

In This Section

- Installation 52
  Covers different aspects of server and database installation, backup and upgrade.
- Server Administration 80
  Covers different aspects of server management and administration.
- Collaborator Settings 146
  Describes how to configure the Collaborator server.

Related Topics of Interest

- [Web Client](227)
  Describes the web user interface of Collaborator.

- [Desktop Clients](327)
  Describes GUI Client, Command-Line Client, plugins for Eclipse, Microsoft Visual Studio and other clients for desktops.

3.1 Installation

This chapter covers different aspects of server and database installation, backup and upgrade.

In This Section

3.1.1 System Requirements

This section describes the minimum and recommended requirements to install and run Collaborator server, as well as some steps that it is prudent to take before attempting to install Collaborator. Please note that Collaborator should run in a VM environment, but it is an unsupported scenario since it cannot guarantee suitable performance due to resource contention.

Server Requirements

Please ensure that you meet or exceed the following requirements to run the current version of Collaborator server.

Configuration for servers with 20 or fewer concurrent users:

- Modern processor with 2 cores, 2.5Ghz or better

- 4GB free RAM
- 100GB free storage space
- Windows, Linux, Solaris or BSD
  (If Windows, *must* be a server edition, not workstation edition)
- Separate database server 54 is recommended. (Trial users may install on our embedded database.)

Configuration for servers with 50 or fewer concurrent users:

- Modern server class processors with at least 4 cores in total, 2.5Ghz or better
- 12GB free RAM. We recommend increasing the memory available to Collaborator server (instructions here 879)
- 100GB free storage space
- Windows, Linux, or Solaris
  (If Windows, *must* be a server edition, not workstation edition)
- Separate database server 54 is required
- Low latency link to database server
- Access from all possible clients to server port without a proxy
- Some kind of drive backup hardware (Example: RAID 0)
- Internet access from Collaborator server

For servers with greater than 50 concurrent users, please contact our support team 29 so that they can help with your implementation plan.

Preparing your Collaborator server

- Install the latest stable build of Oracle Java JRE or JDK. Starting from ver. 9.4.9401 Collaborator Server and Client for Windows and Mac OS are distributed along with JRE. If no existing Java environment is found, or an existing Java does not meet the Collaborator's requirements, Collaborator will use the bundled version of Java. Therefore, it is not necessary to install Java separately on these platforms. See Java Compatibility Matrix 881 for more details.
- Create a database user with permission to connect via TCP/IP from Collaborator server.

- Create an empty schema on database server in which aforementioned database user can create, alter, read, write, update, and delete tables.

- Make sure that you have access to your intended server port (default 8080) through any firewall you may use.

- If you intend to use LDAP or Active Directory for authentication, please review the relevant section of our manual[102]. You may need to ask your LDAP or Active Directory administrator to create a dedicated user for the Collaborator server.

3.1.2 Database Installation

Collaborator supports several databases:

- **Embedded**[54]. A zero-configuration embedded database useful for trials.

- **MySQL**[55] versions 4.1, 5.0, 5.1, 5.4, 5.5, and 5.6.

- **Microsoft SQL Server**[58] versions 2000 (v8.0), 2005, 2008, 2012, 2014.

- **Oracle**[61] version 11gR2 and 12c.

For trials, the zero-configuration embedded database is the easiest way to get started. MySQL is the best choice if you need a free, open-source database.

Collaborator server must be able to access your database server via TCP/IP. Collaborator requires an empty schema on the database server in which a dedicated database user can create, alter, read, write, update, and delete objects.

A built-in database migration tool[91] allows you to move between any of the supported databases, so you can always get started on one and switch to another later on.

Note: *MySQL database is supported in Collaborator Team and Collaborator Enterprise. Oracle and SQL Server databases are only supported in Collaborator Enterprise. For a complete list of differences between Collaborator editions, please see the comparison page*[3]*.*

For more about the database format, see Database Schema[594].

3.1.2.1 Zero-Configuration

The server installer comes with support for the Hypersonic embedded database. As of version 8.2, we install the HSQL 2.2 database. This in-memory database is not only perfect for trials where you want to get up-and-running as easily as possible, it is also the recommended production-ready database and it performs automatic daily backups. There is no need to use SQLServer, Oracle or MySQL unless you have specific needs.

Using this database requires no configuration. When the server installer 63 asks for the database type, simply select "Embedded".

If you find that the embedded database is not going to fit your needs, the standard database migration technique 91 works with all databases, so it is possible to move all your data from the embedded database into a "real" database at any time. In addition to using the database migration technique, to move to a "real" database, you will also need to reconfigure the Collaborator server by running the Server Installation program 63.

3.1.2.2 MySQL

MySQL is a popular enterprise-class, open-source database. This is your best choice if you need a free, open-source database.

Supported MySQL Versions

Collaborator server can run on MySQL version MySQL 4.1, 5.0, 5.1, 5.4, 5.5, or 5.6.

Note: *MySQL database is supported in Collaborator Team and Collaborator Enterprise. For a complete list of differences between Collaborator editions, please see the comparison page* 3.

Downloading MySQL

For downloads and documentation for all platforms, see the MySQL Developer Zone web site. You will need the MySQL Community Server component for the database itself. You can choose to install the GUI tool, MySQL Workbench, for graphical server administration, or you can use the MySQL Command Line Client. The MySQL Command Line Client is installed as part of the database server, while the GUI client is a separate install that you can get from the developer zone.

Installing the Database Server

First, install the Database Server component. Once you have installed the server, the last screen will give you the option to Configure the MySQL Server. If you select this, it will open a new wizard for configuration. Two parts in the configuration that are especially important: Port Number and Root Password. You will need to know both while getting your database setup and while configuring Collaborator to work with your database. For information on configuring your database server, go to the MySQL Documentation and select your MySQL version.

NOTE: It is important to make sure you are using InnoDB tables. Using InnoDB tables will scale better for multiple users than MyISAM. For questions regarding configuring you MySQL database tables, see http://dev.mysql.com/doc/refman/5.0/en/mysql-config-wizard-database-usage.html.

Configuring the Database

Collaborator requires that a database be created. The MySQL Server install will not create a database for you. This is a manual step that you need to do.

You can create a database using the MySQL Command Line Client, or using MySQL Workbench. If you plan to use the MySQL GUI client, it is important to know that the MySQL GUI Tools Bundle is reaching end of life. The instructions given in this documentation use the functionality in the current GUI client, MySQL Workbench.

The steps below for creating a database were written using MySQL Workbench 5.2.16 and are subject to change. As always, the most reliable source for database creation steps is MySQL Workbench Documentation.

1. Open MySQL Workbench.

2. Create a connection to your database server.

   a) From the Home screen, under Server Administration, select New Server Instance.

   b) Follow the steps in the New Server Instance Wizard.

3. Create the database.

   a) Go back to the Home tab.

   b) Under SQL Development, select the database server connection you provided in step 2.

   c) In the Object Explorer, right-click and select Create Schema.

   d) A screen will appear and prompt you to provide a schema name. Once you have done that, click Apply.

   e) You will be shown the command used to create the schema, and given an option to edit it.

   f) Once the create command is as you want it, click Apply.

   g) You will be returned to the screen you saw in step 3d. Click Finish.

We recommend that you create a user specifically for your Collaborator database rather than using the super-user, root. To do this in MySQL Workbench, see the documentation at MySQL Schema Privileges.

All of these changes go into effect immediately. You do not have to restart the MySQL server for changes to take effect.

During the GUI installation screens 63 for the Collaborator server, you will be prompted for the MySQL server host name, TCP/IP port, database name, user name, and password. The installer will report any connectivity errors. When you visit the web page for Collaborator it will detect that you have a new database and will create all tables, indexes, and views for you automatically.

The following SQL script can be used to create a database and a database user for Collaborator and configure the required permissions for that user (be sure to change the database name, user login and password as appropriate):

```
CREATE DATABASE IF NOT EXISTS ccollabdb CHARACTER SET utf8 COLLATE
utf8_unicode_ci;
CREATE USER 'collabuser' IDENTIFIED BY 'password';
GRANT
 ALTER,
 CREATE,
 CREATE TEMPORARY TABLES,
 CREATE VIEW,
 DELETE,
 DROP,
 EXECUTE,
 INDEX,
 INSERT,
 LOCK TABLES,
 SELECT,
 UPDATE
ON TABLE ccollabdb.*
TO collabuser;
FLUSH PRIVILEGES;
```

MySQL Limitations

- MySQL 4.x does not support the concept of a database VIEW object. Therefore custom reporting views 600 are only present with v5.x servers.

- **Important:** The MySQL native restore feature does not automatically clear the database before restoring from backup. You can use the MySQL native restore feature, but you **must** manually drop all tables in the database before you run the restore. By doing this, you will ensure an exact reproduction of your backed-up database. Option two is to use the alternative method 90 provided by Collaborator.

3.1.2.3 SQL Server

Supported SQL Server Versions

Collaborator supports Microsoft SQL Server 2000 (v8.0), 2005, 2008, 2012 and 2014.

Notes:

- SQL Server is only supported in Collaborator Enterprise. For a complete list of differences between Collaborator editions, please see the comparison page 3.
- SQL Server 2000 is no longer supported by Microsoft. The drivers necessary for interaction with SQL Server 2000 are supplied by Microsoft and may no longer be available in the future. We strongly suggest upgrading to a newer version of SQL Server.

Installing Microsoft SQL Server Drivers

There are various JDBC drivers that can be used for SQL Server. Please see the SQL Server Developer Center documentation for specific details about your database installation.

You can download JDBC drivers for the SQL Server version you are using from the Microsoft web site.

- **SQL Server 2012 and 2014:**

  Microsoft SQL Server JDBC Driver 4.0 Documentation and Download

  Note that this driver does not support SQL Server 2000.

- **SQL Server 2000, 2005 and 2008:**

  Microsoft SQL Server JDBC Driver 3.0 Documentation and Download

  This package contains two .jar files: sqljdbc.jar and sqljdbc4.jar. Only sqljdbc4.jar will work on Java 6.0 and later. To install the driver, delete the sqljdbc.jar file, and copy sqljdbc4.jar into the lib directory according to the instructions below.

  Microsoft added support for SQL Server 2012 to this driver as a hotfix. They recommend using the 4.x driver for SQL Server 2012 installations.

To install the driver:

1. Download the preferred driver.

2. Stop the Collaborator server, if it is running.

3. Go to the <Collaborator installation directory>/tomcat/lib folder.

4. Remove sqljdbc.jar or sqljdbc4.jar, if they are in this folder.

5. Copy the downloaded sqljdbc4.jar file to that folder.

If you have sqljdbc.jar in the downloaded package, DO NOT copy it to this folder.

6. Start the Collaborator server.

Setting Up the Database

You need to create an empty database for Collaborator. You can do this, for example, in SQL Server Management Studio.

When installing63 Collaborator on a server, the installation wizard will prompt for the SQL Server host name, TCP/IP port number, the database name, user name, and password. The wizard will report any connectivity errors.

When you log in to the Collaborator Web Client for the first time after installation, it detects that you have a new database and will create all tables, indexes, and views for you automatically.

Important notes:

- When creating the database, be sure to select a case insensitive collation so that the case of column names (and user names and text searches) does not matter.

- It is recommended that you create a user account just for Collaborator and give this account full access to the database and no access to other databases. Also, we recommend using a SQL Server account instead of Windows-based authentication, because the Collaborator service might not be running under a normal Windows-based login. To use an SQL Server account, you may need to change Collaborator's settings. See below.

- Collaborator uses the TCP/IP protocol for data exchange. By default, in SQL Server this protocol is disabled. To enable it, open the SQL Server Configuration Manager and navigate to **Network Configuration > Protocols**. Make sure TCP/IP is enabled.

- By default, SQL Server is configured to use dynamic ports, which means that the port used is changed each time the service is restarted. To use a static port instead, open the TCP/IP settings and change the IPAll setting value. Empty the **TCP Dynamic Ports** box and specify the desired port number in **TCP Port**.

Using SQL Server Authentication

To use SQL Server account, you may need to change the connection Collaborator's settings:

1. After downloading the driver package from one of the links above, extract the files.

2. Copy the platform-specific sqljdbc_auth.dll to the tomcat subfolder of your <Collaborator installation folder>.

3. Open the following file in any text or XML editor --

```
<Collaborator installation folder>/tomcat/conf/Catalina/localhost/
ROOT.xml
```

4. Insert the IntegratedSecurity=true value into the url attribute of the <Resource driverClassName="org.hsqldb.jdbcDriver" ... > element that describes the JDBC configuration.

After the change, the element will look something like this --

```
<Resource driverClassName="org.hsqldb.jdbcDriver" ...
url="jdbc:sqlserver://SERVER:1433;databaseName=DATABASE-NAME;
IntegratedSecurity=true" ...
username="DOMAIN\USERNAME" validationQuery="select 1 ... " />
```

5. Restart the Collaborator service.

Known Limitations

- In SQL Server 2000, text fields can contain 8000 characters maximum. This includes changelist descriptions, review overview text, and comment and defect text. SQL Server 2005 and later has no such restriction.

Troubleshooting

- If you get the error "The TCP/IP connection to the host has failed. java.net. UnknownHostException", you probably need to enable TCP/IP for your database. See Setting Up the Database 59 above.
- By default, when Collaborator is installed, the service runs under the Local System account. If you are using SQL Server authentication rather Windows-based authentication, the Local System account must have the permissions necessary to communicate with the database.
  An error like "Error: Login failed for user 'domain\user$'". indicates that the Local System account does not have these permissions. To handle this situation, you can either grant your Local System account permissions to your database server, or edit the account the Collaborator service is using. To edit the account:
  - On your Collaborator server computer, from the **Control Panel > System and Security > Administrative Tools**, open **Services**.

  - Find **ccollab-server** in the service list and stop the service.
  - Right-click on ccollab-server, and select **Properties** from the context menu. This will open the Properties dialog
  - Go to the **Log On** tab.
  - Select **This account** and then specify the name and password for the account you want the Collaborator service to operate.

    Note: The account that you specify must have sufficient privileges on the machine, where the service is running (for instance, file system privileges for folder creation to allow the service create temporary subfolders in the Collaborator server installation folder).
  - Click **Apply**.
  - Start the ccollab-server service.

- If you are using SQL Server with named instances, it is important to know your port configuration. By default, named instances use dynamic ports. This means, every time SQL Server is restarted, it will search for available ports and assign one to your database. In this situation, you might have trouble finding the port upon which your database is running and could see errors when trying to connect to your database with Collaborator.

  Possible solutions:
  - If you are using named instances with dynamic ports, do not specify a port when providing Collaborator your SQL Server connection information. By leaving the port unspecified, a request will be sent to your SQL Server instance on port 1434 that will search for the port your database is running on and will then send that information back to Collaborator.
  - Alternatively, try using a static port. See Setting Up the Database 59 above.

3.1.2.4 Oracle

This manual assumes you already have Oracle Database Server installed and running.

Note: *Oracle database is only supported in Collaborator Enterprise. For a complete list of differences between Collaborator editions, please see the* *comparison page* 3

Supported Versions

The versions we have tested against are:

- 10gR2 Express Edition
- 11gR2 Personal Edition
- 12c Standard Edition

Your mileage may vary with other versions. Contact us if you have problems -- we *are* interested in fixing bugs!

Setting up the database

Create a database for Collaborator. It is recommended that you also create a username/password pair just for Collaborator and give this account full access to the database and no access to other databases.

During the GUI installation screens 63 for the Collaborator server, you will be prompted for the Oracle server host name, TCP/IP port (default is 1521), database service name (not the SID!), user name, and password. The installer will *not* report any connectivity errors.

> **Warning:** The database service name is not the same thing as the SID! This change was made by Oracle in version 9iR2.
>
> The database service name is fully-qualified, corresponding to GLOBAL_DBNAME in an .ora file. An example would be mysid.mydomain.com. The database service name is also sometimes referred to as "TNS alias" or "connect descriptor".
>
> The SID is the shorter name, corresponding to SID_NAME in an .ora file.

When you first visit the web page for Collaborator, it will detect that you have a new database and will create all tables, indexes, and views for you automatically, or give you an appropriate error message if there is a connectivity problem. Connectivity problems should be resolved by re-running the installer.

Oracle Limitations

- The length of long strings is limited to 1023 characters. This applies to fields such as custom fields, changelist text, comment text, and defect text.

- **Oracle 11g server with non-english locale:** An error may occur when initializing Collaborator database on Oracle 11g servers with non-english locale. To workaround the problem:

  1. Append the following Java VM options 875 to the `<collab server install dir>/ccollab-server.vmoptions` file:

```
-Duser.country=US
-Duser.language=en
```

  2. Restart Collaborator server to apply the changes.

  3. Open Collaborator Web Client and proceed with database initialization.

Troubleshooting

We use the Oracle JDBC driver to connect to your Oracle database. The driver has a few undocumented behaviors that may come as a surprise. There are threads on Oracle's tech support forums about this.

Most of the problems arise in the `GLOBAL_DBNAME` field in your `SID_DESC` entry from your listener.ora file. A typical entry might look like this:

```
(SID_DESC =
(GLOBAL_DBNAME = mysid.mydomain.com)
(ORACLE_HOME = /appl/oracle1/product/10.2.0.1)
(SID_NAME = mysid)
)
```

Most other Oracle-based programs use the `SID_NAME` field to identify the database, but the JDBC driver uses `GLOBAL_DBNAME`. This would cause a connection error in the example above.

Also note that the database service name is not the same thing as the `SID`. This change was made by Oracle in version 9iR2. The installer asks for the database service name, not the SID. The database service name is also sometimes referred to as "TNS alias" or "connect descriptor".

Typically, this means you should use the `GLOBAL_DBNAME` in the installer (that is, mysid.mydomain.com) and not just the `SID` (that is, mysid).

3.1.3 Server Installation

Collaborator uses a stand-alone web server for a cross-platform, no-client, firewall-friendly user interface. Please review the System Requirements 52 section before continuing.

First, you need to download the correct installer for your platform from our website:

http://support.smartbear.com/downloads/collaborator/

To learn how to upgrade an existing Collaborator server, please see Server Upgrades 76.

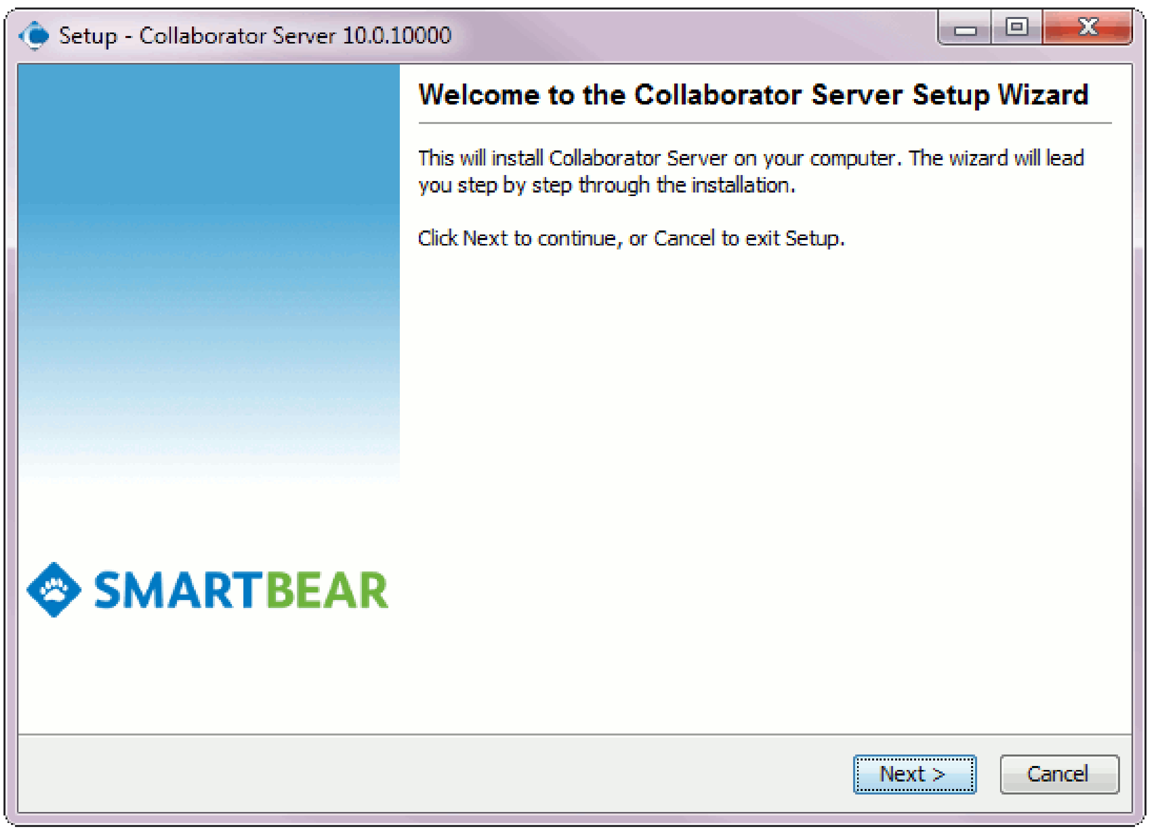
In this section:

The Graphical Installer

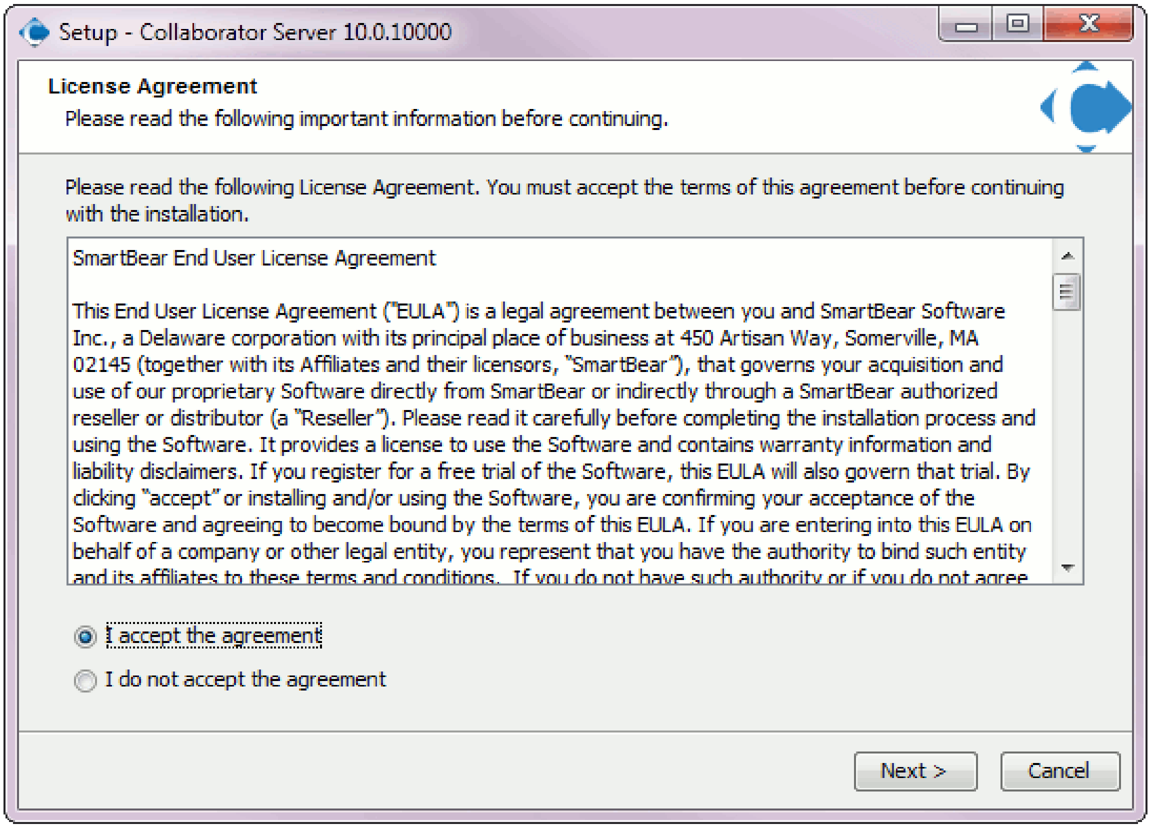
Installers can be run in a graphical, interactive mode or an automatic mode. For first installation, you will need to run the graphical version so you can select options.

Normal Installation

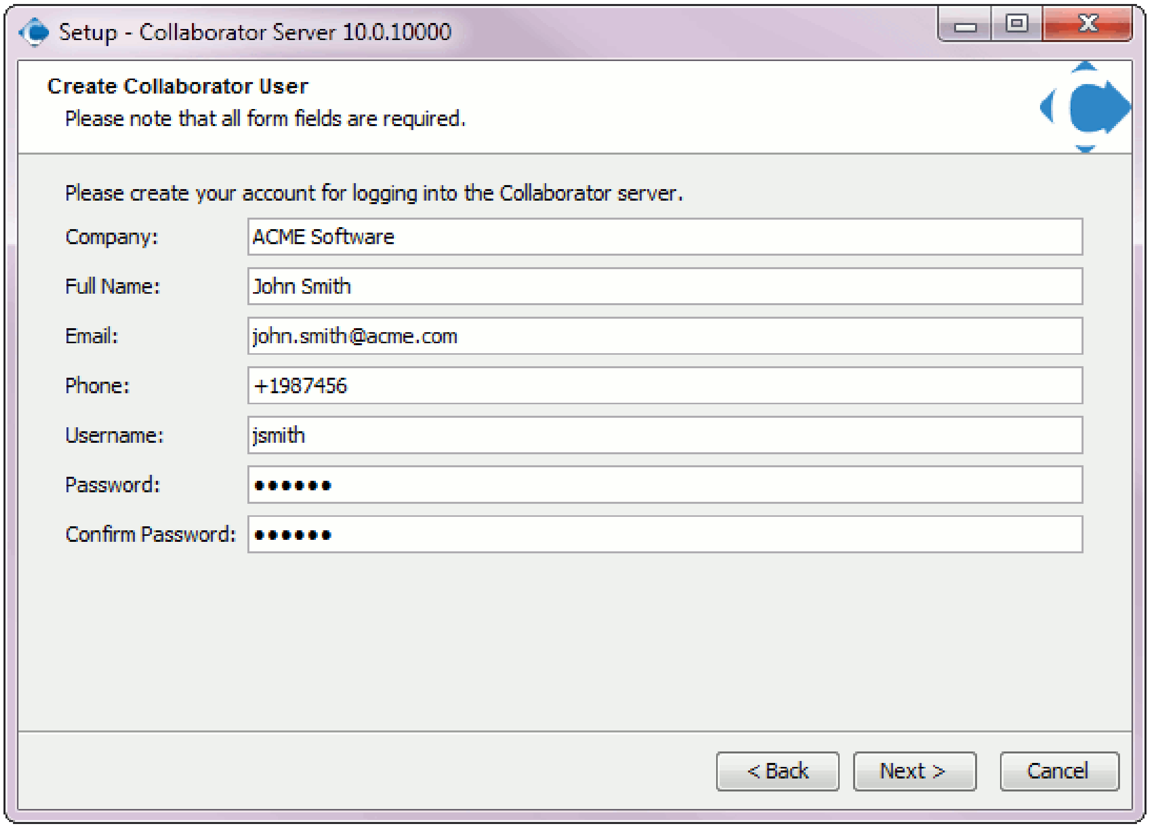
The first screen of the wizard lets you know it is working:



The second screen is the End User License Agreement (EULA):



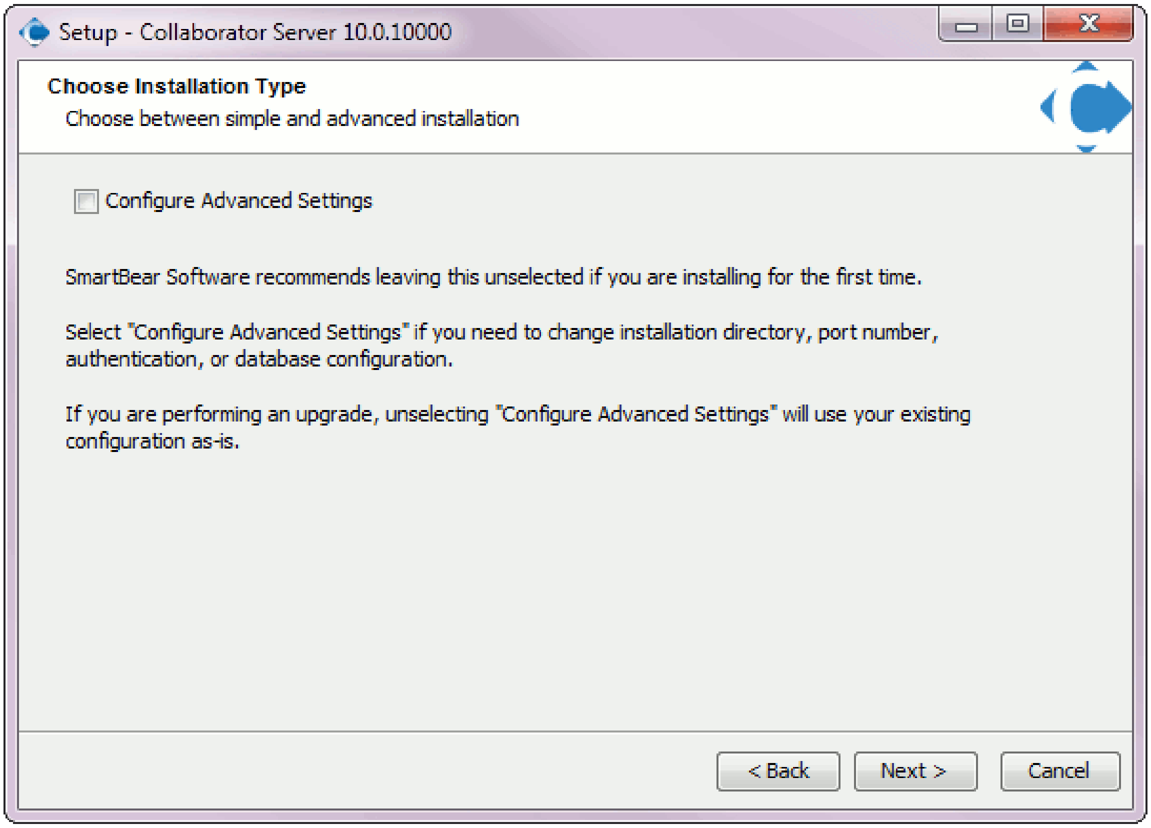
In the third screen the installer prompts to create the first user of your Collaborator server.



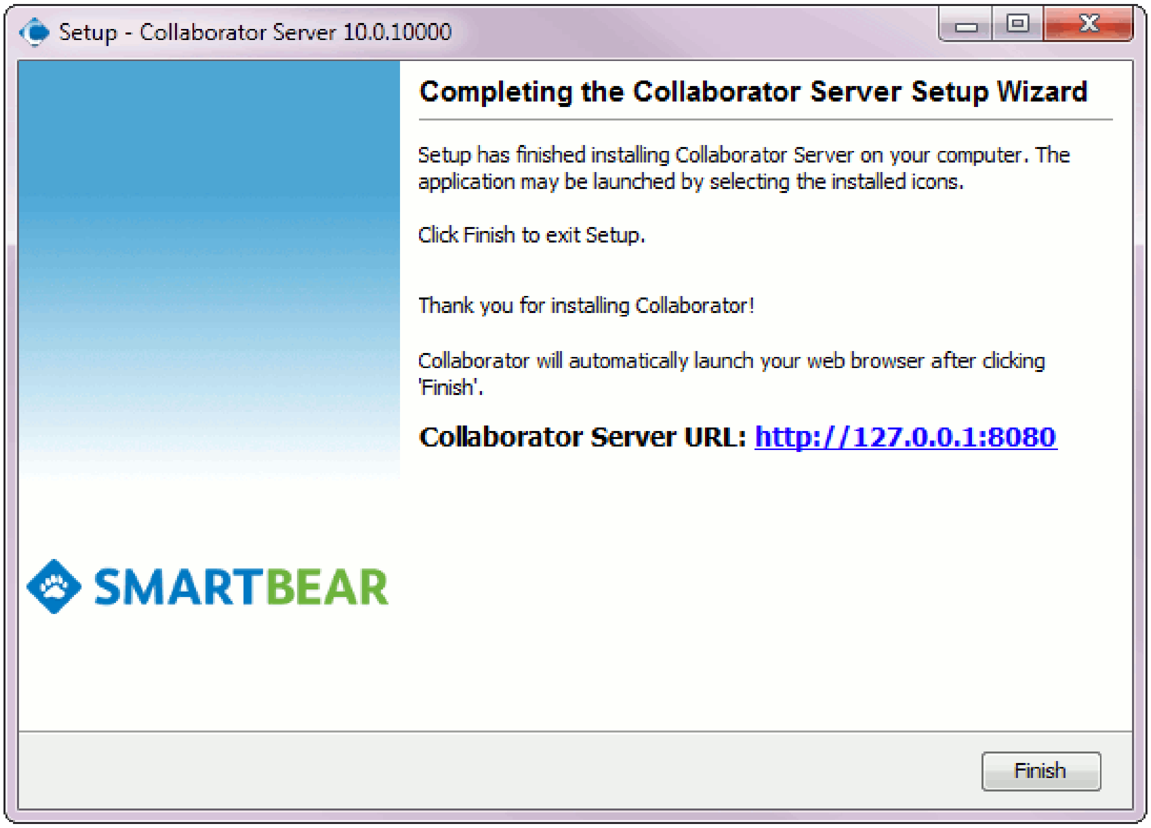
Important: The first user will have Administrator privileges on this Collaborator server.

Fill in company name, full name, email address, phone number, username and password. The contact information is primarily there for your users to know who to contact if they are having issues with Collaborator. SmartBear only uses this information to contact you when there is a critical issue with your Collaborator installation; we will not sell or share this information.

The next screen allows you to select whether to configure advanced options 68. By default, this checkbox is unselected and the default options are recommended for first-time and evaluation installations.



After this, the installer copies the server files, stopping any existing server if necessary. Once the new files are installed, the server is started automatically, and the installer tells you it is finished:



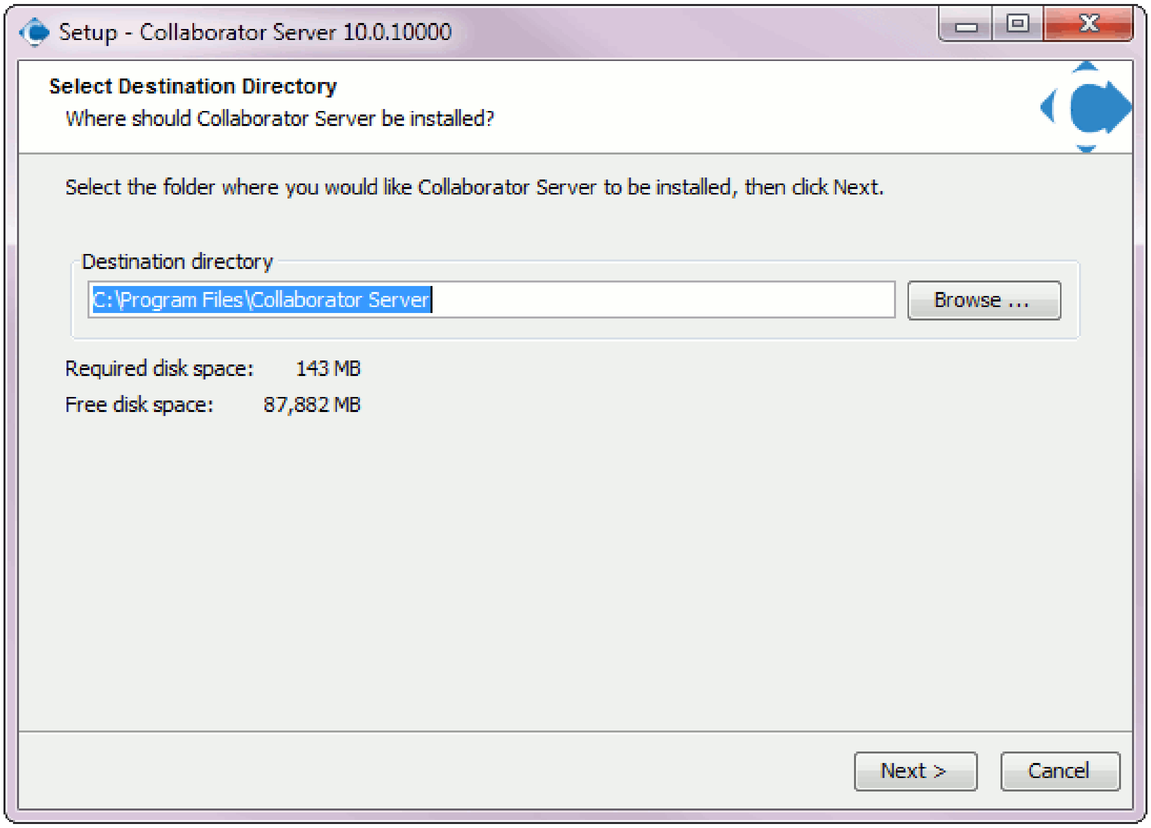
After you click Finish, a web browser will open, pointed at your installed server.

> **Warning:** If the server has not quite had enough time to fully start up, it might take a while for the web page to load and it might even fail to open. Just "refresh" the browser.

Advanced Installation

Selecting the 'Configure Advanced Settings" checkbox, allows you to override the default settings and specify your own configuration.

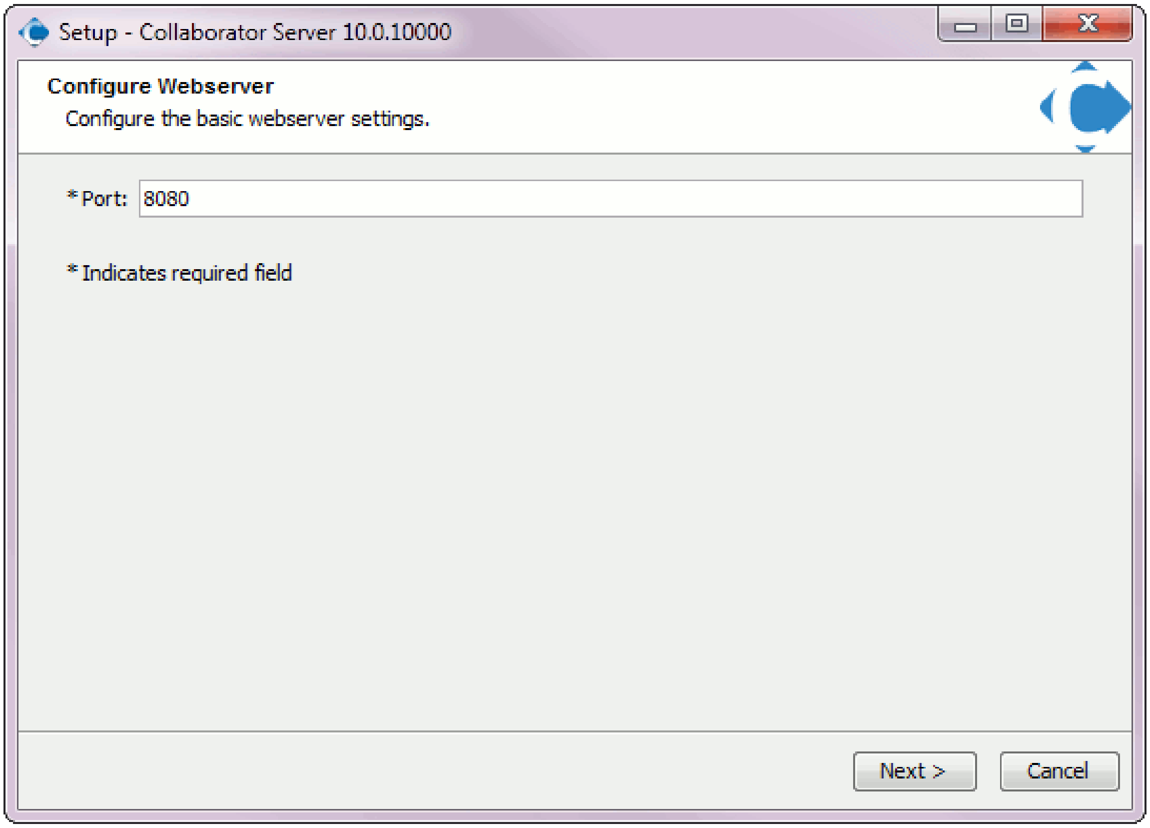
On the first step of advanced configuration, you can select disk location for the installation files.



This directory should be writable by the server because several dynamic files are created here including web server logs, temporary storage, and long-term storage for file content uploaded by users. All of these locations can be changed if it is critical that the installation location be read-only, but this requires significant work on the part of the administrator and makes upgrades more difficult.

Make sure at least 5 gigabytes of space is available in the named directory. Your users will need the space for file uploads. You can always move the file upload directory.

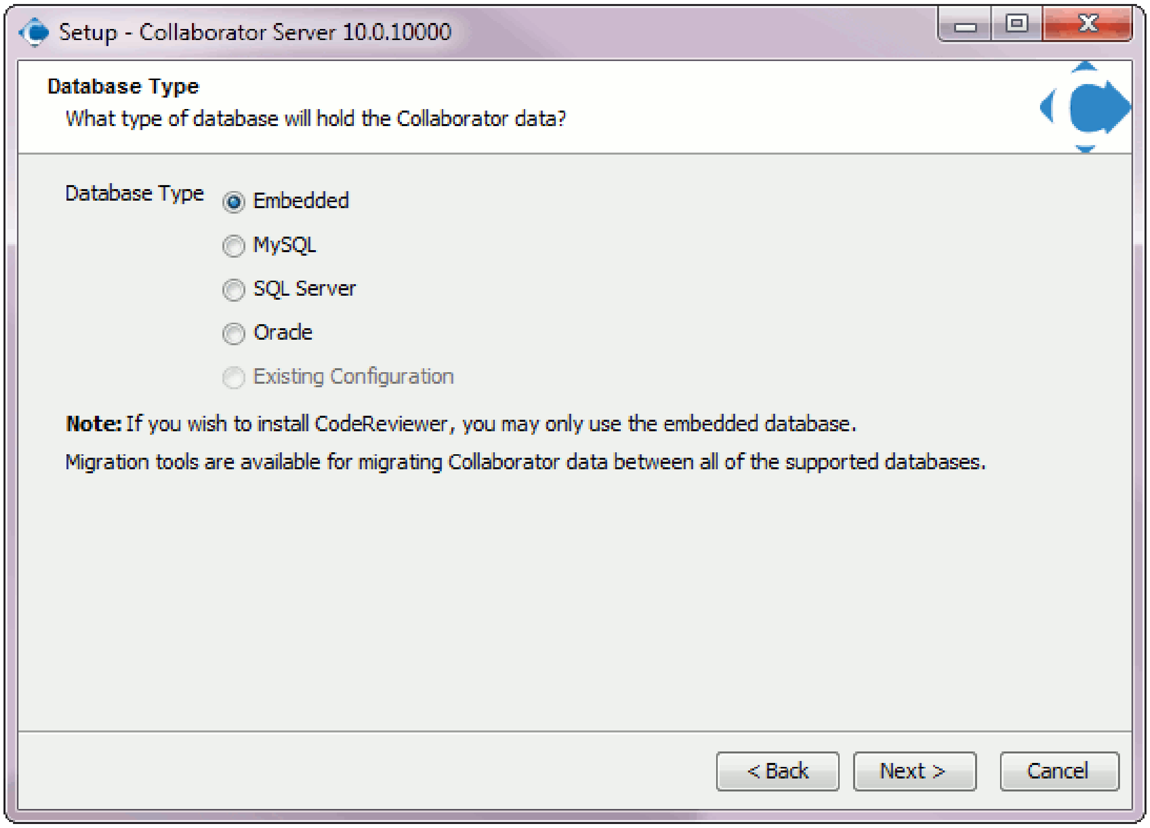
On the next screen, you can specify port number for your server:



The port number should be selected as to not conflict with any existing services. The installer will attempt to connect to this port when you click Next; if the port is already taken by another process, you will get a warning message. You can elect to try a different port or continue. Continue at your own risk -- probably the server will not be able to start up and you will have to make the port available and restart the server manually.

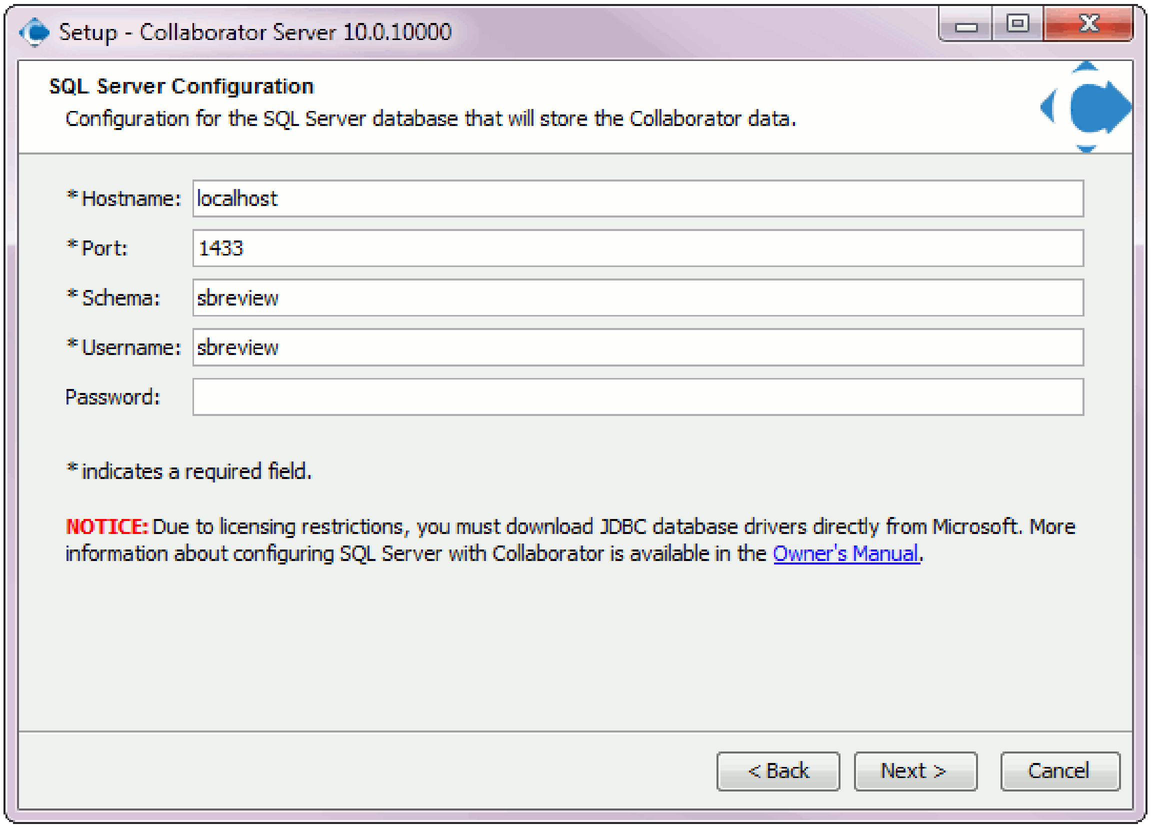
Additionally, your firewall settings may prevent remote access on the default port or on your selected port. In order to allow access, you will have to modify your firewall settings accordingly. For more information see the troubleshooting section 401.

Next, you configure the database connection. The database should already be installed and ready 54:



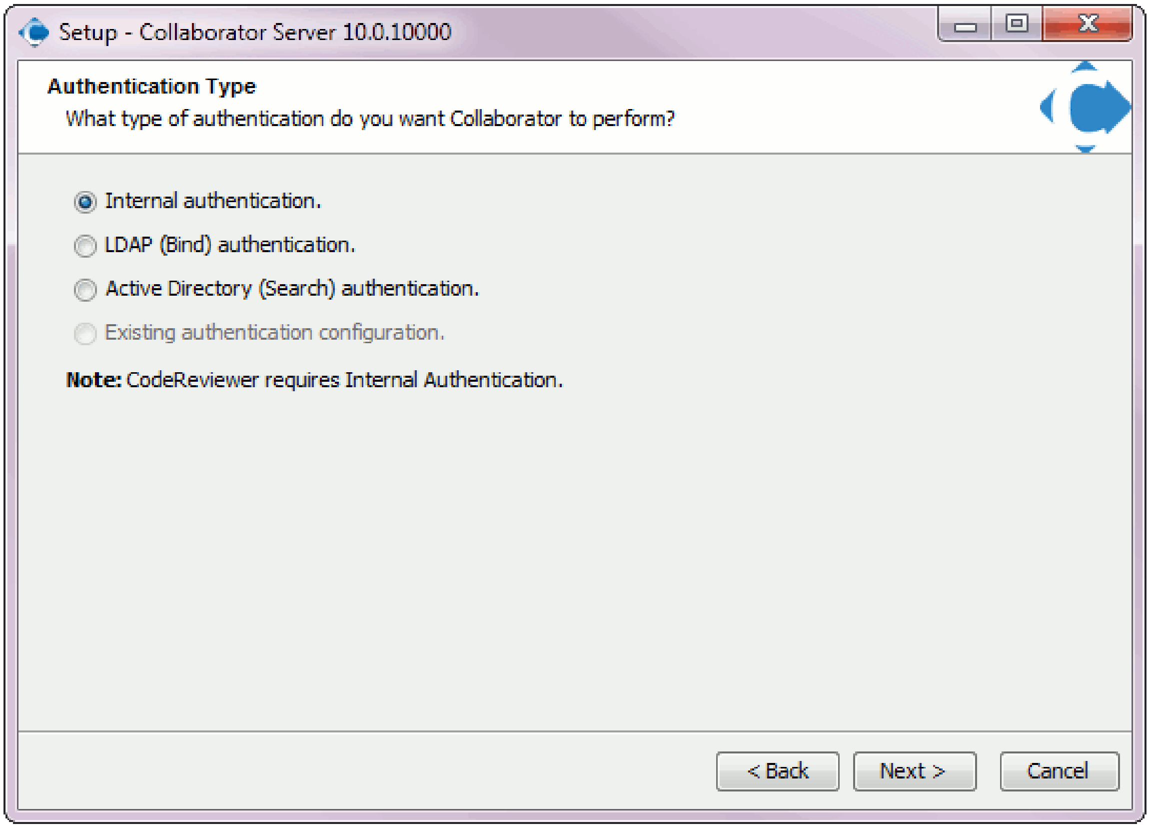
For trial installations, you will probably want to select the default "Embedded" database 54. You should migrate 91 to a full-featured database before you use the server in production.

If you picked anything but the "Embedded" database, the next screen lets you configure the connection to the database server:



The exact format of this screen depends on the database you chose. The `Username` and `Password` fields here refer to the *database* username and password. Typically, you will want to create a special database username and password for the Collaborator application so you can control exactly which data it has access to. This usually means full access to the database created for Collaborator and no access to any other database.

The next screen lets you decide how users will be authenticated in Collaborator.

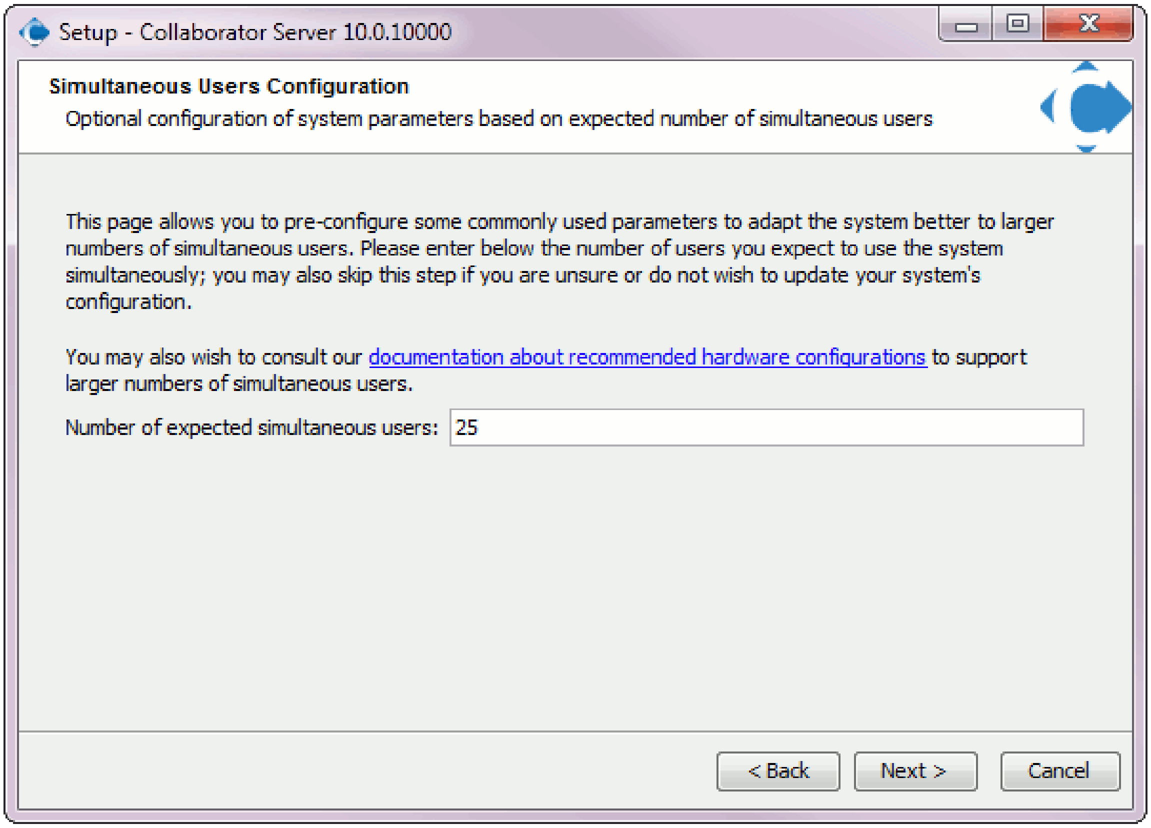


The simplest setting is "Internal," which means Collaborator should maintain usernames/ passwords in its own database.

If your company uses LDAP or ActiveDirectory, you can use that method to authenticate users in Collaborator, which means you do not have to maintain the Collaborator user list at all. If you select the LDAP method you will get an additional wizard screen that lets you supply the settings for your LDAP server. See the LDAP section 102 for details.

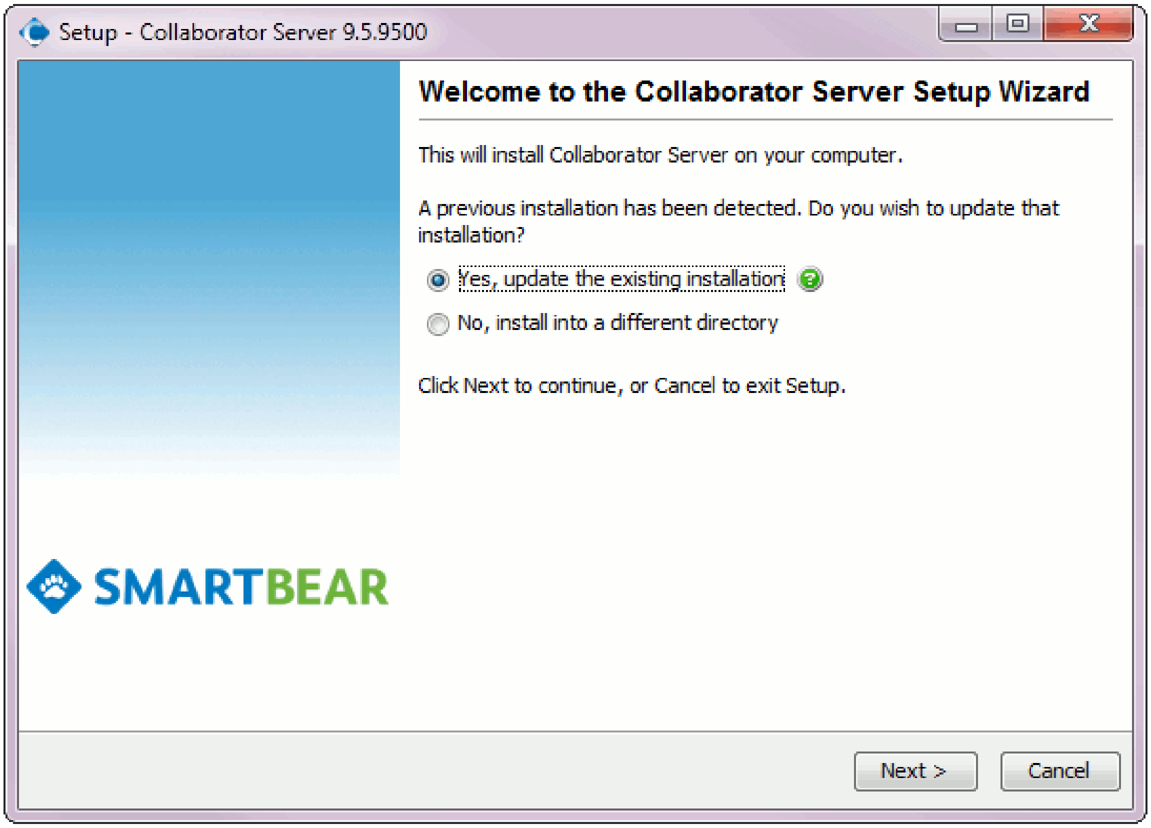
You will also have the option to choose "Existing LDAP authentication configuration" if you are upgrading 76 an existing installation.

The next screen allows you to specify the approximate number simultaneous users and automatically configure your server to support this number of users.



Upgrade Installation

If the installer detects an existing Collaborator server, either to upgrade the existing server or to install into another directory.



When upgrading, the installer retains the current configuration of a server, that is, it assigns the same installation folder and all setting values as in the current configuration - though they can be edited, if desired.

The Non-Graphical Installer

If you are upgrading the server instead of installing from scratch, you have the option of installing without any graphical user interface.

We recommend that you always use the graphical interface when possible because it gives you the chance to review settings, especially new settings that we might have added since your last installation.

To run the installer without a GUI, run the installer from a command-line using the `-q` switch. To set the installation directory from the command-line, use the `-dir [directory]` switch. The `-q` switch gives you a silent install and will not prompt you for any installation instructions. If you would like to be prompted for installation instructions without using the graphical installer, you can run the installer from the console using the `-c` command.

Install Tips

Installing more than one server instance on a single machine

All server instances need to be running on unique and available ports. Each server instance will also need a separate database and license code.

On Windows, install the different instances in different directories, on different ports, with separate database instances. This will get all of the software installed, but only the last one will be properly installed as a service. To install the others as a service, run the following command from the command line:

```
<install-dir>\ccollab-server /install service-name
```

This will install that instance as a Windows service with the specified service name. To uninstall a service that was misnamed or no longer used:

```
<install-dir>\ccollab-server /uninstall service-name
```

On *nix platforms, you should install the server in multiple directories and then edit your `/etc/init.d` scripts accordingly.

Installing on a system with multiple JRE installations

On systems with multiple JREs installed, it may be necessary to specify to the installer which JRE should be used for Collaborator. On Windows platforms, running the installer with the -manual argument will suppress the JRE search and cause the installer to prompt for the JRE location (specifically, java.exe). On *nix platforms, you can specify the JRE location by setting the INSTALL4J_JAVA_HOME_OVERRIDE environment variable to the JAVA_HOME value.

3.1.4 Server Upgrades

This topic explains how to upgrade from a previous version of Collaborator server and retain all your data and settings.

For major releases, we recommend that you install the new version on a test machine using a copy of your current database. Test a typical workflow on the system to make sure it works and that there are no surprises for your users. See Testing Newer Versions 78 for details.

Back Up Before Upgrading

During the upgrade process, changes may be made to Collaborator's database schema. Thus the upgraded server's database may become incompatible with previous versions of Collaborator. Therefore, it is important to perform a complete backup 89 before attempting an upgrade.

Creating a backup is especially important if you are upgrading from an outdated version of Collaborator, CodeCollaborator or PeerReview Complete. Collaborator merges and replaces both CodeCollaborator and PeerReview Complete.

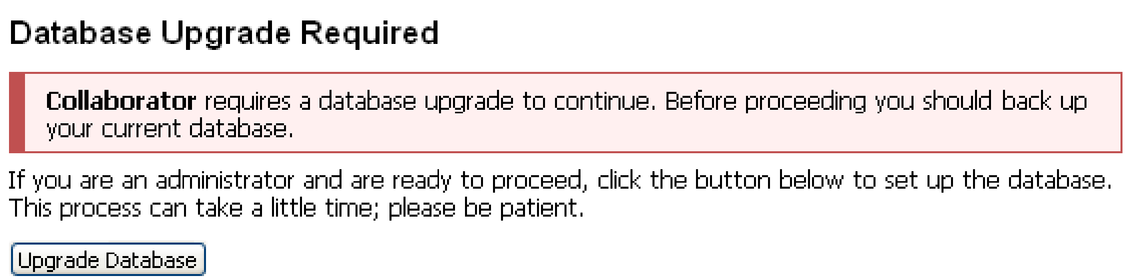
How to Upgrade

Upgrading the server component works exactly like installing 63 it. To keep your data and configuration, **do not uninstall previous version** of Collaborator server. Just install a new version over the existing version.

> When you are upgrading from a very old version of Collaborator, CodeCollaborator or PeerReview Complete, then you will need to perform an upgrade in a stepwise manner - from one major version to another. For example, if you are migrating from version 7.x, then at first you will need to upgrade to version 8.x and then to version 9.x Installers for previous versions of Collaborator are available on SmartBear's website.

Download the server installer(s) and proceed through the installation wizard. If the installer detects an existing Collaborator server, it automatically assigns the same setting values as in the current configuration - though they can be edited, if desired.

Once the installation is finished, an update of database schema could be required. In this case, on attempt to open a Collaborator Web Client, it will display the database update form:



Ensure that you have made a backup and press Upgrade Database button to proceed with the database migration. The rest of schema upgrade process is automatic. This may take some time depending on the scale of the changes required, so please be patient.

Compatibility with Older Clients

Collaborator server is backward compatible with a certain number of earlier versions of Collaborator clients. Generally, a server supports clients of the current and previous major release. You can find the number of the oldest stable client application, as well as specify your own minimum allowable build number in the Administrator Settings 160. Client applications whose build number is lower than Minimum Client Build 160 are incompatible with the current version of Collaborator server.

In order to use new features of Collaborator, we recommend that you upgrade Collaborator clients, as well.

Upgrade Notes

- **Windows-Only:** The system will be taken off-line while the upgrade takes place and will start automatically after the upgrade completes. When upgrading using a 64 bit installer on a server installed using the 32 bit installer, be sure to verify the install directory is the same as you currently have. The 64 bit installer will NOT automatically detect the existing install directory of a Collaborator install that was done using the 32 bit installer. In this scenario, simply edit the install location to be the fully qualified path of the existing install directory.
- **Unix-Only:** The installer will *not* automatically stop or start the server, so if the server is currently running you will need to manually stop it, perform the upgrade, and then restart it.
- After the upgrade validate the configuration of your Java Database Connectivity (JDBC) modules. Upgrading an outdated server (say from version 7 to version 9) may remove stored JDBC modules.

3.1.4.1 Testing Newer Versions

If you are currently using Collaborator and want to try a newer version without risking your existing installation, there are a couple ways to install a newer version in an existing Collaborator environment while still maintaining the integrity of your existing version.

Fresh Installation

This option allows a quick and easy way to try Collaborator from scratch. However, you will not have access to all your existing review and user data.

To test a new Collaborator server with a blank database, download and install 63 the newer version of the Collaborator server software. If you are installing onto the same machine as your existing Collaborator server software, *be sure to specify a different directory, port number, and database instance*. Installing it in the same directory will upgrade your current installation, and you will not be able to "undo".

Parallel Operation

This option allows you to continue running the old version of Collaborator in parallel with the newer version you are testing.

1. Do a complete backup 89 of your existing Collaborator server
2. After the backup finishes, install the exact same build of the Collaborator server software that you are currently using. For example, if you are currently running version 8.0.8001, then install version 8.5.8500 (older versions of the installer are available here).

After the installer finishes it will display a web page in your default browser. That web page will have a button for creating the Collaborator database tables - do not push that button! You do not want those tables to be created because you are about to restore from your existing database.

Again, if you are installing onto the same machine as your existing Collaborator server software, *be sure to specify a different directory, port number, and database instance*. Installing it in the same directory will upgrade your current installation, and you will not be able to "undo".

3. Restore the backup 89 that you just created to the new installation of Collaborator.

4. Then run the installer 63 for the newer version and when prompted, select the directory that contains the Collaborator server that you just installed. This will cause the installer to upgrade that installation.

Windows Notes

If you choose either of the above options, you will end up with two instances of the Collaborator server running: one for your older version and one that is running the newer version. If you are running both instances on the same machine and if the operating system on that machine is Windows, then there is one additional step.

The Collaborator server installer for Windows always uses the same Windows service name: ccollab-server. This means that after you install a second instance of the Collaborator server on a Windows system, the Windows service named ccollab-server points to the new installation. The original installation no longer has a Windows service entry and is therefore no longer running.

This problem is easy to fix. In a command window set the working directory to the original installation of the Collaborator server software. Then enter this command:

```
ccollab-server /install <service-name>
```

You can specify anything you want for <service-name> except for ccollab-server. This will create a new Windows service with its own name for your existing Collaborator server installation.

3.1.5 Platform-Specific Notes

This is additional server-related information that is specific to certain operating systems.

Windows

The web server is installed as a Windows Service. This means the server starts up automatically when the machine boots up, and no user needs to be logged in. The service can be started and stopped manually and even remotely.

The default installation is for the service to start automatically upon system startup using the default service user. All of these settings can be changed by the administrator after installation using Microsoft's standard service configuration control panel.

> **Warning:** If you change the user under which the service runs, make sure the installation directory is still both readable and writable by the new user.

> **Warning:** If Collaborator is located on the same machine as the database, and if the Collaborator service starts up before the database service, Collaborator might fail to start up. The work-around is to restart the Collaborator service, but the fix is to use service dependencies to tell Windows that the Collaborator service is dependant on the database service. This is a standard Windows service feature.

Linux / Solaris / BSD

The web service is not automatically installed such that it will run automatically when the system starts up. However this is easy to set up.

The installation directory contains a file `ccollab-server` that can accept the usual start and stop commands. Create a symbolic link to this file from your standard installation directory (for example, `/etc/rc3.d` or `/etc/rc.local`) to cause the server to start automatically upon system startup.

> **Warning:** If Collaborator is located on the same machine as the database, make sure it starts up *later* in the start-up process than the database server. Otherwise, Collaborator will fail to start up.

3.2 Server Administration

This chapter covers different aspects of server management and administration.

In This Section

3.2.1 Network Configuration

Certain network topologies and configurations require specific configuration in the server component.

Server Proxies

Collaborator optionally will connect to a licensing server hosted by SmartBear via standard HTTP protocol in order to validate your license code. If you are installing Collaborator in an environment where outbound HTTP requests are required to use a proxy, you will need to configure Collaborator to use the proxy.

Proxy settings are configured in the *installation-directory*/ccollab-server.vmoptions file. To enable an HTTP proxy, you will need to add the following lines to that file:

```
-Dhttp.proxyHost=proxy_hostname
-Dhttp.proxyPort=proxy_port
-Dhttp.proxySet=true
```

Many proxies are configured to reject connections to internal URL's via the proxy, as these connections are supposed to be made directly. For this reason, it is also a good idea to configure internal hosts as non-proxied hosts. Specifically, it is important to configure localhost (including its resolvable name), the bug tracking system, and the version control server as non-proxied hosts. These URL's are configured in Collaborator for integration purposes and a connection is made to validate the URL's entered in the configuration screens. If the proxy rejects the connections, you may not be able to properly edit those fields. To configure non-proxied hosts, add the following line to the collab-server.vmoptions file:

```
-Dhttp.nonProxyHosts="localhost|collabserver|*.mydomain.com"
```

The format for the value is a list of hostnames delimited by "|" and using "*" for a wildcard.

Some newer firewalls have been known to cause additional problems with HTTP proxying. For instance, some firewalls periodically redirect HTTP requests to a firewall-generated web page requiring the user to log in. These firewalls are specifically designed to limit web access to users; preventing services (such as Collaborator) from accessing web services. Organizations with such firewalls will need to work with their network administrators to exempt Collaborator from this policy or otherwise allow access.

3.2.2 Licensing

SmartBear offers both fixed-seat and floating-seat licensing plans.

Licensing Options and Definitions

Fixed Seats - With a fixed-seat license, you are allowed a fixed number of "named users". A "named user" is a human being (not a machine) that is active in the past 30 days. Therefore, if some users never log in, or if a user leaves the group and does not log in again, that user does not count towards the fixed-seat license. Fixed-seat licensing is more appropriate when most users will be using the product daily.

Floating Seats - With a floating-seat license, you are allowed a maximum number of "concurrent users". A user is considered "active" if he/she has accessed the server with a web browser, the Eclipse Review Editor, or the Eclipse Compare Editor in the past hour *and* has not explicitly logged out. Users with any Collaborator page open in a browser will remain logged in regardless of whether they are actively navigating through the site. Floating-seat licensing is more appropriate when you have many users that will use the system only occasionally.

In both cases, a "user" is a human being, not tied to a particular machine or client. This means that if someone uses both the Eclipse client, stand-alone client, and command-line client, plus uses Collaborator on a work machine and laptop, that all counts as one "seat" whether fixed or floating.

When you disable 168 a user, that user immediately does not count against your license usage. That user will not be able to log in, and if the user is in the middle of something the user will be kicked out of the system.

NOTE: We do not support both fixed and floating seats on the same server.

NOTE: Each license key is linked to the node ID, and it gets carried over during server migration. Therefore, a new license key is not needed when migrating the server.

Exceeding the license limit

How does the system behave when you exceed the license limit?

Once you have maxed out granted seats, either in fixed or floating schemes, the next user who attempts to log into the system is shown an error message and is not allowed in. The message will explain that all licenses are in use and will prompt that user to contact his system administrator. Additionally, an automatic notification is sent to the administrator, informing that a user was denied due to license limit.

Note that "log in" can either mean "logging in from the front page" or "going back into the system after hours of inactivity". In the latter case, a cookie is used to automatically log the user back in. Normally, this is completely transparent, but if this auto-login will cause the system to go over the licensed limit, the user will see the error message.

This all applies to users who are not already active. The users who were already legally using the system continue uninterrupted. It is the users who come in after that point in time who are not allowed in.

One way to get back under the limit is to disable 168 user accounts. This works for both fixed and floating seat schemes. If you do this the license is made immediately available for another user. If the user you disabled continues to use the system or tries to log in, that user will receive an appropriate error message explaining he has been locked out and to contact his system administrator.

The system administrator [169] is always allowed to log in, even if the license has been exceeded. This allows you to remedy the licensing problem, either by disabling users until you are under the limit, or to install a new license code that has been provided to you. You can also manually log out a user.

Monitoring license usage

There are several ways to keep track of licenses used.

- On the Users Administration [164] screen current usage numbers are displayed. You can also manually disable or logout users if you need to reclaim licenses quickly.
- On the System Status [225] screen you can see historical activity patterns.
- On the Current License section of the Licensing [82] screen.
- You can use JMX [124] to monitor usage and licensing information.

How many licenses do I need?

It is hard to give guidance because it varies quite a bit.

Generally the best advice is: Just try Collaborator. There is a report on the User Administration [164] page that tells you exactly how many "fixed" and "floating" seats you would be using right now. Use that empirical information to determine which is cheaper.

Typically, a trial does not involve everyone, and typically the usage pattern is not exactly the same as when it will be deployed, so you will have to estimate. Still, you will be doing so with some real numbers.

Here are some additional pointers:

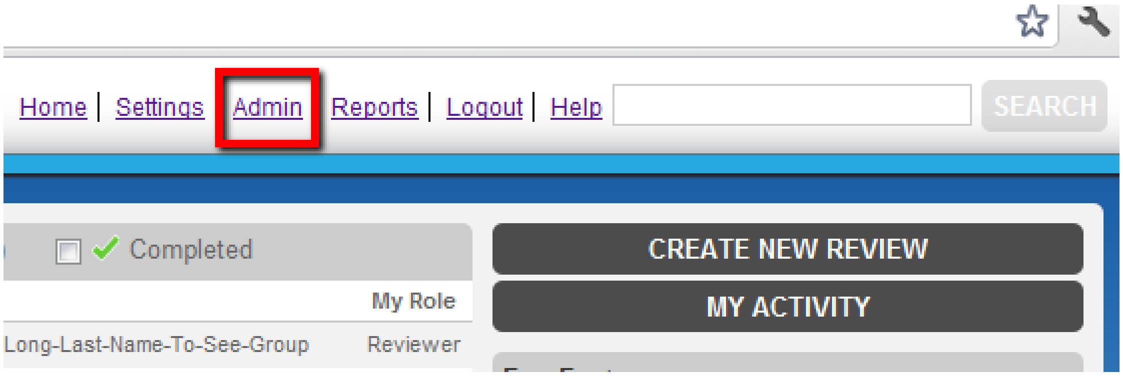
- If you have developers in many timezones, floating usually becomes more economical.
- If each person will be inside Collaborator at least once per day (either as author or reviewer), typically fixed seats are cheaper. If less frequently than that, floating.
- If you expect large spikes in usage -- where perhaps everyone is online at once during a review crunch -- you will want fixed. Otherwise, you have to get enough floating to handle that peak usage.

When Requesting Your License Code

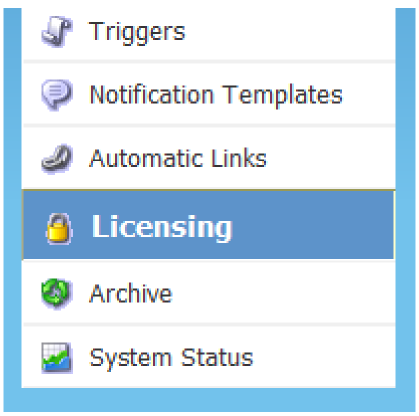
In order to generate a license code you will need to send us the Node ID from your Collaborator server installation.

To find the Node ID, do the following:

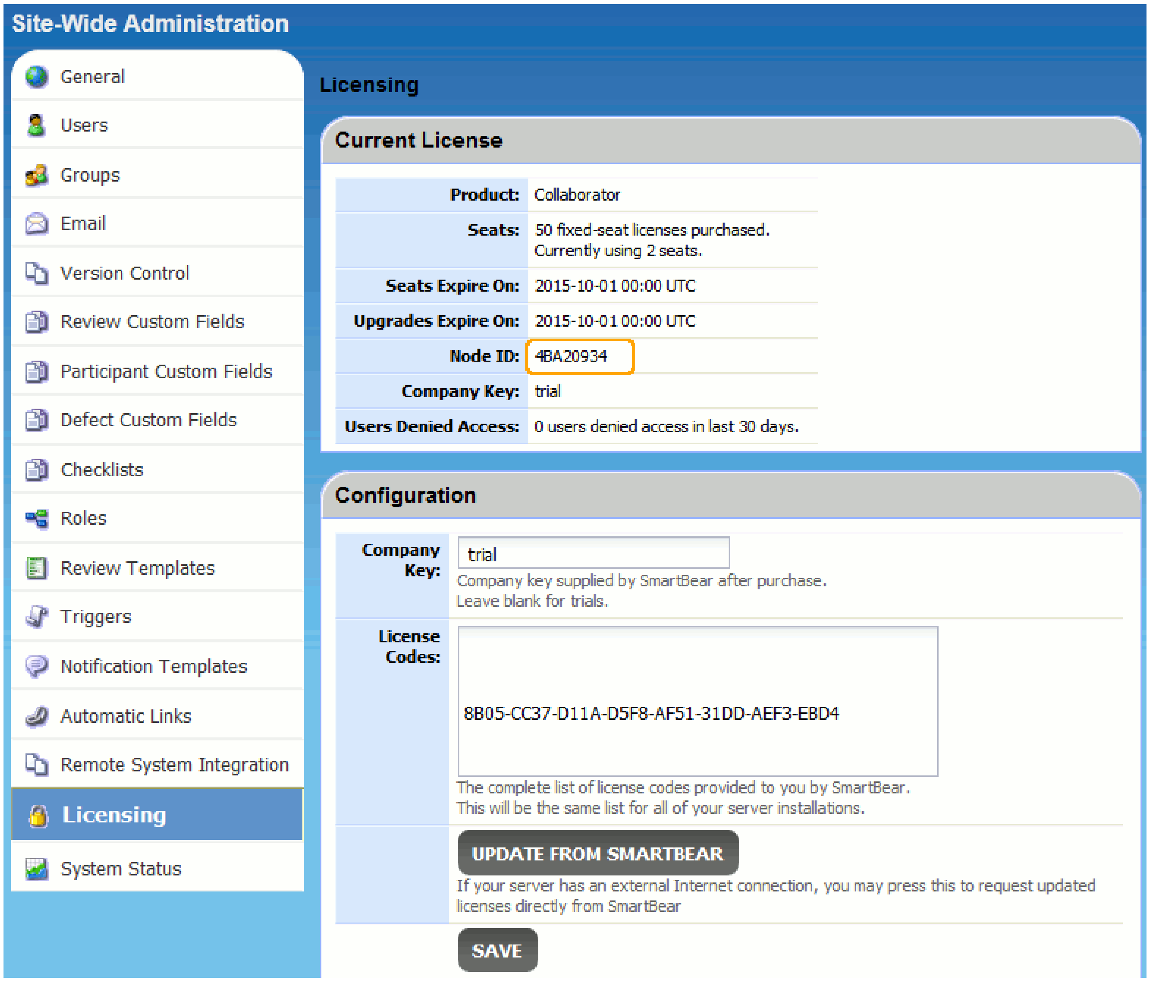
1. Log into Collaborator with any user that has administrative access.
2. Go to the "Admin" screen from the menubar at top-right:



3. Select "Licensing" from the list of sub-categories on the left:



4. There will be a table at the top of the page called "Current License". Look for the Node ID field, and there will be an 8-character code. That is your Node ID.



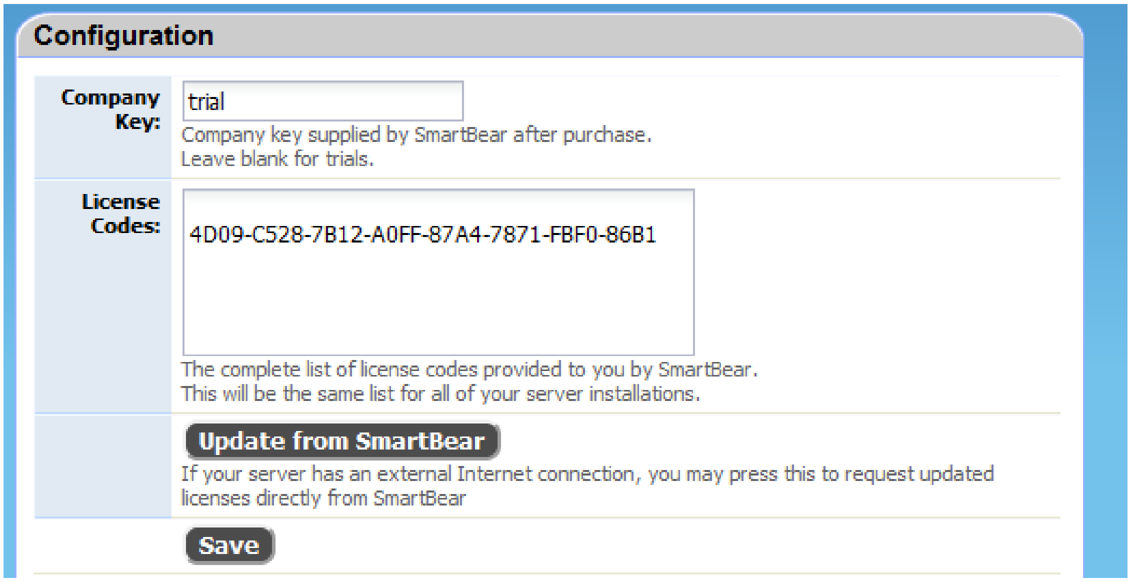
Entering Your License Code

When you receive your license code, the license code is entered into the Collaborator server. Client software does not have to be specially licensed.

To enter your license code, do the following:

1. Go to the Licensing page. (See steps 1-3 above as if you were looking for your Node ID 84.)

2. Below the "Current License" box, there will be a "Configuration" box. In the "Company Key" field, enter the company key. In the "License Codes" field, enter the license code given to you by SmartBear sales:



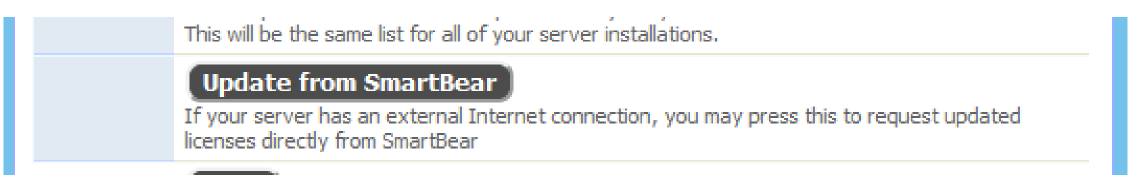
5. Click "Save" to complete changes.

6. If there are any errors they will be displayed at the top of the screen. Otherwise your licensing information (number of fixed and floating seats) will be displayed.

Updating License Code

You can also receive updated licenses from the SmartBear server after your initial license set-up. You must have an external Internet connection to do so.

Just click on the "Update from SmartBear" button near the bottom of the Configuration box:



3.2.3 Content Storage

Most review data is stored in the database. The one exception to this is the contents of the files under review. These are stored in a directory described as the "content cache". The internal structure of the content cache is subject to change between versions of Collaborator, so we do not recommend altering the contents of the content cache directly without specific instructions from SmartBear technical support.

Choosing a Location for the Content Cache

The default location for the content cache is the collaborator-content-cache subdirectory of the install directory. In many environments, this may not be an acceptable location. Here are some things to consider when choosing a content cache location:

- File permissions may not allow writing in the installation directory.
- Maintenance of network storage may be easier if backups are already in place and disk usage is monitored automatically.
- Network storage allows for warm standby Collaborator servers to be available in the event of failure of the primary server.

Configuring the Location of the Content Cache

If a determination is made that the default content cache location is unacceptable, the location can be changed in `*installation-directory*/tomcat/conf/Catalina/localhost/ROOT.xml`. Find the `Parameter` element with the name attribute "`content-cache`". The "`value`" attribute of this element should be the path to the content cache. Relative paths are interpreted relative to the installation directory.

If the content cache location is changed on an active server, it must be restarted before the change will take effect. If the content cache is not also copied over to the new location, users will see a message that content is missing and was probably archived by the administrator. To prevent this, it is best to shut down the server, copy the content cache to the new location, and then restart the server. If you encounter this error message when trying to open a file in a review, "content is missing and was probably archived by the administrator". This can be caused by either of these conditions:

1) the admin has not moved the content cache to the new location,

2) the cache.properties needs to be set as follows:

```
version=2

lazy-upgrade-from-version=1
```

Sharing the Content Cache

Sharing the content cache between servers is *not supported*. The only environment where Collaborator servers should be configured to use the same content cache is if one is configured as a warm backup for the primary server. A warm backup is a system that configured, *but not running*. It can be started in the event of primary server failure to reduce down time.

Upgrading Content Store Format

There is a new file content store format that works better with many filesystems by having a deeper directory structure, reducing the number of files in each directory. The format of the cache is determined by the cache.properties file located at the root of the content-cache directory. By default this is *installation-directory*`/tomcat/collaborator-content-cache`. This file is a Java properties file (spec).

There are two configuration keys, "version" and "lazy-upgrade-from-version". The "version" key determines whether to use the new format (2), or the old format (1) for storing new data. The "lazy-upgrade-from-version" key determines whether to search for and upgrade data stored in the old format (1), or not (blank).

For example, here are the values you would use to store data in the new format and automatically upgrade data in the new format when requested:

```
version=2

lazy-upgrade-from-version=1
```

To just use the new format

```
version=2

lazy-upgrade-from-version=
```

To just use the old format

```
version=1

lazy-upgrade-from-version=
```

3.2.4 Backup / Migration

Collaborator can be backed up while it is running. Also, there is a system for migrating data from one database to another.

Collaborator stores almost all data in the database initially set up for it. It also uses a local directory to store copies of uploaded files. These are the two systems that need to participate in the backup/restore process.

Backing up the Database

NOTE: Each license key is linked to the node ID, and it gets carried over during server migration. Therefore, a new license key is not needed when migrating the server.

The mechanism for backing up the database depends on the database. See the documentation for your database for details.

You can easily create a backup dump of your database into a zip file using the command line (and scripts):

```
ccollab admin wget “/data/server?dump=1" > backup.zip
```

The backup.zip file will be created within your home or user profile directory depending on your OS.

You may specify the following parameters when creating a database dump:

- `&obfuscate` - Specifies whether to copy the data as is (`&obfuscate=0`) (default), or to obfuscate all sensitive information, like file contents, user names and so on (`&obfuscate=1`).
- `&withserverlogs` - Specifies whether to include server logs (`&withserverlogs=1`) or not (`&withserverlogs=0`) (default).
- `&withfiles` - Specifies whether to include content of all files (`&withfiles=1`) or not (`&withfiles=0`) (default).
- `&configonly` - Specifies wether to create a whole system dump (`&configonly=0`) (default) or to save the system settings (`&configonly=1`).

A subset of the four parameters listed above can be appended to the "/data/server?dump=1" URL. For example, the command below will perform a complete backup of your entire environment, which will include both the server logs and content cache.

```
ccollab admin wget "/data/server?dump=1&withserverlogs=1&withfiles=1"

> backup.zip
```

There is an alternate method for backing up the database which is to perform the first half of a database migration 91 and save the migration data file.

Backing up the File Cache

The local directory you need to back up is located here (by default -- it can be changed by the system administrator):

```
installation-directory/tomcat/collaborator-content-cache
```

Typically, a backup mechanism will either copy this directory elsewhere or will keep a zip or other compressed archive file updated with the contents. You can do this while Collaborator is running, although most backup mechanisms will run at off-peak hours.

Files in this cache are stored in such a way that a file is written *only once* and thereafter is never changed. This means incremental backups of the directory are particularly easy -- only new files must be copied. Most file-copy utilities have a mode that means "only copy new files".

Restoring a Collaborator Backup

To restore a Collaborator installation, first restore the database as directed in your database documentation. Then, install the Collaborator server software. Finally, restore the contents of the collaborator-content-cache directory in the new installation directory. You can do this last step while Collaborator is running.

If you have used the database migration technique to back up the database, refer to steps 3-11 of Restoring the Data Dump File 93 for instructions on migrating the database data.

Migrating Data Between Databases

Collaborator has a generic mechanism for migrating data between databases -- even if the databases are completely different types.

Applications of this migration technique include:

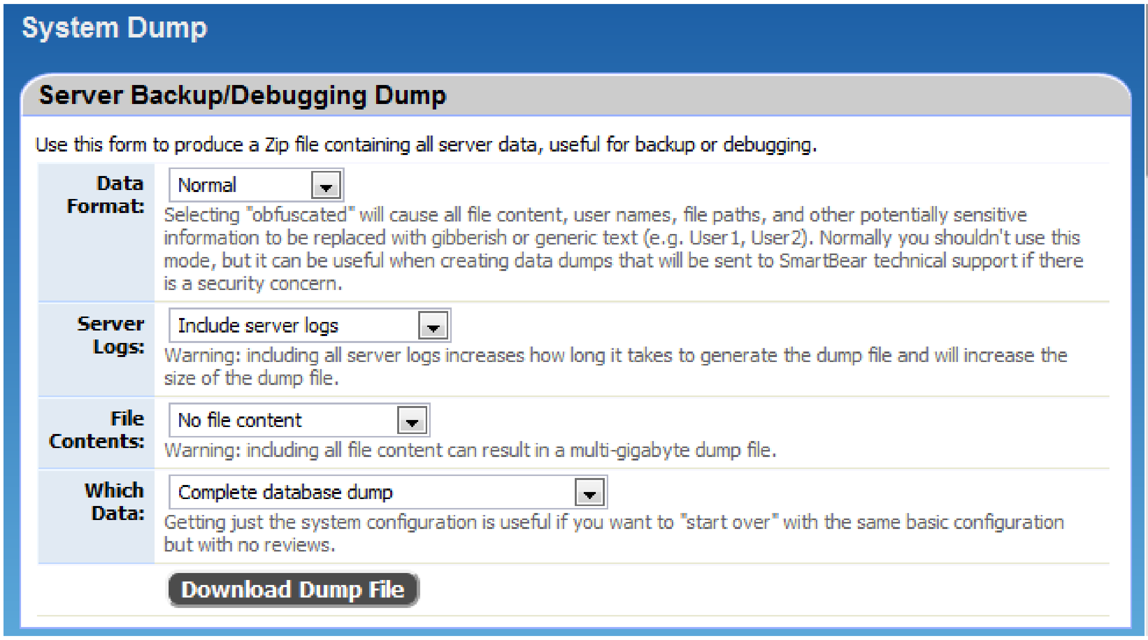
- migrating between the embedded database and one of the other databases when a trial moves to a production environment
- backing up a database in a database-independent and easily-inspected manner
- when we add support for a new database and you want to switch over to it
- we need to debug your database and you need to send a "dump" of your data to SmartBear Technical Support 141

There are two halves to the migration process: Creating the migration data dump file, and "restoring" the data dump file into a Collaborator installation.

1. Creating the Migration Dump File

To create the migration data dump file, log into the Collaborator web server, and click the System link at the bottom of the screen:

Near the top of the screen is a form and a button which will allow you to download a whole system dump:



Making the appropriate selection:

1. **Data Format:** Normal - Selecting "Normal" will leave the data as is.

Obfuscated - Selecting "Obfuscated" will change the data to conceal sensitive information.

2. **Server Logs:** Include server logs - Selecting this will include server logs in dump. Note: If you are creating a dump file to send to technical support, it is important to include the server logs.

do not include server logs - Selecting this will not include server logs in the dump file.

3. **File Contents:** No file content - Selecting "No file content" will not include file content.

Include all file content - Selecting this will include all file content, but this will also cause a longer download.

4. **Which Data:** Complete database dump - This must be selected for a whole system dump.

System configuration only - no review data - Selecting this will only save the system settings.

Once you have filled out the form, click the "Download Dump File" button to download the database dump file. This is a ZIP file containing all your database data in a platform- and database-independent XML format, plus additional files that describes your server environment.

2. Restoring the data dump file

Loading this data into another Collaborator installation requires some effort. This process is intentionally complex to prevent accidental destruction of real data.

Below are the steps to restoring a database migration data dump file:

1. Verify your Collaborator Server install.

   Make sure the Collaborator server version and build number are identical between the server that created the data dump file and the server that is loading it. If the versions do not match exactly, the restore might not succeed. SmartBear maintains installers for previous versions of the server if you need one. You can always upgrade to another version after the migration.

   Be sure when running the installer, you give the correct connection parameters to point the server to the database to which you plan to migrate. Note: Even if the Collaborator Server install location is not changing, you will still need to rerun the installer to point Collaborator to the correct database.

   Once the install is complete, a browser window should open. Do NOT initialize the database as prompted in the browser.

2. Move the dump file into a known location. In this example we will assume the location is:

   ```
   c:\temp\ccollab-dump.zip
   ```

3. Make sure the Collaborator server where you will load the dump is not running. This will not work on a running server.

4. Open the Tomcat session configuration file located here:

   ```
   installation-directory/tomcat/conf/Catalina/localhost/ROOT.xml
   ```

5. Find the parameter called database-migration-data-path, or create one if it does not already exist. It should look something like this:

   ```
   <Parameter name="database-migration-data-path" value="c:\temp
   \ccollab-dump.zip" override="false" />
   ```

6. Make sure the value string matches the location of the dump file, as in the example above. Use an absolute file path.

7. Save the configuration file.

8. Use a database administration tool to make sure the database configured for use with Collaborator has no tables in it. If there are any tables in the database the restore will not work. This prevents accidental restoring over an existing database.

9. Start the Collaborator server.

10. The server will automatically load the data from the database migration data dump file. If there were any problems with migration, you will see a helpful error message in the server log 145. The server will also log progress reports as data is loaded up, so if you have a large database and you wish to monitor migration progress you can "tail" the log file to see what's happening. Loading migration data can take a long time, so be patient!

11. Upon starting after restoring a migrated database, email notifications will be disabled. This is to prevent users from receiving spurious duplicate email notifications when administrators restore into test configurations. You may re-enable email notifications from the email administration page 184.

3.2.5 Security Considerations

Collaborator administrators need to be aware of several security issues and options which affect the overall security of the system. This section covers those issues.

Built-in Administrator Account

Each Collaborator server has a built-in administrator account "admin". By default its password is "admin". To improve security, you will need to specify your own password for the built-in administrator account in the Users 164 category of Collaborator settings.

File System Security

Collaborator relies on the underlying operating system as a foundation for overall system security. Several potentially sensitive items are stored in the local file system, including database credentials, LDAP credentials (if used), and file contents. Care should be taken to maintain system security of the server's operating system, so this information is not compromised. SmartBear does not have any specific security expertise, so we recommend you follow the guidance of your operating system's vendor.

HTTP Transport Security

By default, the Collaborator server operates over regular HTTP. This means that all communications between clients and servers are unencrypted on the wire. Therefore, it is possible for someone with access to the network to use network sniffing tools to gather information from that traffic. Some things that are available over the wire are file contents, user conversations, and even authentication credentials (usernames and passwords). If wire-level security is a concern, administrators should configure the server to use secure http (HTTPS) 111. Enabling HTTPS, also adds the "Secure" attribute to the browsers session cookies, that is, they can only be transmitted over an HTTPS connection.

XMLRPC Security

Prior to version 5.0, Collaborator relied on trusted clients to participate in authentication of users. As of 5.0, the default install is to not trust the clients and instead force them to provide credentials with each XMLRPC request. While this is more secure, and is the recommended configuration, we recognize that this configuration breaks older clients. So, we have implemented the following compromise:

1. Client compatibility is controlled by an application parameter configured in the context configuration file (`.../tomcat/conf/Catalina/localhost/ROOT.xml`). The parameter name is "`client-compatibility`" and if the value is set to "`true`", older clients are allowed to connect to this server.

2. By default, upgrades from 4.0 will have client compatibility enabled -- that is, older clients will still be allowed to connect to the server. This is in recognition of the fact that server upgrades usually lead client upgrades by some period of time. We recommend that client compatibility be disabled as soon as clients can be upgraded.

3. By default, new installs will have client compatibility disabled. The assumption here is that new server installs will usually correspond to new client installs. Unless there are existing older clients (4.0 or earlier), it is not advisable to change this setting.

Note: This setting is explicitly a stop-gap for backwards compatibility. In the future, we expect to break backwards compatibility with 4.0 clients and always require preemptive authentication. However, this setting is expected to remain in place for all 5.x builds.

User Session Information Storage / Cookies

There are two cookies that store user login and session information (`CodeCollaboratorLogin` and `CodeCollaboratorTicketId` respectively). The expiration date of the session cookies is so far in the future that they will never expire, but there is a server setting that overrides that expiration date and controls the length of time that the session is valid. This setting is called "Login Ticket Time-To-Live 160" and can be configured by the Collaborator admin. This setting is not an idle timeout; it is an absolute time the ticket will remain valid after it is created.

The application server-managed session cookie, JSESSIONID, is only valid during the session and it is used to identify the session, but it does not contain any user information. We also store some WebUI preferences locally, but that data also does not contain any user information.

All session cookies have the "HTTPOnly" attribute set, which means that these cookies can only be used by web browsers, and cannot be accessible via scripts or by other means.

Obfuscating Database Passwords

Some environments dictate that sensitive passwords stored in configuration files be obfuscated. In the case of Collaborator, this most commonly occurs in conjunction with the database connection information stored in <server install path>/tomcat/conf/Catalina/localhost/ROOT.xml.

Starting in Collaborator 8.4.8403, obfuscating the database password has *preliminary* support as a post-install operation. Three forms of obfuscation are supported: base64 encoding, base64-encoded AES 128 bit and base64-encoded AES 256 bit. AES obfuscation uses ECB mode with a fixed key and PKCS#5 padding.

Of the three forms, base64-encoding is the recommended process, if sufficient, as it is simpler.

Base64 obfuscation:

1. Stop your Collaborator server instance. See Platform-Specific Notes 79 for instructions for Windows, Linux, Solaris and BSD platforms.

2. Open the <server install path>/tomcat/conf/Catalina/localhost/ROOT.xml file in your chosen text editor.

3. Locate the <Resource ... /> XML tag. This tag declares the database configuration of your Collaborator server.

4. Append the "factory" attribute to the Resource tag:

```
<Resource ... factory="com.smartbear.ccollab.

CollaboratorBasicDataSourceFactory"/>
```

5. Using the tool of your choice, generate a base64-encoded version of your database password (as found in the "password" attribute of the Resource tag). Many base64-capable tools and online encoder/decoder interfaces exist, a web search for "base64 encode" should prove illuminative.

6. Prepend the encoded string with "1". This indicates to Collaborator that plain base64 encoding is being used. For example, the existing password "testpass" would become "1dGVzdHBhc3M=".

7. Replace the value of the existing "password" attribute with the string composed in the prior step. The Resource tag will look similar to:

```
<Resource ... password="$1$dGVzdHBhc3M=" factory="com.smartbear.
ccollab.CollaboratorBasicDataSourceFactory"/>
```

8. Save the `ROOT.xml` file.

9. Restart your Collaborator server instance. The server should come up without issue with the obfuscated password.

AES-128 obfuscation:

Note: base64 is recommended due to simplicity unless your environment absolutely requires this level of obfuscation.

1. Stop your Collaborator server instance. See Platform-Specific Notes 79 for instructions for Windows, Linux, Solaris and BSD platforms.

2. Open the `<server install path>/tomcat/conf/Catalina/localhost/ROOT.xml` file in your chosen text editor.

3. Locate the `<Resource ... />` XML tag. This tag declares the database configuration of your Collaborator server.

4. Append the "factory" attribute to the Resource tag:

```
<Resource ... factory="com.smartbear.ccollab.
CollaboratorBasicDataSourceFactory"/>
```

5. Using the command line interface, in the `<server install path>/tomcat/` directory of your Collaborator instance, execute the following command line:

```
java -cp webapps/ROOT/WEB-INF/lib/smartbear-ccollab-server.jar:
webapps/ROOT/WEB-INF/lib/commons-codec-1.3.jar:lib/tomcat-dbcp.jar:
lib/commons-logging-api.jar com.smartbear.ccollab.
CollaboratorBasicDataSourceFactory
```

(On windows platforms, replace ":" in the command above with ";".)

6. Enter your password when prompted and specify the encoding format as "aes128". The program will then output the encoded string, which has a prefix of "2" to indicate that AES-128 obfuscation is being used. For example, the pre-obfuscation password "testpass" would become "2Nobujw9X9ZJsSOYapNZh+w==".

7. Replace the value of the existing "password" attribute with the string composed in the prior step. The Resource tag will look similar to:

```
<Resource ... password="$2$Nobujw9X9ZJsSOYapNZh+w==" factory="com.
smartbear.ccollab.CollaboratorBasicDataSourceFactory"/>
```

8. Save the `ROOT.xml` file.

9. Restart your Collaborator server instance. The server should come up without issue with the obfuscated password.

AES-256 obfuscation:

Note: base64 is recommended due to simplicity unless your environment absolutely requires this level of obfuscation.

1. To enable AES-256 encryption you need to install Java Cryptography Extension (JCE) Unlimited Strength Jurisdiction Policy Files. They can be downloaded from the Oracle's website: Java Cryptography Extension for JRE 7 and Java Cryptography Extension For JRE 8.
   Download and install the JCE package as described in the README.TXT file shipped within the downloaded archive.

2. Stop your Collaborator server instance. See Platform-Specific Notes 79 for instructions for Windows, Linux, Solaris and BSD platforms.

3. Open the `<server install path>/tomcat/conf/Catalina/localhost/ROOT.xml` file in your chosen text editor.

4. Locate the `<Resource ... />` XML tag. This tag declares the database configuration of your Collaborator server.

5. Append the "factory" attribute to the Resource tag:

```
<Resource ... factory="com.smartbear.ccollab.
CollaboratorBasicDataSourceFactory"/>
```

6. Using the command line interface, in the `<server install path>/tomcat/` directory of your Collaborator instance, execute the following command line:

```
java -cp webapps/ROOT/WEB-INF/lib/smartbear-ccollab-server.jar:
webapps/ROOT/WEB-INF/lib/commons-codec-1.3.jar:lib/tomcat-dbcp.jar:
lib/commons-logging-api.jar com.smartbear.ccollab.
CollaboratorBasicDataSourceFactory
```

   (On windows platforms, replace ":" in the command above with ";".)

7. Enter your password when prompted and specify the encoding format as "aes256". The program will then output the encoded string, which has a prefix of "3" to indicate that AES-256 obfuscation is being used. For example, the pre-obfuscation password "testpass" would become "3w8MhPu6t7vobGeNvTx8RoA==".

8. Replace the value of the existing "password" attribute with the string composed in the prior step. The Resource tag will look similar to:

```
<Resource ... password="$3$w8MhPu6t7vobGeNvTx8RoA==" factory="com.
smartbear.ccollab.CollaboratorBasicDataSourceFactory"/>
```

9. Save the `ROOT.xml` file.

10. Restart your Collaborator server instance. The server should come up without issue with the obfuscated password.

Obfuscating LDAP Passwords

Starting in Collaborator 8.5.8501, LDAP passwords may be obfuscated in a similar fashion to the database password above. Three forms of obfuscation are supported: base64 encoding, base64-encoded AES 128 bit and base64-encoded AES 256 bit. AES obfuscation uses ECB mode with a fixed key and PKCS#5 padding.

Of the three forms, base64-encoding is the recommended process, if sufficient, as it is simpler.

Base64 obfuscation:

1. Stop your Collaborator server instance. See Platform-Specific Notes 79 for instructions for Windows, Linux, Solaris and BSD platforms.

2. Open the `<server install path>/tomcat/conf/Catalina/localhost/ROOT.xml` file in your chosen text editor.

3. Locate the `<Realm ... />` XML tag. This tag declares the LDAP (JNDI) authentication resource that Collaborator uses.

4. Change the "className" attribute of the Realm tag to `"com.smartbear.ccollab.auth.CollaboratorJNDIRealm"`:

```
<Realm ... className="com.smartbear.ccollab.auth.
CollaboratorJNDIRealm"/>
```

5. Using the tool of your choice, generate a base64-encoded version of your database password (as found in the "connectionPassword" attribute of the Realm tag). Many base64-capable tools and online encoder/decoder interfaces exist, a web search for "base64 encode" should prove illuminative.

6. Prepend the encoded string with "1". This indicates to Collaborator that plain base64 encoding is being used. For example, the existing password "testpass" would become "1dGVzdHBhc3M=".

7. Replace the value of the existing "connectionPassword" attribute with the string composed in the prior step. The Realm tag will look similar to:

```
<Realm ... className="com.smartbear.ccollab.auth.
CollaboratorJNDIRealm" connectionPassword="$1$dGVzdHBhc3M="/>
```

8. Save the `ROOT.xml` file.

9. Restart your Collaborator server instance. The server should come up without issue with the obfuscated password.

AES-128 obfuscation:

Note: base64 is recommended due to simplicity unless your environment absolutely requires this level of obfuscation.

1. Stop your Collaborator server instance. See Platform-Specific Notes 79 for instructions for Windows, Linux, Solaris and BSD platforms.

2. Open the `<server install path>/tomcat/conf/Catalina/localhost/ROOT.xml` file in your chosen text editor.

3. Locate the `<Realm ... />` XML tag. This tag declares the LDAP (JNDI) authentication resource that Collaborator uses.

4. Change the "className" attribute of the Realm tag to `"com.smartbear.ccollab.auth.CollaboratorJNDIRealm"`:

```
<Realm ... className="com.smartbear.ccollab.auth.
CollaboratorJNDIRealm"/>
```

5. Using the command line interface, in the `<server install path>/tomcat/` directory of your Collaborator instance, execute the following command line:

```
java -cp webapps/ROOT/WEB-INF/lib/smartbear-ccollab-server.jar:
webapps/ROOT/WEB-INF/lib/commons-codec-1.3.jar:lib/tomcat-dbcp.jar:
lib/commons-logging-api.jar com.smartbear.ccollab.
CollaboratorBasicDataSourceFactory
```

(On Windows platforms, replace ":" in the command above with ";")

6. Enter your password when prompted and specify the encoding format as "aes128". The program will then output the encoded string, which has a prefix of "2" to indicate that AES-128 obfuscation is being used. For example, the pre-obfuscation password "testpass" would become "2Nobujw9X9ZJsSOYapNZh+w==".

7. Replace the value of the existing "connectionPassword" attribute with the string composed in the prior step. The Realm tag will look similar to:

```
<Realm ... className="com.smartbear.ccollab.auth.
CollaboratorJNDIRealm" connectionPassword="$2$Nobujw9X9ZJsSOYapNZh+w=="/>
```

8. Save the `ROOT.xml` file.

9. Restart your Collaborator server instance. The server should come up without issue with the obfuscated password.

AES-256 obfuscation:

Note: base64 is recommended due to simplicity unless your environment absolutely requires this level of obfuscation.

1. To enable AES-256 encryption you need to install Java Cryptography Extension (JCE) Unlimited Strength Jurisdiction Policy Files. They can be downloaded from the Oracle's website: Java Cryptography Extension for JRE 7 and Java Cryptography Extension For JRE 8.
   Download and install the JCE package as described in the README.TXT file shipped within the downloaded archive.

2. Stop your Collaborator server instance. See Platform-Specific Notes 79 for instructions for Windows, Linux, Solaris and BSD platforms.

3. Open the `<server install path>/tomcat/conf/Catalina/localhost/ROOT.xml` file in your chosen text editor.

4. Locate the `<Realm ... />` XML tag. This tag declares the LDAP (JNDI) authentication resource that Collaborator uses.

5. Change the "className" attribute of the Realm tag to `"com.smartbear.ccollab.auth.CollaboratorJNDIRealm"`:

   ```
   <Realm ... className="com.smartbear.ccollab.auth.
   CollaboratorJNDIRealm"/>
   ```

6. Using the command line interface, in the `<server install path>/tomcat/` directory of your Collaborator instance, execute the following command line:

   ```
   java -cp webapps/ROOT/WEB-INF/lib/smartbear-ccollab-server.jar:
   webapps/ROOT/WEB-INF/lib/commons-codec-1.3.jar:lib/tomcat-dbcp.jar:
   lib/commons-logging-api.jar com.smartbear.ccollab.
   CollaboratorBasicDataSourceFactory
   ```

   (On windows platforms, replace ":" in the command above with ";".)

7. Enter your password when prompted and specify the encoding format as "aes256". The program will then output the encoded string, which has a prefix of "3" to indicate that AES-256 obfuscation is being used. For example, the pre-obfuscation password "testpass" would become "3w8MhPu6t7vobGeNvTx8RoA==".

8. Replace the value of the existing "connectionPassword" attribute with the string composed in the prior step. The Realm tag will look similar to:

```
<Realm ... className="com.smartbear.ccollab.auth.
CollaboratorJNDIRealm" connectionPassword="$3$w8MhPu6t7vobGeNvTx8RoA=="/>
```

9. Save the `ROOT.xml` file.

10. Restart your Collaborator server instance. The server should come up without issue with the obfuscated password.

3.2.6 LDAP Authentication

By default the Collaborator server authenticates users against the users in its database. For large organizations with hundreds or thousands of users in multiple product groups, it is simply impractical to add each would-be Collaborator user to the database. For this reason, Collaborator can integrate with an existing LDAP directory (or ActiveDirectory) to perform user authentication.

Note: LDAP authentication *is supported in Collaborator Team and Collaborator Enterprise. For a complete list of differences between Collaborator editions, please see the comparison page* 3

When LDAP authentication is configured, Collaborator authenticates users attempting to login against their entry in the directory. When a user logs in 230 for the first time, a user account is created for them automatically in Collaborator to store their user preferences. Users must be authenticated by logging into the Collaborator server through the web GUI before the client is able to recognize the user and can be configured.

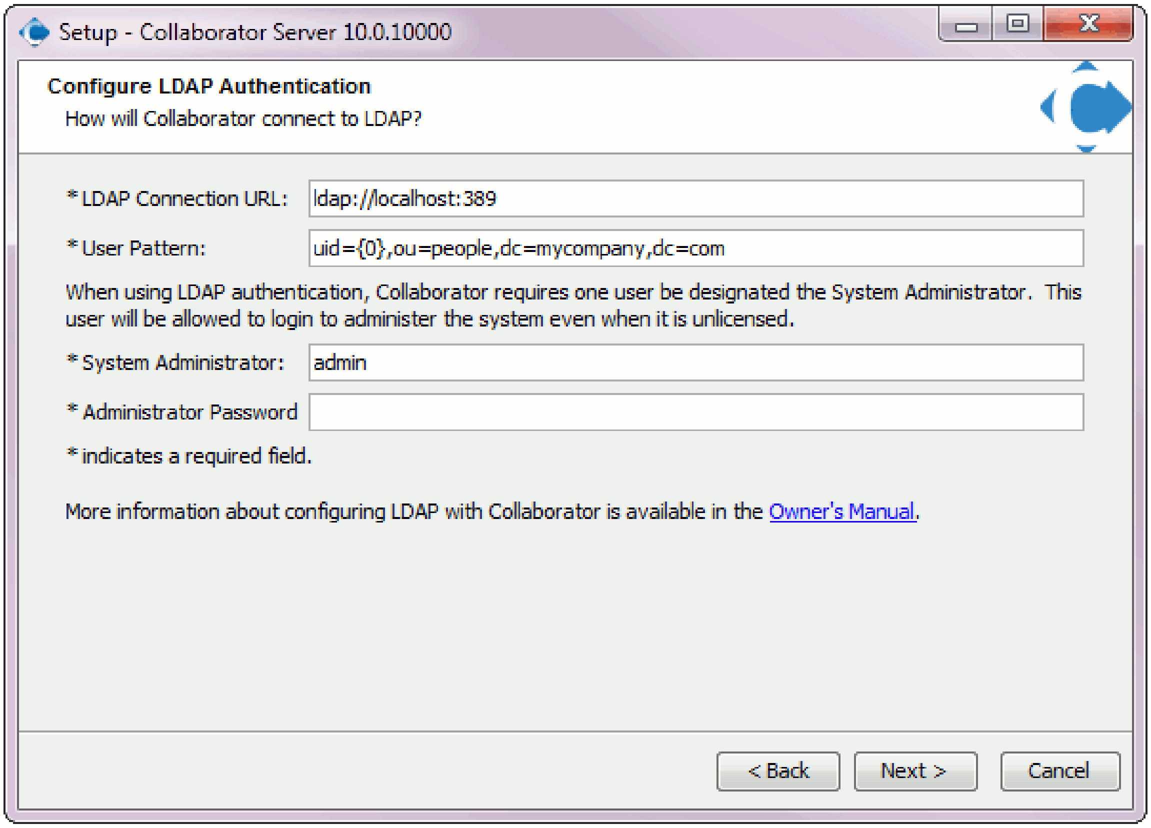
> **Warning:** Only users with accounts can be assigned to roles within reviews, so it is not possible to add a user to a review who has not previously logged in to Collaborator.

Internally, Collaborator uses the Tomcat Servlet Container's JNDI Realm for LDAP authentication. For a detailed description of how it works and for complete configuration information, consult the JNDI Realm Documentation.

Configuring Collaborator with LDAP

The installation wizard 63 provides a screen to perform basic configuration of LDAP authentication. This wizard minimally configures Collaborator to use LDAP authentication. For advanced configuration, see Advanced Configuration 107.

When LDAP authentication is selected, you are prompted for the following items:



- **LDAP Connection URL** - This is a URL where Collaborator can connect to the LDAP server. The format of the url is: ldap://servername:port The standard default port for LDAP is 389.
- **User Pattern** - This string instructs Collaborator how to locate a user within LDAP. The format of the string is the same as the LDAP distinguished name of a user with the username replaced with the string {0}.
- **System Administrator** - The username of the system administrator. The system administrator will always be able to log in and administer license codes and user accounts. This account takes the place of the admin account when using internal authentication.

Active Directory

Microsoft Active Directory is an LDAP compliant directory and can be used to authenticate users to Collaborator. However, in typical Active Directory environments, more configuration is needed than can be provided by the installation wizard. Specifically, the username that users log in with typically corresponds to the `sAMAccountName` attribute of their record. Because this is not part of their LDAP distinguished name (DN), Collaborator cannot create a DN directly from the user-entered username to bind to the directory. Instead, Collaborator must query the directory to get the user's distinguished name and then attempt the bind. To configure this, you will need to first install Collaborator, specifying LDAP authentication and then manually edit the configuration file. The configuration file in question is *`<collab server install dir>`*`/tomcat/conf/Catalina/localhost/ROOT.xml`. Locate the `Realm` element in the context file and replace it with the following:

```
<Realm className="org.apache.catalina.realm.JNDIRealm"
 connectionName="xxxx@xxx.com"
 connectionPassword="xxxx"
 connectionURL="ldap://xxxx.com:389"
 referrals="follow"
 userBase="CN=Users,DC=xxxx,DC=xxxx,DC=com"
 userSearch="(sAMAccountName={0})"
 userSubtree="true"
 allRolesMode="strictAuthOnly"
/>
```

You will need to update the attributes which have **`xxxx`**'ed out fields. The fields `connectionName` and `connectionPassword` define a user account the Collaborator will use to connect to Active Directory to find the user records. If anonymous connections are allowed to your directory (not typical), then these attributes are not required.

When using LDAP, you will also want to set the "collaborator-authentication" value="true" to value="false", as follows:

```
<Parameter description="Is the Code Collaborator database used for
authentication?" name="collaborator-authentication" override="false"
value="false"/>
```

Warning: Modifying the ROOT.xml file will cause Tomcat to dynamically reload the Collaborator application, terminating any active sessions. Changes to ROOT.xml should be done in the context of stopping and restarting the Collaborator service (that is, in a production environment coordinating the restart with user activity), regardless of whether the service itself is actually stopped and restarted, or just reloaded by Tomcat.

To use security groups or other user attributes to restrict access to Collaborator, you can refine the userSearch query to return only users that meet your requirements.

The configuration examples above are a starting place for configuring Active Directory authentication. Additional configuration may be required because of specific configuration details of the directory. The JNDI Realm Documentation describes the different operational modes and explains each of the configuration attributes, and may be helpful in debugging the issue. The directory administrator that manages the directory will be a valuable resource in resolving the issue, either directly, or in conjunction with SmartBear's Customer Support team.

If the directory administrator is unavailable, SmartBear's Customer Support team can help you resolve configuration issues, but often do not have enough information about the directory schema, permissions, and so on, to efficiently resolve issues. We will walk you through several basic configurations that we have seen work with other directories. Having an LDAP browser tool available (there are many good free and commercial browsers available) when you call will help answer some of the questions required to properly configure your server. In some cases, we will still need to discuss details with your directory administrator.

Secure LDAP (LDAPS)

Configuring Collaborator to communicate securely with an LDAP server using LDAPS (LDAP over SSL) can be done, but requires manual configuration outside of the installer wizard. To configure LDAPS, first install Collaborator configured for normal LDAP access. The service will start automatically upon completion of the install, so you will need to shut it down to continue configuration. Open the context configuration file (*<collab server install dir>/*tomcat/conf/Catalina/localhost/ROOT.xml) in a text editor and find the Realm configuration element. It will look something like the following:

```
<Realm className="org.apache.catalina.realm.JNDIRealm"
      connectionURL="ldap://localhost:389"
      userPattern="uid={0},ou=people,dc=mycompany,dc=com"
      allRolesMode="strictAuthOnly" />
```

If you are configuring Collaborator for use with Microsoft Active Directory using LDAPS, follow the Active Directory instructions 104 to make a best effort to configure the realm for your Active Directory server. Do not worry if you do not get it exactly right or cannot test the connection because the server refuses insecure connections. That issue can be resolved once connectivity is established.

To the realm configuration above (or your Active Directory realm configuration), you will need to add an attribute 'protocol' with the value 'ssl' and you will probably need to change the 'connectionURL' attribute to an LDAPS url. The updated configuration below highlights the changes:

```
<Realm className="org.apache.catalina.realm.JNDIRealm"
       connectionURL="ldaps://localhost:636"
       userPattern="uid={0},ou=people,dc=mycompany,dc=com"
       allRolesMode="strictAuthOnly"
       protocol="ssl" />
```

Depending on the LDAP server's SSL certificates, this configuration *may* be enough to establish the connection. However, often companies generate their own SSL certificates signed by their own Certificate Authority (CA) certificate. Unless additional measures are taken, these certificates may not be trusted so Collaborator will still not connect to the LDAP server. To establish trust, you will need to create a "key store" and import the public key of either the Certificate Authority or the public key of the LDAP server as a trusted certificate. Obtain from your LDAP or network administrator the appropriate certificate file. Then using Java's keytool (located in `$JAVA_HOME/bin`), import the certificate into a key store for Collaborator using the following command:

```
keytool -import -alias ldapserver -keystore <collab serverinstall
dir>/tomcat/conf/collab.ks -trustcacerts
 -file <path to chain certificate file>
```

Important: You will likely be prompted to confirm the validity of the certificate. It is imperative for the security of the overall system that you verify the key matches the trusted material. Before accepting the certificate, you should contact the administrator that sent you the certificates and verify that the certificate fingerprints that you see match the certificate fingerprints that they intended to send you. For more information on why this step is important, see the note in the keytool documentation.

The final step is to configure Collaborator to use the newly created keystore. Open *<collab server install dir>*/ccollab-server.vmoptions in a text editor and add the following lines:

```
-Djavax.net.ssl.trustStore=<collab server install dir>/tomcat/conf/
collab.ks
-Djavax.net.ssl.trustStorePassword=<the password>
```

Upon restart, the Collaborator service should be connecting to the LDAP server via SSL. If you are still getting errors, check that the other LDAP configuration options have been configured correctly. If you are using Active Directory, it is now worth revisiting the Active Directory configuration above.

Finally, a note on troubleshooting SSL connections: adding the following line to the ccollab-server.vmoptions file will enable Java's network debug logging.

```
-Djavax.net.debug=all
```

Upon restarting Collaborator, this information will be written to <collab server install dir>/output.log. If you need assistance interpreting this log, contact SmartBear Customer Support.

Note: Do not run in a production environment with network debug logging enabled. This will severely impact the performance of the system and will also consume vast quantities of disk space.

Advanced Configuration

The basic configuration provided by the installer sets up the simplest possible LDAP configuration. Many more sophisticated configurations are possible, but require manually editing the context configuration file (<collab server install dir>/tomcat/conf/Catalina/localhost/ROOT.xml).

Users From Different Organizational Units

Sometimes it is necessary for users from different organizational units to have access to Collaborator. If you are using direct-bind configuration using the userPattern attribute, you can change the configuration to use userPatternArray instead where the value is a colon-separated list of user patterns. For example, if there are users in ou=foo,dc=mycompany,dc=com and ou=bar,dc=mycompany,dc=com identified by their uid attribute, you can set the userPatternArray attribute as follows:

```
userPatternArray="(uid={0},ou=foo,dc=mycompany,dc=com):(uid={0},
ou=bar,dc=mycompany,dc=com)"
```

Restricting Access

If you need to restrict access to Collaborator, we recommend that you configure your Realm definition to use `userSearch` for searching for user accounts rather than `userPattern` for direct bind (see Active Directory Configuration 104 for examples). With `userSearch`, you can expand your search criteria to include only members of the specified group or groups. For example, the following `userSearch` would restrict access to only members of the `ccusers` security group:

```
userSearch="(&amp;(sAMAccountName={0})(memberOf=CN=ccusers,
OU=Security Groups,OU=Accounts and Groups,DC=xxxx,DC=xxxx,DC=com))"
```

Please note that the ampersand (&), needs to be SGML encoded to "`&`" because the configuration file is an XML document.

If you need to broaden the search criteria, you can use the OR operator, "|". For example, to allow users who are in group "foo" or group "bar" (or both), you might use:

```
userSearch="(&amp;(sAMAccountName={0})(|(memberOf=CN=foo,OU=groups,
DC=xxxx,DC=com)(memberOf=CN=bar,OU=groups,DC=xxxx,DC=com)))"
```

Above, the inner OR requires that the user be a member of group "foo" or group "bar". The outer AND ensures that that user's login also matches the one provided to the Collaborator login form.

Administrator Rights

When users first log in to Collaborator, their user account is created automatically, as a standard user account. It is possible to have users in certain roles (see Restricting Access above) to automatically receive administrator privileges. This configuration is done in the `<collab server install dir>/tomcat/conf/Catalina/localhost/ROOT.xml` file.

Near the bottom of the `ROOT.xml` file, there is a section of server parameters (`Parameter` XML elements). These are name-value pairs of configuration options. To configure certain LDAP groups to be assigned administrator rights, create an `admin-roles` parameter and for its value specify a pipe-separated ("|") list of LDAP group names. You must also add 'userRoleName="memberOf"' to the Realm configuration. The `admin-roles` parameter requires an exact match, including case. New users that are members of the specified LDAP groups will be given administrator privileges when their accounts are created. Users that already have accounts in Collaborator will not automatically be promoted to administrator. Those privileges will need to be assigned manually from the `Admin` screen.

Obfuscating LDAP Passwords

Starting in Collaborator 8.5.8501, LDAP passwords can be obfuscated. Two forms of obfuscation are supported: base64 encoding, and base64-encoded AES (128 bit or 256 bit, ECB mode, using a fixed key and PKCS#5 padding). For instructions on enabling LDAP passwords obfuscation, see Security Considerations 99.

Warning: After making changes to the ROOT`.xml` file, you will need to restart the Collaborator service for the changes to take effect.

Troubleshooting LDAP:

There is a process that we go through to help people debug their LDAP issues. You can do it on your own (of course, if you get stuck you can always contact technical support). We recommend using the JXplorer LDAP browser for this task because it is a Java tool and as such it uses the same underlying LDAP library that Collaborator will use. Here is the process:

Download and install JXplorer, following the recommended installation guidelines.

Start up JXplorer.

From the File menu, choose Connect.

In the connect dialog ("Open LDAP/DSML Connection"), specify the following:

Host: the hostname portion of the connectionURL attribute from the Realm declaration in ROOT.xml.

Port: the port portion of the connectionURL attribute from the Realm declaration in ROOT.xml. Usually this is 389, which is the default if unspecified. Some Active Directory configurations require connecting to the "Global Catalog" which is port 3268 (you may see errors that say "DomainDnsZones.foo.bar.com" which means you need to use this port).

Base DN: The value of the userBase attribute from from the Realm declaration in ROOT.xml.

Security Level: User + Password

Security User: The value of the connectionName attribute from the Realm declaration in ROOT.xml. This should be a name that looks like an email address (jason@...) or something that looks like an LDAP distinguished name (uid=jason,ou=people,dc=mycompany,dc=com)

Security Password: The value of the connectionPassword attribute from the Realm declaration in ROOT.xml.

Click Ok to connect to establish the connection.

If the connection establishes normally, you should see the Explore tree populate with some nodes that represent entities in your directory. Note: You may see a Error that "Search partially failed!" This seems to be normal and is a consequence of the way Active Directory does its searching.

If the connection fails to establish normally, check the error message that explains the failure.

Is it a network issue? This could mean that the hostname or port number is wrong or that a firewall (local or on the network somewhere) is preventing the connection to the LDAP server. It could also mean that the LDAP server is simply offline. Double check your connection information and firewalls and if you still cannot connect, contact your LDAP administrator. (This error looks like: "Error opening connection: 192.168.10.441:389")

Is it a login issue? The specific error messages that come back will depend on the LDAP server in question, but if it is a "security" related message it probably means the user DN or password is wrong. Double check those and try to reestablish the connection. If that fails, perhaps the LDAP account does not exist or does not have query permissions on the directory. Consult your LDAP administrator for help getting the appropriate access. An example of an error message from an Active Directory server is as follows:

```
Error opening connection:
 [LDAP: error code 49 - 80090308: LdapErr: DSID-0C090334, comment:
AcceptSecurityContext error, data 52e, vece
```

If it is neither of those issues, send the error message verbatim to SmartBear technical support (the JXplorer error dialog accepts Ctrl-C to copy the message to the clipboard), or consult Google or your LDAP administrator.

Once the connection is established, it is time to verify the search parameters. From the Search menu, select "Search Dialog".

In the Search dialog, confirm that the "Start Searching From" is set to the value of the userBase attribute from the Realm declaration in ROOT.xml.

Search Level should be set to "Search Full Subtree".

Select the "Text Filter" tab at the bottom of the search dialog.

Copy and paste the userSearch attribute from the Realm declaration in ROOT.xml into the text filter box (for example, (sAMAccountName={0})).

Replace the {0} with the value of a user that you expect to be able to login. For example, if the user would use the login jason and the filter is (sAMAccountName={0}), change this value to (sAMAccountName=jason).

Press the Search button. Exactly one result should be returned. If zero results are returned, then the query is at fault. Some possible causes:

The user name as substituted into the filter is incorrect.

The user does not exist or does not exist within the subtree rooted at userBase.

The filter itself is too restrictive. Filters can be arbitrarily complex with AND and OR clauses. If the filter is complex, we recommend simplifying the query down to only the username portion (the place where the {0} occurs) and verifying that portion and then building up the query to the ultimate query, verifying that at each step the user account is still findable.

If the user is returned and you know that user's password (for example, if it is the Code Collaborator administrator account), verify that the account can login using JXplorer.

Select the user from the results tree.

Select the Table Editor tab.

Copy the distinguishedName attribute to the clipboard.

From the File menu, select Connect. Follow the login procedure as above, substituting the user's distinguished name (on the clipboard) for User DN and that user's password for Password.

If that login fails, it is possible that the password is incorrect or has been changed or that the account has been disabled or locked. Consult with your LDAP administrator to confirm that the account has "bind access" as necessary.

3.2.7 Configuring HTTPS

The basic Collaborator installation configures the server to handle requests over standard HTTP. In many environments this is sufficient as the network is trusted. However some organizations require that all network applications are secured with Transport Layer Security (TLS) or Secure Sockets Layer (SSL). Collaborator supports HTTP over TLS (or HTTPS), but this requires additional manual server configuration:

What you need

Certificates

In order to authenticate to clients, the Collaborator server must have a "Certificate" that serves as proof of identity. Certificates come in two forms: Certificate Authority (CA) signed certificates and "self-signed" certificates. CA signed certificates provide an additional level of security because they can be automatically verified and do not rely on human verification. By providing you a certificate, the Certificate Authority is vouching for your identity. Software systems such as web browsers and the Java Runtime Environment (JRE) include the public keys of the trusted Certificate Authorities that are used to verify server certificates were vouched for by a trusted CA. To acquire a CA signed certificate, contact the appropriate person in your IT department.

Self-signed certificates have the advantages of being free and easy to generate. The disadvantage of self-signed certificates is that they cannot be automatically verified. Instead, their security relies on users verifying the certificate signature against a signature obtained through another, ideally secure, channel.

Keystores

A keystore is Java's mechanism for storing cryptographic keys and certificates. The persistent form of a keystore is a password protected file on disk. A keystore may contain "key entries" that allow applications with access to the keystore to authenticate themselves to users or other services. A keystore is also used to store "trusted certificate entries" that contain the public keys of services that are trusted and certificate authorities that are trusted to vouch for services.

To enable HTTPS in Collaborator, you will need to create a keystore with the server's certificate (either CA- or self-signed) and if CA-signed, the certificate authority's "chain certificate". Follow the instructions below to create a keystore with the type of certificate you will be using to secure Collaborator.

Note: In order to use SSL with Collaborator, you must use one of the methods outlined below. Collaborator will no longer support using existing certificates or keys, or keystores in non-standard locations.

Creating a keystore for Collaborator

Creating a private key and certificate in your keystore

To get started, you must use Java's keytool command (located in $JAVA_HOME/bin). Running keytool as follows will create a new private key and install a self-signed certificate:

```
keytool -genkeypair -alias tomcat -keyalg RSA -validity 360 -keysize
2048 -keystore <collab server install dir>/tomcat/conf/collab.ks
```

You will be prompted to answer a series of questions. When you are prompted to enter your first and last name, enter the host and domain name you intend to use to address the Collaborator server instead. For example:

```
What is your first and last name?
[Unknown]: collab.aus.smartbear.com
```

Once you complete the rest of the prompts and assigned a password to the keystore, you have created a private key and a self-signed certificate. Be sure to remember the keystore password you set, as you must include it in your server configuration.

For many organizations, this is sufficient to guarantee security. However, web browsers and the Collaborator client will request confirmation from end users, unless the certificate is not signed by an existing certificate authority. You can read more about this process in the "Accepting Self-Signed Certificates" section at the bottom of this page.

If you wish to have a certificate authority sign your server certificate, please follow the steps outlined in "Creating a CSR" below.

Creating a CSR (Certificate Signing Request)

Once the steps above have been followed, you can create a certificate signing request with the following command:

```
keytool -certreq -alias tomcat -keystore <collab server install dir>/
tomcat/conf/collab.ks -file tomcat.csr
```

You will be prompted to enter the keystore password. This should create a file named "tomcat.csr" which you will need to provide to your signing authority. This may be Verisign, Thawte, another certificate vendor, or a group internal to your organization. Once they have verified the information provided, the signing authority will send you a certificate file.

Importing CA-signed Certificates

If you are using a CA-signed certificate, you will need the server certificate and the CA's chain certificate (or root certificate). The CA chain certificates are publicly available, but the instructions for acquiring them vary by certificate authority. To get the CA chain certificate, inquire of the IT person in your organization responsible for procuring SSL certificates for services. Once you have the certificates, import them into a new keystore using the Java "keytool" program (located in $JAVA_HOME/bin).

To import the CA chain certificate:

```
keytool -importcert -alias root -keystore <collab server install
dir>/tomcat/conf/collab.ks -trustcacerts
 -file <path to chain certificate file>
```

To import the server certificate:

```
keytool -importcert -alias tomcat -keystore <collab server install
dir>/tomcat/conf/collab.ks -trustcacerts
 -file <path to server certificate file>
```

Remember the keystore password you select, as you will need this when configuring the Collaborator server.

Alternate method to import server and chain certificate simultaneously

Some popular signature authorities now provide both a primary and intermediate certificate. The steps below may work more effectively in those cases than the steps above.

First, assemble a single file containing all of the certificates (primary, intermediate, and server) provided to you by your signature authority.

On UNIX systems:

```
cat primary.cert intermediate.cert tomcat.cert > combined.txt
```

On Windows, you will likely want to use notepad and simply copy and paste all of the provided certificates into a single file. Save that file as combined.txt. Once you have that, run the following command:

```
keytool -importcert -alias tomcat -trustcacerts -file combined.txt
```

This will import all three (or more) certificates at the same time, establishing the correct chain of trust.

Configuring the Collaborator Server

The final step in configuring the Collaborator server is to instruct the server to use SSL and tell it what certificates to use. This is done by editing the `server.xml` file located in `<collab server install dir>/tomcat/conf`. In server.xml, locate the "Connector" element and ***replace it*** with the following:

```
<Connector protocol="org.apache.coyote.http11.Http11Protocol"
port="8443" minSpareThreads="5" maxSpareThreads="75"
enableLookups="true" disableUploadTimeout="true"
acceptCount="100" maxThreads="100"
scheme="https" secure="true"
SSLEnabled="true" sslEnabledProtocols="TLSv1.2,TLSv1.1,TLSv1"
keystoreFile="conf/collab.ks" keystorePass="<the keystore password>"
clientAuth="false" sslProtocol="TLS"/>
```

Note, you will need to replace the keystore password in the above XML snippet.

That is all the required configuration. Restart the server and it will be operating over SSL on port 8443.

Be sure to update the External URL147 in the server settings to reflect the correct https URL.

Impact on Clients

After you have generated the keys for the server, you need to distribute a keystore and its signature to users so they can validate the certificate when asked. To do this, first export the certificate to a file:

```
keytool -exportcert -keystore <collab server install dir>/tomcat/
conf/collab.ks -alias tomcat > <export path>collab.cert
```

Then print the certificate information that you will need to distribute. Of particular interest are the fingerprints. To do this, run keytool as below:

```
keytool -printcert -file collab.cert
```

This will print something like the following:

```
Owner: CN=collab.aus.smartbear.com, OU=SmartBear, O=SmartBear,
L=Austin, ST=TX, C=US
Issuer: CN=collab.aus.smartbear.com, OU=SmartBear, O=SmartBear,
L=Austin, ST=TX, C=US
Serial number: 463251eb
Valid from: Fri Apr 27 14:41:31 CDT 2007 until: Thu Jul 26 14:41:31
CDT 2007
Certificate fingerprints:
 MD5: 67:D7:74:5E:72:9D:B2:82:88:3F:33:AA:A0:41:01:F0
 SHA1: E2:4A:1F:9B:9A:38:0F:6B:7B:33:12:73:1B:50:76:30:AC:A6:B2:EA
```

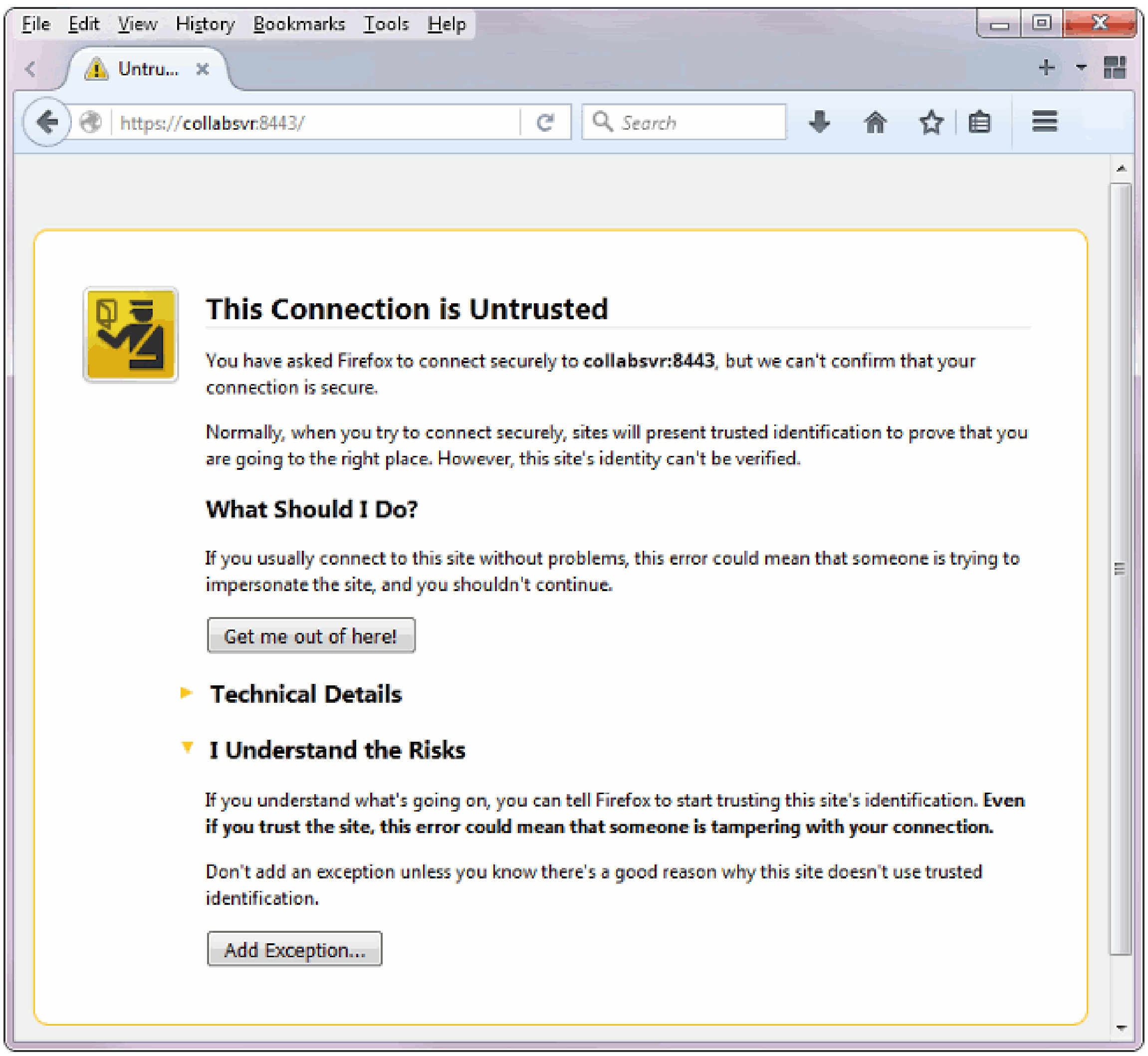
On each client machine you will need to create or edit Java VM options files at `<collab client install dir>/ccollab.vmoptions` and `<collab client install dir>/ccollabgui.vmoptions` and append the following options to these files:

```
-Djavax.net.ssl.keyStore=<export path>collab.ks
-Djavax.net.ssl.keyStorePassword=<the keystore password>
-Djavax.net.ssl.trustStore=<export path>collab.ks
-Djavax.net.ssl.trustStorePassword=<the keystore password>
```

If the certificate used to secure Collaborator is a CA signed certificate from a trusted CA, there will be very little impact on users. The only thing that they must do is configure their clients 336 with the correct HTTPS url.

If you are using a self-signed certificate or the certificate cannot be automatically verified, users will be asked to verify the certificate by comparing its signature to the published signatures for the service. The exact nature of this confirmation varies by client, but the process is the same: look at the certificate the server presents and confirm that its signature matches the published signature.

In the web browser, the certificate confirmation dialog looks something like this:



The above screenshot is from Firefox, but other browser users will see a similar dialog. The users will need verify that the fingerprint (or signature) of the certificate by comparing it to the signature of that you distributed for the server.

Certificates that are accepted permanently are stored in a local keystore in $HOME/.smartbear/trustedcertificates. This file can safely be deleted to remove all trusted certificates. If this is done, the user will have to reauthorize any certificates that are self-signed (or signed by a CA that is not in the Java trusted keystore).

If you want each client to automatically recognize and authorize your internal CA without being prompted to do so, one solution is to accept the key with one client, and then distribute the trustedcertificates file that is generated.

To reiterate, the default location for Unix clients is: `~/.smartbear/trustedcertificates` and for Windows clients: `%USERPROFILE%\.smartbear\trustedcertificates`

If you are capable of distributing files to all user's machines, distributing that file to those locations will prevent remaining users from seeing the prompt.

Additional Resources

- Tomcat SSL Configuration HOW-TO
- Tomcat HTTP Connector Configuration
- keytool - Java Key and Certificate Management Tool

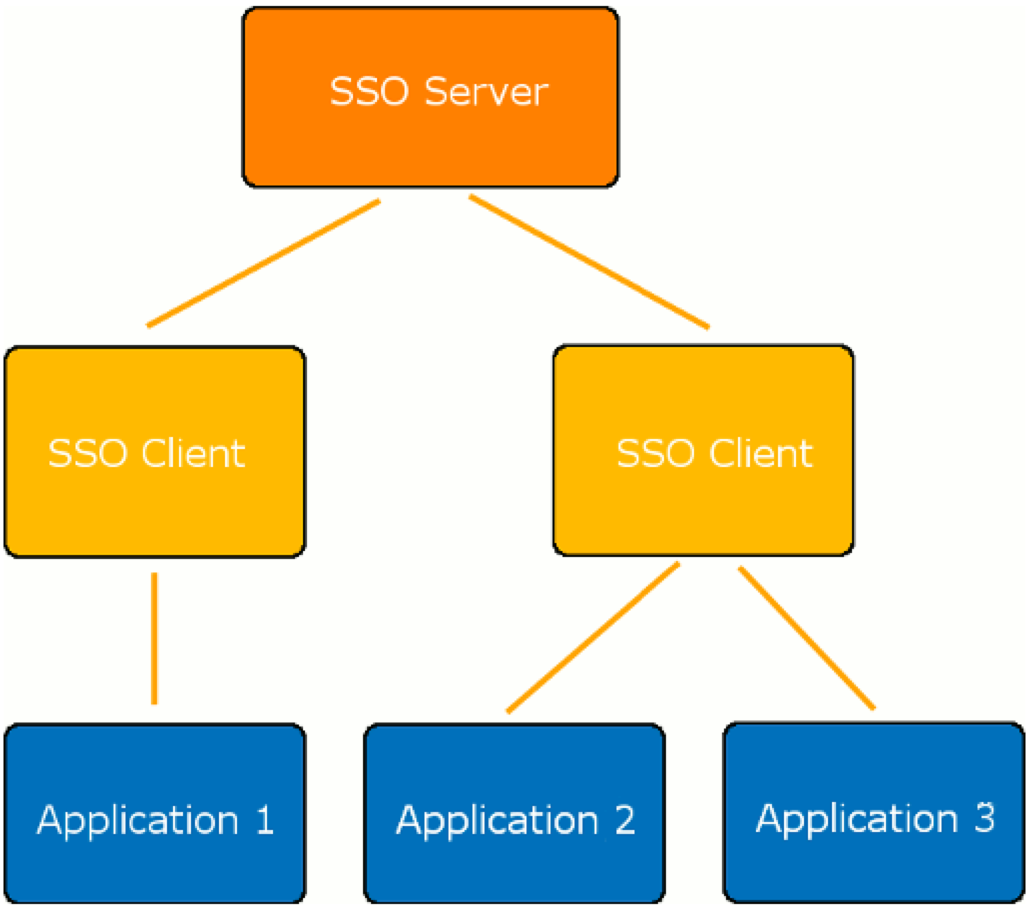
3.2.8 Configuring Single Sign-On

General Concept

Single sign-on (SSO) is a user authentication process that permits a user to enter one name and password in order to access multiple applications. The process authenticates the user for all the applications they have been given rights to and eliminates further prompts when they switch applications during a particular session. That is, having entered a login and password once on a central SSO server a user will be automatically logged into other applications, like, issue tracker, source control system, code review system and so on.

Note: *Single sign-on authentication is only supported in Collaborator Enterprise. For a complete list of differences between Collaborator editions, please see the comparison page* 3

Typically Single Sign-On solutions consist of several components - a SSO server and a number of SSO clients. A SSO server is a component that performs authentication, issues and validates tokens and so forth. SSO clients are intermediate components that can be integrated with various software platforms and applications in order to communicate with the SSO server via some authentication protocol. Most SSO solutions also provide Single Logout functionality - that is they allow users to log out from the application and from the SSO server simultaneously.



This topic describes how to establish single sign-on between an SSO server and Collaborator. In this aspect, the authentication process will be as follows:

1. A user tries to access a Collaborator server.

2. A pre-configured filter on Collaborator's tomcat redirects the user to the SSO server.

3. The SSO server authenticates the user, adds some SSO token and redirects back to the Collaborator server.

4. Another pre-configured filter detects the SSO token and logs the user in.

5. If a user with the specified credentials is not found, Collaborator creates a new user.

Steps to Enable Single Sign-On

Below we describe how to establish single sign-on between Collaborator and Apereo Central Authentication Service (CAS). Integration with Single Sign-On servers of other vendors is performed in a similar manner.

1. Enable HTTPS Connections

Most Single Sign-On servers use HTTPS connections, thus you will likely need to enable it for Collaborator server as well. For instructions, please see, Configuring HTTPS 111. Do not forget to restart the Collaborator server to apply changes.

2. Install SSO Server and Client Components

In Apereo Central Authentication Service, SSO server component is implemented as a Java servlet, and SSO clients are provided for different platforms and technologies (Java, .NET, PHP, Python and so on). Since Collaborator is a Java application, we will use Java CAS client.

Notes: To simplify the example, we will install both CAS server and CAS client on the same instance of Tomcat server.

Not all versions of CAS server and CAS client are compatible with each other. For example, CAS server 4.0 does not work with CAS client 3.3. In this integration, will use CAS server 3.5.2 and CAS client 3.1.12.

1. Download CAS server archive and unzip it to temporary folder.
2. Copy `modules\cas-server-webapp-3.5.2.war` file to `<collab server install dir>\tomcat\webapps` folder.
3. Download CAS client archive and unzip it to another temporary folder.
4. Copy all files from `cas-client-3.1.12\modules\` folder to `<collab server install dir>\tomcat\webapps\ROOT\WEB-INF\lib` folder.

3. Add Filters to Collaborator's Tomcat Server

In this step we will add several filters to Tomcat server. These filters would detect unauthenticated users, redirect them to SSO server, validate users and perform single sign-out. To learn more about filter configuration, see "The Essentials of Filters" on Oracle's website.

Open `<collab server install dir>\tomcat\webapps\ROOT\WEB-INF\web.xml` file and append the following lines to it:

```
<filter>
    <filter-name>CAS Single Sign Out Filter</filter-name>
```

```
      <filter-class>org.jasig.cas.client.session.
SingleSignOutFilter
       </filter-class>
   </filter>
    <filter-mapping>
       <filter-name>CAS Single Sign Out Filter</filter-name>
       <url-pattern>/*</url-pattern>
   </filter-mapping>
    <listener>
      <listener-class>org.jasig.cas.client.session.
SingleSignOutHttpSessionListener</listener-class>
    </listener>

<filter>
 <filter-name>CAS Authentication Filter</filter-name>
 <filter-class>org.jasig.cas.client.authentication.
AuthenticationFilter</filter-class>
  <init-param>
  <param-name>casServerLoginUrl</param-name>
   <param-value>https://yourcollabserver:8443/cas-server-webapp-
3.5.2/login</param-value>
  </init-param>
  <init-param>
  <param-name>serverName</param-name>
   <param-value>https://yourcollabserver:8443</param-value>
  </init-param>
  <init-param>
  <param-name>gateway</param-name>
  <param-value>false</param-value>
  </init-param>

 </filter>
```

```
<filter-mapping>
 <filter-name>CAS Authentication Filter</filter-name>
 <url-pattern>/ui/*</url-pattern>
 <url-pattern>/go/*</url-pattern>
 </filter-mapping>

  <filter>
 <filter-name>CAS Validation Filter</filter-name>
 <filter-class>org.jasig.cas.client.validation.
Cas20ProxyReceivingTicketValidationFilter</filter-class>
  <init-param>
  <param-name>casServerUrlPrefix</param-name>
   <param-value>https://yourcollabserver:8443/cas-server-webapp-
3.5.2/</param-value>
  </init-param>
  <init-param>
  <param-name>serverName</param-name>
   <param-value>https://yourcollabserver:8443</param-value>
  </init-param>

 </filter>
<filter-mapping>
 <filter-name>CAS Validation Filter</filter-name>
 <url-pattern>/*</url-pattern>
</filter-mapping>

  <filter>
   <filter-name>CAS HttpServletRequest Wrapper Filter</filter-name>
   <filter-class>org.jasig.cas.client.util.
HttpServletRequestWrapperFilter</filter-class>
  </filter>
  <filter-mapping>
```

```
<filter-name>CAS HttpServletRequest Wrapper Filter</filter-name>
<url-pattern>/*</url-pattern>
</filter-mapping>
```

Remember to change "yourcollabserver" with the actual URL of your Collaborator server

4. Configure Collaborator Server VM Options

In this step we need to change server's VM options to enable SSL connections between the Collaborator and CAS servers and to specify the logout redirect URL.

Open `<collab server install dir>/ccollab-server.vmoptions` file and add the following lines to it:

```
-Djavax.net.ssl.keyStore=<collab server install dir>/tomcat/conf/collab.ks
-Djavax.net.ssl.keyStorePassword=<the keystore password>
-Djavax.net.ssl.trustStore=<collab server install dir>/tomcat/conf/cacerts
-Djavax.net.ssl.trustStorePassword=<the truststore password>
-Dsmartbear.ccollab.sso.logout.redirect.url=https://yourcollabserver
:8443/cas-server-webapp-3.5.2/logout
```

The latter VM option specifies the URL to which users will be redirected when they press "Logout" link in the Collaborator's web-interface.

Alternatively, you can remove the "Logout" link in Collaborator's Web Client by setting the VM option as:

```
-Dsmartbear.ccollab.sso.logout.redirect.url=hide
```

In that case, users would manually perform logging out from the SSO server.

Restart the Collaborator server to apply changes in VM options.

5. Configure CAS Properties for Logout Requests

In this step we will configure how CAS server should handle logout requests.

1) Open Collaborator Web Client 227.

2) Open the `<collab server install dir>\tomcat\webapps\cas-server-webapp-3.5.2\WEB-INF\` folder and wait until a file with name `cas.properties` is created in this folder. (The `cas.properties` file is deployed from the cas-server-webapp-3.5.2.war web application archive, so it can take some time til it is created.)

3) Open `<collab server install dir>\tomcat\webapps\cas-server-webapp-3.5.2\WEB-INF\cas.properties` file and set the value of `cas.logout.followServiceRedirects` property to true:

```
# Specify whether CAS should redirect to the specified service
parameter on /logout requests
cas.logout.followServiceRedirects=true
```

6. Restart the Collaborator server

In order to apply all the changes we need to restart the Collaborator server.

Known Issues With CAS Server

- Currently, CAS server settings only allow to have coinciding login/password values. That is, the password must have the same value as the login.
- Because of cookie handling issues, CAS server's Single Logout functionality may not work correctly with Collaborator web clients. Namely, logging out from Collaborator web client will not terminate a session on a CAS server. As a result, the subsequent attempts to open any of Collaborator web client's /ui pages will not be redirected to CAS server login page but will open the Collaborator's native login page instead. This issue does not affect /go pages of web client, however major part of Collaborator web client pages are /ui pages and are affected. To workaround the problem:

  1) Open `<collab server install dir>\tomcat\webapps\cas-server-webapp-3.5.2\WEB-INF\spring-configuration\ticketGrantingTicketCookieGenerator.xml` file and set the value of `p:cookieSecure` property to false:

```
<bean id="ticketGrantingTicketCookieGenerator" class="org.jasig.cas.
web.support.CookieRetrievingCookieGenerator"
p:cookieSecure="false"
p:cookieMaxAge="-1"
p:cookieName="CASTGC"
p:cookiePath="/cas" />
```

  2) Logout from Collaborator Web Client and logout from CAS server.

  3) Clear browser cookies.

  Alternatively, you can disable the "Logout" link in Collaborator Web Client and perform logout from the CAS server. See above 122 for instructions.

3.2.9 JMX Monitoring

You can monitor many aspects of the Collaborator server via JMX, Java's standard, built-in network monitoring system.

Setting up a basic JMX system

To enable JMX you must add Java properties to the server startup script. To do that, edit the file `ccollab-server.vmoptions` which is found inside the server installation directory.

Inside this file, add the following lines:

```
-Dcom.sun.management.jmxremote=true

-Dcom.sun.management.jmxremote.port=54321

-Dcom.sun.management.jmxremote.authenticate=false

-Dcom.sun.management.jmxremote.ssl=false
```

The first line enables JMX. The second line sets the TCP/IP port number for the JMX protocol, and of course you can use a value other than the example `54321`. The last two lines disable JMX authentication and security.

Note: You must restart the Collaborator server before these settings take effect.

You can now use any JMX console software to access the Collaborator JMX variables. Sun's Java installation ships with a simple JMX console which can be found in `[Java-Install-Dir]/bin/jconsole.exe`. If you use Sun's console, select the "Remote" tab in the connection dialog and specify the host name, the port given in the configuration above. Leave "User Name" and "Password" blank.

Supported JMX data

There are various things you can monitor with JMX, and this manual cannot cover them all.

The data specific to Collaborator can be found under "MBeans," then under the root tree node "`com.smartbear.ccollab`". Under there you will find one child tree node for each installation of Collaborator, named by the web page it is installed under. The default is just a simple forward slash. Under that node is various data.

Of particular note is "`ApplicationStateCache`" and "`ServletState`". This contains basic information about logins, licensing, versioning, and product usage.

More complex JMX server configurations

A full description of how to configure JMX is outside the scope of this manual. It is completely standardized and documented on Sun's web site. A good resource to get you started is this:

http://java.sun.com/j2se/1.5.0/docs/guide/management/agent.html

3.2.10 Technical Specifications

This section describes the technical aspects of the Collaborator server. This information is not generally needed for server administration.

Server Technology

The web server is Apache Tomcat v8.0.28. Collaborator itself is a collection of standard J2EE servlets, packaged in the standard WAR format that can be used inside any J2EE servlet container. Tomcat is the only servlet container specifically supported by SmartBear.

Tomcat is a sophisticated, scalable stand-alone web server with support for HTTPS 111, LDAP authentication 102, advanced HTTP protocol options, database pools, load-balancing, and more.

For more information about how Collaborator is configured under Tomcat, see Tomcat Configuration Reference.

Starting and Stopping the Server

Windows

The server is a Windows Service. This means you can start, stop and restart the server just like any other service. The typical way is through the "Services" Control Panel. You can also use "`net start ccollab-server`" and "`net stop ccollab-server`" from the command-line.

Unix

The server is a shell script in the installation directory called `ccollab-server`. You can use the usual "`start`" and "`stop`" directives, which also means the script can be used directly in an `init.d` system.

If you encounter the error "Error 1: Incorrect function" when starting the server as a service on Windows, or the server fails to start with no error, possible remedies are:

- free up memory for the service by removing `-Xmx` or `-Xms` in the `ccollab-server.vmoptions` file.

- confirm a valid Java version/environment by running '`java -version`' in you Java bin directory.

Recommended Hardware

For trials, you can use any hardware available. We have lots of customers who have done pilots on "servers" such as laptops and regular workstations. For small groups (30 users or less) doing small reviews, the server is not demanding on CPU, memory, disk access, or database access; if you run the server on a workstation, you will never know it is there.

For permanent installations, and to support hundreds or thousands of users, please review our hardware recommendations in the System Requirements 52 section.

We run our own scalability tests using similar hardware. Our standard "smoke test" is 500 caffeinated users, most hitting Review Summary 250 and Side-by-Side 271 pages, a few in administrative 147 and reporting 317 pages. This represents far more activity than 500 real users.

Performance Tuning

General tips for making the server run as fast as possible:

- Use the latest version of the server and client.
  We are constantly improving speed bottlenecks as they are reported. Upgrade to the latest version, or scan the version history 695 to see if any speed improvements were made.

- Increase the "chat refresh interval 149" setting. This will make the chat pane update more slowly but can reduce stress on the server by many times. The default value is 5 seconds, but 15, 30, or even 60 seconds can work and reduce server load.

- Make sure nothing else is running on the Collaborator Server.
  Often another server or process running on the same machine as our server will take up CPU cycles or slam the hard drive. For small installations it is quite common (and appropriate) for Collaborator to share a server, but for larger installations or when you are trying to squeeze out more performance you should dedicate a server.

- Increase the number of allowed database connections (instructions here 143).
  Even if you are not getting errors on the web page about running out of connections, the web server threads might still be waiting for database connections to become available. (Error messages do not appear until those waits start timing out.)

- Increase the speed of the connection between the database server and the Collaborator Server.
  Collaborator makes many small database queries, so decreasing network latency should improve performance. We recommend that Collaborator and the database server be connected via gigabit ethernet.

- Increase the number of server threads (instructions here 143).
  Just as with database connections, more server threads means less waiting for browser connections on a busy server.

- Increase the max number of simultaneous connections in your browser.
  Both Internet Explorer and Firefox default to just two simultaneous connections to a server. You can increase this to 4 or more. This will not help if you have a very slow connection (for example, a modem), because slow connections are probably already maxed out.

- Make sure caching is enabled in your browser.
  Sometimes a browser's static cache is disabled; make sure it is enabled (at least for connections to our server). We have lots of styles, Javascript, and images that normally are cached.

- Tune the memory settings for Collaborator Server (instructions here 875).
  More memory will often improve performance, but large documents in particular require a great deal of it, and often also require to change your Garbage Collector settings. If your users perform document reviews frequently, visit this section.

Monitoring

You can monitor our application like any other. Like many enterprise-ready Java applications, you can monitor using JMX 124.

3.2.11 High Availability Best Practices

The Collaborator server is generally very stable and resilient. In most environments it is appropriate to simply try configuration changes or upgrades in-place (backup 89 first, of course).

However if the server is in constant use by a large number of users, or if Collaborator is vital for your business processes, it may be a good idea to be more cautious. To ensure that a change will not cause a problem on your production Collaborator server, it is best to try it first on a test server.

Creating a Test Server

A test server should mirror your production server as closely as possible so that the results of the change are reproducible. Follow these steps to create a test server:

1) Provision a machine - this should be physically different hardware than the machine that is running your production Collaborator server, and ideally it should have the same specifications. It does not have to be a perfect match, but the closer you get it to the production server the more confident you will be when testing the change.

a) Hardware - this is not that important to get exactly identical unless you are concerned about performance issues.

b) Operating System - this is important. Make sure you install the same operating system version, especially if you are using Windows.

c) Java Virtual Machine - this is vitally important. Make sure that you install exactly the same version of Java.

d) Network Configuration - this is usually not that important unless your change involves communicating with an external system like LDAP 102, a database service running on a different machine, or configuring https 111.

e) Database - this is very important, especially when testing upgrades to new versions of Collaborator.

> **Warning:** The test server *must* have its own database. Do not run the test server with your production database!

2) Install the Collaborator server

a) Download the installer for *exactly* the same version as your production server.

b) Run the installer. You can click "next" through all the screens and accept the default settings, because those will be overwritten anyway in step 4 128.

c) When you click "Finish" in the installer it will open a browser to a page that says "Initialize database". DO NOT press the button, instead close the browser.

d) Shut down the Collaborator server.

3) Copy your content-cache - this directory stores the content of the files being reviewed and can become very large. The directory is configured in the `installation-directory/tomcat/conf/Catalina/localhost/ROOT.xml` file and defaults to `installation-directory/tomcat/collaborator-content-cache.` Copy the entire directory to the test server in the same location.

a) You can skip this step and your content-cache will simply be empty. Everything will work except when you look at the content of files in old reviews you will see a message "*This content has been archived by the Administrator*".

b) Another option is to use a network share to your production server's content-cache, mounted to the test server's file system. While not ideal this is fairly safe because Collaborator only ever writes to the content-cache, never deletes.

4) Copy your configuration

a) Copy the following files from your production server to your test server:

```
installation-directory/ccollab-server.vmoptions
```

```
installation-directory/tomcat/conf/collab.ks (may not exist)
installation-directory/tomcat/conf/Catalina/localhost/ROOT.xml
```

b) Edit the "*installation-directory*/tomcat/conf/Catalina/localhost/ROOT.xml" file using a text editor and change the database information (url, username, password) to point to the test database.

5) Copy your database data - migrate a copy of the data from your production database to your test database as described in Backup/Migration 89.

6) Start up Collaborator.

a) Immediately disable email notifications 184 so that your users do not get double notifications from your production server and your test server.

b) Click around and make sure everything works. Note that licensing is not an issue - since you have migrated your database your license will work on the test server.

Testing a Change

Once you have set up your test server you can use it to test any change you are considering to Collaborator, especially upgrades to new versions or global configuration changes.

One good way to test the server is the built-in diagnostic tool. Run the diagnostics 136 before and after executing the change and look for any difference in the results.

3.2.12 Variable Substitution

In a few areas of server configuration (Notification templates 209, Collaborator triggers 208, Perforce triggers 559) you are allowed to use variable substitution to insert useful live data into a text-based template.

This section details those variables and how they work.

Syntax

Variable substitution is indicated with a dollar sign followed by curly braces surrounding the variable name. For example, to access the `review.creator.name` variable you would use this:

```
${review.creator.name}
```

When embedding in other text, variables are inserted into the text wherever they should be replaced. An example that is commonly used in the changelist-update Perforce trigger 559 is:

```
ID ${review.id}: "${review.title}" by ${review.participants.rolename}
```

Context

Not all of the substitution variables are applicable in all contexts. In general, notification templates [209] use `${review.*}, ${role.*}, ${actor.*}` for the sender and `${user.*}` for the recipient. The Review Created trigger [208] uses `${review.*}` and `${user.*}` is the review creator. The Review Phase Changed trigger [208] uses `${review.*}` and `${user.*}` (not `${actor.*}`). The Added File trigger [208] uses `${review.*}`, `${changelist.*}` and `${files.paths}`. The Notifications Sent trigger [208] uses `${review.*}` and `${user.*}`. The Defect Activity trigger [208] uses `${actor.*}` and `${defect.*}`. The User Created trigger [209] uses `${user.*}`. And the Role Changed trigger [209] uses `${review.*}, ${user.*}` and `${role.*}`, where `${role.*}` stands for the new current role.

Also, pay your attention that not all of the variables are available at the moment the trigger fires. In this case they will return "Not available" instead of their value.

Reference

The following table lists all the variable substitutions.

Variable	Description
`${review.id}`	The numeric ID of a review. Example: 4235
`${review.title}`	The title field of a review. This variable is not available for the Review Created trigger.
`${review.workflow}`	The name of the workflow this review is currently in. If you change the name in workflow configuration [205] this text changes too, so be careful of scripts which depend on this value.
`${review.phase}`	The name of the phase this review is currently in, for example, "Inspection" or "Completed" or "Canceled".
`${review.phase.previous}`	The name of the previous phase of the review. Valid only in the context of a phase change.
`${review.custom.*}`	The value of one of the review custom fields [190]. The final variable component should be the full title of the custom field, including whitespace and so forth. If this review does not have this field because the user has not entered it yet, if there is a default value it will be returned. If this review does not have this field because the workflow does not include the field, you will get an error message. If you supply the name of a custom field that does not exist, you will get an error message to that effect including the list of valid custom field names. You can use this fact to create an error on purpose to get the list of valid custom fields.

`${review.creator.*}`	User information corresponding to the creator of the review. The asterisk should be replaced by a user-specific variable (described elsewhere). So for example, the user's full name would be `${review.creator.name}`.
`${review.author.*}`	User information corresponding to the primary author assigned in the review. The asterisk should be replaced by a user-specific variable (described elsewhere). So for example, the user's full name would be `${review.author.name}`.
`${review.participants.rolename}` `${review.participants.rolelogin}`	List of role/user pairs of the people assigned to the review. In the `rolename` case the user's full names are used; in `rolelogin` the user's system login names are used. Roles are named by the display name as configured 198; be careful when writing scripts that depend on this text, and remember that different workflows can define different text for the role name.
`${review.changesummary}`	A multi-line summary of the changes in the review, lines (+add, *mod, -del) for each file.
`${review.shortchangesummary}`	A short summary of the changes in the review, total lines (+add, *mod, -del) for all the files in the review.
`${review.defectlog}`	The log of all defects in a review.
`${review.group.title}`	Title of the group associated with the review.
`${review.group.guid}`	GUID of the group associated with the review.
`${user.id}`	The unique ID of the user in our own database.
`${user.login}`	The system login for the user. If LDAP authentication 102 is being used, this is the user's LDAP login. The login is unique for every user in the system.
`${user.name}`	The user's full name, as they configured it themselves. This is not guaranteed to be unique in the system.
`${user.email}`	The user's email address, or blank if it is not configured.
`${user.phone}`	The user's phone number field, exactly as they configured it themselves.
`${files.paths}`	A set of file paths, in no particular order, separated by the pipe symbol. This is typically a set of paths in the SCM server style, not local file paths. This variable is not available for the Review Created trigger.

${changelist.paths}	Same as ${files.paths}. This variable is not available for the Review Created trigger.
${changelist.scmid}	The ID of this changelist according to the SCM system. For example, Perforce changelist ID or Subversion revision number. This variable is not available for the Review Phase Changed trigger.
${changelist.author}	The author of the changelist according to the SCM system. Note that although this username *might* correspond to a user in Collaborator, this is not required. Further note that because this is a simple text field and not a user object, you cannot continue with other sub-fields like email or phone number.
${defect.id}	The unique ID of this defect in our own database.
${defect.creator.*}	User information corresponding to the creator of the defect. The asterisk should be replaced by a user-specific variable (described elsewhere). So for example, the user's full name would be ${defect.creator.name}.
${defect.file}	The full path to the file this defect is attached to, or a blank string if the defect was review-wide.
${defect.line}	The line number in the file where this defect is attached, or 0 if this defect is attached to the overall file, the overall review, or something else that's not relevant to a specific line. Note that this line number refers to the file at the time of review; in the future the file can change and line numbers can change with it.
${defect.text}	The text entered in the comment field for this defect. This can be long and multi-lined.
${defect.isexternal}	Boolean text "true" if the defect is currently marked external, "false" if the defect is currently open.
${defect.externalname}	The external name specified when the defect was marked external.
${defect.isfixed}	Boolean text "true" if the defect is currently marked fixed, "false" if the defect is currently open.
${defect.custom.*}	The value of one of the defect custom fields 190. The final variable component should be the full title of the custom field, including whitespace and so forth.

	If this defect does not have this field because the workflow does not include the field, you will get an error message. If you supply the name of a custom field that does not exist, you will get an error message to that effect including the list of valid custom field names. You can use this fact to create an error on purpose to get the list of valid custom fields.
`${role.title}`	The title of the role assigned to the user in the review
`${role.description}`	The description of the role assigned to the user in the review
`${actor.*}`	The user responsible for triggering this action. The asterisk should be replaced by a user-specific variable (described elsewhere).

3.2.13 Archiving Reviews

Collaborator can pack reviews to an external Zip archive. Only the reviews in the Completed, Cancelled or Rejected phases15 can be archived.

You can use this feature to keep historical records of the reviews (for instance, because of regulatory requirements), or to export review information to a non-proprietary format.

Note: *This feature is only supported in Collaborator Enterprise. For a complete list of differences between Collaborator editions, please see the comparison page*3.

Creating Archives

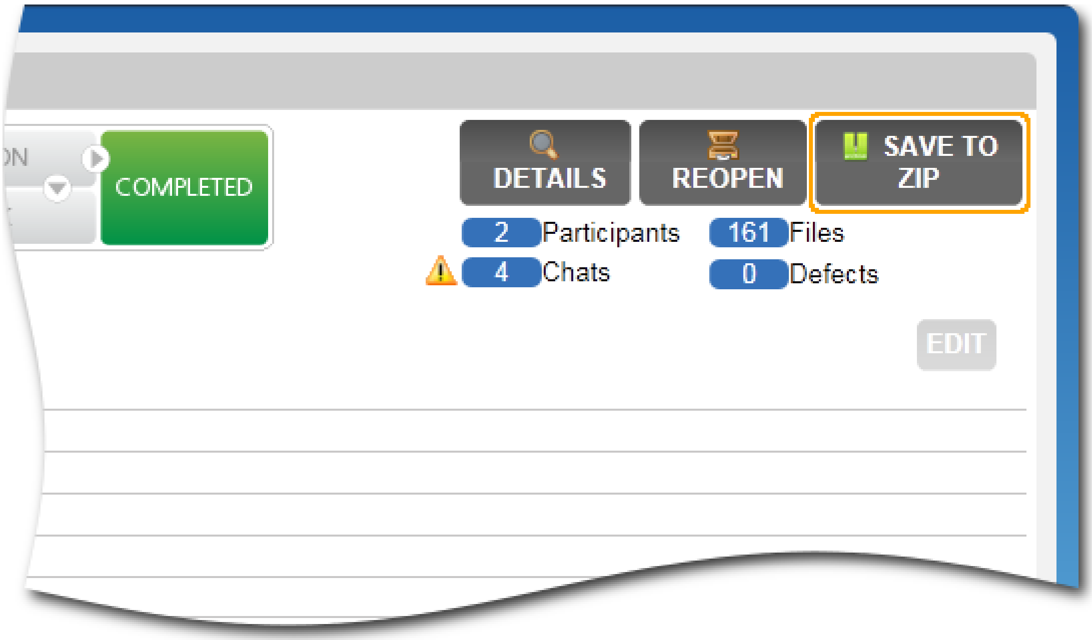
There are two ways to archive reviews: from the Web Client and from the command-line.

To archive a review from the command-line call the `ccollab admin archive` command. See command description for its syntax and examples.

To archive a review from within the Web UI:

1. Open the desired review in the Review Summary screen250. To find the reviews, you may use Collaborator's search308 and reporting317 systems.

2. Scroll to the General Information section and press the "Save To ZIP" button.



This will invoke a standard Save As dialog where you can specify the location for the archive.

Creating Archives Automatically

You may use Collaborator server triggers to archive reviews automatically. The general idea is to install the Command-Line Client on a server machine and call the `ccollab admin archive` command via the server's phase change trigger [208]. Below are the detailed steps of how to achieve this:

1. Install the Collaborator client [329] on the same machine where Collaborator server is installed.

2. Specify the connection parameters [336] for the client.

3. Create a directory to store the archived reviews. In this example that will be `c:\archived-reviews` on Windows platforms and `/archived-reviews` on Unix platforms.

4. Login to the Collaborator web interface as an administrator.

5. Go to the Admin->Triggers [208] page

6. Find the "Review Phase Changed" trigger, and configure it as follows:

Windows platforms	Unix platforms
Executable: `c:\program files\collaborator client\ccollab.exe`	**Executable:** `/usr/local/ccollab_client/ccollab`

Parameters: `admin archive ${review.id} --zip-path c:\archived-reviews`	**Parameters:** `admin archive ${review.id} --zip-path /archived-reviews`

You nay need to change paths to the Collaborator command line client and to the archives folder as necessary.

Note: In the example above the trigger does not check if the phase has transitioned to completed, cancelled or rejected. Since the `ccollab admin archive` command ignores in-progress reviews you can simply call it on every phase changed event. If your team is using the tool heavily, then you should create a shell script or batch file, and check the review phase before calling the ccollab admin archive command. This will result in improved performance, but is not really necessary for small or medium sized installations.

The Archive Contents

For each review a separate archive is created. Generated files have the names in the format "review-*ID*-archive.zip", where *ID* stands for the identifier of the review.

Each archive contains the following information about the review:

- The `ReviewDetails.pdf` file contains a PDF version of the Review Detail Report 317.
- The `material_conversations` subfolder contains all comments, defects and conversations that were made during the review. For each of the commented files a separate PDF version is created that holds the contents of the file and the comments and defects related to this file.
- Review materials.
  - If the archive was created from Web UI, it contains all revisions of the materials that were uploaded to the review. If a file was uploaded multiple times (as it typically happens during rework), the archive will contain a copy of each file revision.
  - If the archive was created with the `ccollab admin archive` command, the amount of review materials is specified by the `--zip-option` parameter.

The naming structure of subfolders that store review materials, depends on how the materials were uploaded. For changes uploaded via version control system, the folder name will contain the name of SCM, the name of the repository and (if available) the ID of the changeset ("git-git.example.com_foo_repo.git-85d2f5ccb7f27e1628c09e4d1373f"). For uploads of arbitrary files, the folder names will contain the "upload-file-" portion followed by the date and time ("upload-file-2015-08-18-02-58-59").

Remarks:

- The "Allow Archive to zip [153]" setting controls who can use this feature. The possible values are: administrators [168], group administrators [174], or all users (considering the access permissions [153] of the chosen review).
- Only the reviews in the Completed, Cancelled or Rejected phases [15] can be archived.
- To keep the order in which the comments were made, the coordinate comments (pushpins) [296] now have an integer number.

  During the upgrade to Collaborator 9.3 all **in-progress** reviews have been updated and their pushpins (if any) were numbered. Converting only in-progress reviews during the upgrade, ensures that upgrading the server to 9.3 does not take too long. To append ordinal numbers to pushpins in all completed reviews, administrators can use the respective command in the Diagnostic Utility [136]. (This however may take some time to accomplish.)
- The built-in PDF viewer of Windows 8, 8.1 and 10 do not support overlay layers in PDF files. Collaborator uses such layers to render coordinate comments (pushpins) [296] in PDF versions of review materials for archived reviews. Because of this, pushpins will not be displayed if the PDF file from the archive is opened in the built-in PDF viewer of Windows 8, 8.1 and 10. As a workaround, please install the Adobe Acrobat Reader or any other full-featured PDF viewer.

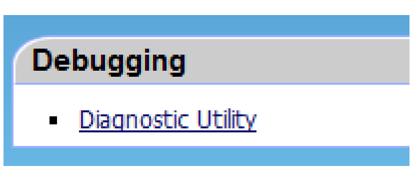
3.2.14 Diagnostics

The Collaborator server offers several diagnostics you can run to check the health of your installation. A failure result from one of the diagnostics does not necessarily represent an actual error, but may assist you and/or SmartBear technical support in debugging a problem with your server.

Accessing Diagnostics

To get to the diagnostics go to the Collaborator web server and click the System link at the bottom of the screen:

Scroll down to the "Debugging" section and click on "Diagnostic Utility".



Running Diagnostics

To run a diagnostic click on one of the links, or click on the ***RUN ALL DIAGNOSTICS*** link to run all diagnostics. Some of the diagnostics take a long time to complete, and may impact the performance of your server while the diagnostic is running. See notes for each diagnostic below.

Verify Database Schema

This diagnostic checks the schema of your database to make sure that it is what Collaborator expects. This diagnostic runs very quickly and will not impact performance on your server.

Fix Database Data

This diagnostic looks for invalid data in the database and fixes the data to be inside allowable ranges. If you have a large database this diagnostic may take some time to complete and could impact performance on your server while it is running. Generally it is only necessary to run this diagnostic if you have been told to do so by Smart Bear technical support.

Delete Old Notification Data

This diagnostic deletes notification data older than 90 days.

Fix Duplicate Users Differing By Case

This diagnostic looks for users whose logins differ only by case and merges them to a single user account. This is used to repair problems caused by a bug in older versions of the Collaborator server that allowed users to be created whose logins differed only by case. This diagnostic usually runs quickly and will not impact performance on your server.

Add Numbers to Pushpins in Completed Reviews

Starting with Collaborator 9.3, we assign numbers to coordinate comments and defects (pushpins) 296. During the upgrade to Collaborator 9.3 all in-progress reviews have been updated and their pushpins (if any) were numbered. Converting only some of the reviews at time of upgrade was made for the performance optimization. This tool allows to add numbers to the pushpins of all completed reviews as well. Using this tool may take some time depending on the number of completed reviews with documents you have and the number of pushpins to alter.

Database Integrity

This diagnostic checks that database data is self-consistent and sensible. Some failures in this diagnostic are common and do not necessarily represent real errors. This diagnostic may take a long time to run (scales linearly with size of your database) and will impact performance on your server while it is running so it is best to *run it only when the server is not in use*.

Content Cache Integrity Check

This diagnostic checks that the on-disk file content cache is present, readable, and that all content therein is properly indexed. This diagnostic takes a long time to run (scales linearly with number and size of files in your content cache).

Content Cache Cleanup

This diagnostic deletes files from the on-disk file content cache that is not properly indexed, meaning the MD5 of the file content does not match the name of the file. This diagnostic takes approximately the same time to run as the Content Cache Integrity Check. You should back up your Content Cache before running this diagnostic.

Clean up Reviews with invalid detached Changelists

This diagnostic fixes orphaned comments and defects. It re-attaches Changelists to reviews that were detached and resulted in orphaned comments or defects.

Fix Duplicate Metadata Values

This diagnostic searches for and fixes metadata values which should be unique, but contain duplicate or multiple values.

Fix All Users group missing some members

This diagnostic looks for users who are not members of the group 'All Users' and adds them to the group

Fix Subscriptions

This diagnostic searches for and removes subscriptions that have no author or file pattern

3.2.15 Logging

Collaborator servers log messages to several log files which are user configurable (with two exceptions). The configurable log files are all, by default, located in `<installation-directory>/tomcat/logs`. They are `collab.log` (and numbered generations of same when logs roll) for application level logging; tomcat.log for the application server logs; and `license.log` which logs license usage events, such as user login and logout (if enabled). The logs that do not allow user configuration are located in the installation directory and are named output.log and error.log which capture the standard out and standard error streams from the application. Normally, Collaborator does not write to standard out or error, but some of the libraries that it uses do. Occasionally, these logs will be helpful for debugging issues in one of those libraries.

Configuring Logging Using Configuration Files

Collaborator uses a sophisticated logging system, log4j, to manage the logging. Because of the breadth of configuration options available in log4j, it is not possible to document everything here (the log4j documentation is available at http://logging.apache.org/log4j/1.2/manual.html). However, in this section, we will cover some common scenarios.

The configuration file for `collab.log` and `license.log` can be found at `<installation-directory>/tomcat/webapps/ROOT/WEB-INF/classes/log4j.properties`. The file is a plain text Java properties file and can be edited with any text editor. Changes will take effect when the server is restarted.

> **Note:** Edits to the log4j.properties file will not be saved between updates to Collaborator. Upon editing this file, it is a good idea to save a backup of the file in a location outside the Collaborator installation tree.

Basic Debug Logging

The most common configuration change that system administrators will make is to turn on debug logging. This can be useful when working with SmartBear technical support to resolve issues (though this is not always required). To enable debug logging, find the first non-comment line in the file:

```
log4j.rootLogger=info, CodeCollaborator
```

This line configures the base level logging to "info" level and attaches an appender named "CodeCollaborator" that will be configured later in the file. To enable debug logging, simply replace "info" with "debug" and restart the server. Do not change the name of the appender as this will result in the log configuration not being available via JMX 140. Running a production system at debug logging level can cause performance issues, so it is not recommended unless specifically directed by SmartBear technical support.

Log Rolling

By default the `collab.log` file is rolled when it reaches 10Mb and saves 10 generations of files, for a total of 110Mb of disk space potentially consumed. Both of these values can be configured in the log configuration file. The following lines specify these values:

```
log4j.appender.CodeCollaborator.MaxFileSize=10MB

log4j.appender.CodeCollaborator.MaxBackupIndex=10
```

System administrators may change these values as necessary to capture additional logging information or conserve disk space as necessary.

Enabling License Logging

Collaborator can log license events (users logging in and out) to help you understand your license consumption. By default this is disabled as it is normally not necessary. The system status 225 page includes graphs which are helpful for understanding the total license consumption. However, drilling down to find what users are using the system when requires turning on license logging. To do this, change the license logging level from "warn" to "info":

```
log4j.logger.com.smartbear.ccollab.license=warn,

CodeCollaboratorLicense
```

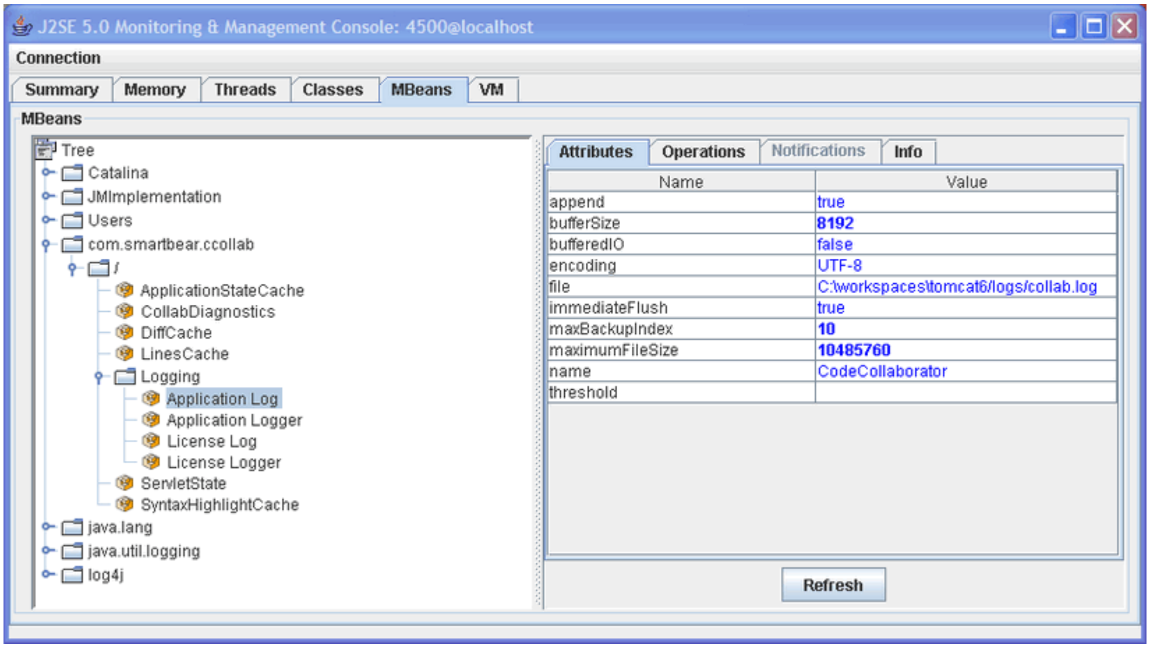
The license log appender is also configured to roll like the `collab.log` and this configuration can be changed in a similar manner. However, it is important that you not change the appender name from "CodeCollaboratorLicense" as this will result in the log configuration not being available via JMX 140.

Controlling Logging with JMX

If the Collaborator server has JMX management enabled 124, the logging level can be changed at runtime. All of the log configuration MBeans are available at com.smartbear.ccollab:/:Logging. Changing the "priority" on "Application Logger" or "License Logger" will change the base level of logging for the application and the license log respectively.

The appenders are found under the names "Application Log" and "License Log". The max size, number of backups, and even the file names, can be changed in JMX. The changes will not take effect until the "activateOptions" operation is invoked. In jconsole operations are found in a separate tab.

Note: Changes to logging made via JMX are not persisted across server restarts.



Editing the Application Log Configuration in jconsole

3.2.16 Troubleshooting

When something goes wrong, refer to this section.

Known Issues

Check the Known Issues Appendix 689 to see whether SmartBear already knows about this issue.

Version History

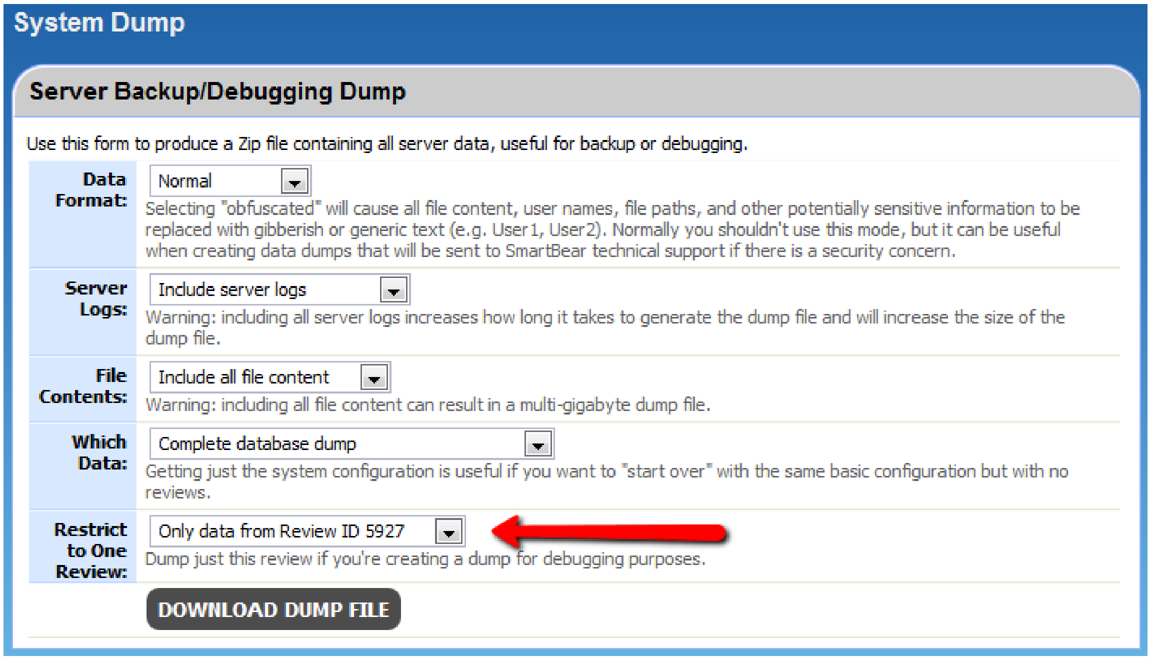
Check the Version History on the SmartBear website to see if this issue has been resolved in a later release.

Getting server information

To get debugging information about the server, go to the Collaborator web server and click the System link at the bottom of the screen:

Downloading server dumps for SmartBear technical support

Sometimes it will be useful for SmartBear technical support to get a "dump" of your server configuration and database data. You do this by filling out the form at the top of the System page.



Data Format

You can dump the entire database in a normal format, or set the "Data Format" field to "Obfuscated," which will dump the data after passing through a filter that converts potentially sensitive information into unhackable text. For example, users are renamed "user1," "user2," and changelist text is replaced by the MD5 of that text. If file contents are included in the dump, each line of file content is replaced with the MD5 of that line to enable us to reproduce exactly the right line numbers and diffs you are seeing. This can be used to send us data when you are worried there might be sensitive information.

If you are worried about whether we are really cleaning all the data, you can check out the dump file yourself. It is just a ZIP file containing XML with information, so it is easy to inspect. In fact, if you still see some data you would like to change or delete, you can just do that in the XML, re-zip the file, and send it to us.

Server Logs

You can choose to include all server logs or none at all.

File Contents

You can choose to include all file content or none at all.

Which Data

Here you can choose whether you would like to perform a complete database dump or just include the system configuration.

Review Dumps

If just one review is broken, you can send us a dump of just the one review. To do that, **first go to the review in question**, then click the `System` link as before. Now you will see an additional field in the form for downloading review data (which includes all the file content as well).

Diagnostics

Collaborator has some built-in diagnostics 136 that may be helpful in diagnosing a problem. You may be prompted to run one of these diagnostics by SmartBear technical support.

The server is running slowly

Check out our performance tuning 126 suggestions and use recommended hardware 126.

Large files consistently fail to upload or render

In order to review large artifacts, we recommend increasing the memory available to Collaborator server (instructions here 875).

Email is not working

If email is not working, here are some things to try:

- Make sure the SMTP Host and SMTP Port settings 184 are correct.
- Try sending a test email 184. Look in the server logs 145 for error messages.
- If you just performed a database migration/restore 91, email is automatically disabled. You need to enable it in the settings 184.

Getting "Idle Timeout Waiting for Object" Error

This error is shown when the database connection pool runs out of connections to the database.

The fix is to increase the number of connections allowed in the pool. The server is capable of running with many more connections than the default; we keep the default fairly low so that in smaller installations we are not taking up too many database resources.

Fix this by going into the Tomcat servlet context XML file located here:

```
installation-directory/tomcat/conf/Catalina/localhost/ROOT.xml
```

Edit the property called `maxActive` and increase the number of connections. Even doubling this number is normal. A rule of thumb is to have 3 times the database connections (and server threads) as the number of simultaneous users you have under the biggest load.

The Collaborator server must restart for this change to take effect. You do not need to do anything to your database server.

Warning: Modifying the ROOT`.xml` file will cause Tomcat to dynamically reload the Collaborator application, terminating any active sessions. Changes to ROOT`.xml` should be done in the context of stopping and restarting the Collaborator service (that is, in a production environment coordinating the restart with user activity), regardless of whether the service itself is actually stopped and restarted, or just reloaded by Tomcat.

Frequently this problem also implies that you should have more web server threads in addition to more database connections. To increase that, edit the `maxThreads` property from this XML file:

```
installation-directory/tomcat/conf/server.xml
```

Stop and restart the server to load new settings from the `server.xml` file.

"NoHttpResponseException: The server ... failed to respond" Error

This error can occur if a client connection times out after the default 20 seconds. A heavily loaded Collaborator server or limited resources can be the root of this problem, and investigating the server performance and network connectivity may be warranted. Regardless, the connection timeout can be increased by editing the millisecond value of the `connectionTimeout` variable in the `server.xml` file described above. For example, for a timeout of 60 seconds, use:

```
connectionTimeout="60000"
```

"IllegalStateException: ... Session already invalidated" Error

This error indicates a client XML-RPC session timeout. This can occur uploading large files, for example, a 300 DPI color PDF document. Refer to the `smartbear.rpc.session.timeout` property in Java VM Options875. Setting this value on the Collaborator server to 600 seconds (10 minutes) will allow for uploading much larger files.

The Server Log

Collaborator is configured by default to perform a very limited amount of logging. The primary purpose of the logs is to record information about error conditions that could potentially arise. When working with SmartBear Technical Support to diagnose issues often it will be helpful to send the logs (or a portion thereof) for investigation.

The logs are located in the following directory:

```
installation-directory/tomcat/logs
```

Enable server-side debug logging

To enable verbose server-side logging, edit this file:

```
<installation-dir>/tomcat/webapps/ROOT/WEB-INF/classes/log4j.
properties
```

At the bottom you will find a line called:

```
log4j.logger.com.smartbear=info
```

Change the "info" to "debug". You will have to restart the server for changes to take effect. Remember to revert these changes after reproducing the problem and copying off the log file because this creates a large number of logging messages and degrades server performance.

Change the settings so the server can be accessed remotely

To change the Windows Firewall settings:

Start > All Programs > Accessories > System Tools > Security Center

Click the "Manage security settings for: Windows Firewall" link. On the General tab, make sure the "do not allow exceptions" box is not checked. On the Exceptions tab, click "Add Port" For "Name", use "Collaborator", for "Port number", 8080. Leave TCP selected. If you want, you can click the "Change scope" button to get more options about who can and cannot connect to the port. Click "OK" in each dialog to save the settings and try connecting again.

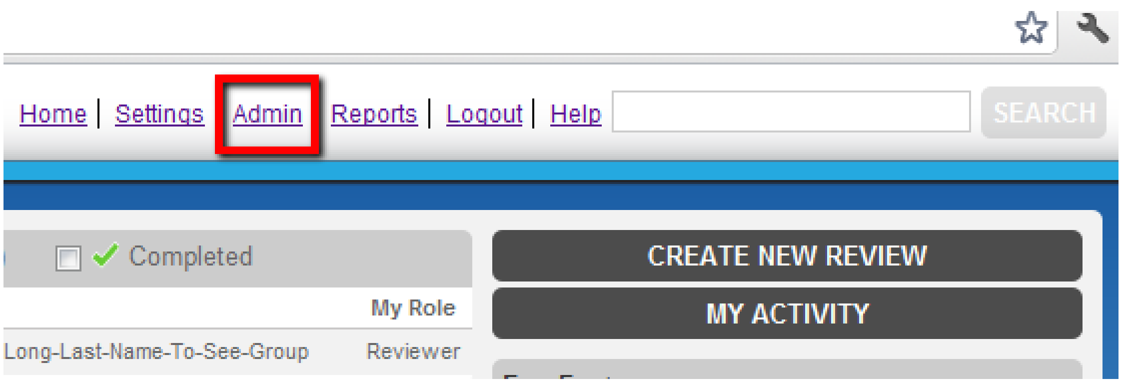
Contacting Technical Support

For technical support and general inquires, contact us 29.

3.3 Collaborator Settings

As a system administrator, you can configure Collaborator's settings to however you would like. This may be useful in better managing users and how they perform reviews.

These settings can be found and changed by simply clicking on "Admin" at the top menu bar. This button is only available to users that are Collaborator administrators.

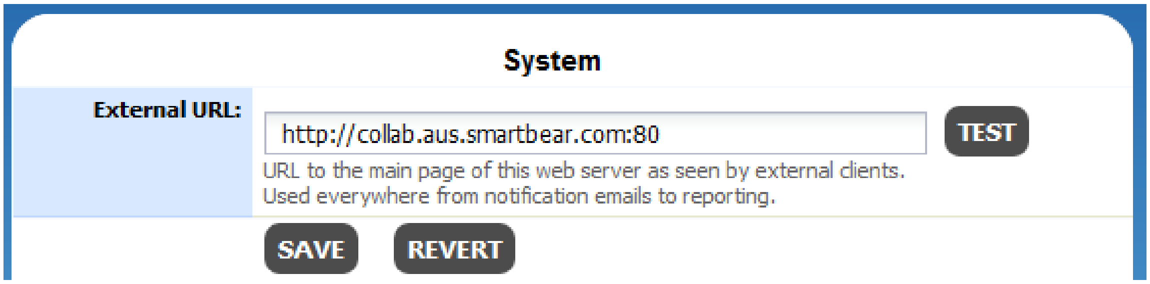


The administration settings are grouped into a number of categories:

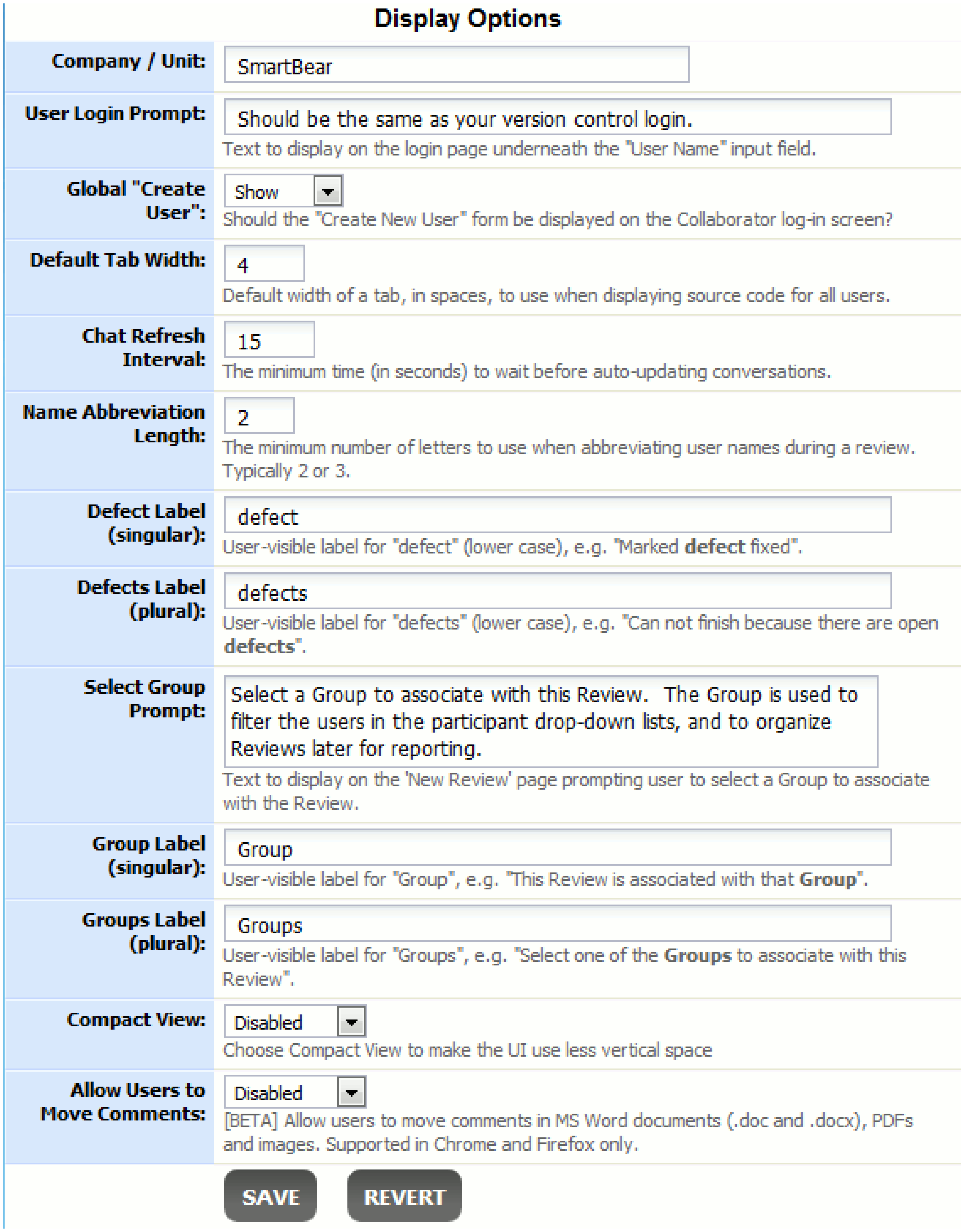
- The General 147 category holds settings that control Collaborator look and feel, abilities and behaviour.
- The Users 164 category allows to create users, view user statistics and edit user accounts.
- The Groups 169 category allows to create and organize user groups. Groups of users are used for reporting, filtering and for assigning reviews to multiple users.
- The Email 184 category holds settings for e-mail notifications of review activity.
- The Version Control 188 category allows to integrate Collaborator with your version control system.
- The Review/Participant/Defect Custom Fields 190 categories allow to create your own fields for users to annotate reviews, participants and defects with necessary information.

- The Checklists 196 category allows to create and manage a list of items that should be checked in every review.
- The Roles 198 category allows to specify the rights and privileges of review participants.
- The Review Templates 205 category allows to create and manage review templates: sets of roles, custom fields, and other options that determine the behavior and rules of a review.
- The Triggers 208 category configures Collaborator to run an external script or application when certain events occur.
- The Notification Templates 209 category allows to customize the content of notification e-mails that Collaborator sends to review participants.
- The Automatic Links 219 category specifies regular expression patterns to treat certain text fragments as links.
- The Remote System Integration 221 category allows to establish integration with JIRA or GitHub servers.
- The Licensing 82 category manages Collaborator licenses.
- The System Status 225 category displays various data about server, database, connection and allows to perform server backup and debugging.

3.3.1 General

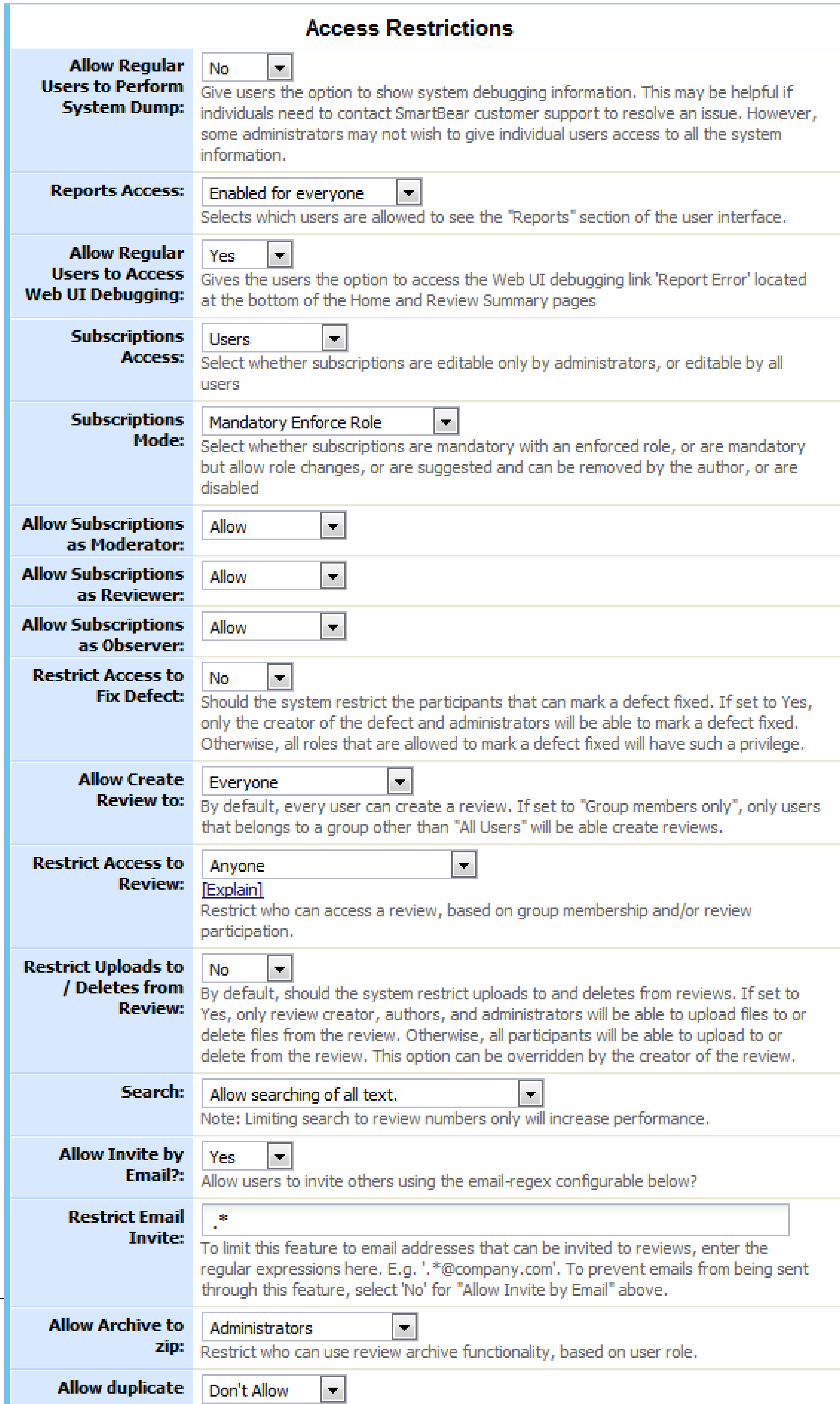


External URL The URL to use as the "official" URL for the Collaborator server. This URL will be reported to clients, used in notification emails, and so forth. It should be something that is accessible from as many other computers as possible. If the port number is other than default 80, then specify it as well.


Display Options
Company / Unit:
SmartBear
User Login Prompt:
Should be the same as your version control login.
Text to display on the login page underneath the "User Name" input field.
Global "Create User":
Show
Should the "Create New User" form be displayed on the Collaborator log-in screen?
Default Tab Width:
4
Default width of a tab, in spaces, to use when displaying source code for all users.
Chat Refresh Interval:
15
The minimum time (in seconds) to wait before auto-updating conversations.
Name Abbreviation Length:
2
The minimum number of letters to use when abbreviating user names during a review. Typically 2 or 3.
Defect Label (singular):
defect
User-visible label for "defect" (lower case), e.g. "Marked defect fixed".
Defects Label (plural):
defects
User-visible label for "defects" (lower case), e.g. "Can not finish because there are open defects".
Select Group Prompt:
Select a Group to associate with this Review. The Group is used to filter the users in the participant drop-down lists, and to organize Reviews later for reporting.
Text to display on the 'New Review' page prompting user to select a Group to associate with the Review.
Group Label (singular):
Group
User-visible label for "Group", e.g. "This Review is associated with that Group".
Groups Label (plural):
Groups
User-visible label for "Groups", e.g. "Select one of the Groups to associate with this Review".
Compact View:
Disabled
Choose Compact View to make the UI use less vertical space
Allow Users to Move Comments:
Disabled
[BETA] Allow users to move comments in MS Word documents (.doc and .docx), PDFs and images. Supported in Chrome and Firefox only.
SAVE
REVERT

Company / Unit	Arbitrary text that will be displayed at the top of the Collaborator web page. This distinguishes the server from other servers. This personalizes the server and also makes it easy for users to distinguish between different installations you might have.
User Login Prompt	The text to display on the front page when the user logs in. This text is displayed just below the "Username" field. The default text suggests using the same login as the version control system, however you might want to change this to be more specific, or in the case of LDAP authentication 102, you could instruct the user to use that login.
Global "Create User"	If you are not using LDAP authentication 102, every user in the system must be explicitly created. The system administrator can create users at any time, but an easier technique is to allow users to create their own accounts from the "Login" screen 229. When this option is enabled, this create-account form is displayed, otherwise it is hidden. This option does not make sense if you are using LDAP authentication because in that case user accounts are created automatically when a user first successfully authenticates on the Login screen.
Use Global Tab Width	If 'Yes' all users will use the same tab width. If 'No' each user can configure their own preference (the global setting is the default).
Global-Tab Width	Width of a tab (in spaces) for all users to use when displaying reviewed files 273.
Chat Refresh Interval	The minimum time (in seconds) to wait before auto-updating chat conversations 299 in the diff viewer 271. If increase the refresh time, new chat display will become less responsive, but server load will decrease. This also reduces contention for connections on the browser side because most modern browsers limit the number of simultaneous server connections to 2.
Name Abbreviation Length	The minimum number of letters to use when abbreviating user names during a review.
Defect Label (singular)	User-visible label for "defect" (lower case). Shows in phrases, like "Marked defect fixed". If the word 'defect' has a negative connotation in your environment, specify a different word (for instance, "item" or "finding" and so on).

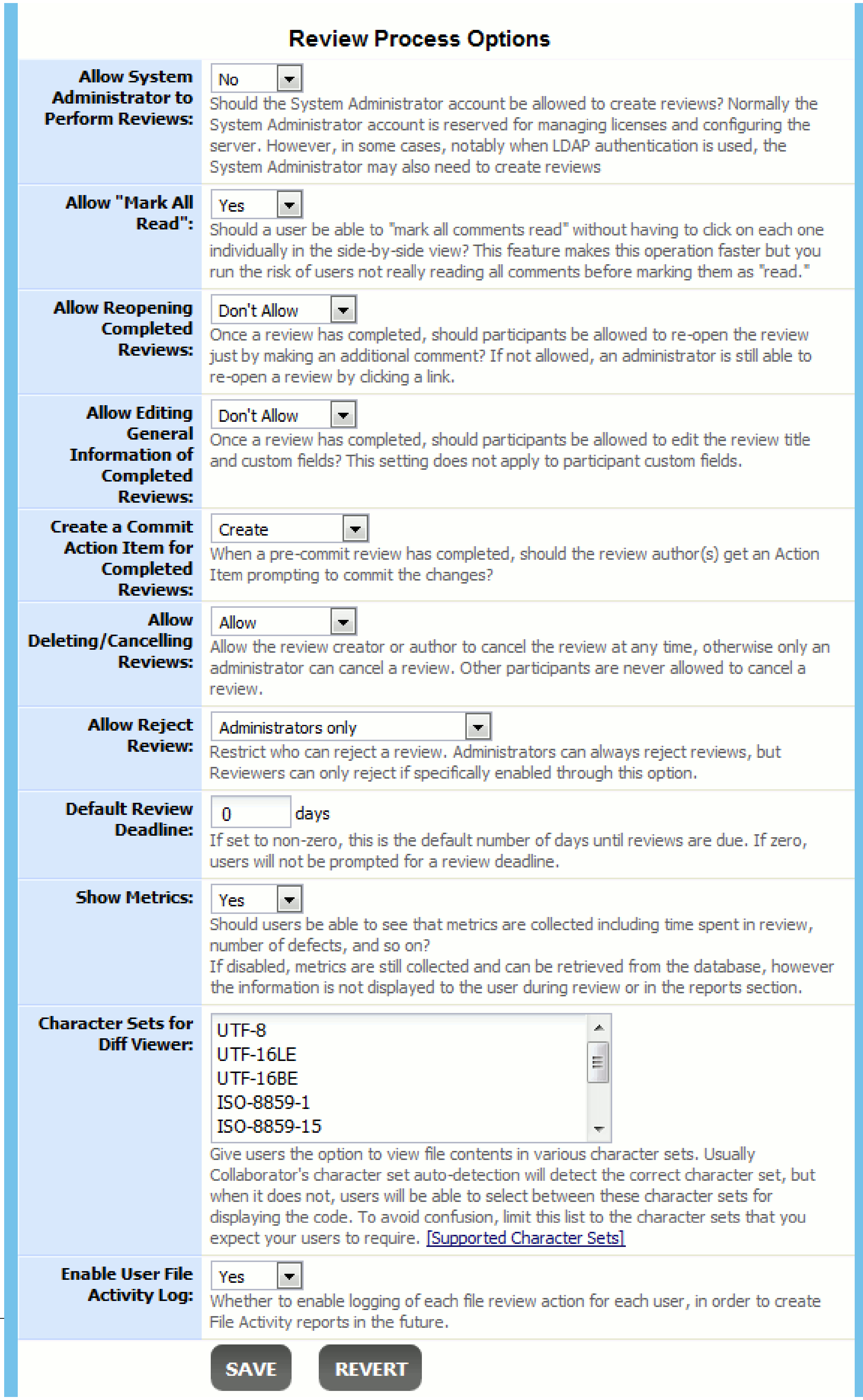
Defects Label (plural)	User-visible label for "defects" (lower case). Shows in phrases, like "Can not finish because there are open defects". If the word 'defects' has a negative connotation in your environment, specify a different word (for instance, "items" or "findings" and so on).
Select Group Prompt	Text to display on the 'New Review' page prompting user to select a Group to associate with the Review.
Group Label (singular)	User-visible label for "Group". Shows in phrases, like "This Review is associated with that Group".
Group Label (plural)	User-visible label for "Groups". Shows in phrases, like "Select one of the Groups to associate with the Review".
Compact View	When this option is enabled, some user interface elements will be collapsed to occupy less vertical space.
Allow Users to Move Comments	[BETA] Allow users to move comments in MS Word documents (.docx and .docx) 280, PDFs 290 and images 287. Supported in Chrome and Firefox only.


Access Restrictions
Allow Regular Users to Perform System Dump:
No
Give users the option to show system debugging information. This may be helpful if individuals need to contact SmartBear customer support to resolve an issue. However, some administrators may not wish to give individual users access to all the system information.
Reports Access:
Enabled for everyone
Selects which users are allowed to see the "Reports" section of the user interface.
Allow Regular Users to Access Web UI Debugging:
Yes
Gives the users the option to access the Web UI debugging link 'Report Error' located at the bottom of the Home and Review Summary pages
Subscriptions Access:
Users
Select whether subscriptions are editable only by administrators, or editable by all users
Subscriptions Mode:
Mandatory Enforce Role
Select whether subscriptions are mandatory with an enforced role, or are mandatory but allow role changes, or are suggested and can be removed by the author, or are disabled
Allow Subscriptions as Moderator:
Allow
Allow Subscriptions as Reviewer:
Allow
Allow Subscriptions as Observer:
Allow
Restrict Access to Fix Defect:
No
Should the system restrict the participants that can mark a defect fixed. If set to Yes, only the creator of the defect and administrators will be able to mark a defect fixed. Otherwise, all roles that are allowed to mark a defect fixed will have such a privilege.
Allow Create Review to:
Everyone
By default, every user can create a review. If set to "Group members only", only users that belongs to a group other than "All Users" will be able create reviews.
Restrict Access to Review:
Anyone
[Explain]
Restrict who can access a review, based on group membership and/or review participation.
Restrict Uploads to / Deletes from Review:
No
By default, should the system restrict uploads to and deletes from reviews. If set to Yes, only review creator, authors, and administrators will be able to upload files to or delete files from the review. Otherwise, all participants will be able to upload to or delete from the review. This option can be overridden by the creator of the review.
Search:
Allow searching of all text.
Note: Limiting search to review numbers only will increase performance.
Allow Invite by Email?:
Yes
Allow users to invite others using the email-regex configurable below?
Restrict Email Invite:
.*
To limit this feature to email addresses that can be invited to reviews, enter the regular expressions here. E.g. '.*@company.com'. To prevent emails from being sent through this feature, select 'No' for "Allow Invite by Email" above.
Allow Archive to zip:
Administrators
Restrict who can use review archive functionality, based on user role.
Allow duplicate
Don't Allow

Allow Regular Users to Perform System Dump	Should regular users be allowed to perform system dump? Selecting "Yes" will give users, as well as administrators, access to the system debugging information.
Reports Access	Who should be allowed to view the "Reports" section of the user interface? You can choose everyone, everyone but with review permissions applied, only administrators, or disabled (no one). Enabled for everyone: Everyone will see the "Reports" section; no restrictions are enforced on what information is returned. Respect permissions: Everyone will see the "Reports" section; users can only see report content for reviews that they can access. Note that since administrators can always access all reviews, this setting does not affect the content of their reports. Administrators only: Only administrators will see the "Reports" section. Disabled: No one will see the "Reports" section.
Subscriptions Access	Selecting "Users" will allow users, as well as administrators, access to edit subscriptions. Choose "Administrators" to give access to only administrators.
Subscriptions Mode	Mandatory Enforce Role: Subscribed users must be participants in a review, and they must use the role specified on their subscription page. Mandatory do not Enforce Role: Subscribed users must be participants in a review, however they can change their role once added to the review. Requested: Subscribed users are automatically added to a review but can be manually removed. Disabled: Subscriptions are not used.
Allow Subscriptions as ...	The Administrator can choose whether users that subscribe to a review can subscribe as a Moderator, Reviewer, or Observer by choosing "Allow" or "do not Allow" from the drop downs below.
Restrict Access to Fix Defect	Should the system restrict the participants that can mark a defect fixed? If set to Yes, only the creator of the defect and administrators will be able to mark a defect fixed. Otherwise, all roles that are allowed to mark a defect fixed will have such a privilege.

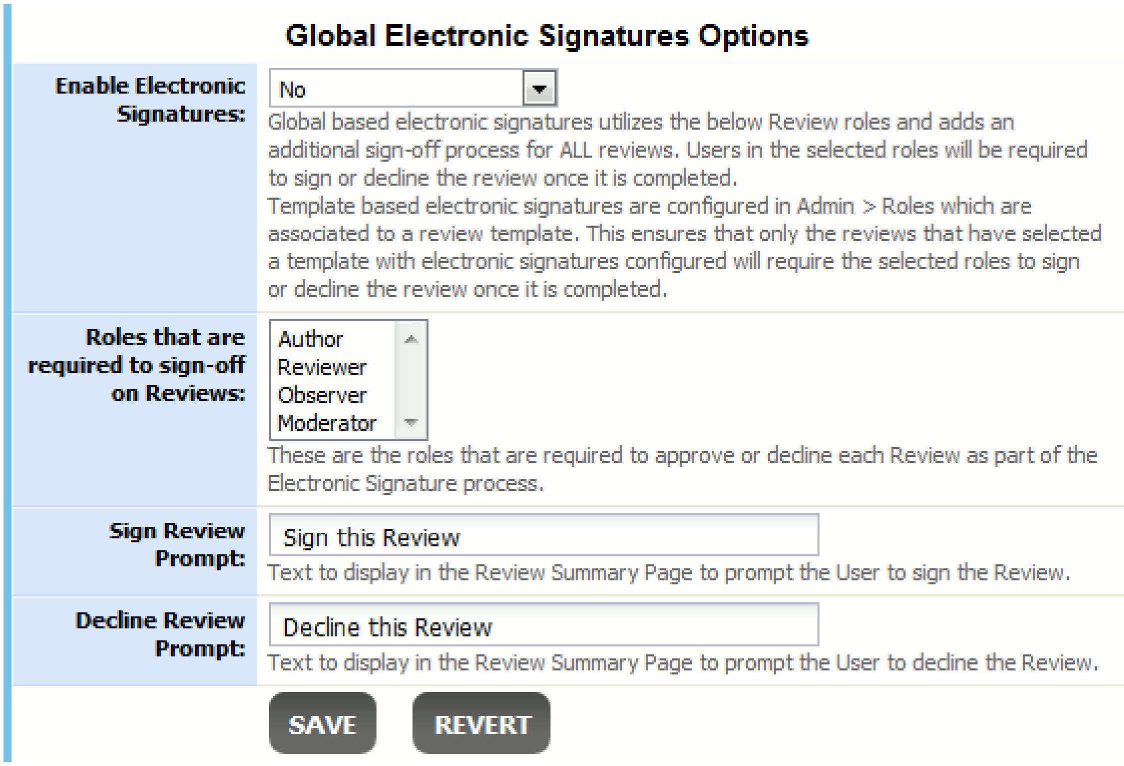
Allow Create Review to	Specifies who is able to create new reviews. By default, every user can create a review. If set to "Group members only", only users that belongs to a group other than "All Users" will be able create reviews.
Restrict Access to Review	Should the system always restrict access to review such that only certain users are allowed to view the review? In each review 245 the review creator can select to further restrict access. Administrators can always access all reviews. Anyone: No global restrictions on who can access reviews Group Based: Users must have access to the review's associated group 170 to access reviews Participants: Users must be participants in the review to access reviews Participants and Group Based: Users must be participants in the review and currently have access to the review's associated group to access reviews Participant or Group Based: Users may be participants in the review or have access to the review’s associated group to access reviews
Restrict Uploads to / Deletes from Review	Should only creators of a review be allowed to upload files to and delete files from a review? If set to "yes," only review creators and administrators will be allowed to upload files to or delete files from the review. However, the option will be available on the Create Review screen 243 to override at the review creator's discretion. If set to "no," all participants will be allowed to upload and delete files. ***Note:*** *This feature is only supported in Collaborator Enterprise. For a complete list of differences between Collaborator editions, please see the comparison page* 3
Search	Sets the limits on the Search feature. "Allow Searching of all text" enables unrestricted searching, while "Limit searches to review numbers only" limits the search feature to only allow searching for review ID numbers.
Allow Invite by Email?	Should it be possible to invite a colleague by e-mail 679?
Restrict Email Invite	Used for the "Invite a colleague" feature, the regular expression in this field is used to match email addresses that can be invited to Reviews. For example, '[\w\.-]+@company.com'.
Allow Archive to zip	Should the system restrict access to archiving of reviews 133?

	Administrators: Only users with administrator 168 privileges can use this feature.
	Group Administrators: Only users with administrator 168 or group administrator 174 privileges can use this feature.
	All users: All users, who can access the review (based on the review permissions 153), can use this feature.
Allow duplicate group names	Should it be possible to create groups having the same names?


Review Process Options
Allow System Administrator to Perform Reviews:
No
Should the System Administrator account be allowed to create reviews? Normally the System Administrator account is reserved for managing licenses and configuring the server. However, in some cases, notably when LDAP authentication is used, the System Administrator may also need to create reviews
Allow "Mark All Read":
Yes
Should a user be able to "mark all comments read" without having to click on each one individually in the side-by-side view? This feature makes this operation faster but you run the risk of users not really reading all comments before marking them as "read."
Allow Reopening Completed Reviews:
Don't Allow
Once a review has completed, should participants be allowed to re-open the review just by making an additional comment? If not allowed, an administrator is still able to re-open a review by clicking a link.
Allow Editing General Information of Completed Reviews:
Don't Allow
Once a review has completed, should participants be allowed to edit the review title and custom fields? This setting does not apply to participant custom fields.
Create a Commit Action Item for Completed Reviews:
Create
When a pre-commit review has completed, should the review author(s) get an Action Item prompting to commit the changes?
Allow Deleting/Cancelling Reviews:
Allow
Allow the review creator or author to cancel the review at any time, otherwise only an administrator can cancel a review. Other participants are never allowed to cancel a review.
Allow Reject Review:
Administrators only
Restrict who can reject a review. Administrators can always reject reviews, but Reviewers can only reject if specifically enabled through this option.
Default Review Deadline:
0
days
If set to non-zero, this is the default number of days until reviews are due. If zero, users will not be prompted for a review deadline.
Show Metrics:
Yes
Should users be able to see that metrics are collected including time spent in review, number of defects, and so on?
If disabled, metrics are still collected and can be retrieved from the database, however the information is not displayed to the user during review or in the reports section.
Character Sets for Diff Viewer:
UTF-8
UTF-16LE
UTF-16BE
ISO-8859-1
ISO-8859-15
Give users the option to view file contents in various character sets. Usually Collaborator's character set auto-detection will detect the correct character set, but when it does not, users will be able to select between these character sets for displaying the code. To avoid confusion, limit this list to the character sets that you expect your users to require. [Supported Character Sets]
Enable User File Activity Log:
Yes
Whether to enable logging of each file review action for each user, in order to create File Activity reports in the future.
SAVE
REVERT

Allow System Administrator to Perform Reviews	Should the main system administrator be allowed to participate in reviews? If you are using internal authentication the setting is typically "no" because the main "admin" account is special and should be used only for system configuration and not to actually do reviews. If you are using LDAP authentication 102 the setting is typically "yes" because the main administrator is usually an actual human being who will also want to participate in reviews. This setting affects whether the system account is allowed to create a new review 243 and whether it appears in, for example, drop-down lists for review participants 245.
Allow "Mark All Read"	Should users be given the option to "mark all conversations read" in one click in the conversation area of the diff viewer 302? This is a convenient operation, so most administrators leave this enabled. However this makes it easy for someone to not actually read a lot of comments because they are not forced to visit each conversation individually.
Allow Reopening Completed Reviews	Once a review has completed, should participants be allowed to re-open the review just by making an additional comment? If not allowed, an administrator is still able to re-open a review by clicking a link.
Allow Editing General Information of Completed Reviews	Once a review has completed, should participants be allowed to edit the review title and custom fields? This setting does not apply to participant custom fields.
Create a Commit Action Item for Completed Reviews	By default, when a pre-commit review is completed, the author(s) are given an action item as a reminder to commit the changes to the underlying source control system. The author then has the option of using the Tray Notifier to commit the changes. In some workflows, this is not the correct behavior. In that case, choose "Do Not Create" to avoid this prompt.
Allow Deleting/ Cancelling Reviews	Should the review creator or author be able to cancel the review at any time? If "do not allow" is selected, only an administrator will have the permissions to cancel a review. Other participants are never allowed to cancel a review.

Allow Reject Review	Reject review allows a user to stop a review which has passed the planning state but yet in a terminal state such as completed or cancelled. Rejecting a review is different than cancelling or deleting because the administrator can require the user to specify a reason for the rejection. The reason values can be configured in the Review Custom Fields section of the administration pages. Administrators can always reject reviews. Select Administrators and Reviewers to allow non-observer participants to reject reviews.
Default Review Deadline	If set to non-zero, this is the default number of days until reviews are due. If zero, users will not be prompted for a review deadline 244 when creating a new review.
Show Metrics	Should users be able to see that metrics are collected including time spent in review, number of defects, and so on? If set to "No", metrics are still collected and can be retrieved directly from the database 594, however the information is not displayed to the user during review 261 or in the reports 317 section.
Character Sets for Diff Viewer	Give users the option to view file contents in various character sets. Usually Collaborator's character set auto-detection will detect the correct character set, but when it does not, users will be able to select between these character sets for displaying the file contents. To avoid confusion, limit this list to the character sets that you expect your users to require. Click [Supported Character Sets] to view all supported character sets.
Enable User File Activity Log	Specifies whether to log file activity of review participants. The gathered data is used when generating File Activity section of Review Detail Reports 321.



Note: *Electronic Signatures are only supported in Collaborator Enterprise. For a complete list of differences between Collaborator editions, please see the comparison page* 3

Enable Electronic Signature

Electronic Signatures allow users in the selected role(s) to either sign off on or decline to sign off on a completed review.

Global based electronic signatures adds an additional sign-off process for all reviews. Users whose roles were selected in the "Roles that are required to sign-off on Reviews 158" setting will be required to sign or decline the review once it is completed.

Template based electronic signatures add an additional sign-off process only to reviews with specific templates. Users whose roles were selected in the Role Configuration 204 screen will be required to sign or decline the review once it is completed.

Roles that are required to sign-off on Reviews

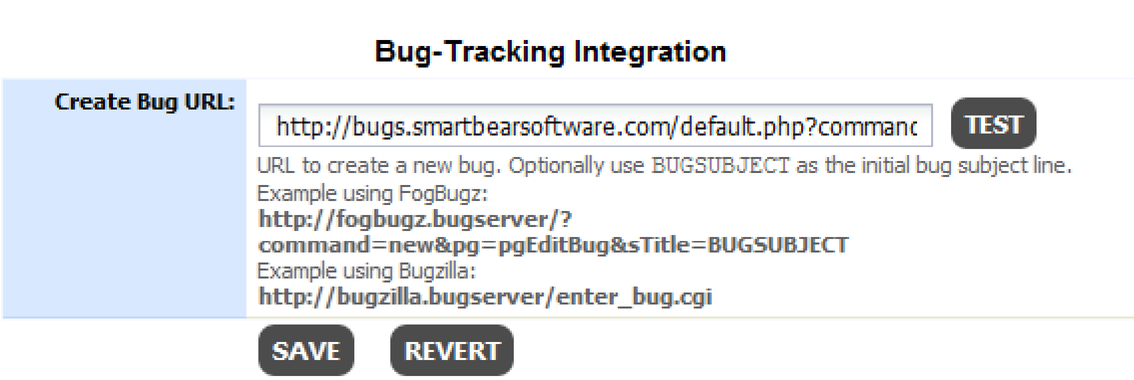
Here, the admin can select one or more roles that will be prompted to sign off on Completed reviews.

This setting takes effect when global based electronic signatures are enabled.

Sign Review Prompt

This is the text that will appear on the review summary screen next to the Sign button.

Decline Review Prompt This is the text that will appear on the review summary screen next to the Decline button.



Create Bug URL The URL to your bug tracking system that creates a new bug. Optionally use the special text `BUGSUBJECT` as the starting subject line for the bug. This setting is used when the user is prompted to create a bug in your external issue tracking system.

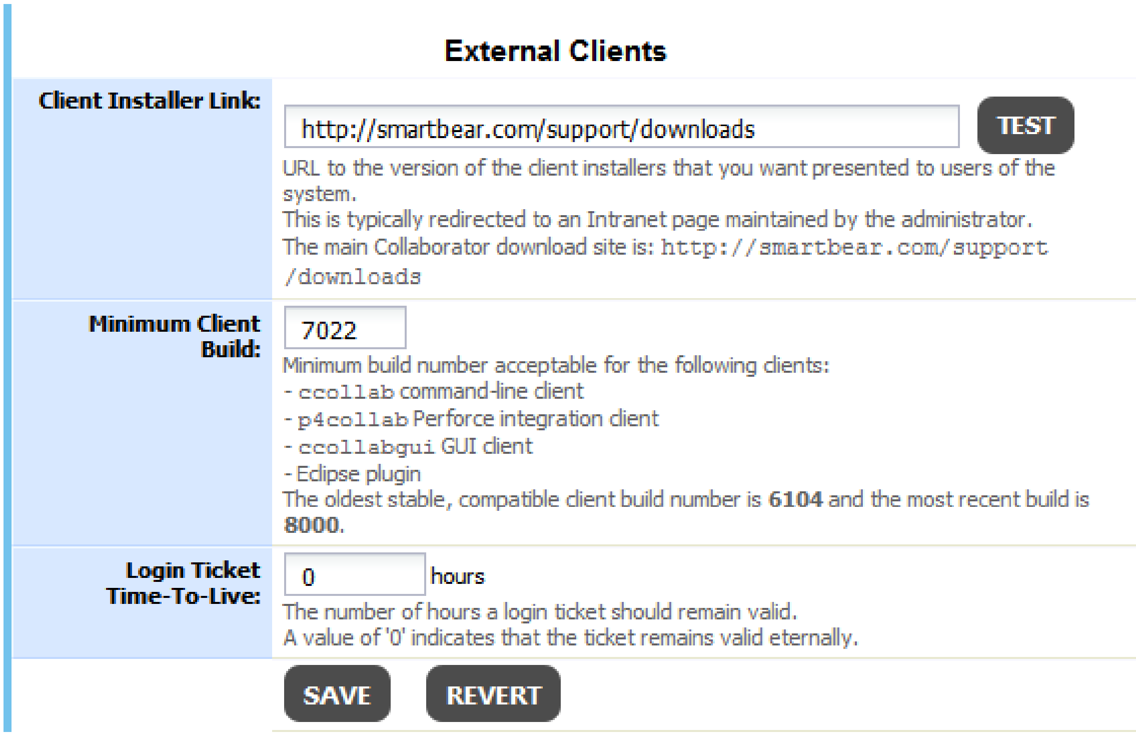
To track a defect externally, the user must first create the defect in Collaborator, then select and edit that defect to choose the 'Track Externally' option.

Below are examples of URL, for some popular bug tracking systems:

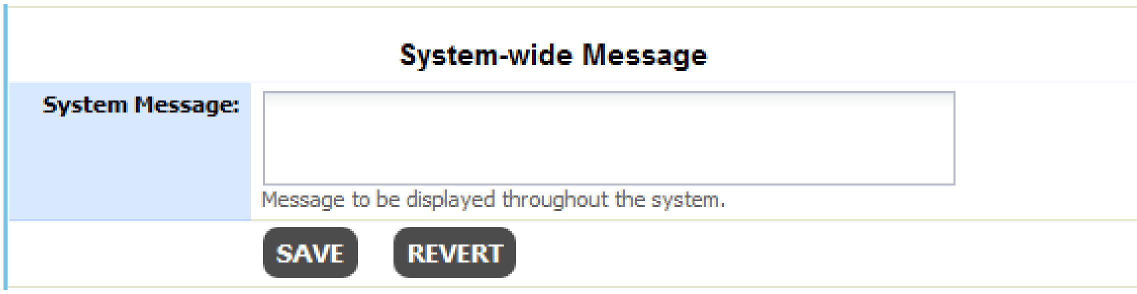
FogBugz: `http://bugserver/default.php?command=new&pg=pgEditBug`

Bugzilla: `http://bugserver/enter_bug.cgi`

JIRA: `http://bugserver/secure/CreateIssue!default.jspa`



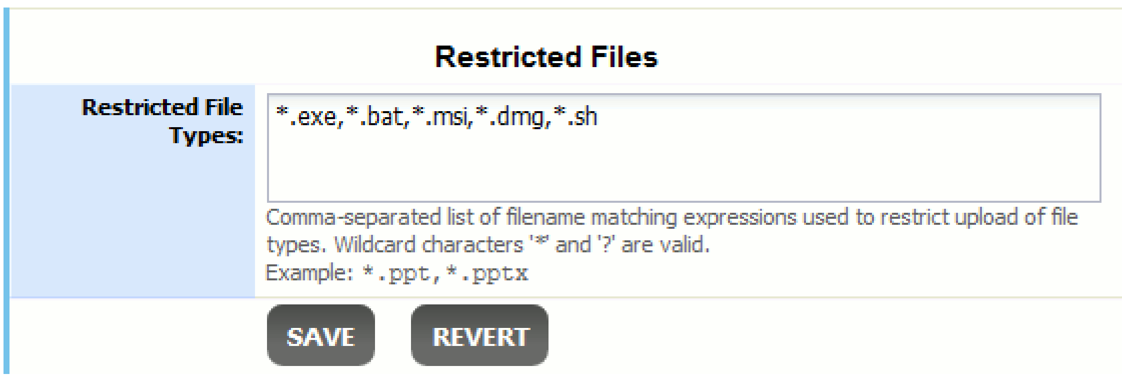
Client Installer Link	URL to the version of the client installers that you want presented to users of the system. This is typically redirected to an intranet page maintained by the administrator.
Minimum Client Build	Minimum allowable build number for the various client applications including the Command-Line Client 348, the GUI Client 338, the Tray Notifier 404, and the Eclipse Plug-in 366. Use this to ensure your clients are reasonably up to date. This is especially important if there is a feature or bug-fix you know is necessary for your system. The help text in the GUI will identify the oldest stable, compatible build number and will list the most recent known build number for your reference.
Login Ticket Time-To-Live	Defines how long a login ticket should remain valid. A value of '0' indicates that the ticket remains valid eternally.



System Message

Administrators can optionally insert a message to be displayed throughout the system.

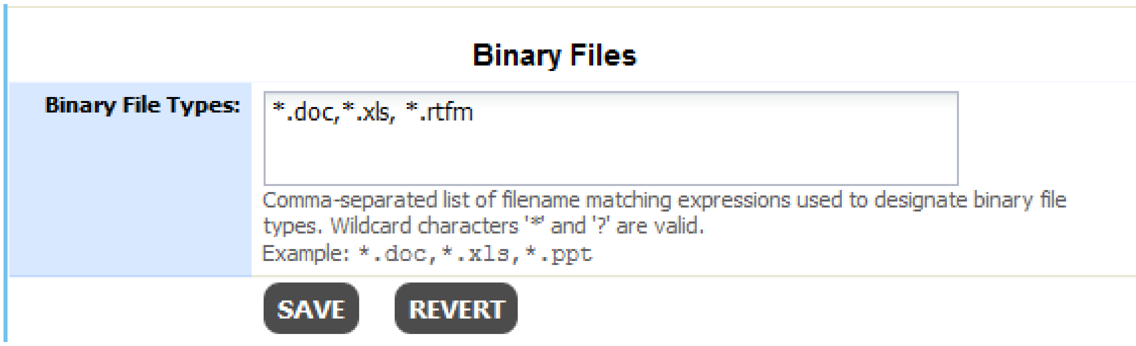
This can be useful for reminders, Collaborator announcements, or general information.



Restricted File Types

Specifies which files cannot be uploaded to reviews (to avoid malicious file uploads). By default Collaborator blocks the following file types: executable files (.exe), batch files (.bat), Windows Installer files (.msi), Mac OS disk images (.dmg) and Unix script files (.sh).

Filename matching is done using the '*' and '?' wildcards characters. '*' matches 0 or more contiguous characters, and '?' matches exactly one character. The character matching is case-insensitive on Windows platforms and case-sensitive on all other platforms.



Binary File Types

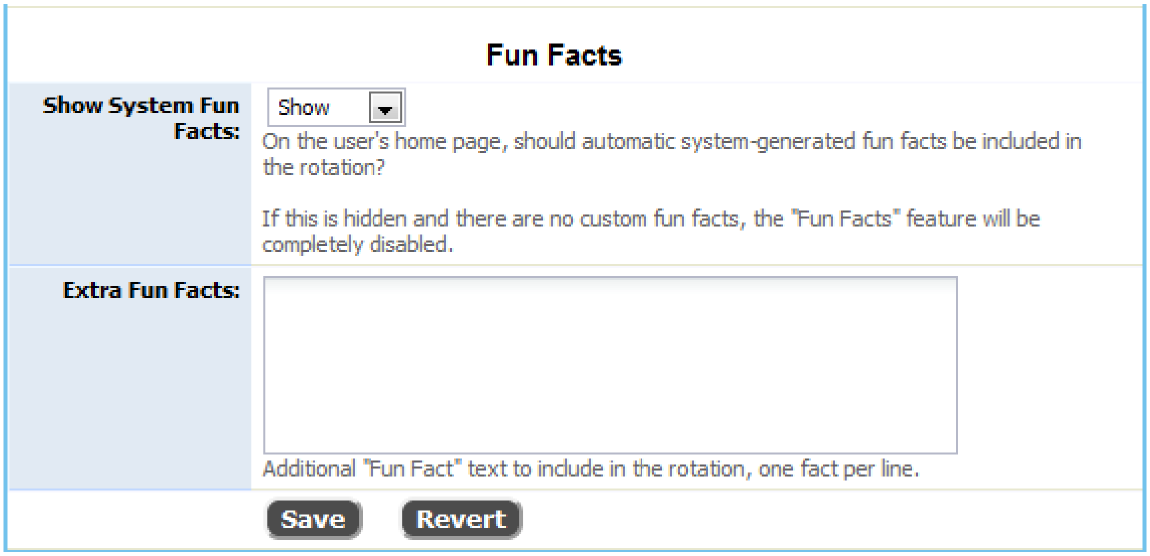
Binary files attached to reviews are not displayed in the Diff Viewer 271, and instead must be opened by external applications. Here you can configure which files are to be treated as binary. By default, Microsoft Word, Microsoft Excel and Rich Text files are considered binary.

Filename matching is done using the '*' and '?' wildcards characters. '*' matches 0 or more contiguous characters, and '?' matches exactly one character. The character matching is case-insensitive on Windows platforms and case-sensitive on all other platforms.

Image File Types

Image files are reviewed in the browser in the diff viewer using a special image diff viewer 284. Here you can configure which files are treated as images. By default, GIF, JPEG, and PNG images are handled as images. The content of the files must be renderable by the users' browsers for images to actually be reviewable. Images that require special software to view should be treated as Binary Files 162 so they can be rendered by that software.

Filename matching is done using the '*' and '?' wildcards characters. '*' matches 0 or more contiguous characters, and '?' matches exactly one character. The character matching is case-insensitive on Windows platforms and case-sensitive on all other platforms.



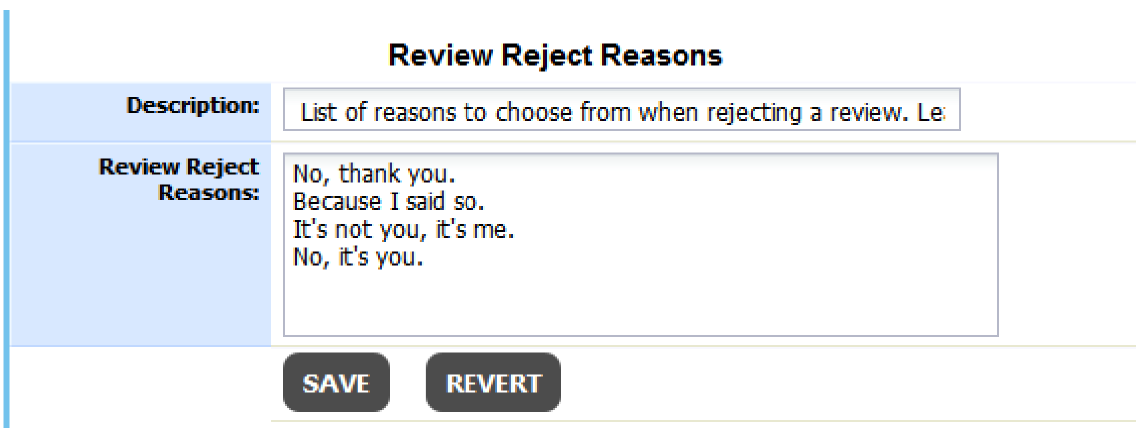
Show System Fun Facts

Fun facts are lines of information displayed on the home page. Collaborator rotates through a number of internal facts based on aggregate review metrics.

If this is set to "Hide" and there are no extra fun facts listed, this feature is completely disabled.

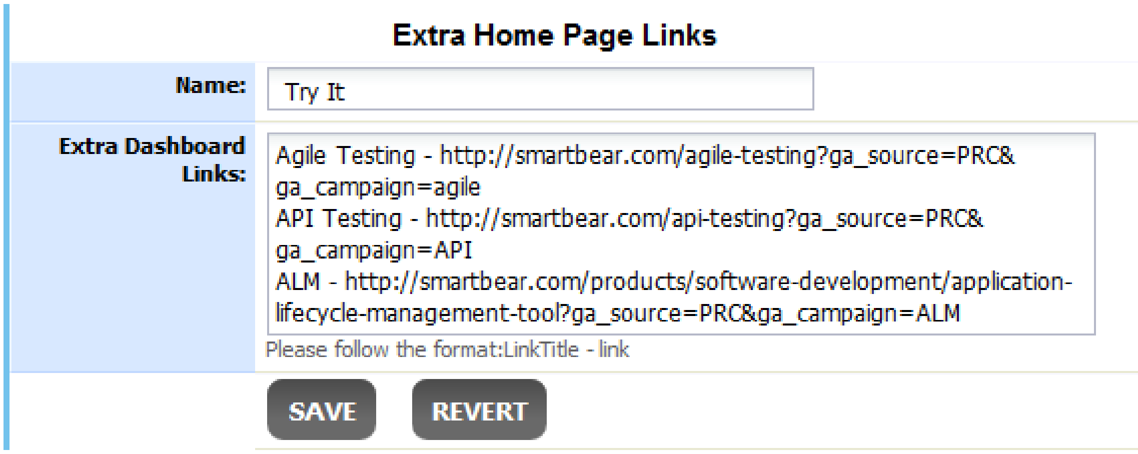
Extra Fun Facts

Additional lines to be displayed can be entered in this field.



Review Reject Reasons

List of reasons to choose from when rejecting a review 252. Leave this list empty if providing a reason is not required.



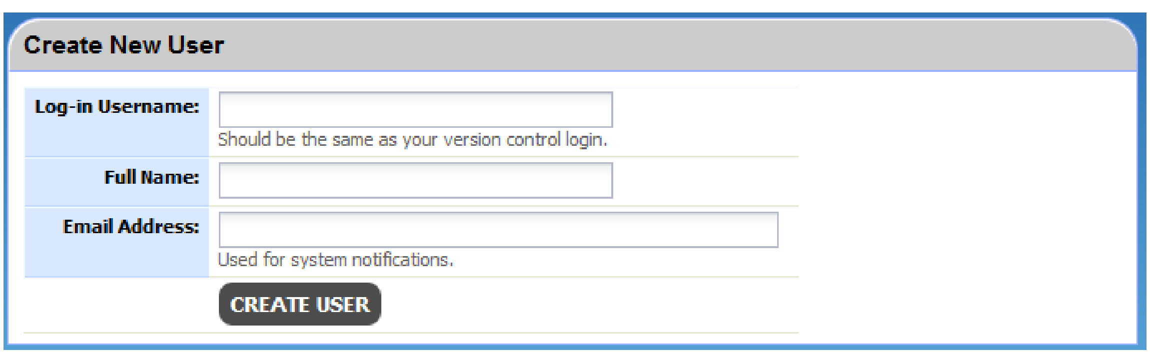
Name	A caption for the block of extra links.
Extra Dashboard Links	List of additional links to be displayed on the Home page. One link per line. Links should be specified in the following format: LinkTitle - LinkURL

3.3.2 Users

The user management page lets you add, disable, and manage user accounts.

Creating New Users

This form lets you create new users in Collaborator. If you are using LDAP authentication 102 you will not see this form because users are created automatically when they first log into the system.



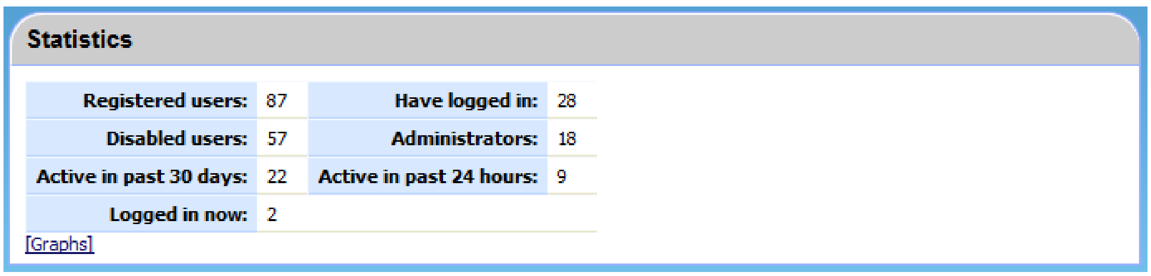
Login names must be unique in the system; Collaborator will not allow you to create a second user with the same login. The full name is used when displaying the user in the interface, and the email address is used to send notification messages.

After you create a user you are returned to the same screen. This makes it easy to add multiple users quickly.

Warning: When creating new user accounts, it is a good idea to make the login name identical to the user's version control login. One advantage is that the user does not have to remember a new login. Another advantage is that certain features are enabled in Collaborator because it can correlate users from version control changelists with Collaborator users. Finally cross-system reporting becomes much easier when the logins are the same.

Statistics

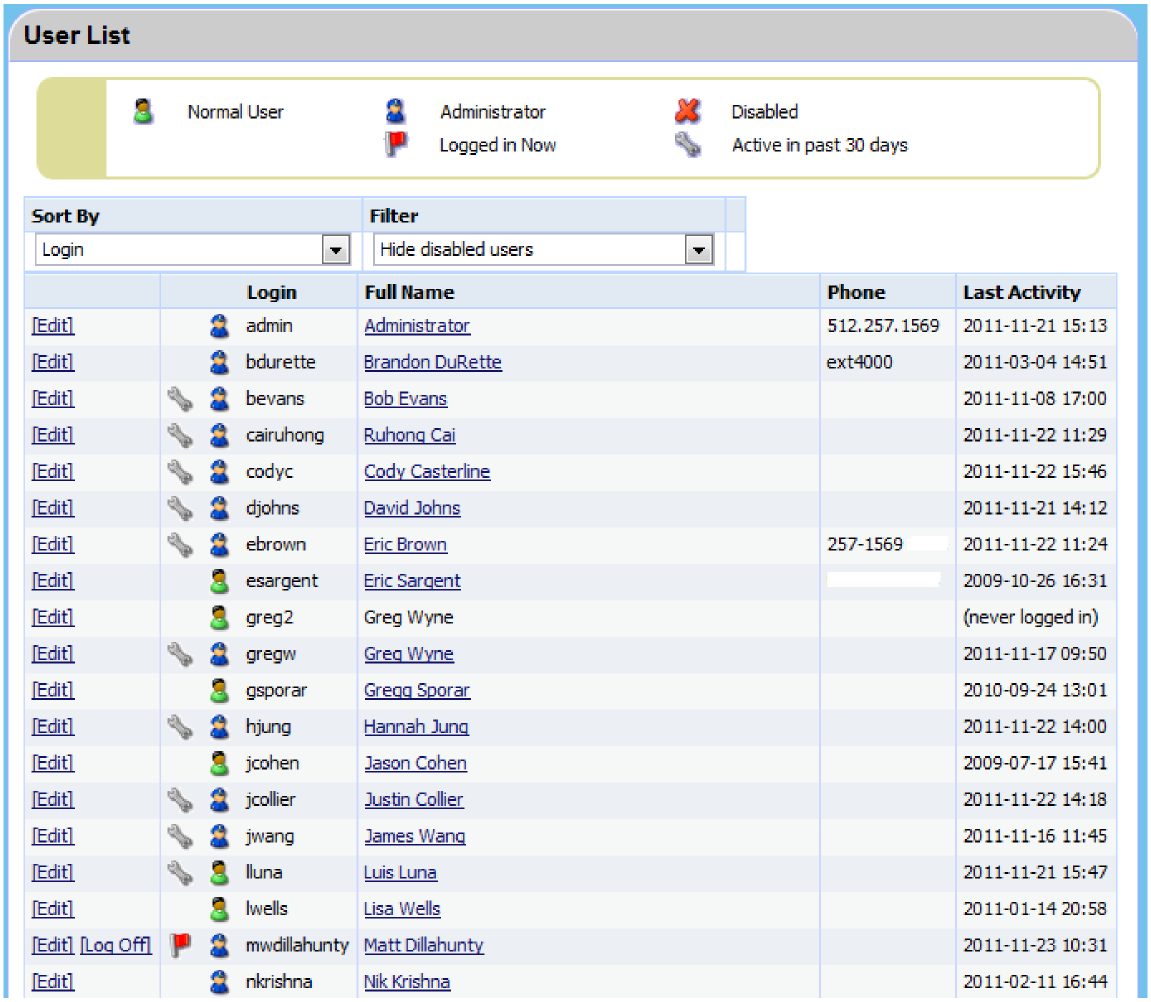
The statistics box shows information about users and usage of Collaborator:



This can help monitor your usage and determine how many seats are necessary.

The User List

The user list shows every user in the system along with key information about each:



User List

Normal User | Administrator | Disabled | Logged in Now | Active in past 30 days

Sort By	Filter
Login	Hide disabled users

	Login	Full Name	Phone	Last Activity
[Edit]	admin	Administrator	512.257.1569	2011-11-21 15:13
[Edit]	bdurette	Brandon DuRette	ext4000	2011-03-04 14:51
[Edit]	bevans	Bob Evans		2011-11-08 17:00
[Edit]	cairuhong	Ruhong Cai		2011-11-22 11:29
[Edit]	codyc	Cody Casterline		2011-11-22 15:46
[Edit]	djohns	David Johns		2011-11-21 14:12
[Edit]	ebrown	Eric Brown	257-1569	2011-11-22 11:24
[Edit]	esargent	Eric Sargent		2009-10-26 16:31
[Edit]	greg2	Greg Wyne		(never logged in)
[Edit]	gregw	Greg Wyne		2011-11-17 09:50
[Edit]	gsporar	Gregg Sporar		2010-09-24 13:01
[Edit]	hjung	Hannah Jung		2011-11-22 14:00
[Edit]	jcohen	Jason Cohen		2009-07-17 15:41
[Edit]	jcollier	Justin Collier		2011-11-22 14:18
[Edit]	jwang	James Wang		2011-11-16 11:45
[Edit]	lluna	Luis Luna		2011-11-21 15:47
[Edit]	lwells	Lisa Wells		2011-01-14 20:58
[Edit] [Log Off]	mwdillahunty	Matt Dillahunty		2011-11-23 10:31
[Edit]	nkrishna	Nik Krishna		2011-02-11 16:44

You can sort the user list by:

- Login
- Full Name
- Last Activity (oldest first)
- Last Activity (most recent first)

You can filter the user list by:

- Show all users
- Hide disabled users
- Show only logged-in users

- Show only administrators
- Show users missing name
- Show users missing email
- Show users missing phone number

The `[Edit]`link allows you to update any user setting [232] from basic contact information to personal display and notification settings. The `[Log Off]`link allows you to immediately log off a logged-in user [167].

The first column of icons tells you several things about the user's recent activity and how the user is counting towards server licensing [82].

Icon	Logged in?	Consuming floating-seat license?	Consuming fixed-seat license?
	Yes	Yes	Yes
	No	No	Yes
(none)	No	No	No

The second column of icons tells you about the user's access rights:

Icon	Is user an administrator?	Is user allowed to log in?
	Yes	Yes
	No	Yes
	No	No

You will notice that the `admin` account never counts towards licensing. This is one of the special characteristics of the System Administrator Account [169].

Log User Off

Administrators also have the ability to force a user to log out of Collaborator to make a seat available. To do so, just click the [Log Off] link that will appear to the left of the logged in username. This feature should be used carefully as the user will immediately be logged off. Once a user is forced out, the next time they access Collaborator, they will be required to reenter their username/password to gain access.

Deleting & Disabling Users

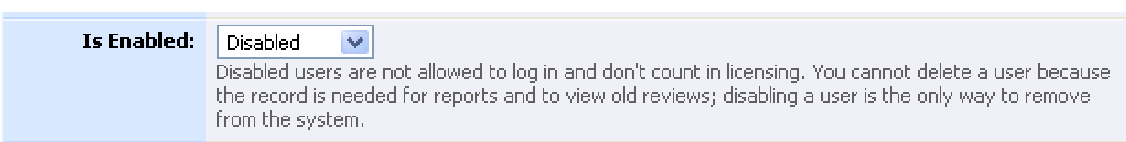
You cannot delete users in Collaborator because the user record is necessary for reporting and for viewing old reviews that they were a part of.

However you can *disable* a user. Disabling a user does several things immediately:

- The user can no longer log in.
- If the user is already logged in, he is automatically and immediately logged off.
- The user does not show up in standard user lists, like in list for inviting to a review.
- The user will not receive any notifications or broadcast messages 184.
- The user immediately does not count towards either floating-seat or fixed-seat licensing 82.

The user will continue to appear in the general user list at the end, and an administrator can re-enable a user at any time.

To disable or enable a user, click the `[Edit]` link next to that user on the user list and change the "Is Enabled" flag:

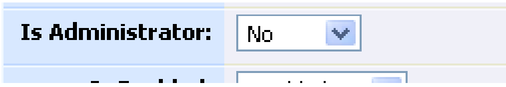


Administrative Access

Users with administrative access are allowed to access the "Admin" menu from the menubar and all screens therein. They also have a variety of other permissions described elsewhere in this manual, including but not limited to:

- Administrators can look at *all* reviews, regardless of whether they have been marked restricted 243.
- Administrators can do anything with defects in *any* review: create, delete, edit, externalize, and mark fixed, regardless of their role or even non-participation in that review.
- Administrators can edit characteristics of *any* review including changing custom field content, changing the list of participants, and canceling the review.

To set or clear a user's administrative access, click the [Edit] link next to that user on the user list and change the "Is Administrator" flag:



> **Warning:** Be careful if you are an administrator and you are editing your own user information. If you say that you are not an administrator, you are not from that point forward!
> If you do this by accident it can be remedied by another administrator, or the System Administrator in particular (see below).

The Special "System Administrator" Account

One user account is special: The System Administrator Account. How do you know which account is this special one? If you are using internal authentication, the System Administrator Account is always called `admin` (this cannot be changed). If you are using LDAP authentication 102, the account is determined during installation 63.

The System Administrator Account has the following special properties:

- There can be only one. One to rule them all.
- The System Administrator is *always* an administrator; administrative access cannot be revoked. (This is prevented in the user interface so you cannot revoke access, even by mistake.)
- The System Administrator can *always* log in. Even if the server license has been exceeded, this account is *still* allowed to log in.

3.3.3 Groups

Group Administration

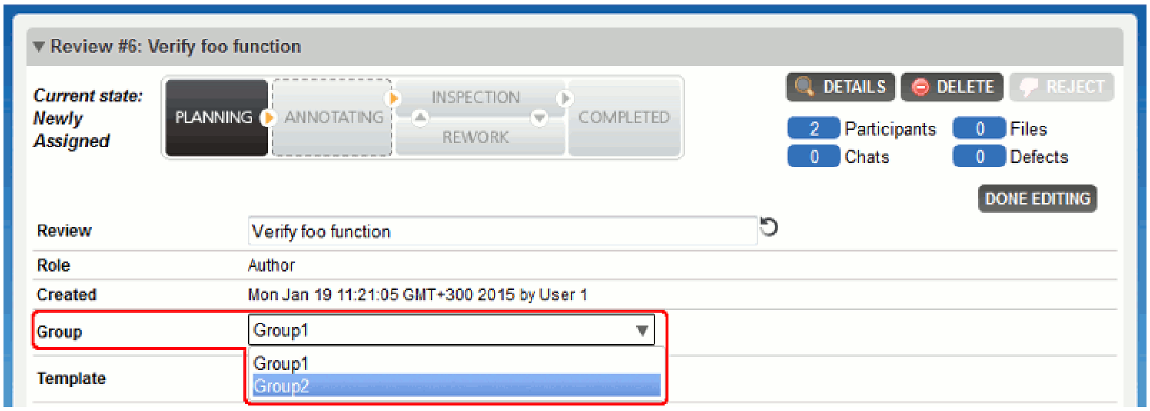
User "Groups" is an optional feature that allows you to define groups of users within your organization, so reviews can be associated with a group. Groups can be used to model your organization's hierarchy and/or project assignments. Each group can contain multiple users and can also contain other groups. Each user can be in more than one group. You can specify group administrators who are able to maintain individual groups.

The word "Group" is configurable in the General Settings 147, so you could change it to "Team", or "Project", or whatever else.

Note: *User groups are only supported in Collaborator Enterprise. For a complete list of differences between Collaborator editions, please see the comparison page* 3.

Association With Reviews

If a user is a member of a single group that can be associated with a review [173], reviews created by that user are automatically associated with that group. If a user is a member of more than one group that can be associated with a review [173], an additional field is displayed when creating a review:



The list of groups to select from is calculated by first creating a list of all groups that contain the review creator as a member. All groups in that list are then checked to see if they are a child group of any other group(s). Parent groups are added to the list recursively.

In the settings for a group there is an option to disallow associating that group with reviews [173]. This is useful for creating groups that are used for reporting or filtering only. When a group and all its sub-groups cannot be associated with reviews, then this group is not displayed in the Group list. When a group cannot be associated with reviews, but some of its sub-groups can be associated with reviews, then the parent group is displayed in the Group list, but cannot be selected.

Associating a group with a review makes it easier to select participants for that review because the Person list can optionally be filtered by group. The filter is calculated by starting with the users that are members of the selected group. If the selected group also contains child groups, then the users that are members of those child groups will also be added. The search for child groups is done recursively.

Restricting Access

Groups can be used to limit access to reviews by setting **Restrict Access to Review Content** [151] in the general settings. When the group access restriction feature is used, the list of users who have access to the review is calculated by starting with the users that are members of the group that is associated with the review. If that group also contains child groups, then the users that are members of those child groups will also be added. The search for child groups is done recursively. Finally, if the group associated with the review is a child of any other group(s) then the users that are members of those parent groups will also be added. The search for parent groups is done recursively.

Sample Group Hierarchies

It may be difficult to understand how best to use groups based on the rules given above. We have provided a few examples of how they are usually used:

- Using Groups for Organizational Hierarchy 177
- Using Groups for Projects 178
- Using Groups for Organizational Hierarchy and Projects 180

Maintaining Groups

Groups can be created and modified in one of two ways: manually (with the web user interface - see the sections below, starting with **Creating New Groups** 171, or with the command-line scripting command ccollab admin group create) or automatically via the command-line scripting ccollab admin group sync command.

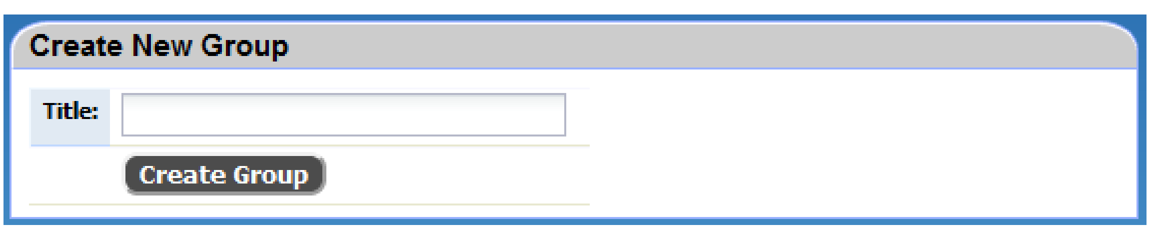
"Group Administrators" can be assigned to administer individual groups. A group administrator is a regular (not full administrator) user who can manage a specific group. Group administrators are allowed to create child groups of groups they administer, but are not allowed to create top-level groups.

If you have only a few groups it is easiest to manage them manually. If you have many groups or if you are mirroring them from an external system like LDAP, it is best to manage them automatically using the "sync" command.

The command-line "sync" command interface is provided to make it easy to mirror group definitions in to Collaborator from an external system. The ccollab admin group sync command uses the contents of an XML file (schema) to update Collaborator's group definitions. See the Syncing Groups 175 topic for more information.

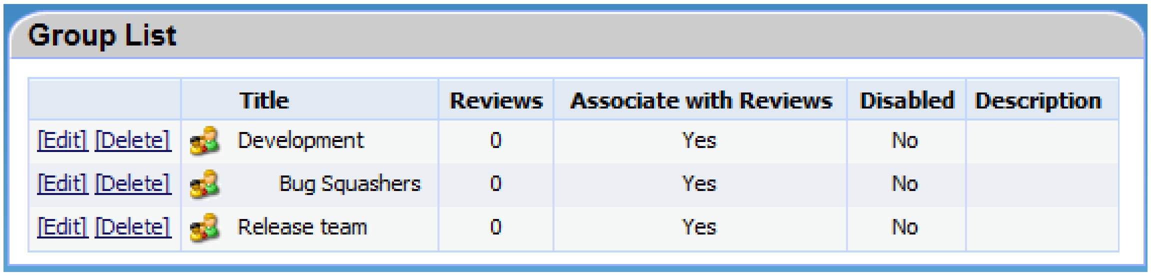
Collaborator tracks which groups were created manually and which were defined via ccollab admin group sync. Groups that were defined manually are not overwritten as a result of using ccollab admin group sync. See the Using Groups for Organizational Hierarchy and Projects 180 example to see how this can be useful.

Creating New Groups



To make use of this feature, first create a title for your group, and click "Create Group".

Group List



Group List

	Title	Reviews	Associate with Reviews	Disabled	Description
[Edit] [Delete]	Development	0	Yes	No	
[Edit] [Delete]	Bug Squashers	0	Yes	No	
[Edit] [Delete]	Release team	0	Yes	No	

Once a group is created, the group will appear in the Group List. In the Group List, you can edit the configuration details or delete the group by clicking the appropriate link. The Group List also shows the number of reviews associated with the group, whether or not the group can be associated with reviews, whether or not the group is enabled, and any descriptions given to the group. Note group administrators will only see groups listed that they can administer.

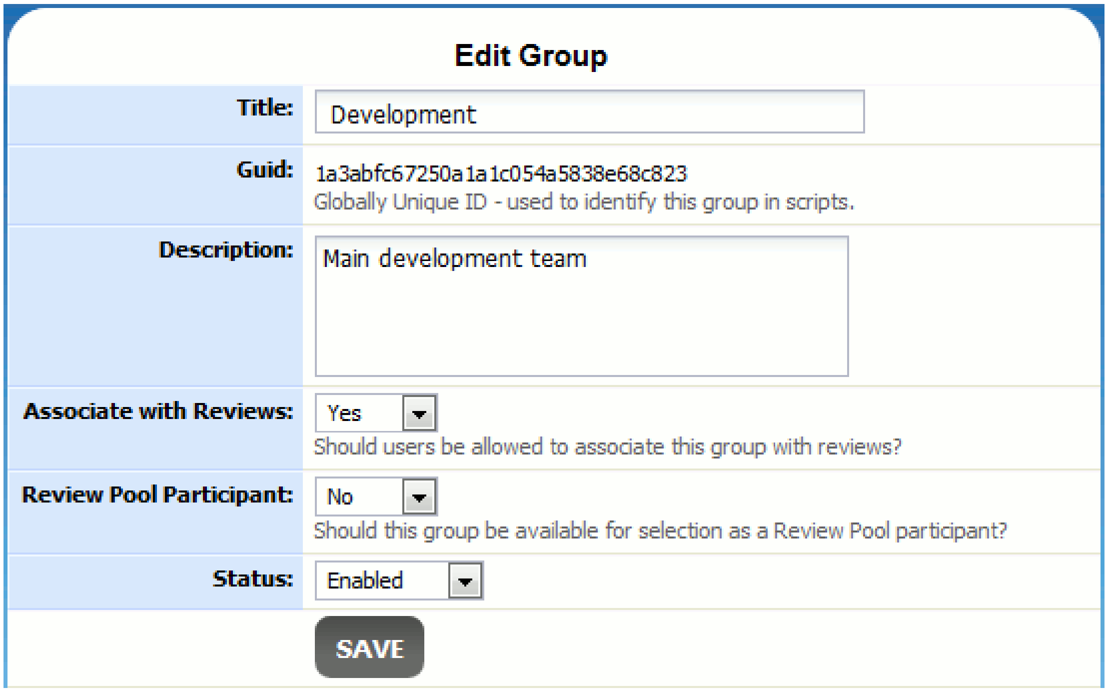
Deleting a Group

To delete a group, click the [Delete] link next to the group's title in the Group List. You can only delete a group if it is not associated with reviews. If the group is associated with reviews, you must first associate those reviews with a different group before deleting it; alternatively, you could instead disable the group in order to prevent future reviews from being associated with it.

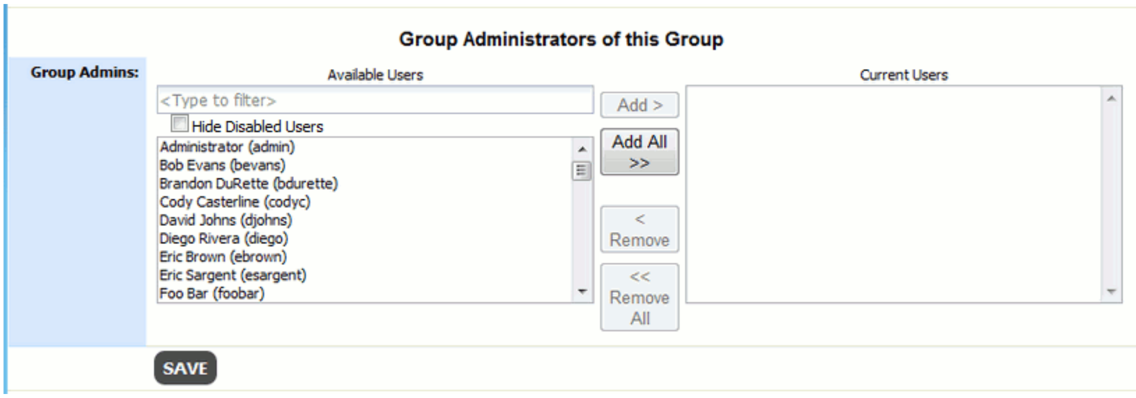
Group administrators are further restricted to only being able to delete groups that they are group administrators of and that have no child groups. This restriction is to prevent group administrators from indirectly creating top-level groups.

Editing a Group

To edit a group, click on the [Edit] link next to the group's title in the Group List. You will be directed to the "Edit Group" page.



Title	Human-readable title for the group, used in drop-down menus and other UI elements. This does not have to be unique across all groups.
Guid	Machine-readable ID for group, unique across all groups. If the group was created using the Web Client, this is generated automatically. If the group was created using the sync command, this ID is supplied in the XML file.
Description	Human-readable description for the group. This is displayed on the "New Review 244" page when associating a group with a review 170.
Associate with Reviews	If this is set to "Yes", this group is selectable from the Group drop-down list when associating a group with a review 170. If "No", this group will be hidden or disabled in the Group list. For an example, see Using Groups for Organizational Hierarchy and Projects 180.
Review Pool Participant	Specifies whether this group is a Review Pool 680, that is it could be selected as a participant of a review.
Status	Specifies whether the group is enabled or disabled. Groups can be disabled when they are no longer in use. Disabled groups still show up in reports because reviews may be associated with them.



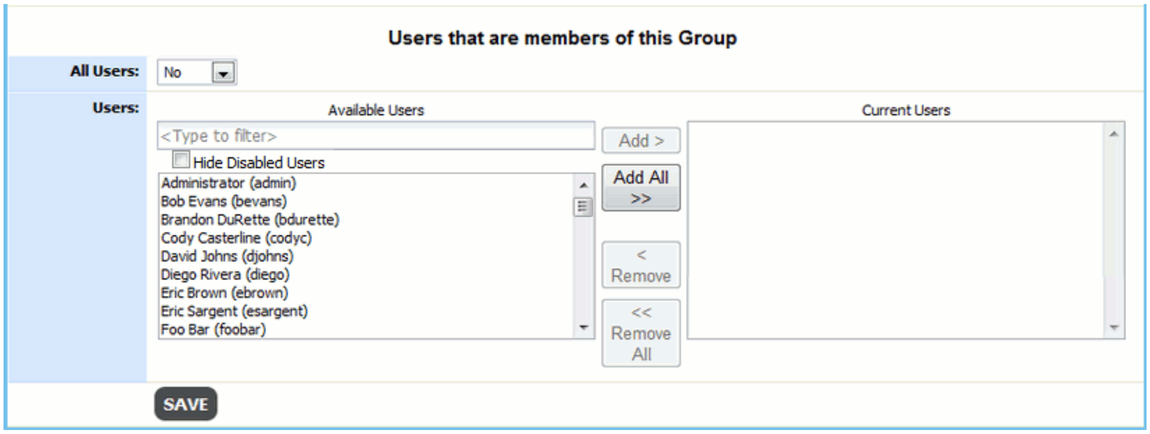
Group administrators are regular (not full administrator) users who are allowed to administer this group. Group administrators can edit 172 all of the fields of the group.

Group administrators can add or remove group administrators for the group, even themselves, but they can not remove the last group administrator from the group.

Group administrators can add or remove user members 175 of the group. Users that are group administrators may or may not also be regular members of the group.

Group administrators are not allowed to directly edit the list of child groups of the group, but they can create new child groups of the group. The group administrator that creates a child group is automatically a group administrator of that child group.

You can add multiple groups to be children of the group. This may be helpful if a group is constituted by a number of sub-groups. The "group hierarchy" created by Group -> Child Group relationships is important for the associate with review 170 and access control 170 algorithms.



Groups can have specifically named member users, or they can automatically contain all users as members. Group membership is important for the associate with review [170] and access control [170] algorithms.

3.3.3.1 Syncing Groups

Collaborator provides a simple web UI for creating and managing groups, but when groups are used to represent organizational hierarchy [177] for large companies the web UI becomes unmanageable. Such groups are usually already stored in an external system such as LDAP, so Collaborator provides the ability to "sync" it is groups from an external system.

Group Sync XML

The `ccollab admin group sync` command takes as input an XML file describing all the groups being synced, their relationships, and their member users. The XML format is simple and a full schema is provided. For an example see Using Groups for Organizational Hierarchy [177]. The Collaborator administrator should write a script that queries the external system (that is, LDAP) and creates this XML.

Syncing

The Collaborator administrator should run the sync script periodically. Collaborator will examine the group sync xml and make the appropriate changes in the system. Processing the sync is not very resource intensive, so you probably do not need to worry about load on the Collaborator server.

Users

The group sync xml describes which users are admins and/or members of which groups. There are two options if the XML describes users who do not yet have accounts in Collaborator, controlled by the `--create-user` option of the `ccollab admin group sync`command:

- ***Create the member-user*** - If the `--create-user` option is specified, a user account is created for the user. Note the user does not consume a license 82 until they log in.

- ***Ignore the member-user*** - If the `--create-user` option is not specified (default behavior), t he member-user is ignored and a user account is not created. This is useful if you have a large organization but only a small subset of the employees are using Collaborator.

Removing Groups

Groups may be removed from the external system. There are two options if the XML no longer describes a group which was created in an earlier sync, controlled by the `--delete-groups` option of the `ccollab admin group sync` command:

- Delete the group - If the `--delete-groups` option is specified, the group is deleted. However if the group can not be deleted because it has associated reviews 172, an error is returned and the sync is canceled.

- Disable the group - If the `--delete-groups` option is not specified (default behavior), the group is marked disabled. This always works, regardless of whether there are reviews associated with the group.

Renaming groups

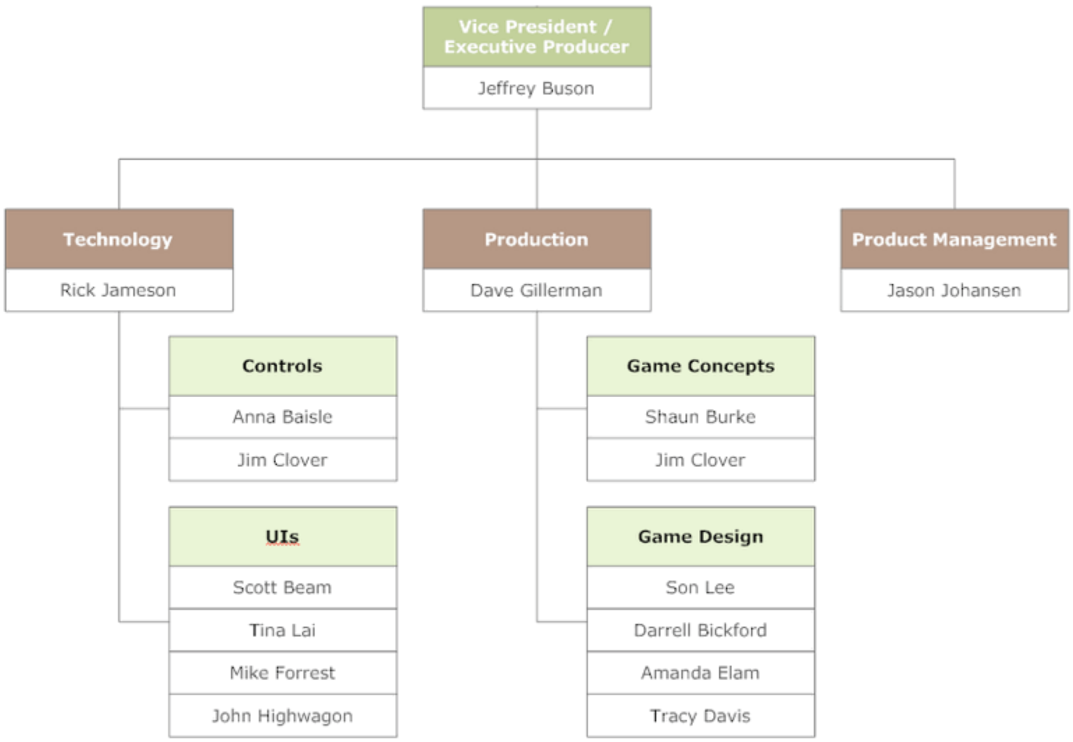
Groups are uniquely identified by a GUID which is specified in the group sync xml. To rename the group simply specify a group with the same GUID but a different title.

Manual groups

Sometimes it is useful to sync groups with an external system but *also* manually specify some groups using the Web Client or the ccollab admin group create command. For an example see Using Groups for Organizational Hierarchy and Projects 180. Collaborator keeps track of which groups were created using sync and which groups were created manually. Manually created groups are not deleted or disabled on subsequent syncs just because they are not in the group XML. The web UI displays a warning when manually editing a group that was created by sync. Manually created groups can contain synced groups as children, but not vice-versa.

3.3.3.2 Using Groups for Organizational Hierarchy

The Groups 169 feature is flexible enough to allow you to model any organization. As an example, suppose your company's **Action Games Division** org chart looked like this:



Companies this large typically store their org chart in an LDAP system. The Collaborator administrator can write a script that synchronizes 175 Collaborator groups with the LDAP system.

For example, the XML to create the organizational structure shown above would look like this:

Sample XML

```
<groups>?<group guid="action-games-division" title="Action
Games Division" allow-associate-with-reviews="false"><member-group
guid="technology"/><member-group guid="production"/><member-group
guid="product-management"/><member-user
login="jbuson"/></group>?<group guid="technology" title="Technology"
allow-associate-with-reviews="false"><member-group
guid="controls"/><member-group guid="uis"/><member-user
login="rjameson"/></group>?<group guid="production"
title="Production" allow-associate-with-reviews="false"><member-group
guid="game-concepts"/><member-group guid="game-design"/><member-user
login="dgillerman"/></group>?<group guid="product-management"
title="Product Management"
allow-associate-with-reviews="false"><member-user
login="jjohansen"/></group>?<group guid="controls" title="Controls"
allow-associate-with-reviews="false"><member-user
login="abaisle"/><member-user login="jclover"/></group>?<group
guid="uis" title="UIs"
allow-associate-with-reviews="false"><member-user
login="sbeam"/><member-user login="tlai"/><member-user
login="mforrest"/><member-user login="jhighwagon"/></group>?<group
guid="game-concepts" title="Game Concepts"
allow-associate-with-reviews="false"><member-user
login="sburke"/><member-user login="jclover"/></group>?<group
guid="game-design" title="Game Design"
allow-associate-with-reviews="false"><member-user
login="slee"/><member-user login="dbickford"/><member-user
login="aelam"/><member-user login="tdavis"/></group></groups>
```

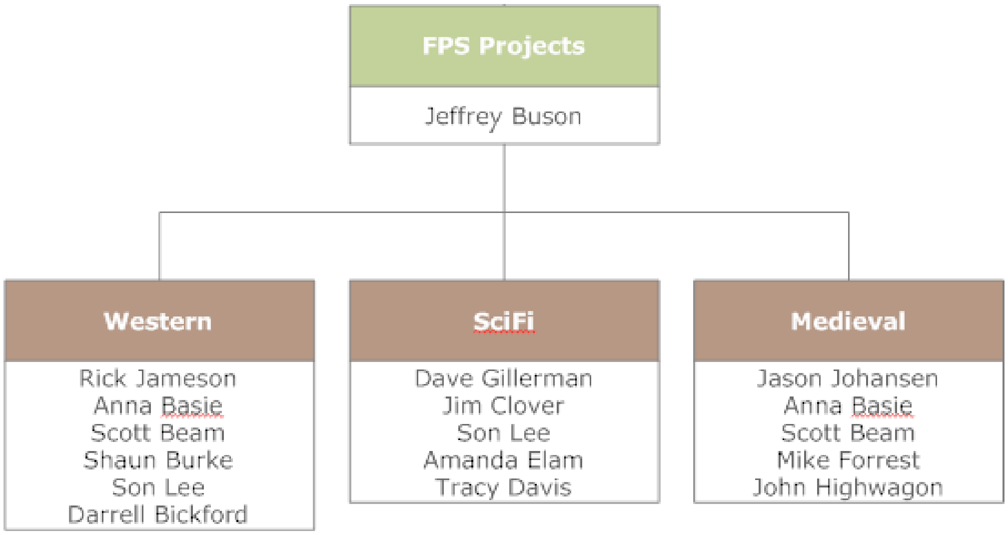

Note - we have assumed that user's logins are created by prefixing the first character from their first names to their last names. All of the groups have "Allow associate with Review 173" set to "No".

Reporting based on group membership

The reporting system can be used to create reports based on group membership. For example, all reviews where a member of a department was a participant, or all reviews created by a member of a department, and so on.

3.3.3.3 Using Groups for Projects

The Groups 169 feature is flexible enough to allow you to model any structure. As an example, if you wanted to model a group of projects from a software gaming company:



Since there is only a few groups we create them manually using the web UI. First create a group called *FPS Projects*. The *FPS Projects* group would have only one user in it: Jeffrey Buson. It would also have three child groups: *Western*, *SciFi*, and *Medieval*. The *Western*, *SciFi*, and *Medieval* groups would each contain the users that are assigned to those projects.

Associating groups with reviews

We set "Allow associate with Review 173" to "Yes" for the *Western*, *SciFi*, and *Medieval* groups. In this example we are using groups to represent projects, so we configure the singular group label 150 to "Project" and the plural group label 150 to "Projects".

When a user in one of those groups creates a review it will be associated with a group. Most of the users are only members of one group, so when they create a review they do not have to manually choose a group - the review is automatically associated with their group. The users "Anna Basie" and "Scott Bean" are members of both the *Western* and *Medieval* groups, so when they create a review they are prompted to select one of those "Projects" to associate with the review.

Filtering the participant list

When a user creates a review they can choose to filter the participant list 170 by that group. When Amanda Elam creates a review, if she selects "Filter possible participants by 'SciFi' Project" then the participant drop-downs will only contain Dave Gillerman, Jim Clover, Son Lee, and Tracy Davis. This is useful at large companies to make the list of users more manageable.

Restricting Access based on group

Access to reviews can be restricted based on associated group. The restriction can be set for all reviews or just for a particular review. For example, if a review was associated with the *Western* group and group access restriction was enabled, then it would be accessible to Scott Beam and Jeffrey Buson, but not accessible to Jason Johansen.

Reporting based on associated group

You can display, sort and filter reports by the associated group, so you know which project the review was for.

Finishing projects

When a project is finished, we mark it is group disabled. This means the group can no longer be associated with reviews, but it is still in the system for reporting purposes.

3.3.3.4 Using Groups for Organizational Hierarchy and Projects

The Groups 169 feature is flexible enough to allow you to model any structure. You might want to use groups to represent an organizational hierarchy like the Using Groups for Organizational Hierarchy 177 example *and* use groups to represent projects like the Using Groups for Projects 178 example. This is supported and gives us all the advantages of both approaches.

Creating Groups

We create the groups to represent organizational hierarchy using the sync process as described in the Using Groups for Organizational Hierarchy 177 example. We create the groups to represent the projects manually as described in the Using Groups for Projects 178 example. Collaborator remembers which groups were created manually and which were created using sync, so the sync process does not delete the manually created project groups.

Assigning Group Members

Instead of manually naming each user that is a member of each project group like we did in the Using Groups for Projects 178 example, we can indicate that all the members in an organizational hierarchy department are working on a project by making the organizational hierarchy group a child of the project group. This is much easier than assigning individual user members, but we lose some fine-grained control.

Associating groups with Reviews

All of the organizational hierarchy groups have the "Allow associate with review 173" option set to "No". The *Western*, *SciFi*, and *Medieval* project groups have the "Allow associate with Review 173" option set to "Yes". We configure the singular group label 150 to "Project" and the plural group label 150 to "Projects".

When a user creates a review it will be associated with a project group. If the user's organizational hierarchy group is only a member of one project group then when they create a review they do not have to manually choose a group - the review is automatically associated with the project group. If a user's organizational hierarchy group is a member of more than one project group then when they create a review they are prompted to select one of those "Projects" to associate with the review.

Filtering the participant list

When a user creates a review they can choose to filter the participant list 170 by that group. This lets a user filter the list of participants by only the users working on the project associated with the review. This is useful at large companies to make the list of users more manageable.

Restricting Access based on group

Access to reviews can be restricted based on associated group. The restriction can be set for all reviews or just for a particular review. For example, if a review was associated with the *Western* group and group access restriction was enabled, then only users working on the *Western* project would be able to access it.

Reporting based on group membership

The reporting system can be used to create reports based on group membership. For example, all reviews where a member of a department was a participant, or all reviews created by a member of a department, and so on.

Reporting based on associated group

You can also display, sort and filter reports by the associated group, so you know which project the review was for.

Finishing projects

When a project is finished, we mark it is group disabled. This means the group can no longer be associated with reviews, but it is still in the system for reporting purposes.

3.3.3.5 Using Groups for Review Pools

Groups for Review Pools

Review Pools are Groups that can be selected as participants in a Review 680. To enable Review Pools, a Collaborator administrator must define specific Groups to be selectable for Review Pools. You can configure Groups for Review Pools specifically for use as Review Pools, or select Review Pools from an existing group hierarchy.

Using Groups for Review Pools without a Group Hierarchy

As a Collaborator administrator, if you do not already use a group hierarchy, or if it does not make sense to use it for Review Pools, then you should create Groups only for use by Review Pools. Create one or more Groups containing the users who are candidate participants. For each Group to be used as a Review Pool without a group hierarchy, enable **Review Pool Participant** and disable **Associate With Reviews**. Shown below is an example where several Groups have been created specifically for use as Review Pools.

Group List

	Title	Reviews	Associate with Reviews	Review Pool Participant	Disabled	Description
[Edit] [Delete]	Developers - Core	0	No	Yes	No	
[Edit] [Delete]	Developers - UI	0	No	Yes	No	
[Edit] [Delete]	Documentation Reviewers	0	No	Yes	No	

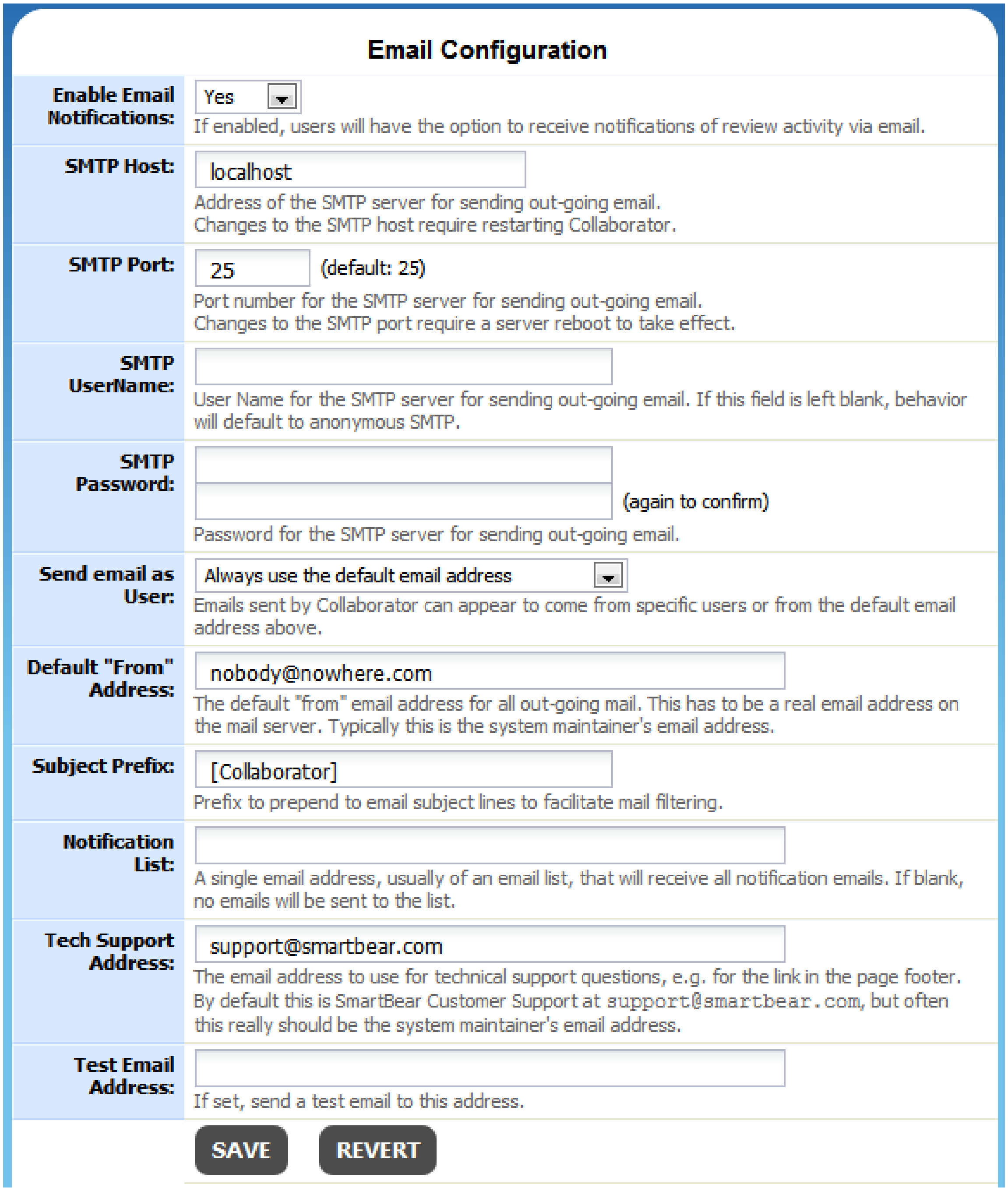
Using Groups for Review Pools with Group Hierarchy

As a Collaborator administrator, if you have a group hierarchy already defined for your organization, you may designate any existing Groups to also be used for Review Pools. For each group to additionally be used for Review Pools, enable **Review Pool Participant** and leave **Associate with Reviews** enabled. Shown below is an example organization where the leaf groups have been enabled for use as Review Pools.

Group List

	Title	Reviews	Associate with Reviews	Review Pool Participant	Disabled	Description
[Edit] [Delete]	WYSIWIG	0	Yes	No	No	WYSIWIG organization
[Edit] [Delete]	Dev	0	Yes	No	No	WYSIWIG development
[Edit] [Delete]	Core	0	Yes	Yes	No	
[Edit] [Delete]	UI	0	Yes	Yes	No	
[Edit] [Delete]	Pubs	0	Yes	No	No	WYSIWIG documentation team
[Edit] [Delete]	In-product manual	0	Yes	Yes	No	
[Edit] [Delete]	Website Documentation	0	Yes	Yes	No	
[Edit] [Delete]	QA	0	Yes	Yes	No	WYSIWIG test team

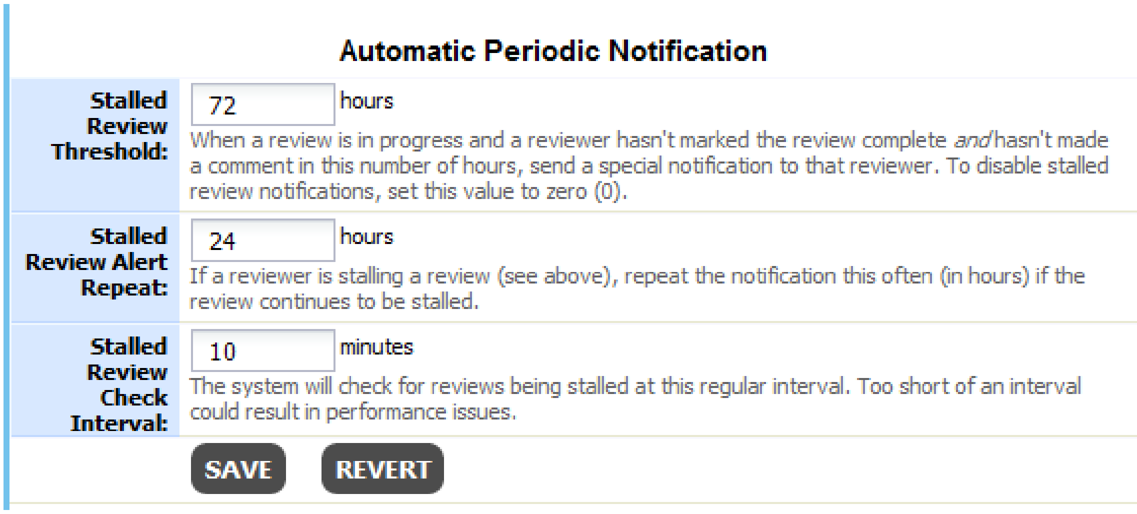
3.3.4 Email



Enable Email Notifications	Email notifications are now optional. If enabled, users will have the option to receive notifications of review activity via email.

SMTP Host	The domain name or IP address of the server to use to send SMTP messages. This machine must be configured to accept mail from the server on which Collaborator is installed. If your email server is Exchange you will need to get your Exchange administrator to enable anonymous SMTP. If this setting is not established properly, no emails will be sent.
SMTP Port	The port number to connect on when sending SMTP messages, typically 25. The port number might be different if a spam filter is set up in front of the primary server; in this case you probably want to bypass the spam machine, or else put a rule on the spam machine to allow Collaborator to send messages. If this setting is not established properly, no emails will be sent.
Send Email as User	Determines which user will be listed in the "From Address" in emails sent by Collaborator. If you elect to use the "default address," emails will come from the default address given elsewhere in this configuration screen. Otherwise the system will attempt to send email from the user that caused the message to be sent. For example, if a user causes a "new review" notification to be sent, that user's email address will be used as the "from" address. Some messages cannot be associated with a particular user and will still be sent from the default address.
Default "From" Address	The email address to use in the "From Address" field in notification emails. Typically this is the system maintainer's email address.
Subject Prefix	This text will be pre-pended to the subject line of any email sent by Collaborator. This assists end users with mail filtering and helps to train or configure spam-filters to identify Collaborator notifications as non-spam.
Notification List	Specifies an e-mail address or mailing list that will receive a copy of *every* notification 237 that Collaborator sends. This field can be blank.
Tech Support Address	The email address to use for technical support questions. For example, this is used in the `[Support]` link in the web page footer. By default this is the email address for Collaborator Technical Support, but often the system maintainer wants to get these emails first for internal resolution.

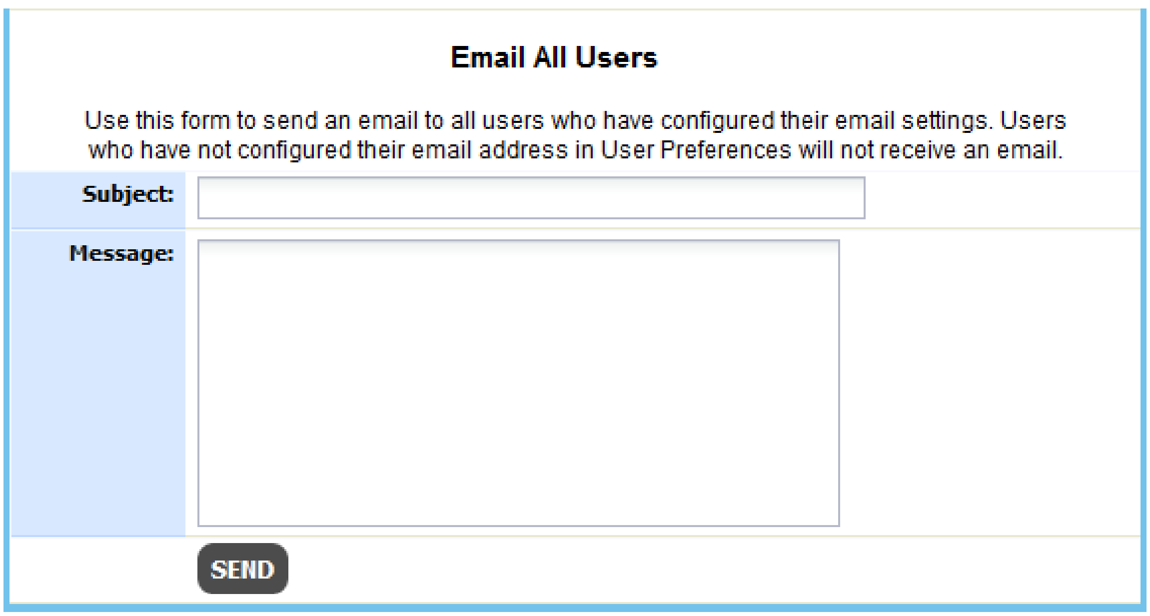
Test E-Mail Address Usually left blank; if an address is supplied here a test message will be sent to this address when the form is submitted. This is used to test the email system. The email address is not saved.



Stalled Review Threshold
When a review is in progress and a reviewer has not marked the review complete and has not made a comment in this number of hours, send a special notification to that reviewer. To disable stalled review notifications, set this value to zero (0).

Stalled Review Alert Repeat
If a reviewer is stalling a review (see above), repeat the notification this often (in hours) if the review continues to be stalled.

Stalled Review Check Interval
Specifies how often to check for stalled reviews.



Bulk-Email Facility

At the end of the email configuration dialog is a form that allows the administrator to send an email to all users 164 in the system. This is easier than maintaining a separate email mailing list for users.

A typical use is to broadcast scheduled maintenance of the system, especially before and after a system upgrade 76.

3.3.5 Version Control

Collaborator integrates closely with your version control server to select which files to review. The administrator can configure the Collaborator server to be able to connect directly with version control. This allows users to select checked-in changelists to review from the web UI without having to install and configure client-side tools. Users can also configure their connection to the various version control servers using the client tools 328 so they can review changes before committing them.

If you use more than one version control server Collaborator recognizes this and displays the files from the different servers separately.

Configuring Version Control Server Templates

Each version control system that Collaborator supports for server-side integration has a configurable "template". The configuration in this template is copied in to a version control server entry when you click ***Create*** in the **Configure a new version control server** form, or when a version control server entry is created automatically because a client uploaded files from a server that does not map 190 to any of the existing version control server entries.

Version Control Server Templates

	SCM System
[Edit]	ClearCase
[Edit]	Git
[Edit]	Perforce
[Edit]	Rational Team Concert
[Edit]	Subversion

Each version control system that supports server-side version control integration includes different options in the Version Control Server Template:

- Git 437
- Perforce 539
- Subversion 570
- ClearCase 457
- Rational Team Concert 485

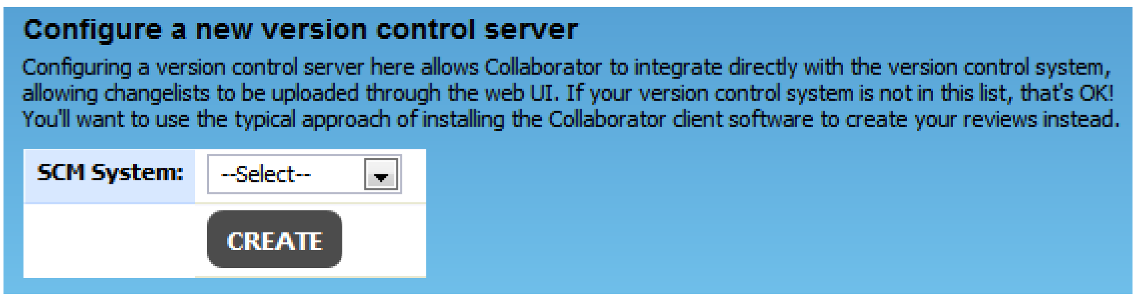
Configuring Servers

Next is the list of currently configured servers, or a message if you have not created any yet:

Version Control Servers

	Title	Type
[Edit] [Delete]	Jason's Perforce Server	Perforce
[Edit] [Delete]	Smart Bear Subversion	Subversion

Entries in this table are created automatically when one of the client tools uploads files from a server that does not map [190] to any of the servers we currently know about. You can edit or delete entries in this list. A form to create a new entry always appears at the bottom of the screen:



Editing Server Configuration

The exact fields you need to configure the connection to a version control server depends on the version control system:

Most of the version control server entries have at a minimum these two fields:

Title	The title is used to indicate this version control server to other users of Collaborator, so it should be something that everyone will understand, even if they are going through proxies, VPNs, or other such things.
Attach changelists from browser	If enabled, this feature lets users select committed changelists to review directly from the web browser, without having to install any client programs.

All of the version control systems also require that you specify the path to the command-line client executable for that system. This is a good example of something you might want to specify in the version control server template [188], since it is probably going to be the same for all the version control server entries you configure.

If you want to enable the Attach changelists from browser [189] feature, then the server will also require some sort of authentication. This is the version control server account that Collaborator should use when querying that version control server. Note that Collaborator will use this account no matter who is logged in!

You can click ***Test Connection*** at the bottom of the form to make sure that Collaborator can successfully communicate with the server. NOTE: This test simply verifies that specified server appears to be a valid repository; it does NOT verify that your username and password can update the repository.

Client Configuration Mapping

An unfortunate thing happens when client tools are separately configured for version control access: they can have different names for the same physical version control server. It is hard or impossible for the Collaborator server to automatically figure out whether these two names represent the same server or two different version control servers.

The administrator can fix this using the **Client Configuration Mapping** section of the server configuration form. You can configure Java-style regular expressions to match against each of the fields that our client tools upload. If the version control server entry was created automatically then these fields are already filled out and you probably do not need to change them. The fields available are different for each version control system:

When you submit this form, the list of configurations updates to indicate which configurations match and which do not match the current patterns. This makes it easy to iterate until you have covered exactly the right cases.

3.3.6 Custom Fields

Collaborator supports custom fields for reviews and defects. A special type of review custom field is also supported: participant custom fields. Participant custom fields apply to a review, but allow each user to specify their own value for the field.

Note: *Support of custom fields varies depending on Collaborator edition. They are not supported in Collaborator Community, have limitations in Collaborator Team and are fully supported in Collaborator Enterprise. For a complete list of differences between Collaborator editions, please see the comparison page* [3]

Custom fields may be any of four types: Single-line String, Multi-line String, Drop-down List, and Multi-Selection. Although these fields show up in different places in the user interface, the administrative interface for configuring these fields is identical. It shows up in the `Review Custom Fields`, `Participant Custom Fields`, and `Defect Custom Fields` subsections of the administrative interface.

Consequences of Changing Custom Fields

The conscientious administrator will realize that it could be disastrous to change custom field settings while a review is taking place. If someone is filling out custom fields and simultaneously a new one is added, what happens? If a review is going on and a new field is added or a field is removed, what happens? If you view an old review with defects and you have since added, removed, or changed defect custom fields, what happens to the defect data?

Collaborator is smart about handling dynamically changing custom fields even while reviews are in progress or already complete. If fields are added after the fact, reviews and defects will show a dash or "N/A" to indicate that this value was not given. Any new creations or edits of existing creations will force the user to fill in values for the new fields. If fields are deleted, existing values are simply ignored. If there are changes to field titles, descriptions, or other non-value items, existing values are unaffected. If the values in drop-down lists change such that a value given previously no longer exists, the previous value will still hold for that field, although if the user then edits the field he will be forced to pick a new valid value.

Fields that are deleted in the administrative interface are removed from the user's interface immediately. The original data is still preserved in the database for reporting but is no longer available to the user in the various client interfaces.

Custom Fields and Reports

There are consequences of custom fields on external reporting systems such as Excel, Access, Crystal Reports, and Business Objects.

The custom field system inside the database is fairly involved and not intuitive. Therefore for your convenience Collaborator maintains several database VIEW objects that cause custom field data to appear as if it was a standard table in the database. The two VIEW objects are `reviewcustom` and `defectcustom`. In each case one column refers to the unique ID of the associated object, then Collaborator generates columns for each of the other custom fields and fills in the values for each, using `NULL` if the value is not specified.

Warning: It is not uncommon to see `NULL` values in custom field views. If a review is in a workflow 205 that does not support certain fields, they will be `NULL`. If a review was created before a certain custom field existed, the value will be `NULL`.

Warning: Custom fields of "Multi-Select List" type are not retrieved in the `reviewcustom` database view.

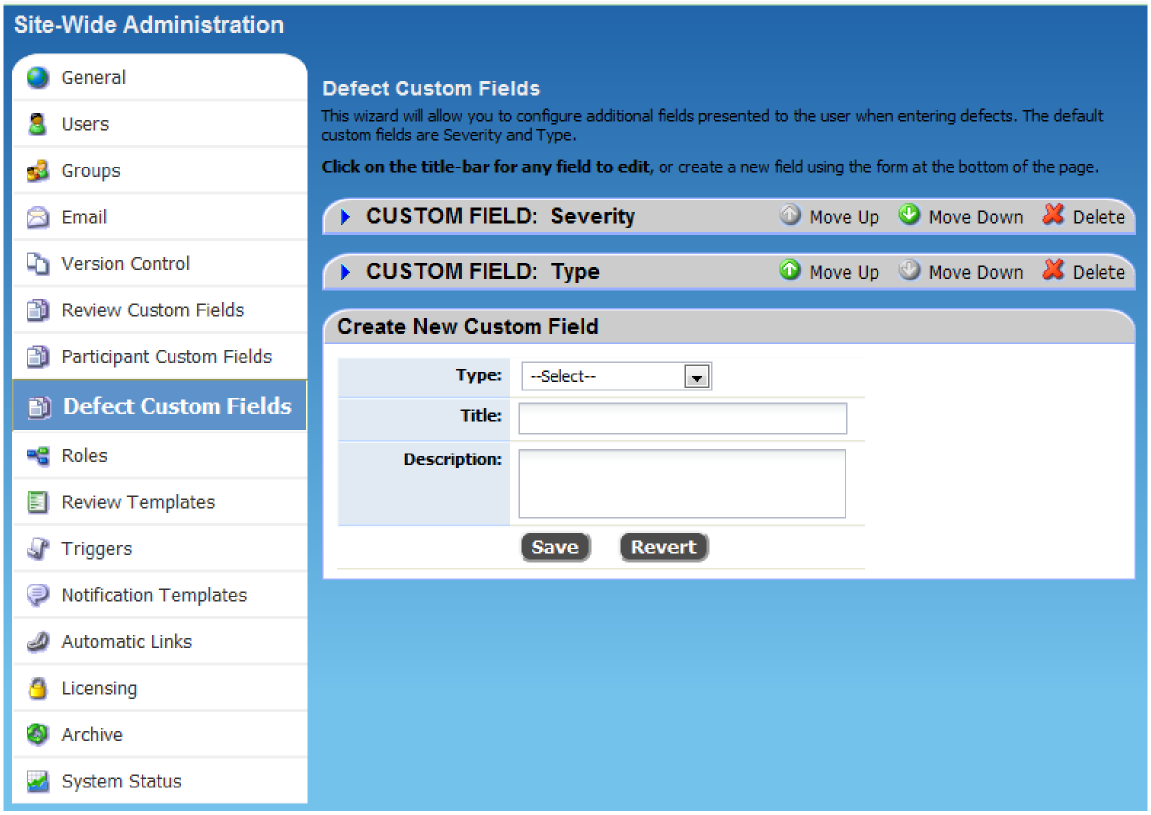
Warning: If you change custom fields Collaborator will immediately change the VIEW definitions in the database. This can break existing queries and reports unless those queries have been designed to be immune to such changes. For example, you should refer to columns by name and not by their order.

Custom Fields and Searching

The search engine 308 is aware of all custom fields and will scan data in custom fields you would expect.

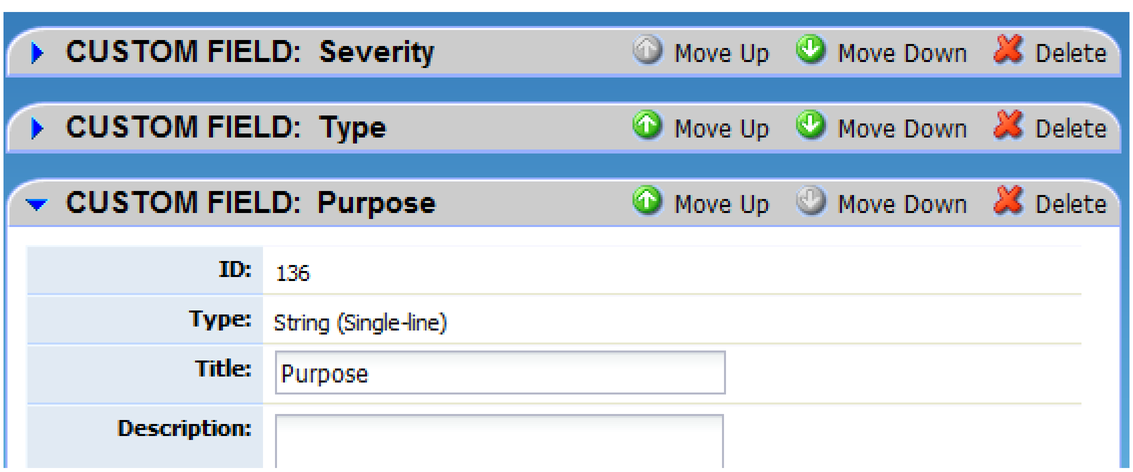
Custom Field Configuration

When you view either the Review Custom Fields, Participant Custom Fields, or Defect Custom Fields subsection, a list of already customized fields will appear at the top of the list:



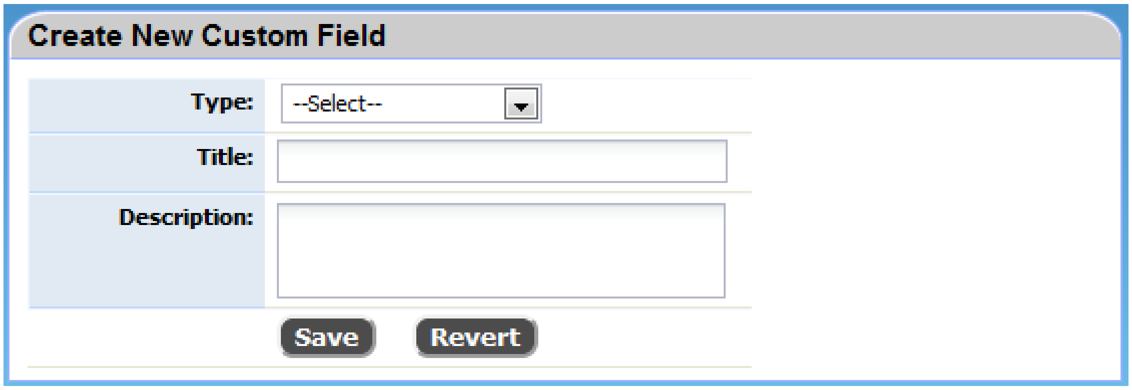
Collaborator will come with default custom fields, an "Overview" review custom field and "Severity" and "Type" defect custom fields. They will appear collapsed as exemplified by the Severity custom field. Click on the blue triangle to the left of the custom field title, and the section will expand so that you may view/edit the settings. Expanded sections will look like the Type custom field.

Each existing custom field comes in a box with a toolbar of commands to the right of the title:



The `Move Up / Move Down` commands let you change the order of the fields as it will appear to users. `Delete` removes the custom field from the system forever, so use with caution.

At the bottom of the custom fields list, there will be a customizable form where you will be able to create a new custom field:



A custom field's data type cannot be changed once it is created; everything else about the field can be modified at any time. Types are one of:

- **Single-Line Text**. A single line of text, scrolling horizontally if needed for length. Maximum length is 255 characters. Various validation options.
- **Multi-Line Text**. Multiple lines of text, scrolling horizontally and vertically as needed. Maximum length is database-dependant, but always at least 8192 characters, and typically more like many millions of characters.
- **Drop-Down List**. A drop-down list of pre-defined choices. Exactly one selection is required.
- **Drop-Down List Series**. A hierarchical series of drop-down lists of pre-defined choices.
- **Multi-Select List.** A drop-down list of pre-defined choices. User may select zero, one, or multiple values.

The Title of a field is displayed to the user as a prompt, much like "Type" and "Title" are shown in the screenshot above.

Tip: Avoid to name fields very much alike. Prefer more descriptive names. Otherwise, it may confuse users when selecting an appropriate field. Besides, there is a known issue 690 that custom field names which differ only by double quote characters (") may break Oracle reporting views.

The Description of a field is shown as help-text below the field, prompting the user as to the intent of the field.

All textual fields allow for a minimum and maximum length. Minimums can be zero if it is OK for the user to leave the field blank.

Single-Line string fields also allow for an optional Java-style regular expression validator. If given, the content of the field must match the regular expression exactly. It is important to note that if you use a Validator, that field will be automatically required. If you do not want the field to be required, you must use a Validator that will allow the field to accept empty values AND set the Minimum Length to 0.

The Drop-Down List type requires a list of options. These are in plain text. To change the order of items, just copy/paste the items in the list. If you change just capitalization, the item is altered in-place; if you change an item more than just in capitalization the system considers the previous item to be deleted and the current item to be added.

> **Warning:** If you think you are renaming a drop-down item, you are not! The system considers "renaming" as deleting the old item and creating a new item. Rearranging items without renaming works as expected, as does changing just capitalization in an item.
>
> This confusing situation will be remedied in a future version.

The Drop-Down List Series type requires a title that is pipe-delimited and a list of options that are also pipe-delimited, and the number of elements must match. For example, if you title the field "Product|Version|Area", you will need list elements that match, like: "Review|5.0|Misc", "Review|5.0|CLI", "NewProduct|1.0|Development". These hierarchical custom fields will automatically populate the remaining fields if no other options are available.

Note: When running reports, the text entered must exactly match the list item, including pipe characters. For example, "Review|5.0|Misc" ...

For example, if the list elements are "A|B|C", "D|E|F" and "D|G|H", selecting "A" in the first drop-down will automatically populate the second and third drop-down elements with "B" and "C", respectively, as there are no other valid options for "A". Selecting "D" will not automatically populate the remaining drop-downs, as there are multiple options associated with "D".

Why Are not My Custom Fields Showing Up in My Reviews?

Once you have created a new custom field, you may not see them automatically in your reviews.

If you have more than one template defined, custom fields will be automatically be disabled on all templates. To enable custom fields, go to the Review Templates screen, edit the appropriate template and change the setting for that specific custom field to "Yes".

You can also define a Review Custom Field and Participant Custom Field to be visible only during certain phases of the review. This can be useful for storing fields only used by scripts or triggers. This is changed via the "Visible Phase" drop-down.

You can set Review Custom Fields or Participant Custom Fields to be mandatory by a certain phase of the review by setting the “Due by Phase” dropdown. The phase set in the “Visible Phase” dropdown should be earlier than the phase set in the “Due by Phase” dropdown. Note that mandatory participant custom fields are only mandatory for participants in charge of changing the phase (planning phase: author; annotation phase: all participants; inspection phase: reviewers, and so on).

Notes About Participant Custom Fields

Participant custom fields have some unique behaviors. First, they cannot be visible only in the planning phase, as this would not give the participants an opportunity to specify their values for the fields. Second, if a required participant custom field is visible only within the Inspection phase, users may not "Finish" the inspection phase without specifying their values for the fields. Finally, participant custom fields may be edited while the review is in the complete phase without reopening the review. This is to support post-review survey questions.

For examples of reporting on Participant Custom Fields, see:

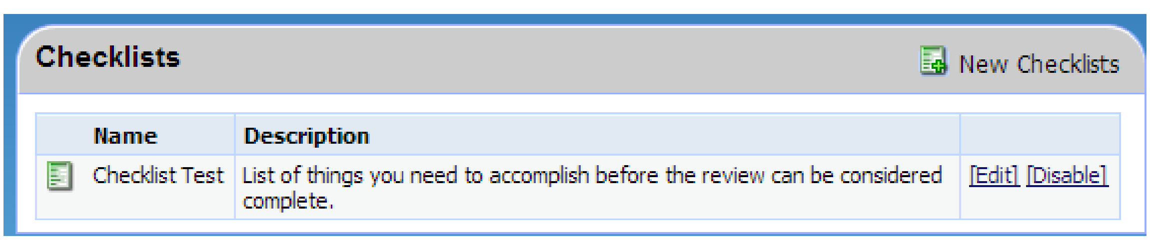
- Example SQL: Participant Custom Fields 603
- Example XPath and XSL 609

3.3.7 Checklists

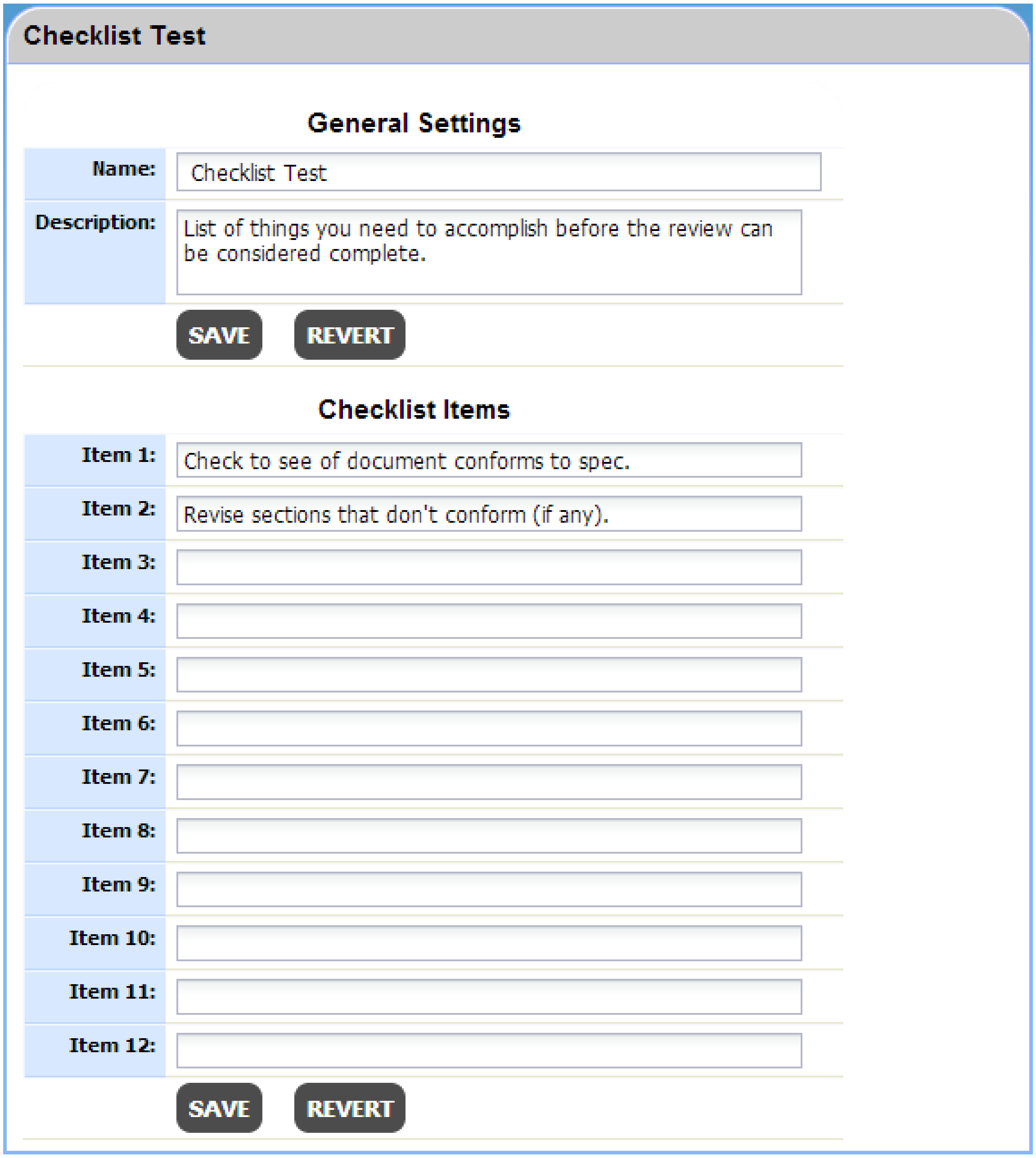
When you want to remind reviewers to look for items in a review that have been recurring problems (perhaps security issues for a reviewer who is a security specialist or integration issues for another), a checklist is the answer to make sure that the code is thoroughly reviewed before it is considered complete.

Note: *This feature is only supported in Collaborator Team and Collaborator Enterprise. For a complete list of differences between Collaborator editions, please see the comparison page* 3

You can configure checklists and the items that they include from the Checklist wizard on the Admin page:

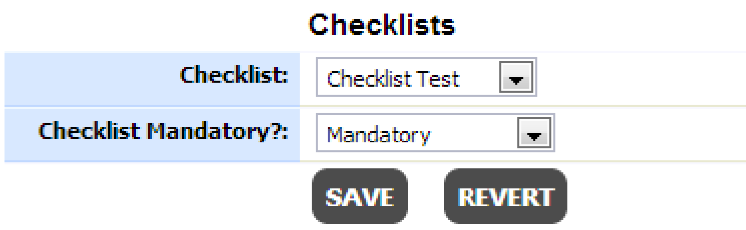


You can make a new checklist, edit a checklist, or disable a checklist. After a checklist has been disabled, you can enable it. Checklist names must be unique. Checklist items must be unique within a checklist.



The checklist item list always has space for 10 new items. If you need more space, click SAVE and the list refreshes with your current items and space for 10 more.

After you have created the checklist, apply the checklist to a template. Only one checklist can be applied to a template. Go to the Review Templates tab on the Admin page and edit the template to make sure that the template you are using has checklists set up:



Select the checklist you want to include in the review, and then select Mandatory or Non-Mandatory from the dropdown box. Mandatory checklists must have all items checked before the review can be approved.

If you revise a checklist after it has been applied to a review, the current review is not affected. The revised checklist applies only to future reviews.

When a reviewer checks off an item, the Chat section on the Review Summary page shows the information for that item. Collaborator notes the name of the reviewer and the date and time the item was checked off. If the reviewer who checked an item unchecks it, the system notes that he has unchecked the item and the date and time.

For auditing purposes, each checklist status change is included in the Review Details Report. Make sure that Checklist History is set to Display Checklist History.

3.3.8 Roles

A "Role" in Collaborator indicates the way in which a person participates in a review.

Note: *This feature is only supported in Collaborator Enterprise. For a complete list of differences between Collaborator editions, please see the comparison page* 3

Roles

Collaborator supports four "roles" for review participants. The following roles are configured by default but administrators can configure completely different templates.

Author

Authors are the people responsible for the changes or documents under review. Usually they are responding to comments and questions made by reviewers and observers. In the "Fix Defects" phase the review will be "in their court" and on their Action Items 241 list.

Reviewer

Reviewers are responsible for inspection, creating defects, and so on. With multiple reviewers, they will hopefully come to a consensus about each questionable item, but this is not required by the system. Reviewers typically create defects [303], but again this is not required.

Observer

Observers are involved and make comments but they are not "vital" to the review. If all other participants mark the review "complete," the review goes to the next phase regardless of observer state. Observer roles are usually used when you want to bring in someone who has special expertise on an issue.

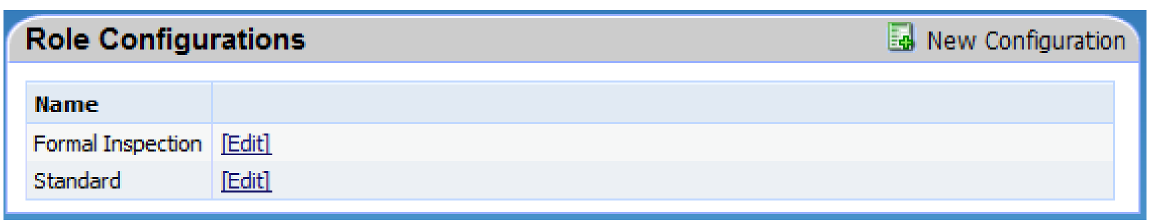
Moderator (optional, not enabled by default)

The Moderator maintains the pace and tenor of the review. This is an optional role that does not exist in the default installation. This is used for more formal review workflows where one person leads and controls the review.

Different styles of review require different roles with different terminology and rules for what each rule is allowed to see and do in a review. Formal reviews might have four roles with strict rules, informal reviews might have just an author and reviewer, and a "self-check" review might just require an author with optional external reviewer.

Users interact with roles when they are creating a new review [245] or editing the list of participants [254] in a review.

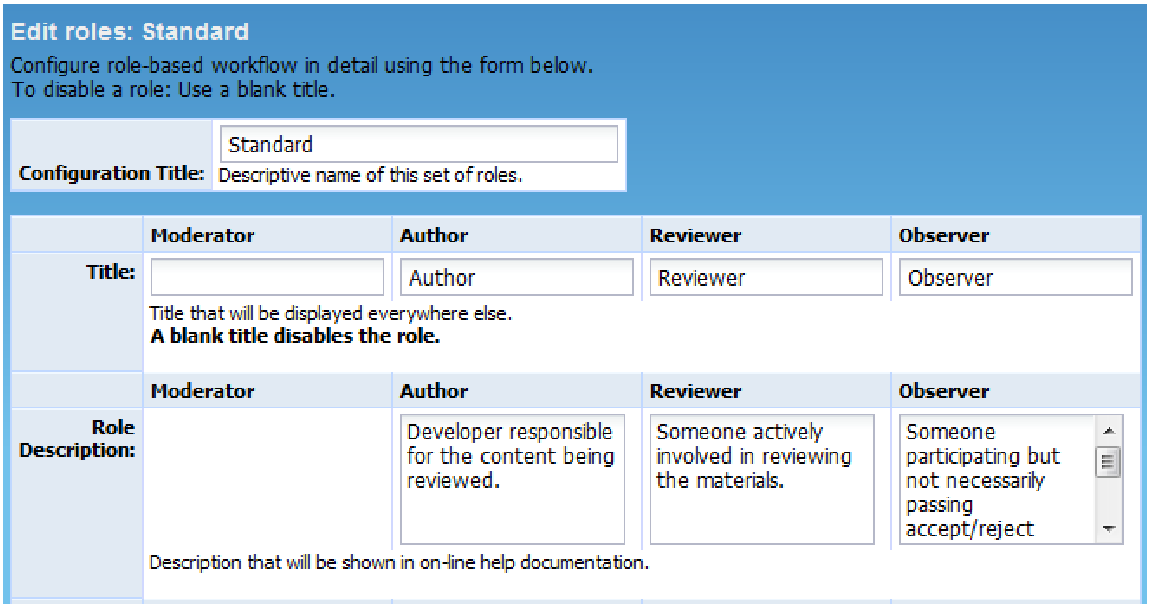
The Role Configuration screen lets you set up any number of sets of roles. Each set is given a name and corresponds to some concept of a review.



Any number of role configurations can be specified. The names here are never shown to an end user; they are used only when selecting a role configuration as part of a review workflow [205].

In each role configuration you can have between 1 and 4 roles.

A variety of options are available when editing an existing role configuration or creating a new one:



Configuration Title

The title of this configuration. This is strictly an administrative thing -- users of the system will never see this title. They see review workflows 205 instead.

Title

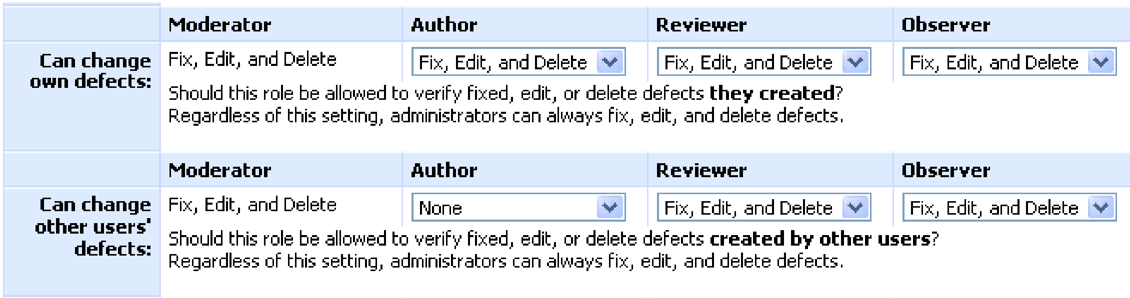
The name of the role as it will appear in drop-down lists and on-line help text. The user will use this title as the primary mechanism for referring to the role.

Use a blank title to indicate that this role should be completely disabled.

The "Author" role *must* always be in the second column, although it can be renamed. It *must* always exist. The concept of the "author" is a special one in the system because the author always has special responsibilities. For example, when a review is in "Rework" phase the author's Action Items 241 list will say "Rework defects found" whereas other participants will see "(No Action Required) Waiting for author to rework defects".

Description

A description of the role that will be prominently displayed to the user in all client user interfaces where roles are chosen, most prominently in the Participants 245 section of the Create Review wizard.



Can change own defects

If "None", this role will be allowed to create defects, but will not be allowed to mark their own defects fixed, edit their own defects, or delete their own defects.

If set to "Fix and Edit", this role will be able to create defects, mark their own defects fixed, and edit their own defects, but will not be allowed to delete their own defects.

If set to "Fix, Edit, and Delete", this role will be able to create defects, mark their own defects fixed, edit their own defects, and delete their own defects

Administrators can always change or delete any defect, regardless of this setting.

In all but the most informal of reviews, authors are typically not allowed to mark defects fixed, but all other roles are allowed.

This setting also applies to the ability to externalize [306] a defect.

Can change other users' defects

If "None", this role will not be allowed to mark other users' defects fixed, edit other users' defects, or delete other users' defects.

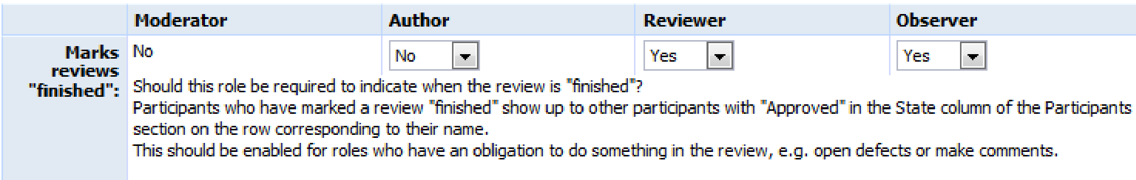
If set to "Fix and Edit", this role will be able to mark other users' defects fixed and edit other users' defects, but will not be allowed to delete other users' defects.

If set to "Fix, Edit, and Delete", this role will be to mark other users' defects fixed, edit other users' defects, and delete other users' defects

Administrators can always change or delete any defect, regardless of this setting.

To enable this setting, the Restrict Access to Fix Defect [152] setting must be set to "No".

This setting also applies to the ability to externalize [306] a defect.

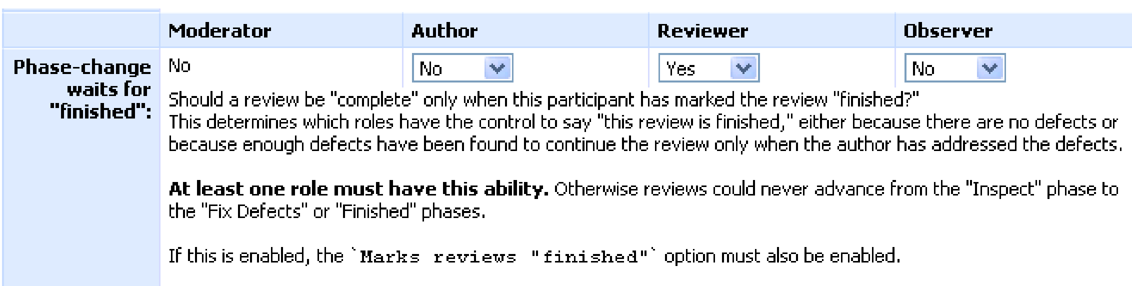


Marks reviews "finished"

If true, users with this role will be presented with a button in the Next Steps screen 262 that allows the user to say to the group: "I am finished looking at this review". The user will be brought back into the review if another user makes a non-trivial comment.

If false, the user is told "You must wait for other users".

Typically everyone except the author has this feature enabled. The author is usually not in control of when the review finished so his "I am finished" decision is not interesting.

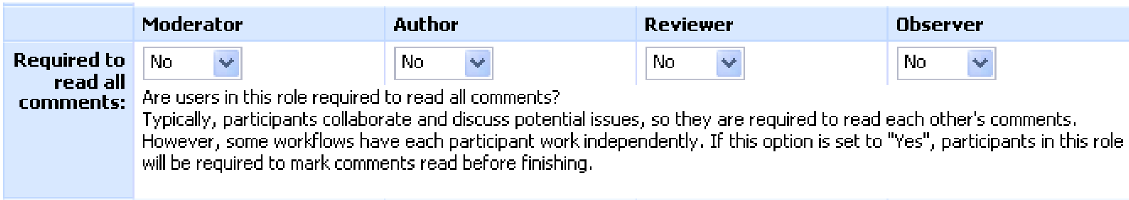


Phase-change waits for "finished"

If true, the review does not change phases until this user says he is "finished" with the review in the Next Steps screen 262. A phase-change might be inspection -> rework or inspection -> complete.

For this to be true, "Marks reviews finished" must also be true.

Typically this will be enabled for reviewers but disabled for observers where the user has been invited but we do not want the review held up.



Required to read all comments

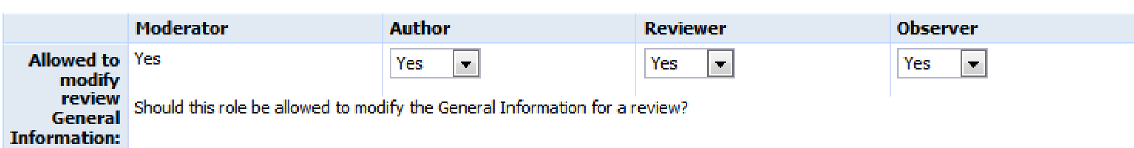
Please note that "Marks reviews finished" and "Phase-change waits for finished" must both be set to "yes" in order for this setting to be evaluated for the selected roles. Changes here will have no effect if one or both of those settings are set to "no" for the specified role.

If yes, participants in this role will be required to mark comments read before finishing the review.

Typically participants collaborate and discuss potential issues, so they are required to read each other's comments. However, some workflows have each participant work independently.

Setting this configuration to "no" is usually applied to observer-type roles because they are frequently called in for something specific and do not need to "hang around" and see what other users have to say. This is also helpful in workflows where the reviewers independently submit comments to the author, who is then in charge of all changes without having to communicate back to reviewers.

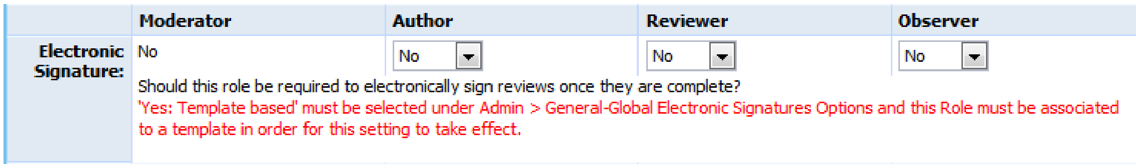
Note that this setting does not prevent anyone from coming back to the review and continuing to actively participate at any time.



Allowed to modify review General Information

Should this role be allowed to modify the review title, template, custom fields and other data of the General Information 252 section?

Typically there is no harm in allowing this, but you might want to lock down exactly who has the last word on the review custom fields and title.



Electronic Signature

Should this role be required to either sign off on or decline to sign off on a completed review?

This setting takes effect when template based electronic signatures 158 are enabled in the General Settings 147 screen.

Min # per review

The minimum number of users with this role required in the review. Can be zero to indicate "This role completely optional". Most often used with reviewers or moderators to require at least one, or with a "very careful" review where multiple reviewers are required.

Max # per review

The maximum number of users with this role required in the review. The maximum supported number per role is 999. Usually there is no reason to limit the number of users who can participate as a role in a review, except for highly formal reviews where a strict process is required.

Min # required to finish review

The minimum number of users with this role required to approve the review in order to complete it.

This value should be less than or equal to a value specified in "Min # per review" for the respective role.

If the user role allows to mark the review as finished and this value is 0, then all users with this role must approve the review to "close" it. If the user role is not obligated to approve reviews and this value is 0, then all users with this role are not required to "close" a review.

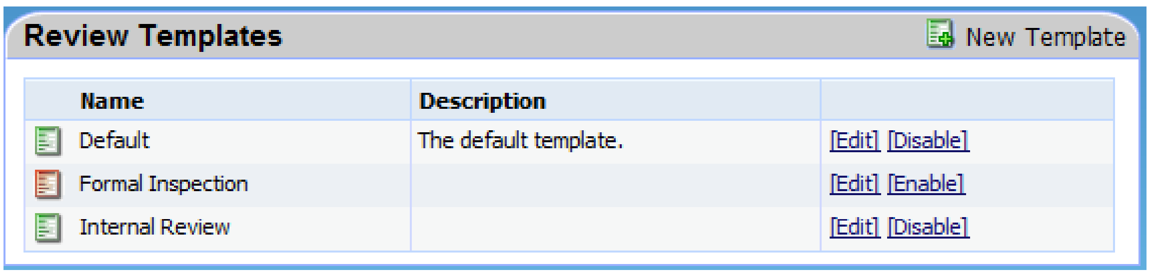
3.3.9 Review Templates

A "Review Template," or a "Review Workflow," is a particular set of roles, custom fields, and other options that determine the behavior and rules of a review.

***Note:** This feature is only supported in Collaborator Team and Collaborator Enterprise. For a complete list of differences between Collaborator editions, please see the comparison page* 3

Small installations might have only one template. Some installations will want a template for "quick" reviews (self-checks during active development of new features), another for "standard" (one author, one reviewer, suitable for most reviews), and another for "very strict" (reviews of a stable branch, core module, stable files or particularly difficult piece of code). Still others might require different templates in different development groups all using a single server.

The Review Templates section in the Admin screen allows an administrator to configure these templates.

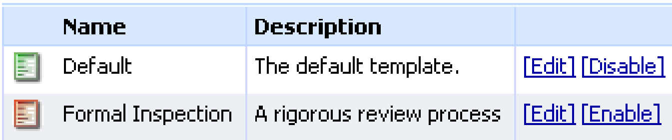


Template Management

The default configuration is to have only a single active template, and this is adequate for many smaller installations and trials. When there is exactly one template, the user is not prompted to select a template when he creates a review 245; the one template is automatically selected. If additional templates are added later, the template that was the singleton is still applied to those existing and completed reviews.

You cannot have fewer than one active template. The user interface will not allow you to disable the last template in your system; users need *something* to control the rules of the review.

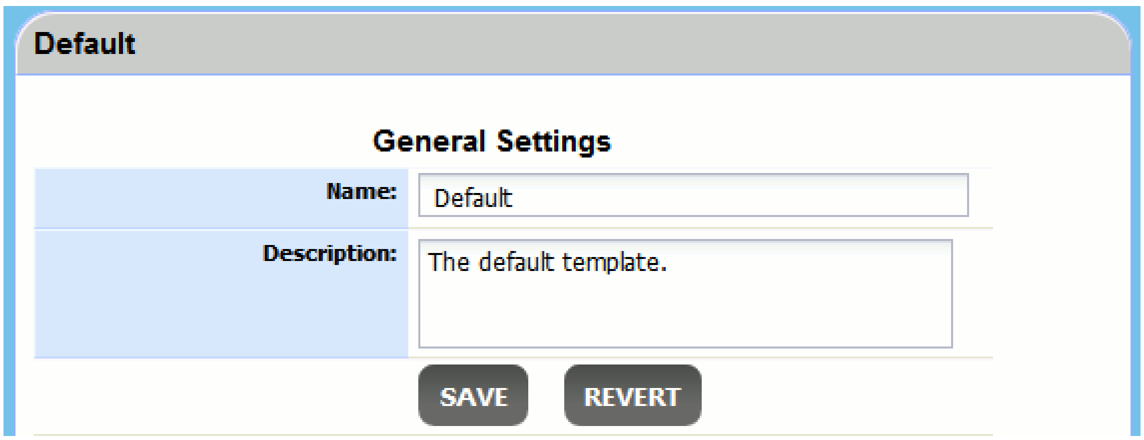
You also cannot delete templates. Old templates are needed for existing and completed reviews that depended on that template. You can, however, mark templates as "disabled," in which case they appear only in the administrative interface but never when creating a new review. Existing reviews with that template continue to their completion so as to not disrupt their progress:



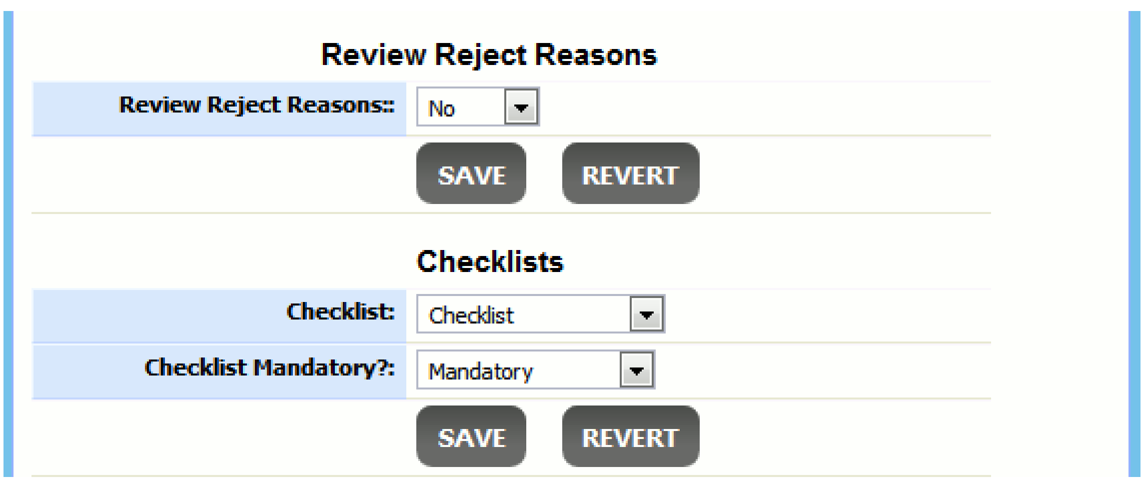
	Name	Description	
	Default	The default template.	[Edit] [Disable]
	Formal Inspection	A rigorous review process	[Edit] [Enable]

Here "Formal Inspection" has been disabled.

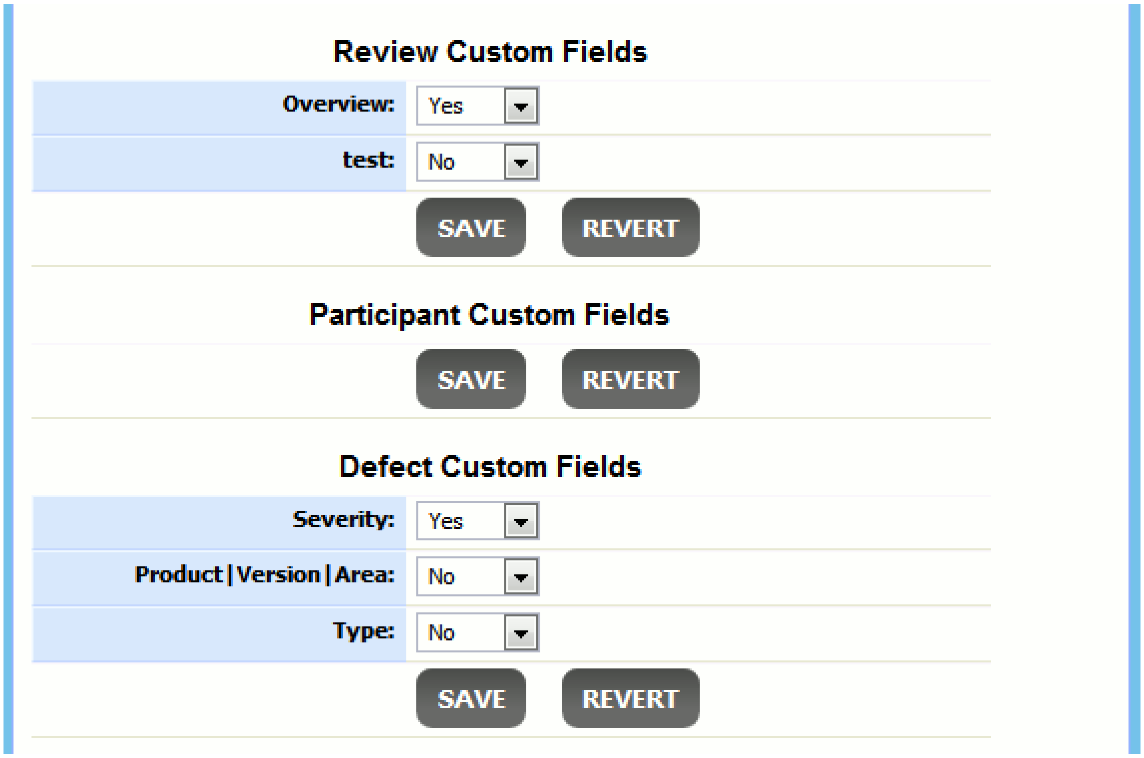
Editing Templates



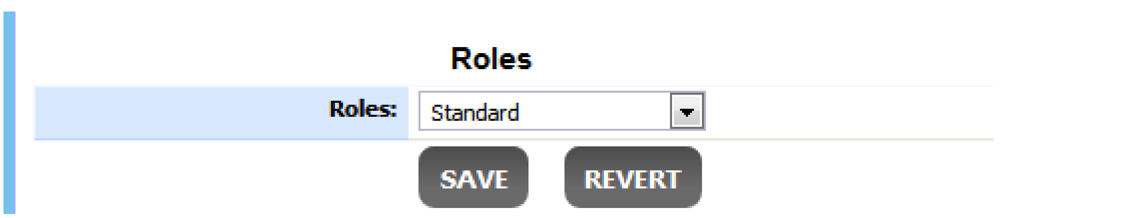
Every template has a Name and Description. Both of these are shown to the user for reference.



For each template you can specify whether it will prompt for review reject reasons 252, or display some of the predefined checklists 196.



Each template can include an arbitrary set of custom review, participant and defect fields [190]. The master list of all possible custom fields is set up separately; here you can configure which of those fields to display to the user during this template. This makes it possible to have templates with various field requirements, but where the same field *can* be reused across templates, the database and user interface will make that plain.



Each template also specifies a single role configuration [198] to use for that review.

Changing the Template being used in a review

What happens when a review changes its template, or when a template definition changes when a review is already in progress or complete?

A review can only change template during the Planning phase. This means once the review is under way, the template is fixed. This makes sense -- it would be hard to change, for example, the role configuration 198 when participants are already invited and performing their respective tasks! During the planning phase the wizard interface prevents the user from making incorrect moves.

Editing a template that is in use

If you edit a template that is currently in use by a review, the template will be set to disabled but it will continue to be used by the open review. A new template with the same name containing your changes will be automatically created. The newly created template will be used by all reviews created/edited after this change. Editing a template will not re-open old reviews.

3.3.10 Triggers

Collaborator can execute an external script or application when certain events occur. This is useful when integrating Collaborator with other systems such as issue-tracking, ALM, or builds.

Note: *This feature is only supported in Collaborator Team and Collaborator Enterprise. For a complete list of differences between Collaborator editions, please see the comparison page* 3

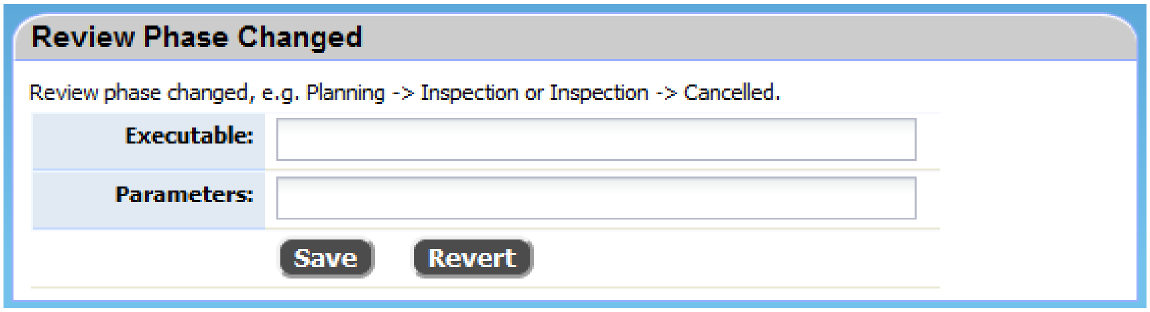
Possible uses of triggers include:

- Mirror defects created in Collaborator into an external issue-tracking system.
- Set a flag in a system when a review completes.
- Intercept all notifications sent from Collaborator to log them or to send the notification in a way other than standard email or RSS.
- Send notifications to a mailing list when certain events occur.

The Triggers section of the Administration page lets you configure the various triggers:

- **Review Created** - Review created. No files or participants yet.
- **Review Phase Changed** - Review phase changed. For instance from "Planning" to "Inspection" or from "Inspection" to "Canceled".
- **Added Files** - Files and/or changelists attached to a review.
- **Notifications Sent** - A email, RSS or other type of notification was sent to someone.
- **Defect Activity** - A defect was added, modified, or marked open/fixed. Use the defect unique ID to determine the difference.

- **User Created** - A new user was created. This runs whether or not the creation was automated or manual.
- **Role Changed** - A participant's role has changed. For instance, a participant was added to a review, removed from a review or promoted from one role to another.



The `Executable` field specifies the application to run. If this is a script, use the script executable here (for example, Perl, PHP, Python). This must be an absolute path to the application; the form will complain if the file cannot be found or executed.

The `Parameters` field is a list of arguments to supply to the executable. If this is a script, the absolute path to the script itself is typically the first argument.

There are many special arguments you can supply that will be replaced by Collaborator when the application is executed. For example, `${review.title}` will be replaced by the title of the review associated with the given triggering event. See the Variable Substitution [129] chapter for details.

Please note, that not all of the variables are available at the moment the trigger fires. In this case they will return "Not available" instead of their value. For example, the `${review.title}` is not available for the Review Created trigger as the review does not yet has a title when the trigger fires.

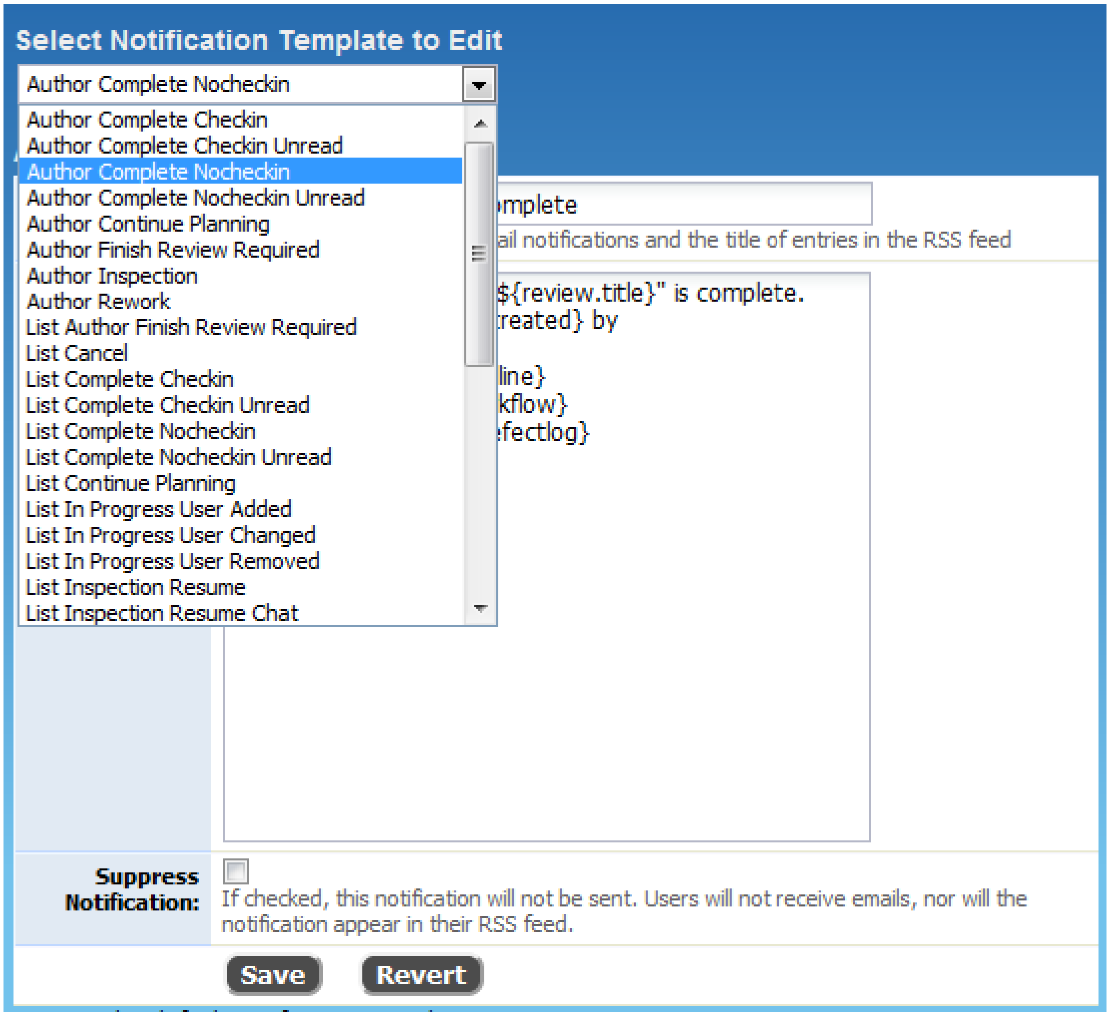
3.3.11 Notification Templates

Using settings on the **Notification Templates** page, you can customize the content of notification e-mails that Collaborator sends to review participants (see Notifications on Review Changes [237]).

Note: *This feature is only supported in Collaborator Enterprise. For a complete list of differences between Collaborator editions, please see the comparison page* [3]

About Notification Types

At the top of the page, there is a drop-down list of available notifications:



You can find detailed description of events below 211 in this topic.

To modify a notification template

1. Select the desired notification from the drop-down list.

2. Specify the e-mail subject in the **Title Template** box.

3. Enter the desired e-mail text into the **Message Template** box.

4. Click **Save** to apply the changes.

Important: The text in the “Title Template” and “Message Template” boxes can include **Collaborator variables** (like `${review.id}` or `${review.creator.name}`). These variables let you insert user- and review-specific information into notifications. For complete list of available values, see Variables 129.

To enable or disable a notification

1. Select the desired notification from the drop-down list.

2. Select the **Suppress Notification** check box to disable the notification.
   Clear this check box to enable the notification.

To return to default settings

- Simply click **Restore Default Templates** on the page.

How to Determine Notification Recipients Quickly

To indicate notification recipients, Collaborator puts the following keywords at the beginning of notification name:

Recipient	Description
Author	The author of the review, for which the event is generated. The author is also called "review creator".
User	All participants of the review (except for the author).
List	All participants of the review (except for the author) **and also** the e-mail address (or mailing list) specified by the Notification List 184 setting of Collaborator. Using these notifications are convenient for notifying multiple users, including those users who are not mentioned in the Participants list of a review.
Reviewer	All users with a Reviewer role on the review.
Poke	The user, who is poked (that is, notified explicitly).

Event Descriptions

The drop-down list at the top of the setting page 209 displays notifications in alphabetical order. Below is a list of notifications organized by their type.

Review Phase Notifications 212

Changes in File and Participant Lists 218

Changes in Comments 218

Miscellaneous 218

Review Phase Notifications

Below is a description of notifications that Collaborator sends when a review phase changes:

Annotating 212

Canceled 212

Completed 212

Inspection 214

Planning 215

Rejected 215

Rework 216

Signing 216

Stalled 217

- **Annotating**

  The following notifications indicate that the review is in the Annotating phase:

Notification	Sent To	Remarks
List Annotating	All review participants and recipients of the Notification List e-mails	Just a notification that the review is in the Annotating phase.
User Annotating	All review participants	A notification that the review is in the Annotating phase. The default message template also describes the recipient's role in the review.

- **Canceled**

  The following notifications indicate that the review has been canceled:

Notification	Sent To
List Cancel	All review participants and recipients of the Notification List e-mails
User Cancel	All review participants

  The default notification message mentions the user, who canceled the review.

- **Completed**

  The following notifications indicate that all the reviewers have marked the review as completed, and that the author needs to mark it as completed as well in order for the review to be finished:

Notification	Sent To
Author Finish Review Required	Review author
List Author Finish Review Required	All review participants and recipients of the Notification List e-mails

Note: Configurations on the Admin | Roles 198 page have the Marks reviews "finished" 202 setting. It specifies, to which roles the above-mentioned notifications are applicable. If this setting does not specify that some role can mark reviews as "finished", Collaborator does not send notifications to the participants that have this role.

The following notifications indicate that the review has been completed:

Notification	Sent To	Remarks
Author Complete Checkin	Review author	Indicates that the review has been completed, and the author can commit the changes to the source control.
Author Complete Checkin Unread	Review author	Indicates that the review has been completed, but has unread comments. The author can commit the changes to the source control, but should read the comments before doing this.
Author Complete Nocheckin	Review author	Indicates that the review has been completed.
Author Complete Nocheckin Unread	Review author	Indicates that the review has been completed and that there are unread comments in it.
List Complete Checkin	All review participants and recipients of the Notification List e-mails	Indicates that the review has been completed, and the author can commit the changes to the source control.
List Complete Checkin Unread	All review participants and recipients of the Notification List e-mails	Indicates that the review has been completed, but has unread comments. The author can commit the changes to the source control, but should read the comments before doing this.

Notification	Sent To	Remarks
List Complete Nocheckin	All review participants and recipients of the Notification List e-mails	Indicates that the review has been completed.
List Complete Nocheckin Unread	All review participants and recipients of the Notification List e-mails	Indicates that the review has been completed and that there are unread comments in it.
User Complete	All review participants	A notification that the review has been completed.
User Complete Unread	All review participants	A notification that the review has been completed and that there are some unread comments in it.

Note: the list above contains the Checkin and Nocheckin notifications that are very similar to each other. The notification message, which Collaborator sends, depends on the "*Create a Commit Action Item for Completed Review*" setting (you can find it on the Admin | General 147 setting page). If the setting's value is `Create`, then Collaborator sends the "Checkin" notifications. Otherwise, it sends the "Nocheckin" notifications.

- **Inspection**

The following notifications indicate that the review is in the Inspection phase.

Notification	Sent To	Remarks
Author Inspection	Review author	Indicates that the review has got to the Inspection phase and that the author can respond to comments.
List Inspection Resume	All review participants and recipients of the Notification List e-mails	Indicates that the review returned back to the Inspection phase and that participants can review the author's proposed fixes.

Notification	Sent To	Remarks
List Inspection Resume Chat	All review participants and recipients of the Notification List e-mails	Indicates that the review returned back to the Inspection phase and that it has comments that participants need to read.
List Inspection Start	All review participants and recipients of the Notification List e-mails	Indicates that the review has got to the Inspection phase for the first time.
User Inspection Resume	All review participants	Indicates that the review returned back to the Inspection phase and that participants can review the author's proposed fixes.
User Inspection Resume Chat	All review participants	Indicates that the review returned back to the Inspection phase and that it has comments that participants need to read.
User Inspection Start	All review participants	Indicates that the review has got to the Inspection phase for the first time.

- **Planning**

  The following notifications indicate that the review returned back to the Planning phase. The author needs to finish planning in order for inspection to be able to continue.

Notification	Sent To
Author Continue Planning	Review author
List Continue Planning	All review participants and recipients of the Notification List e-mails

- **Rejected**

  The following notifications indicate that the review has been rejected. The default notification message says what user rejected the review.

Notification	Sent To
List Reject	All review participants and recipients of the Notification List e-mails
User Reject	All review participants

- **Rework**

  The following notifications indicate that the review is in the Rework phase. The author needs to rework found defects:

Notification	Sent To
Author Rework	Review author
List Rework	All review participants and recipients of the Notification List e-mails
User Rework	All review participants

- **Signing**

  Collaborator sends these notifications to indicate that reviewers need to sign the review 158.

Notification	Sent To	Remarks
Author Review Signed	Review author	Indicates that the author has signed the review.
Author Review Signed Checkin	Review author	Indicates that the author has signed the review.
Note: The two notifications above are similar to each other. The notification message, which Collaborator sends, depends on the "*Create a Commit Action Item for Completed Review*" setting (you can find it on the Admin | General 147 setting page). If the setting's value is `Create`, then Collaborator sends the "Checkin" notification. Otherwise, it sends the other notification.		
List Complete Waiting for Signature	All review participants and recipients of the Notification List e-mails	Indicates that the review needs to be signed for approval.
List Signature Declined	All review participants and recipients of the Notification List e-mails	Indicates that some participant has declined to sign the review.

Notification	Sent To	Remarks
User Complete Signature	All review participants	The review has been completed and needs to be signed by participants.

- **Stalled**

The following notifications indicate that the review is stalled and needs some activity:

Notification	Sent To	Remarks
List Review Stalled Author Not Reworking	All review participants and recipients of the Notification List e-mails	Indicates that the review is stalled because the author needs to fix some defects.
List Review Stalled Reviewer Not Finished	All review participants and recipients of the Notification List e-mails	Indicates that the review is stalled because a reviewer needs to approve it.
Review Stalled Author Finish Annotating	Review author	Indicates that the review is stalled in the Annotating phase. It is waiting for the author to begin the Inspection phase.
Review Stalled Author Not Reworking	Review author	Indicates that the review is stalled in the Reworking phase, and that the author should fix defects.
Review Stalled Reviewer Not Finished	Participants with the Reviewer role	Indicates that the review is stalled in the Reworking phase. The default message specifies the reviewer, who needs to approve the review in order for it to be completed.
User Waiting Failed	All review participants	Indicates that the review is stalled because some review participants have already approved the review and others are waiting for each other.

Changes in File and Participant Lists

Collaborator sends the following notifications when the review's properties change:

Notification	Sent To	Remarks
List New Files	All review participants and recipients of the Notification List e-mails	Indicates that new files have been added to the review.
List In Progress User Added	All review participants and recipients of the Notification List e-mails	Indicates that one or more users have been added to the review. The default notification message specified the users' roles in the review.
List In Progress User Changed	All review participants and recipients of the Notification List e-mails	Indicates that the role of some review participant has changed.
List in Progress User Removed	All review participants and recipients of the Notification List e-mails	Indicates that one or more users have been deleted from the review's Participants list.
User New Files	All review participants	Indicates that new files have been added to the review.

Changes in Comments

When a review is in the Inspection phase and there are unread comments, Collaborator sends the *List Inspection Resume Chat* and *User Inspection Resume Chat* notifications. See their descriptions above 214.

Miscellaneous

Notification	Sent To	Remarks
Poke	A review participant that you poked in the Collaborator UI	Just a notification that the review needs the user's attention.

See Also

Notifications on Review Changes 237

Variables 129

3.3.12 Automatic Links

Collaborator creates links in text that is typed by users as review comments, custom fields, and so on. Several types of links are created automatically:

- URL's create links to that URL
- Names of files in the review create links that open that file in the diff viewer
- Line numbers (for example, 'line 345') in a file comment create links to that line in the diff viewer

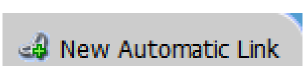
Note: *This feature is only supported in Collaborator Enterprise. For a complete list of differences between Collaborator editions, please see the comparison page* 3

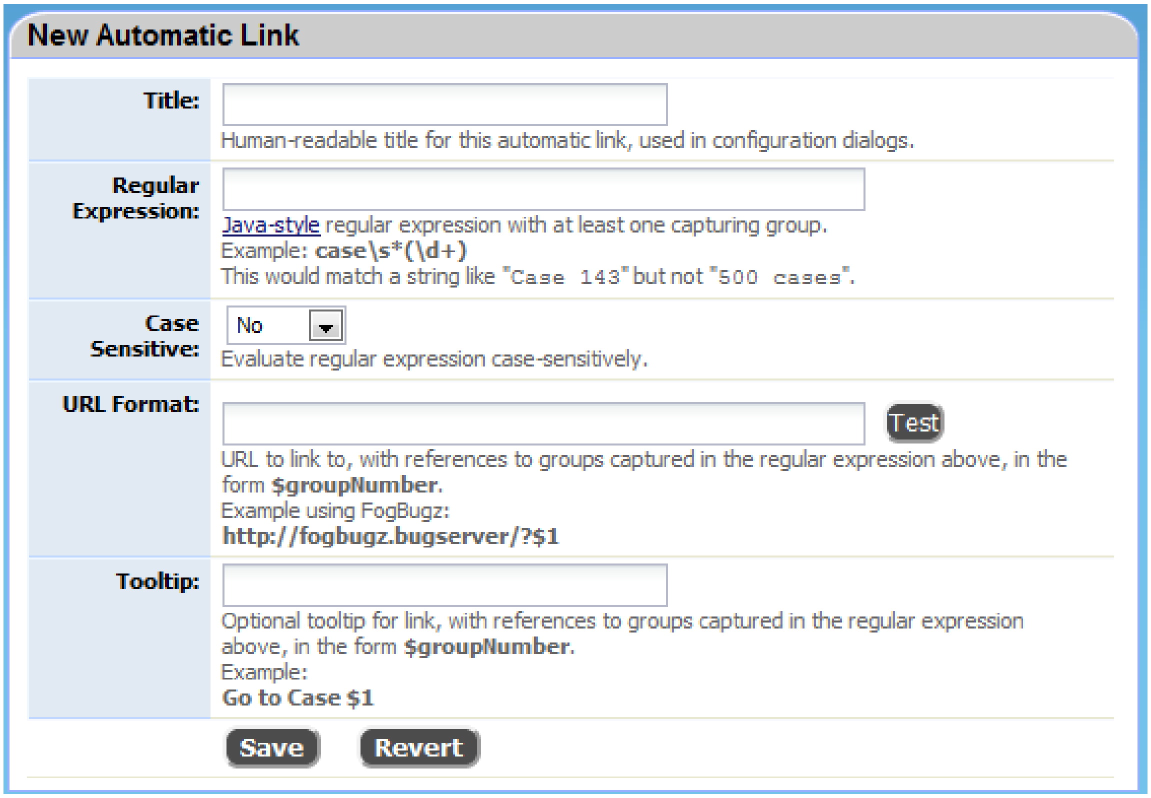
You can define your own Automatic Links to integrate Collaborator with external systems. Each Automatic Link consists of a regular expression pattern, URL format, and optionally a tooltip. When a match is found, Collaborator creates a hyperlink around the matching text. The URL of the hyperlink and the tooltip are constructed by replacing references to groups with the text selected by the corresponding capturing groups in the regular expression.

Examples of external systems you might want to link to include issue/bug trackers, build tools, or documentation library systems.

Creating New Automatic Links

To create a new Automatic Link, click the *New Automatic Link* button.





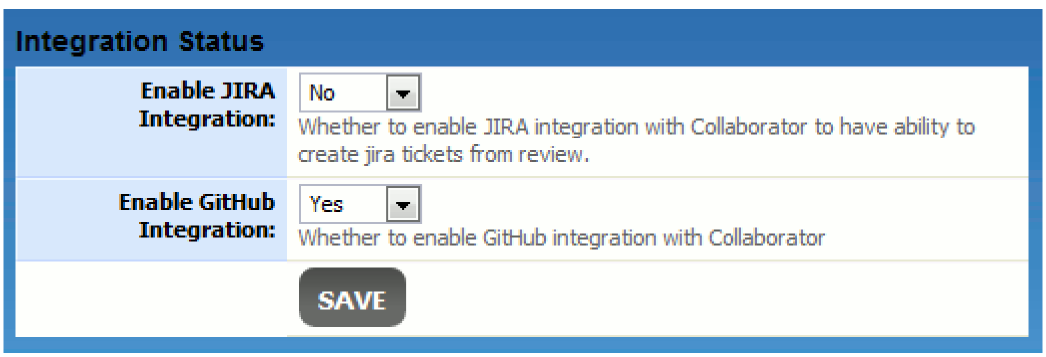
Title	Human-readable title for this automatic link, only used in the Automatic Link Configuration page.
Regular Expression	A [JavaScript-style regular expression](#) regular expression that identifies a reference to the external tool in text. This is used matched against user-entered text in review titles, custom fields, comments, and defects. You must include at least one one grouping expression (parenthesis). This is combined with the URL Format to link to construct the hyperlink to the external tool. For example: `case\s*(\d+)` This would match a string like `Case 1423` but not `500 cases`. This is the standard way to refer to a bug in FogBugz.
Case Sensitive	Evaluate regular expression case-sensitively. Usually this is set to "no".
URL Format	URL to link to, with references to groups captured in the regular expression above, in the form *$groupNumber*. Example using FogBugz:

	http://fogbugz.bugserver/?$1
Tooltip	Optional tooltip for link, with references to groups captured in the regular expression above, in the form *$groupNumber*. Example: Go to Case $1

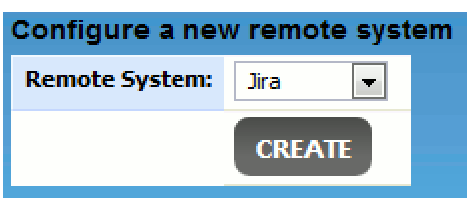
3.3.13 Remote System Integration

These settings allow to configure integration between Collaborator and the remote systems like JIRA or GitHub. See JIRA Integration 614 and GitHub Integration 632 for details.

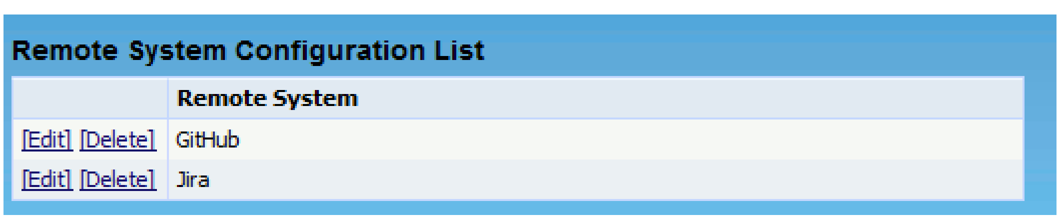
The **Integration Status** panel indicates which of integrations are currently operating and allows to enable of disable pre-configured integrations.



To create a new configuration for a remote system, select the system and press Create button.

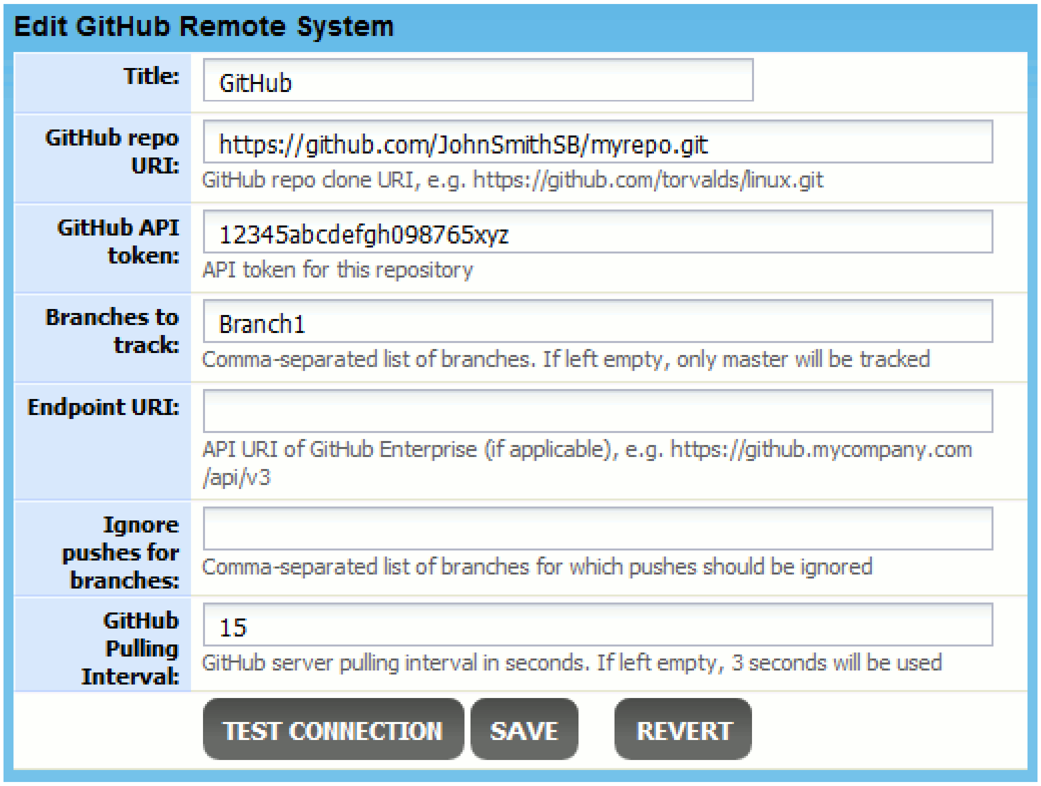


The **Remote System Configuration List** panel lists all existing configurations for remote systems and allows to modify or delete them.



GitHub Configuration Settings

For GitHub Configurations the following set of parameters are available:



Setting	Description
Title	The configuration name as it will be displayed in Collaborator's user interface.
GitHub repo URI	The URL of GitHub repository to be tracked. You can copy it from the Clone URL field of the repository's main page on GitHub.
GitHub API token	The personal access token for the GitHub account to be tracked. Read [Creating an access token for command-line use] on GitHub documentation to learn how to obtain it. The default set of token scopes is enough for integration with Collaborator.
Branch to track	One or several coma-separated names of branches to track. If this field is empty, "master" branch will be tracked.
Endpoint URI	This setting is needed for repositories hosted on GitHub Enterprise servers. It specifies the API URI of your GitHub Enterprise server.

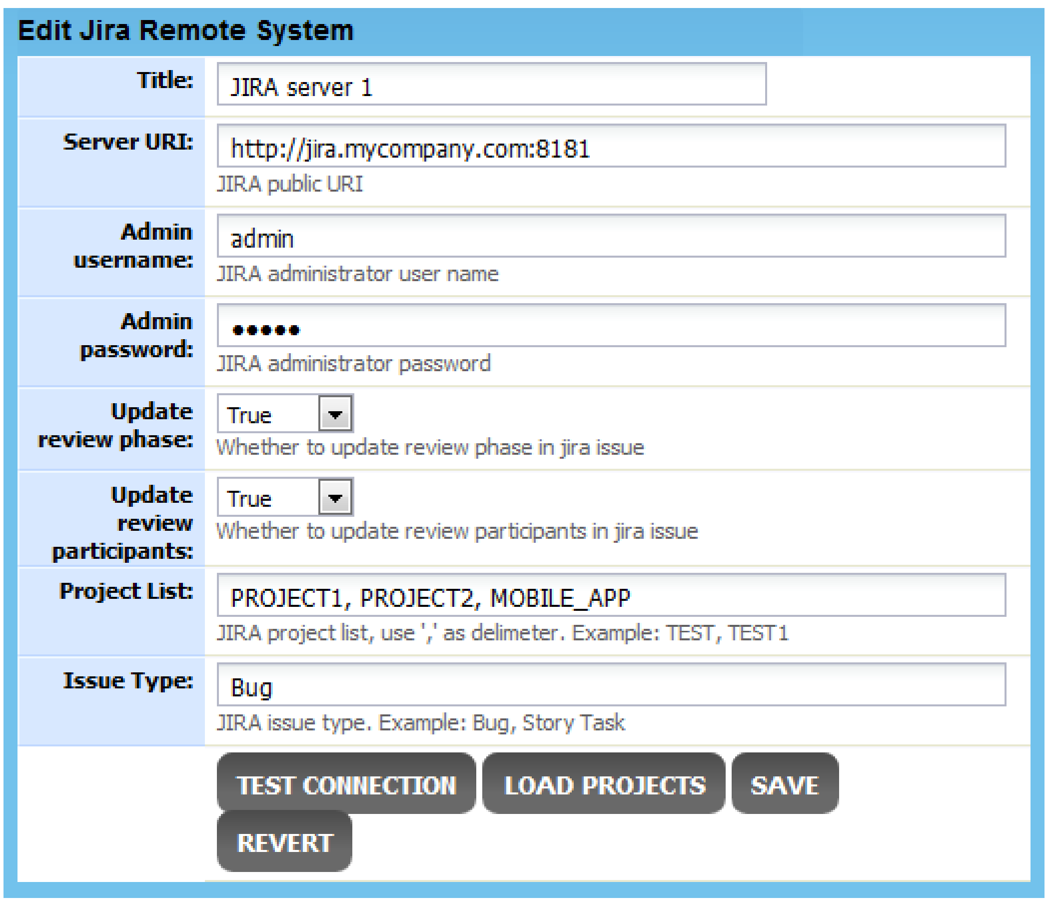
Ignore pushes for branches	Optional. One or several coma-separated names of branches to ignore. Collaborator will not create reviews for pushes to the specified branches.
GitHub pulling interval	Optional. Specifies how often to check for the changes on the GitHub repository. 3 seconds by default.

After specifying these values, you can click **TEST CONNECTION** to verify if you entered data correctly.

Read Configuring GitHub Integration 635 for step by step instructions on enabling and configuring integration with GitHub.

JIRA Configuration Settings

For JIRA Configurations the following set of parameters are available:



Setting	Description

Title	The configuration name as it will be displayed in Collaborator's user interface.
Server URI	The JIRA server's URL and port.
Admin username, and **Admin password**	The user name and password that the plugin will use for connecting to JIRA. It is recommended that the specified user has administrator permissions in JIRA.

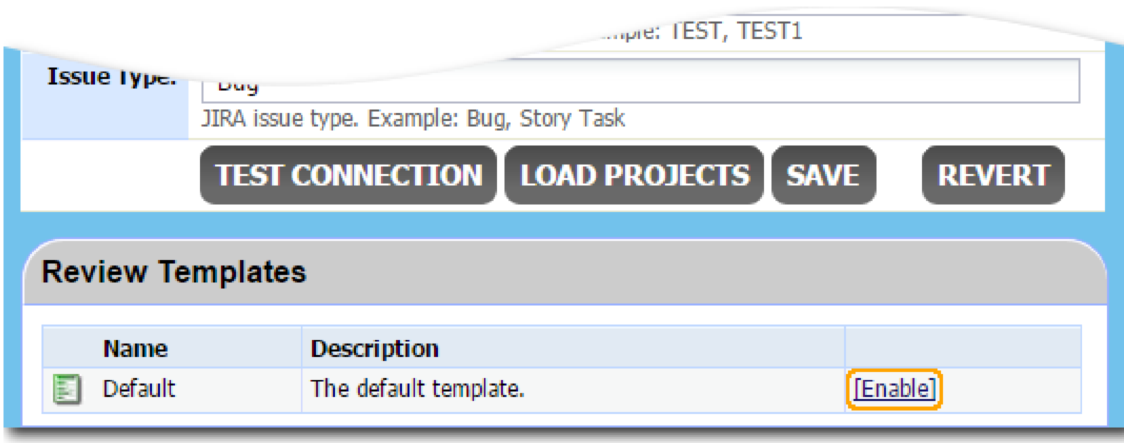
After specifying these values, you can click **TEST CONNECTION** to verify if you entered data correctly.

Setting	Description
Update review phase	Specifies if the Collaborator plugin will automatically update the review status in JIRA items that are connected with that review.
Update review participants	Specifies if the Collaborator plugin will automatically update the list of review participants in JIRA items that are connected with that review.
Project List	A string containing the keys of JIRA projects, to which Collaborator will add new items. This setting's value is used as a default value for the JIRA Project custom field (see below). If you are going to create items in several projects, enter several keys and separate them with commas. **Tip:** click **LOAD PROJECTS** to read project keys from the JIRA instance specified by the *Server URI* setting. Project keys are case-insensitive.
Issue Type	The type of the JIRA items to be created from Collaborator. You can specify one item type only. **Important:** This setting is case-sensitive. Specify the type exactly as it is written in JIRA settings.

Review Templates

If JIRA integration is currently running, the page additionally displays the **Review Templates** list. In this list you can specify which of review templates 205 should display the special review custom field 190 named **JIRA Project.**

JIRA Project is a drop-down field which lists JIRA projects, to which Collaborator can add new items. Just after the creation, the JIRA Project field is hidden. To show this field in the desired template, just click the **Enable** link next to template name.



Read Configuring JIRA Integration 618 for step by step instructions on enabling and configuring integration with JIRA.

3.3.14 System Status

Collaborator system status reports can be found on the System Status page.

Charts

The "Peak Usage" chart plots the maximum number of simultaneous users, measured by day. The "Active Users" chart displays the total number of users during the day:

This is most useful when determining the number of floating seats necessary to handle your Collaborator traffic. In the example above, 4 floating seats would be sufficient.

Server Backup/Debugging Dump

You can also find the server backup 89 form here.

Many server parameters are displayed. These are typically useful only when debugging problems.

System Information

Following the debugging forms, charts will display a long list of charts is a long list of system information. These charts will include:

- Debugging (Diagnostic Utility 136)

- Client/Server Connection
- Database Connection
- Server Properties
- VM Information

These charts will be mainly used to gather system information for our Technical Support when trouble should arise.

4 Web Client

This chapter describes the web user interface of Collaborator. The Web Client allows you to perform all types of peer review tasks: create reviews as an author, participate in someone else's reviews as a reviewer or observer, inspect the review materials and so forth.

> In order to use the Collaborator's Web Client, your administrator must first install and configure 51 the server part of Collaborator.

The topics of this section contain detailed information on working with web client.

In This Section

Related Topics of Interest

- Desktop Clients 327
  Describes GUI Client, Command-Line Client, plugins for Eclipse, Microsoft Visual Studio and other clients for desktops.

4.1 Web Interface Client - Overview

The Collaborator's Web Client allows you to perform all types of peer review tasks: create reviews as an author, participate in someone else's reviews as a reviewer or observer, inspect the review materials and so forth.

Requirements

In order to use the Collaborator's Web Client, your administrator must first install and configure 51 the server part of Collaborator.

The Web Client supports the following browsers:

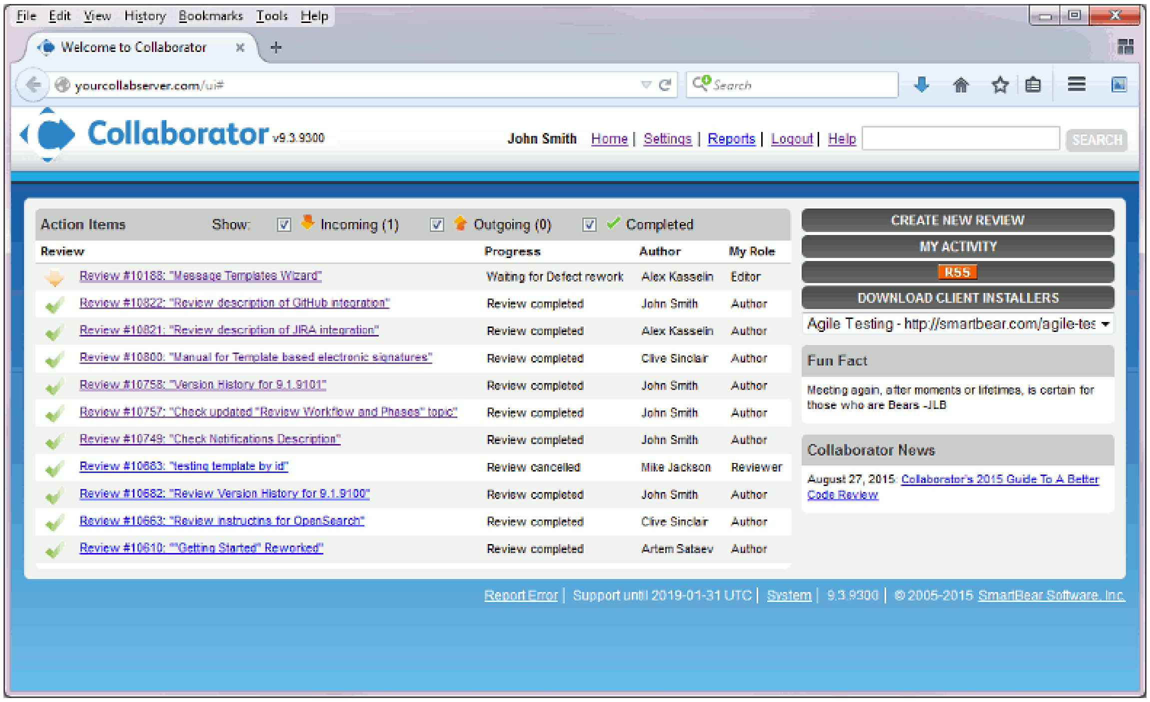
- Microsoft Internet Explorer 8.0 and later (To upload files from this browser, your administrator should enable Adobe Flash 875 component)
- Microsoft Edge
- Mozilla Firefox 3.x and later
- Apple Safari 3.x and later
- Google Chrome 3.x and later

Other browsers and versions *might* work to varying degrees.

Opening Web Client

To open the Collaborator's Web Client just start a web browser and navigate to the URL of the Collaborator Server. If you do not know the URL, ask your Collaborator administrator.

If you have not been authenticated, you will be redirected the Log-in Screen 230. Otherwise, the Home Page will be displayed.



Collaborator Web Client Home Page

From the Home Page you can:

- Check your Action Items [241] to see if you have any assigned reviews.
- View detailed information about the review in the Review Summary Screen [250].
- Create new reviews [243].
- Search [308] for specific reviews or generate various reports [317].
- Manage your user preferences [232] and notifications [237].
- Read news, release announcements, webinar invitations and other information from the SmartBear.

4.2 Account Management

Topics of this section contains information on your Collaborator's user account settings, logging in and logging out operations and subscribing to notifications.

In This Section

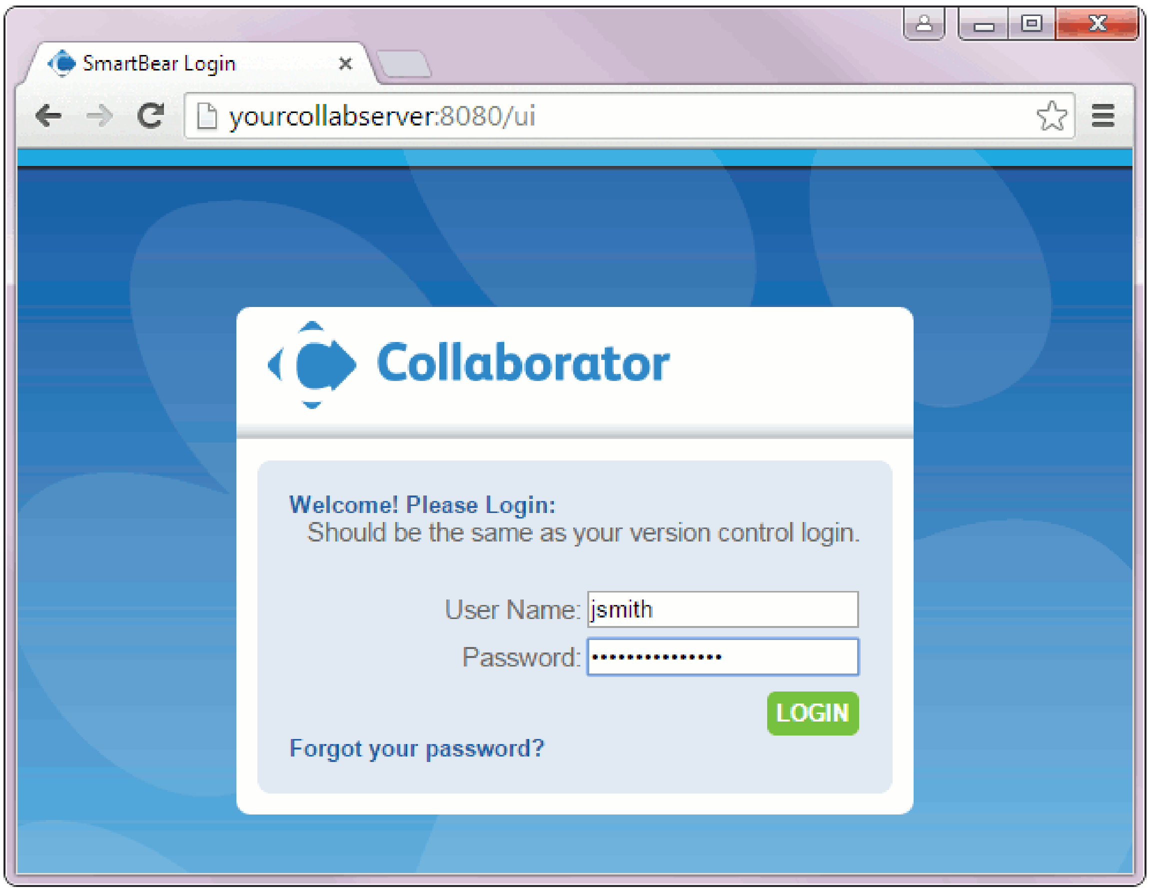
- Logging In and Logging Out [230]
  Describes how to log in to and log out from Collaborator.

- User Preferences 232
  Provides information on user account settings.

- Notifications on Review Changes 237
  Contains information on notifications that Collaborator sends to inform review participants on review changes.

4.2.1 Log in / Log out

When you visit the main Collaborator web page, you are prompted with a log-in screen:

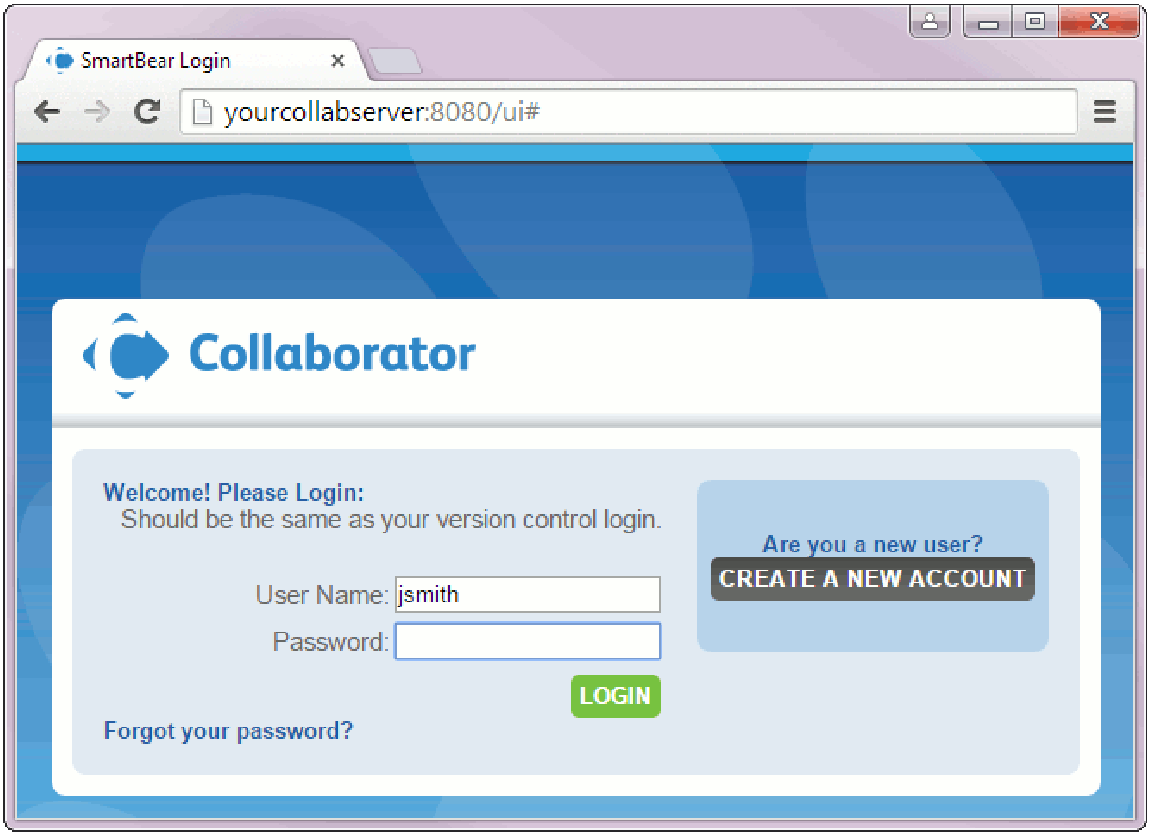


The URL to this screen will depend on your system administrator. It often includes a special port number.

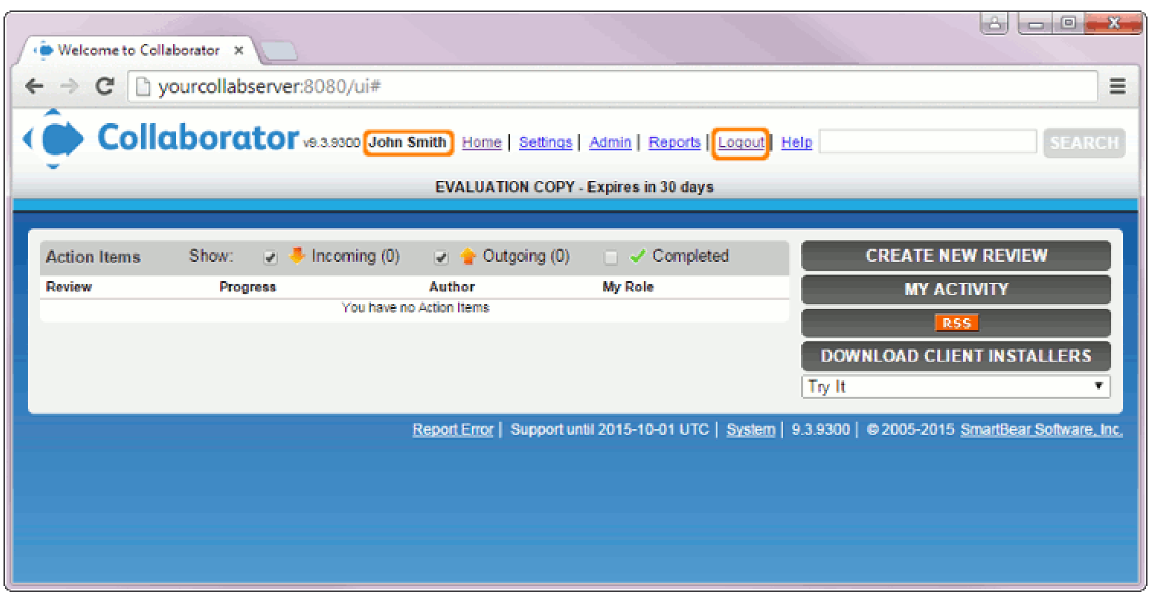
Typically, accounts in Collaborator will be identical to your version control system account.

If your account is not set up, you will need to contact an administrator to set one up 164. If you use LDAP or ActiveDirectory 102 for authentication in your company, you can use that username/password with Collaborator and it will automatically create your user account.

Some system administrators will have enabled 147 a "Create an account" form on the front page:



Once you are logged in, the system displays this fact at the top of the screen:

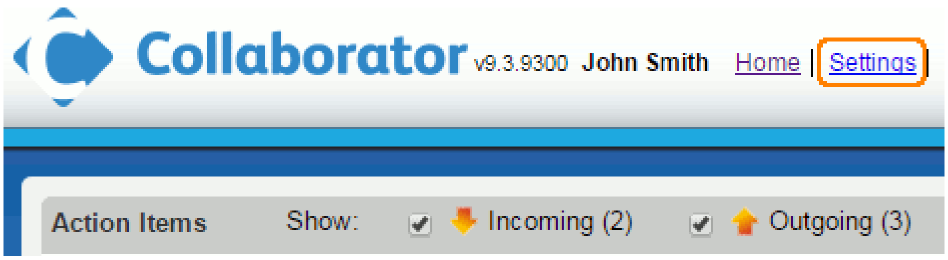


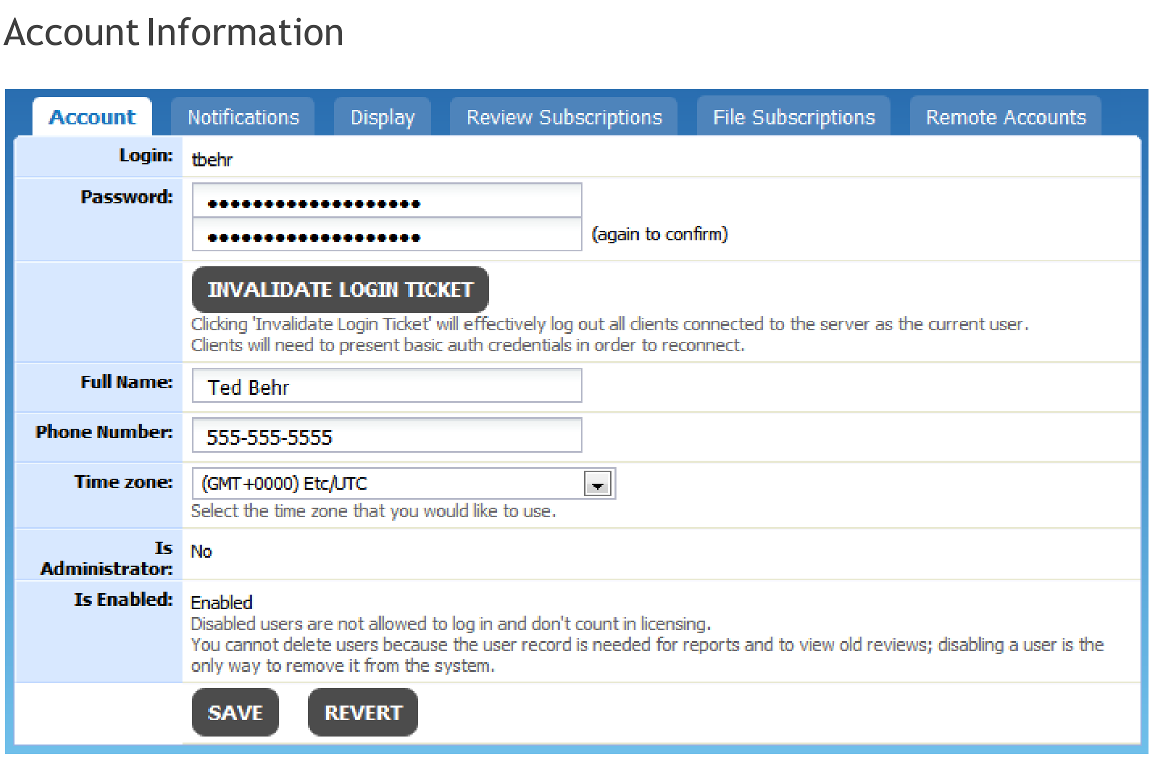
You can log out using the "Logout" button in the menu bar, but this is usually not necessary.

If you do not explicitly log out, the system will give your browser a cookie so the next time you go into a page you will not have to re-login first.

4.2.2 User Preferences

To edit your settings and preferences, use the **Settings** menubar command:



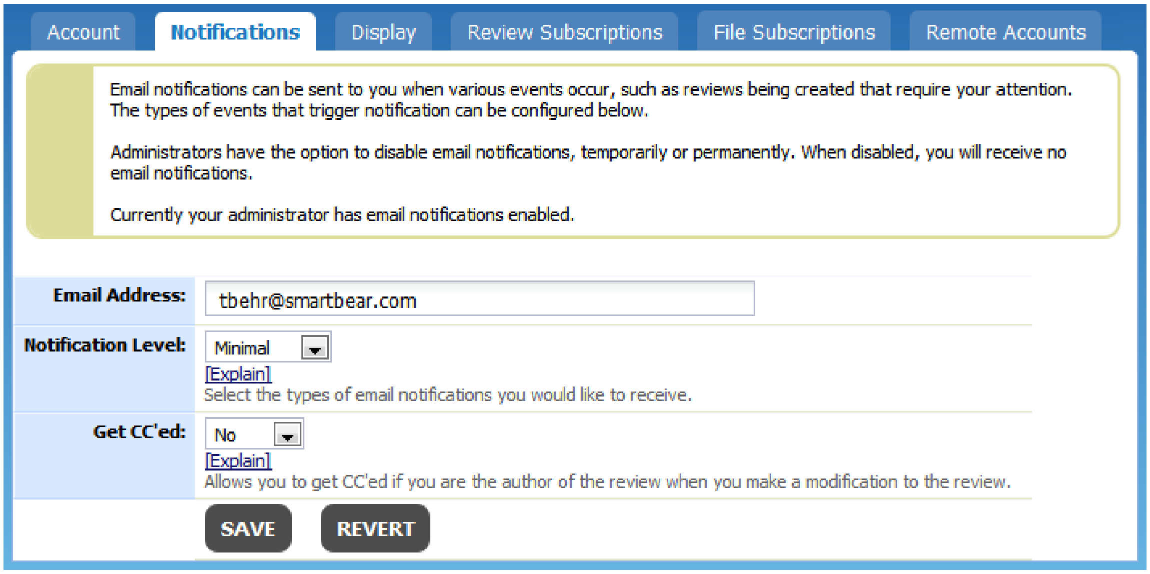


Login The token you use to log into [230] the system. Typically this will be identical to your version control login name.

Normally, you cannot edit your own login name. However, system administrators are able to edit anyone's login name, so contact an administrator if you need this done.

Password	The password needed to log into the system. Can be blank for "no password," although in all cases the password will be displayed with many dots as shown in the screenshot above. This prevents the causal observer from knowing anything about your password, even its length. When changing your password you have to type it in twice to confirm.
Full Name	Your full, real name. This is displayed to other users everywhere in the system. You can change this setting at any time. If you leave this field blank your login name will be used for your name. This is undesirable however; most other users will not know you by your login name.
Phone Number	The phone number other users can reach you at. This field is optional.
Time Zone	Your time zone. This will be used to determine users's displayed date/time. This is defaulted to the time zone selected on the Collaborator server
Is Administrator	Controls whether you are a system administrator 168. Typically, you are not able to change this field. Only if you are an administrator yourself can you change this. Be careful: If you remove administrative access from yourself, there is no going back! (Unless another administrator adds you back.)
Is Enabled	This field is used by system administrators to determine whether you are allowed 168 to log into the system. If you are looking at your preferences, you can log in, so you will always see this as "enabled".

Notification Preferences



E-Mail Address

The e-mail address that you want all notifications delivered to, and also to display to other users in the system in case they want to contact you directly via email.

Although this field is technically not required, you really should fill it in, and if you do not, you will get a warning in your Action Items list 241.

Notification Level

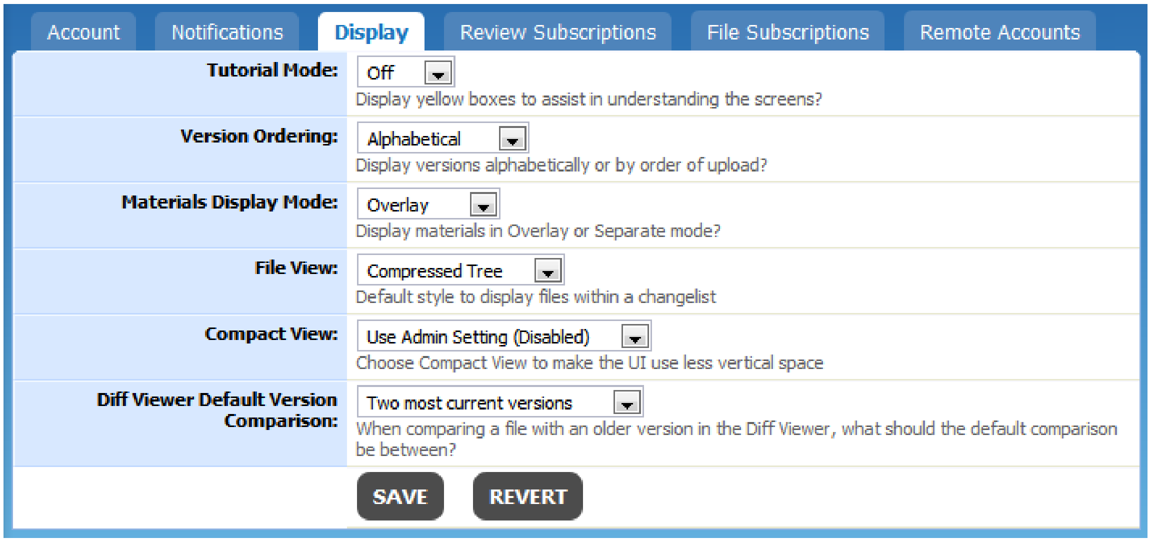
This controls how many e-mails you want to get. See the [Explain] link for details on the options. Generally, these are the choices:

- Get all notifications, even if you were the cause of the notification event
- Get notification only of those events that you did not cause yourself
- Get no email notifications

Get CC'ed

This allows you to get CC'ed if you are the author of the review when you make a modification to the review.

Display Preferences



Tutorial Mode

Controls whether those little yellow tutorial boxes are displayed throughout the system. By default, these boxes are displayed to help you understand the user interface.

Version Ordering

Controls how versions are displayed, alphabetically or by order of upload.

Materials Display Mode

Allows the selection of the default display mode (Overlay or Separate) of materials on the Review Summary page.

File View

Controls which style should be used to display files within a changelist. Choices include Compressed Tree, Tree, or Flat.

Compact View

When enabled, the Review Summary screen is presented in a format that uses less vertical space.

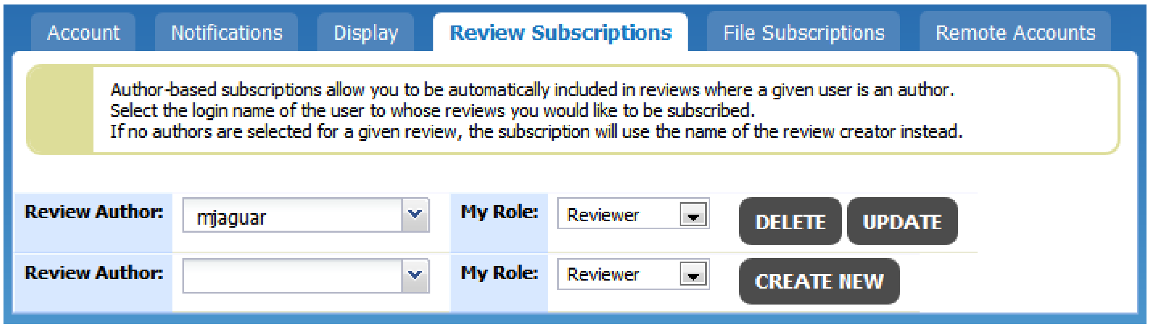
Diff Viewer Default Version Comparison

Allows the user to select which two versions are presented, by default, when the diff viewer is launched.

The available options are:

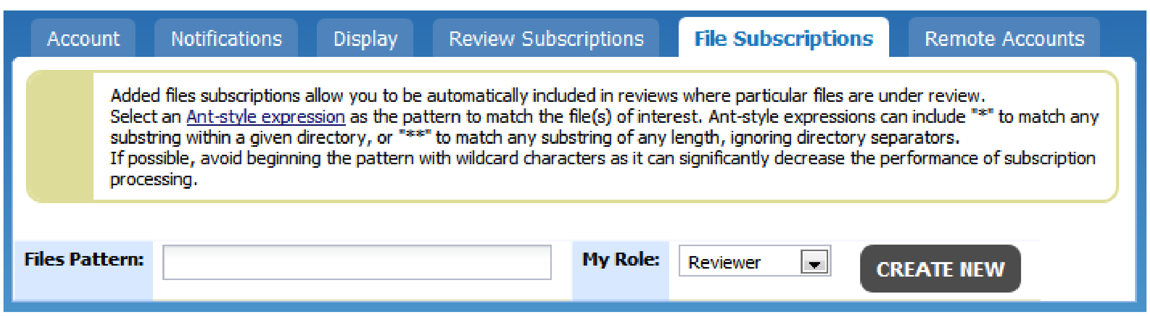
- Two most current versions
- Current vs. base version
- Current vs. latest Accepted
- First Uploaded vs. Last Uploaded

Review Subscriptions Preferences



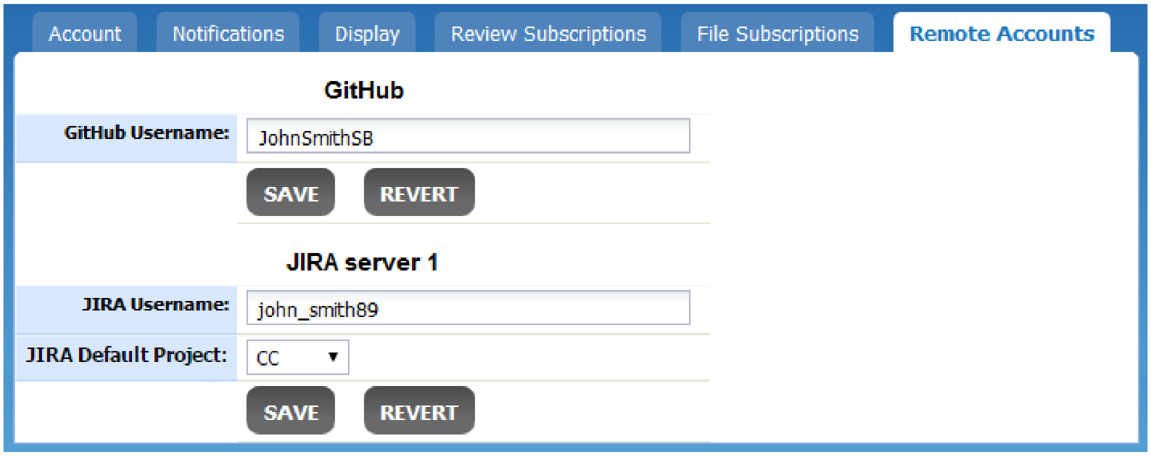
Review Subscriptions allow you to automatically subscribe and be included in reviews with a preferred author. Under the "review creator" field, select the login name of the user to whose reviews you would like to be subscribed. If no authors are selected for a given review, the subscription will use the name of the review creator instead - unless the review creator is flagged as a system admin. You can also choose whether you would like to be **Reviewer**, **Observer**, or **Moderator** in the review.

File Subscriptions Preferences



File Subscriptions allow you to automatically subscribe and be included in reviewers where a particular file is under a review. Like Review Subscriptions 236, you can choose your role as a **Reviewer**, **Observer**, or **Moderator**. Select an Ant-style expression as the pattern to match the file (s) of interest. The expression will be matched to the file path alone; it will not look for matches in the complete repository path with URL and other server descriptions. Ant-style expressions can include "*" to match any substring within a given directory, or "**" to match any substring of any length, ignoring directory separators. If possible, avoid beginning the pattern with wildcard characters as it can significantly decrease the performance of subscription processing.

Remote Accounts Preferences



Remote Accounts allow you to specify correspondence between your user name in Collaborator and your logins on various remote servers. These settings are used to match user names for Collaborator integrations with remote JIRA or GitHub servers.

For JIRA integration you can also specify the default value for the JIRA project setting.

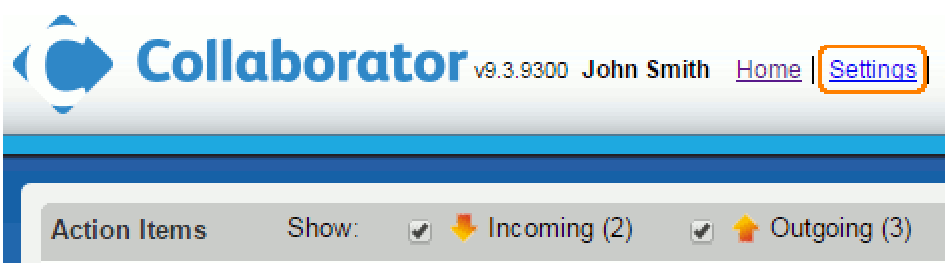
4.2.3 Notifications on Review Changes

You can subscribe to notifications about changes in reviews, in which you participate. Collaborator will notify you about changes in review statuses and activities of other participants. The notifications can come through email or RSS.

Subscribing to Email Notifications

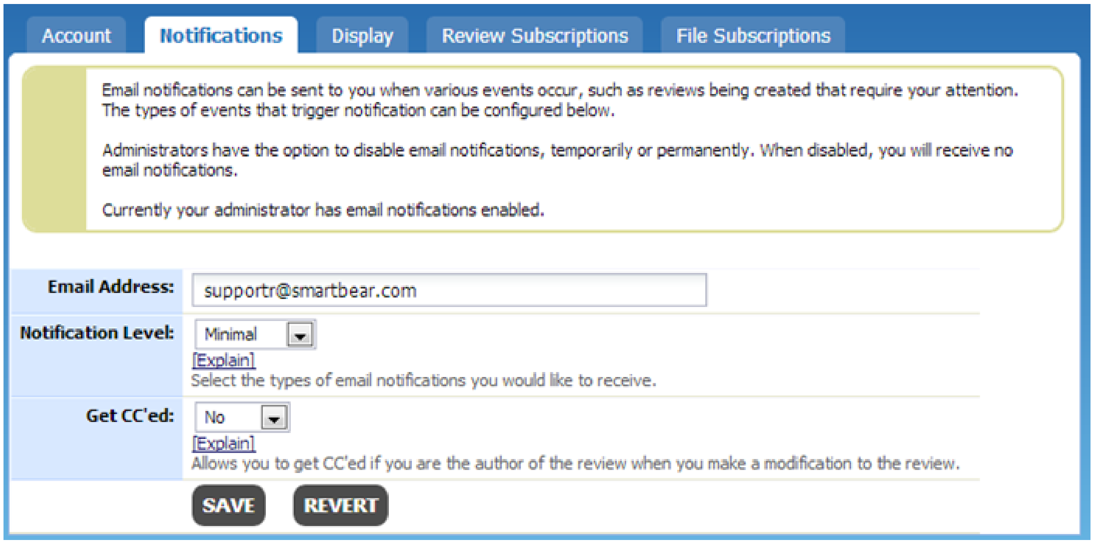
1. Log in to the Collaborator Web Client.

2. Click **Settings** on the home page.



This will open the **Preferences** page for your account.

3. Switch to the **Notifications** tab:



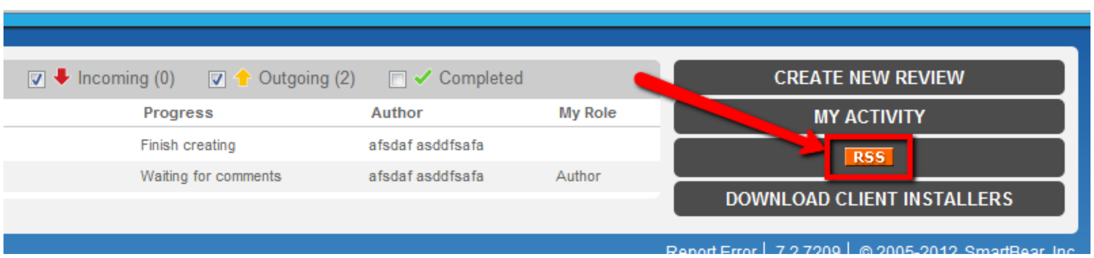
4. On the tab, check your email address and specify the desired notification level (see below 239).

5. Click **Save** to apply the changes.

Subscribing to RSS Notifications

1. Log in to the Collaborator Web Client.

2. Click **RSS** in the menu on the right:



Who Can Receive Notifications

Collaborator can send notifications both to review author as well as to other participants. The user needs to be in an active "Wait 250" state, which is an option at the very bottom of the Review Summary 250 screen under "Next Steps". If a user is waiting for an action, they will be informed via email once that action takes place.

If you do not participate in a review, but want to be notified about its status, you can do the following:

- Ask the review author or administrator to add you into the review (they can add you as an observer).

- Create an author-based subscription 236 which will automatically add you to the reviews created by the particular author.

By default, Collaborator notifies you about actions of other users on the review. To get all notifications, including ones for actions initiated by you, change your notification level setting to *All* (see below 239).

When Collaborator Sends Notifications

Collaborator sends notifications when an author, or a participant makes changes to a review, namely:

- When a review phase changes. Collaborator sends notifications when a review gets to the Annotating phase, or when it is Completed, Canceled or Rejected. Administrators can enable notifications for specific phases and disable them for others. (These notifications are sent both to active participants and to waiting participants.)
- When a review requires some action. For instance, Collaborator is clever enough to detect situations when a review stalls 187, and notifies the participants that the review requires some action in order for it to be completed.
- When a participant adds a comment to the review, or creates a defect. (These notifications are sent to participants who are waiting for review activity 250.)
- When participants add files to a review. (These notifications are sent to participants who are waiting for review activity 250.)
- When you add new participants to or remove them from a review.

The entire list includes several dozens of events. You can control your overall notification level only (see below 239). Administrators can enable or suppress specific notifications 209.

When Collaborator Does Not Send Notifications

- Collaborator does not send notifications for reviews that are in the Planning phase.
- Collaborator does not send repeated notifications. If several events occur within the review, then only the notification of the first event is sent. After which, the notification recipients have their state set to "Active". They will not receive further notifications.
- By default, Collaborator does not send notifications to the user who changed a review. (However, this can be controlled by the Notification Level 239 setting.)

See below 240 for information on why you can miss a notification.

Setting the Desired Notification Level

1. Log in to the Collaborator Web Client (if you have not logged in yet).

2. Go to **Settings | Notifications**.

3. Choose the desired level from the **Notification Level** combo box. The following choices are possible:

None	No notifications except for those that the administrator sends explicitly.
Minimal	Default. You will get notifications on other review participants' activities on a review. "Non-activity" notifications will not be sent.
All	You will receive all the available notifications.

Changing Notification Message Text

Regular users are not allowed to customize the text of notification messages. You need to have administrator permissions in order to customize the notification message text 209.

Why Do I Fail to Get Notifications?

Below are some typical reasons for this:

- A review is in the Planning phase (Collaborator does not send notifications for such reviews).
- You are active participant of the review.
- Your role in the review is not one that would receive the notification in question.
- You chose the *None* notification level in your Collaborator account's settings. Check the settings and select either Minimal or All level.
- You are the user who modified the review and your notification level is *Minimal* (default). By default, Collaborator does not notify the user, who made some change, about this change. If you want to receive such notifications, change your notification level to *All*.
- The administrator could disable notifications of certain types or disable all the notifications. Please ask the administrator to check their settings.
- Your email client can have active filter or anti-spam rules that delete the notification emails or move them to a Junk folder. Please check the rules of your email client.

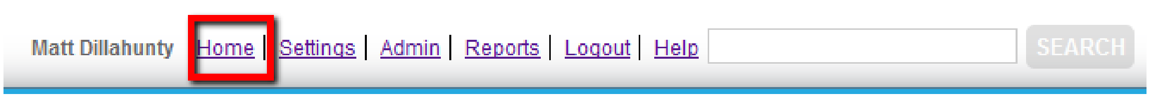
4.3 Performing Reviews

This chapter describes creating, performing, and managing peer reviews.

In This Section

4.3.1 Action Items

Action Items are relevant, current things that you are included in. You can view your "Action Items" on your homepage by clicking the "Home" button on the top right of your screen:



You can select which action items are shown, by selecting the check-boxes for "Incoming", "Outgoing" and/or "Completed". When the "Incoming" check-box is active, you will view all reviews in which you are a reviewer or an observer. The "Outgoing" option will show all reviews in which you are the author. "Completed" will list recently completed reviews. You can also sort action items by clicking on the column labels, "Review", "Progress", "Author" or "My Role".

Your Action Item list is updated immediately if anything changes. You can refresh this screen manually; the home page refreshes automatically every five minutes.

When you have an Action Item directing you to commit files, you remove it by clicking the review link on the left. Collaborator uses these Action Items to track whether review materials have been submitted to version control. If Collaborator does not have enough information to determine that the materials are already versioned it will create a reminder for you when the review is completed.

For recently completed reviews the Action Items list displays the "Dismiss" link to confirm that the review has been finished and dismiss it from the list of your active reviews.

Action Items are also visible in other clients, but that is covered in the separate User Guides.

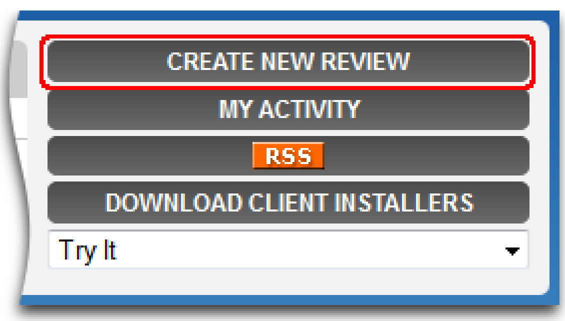
Progress values for action items:

Annotate Review	Action	you have been invited by the author to annotate the review
Commit files	Action	you need to commit your files to source control
Finish Creating	Action	you need to finish creating the review
Fix Configuration	Action	not review related - you need to finish filling out your user configuration information
Perform	Action	you need to perform the review
Respond to Comments	Action	you need to respond to comments in the review
Review cancelled	Non-Action	the review has been cancelled
Review completed	Non-Action	the review has been completed
Review rejected	Non-Action	the review has been rejected
Rework defects	Action	you need to rework the defects in the review

Sign review	Action	you need to sign the review
Waiting for annotation	Non-Action	you are waiting for others to annotate the review
Waiting for comments	Non-Action	you are waiting for others to make comments on the review
Waiting for defect rework	Non-Action	you are waiting for open defects in the review to be reworked
Waiting for other reviewers	Non-Action	you are waiting for others to complete the review
Waiting for signatures	Non-Action	you are waiting for others to sign the review

4.3.2 Creating a Review

To create a new review, click the "Create New Review" button on the Home screen:

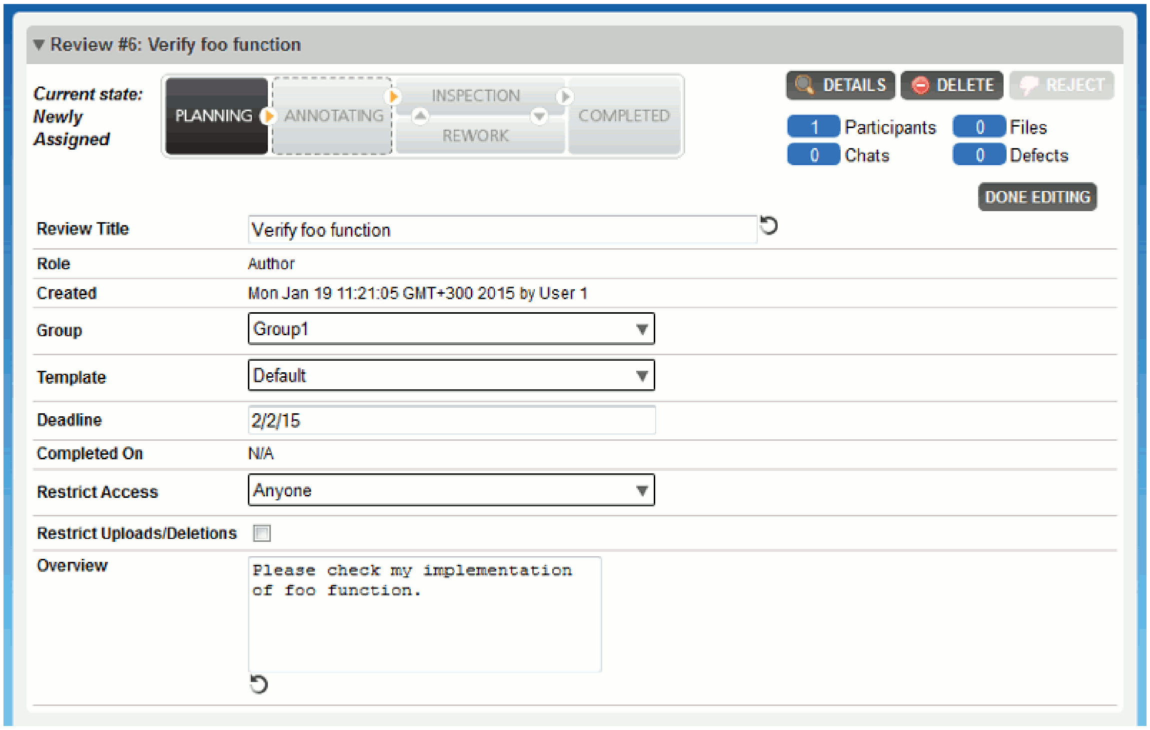


You will see a Create Review Screen where you can specify information about the newly created review.

Creating a review involves the following steps:

- Specify General Information 244
- Assign Review Participants 245
- Add Review Materials 246
- Start the Review Procedure 250

Specifying General Information About a Review



In the **General Information** section you can specify the following data about a new review:

- **Review Title -** a brief description for the review. The title is used all over the place -- in Action Items 241, in notification emails, to web page titles, and so forth. Titles do not have to be unique in the system; reviews already have a unique ID that is assigned by the server. (In the example given above, the unique ID is "6".)
- **Role** - your role in the current review. This field is read-only. Your and other participant's roles will be set through the Participants section described below 245.
- **Created** - a date when the review was created and a user who created it. This field is read-only and filled out automatically.
- **Group** - a group of users associated with the review. This field only appears when the Groups feature 169 is enabled and you belong to some user group.
  Once you select a group, the participants list will be updated accordingly to show only those users belonging to the selected group. If you belong to only one user group, the group is set automatically.
  Changing the user group will cause you to lose any unsaved data applied to the review and may invalidate any saved data that is not applicable to the new group.

- **Template**- a template for the review. The template defines all the rules and workflow that governs the review. This includes custom fields for reviews and defects as well as the set of roles and rules for participants in the review. Your system administrator will have already configured 205 the templates you can pick from and probably has some guidelines as to which templates should be used under which circumstances.
  If there is only one configured template, this template will be applied automatically.

- **Deadline** - a date when the review should be completed. This field only appears if a system administrator has set the default review deadline 157 to a value other than 0. In that case, you will see the Deadline field with a default date that is calculated based on the value provided by the administrator. You can set the review deadline to any date that is on or after the current date. On the day before the deadline, participants will see a note in their action items that review is 'Due today'. This is intended to alert participants that if the review is not completed by midnight of the current day, it is overdue.

- **Completed On** - a date when the review was completed. This field is read-only and filled out automatically.

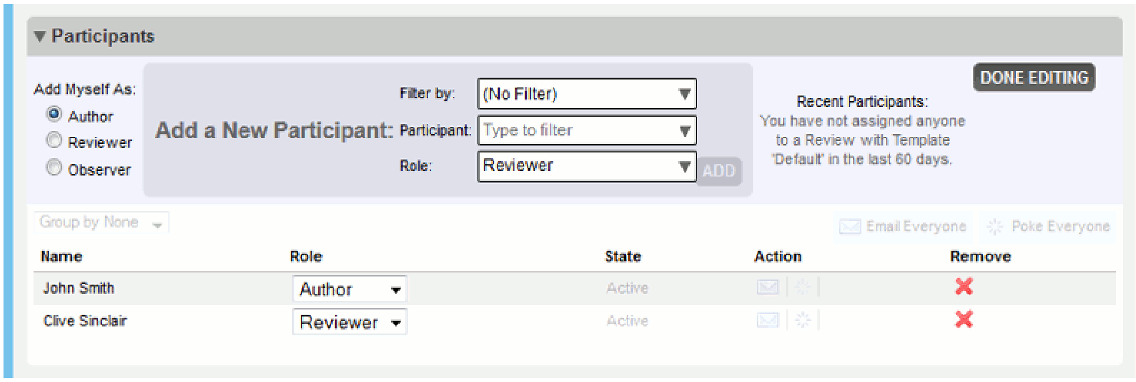
- **Restrict Access** - allows you to limit those users who may access your review. By default, any user in the system can view and comment on any review at any time. However, there are circumstances where you may want to restrict viewing to those users specifically invited to the review, and this option enables you to do so. Please note that system administrators are able to view all reviews regardless of restricted access selections, and also have the ability to require 147 that all reviews be restricted. In such cases, you will not be given an option to restrict access.

- **Restrict uploads/Deletions -** allows you to limit who can upload files into the review and delete files from the review. If this setting is enabled, only the creator and the administrators will be allowed to upload or delete files.

- **Overview** - a detailed description of the review. This field is optional and does not have to be filled out if you would like to leave it empty.

Assigning Review Participants

The next step in creating a review is to invite people to the review, and give each of them a role to play. In the Participants section you need to select your role on this review and add other participants.



The commonly-used roles are as follows:

- Author: Responsible for the files under review and probably responsible for fixing any defects that are found.
- Reviewer: Responsible for finding defects; is allowed to mark defects "fixed". The review is not finished until all reviewers approve it.
- Observer: Invited to the review but if all other participants are finished the review is complete. Useful when this user is not available just now and you do not want to wait for him to show up.
- Moderator: Controls the pace and flow of the review; coordinates other people and decides when the review changes phases.

Note, that the number of roles, their names and abilities are configured by your administrator 198. Therefore the list of user roles on your server may be different from the list above.

You can select each user and role individually through the drop-down menu, or start typing the name of the user in the appropriate field to narrow down the user list. User/role combinations you have used recently will also appear under "Recent Participants". This makes it easy and fast to select common combinations.

Each invitee can be assigned *only one* role. However, there is no limit on the number of invites, and, unless the administrator has configured 198 things otherwise, there can be more than one user per role.

Adding Materials To A Review

Review materials is what you are asking to review. Various types of materials can be uploaded into the review. This includes but is not limited to:

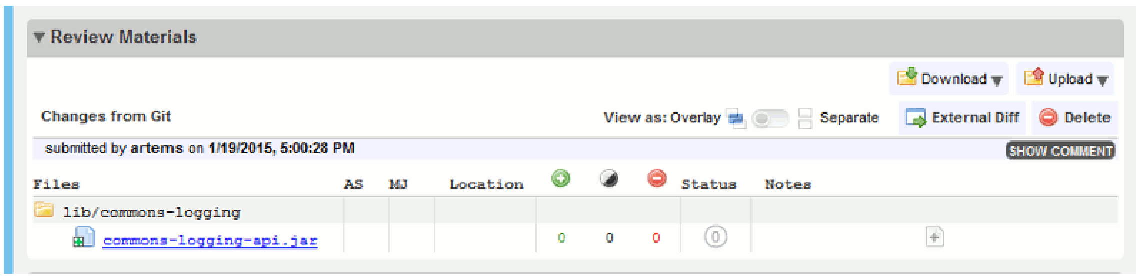
- Files controlled by a version control system: changes committed to a remote server (pushed commits), changes that are not yet committed to a server (un-pushed commits), local changes, differences between files, changelists, branches and so forth.

- Arbitrary files from your local disk: text files, Word documents, Excel tables, PDF's, images and so on.
- Links to Web sites

Once you have attached anything to a review, it will be listed in the Review Materials section.

Attaching Review Materials From Client Components

The most common way to get files attached to a review is to use one of the client components: Command-Line Client 348, GUI Client 338, Eclipse Plug-in 366, Visual Studio Add-in 402 or Plug-ins for Perforce Visual Client 557. All of these clients can integrate with version control system and/or easily upload local files or file-differences to the server.



Local changes from files controlled by Git have been uploaded into this review via client.

Attaching Review Materials From Web Client

It is also possible to upload content directly from the Web Client. The advantage of performing this action from a web browser is that you do not need to install and configure the client.

From the Web Client you can upload the following types of content:

- Changes committed to a pre-configured 188 version control system
- Arbitrary files from your computer
- Links to Web sites

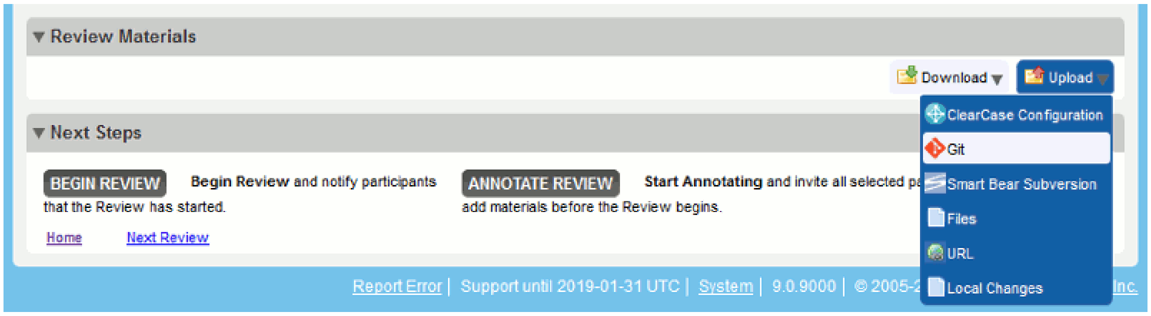
Attaching Changelists From Web Client

In order to perform these steps, your Collaborator server must be connected to a version control system as described in Collaborator Administration - Version Control 188.

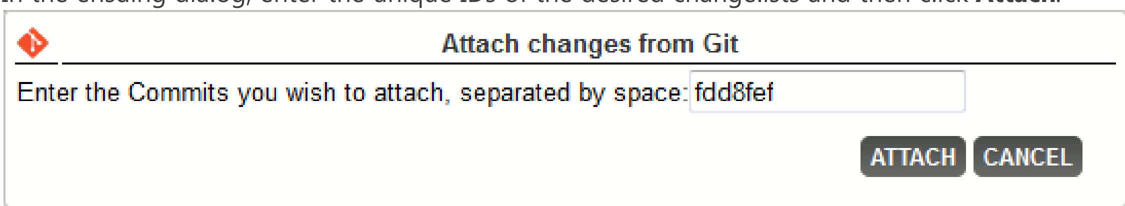
To add a changelist:

- Click the **Upload** button.

- Select the name of the connected version control system from the drop-down list:



- In the ensuing dialog, enter the unique IDs of the desired changelists and then click **Attach**.



You can attach any number of changelists to a single review. Also, you can attach changelists from different version control servers to a single review.

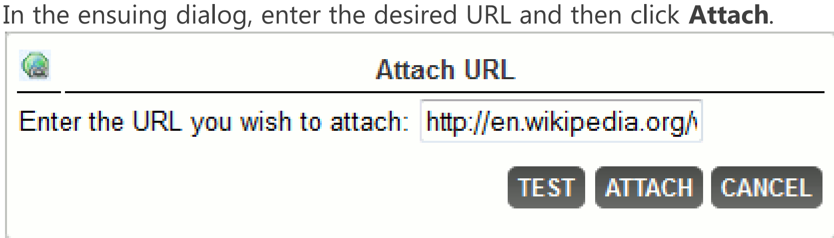
If there is an error retrieving that version or communicating with the server, you will see an error message.

Attaching Live URL's

You can attach live links to web sites. Attaching a live URL will display the live contents of the link during the review (rather than a local copy of the content). This feature is useful for accessing a document on a Wiki or document management system, particularly if you link to a specific version of that document.

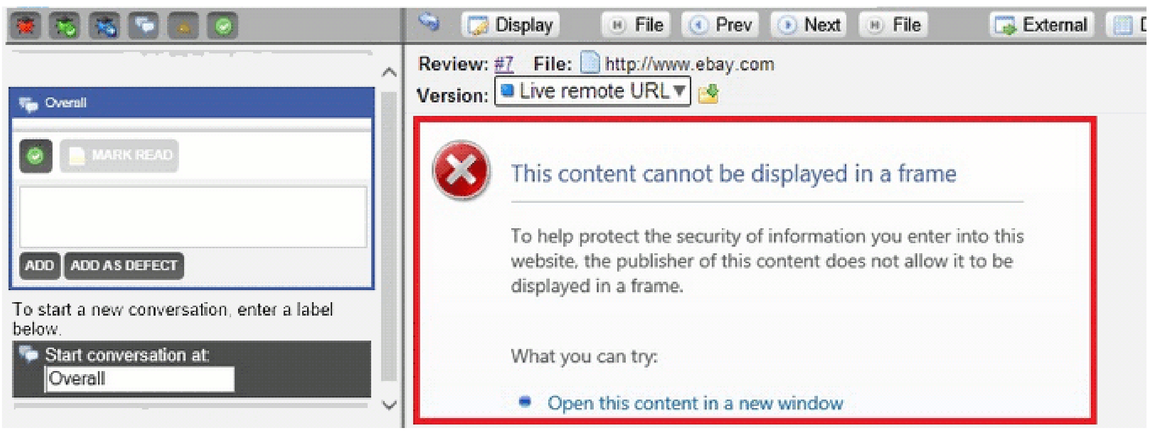
To add a web link:

- Click the **Upload** button.
- Select **URL** from the drop-down list.
- In the ensuing dialog, enter the desired URL and then click **Attach**.



Notes:

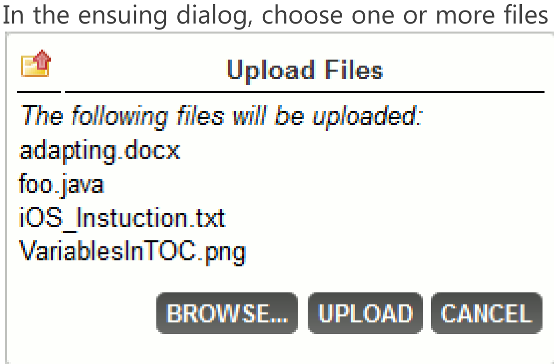
- The URL must be a valid web URL, which should include the protocol specification (either http:// or https://).
- You will also see an error message if the specified URL is malformed.
- Collaborator does not check whether the specified resource is available. In fact, since it is a link, the contents and availability of the document can change at any time.
- Collaborator displays the referred resource in a frame. The server can send requested contents with anti-framing headers. You will not see the referred content in this case. Depending on the web browser you use, you will see an empty frame or an error message saying that *the content cannot be displayed in a frame:*



Attaching Arbitrary Files

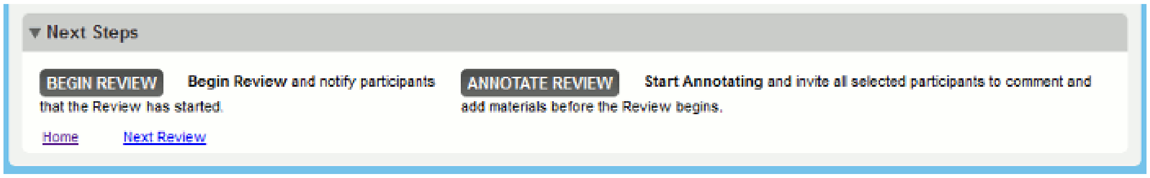
You can also attach any arbitrary file (images, PDFs, and binary file types) from your local hard drive:

- Click the **Upload** button.
- Select **Files** from the drop-down list.
- In the ensuing dialog, choose one or more files you want to attach and then click **Upload**.



Completing the Review Creation

The last step allows you to start the review immediately or to keep it for annotating:

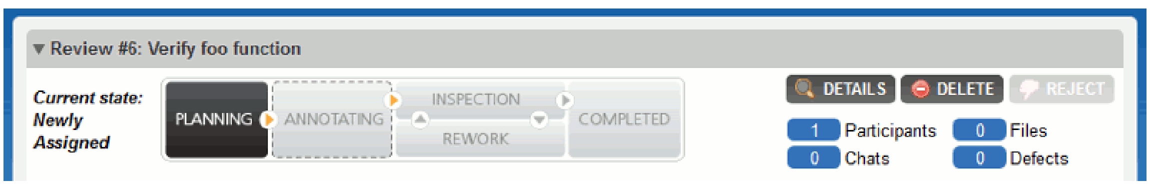


Click Begin Review to start a review. Other participants will receive notifications about your new review, and it will be displayed in their Action Items 241 list.

Click Annotate Review to apply the current changes, and proceed to the Annotating phase. Any participants you have selected will be notified that the review is in the Annotating phase and they will be invited to add their comments and review materials. The review will not begin until you select the "Begin Review" button on the Review Summary page.

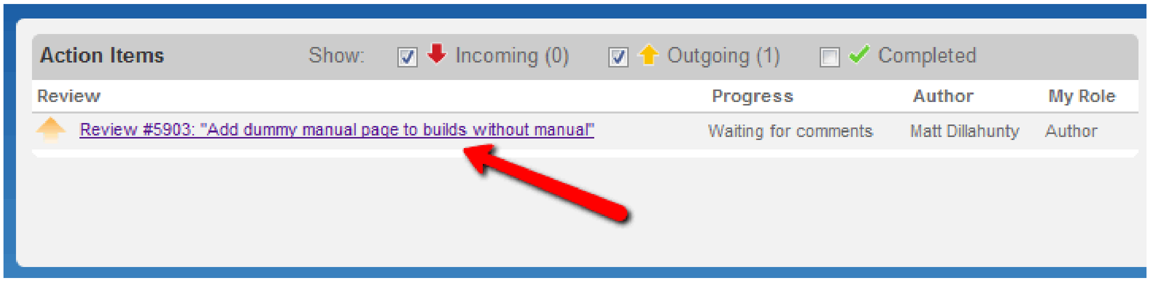
Canceling a review before it starts

To cancel a review before it begins, use the Delete button on the top right of the "General Information" box:



4.3.3 Review Summary Screen

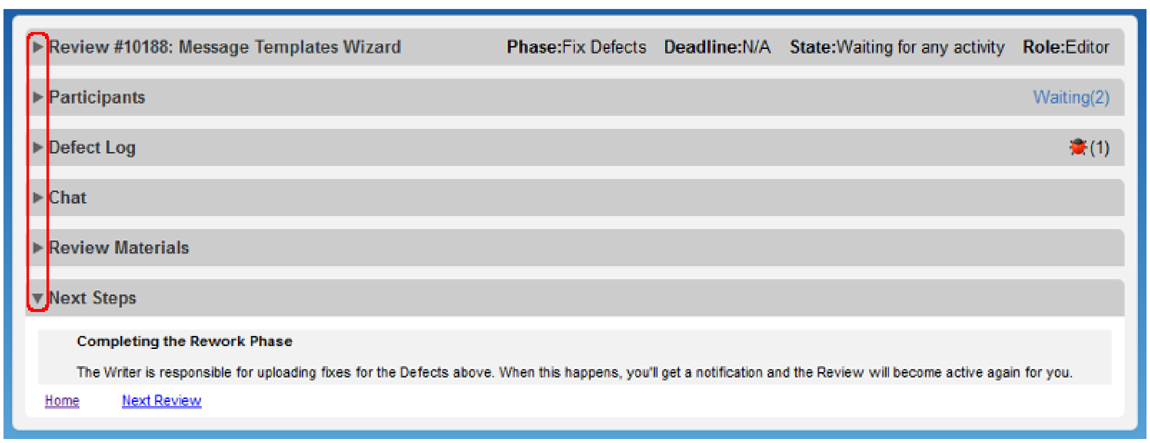
You will know that you are part of a review because it will show up in your Action Items list 241, clicking the link for a review will take you to the Review Summary screen.



The Review Summary Screen is displayed any time you are creating, editing or participating in a review. It is split up into several sections:

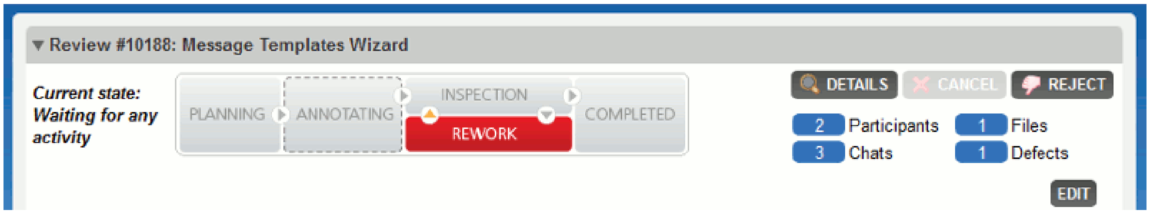
- General Information 252
- Participants 254
- Defect Log 254
- Overall Chat 256
- Review Materials 257
- Next Steps 262

Each section of the Review Summary screen can be collapsed and expanded, individually, by clicking the icon in the upper right hand corner of each section:



General Information Section

The General Information section provides a graphical overview of the current status of the review. The image below shows the information about a review during the rework phase:



The General Information section is divided into thirds. The left third includes information about your status within the review. The middle third shows a graphical representation of the current stage that the review is in. The right third lists the number of participants, defects, chat messages and files. The right third also has a number of buttons: Edit, Details, Cancel, Reject, Reopen or Save To ZIP.

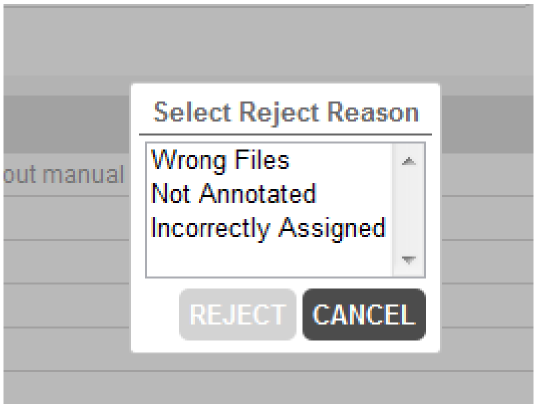
Selecting "Edit" will take you to the Edit Review screen. To have permission to do this, you must be either a participant in the review or an administrator, and the review must be in progress (that is not canceled or complete), and the role rules 198 for your role must allow you to do this.

Selecting "Details" will direct you to the Review Details Report 321 tailored to the open review.

Selecting "Cancel" will cancel the review. To have permission to do this, you must be authorized 156 to do so by the administrator, and the review must be in progress (that is, not already canceled or complete).

Warning: Once a review is canceled it can only be reactivated by an admin. Users will still be able to find this review when searching and can view it in a read-only capacity, but the review cannot be restarted by users without administrative rights.

Selecting "Reject" will open the following dialog which allows you to select a reason for rejecting the review:



Rejecting a review differs from cancelling in two ways:

- When rejecting a review a reason for the rejection can be required by the administrator and will be displayed in the review details.
- A rejected review cannot be re-opened.

You might also be able to **Reopen** a review after a review is finished. You must be allowed 156 to do so by the system administrator (the Reopen button is not shown in the screenshot above).

Selecting "Save To ZIP" will create an ZIP archive 133 containing all the information related to the review. This button is displayed only for the reviews in the completed phase.

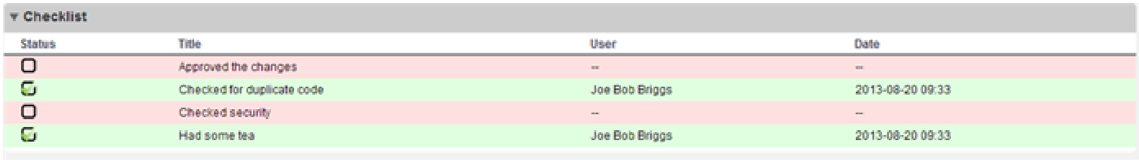
The table in the lower part of the General Information section shows the overall information about the review.

Review Title	Message Templates Wizard
Role	Editor
Created	Mon Jun 16 16:18:36 GMT+300 2014 by John Smith
Template	A different template
Completed On	N/A
Restrict Access	Anyone
Restrict Uploads/Deletions	No
Overview	We need to review the classes we use in the Message Template wizard of our product.

Most of the fields mirror the title and custom fields supplied by the review creator, though your role and any custom fields will also be displayed here.

Checklist Section

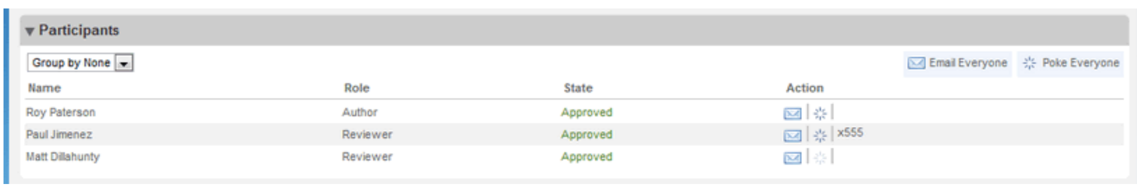
If there are checklists, the Checklist section displays. Unchecked items have a red background, checked items have a check on the left and a green background.



You can sort checklists by Status, Title, User or Date. If checklists are mandatory, all items must be checked before the review can be approved. Checklists are managed in the admin section and added to review templates. Any user can check or uncheck items on the checklist and the system will record each event in the chat log while showing only the latest state on the actual checklist items.

Participants Section

The Participants section lists all participants in the review, their status, and their role:



The drop-down list at the top left allows you to select the way participants are grouped when displayed in this section. The options are "Group by Role", "Group by State" or "Group by None". The "Group by None" option lists all participants in the review in a single list which is sortable by clicking the headers for each column (name, role, state).

You can send e-mail to an individual participant by clicking the mail icon in the Action column associated with the participant you wish to email. To send an e-mail to all participants, click the "Email Everyone" button at the top of the participants section.

You can also use the **Poke** feature to send someone a notification immediately. To use this feature, click the 

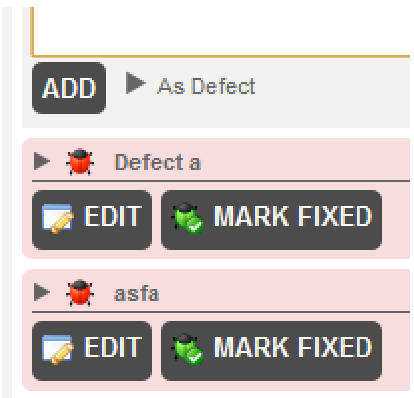
icon in the Action column associated with the participants you wish to poke. This may be useful when a certain participant has stalled the review or when you would like to invite a "finished"/"waiting" participant back into the review. You can also poke all participants using the "* Poke Everyone" button at the top of the participants section.

Defect Log Section

The Defect Log lists all defects found in the review:

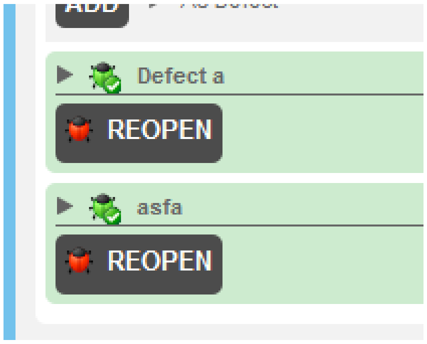
Initially the log will be empty. As defects are created for the review as a whole or on individual files and line numbers, all defects are collected and listed here. For defects associated with particular files, links to that file and line number appear in the table for fast access. All defect custom fields are shown in the table.

When, as the reviewer, you have verified that a defect you found has been fixed, you can indicate this by clicking **Mark Fixed**.

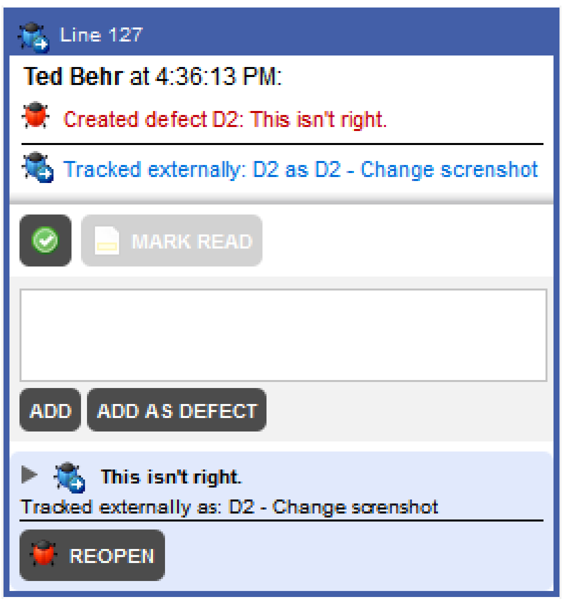


The defect is then redrawn to reflect this:

You can mark the defect open again if you change your mind. Open the defect by clicking **Reopen**
.



You can also externalize 306 a defect if you want to indicate that the defect will be fixed sometime after the review is complete. The defect must first be created, as normal, and then a user can click **Edit** and select **Track Externally** to use the external defect tracking software (if it has been configured by the administrator). If a defect is tracked externally, it will be indicated by a blue bug with a blue arrow icon as shown below:

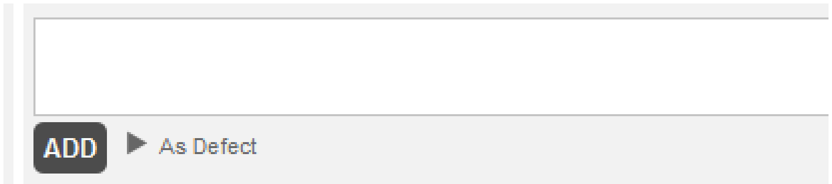


Only certain participants will be able to mark defects fixed. Which roles are allowed to do this depends on the system configuration 198. Also the user that created the defect is allowed to mark it fixed, and administrators are always allowed to mark any defect fixed.

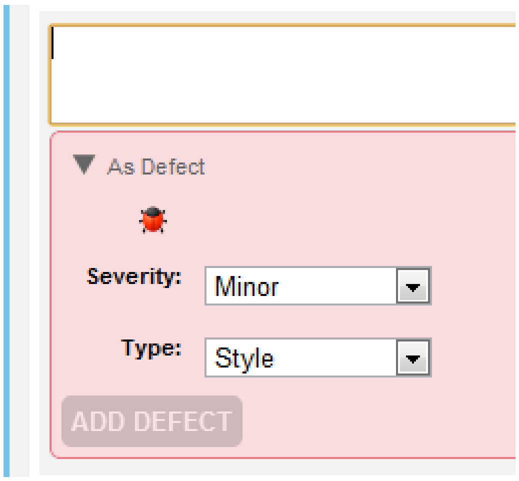
Most of the time you will create defects 303 and mark them fixed 305 on individual lines (in text files) or on specific areas (in other types of documents).

Overall Review Chat

You can chat with other users about this review as a whole, rather than chatting on individual lines:

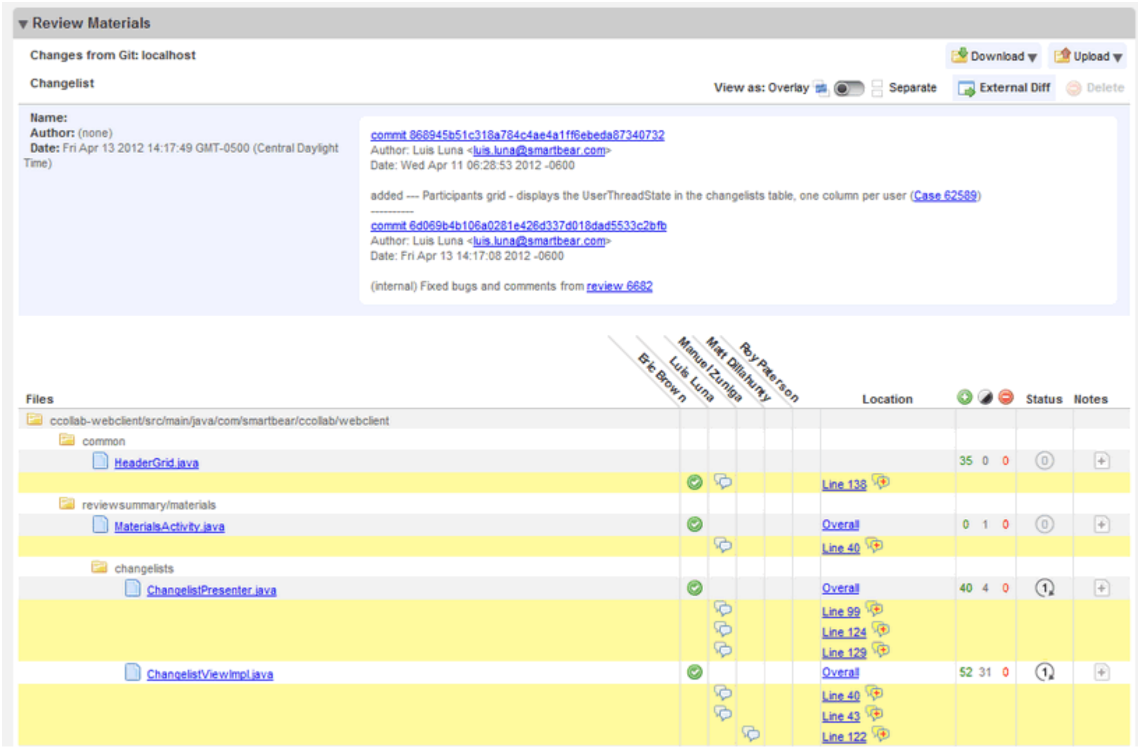


You can also use this section to enter defects related to the review. Clicking the "As Defect" button will change the interface to include a drop-down list that will allow you to select a defect Severity (required for all defects):

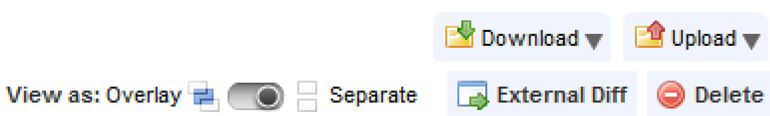


There is much to say about chat and defects, but this interface is identical to the one in the Review Chats 299, so please see that section for details.

Review Materials Section



The Review Materials section is the heart of the review: All files are displayed and users can view content and differences and chat and create defects on specific lines of a file.



Toolbar

The toolbar has the following items:

- **Download** - Allows to download review materials to your local computer. The item holds the following sub-items:
    - **Download Files** - This downloads a ZIP file to the local hard drive containing all files *with subdirectory structure preserved*. This means you can **test** the proposed file changes locally: Just download the ZIP file and expand it in your own development environment. This is also useful in the **single-committer** model for when you want to actually commit the changes. This can take the place of a patch file.

Warning: Downloading files to your local hard drive can have unintended consequences. Make sure you do not have changes of your own that you are overwriting. Also, remember that the author of these changes might not be synched to exactly the same versions of all files in version control, so if your local test fails this might be the reason.

You can also download individual file versions from the diff viewer 271, but the Download Files toolbar link is the more common way because you get all files at once.

- o **Download Diff** - This downloads a unified diff of all files in the review.

- **Upload -** Allows to upload data from your local computer to current review. Uploads can be disabled by review creator 245 and by administrator 153. The item holds the following sub-items:

  - o **<Pre-configured Version Control System>** - Attach changes from one of pre-configured 188 version control repositories.
  - o **Files** - Attaches arbitrary files from your computer.
  - o **URL** - Attaches live URL link.
  - o **Local Changes** - Attaches local files using the command-line client, GUI Client, or P4V integration.

- **View as** - This allows you to change the display of files from the overlay format to the separate format. To change from Overlay mode to Separate mode, simply click on the toggle switch between the two options.

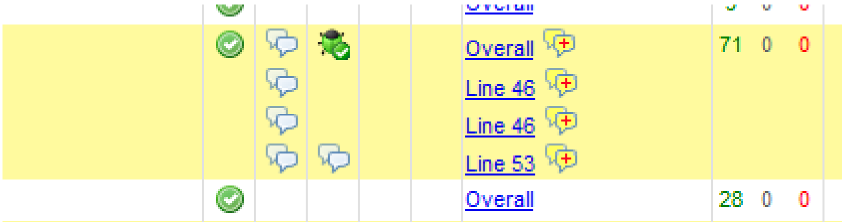
In Overlay mode all files from multiple changelists are displayed in one list.

In Separate mode each of the changelists is displayed separately.

- **External Diff** - This downloads a diff file for viewing in an external diff viewer.

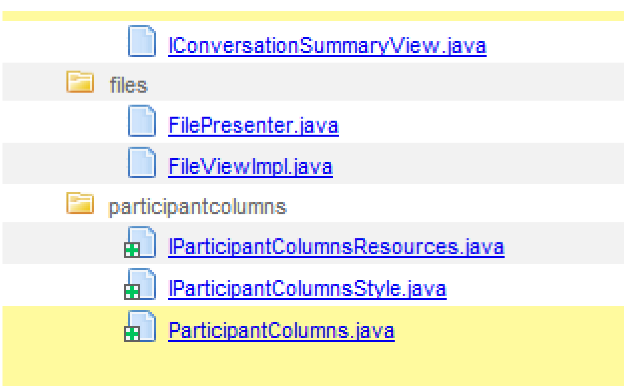
- **Delete** - This deletes a changelist from the review materials. If you have multiple changelists in the review, you will need to go to separate view in order for the button to be enabled. You cannot delete an arbitrary file from a changelist. You can only delete the entire changelist. You cannot delete changelists that have comments to any file. Ability to delete review materials can be disabled by review creator 245 and by administrator 153.

The conversation section of the Files list shows when comments and defects have been made, and the line number associated as well as when comments have been approved.



Conversation status icons

Icon	Meaning
	User has clicked "Accepted"
	User has made a Comment
	User has created a Defect, which is currently "Open"
	User has created a Defect, which is currently marked "Fixed"
	User has created a Defect, which is currently marked "Tracked Externally"



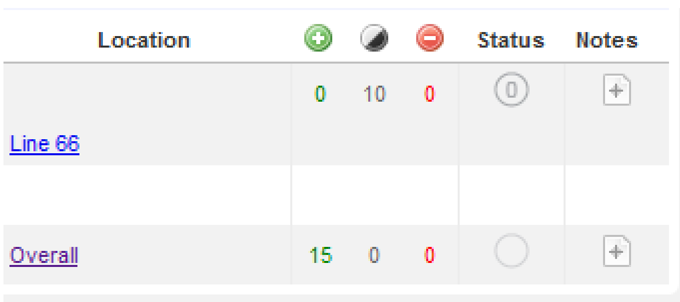
File list

The file list shows the files in this changelist. This part of the screen may look different depending on the selected *View as* 259 setting. The icon next to the file name indicates what operation was performed to the file.

Icon	Meaning

	File was modified
	File was added
	File was removed from a changelist File was reverted before the review has started
	File was deleted
	File was reverted during the review

Click on a file to open the content 271 of that file and view all comments associated with that file.



Notes, Location, Metrics, and Status

The Notes column allows any user to annotate the files. To edit the note click in the note column. This is typically used for messages to all reviewers such as "review this file first", or "ignore this file".

The Location column indicates where within the file the conversation represented by this row is located. Yellow alert bubbles mean there is activity on that line that the current user has not yet marked read. Click on a line number to open the content 271 of that file and view that conversation.

The three columns with the green +, white/black circle and red -, respectively show metrics for the number of lines that have been added, changed, and deleted since the previous version in version control, with special cases for situations like added or deleted files. These counters are not updated if files are added from the Web Client.

The Status column shows cumulative status of a file based on combining the actions of all previous changelists uploaded to the review.

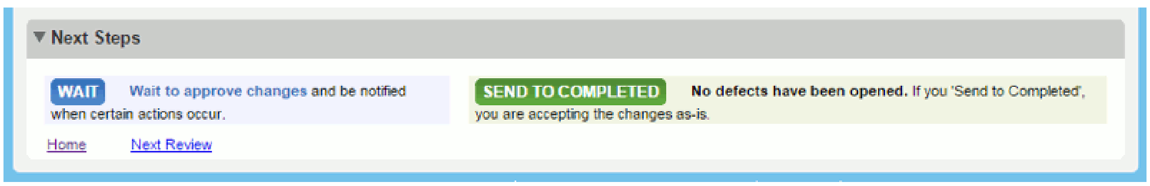
Drag-and-Drop Support

You can add files to current review by dragging and dropping files directly on to the Review Summary screen. (Please note, for Internet Explorer to support multi-file drag and drop Adobe Flash Player must be installed.)

Next Steps

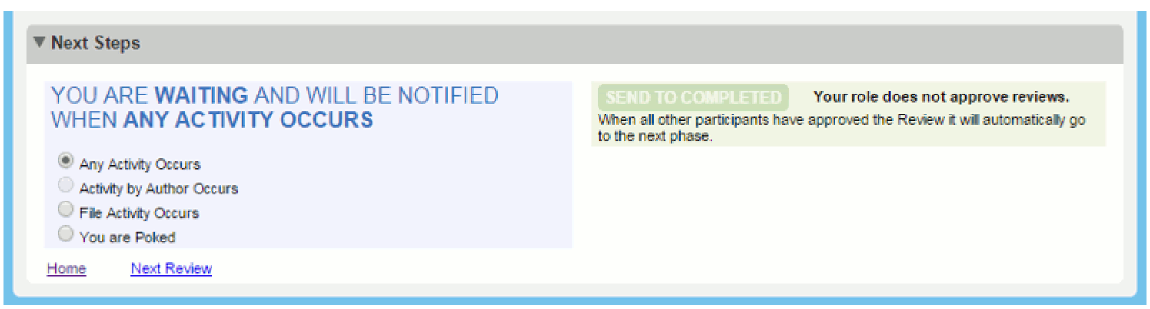
At the bottom of the Overview screen, you can find a "Next Steps" section that allows each review participant to move the review from one phase to another, or to wait in the current phase until certain specified activity occur. To learn more about review phases, see the Review Overview [15] topic.

The choice options in "Next Steps" vary depending on the current and the expected phases of the review and the role of the participant. The choice options can be: Wait, Begin Review, Annotate Review, Send to Completed, Send to Rework, Send to Inspection and so forth.



Pressing any of the "Next Steps" buttons (except for Wait) indicates that you have passed through the current review phase and moves the review to another phase.

Pressing the Wait button keeps the review in its current phase.



Most of the choices also allow to select in which case Collaborator will notify you of certain activities related to the given review. The action options are:

- **Any Activity Occurs** - any action that occurs in the review; for example, comments, file uploads, or added participants
- **Activity by Author Occurs** - any action that occurs in the review that is initiated by the author

- **File Activity Occurs** - any action that occurs to change the file content of the review; for example, the upload of a new file or the upload of a new version of an existing file
- **You are Poked** - only notifies you in the event that you are poked

The "Home" link in the lower part of "Next Steps" section will lead you to Home screen of web client. The "Next Review" link will open the next review in your Action Items list 241.

Electronic Signatures in Next Steps

When electronic signatures 158 are enabled, users will see Sign and Decline buttons. Clicking either button requires a user to provide their login and password to complete the action. This makes the electronic signature compliant with FDA regulations.

When a reviewer signs or declines a review, the Next Steps section of the Review Summary page says, "This Review has been Signed Off" or "This Review has been Declined". The Chat section shows the signature information. Collaborator notes the name of the reviewer and the date and time the review was signed or declined.

For auditing purposes, you can go to the Review Details Report. Make sure that Comments Section Format is set to Display All Comments, and in the Overall Review Conversation section, you can see the signature information.

4.3.4 Reviewing Materials

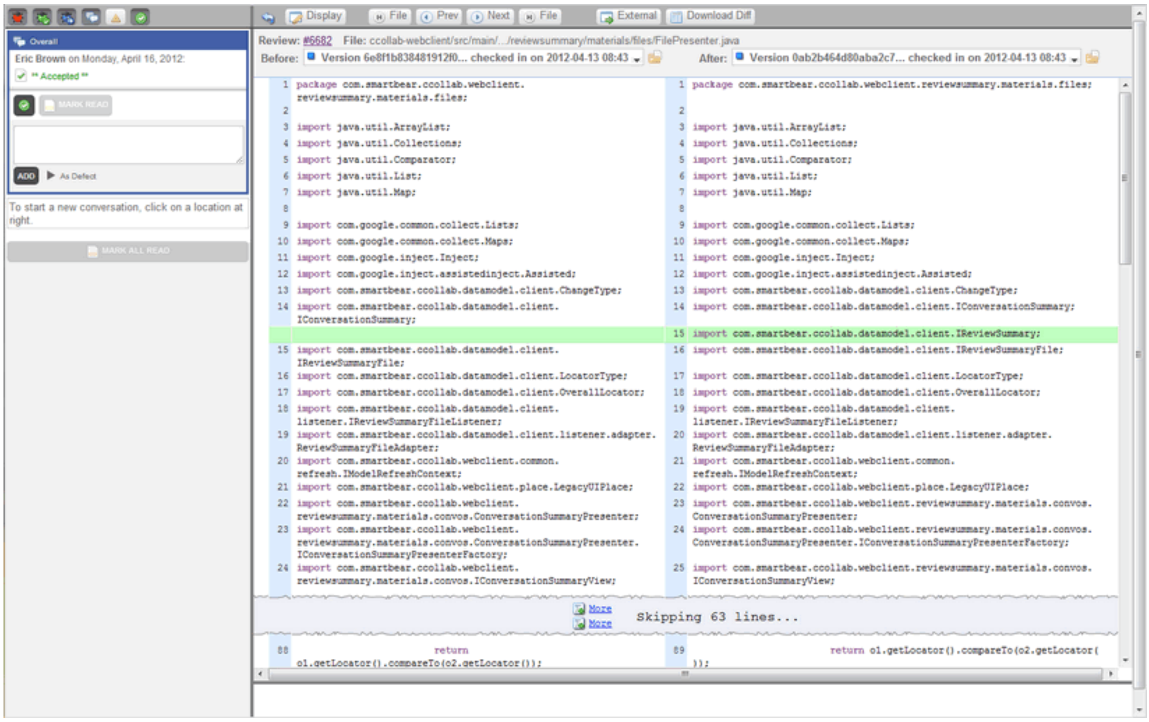
The Review Materials screen, or the diff viewer, is where most of the reviewing takes place. The commenting format and functionality will differ depending on what file type you are reviewing. We support the following:

- Text files 271 (including source code and any other text-based formats)
- Microsoft Word files 277 (.DOC and .DOCX)
- Microsoft Excel files 280 (.XLS and .XLSX)
- Images 284 (.JPG, .JPEG, .PNG, and .GIF)
- PDF files 287 (.PDF, and any other document types converted to PDF format)

- URL's 291 (HTTP and HTTPS)

4.3.4.1 Diff Viewer Overview

The Review Materials screen or Diff Viewer includes a number of configuration and display options that may change depending on the specific type of file that is being reviewed.



The appearance of the Diff Viewer when reviewing souce code files

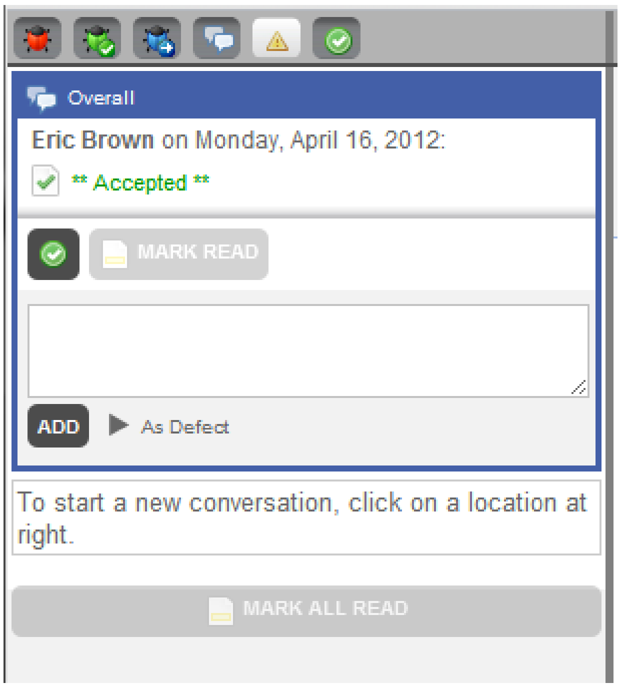
The Diff Viewer is divided into a number of sections:

- Chat Pane and associated toolbar options 265
- Diff Viewer Toolbar 266 (Which includes the Display Options pane 266)
- Diff Viewer Header 269
- Diff Viewer Content (The actual content under review)

NOTE: The Diff Viewer now opens in the same window and tab, when launched from the Review Summary screen. To open it in a new window, you can Shift+click the link.

Chat Pane

On the left of the main diff viewer page, there is a pane for chat threads. This pane allows you to add both global and content-specific comments and defects to the document you are reviewing. **Comments** may hold any information concerning the review: a question, a clarification, a remark, an encouragement, whatever else. **Defects** indicate a problem that needs to be fixed. To learn more about global and content-specific comments and defects, see Types of Review Comments and Defects 292.



At the top of the chat pane, you will find a series of buttons that control whether or not certain types of comments appear in full or in collapsed states (to save viewing space). Note that defects, count as unread comments until they are accepted/marked read.

The first three icons control whether defects appear collapsed or expanded in the chat panel. The red bug controls the display for open defects, the green bug controls the display for fixed defects and the blue bug controls the display for defects tracked externally.

The final three icons control the display of non-defect conversations. The white conversation bubble controls the display for all comments, the yellow hazard sign controls the display for unread comments and the green checkmark controls the display for conversations that have been marked accepted.

To learn how to make conversation during the review, see Types of Review Comments and Defects 292 and Review Chats, Comments and Defects 299 topics.

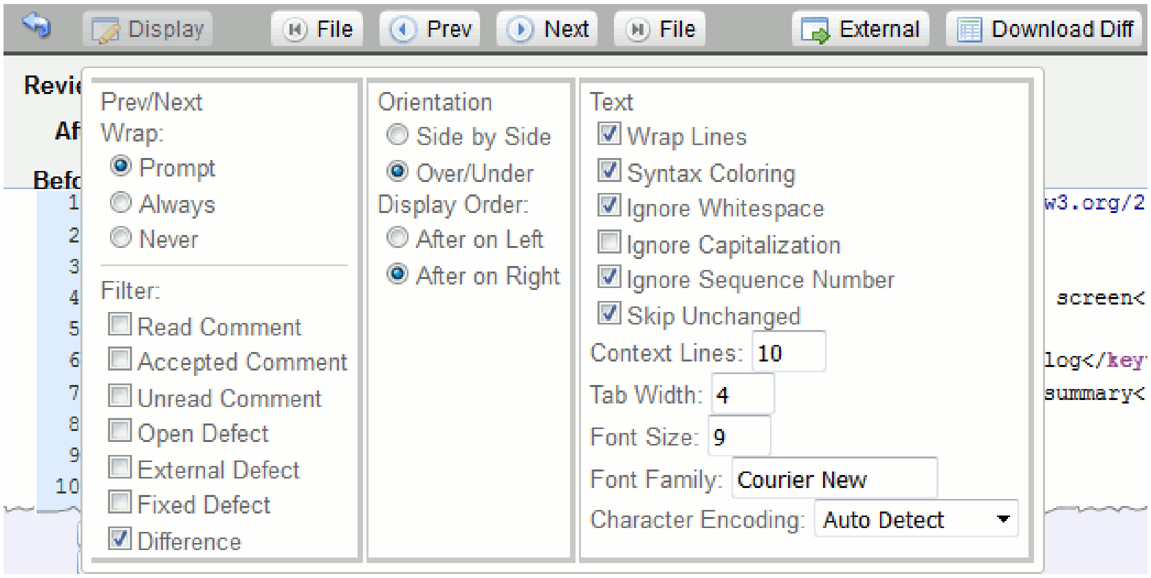
Diff Viewer Toolbar

The toolbar at the top of the Diff Viewer includes options for altering the display of information and navigation through documents within the review.

Back Button	Returns the user to the review summary page for the current review.
Display Button	Opens the Display Options panel 266.
File Navigation	The Previous file "<- File" and Next file "File ->" buttons navigate to the previous or next file in the review, respectively.
Comment Navigation	The Previous comment "<- Prev" and Next comment "Next ->" buttons navigate to the previous or next comment or defect in the current document, based on the settings in the Display options 267.
External	Launches the current document review in an external diff viewer.
Download Diff	Downloads a Diff file of the current document.

Display Options Panel

This panel contains various options that determine what data is displayed by the viewer and how it is displayed. Some options are only shown for certain types of files.



Prev/Next Wrap — Determines whether the user is prompted to continue from the beginning of the document once reaching the end of the document when using the 'Prev' and 'Next' buttons to navigate through comments and/or defects.

Prev/Next Filter — Determines which locations within the file the viewer navigates to when using the 'Prev' and 'Next' buttons and controls which types of comments, defects or differences are expanded in the Chat pane and displayed in the viewer.

Read Comment — Navigates from one read comment to another. Expands all read comments in the Chat pane.

Accepted Comment — Navigates from one accepted comment to another. Expands all accepted comments in the Chat pane.

Unread Comment — Navigates from one unread comment to another. Expands all unread comments in the Chat pane.

Open Defect — Navigates from one open defect to another. Expands all open defects in the Chat pane.

External Defect — Navigates from external open defect to another. Expands all external defects in the Chat pane.

Fixed Defect — Navigates from one fixed defect to another. Expands all fixed defects in the Chat pane.

Difference	Navigates from one difference to another. Enables highlighting of additions, deletions and differences in the viewer.

These settings can be used separately or in combination with each other. The setting values are synchronized with the corresponding toolbar options of the Chat pane.

Orientation This group of options is shown when a previous revision of the file is available.

Orientation	Specifies whether the diff viewer displays in side-by-side mode or over/under mode.
Display Order	Determines which pane is considered the 'After' pane, for the purposes of highlighting additions and deletions.

Text This group of options is shown when reviewing text-based files.

Wrap Lines	Controls whether lines of text are wrapped to the width of the pane. NOTE: When 'Wrap Lines' is not selected, an option will appear at the bottom of the text section to enable/disable synchronized scrolling of the panes.
Syntax Coloring	Controls whether syntax-specific coloring is used, when supported.
Ignore Whitespace	Controls whether white-space is included in determining version differences.
Ignore Capitalization	Controls whether capitalization is included in determining version differences.
Ignore Sequence Number	Controls whether COBOL sequence numbers are included in determining version differences.
Skip Unchanged	Determines whether large blocks of unchanged content is displayed. These gaps will appear, in the diff viewer as 'Skipping X lines...' and will include the two links labeled 'More', which will allow you to see more of this skipped content.

Context Lines	Defines the number of lines of context that are presented surrounding changes.
Tab Width	Sets the number of spaces per tab.
Font Size	Allows customization of the font size.
Font Family	Allows customization of the font family
Character Encoding	Specifies the character encoding for the file.

View Options This group of options is shown when reviewing images, Microsoft Word files or PDF files.

Scale	Specifies the zoom level of content. You can set the scale to various percentages, Page Width or Full Page.
Show Markers	Specifies whether to display or hide pushpin markers for coordinate comments and defects 296. Only inactive markers are hidden. To hide all markers, select Overall section of Chat pane and press Hide Markers.

Spreadsheet This group of options is shown when reviewing Microsoft Excel files.

Evaluate Formulas	Specifies whether to evaluate formulas and display the resulting value, or to display the formula itself.
Ignore Empty Cells	Specifies whether to ignore empty cells when viewing differences.

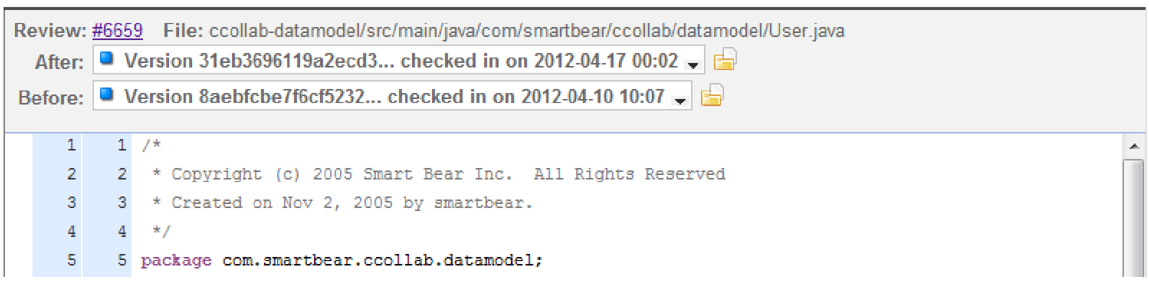
Diff Viewer Header

The content of the header will vary, depending on the type of file being reviewed and the selected orientation.

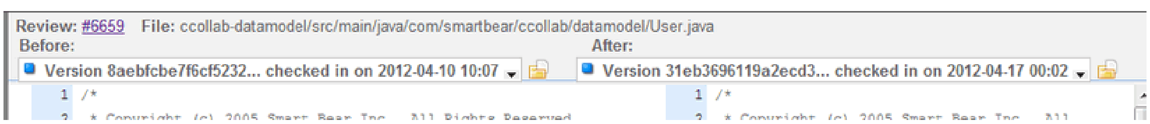
The diff viewer displays different version of the same file that have been added to the review. The comparison is performed based on the MD5 checksum of the full content (it is not dependent on our diff algorithm or the users's diff options) - so different versions that are identical in content will not be displayed as different versions in the diff viewer.

Versions are further identified by an icon which appears adjacent to the version number denoting:

	A checked-in version
	A checked-in version that has been accepted
	A local, pending version
	A local, pending version that has been accepted



Header content for Over/Under display of a text file.



Header content for Side-By-Side display of a text file.

The content of the header functions identically, regardless of the display type chosen and includes the following components:

Review number	The review number serves as a direct link to the Review Summary page for the current review. It functions exactly the same as the Back button 266 on the toolbar.
File:	Displays the name of the file currently visible in the diff viewer pane.
After:	Allows the selection of the specific uploaded version of the file to be displayed in the 'After' pane. Each file version is identified by its SHA-1 hash value. Additionally, the file folder icon adjacent to this field can be used to download the selected version of the file.

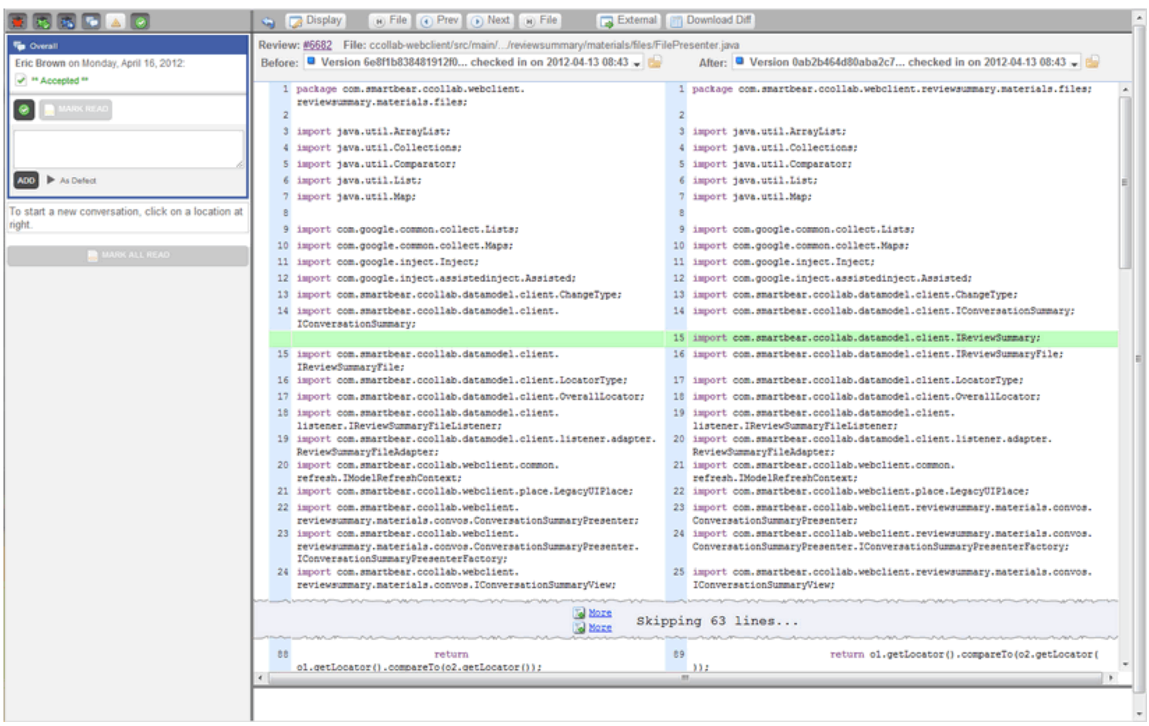
Before: Allows the selection of the specific uploaded version of the file to be displayed in the 'Before' pane. Each file version is identified by its SHA-1 hash value. Additionally, the file folder icon adjacent to this field can be used to download the selected version of the file.

4.3.4.2 Reviewing Text Files

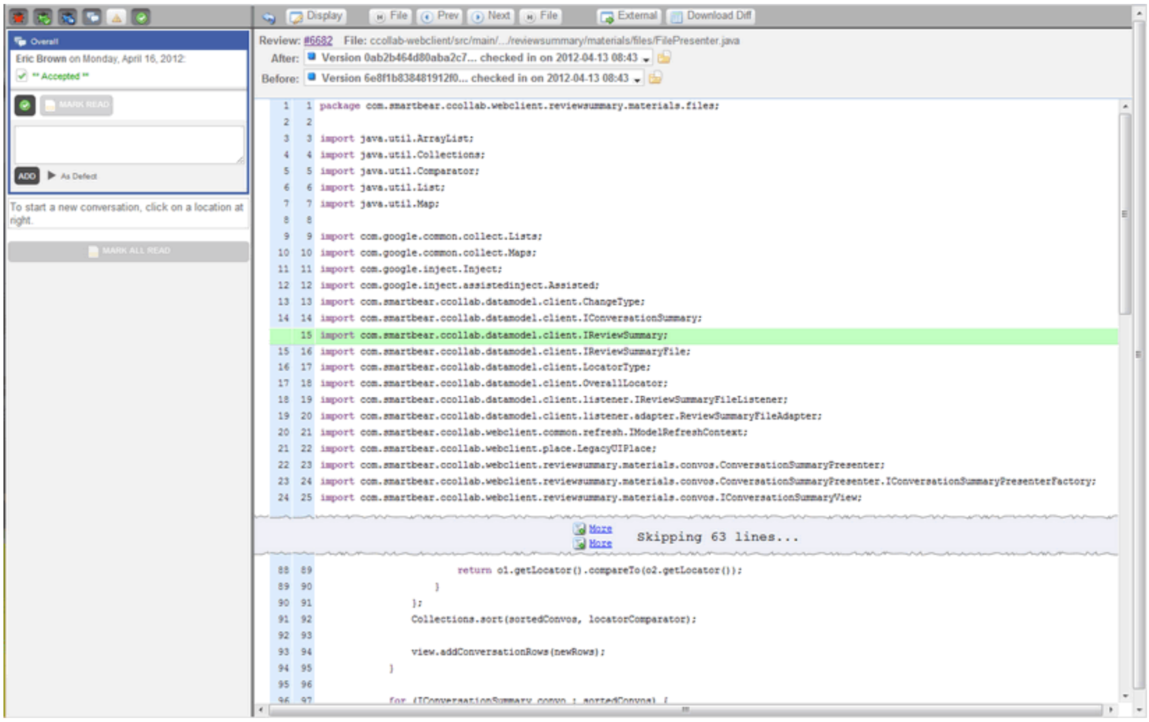
When reviewing text files (including source code and any other text-based formats), the review screen becomes the diff viewer. Here, you can see file content, differences with previous versions of the file, and all comments and defects for the file all on one screen.

Viewing Differences

The Collaborator diff view displays any text either side-by-side or in an over-under orientation. Both views have all the same options and functionality, so users should feel free to use whatever is most comfortable. Since differences in the content could affect users' orientation preference, changing the orientation is simple, just click the Display button in the top toolbar 266 and select the orientation you would like to use.



Standard View with Side-by-Side Orientation



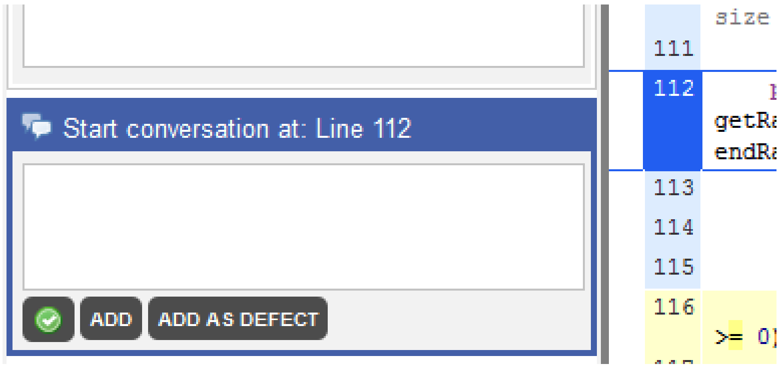
Standard View with Over/Under Orientation

The over and under orientation merges both versions of the file together. Unchanged lines are displayed as one, while added and deleted lines are highlighted with the appropriate line number for the version. The left two columns in blue correlate to the versions listed above the main file view respectively.

Making Comments and Marking Defects

On the left of the main diff viewer page, there is a pane for chat threads, where you can view and make comments and mark defects that should be fixed. When reviewing text files, you can create global 294, annotation 294, overall for file revision 295 and line 295 comments and defects.

To add line comments, click the desired line of text in the content view, type your comment in the text box and click "Add". To add defects, click the desired line of text in the content view, type the defect description, click "Add As Defect" and fill-in the required fields.



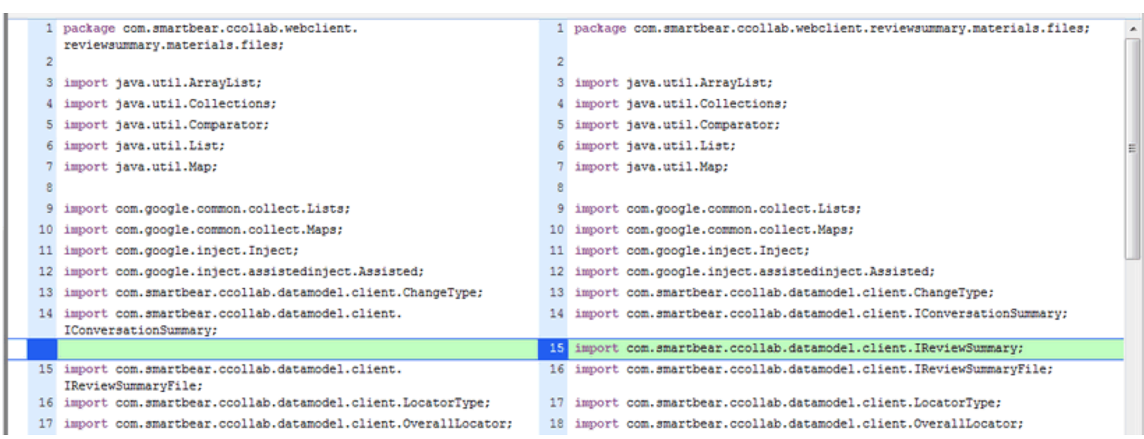
To learn more about communicating during the reviews, see [Types of Review Comments and Defects](292) and [Review Chats, Comments and Defects](299) topics.

Menubar

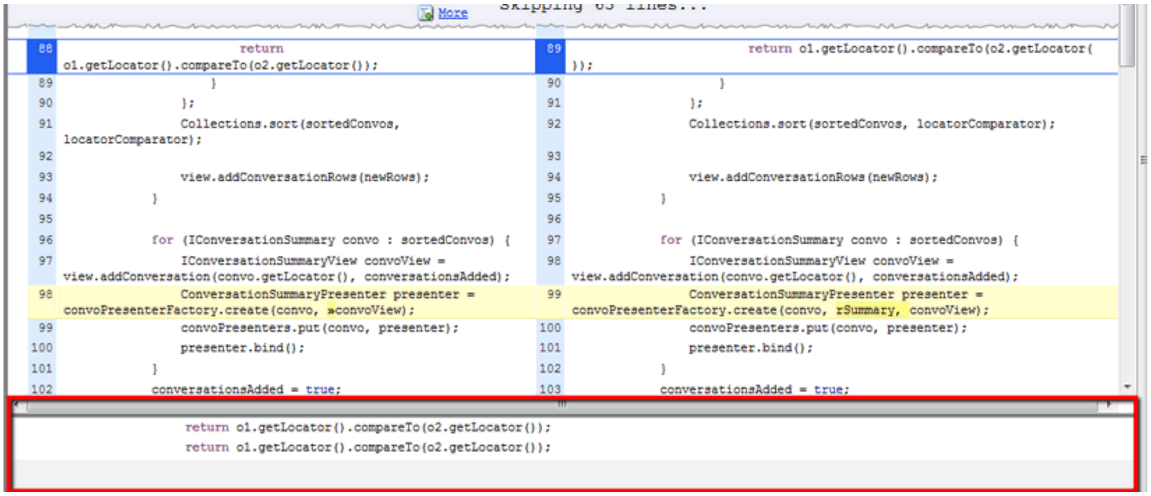
Right at the top, above the main file view, a menubar is displayed with a few possible actions. Buttons with blue triangles to the right will display drop-down menus when clicked on. For a list of all of the features of the menubar, please review the [Diff Viewer Overview](264) section.

The File Content View

To the right of the chat session, there is the main file view. This is where you can view file content and differences. The format of the main file on your local Collaborator screen may be different depending on how you have configured the [Display options](266) for the Diff Viewer.

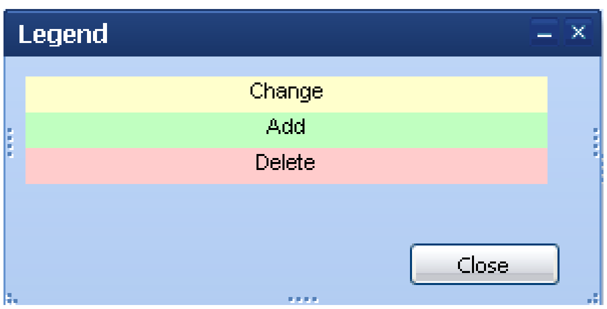


If differences are being shown, the interface automatically scrolls to the first difference (unless you got to this screen by clicking on a particular line number, in which case the screen will be centered on that line number). Below the file content is a small area which shows the currently selected line in an over-under view. This is most useful when the content view is in side-by-side mode, but the differences are not immediately clear in that view.

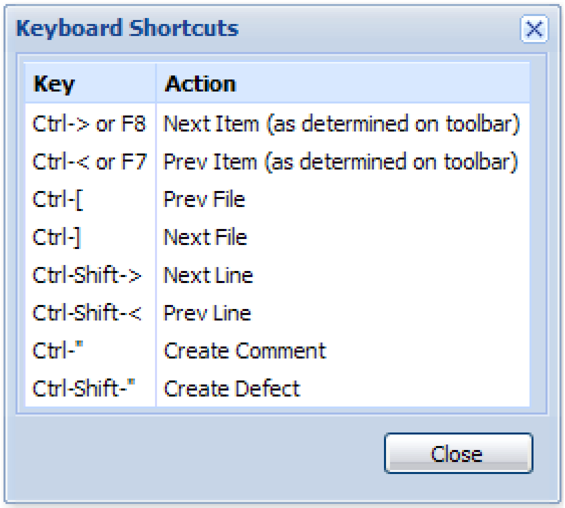


Legends

The differences are noticeably highlighted and color coded as explained by the legend. The color-code legend for changes, additions and deletions appears below. Changes appear in a yellow, additions are green and deletions are red.

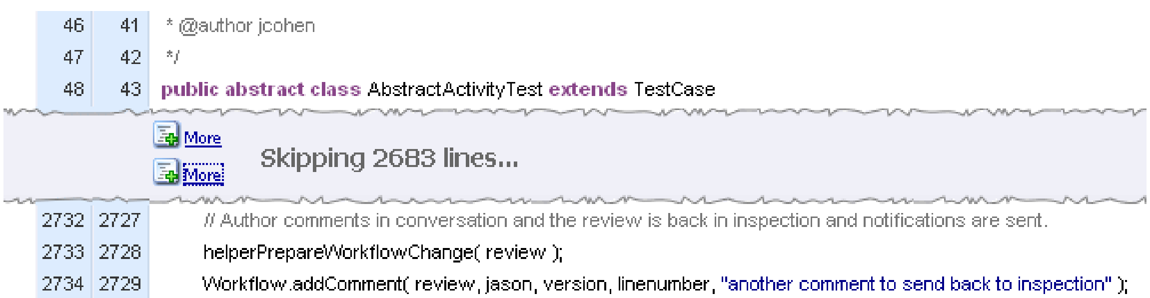


The diff view is completely navigable from the keyboard. You can move around the file, jump to changes, and make comments and defects. To get the list of keyboard shortcuts, click the "Help" link in the menu bar, then "Keyboard Shortcuts".



Skip Unchanged

If the "Skip Unchanged [266]" option is enabled, unchanged lines will be hidden in the diff viewer as shown below:



If you would like to get more lines of context, just click either "More" link. The top link will show the next 25 lines of context, while the bottom link will show the last 25 lines of context.

Syntax Coloring

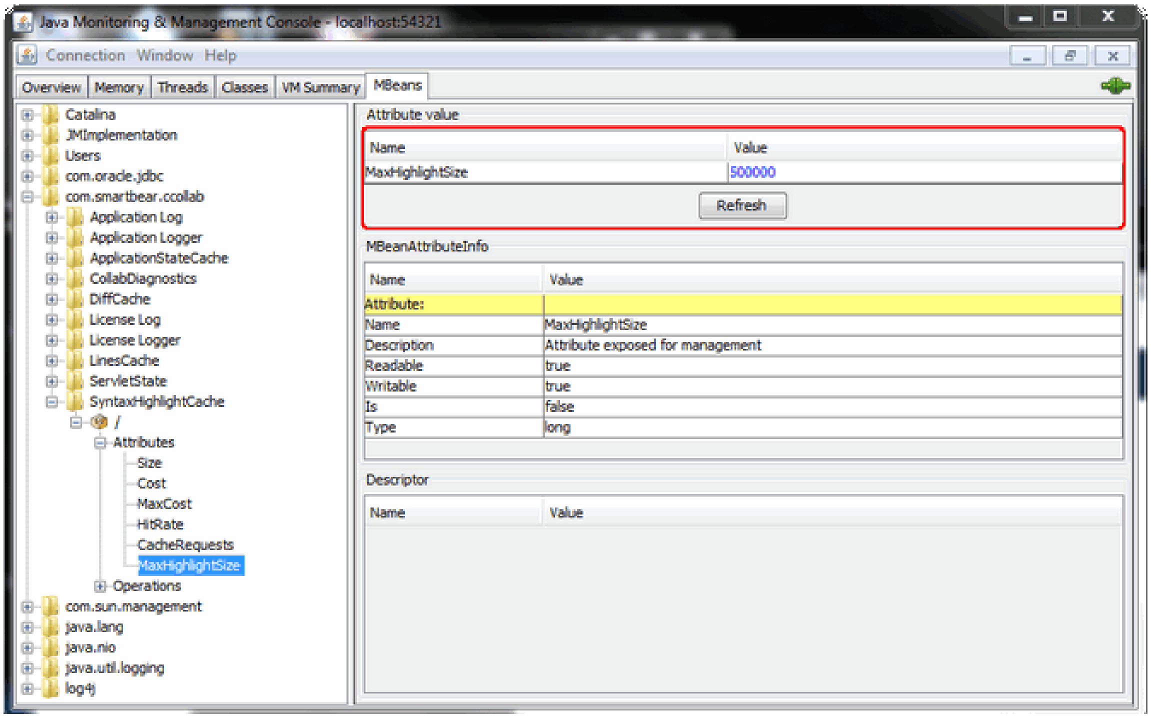
When the "Syntax Coloring [266]" option is on, files of the following types are marked up with syntax coloring. If the file type is not recognized, it is displayed without highlighting.

The file viewer will color language syntax for certain file types. Although Collaborator works with any text files, this feature helps read these languages and formats more easily:

- ASPX
- C
- C++

- CSS
- HTML
- Java
- JavaScript
- JSP
- Perl
- PHP
- Python
- Ruby
- SGML
- Shell Scripts
- Visual Basic (VB)
- XML
- XAML

By default, Collaborator does not apply syntax highlighting to files larger than 500000 bytes. However, you can change this value via the "MaxHighlightSize" setting in JMX console:



4.3.4.3 Reviewing Word Files (.doc and .docx)

About Word Support

Collaborator supports reviewing Microsoft Word documents both in .doc and .docx formats.

You can

- Download discrete versions of the original documents.
- View highlighted differences between discrete versions.
- Insert comments and defects, marked by pushpins, into the documents to simplify conversation.

Tip: You can install Collaborator plugin for Microsoft Word to upload your documents directly from Microsoft Word.

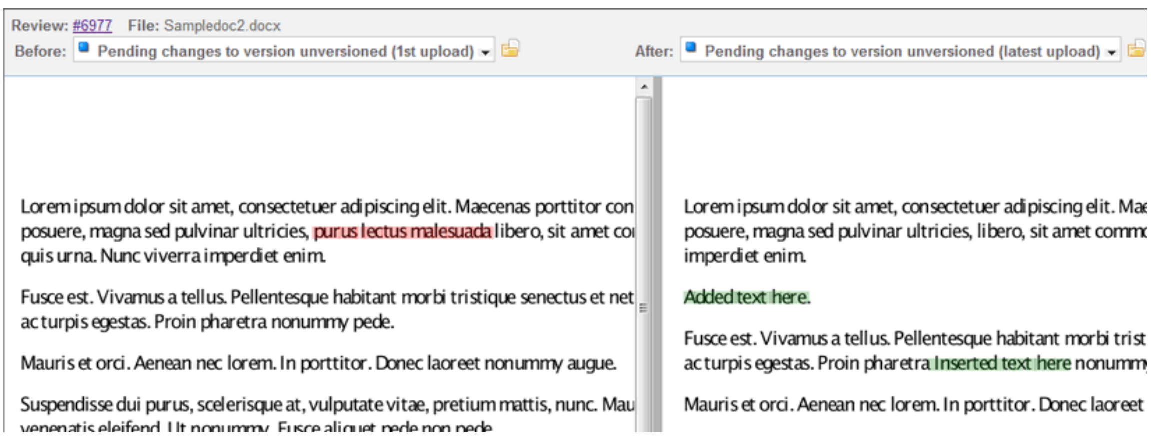
Note: if you have the Track Changes setting enabled in your Word document, you have to accept the changes before uploading the document to Collaborator. Otherwise, Collaborator will treat the deleted text as if it were never deleted.

Downloading Original Files

Collaborator stores Word documents with the review. It converts them to PDF to render them in the diff viewer. You can download the original .doc and .docx files from the Review Summary screen. You can also get them by clicking the following button next to the selection list at the top of the diff viewer:

Viewing Highlighted Differences

Collaborator automatically finds and highlights differences between the document versions that you uploaded and selected for review. Both versions uses standard highlighting: red for deletions and green for additions.

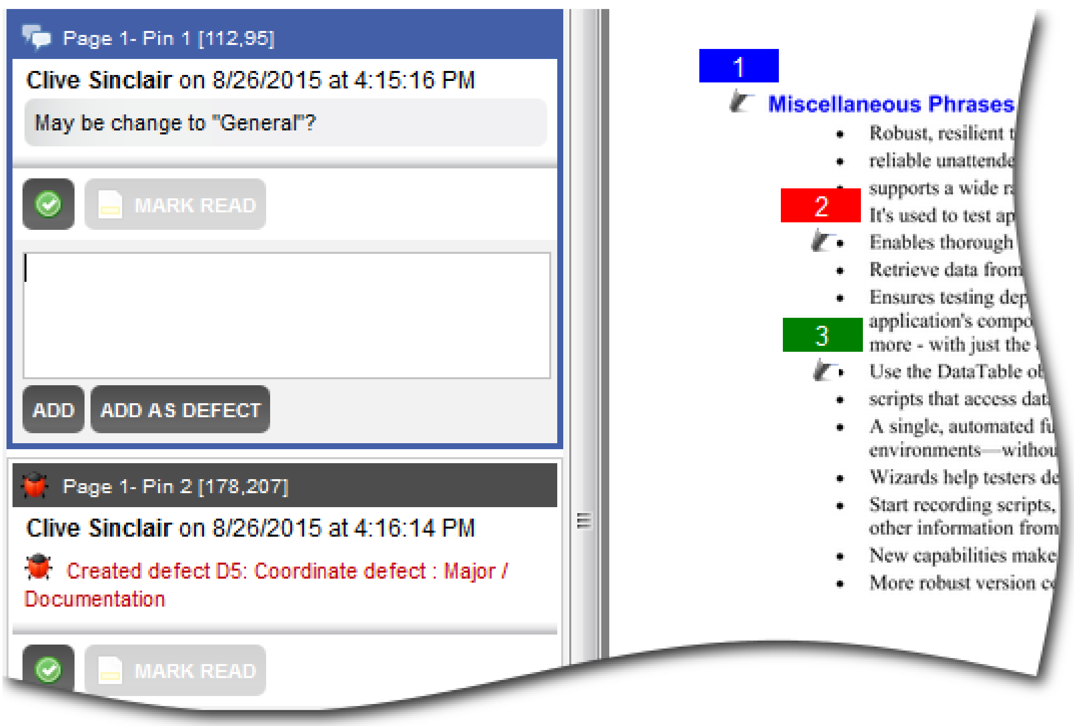


Documents can have content that displays, for example, on page 2 of the original version and on page 4 of the reviewed version. The diff viewer recognizes these changes, promotes comments to correct places in the newer version and navigates the Before and After panes independently to make this content visible during the review. To navigate each page independently, use pagination controls at the bottom of the diff viewer:

Making Comments and Marking Defects

On the left of the main diff viewer page, there is a pane for chat threads, where you can view and make comments and mark defects that should be fixed. When reviewing Word files, you can create global 294, annotation 294, overall for file revision 295, coordinate (pushpin) 296 and label 297 comments and defects.

To comment on specific text in a document, simply click the document at a point where you would like your comment to appear and begin typing. Collaborator will insert a pushpin () to indicate the comment. The number in the pushpin head corresponds to the comment's order within the current page of the document.



You can hide pushpins by clicking the pushpin toggle button on the toolbar. Use this feature if a pushpin overlaps an important part of the document.

Alternatively, you may specify an arbitrary label, such as "Section 5.1", to describe the content you are referring to. Using labeled locations decreases the confusion that can occur when large changes occur in a text document resulting in the pushpins not being adjacent to the corresponding text. Label text may not be updated.

Except the fact that documents are highlighted with pushpins and text files are highlighted by line, the way you use review chats 299 when reviewing Word documents is very similar to the way you use them when reviewing text files.

To learn more about communicating during the reviews, see Types of Review Comments and Defects [292] and Review Chats, Comments and Defects [299] topics.

Moving Comment Pushpins

You can move an existing pushpin to a new position in a document. The feature works in Mozilla Firefox and Google Chrome, and should be enabled by administrator [150].

To move a comment:

1. Select the desired comment.
2. Press and hold the Move Comment handle ( ).
3. Drag and drop the handle over the new position in the document.

Document Review Notes

- If you have the Track Changes setting enabled in your Word document, you have to accept the changes before uploading the document to Collaborator. Otherwise, Collaborator will treat the deleted text as if it were never deleted.
- After you have uploaded a Word document, Collaborator starts converting it to a specific format that it uses to find differences. This takes some time (several minutes for large documents). During the conversion, you can open the document in the diff viewer. However, you are not allowed to make comments, browse pages and see differences until the conversion is over. Once it finishes, Collaborator enables the page navigation controls and highlights the diffs.
- To keep the computer performance reasonable Collaborator limits the number of documents it will convert concurrently to four by default. If you upload a document while the conversion pool is full, the document will wait until there is room for it. This can take several minutes. If you experience server performance degradation, try configuring Java VM memory settings [879]. If you continue experiencing problems or need further assistance, please contact our Support Team [29].
- We recommend running the Collaborator server on a computer that has at least 4 CPUs (or cores) and has more than 2GB of memory allocated for the Java virtual machine. The memory requirement may increase depending on the typical document size your users upload.

4.3.4.4 Reviewing Excel Files

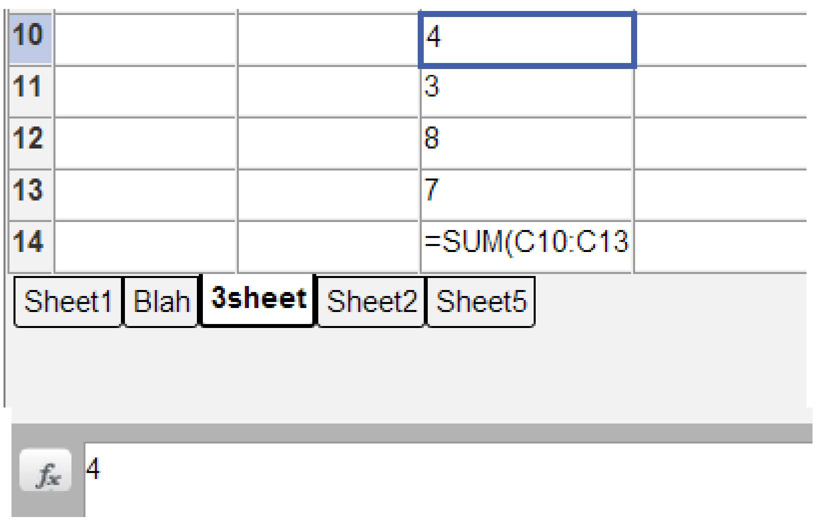
About Excel Support

Collaborator adds native support for Excel which allows the user to do reviews of Excel files. This is useful particularly for users who want to compare files such as QA test plans. Every effort is made to keep the Excel format, so a review shows the entire workbook (spreadsheet), which can consist of multiple worksheets.

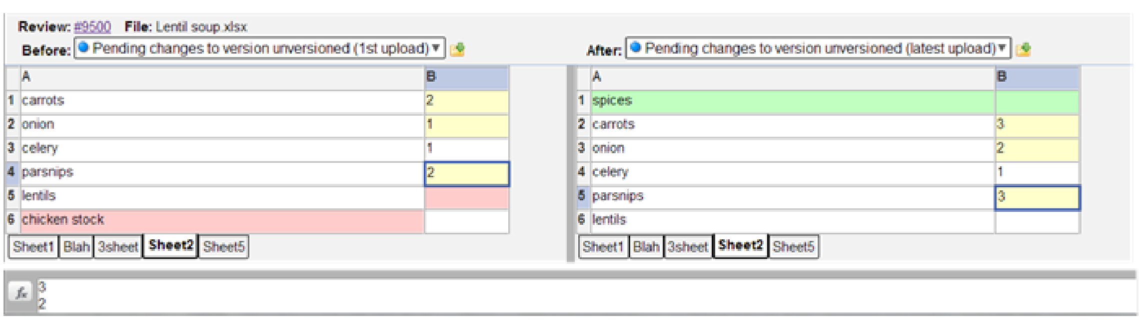
Note: When a file is uploaded for review, hidden rows are shown. Also, fill color and font color are stripped from the spreadsheet. If the use of color is essential to your spreadsheet, for example, if you are using charts, then consider converting the spreadsheet to PDF format 287. Review is recommended. Some formatting options are ignored. You may need to save your file with "word wrap" enabled to more easily see the content during reviews.

Worksheet is often abbreviated as "sheet". As in Excel, the UI displays a list of tabs at the bottom of the workbook for switching between worksheets. Only one worksheet is displayed at a time. Worksheets can be added, deleted, renamed, and re-ordered.

When you click in a cell, the value is displayed in the cell detail pane (equivalent to the formula bar in Excel).



The values for the selected cell appear in the cell detail pane with the value for the "after" version on top:



Display

The Display button has specific options for an Excel review. When you select Evaluate Formulas, only the evaluated result of the formula is shown, not the formula itself. You can toggle this through the Display button or the Evaluate Formulas button at the bottom of the diff viewer.

You can also toggle Display Empty Cells, which provides shading for emply cells, as shown above.

Viewing Differences

Since it is difficult to diff versions of Excel to meet all use cases, some changes may not be highlighted in diffs in the way that people would expect. We will continue to work on the Excel diff feature to meet the broadest set of needs.

As part of the review, you can do diffs of the files that show the contents of a cell (either formula or result). You can navigate around the spreadsheet by selecting the cell location.

The UI displays a diff of two versions of a spreadsheet side-by-side. There is a panel at the bottom that shows the contents of the selected cell in both versions of the spreadsheet on top of one another for easy visual comparison.

The use of color allows you to quickly identify changes in diffs so that you can address just what has been modified, added or deleted between versions of the Excel file under review.

Added cells have a green background.

Deleted cells have a red background.

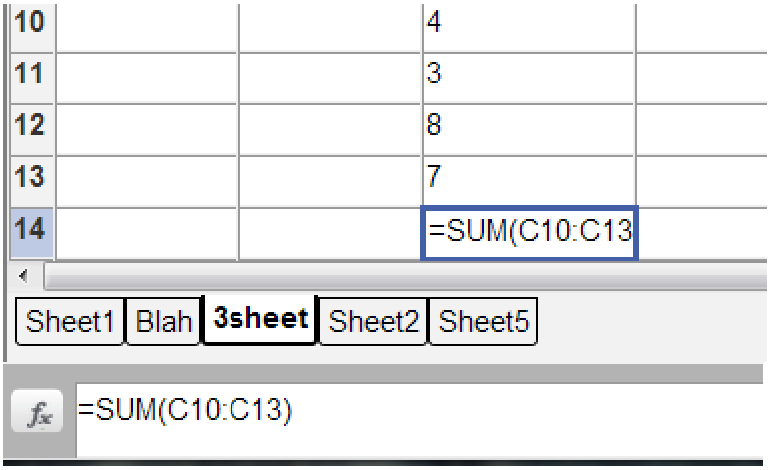
Modified cells have a yellow background.

All other cells (empty or not) display with a white background.

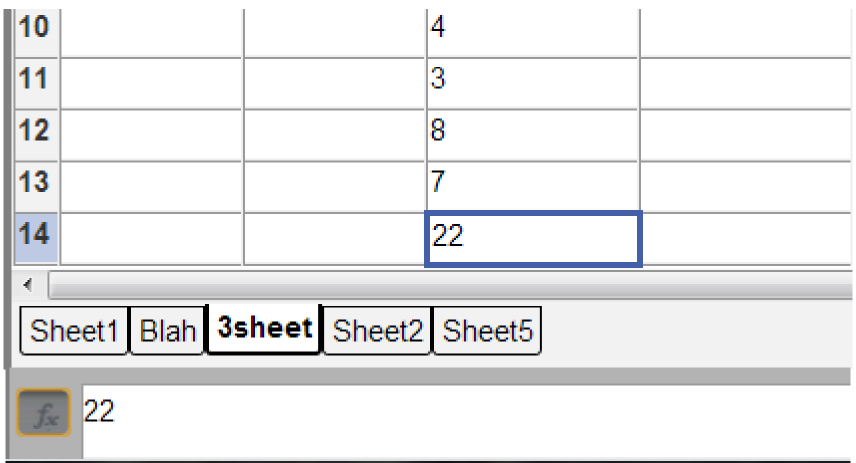
No empty cells are highlighted, even if they are different (added or deleted)

Formulas

Formulas are not displayed by default. Depending on the Evaluate Formulas option, the cell content is the formula (for example, "=1+1") or the value of the formula (for example, "2"). You can also toggle formulas by the button in the cell detail pane. When you click in a cell, the value is displayed at the bottom in the formula space.



If you click the Evaluate Formulas button, the value displays in the cell detail pane:

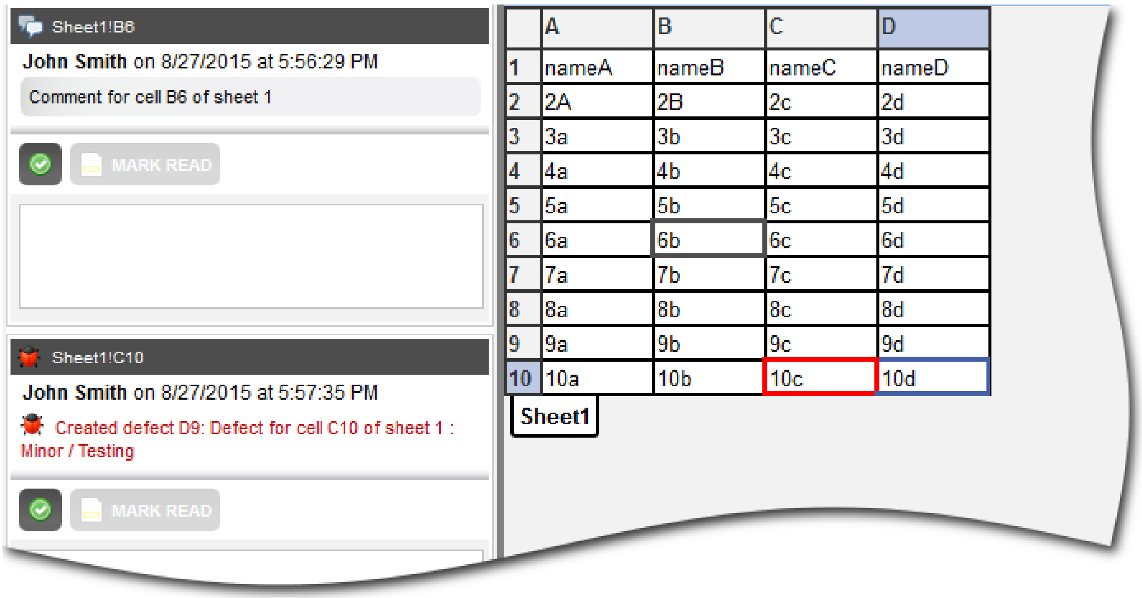


Making Comments and Marking Defects

On the left of the main diff viewer page, there is a pane for chat threads, where you can view and make comments and mark defects that should be fixed. When reviewing Excel files, you can create global 294, annotation 294, overall for file revision 295 and cell 298 comments and defects.

To comment on specific cell within an Excel spreadsheet, click the desired cell in the content view, type your comment in the text box and click "Add". To add defects, click the desired cell in the content view, type the defect description, click "Add As Defect" and fill-in the required fields.

Conversations on cells are displayed in alphabetical order by sheet name, not in the sheet order found in the version content. In the example above, 3Sheet would come before Blah. The name of the chat includes the name of the sheet followed by the location of the cell being discussed. For example, 3sheetC10.



To learn more about communicating during the reviews, see Types of Review Comments and Defects 292 and Review Chats, Comments and Defects 299 topics.

4.3.4.5 Reviewing Images

Images can be reviewed within the tool and not as external binary files. Image files must be renderable by the browser and be configured by the administrator 162 to be treated as images. By default, JPEG (.jpg and .jpeg), GIF (.gif), and PNG (.png) files are treated as images.

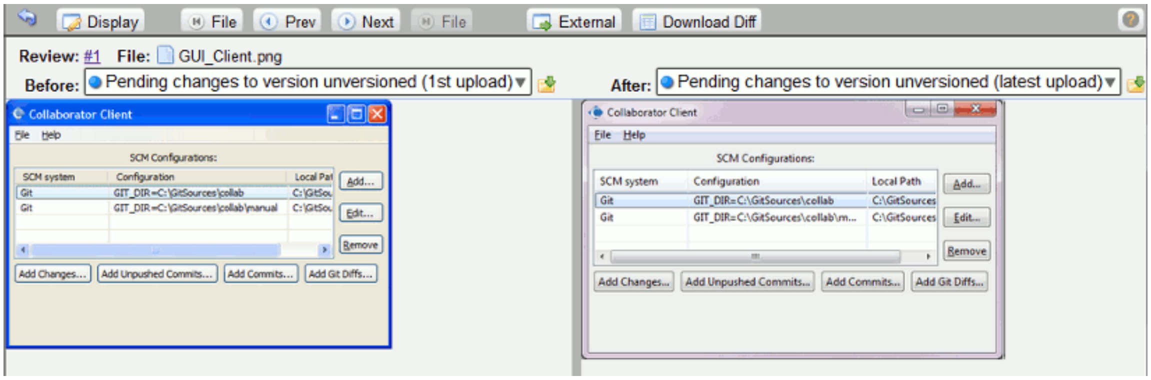
Uploading Images

To review images, just attach 249 them to the review as you would any other file, and when you open the diff viewer, the content area will display the images for review.

Viewing Differences

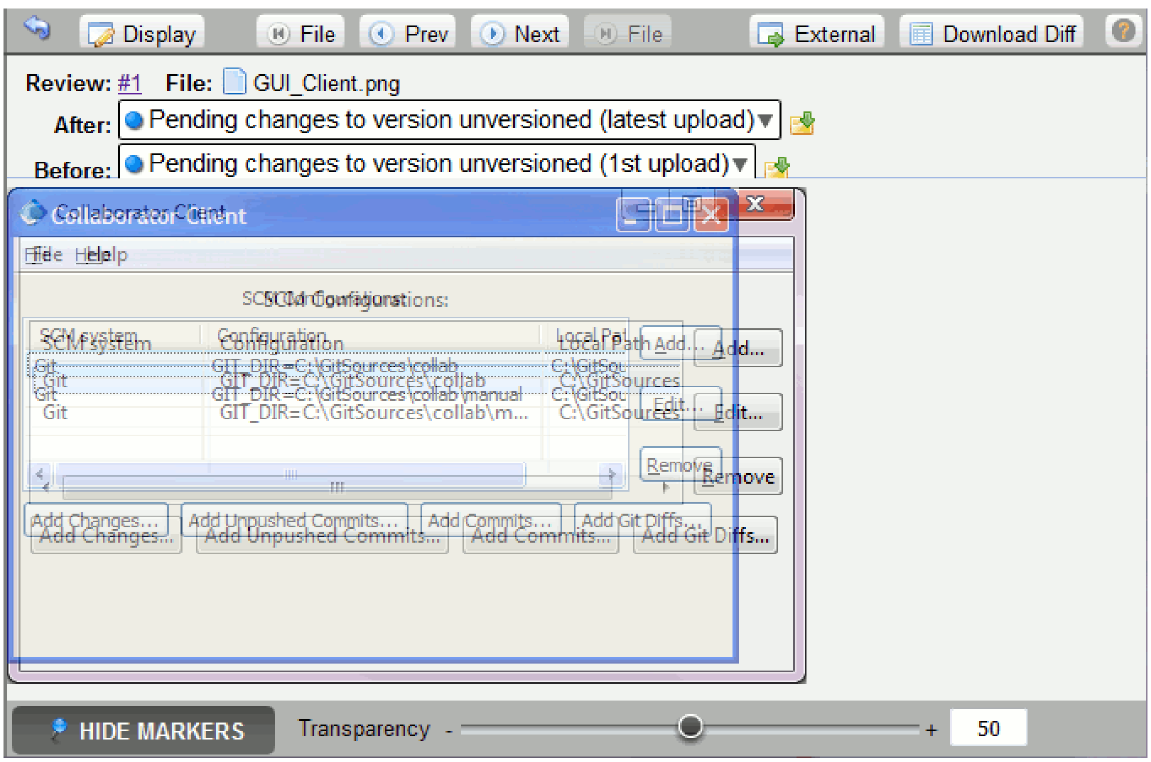
Images can be reviewed in two different manners: **side-by-side** or **overlaid**. Toggling between the two layouts is as simple as changing the Diff View setting in the Display 266 menu.

The **side-by-side view** displays the before and after images separately, one next to another. This layout is useful to see both images at the same time.



Side-by-Side Image Review

The **overlaid view** displays the after image over the before image (as image layers on photo editors). The **Transparency** selector adjusts the opacity of the top image and thus allows you to blend the two images together. This layout is useful to see the subtle differences between two images, including alignment differences and color variation.



Overlaid Image Review

Zoom

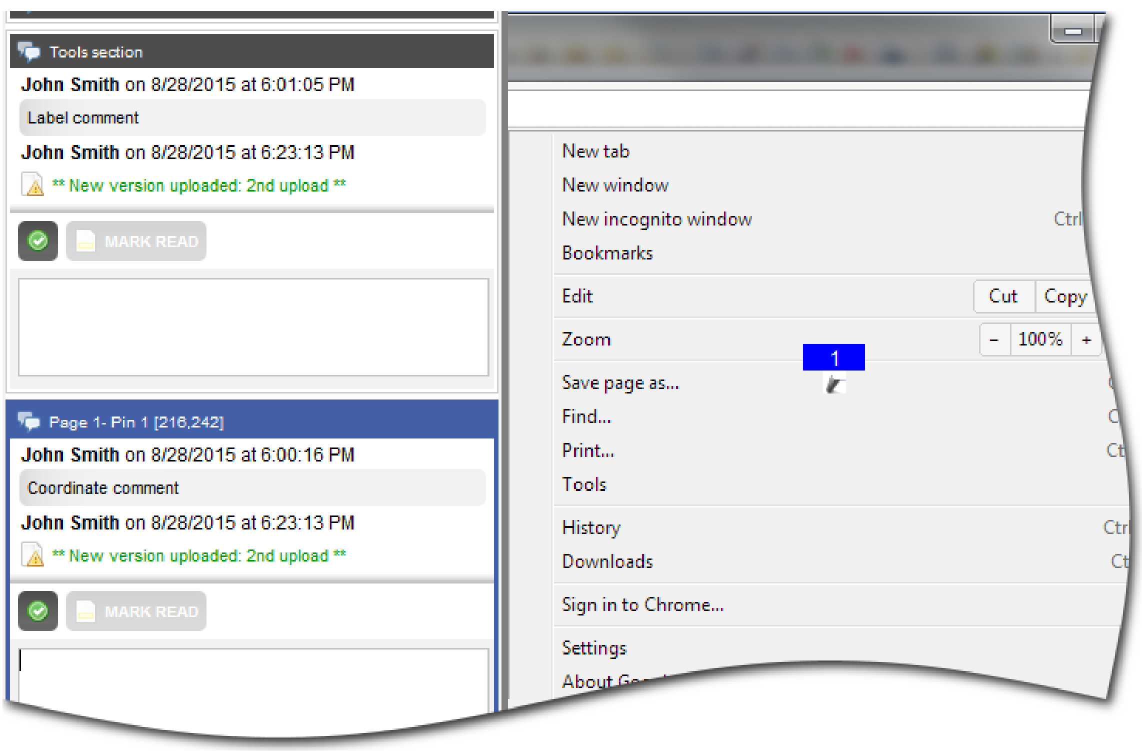
Both the side-by-side and overlaid view support zooming the images [269] in the display. Whether zoomed in or out, the comment markers still refer to pixel locations in the image at 100% zoom, so subpixel comments are not supported. If a zoom operation would cause the currently selected location to scroll offscreen, the image will be scrolled to recenter the selected location.

The image rescaling for the zoom function is provided by the browser and may introduce artifacts depending on the type of image and the scaling algorithm chosen by the browser.

Making Comments and Marking Defects

On the left of the main diff viewer page, there is a pane for chat threads, where you can view and make comments and mark defects that should be fixed. When reviewing image files, you can create global [294], annotation [294], overall for file revision [295], coordinate (pushpin) [296] and label [297] comments and defects.

To comment on specific location, simply click the image at a point where you would like your comment to appear and begin typing. Collaborator will insert a pushpin () to indicate the comment. The number in the pushpin head corresponds to the comment's order within the current image.



The pins may be turned off by clicking the pushpin toggle in the image review toolbar at the bottom of the content pane. This is useful when the pushpins cover important parts of the image.

Alternatively, you may specify an arbitrary label, such as "Tools menu", to describe the content you are referring to. Using labeled locations decreases the confusion that can occur when large changes occur in an image resulting in the pushpins not being adjacent to the corresponding context. Label text may not be updated.

To learn more about communicating during the reviews, see Types of Review Comments and Defects 292 and Review Chats, Comments and Defects 299 topics.

Moving Comment Pushpins

You can move an existing pushpin to a new position in a document. The feature works in Mozilla Firefox and Google Chrome, and should be enabled by administrator 150.

To move a comment:

1. Select the desired comment.

2. Press and hold the Move Comment handle ( ).

3. Drag and drop the handle over the new position.

4.3.4.6 Reviewing PDFs and Documents of Other Types

Collaborator includes native support for PDF files. Additionally, you may convert any other document type (for example, PowerPoint slides or OpenOffice documents) into PDF format and upload it to Collaborator.

Uploading PDFs

To review PDF documents, just attach 249 them to the review as you would any other file and when you open the diff viewer, the content area will display the documents for review.

Uploading Arbitrary Document Types

To upload any arbitrary document, you need to convert the desired document to PDF format using a conversion tool and then upload it to the review. Popular converters include (but are not limited to):

- OpenOffice

- PrimoPDF

- pdftk

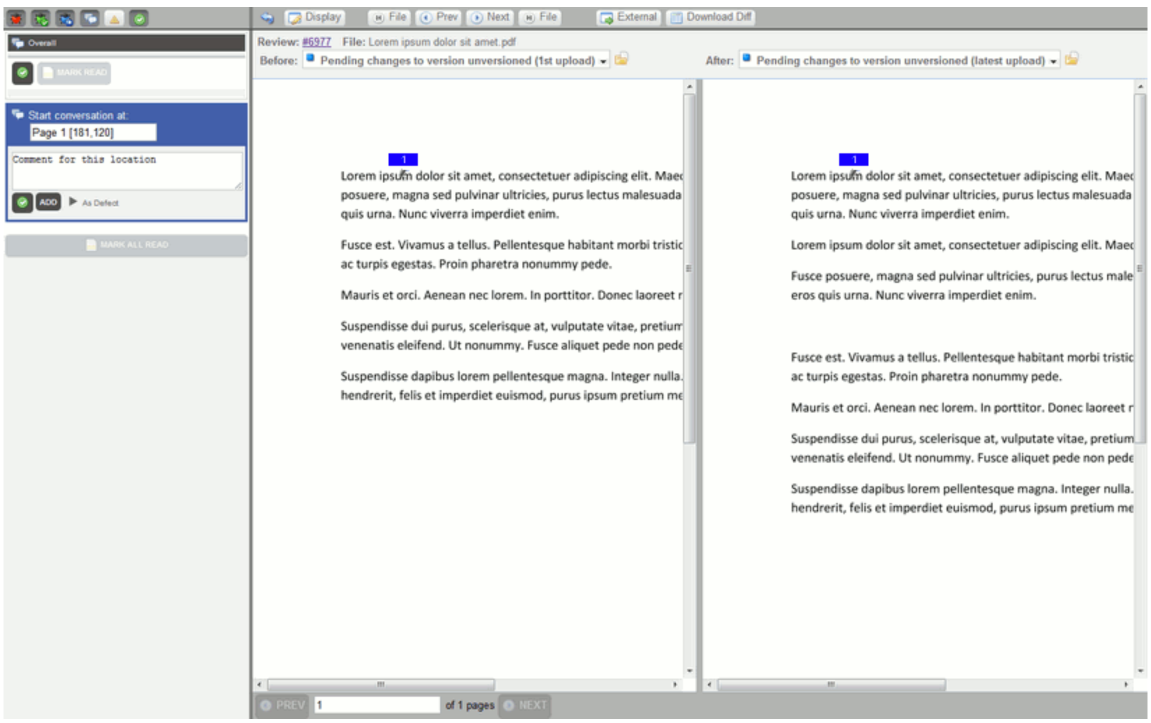
- [Microsoft Save as PDF or XPS Add-in]

To upload PowerPoint documents you can install Collaborator plugin for Microsoft PowerPoint. This plugin saves a PowerPoint slide deck as a PDF, and then uploads it to a Collaborator review.

Viewing Differences

Documents can only be viewed in a **single** or **side-by-side** layout. There is no over-under view available currently for PDF documents.

Note: Collaborator does not compare document file content. Differences in text will not be highlighted, and coordinate-based comments and defects of a previous revision will remain in the same location on newer revision.



Side-by-Side PDF Review

Scrollbars are available for each version of the document. You can also hide the version shown on the right by clicking on the arrow in the **separator** between the two versions. You are also able to move the separator to show more or less of either version. To do this, hover the mouse over the separator until the arrows appear, and click and drag until it reaches the desired location.

Changing Pages

To change pages, use the arrows at the bottom left of the comparison screen.

The arrows will allow you to go to the **Previous Page** or the **Next Page**. You can also manually enter a **page number** and hit enter to jump to any arbitrary page. The page numbers will refer to the latest upload of the document shown.

Zoom

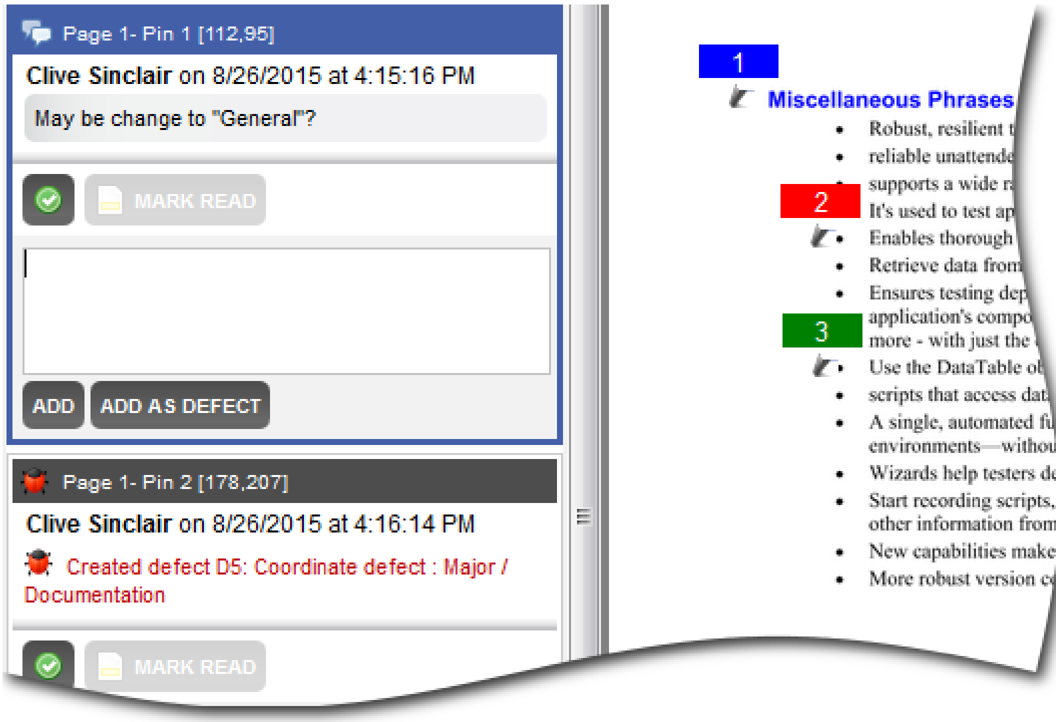
Both the side-by-side and single view support zooming [269] the images in the display. Zooming out is useful if the page is too large to display in the browser window without scrolling. Zoom is also useful for more precise placement of the comment markers. However, whether zoomed in or out, the comment markers still refer to pixel locations in the image at 100% zoom, so subpixel comments are not supported. If a zoom operation would cause the currently selected location to scroll offscreen, the image will be scrolled to recenter the selected location.

Rescaling of documents is performed by rerendering the document on the Collaborator server and could be slow depending on the size of the document and the selected image scale.

Making Comments and Marking Defects

On the left of the main diff viewer page, there is a pane for chat threads, where you can view and make comments and mark defects that should be fixed. When reviewing PDF files, you can create global [294], annotation [294], overall for file revision [295], coordinate (pushpin) [296] and label [297] comments and defects.

To comment on specific text in a document, simply click the document at a point where you would like your comment to appear and begin typing. Collaborator will insert a pushpin () to indicate the comment. The number in the pushpin head corresponds to the comment's order within the current page of the document.



You can hide pushpins by clicking the pushpin toggle button on the toolbar. Use this feature if a pushpin overlaps an important part of the document.

Alternatively, you may specify an arbitrary label, such as "Section 5.1", to describe the content you are referring to. Using labeled locations decreases the confusion that can occur when large changes occur in a text document resulting in the pushpins not being adjacent to the corresponding text. Label text may not be updated.

To learn more about communicating during the reviews, see Types of Review Comments and Defects 292 and Review Chats, Comments and Defects 299 topics.

Moving Comment Pushpins

You can move an existing pushpin to a new position in a document. The feature works in Mozilla Firefox and Google Chrome, and should be enabled by administrator 150.

To move a comment:

1. Select the desired comment.

2. Press and hold the Move Comment handle ( ).

3. Drag and drop the handle over the new position in the document.

4.3.4.7 Reviewing URLs

URL's can also be reviewed in Collaborator.

However, it is important to note certain limitations. Currently, URL's are rendered in the browser as "live". This implies that clicking on a link on the URL page will direct you to a new page. This also means that you will not be able to anchor comments in the same manner as in image and document reviews.

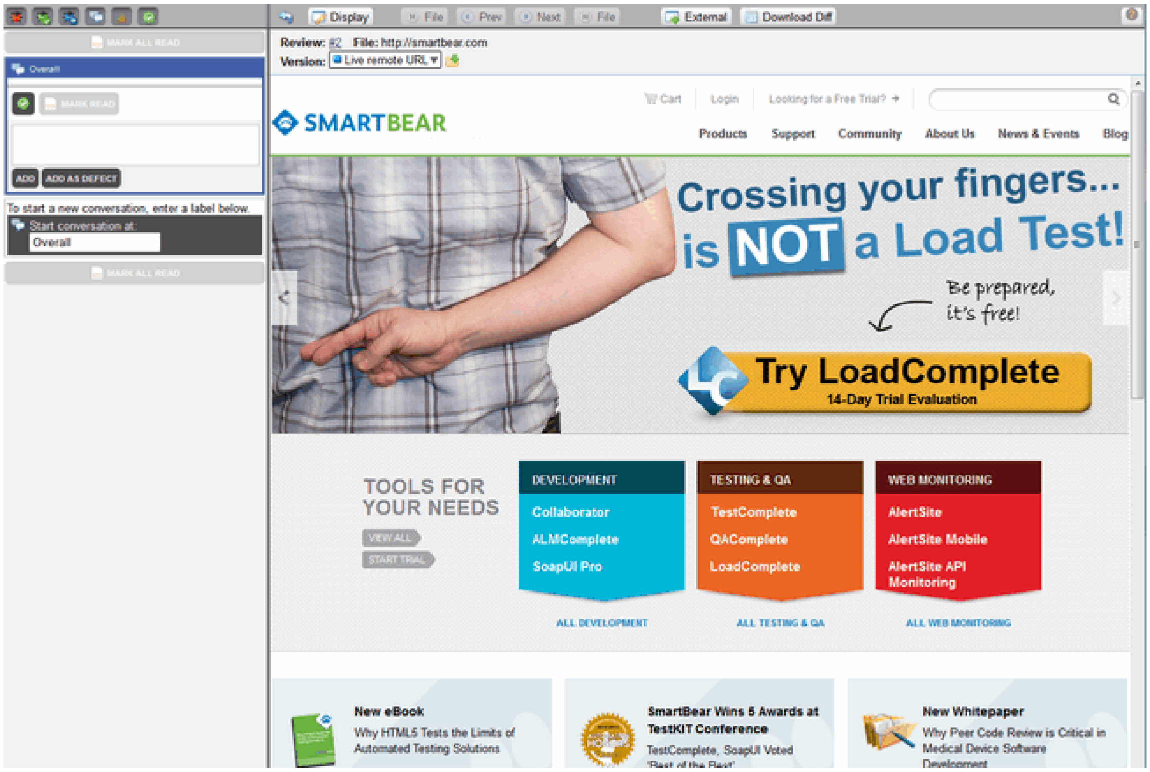
With our current URL review functionality, newer versions of the URL will not be displayed with older versions, meaning you cannot display multiple versions of the same web page. If you would like to compare multiple URL versions, we recommend that you take static snap shots of the web page and use the image review functionality 284 of Collaborator.

Uploading URL's

To upload a URL, use the Attach URL 248 feature on the review creation page.

Making Comments and Marking Defects

As mentioned above, you will not be able to anchor comments. Instead, you can specify an arbitrary label describing a part of the page or otherwise indicating to other participants what you are commenting on. In older versions of Collaborator, comments in URL's were anchored to a fake "line". Those comments will continue to be displayed, but will be sorted after the new labeled locations.



URL Review

4.3.5 Types of Review Comments and Defects

There are two main types of messages in Collaborator: comments and defects.

Comments may hold any information concerning the review: a question, a clarification, a remark, an encouragement, whatever else. These are the major mean of communication during the review process.

Defects indicate a problem that needs to be fixed. Defects have some text that describes the problem and also can have any number of additional fields. These are all completely configurable 190 by the system administrator and can also vary depending on the review workflow 245 that was originally selected for the review. Because this is completely configurable, this manual cannot say exactly what the fields will be or what they mean; ask your administrator for details. It is common to see fields like severity, type, checklist item, and phase-injected.

Every defect is given a unique number, on the server. There will only ever be a single defect with the given ID, no matter how many defects, documents or reviews exist on the server.

All defects found during a review are listed in the Defect Log 254 section of the Review Summary Screen 250, (so you will not overlook any of them).

Note: The word "defect" has many connotations that are inappropriate for peer review. This does not mean the problem will be mirrored in an external issue-tracking system, and it does not necessarily mean it was a bug! Even "bad documentation" can be a defect.

A "defect" is just a way of identifying something that needs to be fixed.

Moreover, if the word "defect" has a negative connotation in your environment, your Collaborator administrator can change it to another term 149.

Color Highlighting of Comments and Defects

To indicate the status of the comment or defect they are highlighted in different colors. The following color notations are used for message backgrounds in the Chat pane, for line indents of text files, for pushpins and for cell borders:

Color	Meaning
Blue	The currently selected conversation.
Red	An open defect.
Yellow	An unread comment.
Green	A fixed defect or an external defect.
Gray	No defects.

Global and Content Specific Comments and Defects

Comments and defects can be *global* or *context specific*. That is, they may relate to the entire review, or to certain review materials or even to particular line, coordinate, cell in one of the reviewed files.

Collaborator has the following sub-types of comments and defects:

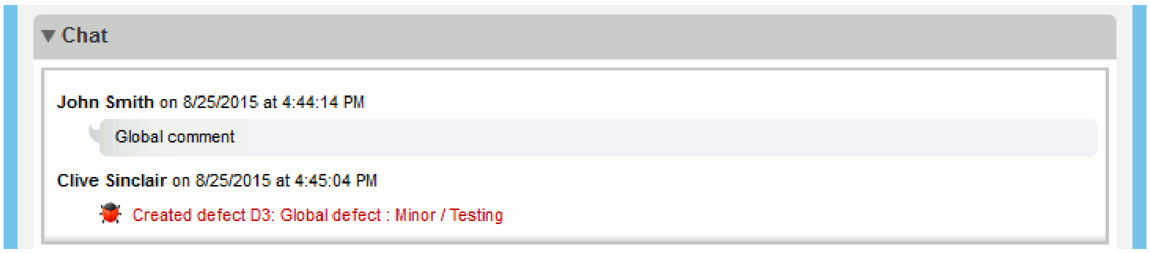
- Global (Review Chat) 294
- Annotation 294
- Overall for File Revision or URL 295
- Line 295

- Coordinate (Pushpin) 296
- Label 297
- Cell 298

Global Comments and Defects(Review Chat)

These comments or defects relate to the entire review as a whole (not to some specific review materials). Can be used with all reviews.

Global comments and defects are displayed in the Chat 256 section of the Review Summary Screen 250.

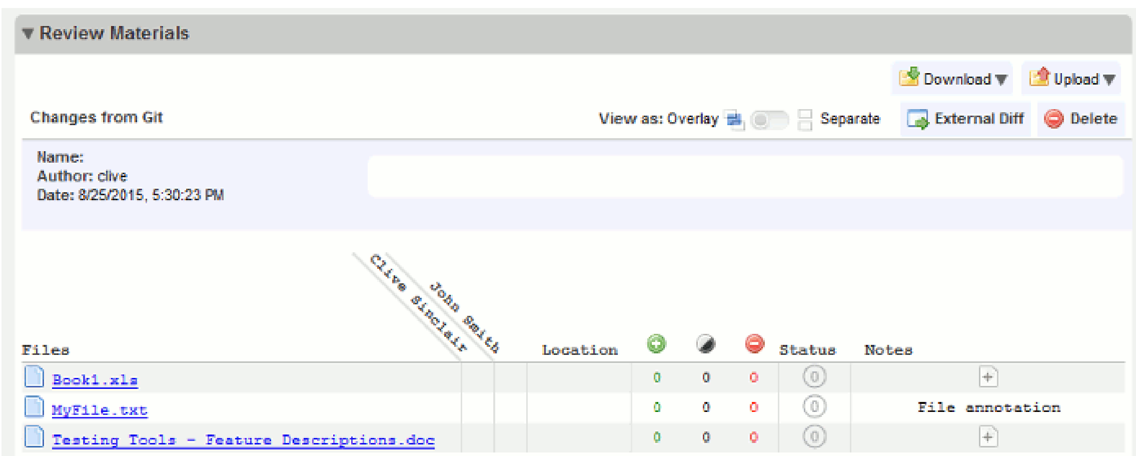


To add comments to the Chat section, simply type your comment in the text box and click "Add". To add defects, type the defect description, click "Add As Defect" and fill-in the required fields.

Annotation Comments

These type of comments provide short description (annotation, notes or some other short info) about a particular file revision or URL. Can be used with all review materials. Defects cannot be of annotation type.

Annotation comments are displayed in the Notes column of the Review Materials 257 section of the Review Summary Screen 250.



To add annotation comments, click the plus button in the Notes column, enter annotation text and click "Save".

Overall Comments and Defects for File Revision or URL

These comments or defects relate to a particular file revision or URL (as a whole, but not to some specific part if it). Can be used with all kinds of review materials.

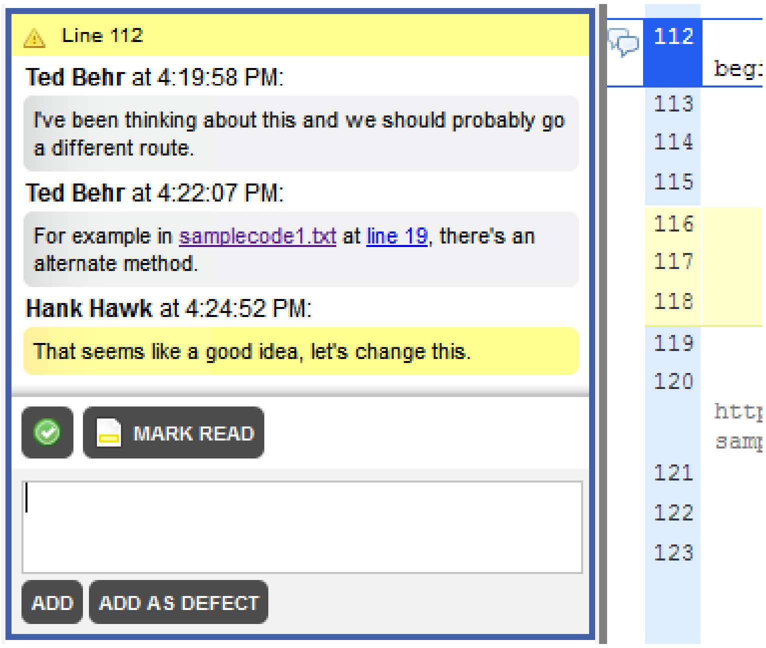
Overall comments and defects are displayed in the Overall section of Chat pane in the Diff Viewer 264.

To add comments to the Overall section, simply type your comment in the text box and click "Add". To add defects, type the defect description, click "Add As Defect" and fill-in the required fields.

Line Comments and Defects

These comments or defects relate to a particular line within a file. Can be used with text-based files and their revisions. Multiple comments and defects can relate to the same line of text.

Line comments and defects are displayed in the Chat pane of the Diff Viewer 264.

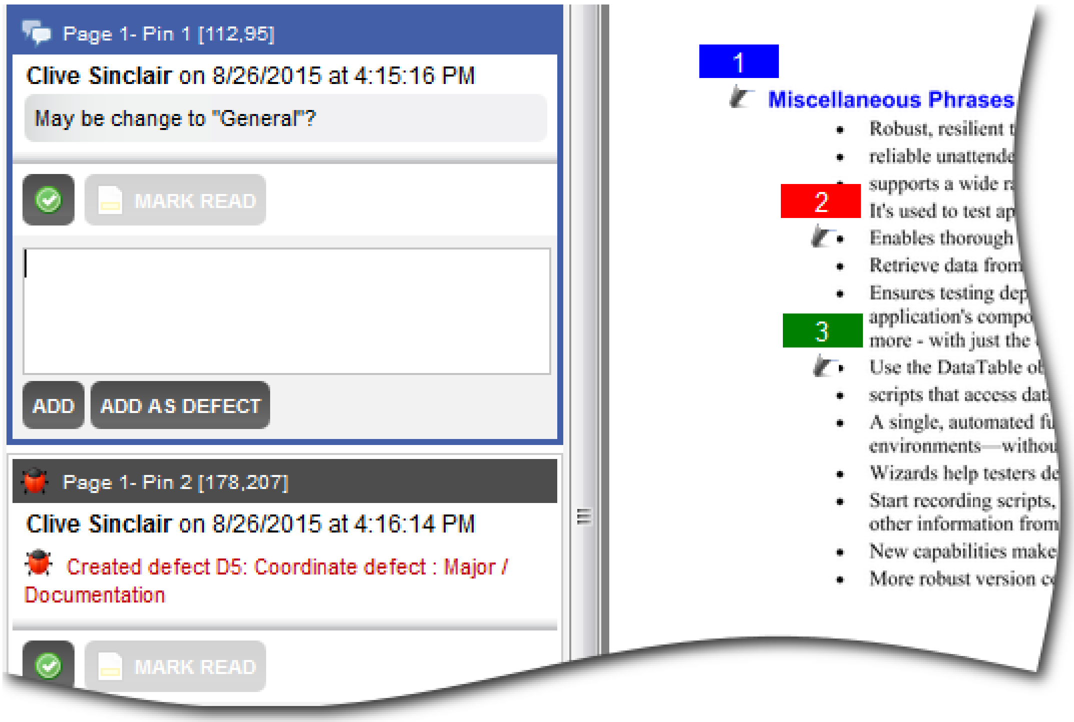


To add line comments, click the desired line of text in the content view, type your comment in the text box and click "Add". To add defects, click the desired line of text in the content view, type the defect description, click "Add As Defect" and fill-in the required fields.

Coordinate Comments and Defects (Pushpins)

These comments or defects relate to a particular coordinates within a file. Can be used with images, Microsoft Word files and PDF files. Multiple comments and defects can relate to the same coordinate.

Pushpin comments and defects are displayed in the Chat pane of the Diff Viewer 264.



To add pushpin comments, click the desired location in the content view, type your comment in the text box and click "Add". To add defects, click the desired location in the content view, type the defect description, click "Add As Defect" and fill-in the required fields.

Pushpins created via Web Client or command-line client display an integer number in their head: 

The number corresponds to the order in which that pushpin was added to the document page or image.

Pushpins created via Eclipse Plug-in do not display any ordinal numbers: 

Note: During the upgrade to Collaborator 9.3 all **in-progress** reviews have been updated and their pushpins (if any) were numbered. Converting only in-progress reviews during the upgrade, ensures that upgrading the server to 9.3 does not take too long. To append ordinal numbers to pushpins in all completed reviews, your administrators can use the respective command in the Diagnostic Utility 136. (This however may take some time to accomplish.)

Label Comments and Defects

These comments or defects relate to an arbitrary label within a file. Can be used with images, Microsoft Word files and PDF files. The label text **must** describe the content (for example, "Section 5.1 on page 23") it relates to. (Since, label comments/defects do not have any other markers that bind the content and the label.) Multiple comments and defects can relate to the same label.

Using labeled locations decreases the confusion that can occur when large changes occur in a document or image resulting in the pushpins not being adjacent to the corresponding context. Label text may not be updated.

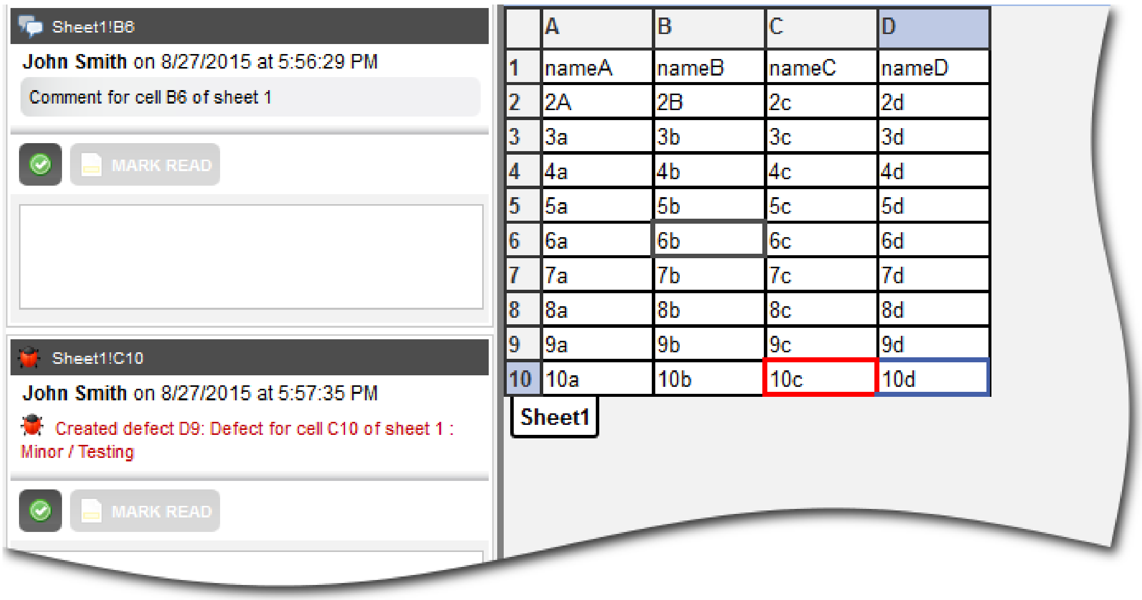
Label comments and defects are displayed in the Chat pane of the Diff Viewer 264.

To add label comments, scroll the Chat pane to the "Start conversation at" box, specify label text and text of the comment and click "Add". To add defects, perform the same steps as for label comments, but click click "Add As Defect" and fill-in the required fields.

Cell Comments and Defects

These comments or defects relate to a particular cell within an Excel spreadsheet. Can be used with Excel files and their revisions. Multiple comments and defects can relate to the same cell. Conversations on cells are displayed in alphabetical order by sheet name, not in the sheet order found in the version content. The name of the chat includes the name of the sheet followed by the location of the cell being discussed. For example, 3sheetC10.

Cell comments and defects are displayed in the Chat pane of the Diff Viewer 264.



To add cell comments, click the desired cell in the content view, type your comment in the text box and click "Add". To add defects, click the desired cell in the content view, type the defect description, click "Add As Defect" and fill-in the required fields.

4.3.6 Review Chats, Comments and Defects

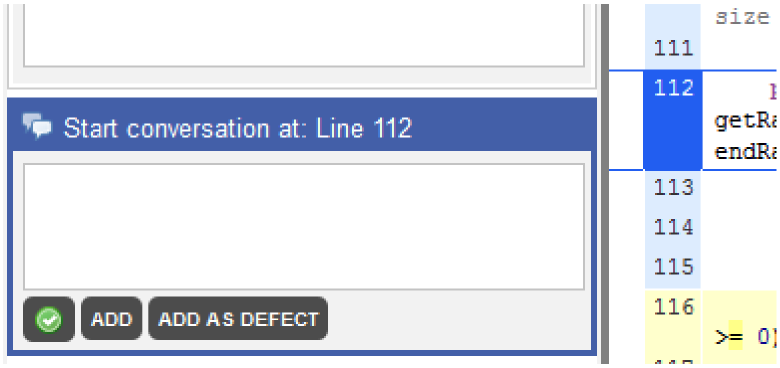
Viewing differences [264] between documents is merely the beginning. The key to reviewing documents is communication.

There are various global and content-specific types of comments and defects in Collaborator. See Types of Review Comments and Defects [292] for detailed description of each type.

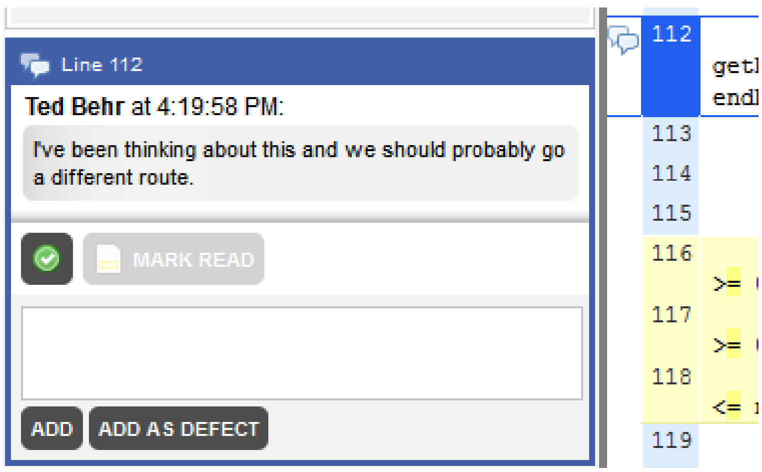
This topic describes how to communicate during a review.

Making Conversation -- Chatting at particular lines, coordinates, cells

To start a new chat session, just click on a desired location (line, coordinates, cell) and start typing. The interface will open up automatically and accept your chat message:

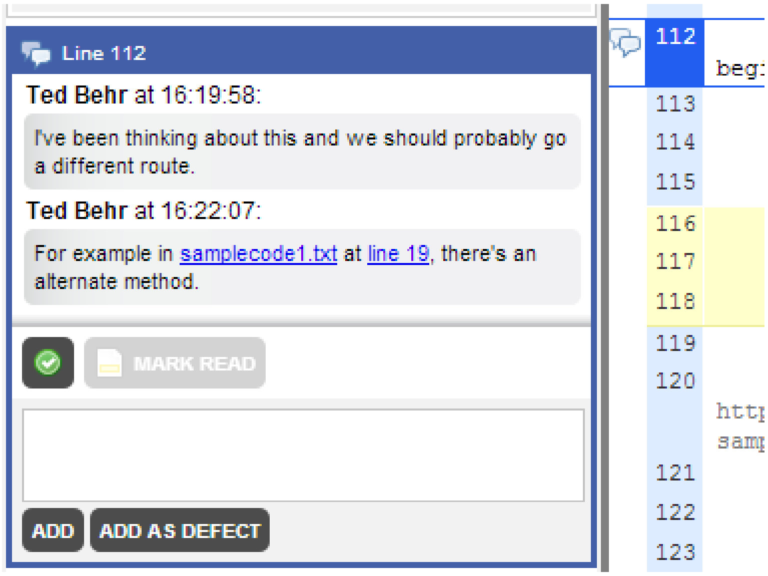


When you click "Add", your message is transmitted to all other users and you have started a *threaded* conversation for that particular location (line, coordinates, cell). In this case, it would look something like this:

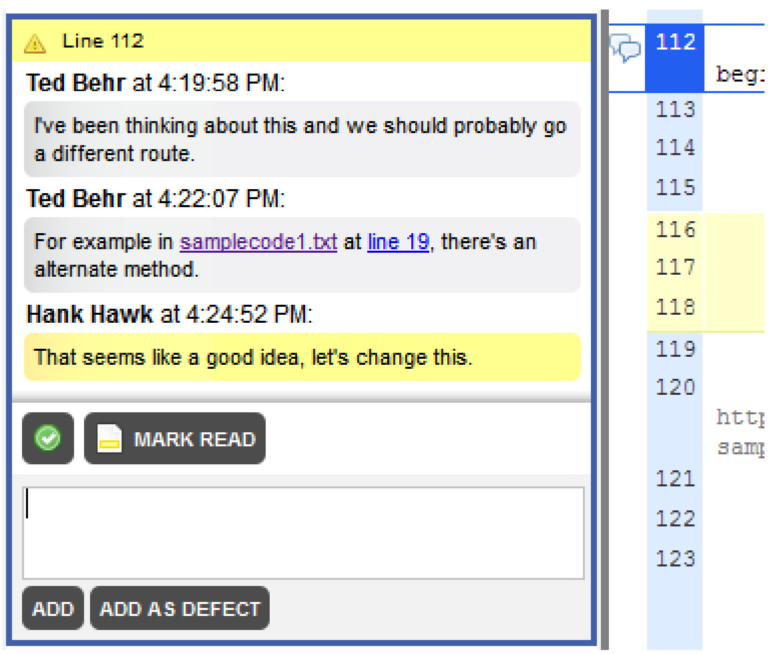


Notice how the conversation is now threaded by line (112) and how a little icon appears next to the source where the conversation was made.

When you type the name of a file in the same review, it will turn into a link to that file. You can also link to a different line number in the current file by typing "line NNN".



When another user chats on that same line, that message appears in yellow and yellow bubbles help to make the conversation stand out as needing to be read. The screen updates immediately without the need for a browser "refresh":

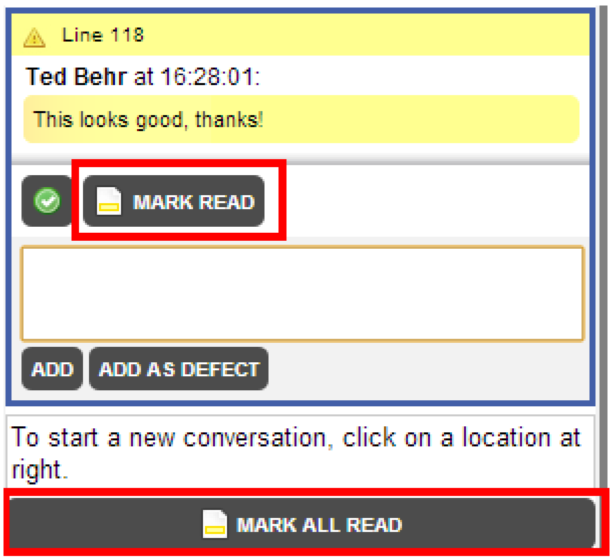


To clear this "unread chat" state, send a chat message back to the other user. You can also click the green checkmark button to 'Accept' the comment or the 'Mark Read' button.

"Accept" means whatever you want it to mean. If you want, you can never use the Accept button at all. The actual effect of clicking "Accept" on a conversation is to mark that conversation read, and to put a green check mark next to that conversation in the Inspection page (main review page with list of files). Those check marks are visible to all users.

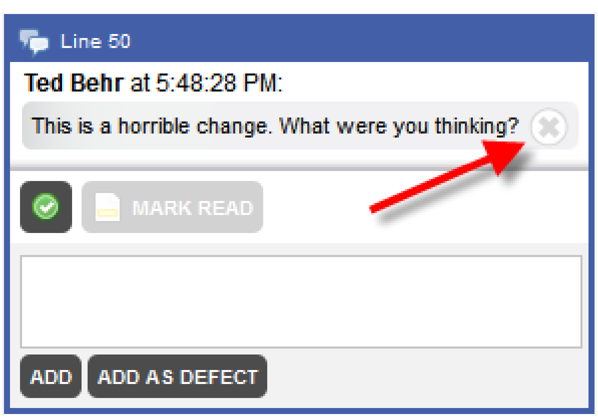
Many people use "Accept" as sort of a bookmark within the review to keep track of what files they have already looked at. Some people use it to mean explicit agreement with the conversation (as opposed to simply not replying, which is implicit agreement).

If you want to clear the "unread chat" state without saying something, click the Mark Read button (there is also a 'Mark All Read' button at the bottom of the chat pane):

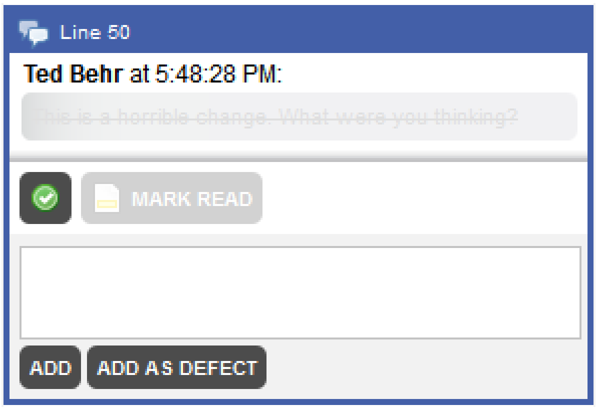


Redacting Comments

People have a knack for typing things that for various reasons they should not.



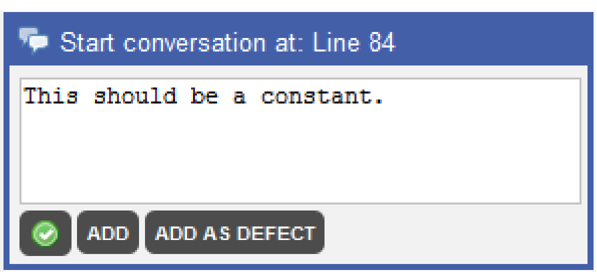
When you do this, you can redact your harsh, erroneous or otherwise inappropriate statement by clicking the "X" to the right of your comment. The "X" will appear when you mouse-over the specific comment you would like to redact. The comment will then be displayed in a much more difficult to read manner.



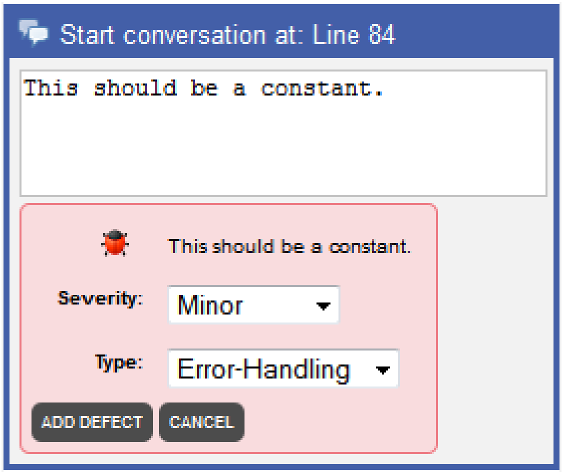
This styling is meant to deter the casual reader from actually reading the text. You cannot undo redacting a comment. If you have accidentally redacted a comment, you can copy the text from the redacted comment into a new comment. System administrators are allowed to redact any comment. Normal users are allowed to redact comments they authored.

Creating Defects -- indicating that something is wrong

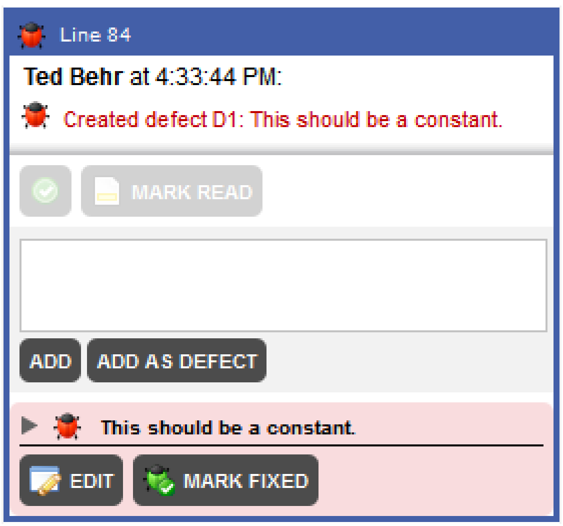
When you want to indicate that there is a problem that needs to be fixed -- not just more chat -- you open a defect. Do this using the As Defect drop-down below the comment field:



Besides the comment text, defects can have any number of additional fields. These are all completely configurable 190 by the system administrator and can also vary depending on the review workflow 245 that was originally selected for the review. Because this is completely configurable, this manual cannot say exactly what the fields will be or what they mean; ask your administrator for details. It is common to see fields like severity, type, checklist item, and phase-injected.



Once the defect is created, it is added to the chat area and a defect log is started on that line:



Every defect is given a unique number, on the server; in the example above the number is D1. There will only ever be a single defect numbered D1, no matter how many defects, documents or reviews exist on the server.

You can have any number of defects on a single line; all will be logged into the list beneath the chat area.

You can **Edit** a defect by clicking [Edit] in the defect log. Or **Delete** a defect by clicking [Delete] (available after clicking Edit). All of these activities will be logged into the chat conversation area as an audit trail of what happened.

Warning: It is tempting to delete a defect once the author has corrected the problem, but this is the wrong thing to do. You want to keep the defect record around, just mark it "fixed". This process is described next.

Delete a defect only if it turns out that it really was not a defect at all.

Warning: The word "defect" has many connotations that are inappropriate for peer review. This does not mean the problem will be mirrored in an external issue-tracking system, and it does not necessarily mean it was a bug! Even "bad documentation" can be a defect.

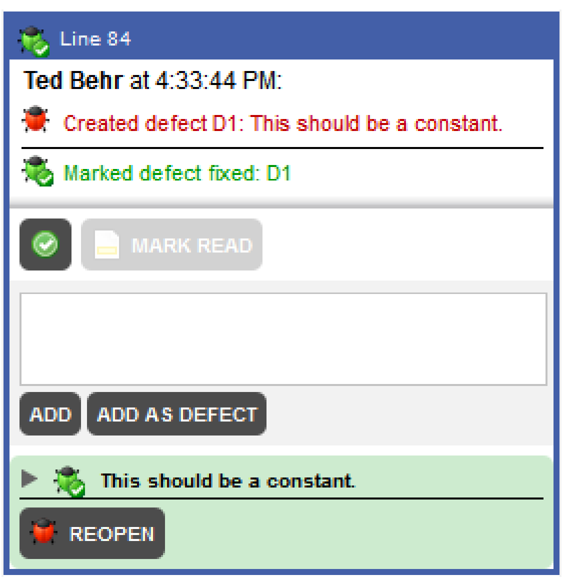
A "defect" is just a way of identifying something that needs to be fixed.

Moreover, if the word "defect" has a negative connotation in your environment, your Collaborator administrator can change it to another term 149.

Verifying that defects have been fixed

Later, after the author has attempted to fix the defects and has uploaded the new files to the review, the reviewers will verify that the fixes do fix the defect and do not open more defects in the process.

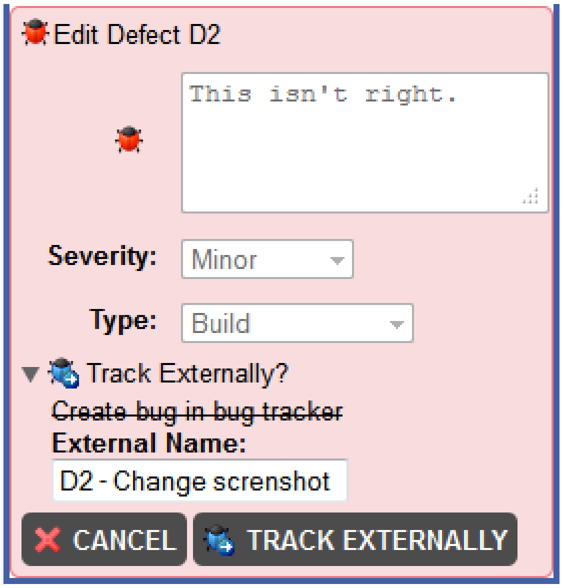
When the fix is verified, click [Mark Fixed] to indicate this fact. The conversation area and defect log will be updated to reflect this new state:



Externalizing defects

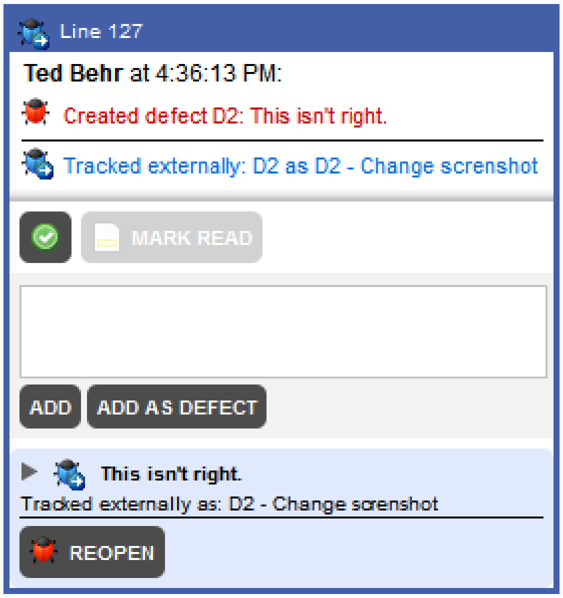
Sometimes you decide that a defect should be fixed at a later date. You do not want to mark it fixed because it is not fixed yet. But you do not want to delete it either because it is still a defect.

The answer is to use the [Track Externally] link as shown below:



This does two things. First it prompts you to create a new defect in your external issue tracker, then allows you to type in the associated issue ID in a field. Second, it changes the state of the defect from "Open" to "Tracked Externally".

This special state tells everyone else that (a) the review can complete but (b) the problem was not fixed during the review and (c) how to find the external issue for further auditing. The state appears on the Review Overview 254 screen with a special icon:



You can always undo the "Tracked Externally" state by clicking on the associated link [REOPEN]. This link will be in the place where [Track Externally] was. This will re-open the defect, restoring it to the state it had before the externalization.

4.3.7 FAQs

Can I highlight a range of lines in a file?

Currently there is no way to highlight a range of lines, although this is asked for frequently.

We are going to implement this feature, but there are some subtle UI considerations that are not immediately obvious. For example, say person A highlights lines 10-20. Then B wants to highlight lines 15-25. The UI must make those ranges and how to highlight those ranges clear. Then what if C wants to comment on just line 10, the edge of A's range? The conversation threads need to make sense, the highlighting needs to represent these cases clearly, and it has to be clear how to highlight one of those or make a new comment.

This is why it is not trivial, but we are working on it.

How can I delete files in a review?

Currently, files can be deleted from a review as long as there are no comments and/or defects associated. The New Review page 246 has a link that removes uploaded changesets. One option is to cancel 250 the review and start another. Also, note that you can optionally annotate 250 uploaded files before the review is started. This step additionally allows the author a chance to verify the right files are in the review.

How does Collaborator calculate the lines of code (LOC) metrics?

Collaborator uses different LOC calculation methods for different file types. Also, these calculating methods can provide slightly different results for the review summary, diff viewer, review detail and recently completed reviews reports. Here are some basic concepts:

- Collaborator calculates the LOC metrics only for text files that are in some source control repository. It does not calculate these metrics for the files that are outside of any source control. LOC metrics are not calculated for Word, Excel and PDF documents, as well as images and other binary files.
- To determine LOC metrics for the text files that are in a source control, Collaborator uses differences between the base and current file versions.

4.4 Searching & Reporting

Various reports 317 and a sophisticated search 308 engine help you track reviews completed, reviews in progress, and changes in version control that have not been reviewed.

Collaborator also creates metrics 685 reports for things like time spent in reviews, time between phases, kLOC/hour reviewed, defects per kLOC, time per defect, and many others.

Reports can be viewed on-line or exported in a variety of formats. Reports can also be saved and e-mailed.

In This Section

- Searching From Web UI 308
  Describes different ways to find a review from the Web Client.
- Searching Directly From Web Browser 312
  Describes hot to search for Collaborator reviews directly from the browser's address bar or search box.
- Reporting 317
  Describes customizable pre-built reports.

4.4.1 Searching From Web UI

Collaborator has a sophisticated search facility allowing you to find reviews in many ways. Uses include:

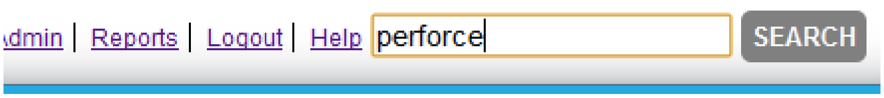
- Find reviews by review ID.
- Find reviews with substrings in title and custom fields 190.
- Find reviews with specific participants 245.

- Find reviews of particular changelists by check-in comment or changelist ID.
- Find reviews of certain files by file path.
- Find reviews having a substring in comment or defect text.

Starting a Search

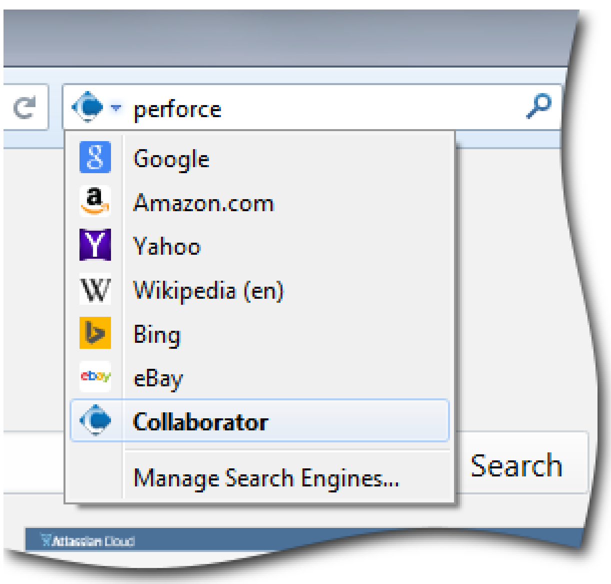
To start a search you can type the search term into any of the following:

- The search box at the left side of the menubar:



Entering search term in Web User Interface

- The address bar or search box of your browser (if your Collaborator server was added as browser's search provider 312):



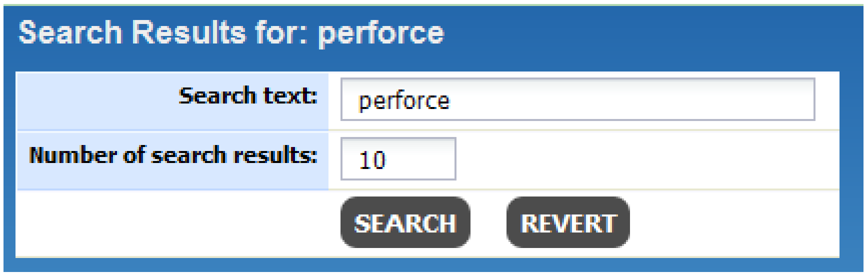
Entering search term in Mozilla Firefox

The system will automatically search in all the ways listed above.

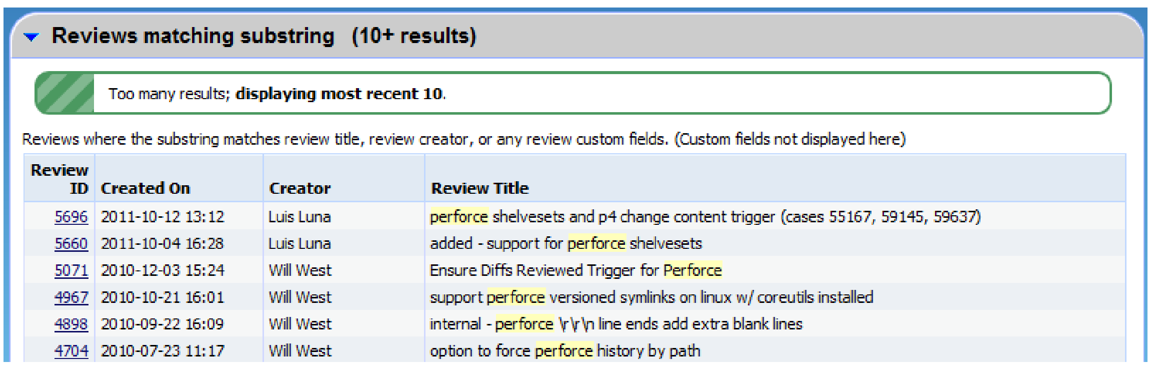
If you have entered the review ID number, you will automatically be taken to review. See Jumping to Reviews 311 section for details.

Search Results

The number of displayed search results will be limited if the search produces too many results. The default number displayed will usually be "10". This can be changed in the form that will appear at the top of the search results. To display more or less than shown, change the value in the "number of search results" field and click "search".



Because there are many types of searching, each result block is drawn separately. For example, below are the results of searching inside review title and custom field text:


Reviews matching substring (10+ results)

Too many results; **displaying most recent 10.**

Reviews where the substring matches review title, review creator, or any review custom fields. (Custom fields not displayed here)

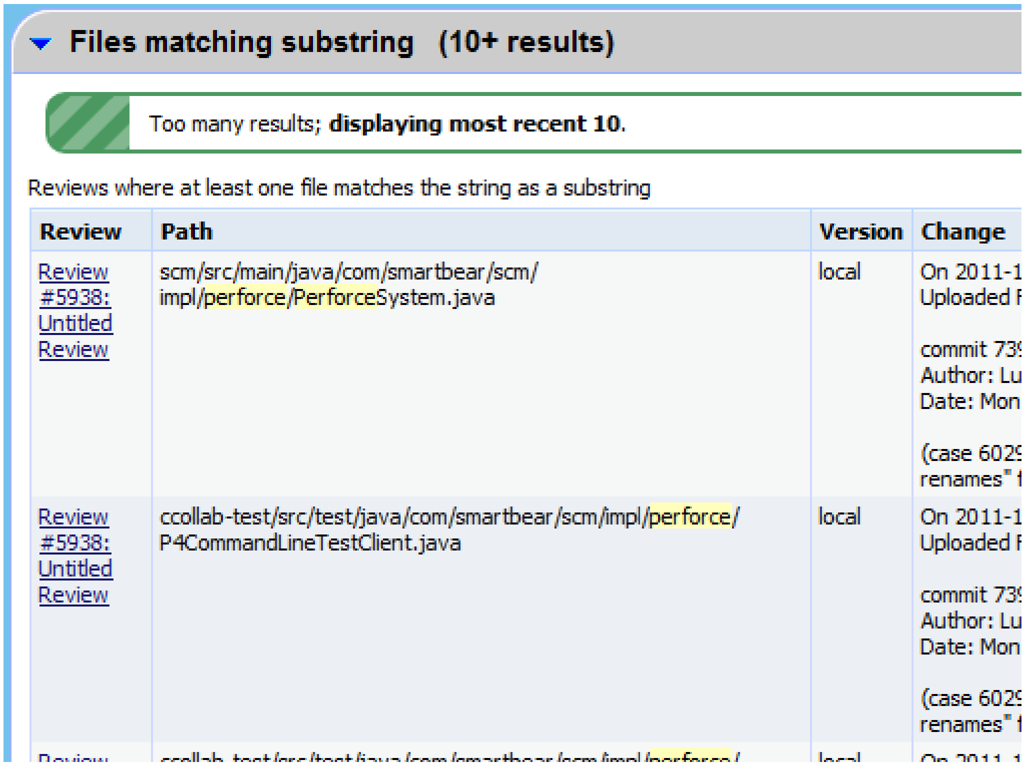
Review ID	Created On	Creator	Review Title
5696	2011-10-12 13:12	Luis Luna	perforce shelvesets and p4 change content trigger (cases 55167, 59145, 59637)
5660	2011-10-04 16:28	Luis Luna	added - support for perforce shelvesets
5071	2010-12-03 15:24	Will West	Ensure Diffs Reviewed Trigger for Perforce
4967	2010-10-21 16:01	Will West	support perforce versioned symlinks on linux w/ coreutils installed
4898	2010-09-22 16:09	Will West	internal - perforce \r\r\n line ends add extra blank lines
4704	2010-07-23 11:17	Will West	option to force perforce history by path

Note several features of the search results:

- Text at top of the block explains exactly what the block is searching on.
- Reviews are displayed in creation-date order, most recent first.
- Specific search term is highlighted in yellow.
- Jump to a review by clicking the ID link.
- When there are many results, a message appears near the top in green.

You may notice that some reviews do *not* have the yellow highlight. Why did these reviews match the search? This search looks not only at the review title and participants but also in all custom fields. Those fields are not, however, displayed in this view, so nothing can be highlighted. (Custom fields are not shown because there can be a large number of them which would make the search results difficult to read.)

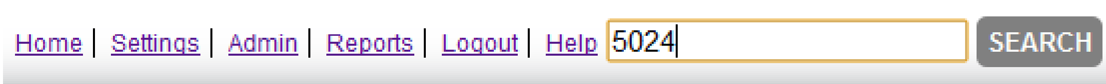
Here is another example where the block is searching over files present in the review:



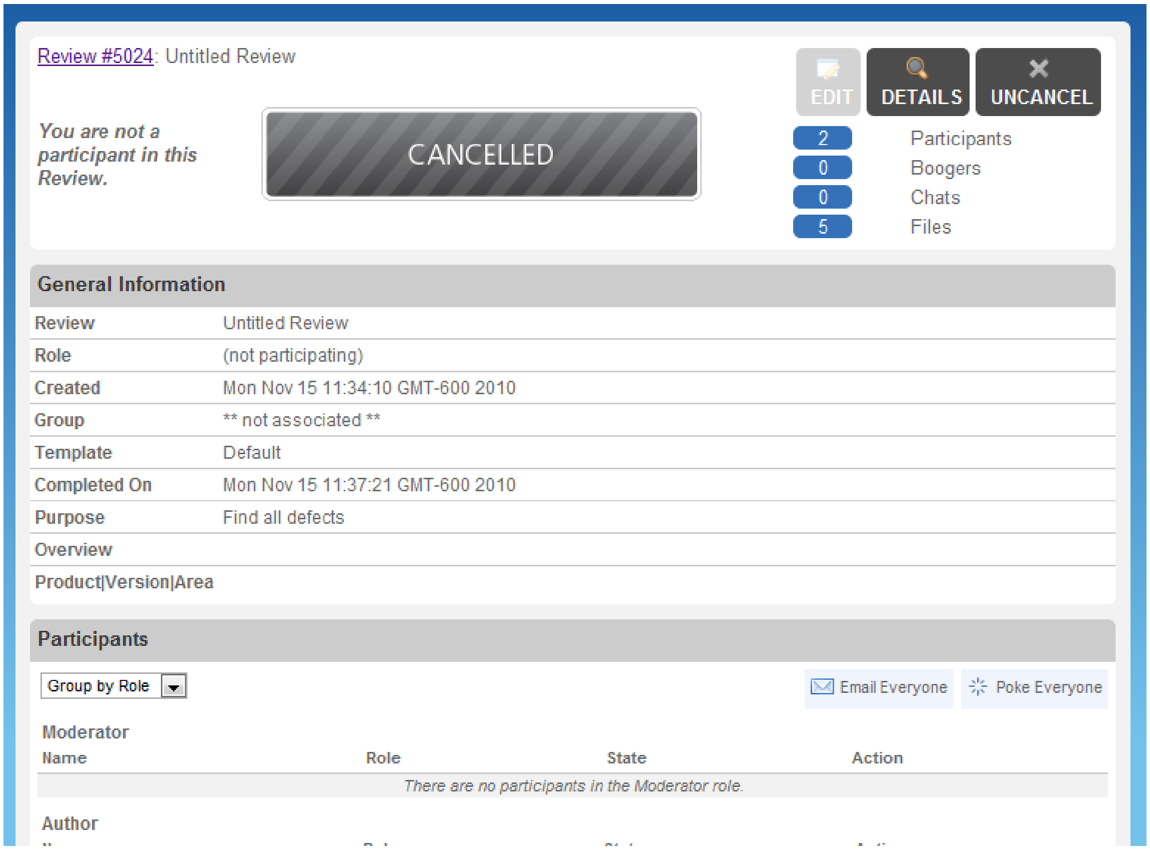
Jumping to Reviews

You can jump to a review by entering the unique review ID number into the search box. If the number entered matches a review ID number, you will automatically be taken to review. This allows you to bypass search results and quickly find the searched review.

Enter the Review ID number into the search box at the left side of the website menubar:



The browser will be automatically directed to Review # 5024:



4.4.2 Searching Directly From Web Browser

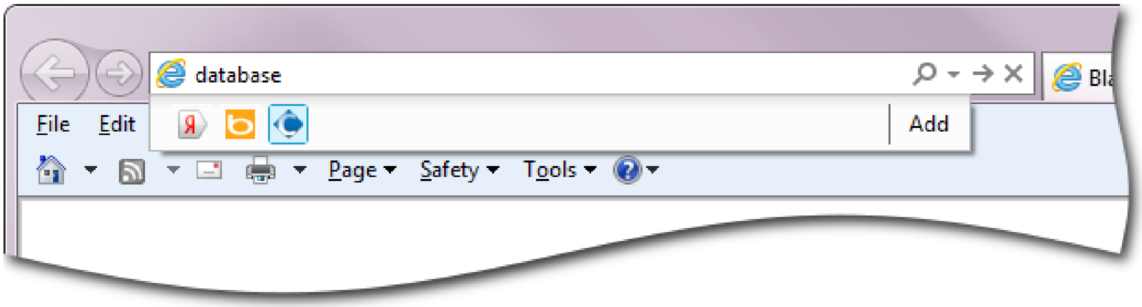
You can add Collaborator to the list of search engines of your browser. In this case you can search for reviews, participants, files and other directly from your browser's address bar or search box.

How it works

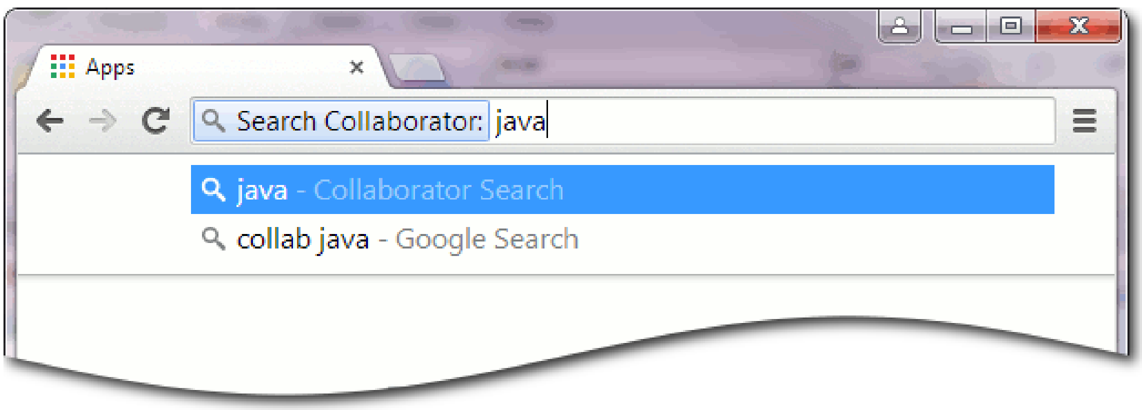
To perform a search in Collaborator from within the web browser, we need to add your Collaborator server as the browser's search provider. (See instructions below 312.)

Once this is done, you can open any arbitrary web page (not necessary from Collaborator Web UI) and enter the desired search term in the browser's address bar or search box.

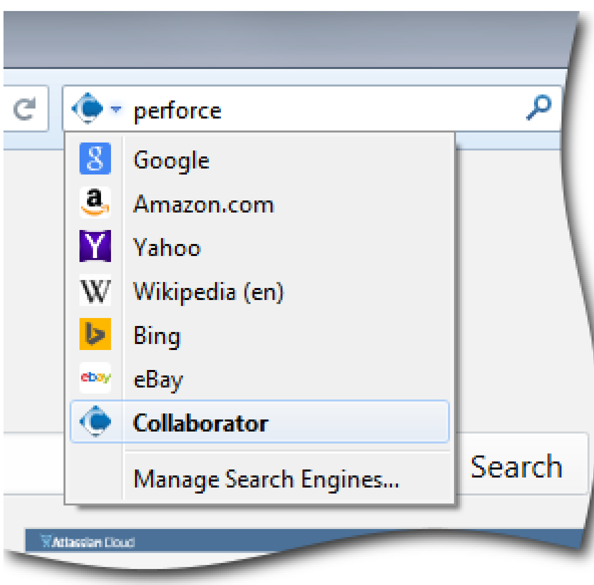
Then you need to select Collaborator as the search provider (if it is not set as the default provider) and press Search.



Entering search term in Internet Explorer

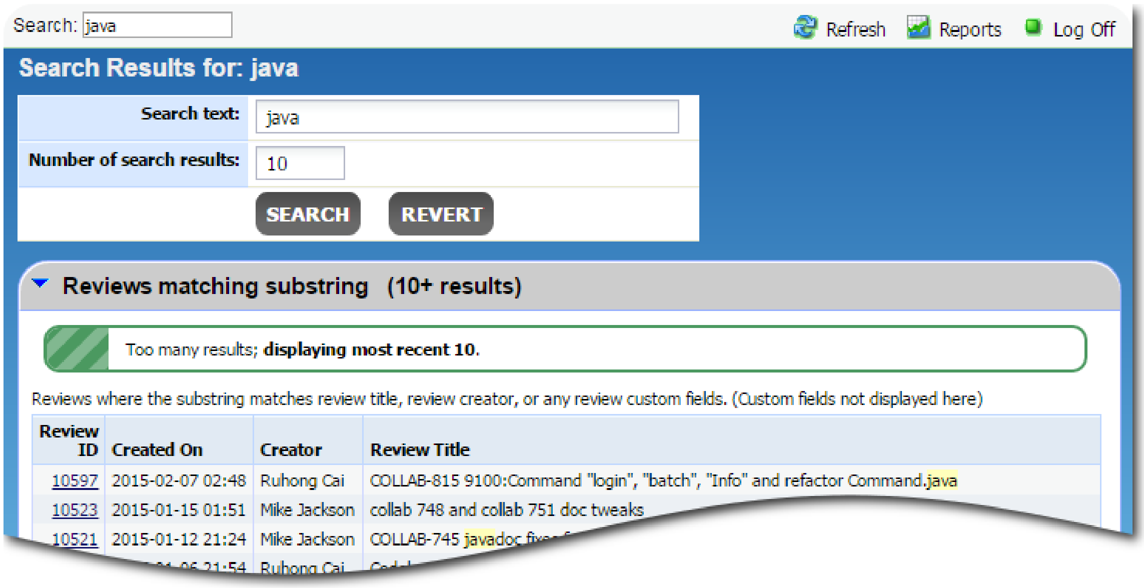


Entering search term in Google Chrome



Entering search term in Mozilla Firefox

Your Collaborator server will perform a search and display search results for the given term.



Results of Collaborator search

Adding Collaborator as Browser's search engine

Collaborator uses the OpenSearch technology to act as the browser's search provider. The exact instructions on adding custom OpenSearch providers depends on a browser. Below are instructions for the most popular browsers.

Internet Explorer:

1. Create a *.reg file with the following content:

```
Windows Registry Editor Version 5.00

[HKEY_CURRENT_USER\Software\Microsoft\Internet Explorer\SearchScopes
\Collaborator]
"DisplayName"="Collabortor"
"URL"="http://yourServer.com/go?page=SuperSearch&superSearchField=
{searchTerms}"
"FaviconPath"="C:\\loclPathToFavicon\\CC.ICO"
"FaviconURLFallback"="http://yourServer.com/i/cc.ico"
```

2. Change ***http://yourServer.com*** to the actual URL of your Collaborator server (including the protocol name: http or https).

3. Save the file and run it.

4. Confirm to make changes to the registry.

5. (Optional) Open Internet Explorer, go to **Tools | Manage Add-ons | Search Providers**, and set Collaborator as the Default Search Provider.

Google Chrome:

1. Navigate to navigate to the URL of the Collaborator Web Client.

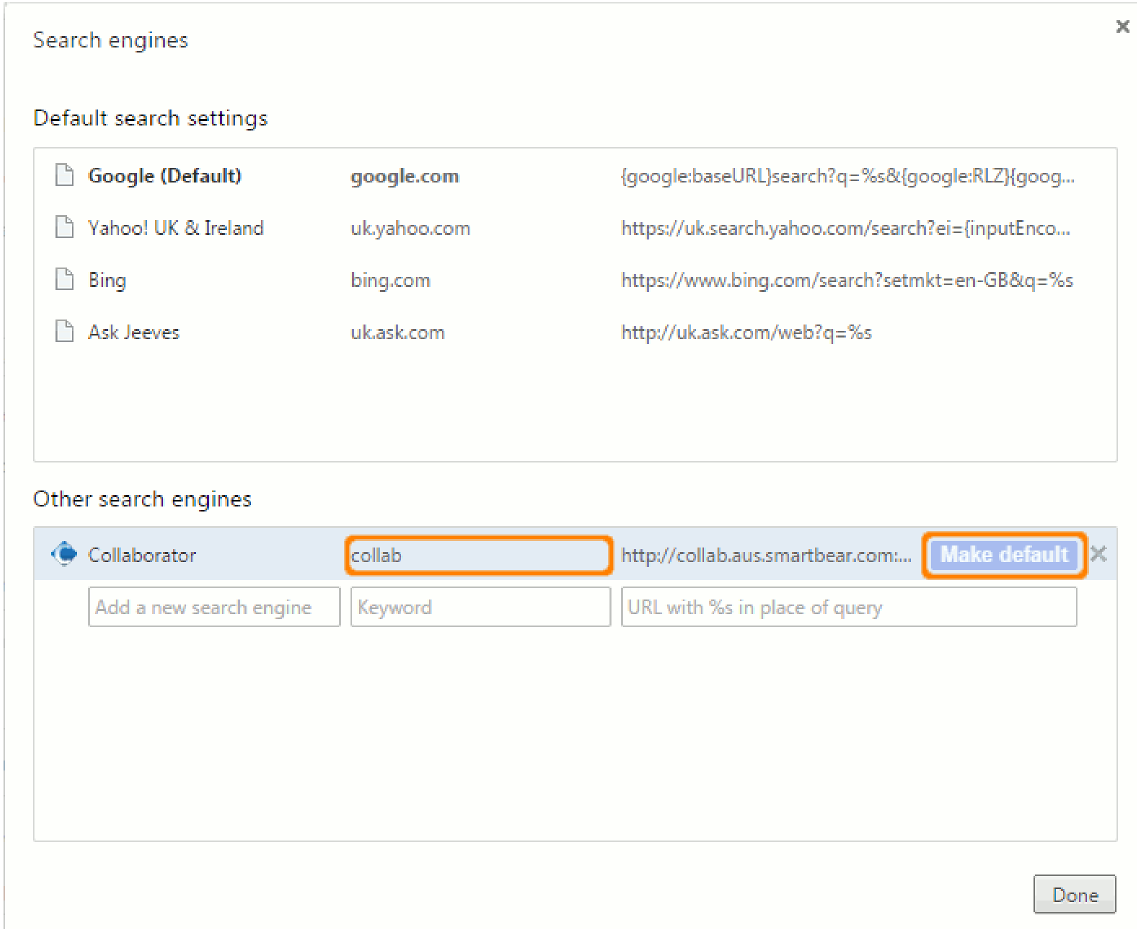
2. Click Chrome menu.

3. Select Settings.

4. Go to the "Search" section.

5. Press "Manage Search Engines".

6. Under "Other search engines" select "Collaborator"



7. Specify a more memorable text shortcut for the Keyword field. That is, instead of the full URL of your Collaborator server enter, for example, "collab". Keywords are entered in the address bar to denote which of search engines to use.

8. Press "Make default". This will add your Collaborator server as the default search engine.

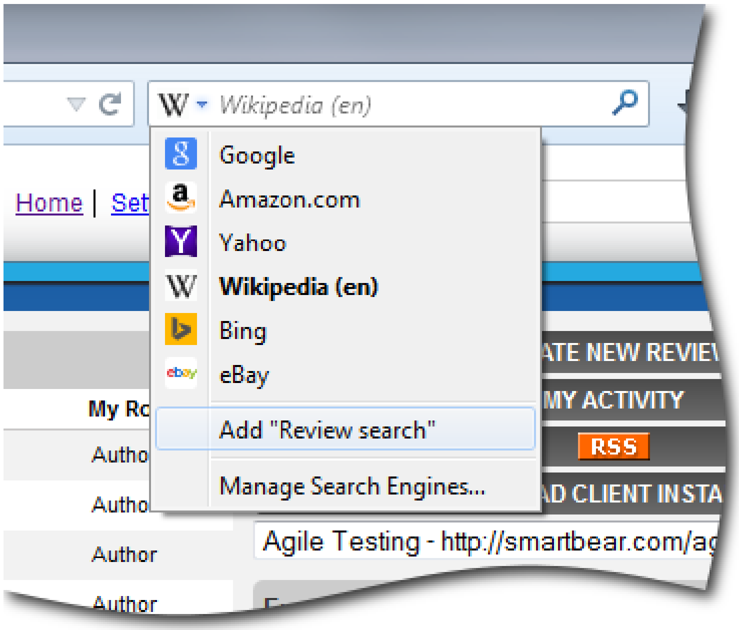
9. Press Done and close Chrome settings.

Later on you may restore your default search engine and use the specified keyword to search for the term on your Collaborator server.

Mozilla Firefox:

1. Navigate to navigate to the URL of the Collaborator Web Client.

2. Open the search engine list and select "Add Review search". Firefox will add it to your list and make it the active search engine.

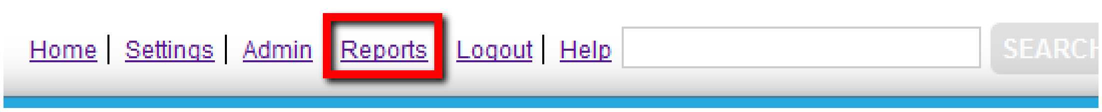


4.4.3 Reporting

Collaborator has a number of customizable pre-built reports.

Note: *Support of pre-built reports varies depending on Collaborator edition. Collaborator Community has only basic reports, while Collaborator Team and Collaborator Enterprise have all types of pre-built reports. For a complete list of differences between Collaborator editions, please see the comparison page* 3

To access the customizable pre-built reports, click the Reports menubar option:



If you are not an administrator, you may or may not have access to view reports depending on the Reports Access 152 setting.

The pre-built reports are divided into the following groups:

- Customizable Review Reports 319 - generate a list of reviews that meet certain requirements (reviews having the specified phase, status, duration and so forth).
- Review Detail Reports 321 - display detailed information about a particular review.
- Customizable Defect Reports 322 - generate a list of defects that meet certain requirements.

- Customizable User Reports [323] - generate a list of users that meet certain requirements.
- List Reports [323] - generate lists of users and SCM changes.

Additionally, you can retrieve data from Collaborator database and create your own custom reports [594] using an external reporting tool such as Excel, Access, Crystal Reports, or Business Objects. For further information on this approach, see Creating Custom Reports [594].

General Procedure

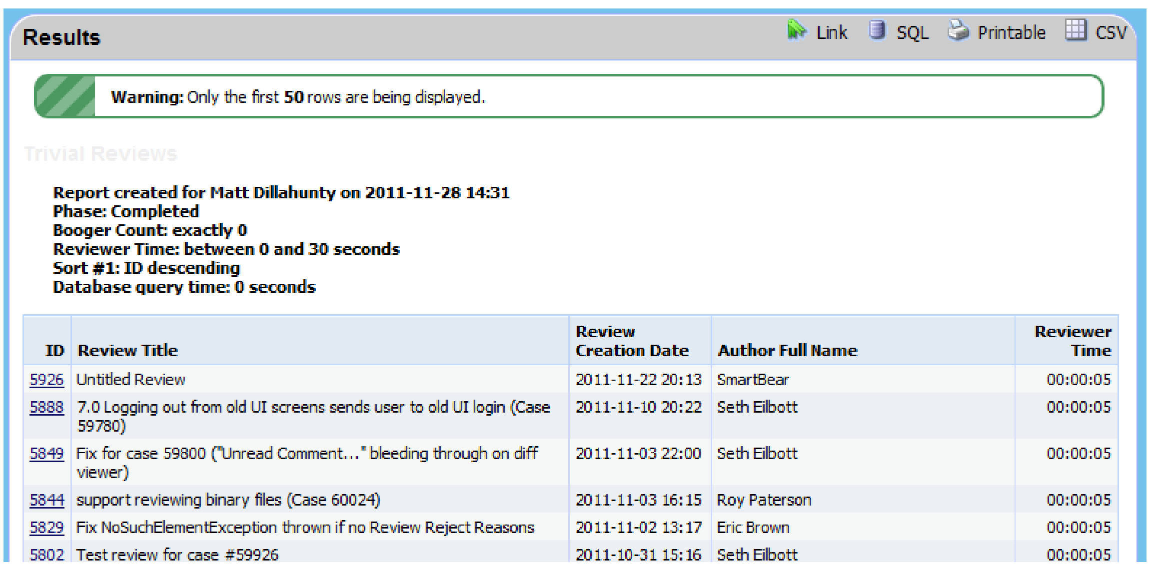
To generate any of the built-in reports:

1. Choose the type of a report that you need and click its name.

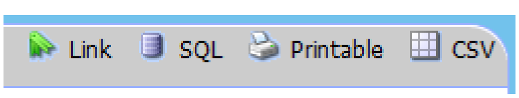
2. On the ensuing page, specify the desired options for the report: column set, filters, sorting and so on. To reset the report options and filters, you can press **Revert** button.

3. Click **Run** or **Update** button to generate the report with the specified criteria and parameters.

The report will be displayed in the Results pane in the bottom of the page.



4. (Optional.) Use the toolbar on the top right of the Results box to export or print report results:



- The **Link** will bring up a pop-up window with a direct link to the current customized report (with all the current options and filters preserved). You can bookmark this link to use whenever you want to revert back to the review configuration.

- The **SQL** will display an SQL query that was used to generate the current report. You can use this SQL query when [creating custom reporting tool](594).
- The **Printable** button will prepare the report in a printable format.
- The **CSV** button will export the report in comma-separated values format. Note the **CSV** output format does not consume a license.

Each of the pre-built reports is described in the sections below.

Customizable Review Reports

The reports from the Customizable Review Reports group generate a list of reviews that meet certain requirements. Collaborator comes with the following pre-configured review reports:

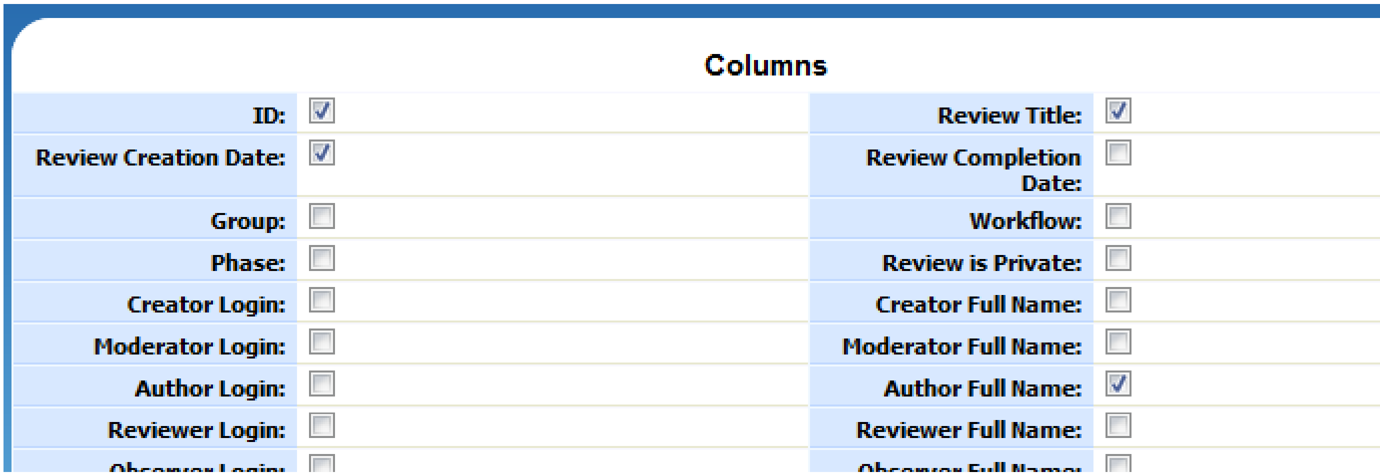
Customizable Review Reports

Report	
Reviews Currently In Progress	Reviews in Planning, Inspection, or Rework phases.
My Reviews, Currently In Progress	Reviews you're participating in which are currently in Planning, Inspection, or Rework phases.
Recently Completed Reviews	Reviews completed normally (i.e., not cancelled or rejected).
Stalled Reviews	Reviews where no communication has happened for a while.
Trivial Reviews	Reviews completed normally but too quickly to have been done properly.

Once you click on a report name, you will be directed to another page where you can tailor the report to your preferences. On the top the page you can view and edit customizable options for the report. The options are divided in several groups: Columns, Filters and Options.

⊟ The options from the Columns group control which fields to display for the report.

This section gives you the option of showing or hiding certain fields, allowing you to choose how much or how little yo report. Note that the fields may not be identical to the example given above. The quantity and content of the fields will depending on how your local Collaborator configuration is set up.



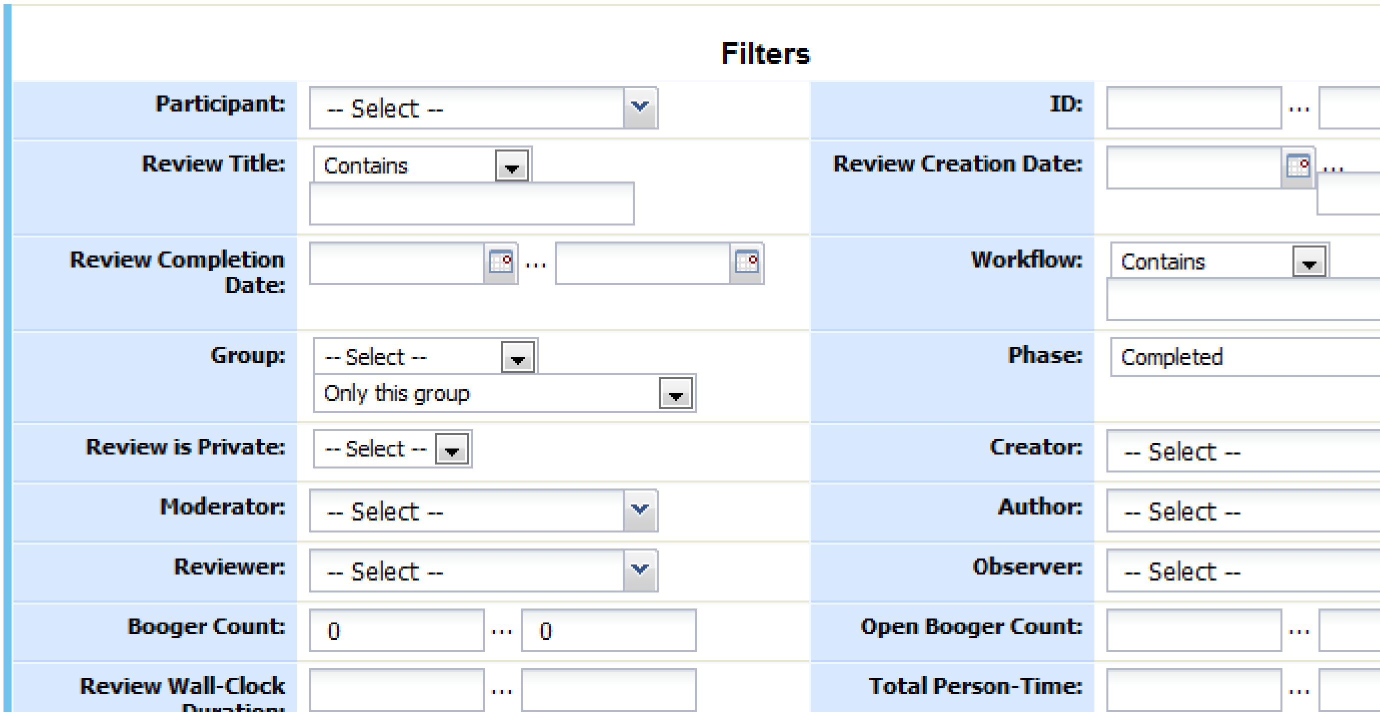
Most of the field names are self-explanatory. Here are definitions for some of the abbreviations:

- LOC - Total number of lines of code
- LOC Added - Lines added
- LOC Removed - Lines deleted
- LOC Modified - Lines with modifications
- LOC Delta - Change in line count, that is, current - previous
- LOC Changed - Also known as churn, this is lines added + removed + modified

To learn about the other metrics of the reviews, see Metrics: Definitions 683 and Metrics: Analysis 685.

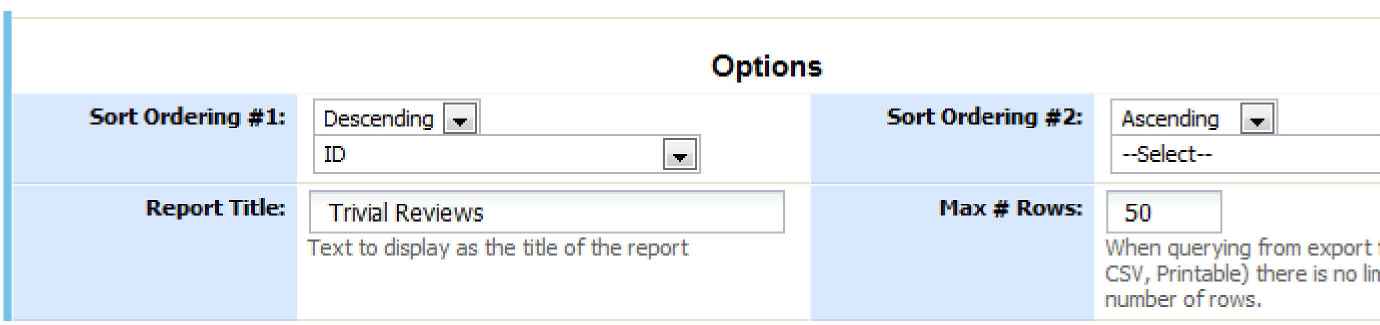
The options from the Filters group define which reviews to include or exclude from the report.

Use this section to filter out your search results. Again, your fields will reflect your local Collaborator configuration.



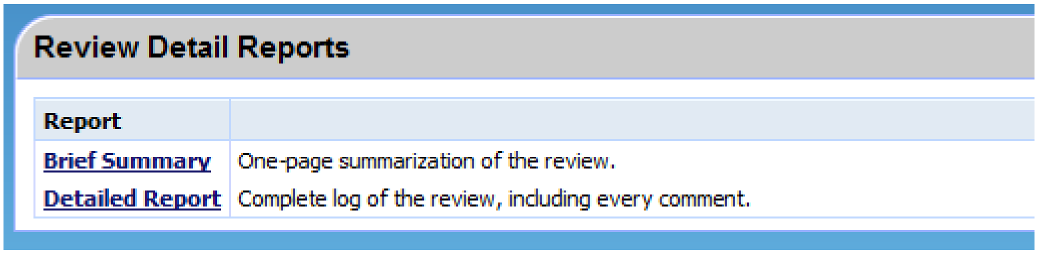
The options from the Options group control how the found data is sorted, titled and divided into pages.

The **Options** sections allows you to edit the sorting, title, and number of rows of the review. A report has a limit on the number of rows that can be displayed: 50 rows by default. You can change the number in the "Max # Rows" field. Whe report data to CSV, SQL or print the report all rows are exported/printed regardless of the This option does not affec will be visible when you use export to SQL, CSV, or print your resulting report.



Review Detail Reports

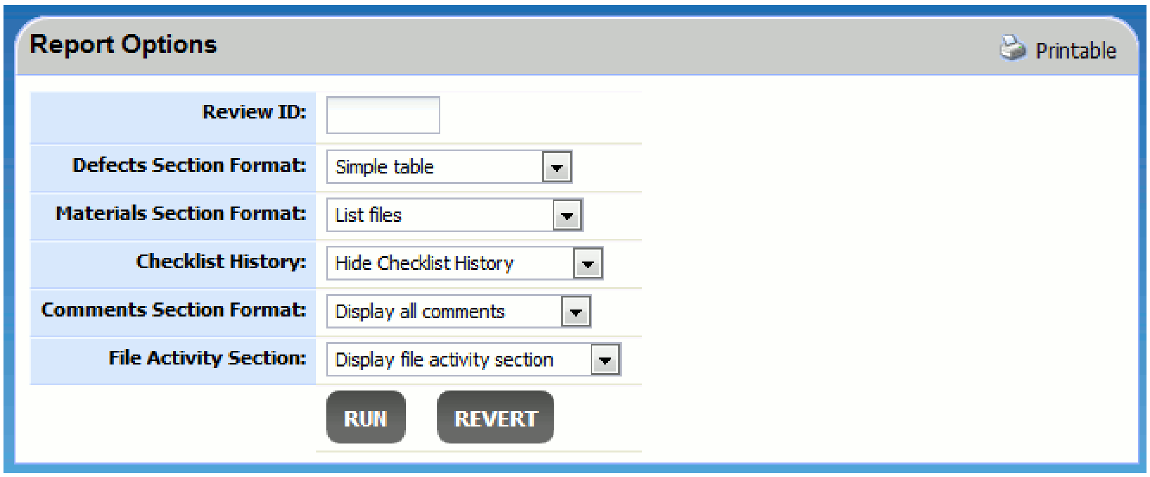
Review Detail Reports provide information about the specified review. You can choose between a brief summary or a detailed report on a review.



Review Detail Reports

Report	
Brief Summary	One-page summarization of the review.
Detailed Report	Complete log of the review, including every comment.

Once you click on a report name, you will be given the following form:

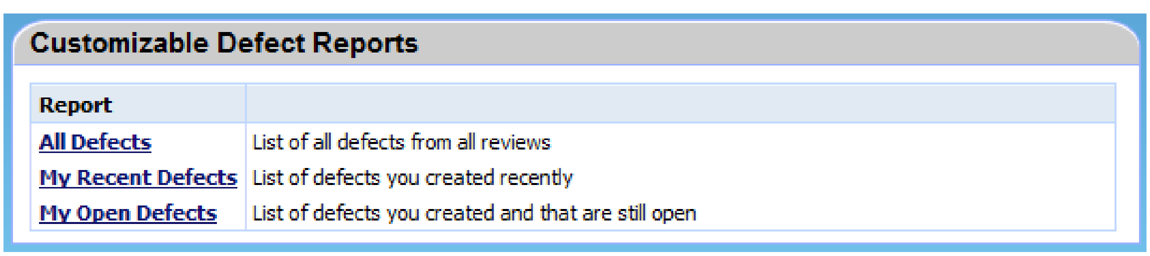


Enter the unique review ID number, and change the pre-defined report options as you wish. Any reports of this type display the Overview and Participants sections. The Defects, Materials, Checklist History, Comments and File Activity sections can be displayed or hidden depending on how you configure the format fields.

Review Detail Reports are also accessible through the Review Summary Screen 252.

Customizable Defect Reports

The reports from the Customizable Defect Reports group generate a list of defects that meet certain requirements. They include the following reports:



Customizable Defect Reports

Report	
All Defects	List of all defects from all reviews
My Recent Defects	List of defects you created recently
My Open Defects	List of defects you created and that are still open

Clicking a report name will open a page where you can configure the criteria for the defect reports. On the top the page you can view and edit customizable options for the report. The options are divided in several groups: Columns, Filters and Options. The options are analogous to those of Customizable Review Reports 319, but these reports are centered around defects.

User Reports

The reports from the User Reports group generate a list of users that meet certain requirements. They include the following reports:

User Reports

Report	
Enabled Users	List of users who are allowed to log into Collaborator
Disabled Users	List of users who are no longer allowed to log into Collaborator
Administrators	List of active administrator accounts
All Users	List of users that have been created in the system
Activity This Week	List of users who were active in reviews this week
Activity Last Week	List of users who were active in reviews last week
User Detail Report	Detailed report of user information

Clicking a report name will open a page where you can configure the criteria for the user reports. On the top the page you can view and edit customizable options for the report. All reports from this group, except for the User Detail Report, have the options analogous to those of Customizable Review Reports 319.

For the User Detail Report you will need to input the ID of the desired user and specify time period for which to generate the report.

List Reports

The List Reports generate various types of data about Collaborator users and source control management integration. They include the following reports:

List Reports

Lists	
User List	List of users in the system and when they last accessed the server
Reviews by Changelist	List of reviews in the system, organized by SCM changelists present in the review
Changes List	List of SCM changes in the system
Changes, Unreviewed	List of SCM changes that have been submitted but not yet reviewed

- The User List report lists the users registered on the current Collaborator server and indicates whether the user is active and when they last accessed the server. By default the report lists all the users. To filter the user list, enter a value into the User Login or User Full Name fields. In this case the report will list only the users whose login or full name contain the specified value.

- The Reviews by Changelist report lists the reviews having SCM changelists linked to the review. By default the report lists the reviews changed during the current week. To specify another time period for the changes, enter the desired values into the Start Date and End Date fields. To filter the review list, enter a value into the Change List Author or Changelist ID fields. In this case the report will list only the changelists whose author or ID contain the specified value.

- The Changes List report lists the SCM changes linked to the review. By default the report lists the changes made during the current week. To specify another time period for the changes, enter the desired values into the Start Date and End Date fields.

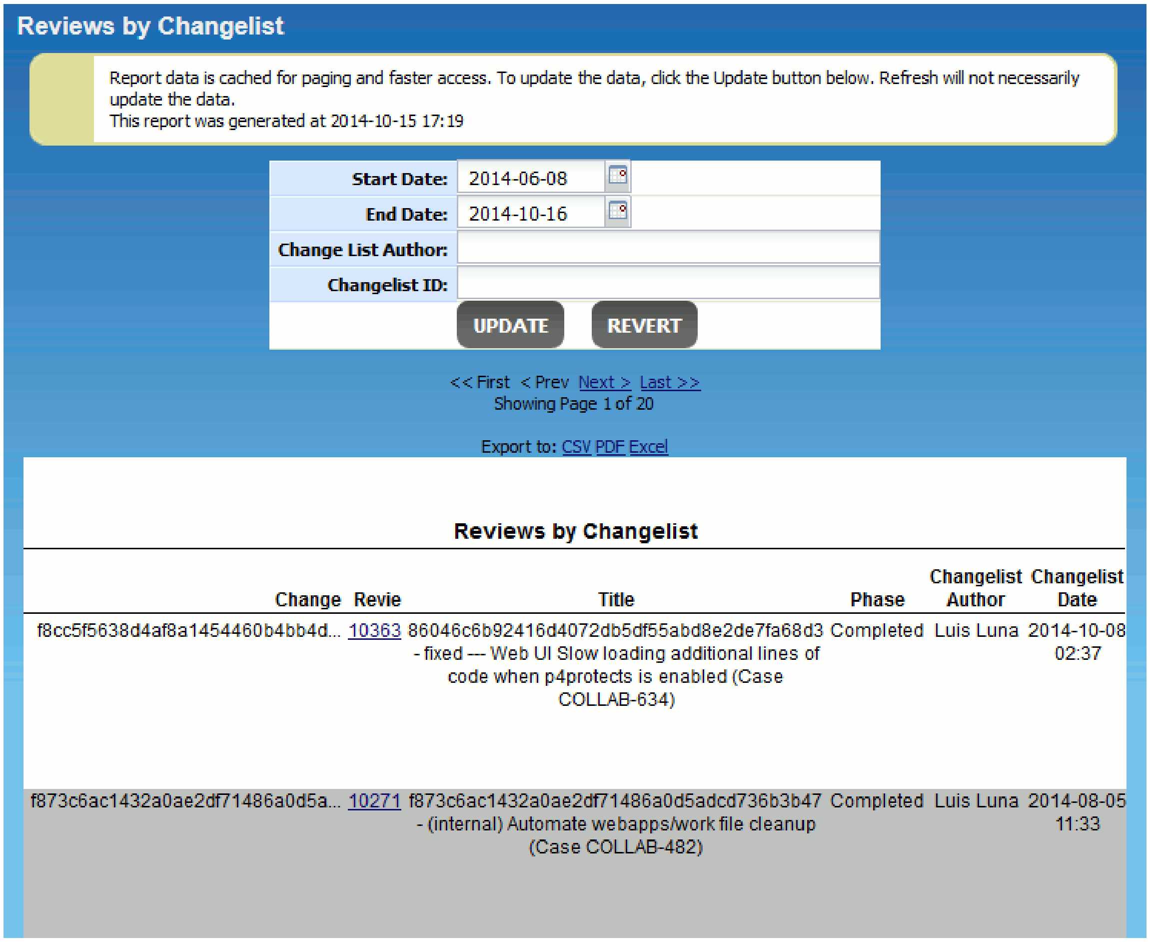
- The Changes, Unreviewed report lists the changes that have been submitted to SCM but have not yet been reviewed. By default the report lists the changes made during the current week. To specify another time period, enter the desired values into the Start Date and End Date fields. To filter the changes list, enter a value into the Author or Changelist ID fields. In this case the report will list only the changes whose author or ID contain the specified value.

Each list report has the same basic structure. In the upper part it contains several filter fields and in the lower part it displays a table that lists the users, changes or reviews that match the specified criteria.

Warning: Report data is cached by the server automatically. This makes it fast to page through data, but can be confusing since data is not updated automatically when you just refresh the page.

To "really" refresh data, click the `Update` button under the list of filters.

You can export list reports into CSV, PDF, or Excel. Just click the appropriate link under the filters.

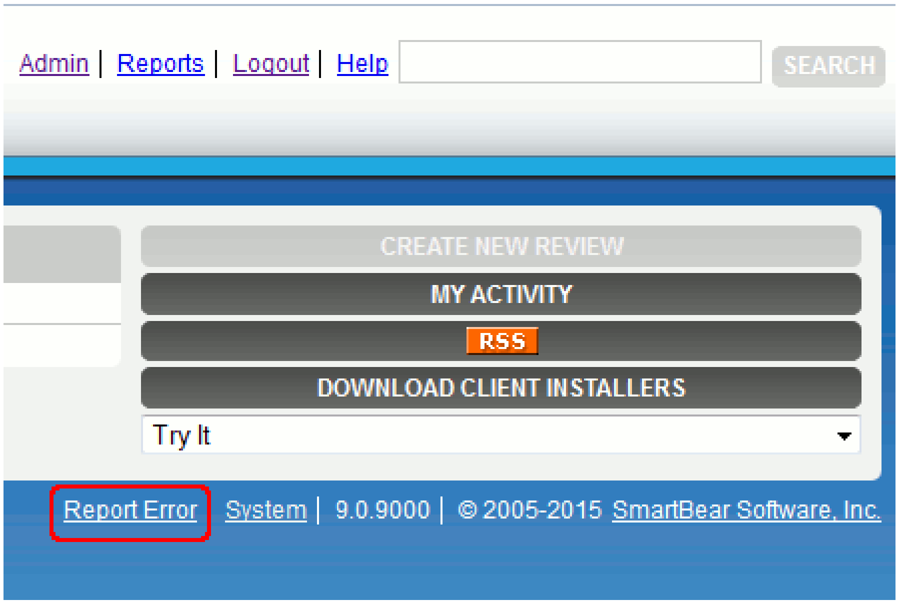


If none of pre-built reports suits your needs, you can always create your own custom report 594.

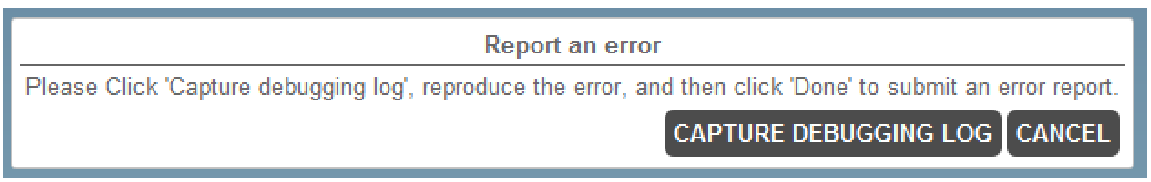
4.5 Troubleshooting

Collaborator has a new debugging feature which makes gathering support logs easy.

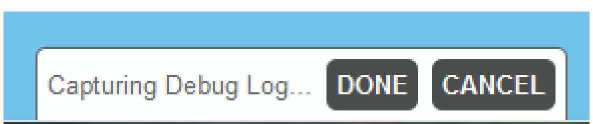
The first step is to click the ‘Report Error’ link at the bottom of the web UI.



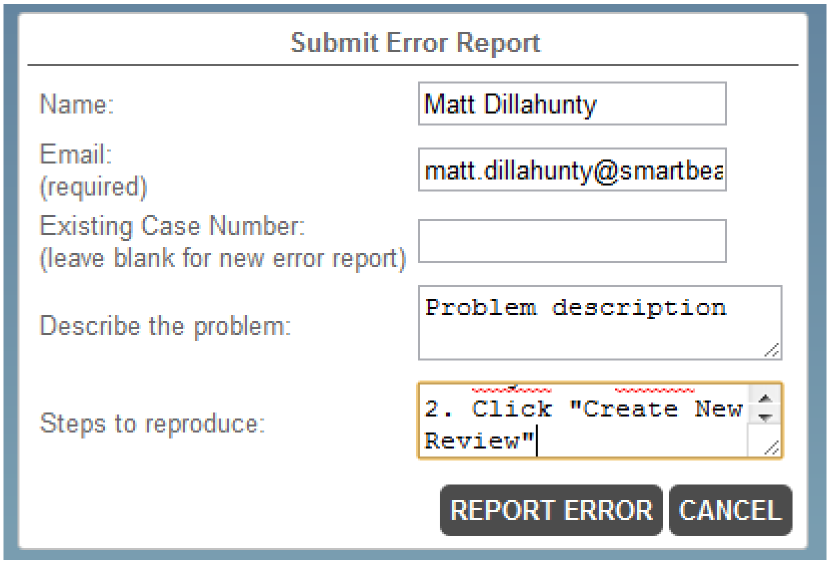
A 'Report an error' dialog box will automatically launch once the link is clicked. Click 'Capture Debugging Log' and then go through the steps that originally caused the error. The log will automatically capture the error information.



Once the error has been reproduced, click 'DONE' at the bottom of the screen in the flashing Capturing Debug Log dialog box.



A Submit Error Report dialog box will be displayed. Fill out the form and click 'Report Error' to send the information and open a case with SmartBear support.



Note: Log files may accumulate in the temp directory if users enable debugging and do not disable it. These logs are capped at 50MB but if many users leave debugging on, the number of files can impact performance. These files can be deleted if they are not needed and administrators could set up a system task to clean that temp folder of anything older than 2 weeks (for example).

5 Desktop Clients

This chapter describes various desktop client applications and plugins, that simplify and expedite your daily work with Collaborator.

In order to use any of Collaborator clients, your administrator must first install and configure 51 the server part of Collaborator.

In This Section

- Configuration 336
  Describes how to configure client's connection to Collaborator server and to version control system.

- GUI Client 338
  Describes a cross-platform GUI client.

- Command-Line Client 348
  Describes a cross-platform command-line client.

- IDE Clients 365
  Describes plugins for Eclipse and Visual Studio that allow creating reviews directly from these IDE's

- Tray Notifier 404
  Describes a helper tray notifier client.

- External Diff Viewer launcher 406
  Describes a helper tool that allows to launch an external difference viewer for Collaborator reviews.

- Print To Review 409
  Describes a virtual printer driver that submits documents for review.

Related Topics of Interest

- Collaborator Server 51
  Describes the server component of Collaborator.

- Web Client 227
  Describes the web user interface of Collaborator.

5.1 Desktop Clients - Overview

Collaborator has a variety of clients for creating reviews and uploading files for review. While the Collaborator web server user interface provides the capability for uploading documents and, for some SCM integrations, the capability for creating reviews from committed changes, a client simplifies and expedites this process. Also, importantly, a client allows reviews to be created from local modifications to SCM files that are not accessible on the SCM server (that is, Collaborator clients allow for pre-commit reviews).

Client/Server Version Compatibility

As a general rule, older clients will work with a newer version of the server, but clients will not work with servers that are older than the client. However, it is always recommend to use the same client version as the server if at all possible.

SCM Integration

All Collaborator clients integrate with SCM systems, for identifying files under source control and ease of selecting modified files to be uploaded to the Collaborator server for a review. Files are uploaded as changelists. For SCM systems that do not implicitly support changelists, the clients have mechanisms for selecting a group of files to be uploaded to a review.

The SCM integration understands adds, changes and deletes but does not currently track or detect file renames or moves.

Creating Reviews and Uploading Files For Review

Each client also provides a means for creating a review, and for attaching a changelist to an existing review.

Other Features

Additional features are available depending on the client. The client right for your development environment may be determined by your SCM system, or just a matter of personal choice.

5.2 Client Installation

The Client Installer includes the following components:

- GUI Client 338
- Command-Line Client 348
- Tray Notifier 404
- External Diff Viewer launcher 406
- Perforce P4V/P4Win plug-ins 557
- Version Control System triggers

The client installer is cross-platform and can be run in an interactive GUI mode or silently from the command-line.

Getting the Installer

Go to our website to get the latest installer for your platform:

http://downloads.smartbear.com

Installers are provided for Windows, Linux/Solaris and Mac OS X. We also supply the raw files without a managing installer in the form of a compressed tar archive.

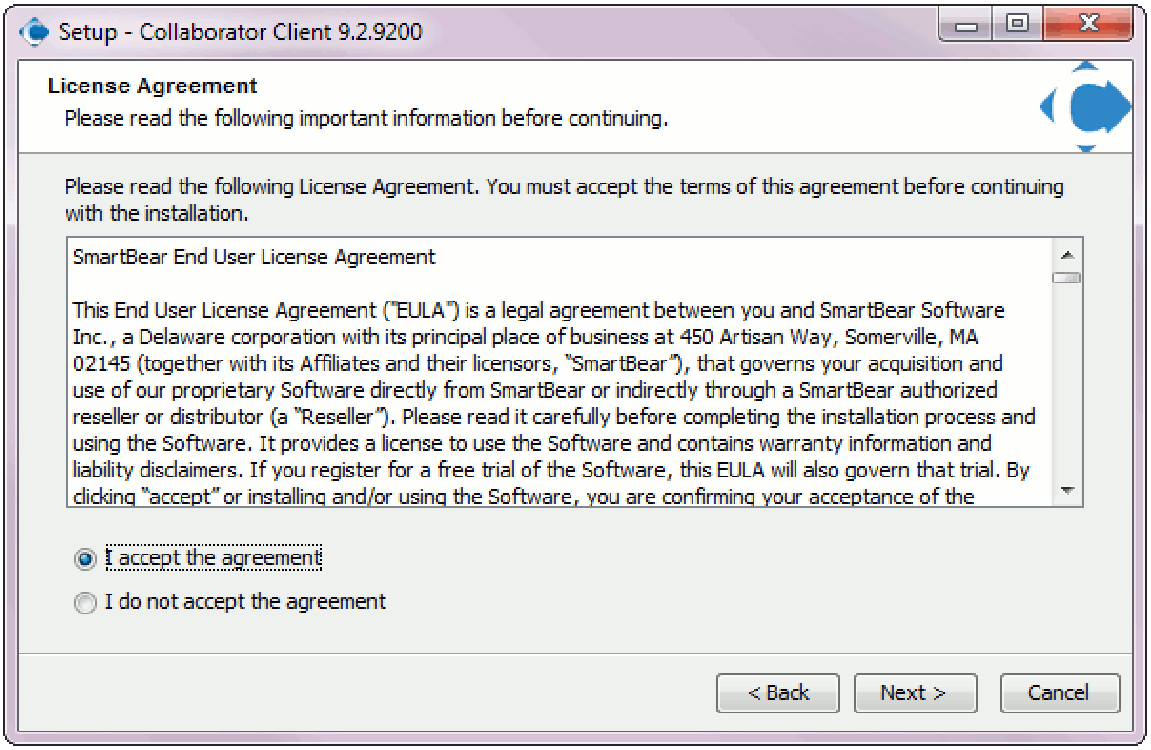
Note: In order to install client, you may need to install Java Runtime Environment (JRE). Collaborator client for Windows and Mac OS are distributed along with JRE. Therefore, it is not necessary to install Java separately on these platforms, since Collaborator may use the bundled version of Java. See Java Compatibility Matrix 881 for more details.

Note: If you have previously installed the client with the 32 bit installer and are now wanting to run the 64 bit installer, you must first uninstall the 32 bit client. This will not remove any existing configuration data, like preferences, SCM configurations, default browsers and so on.

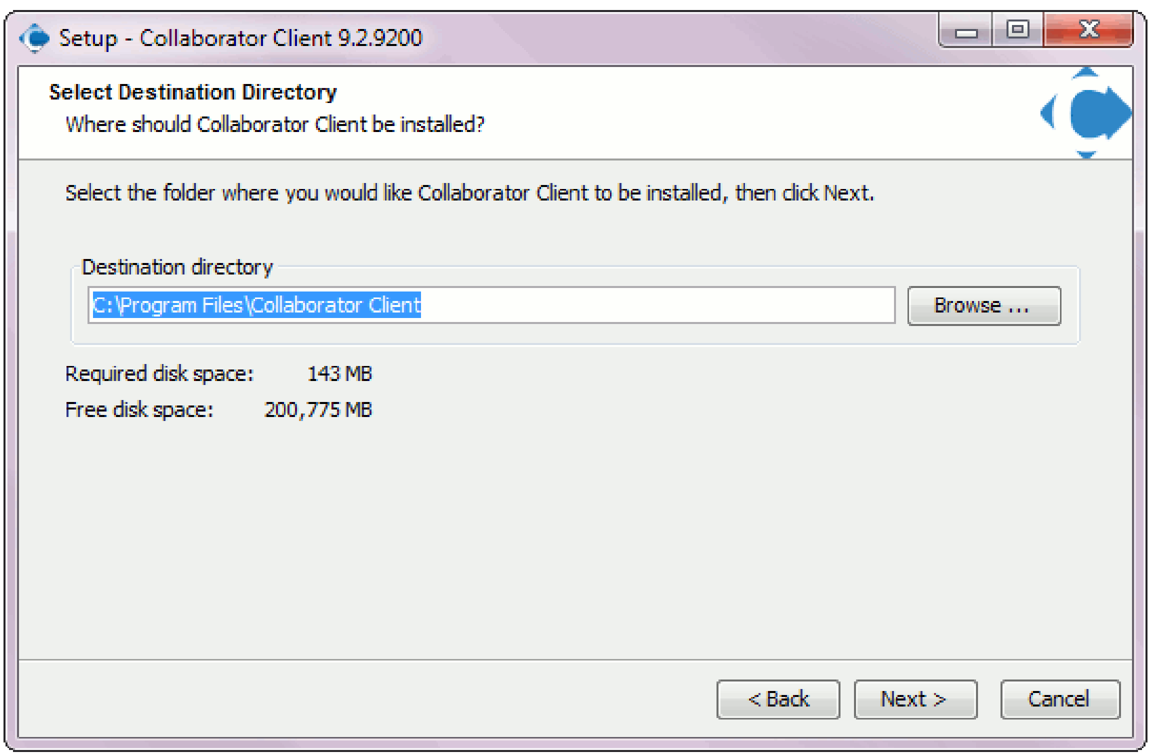
Graphical Installation

This is the recommended way to install the client software because you get a chance to see all the configuration options and allow the installer to validate your configuration.

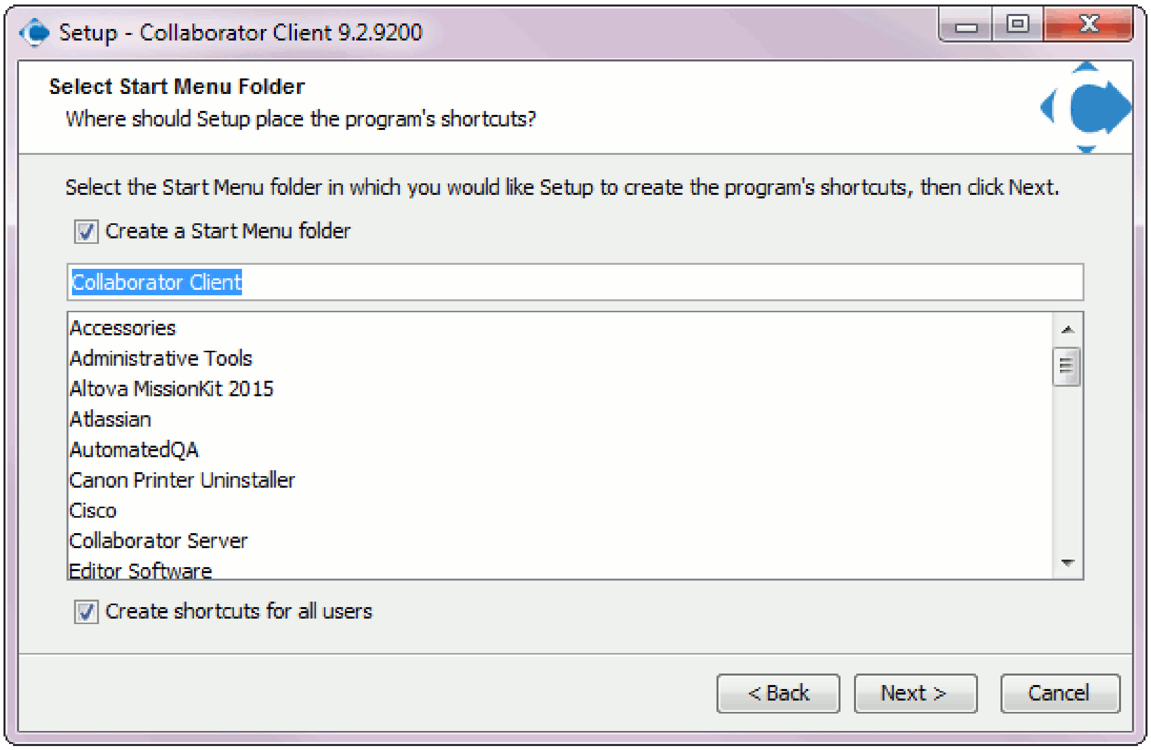
After the welcome screen, you are prompted with the EULA (End User License Agreement):



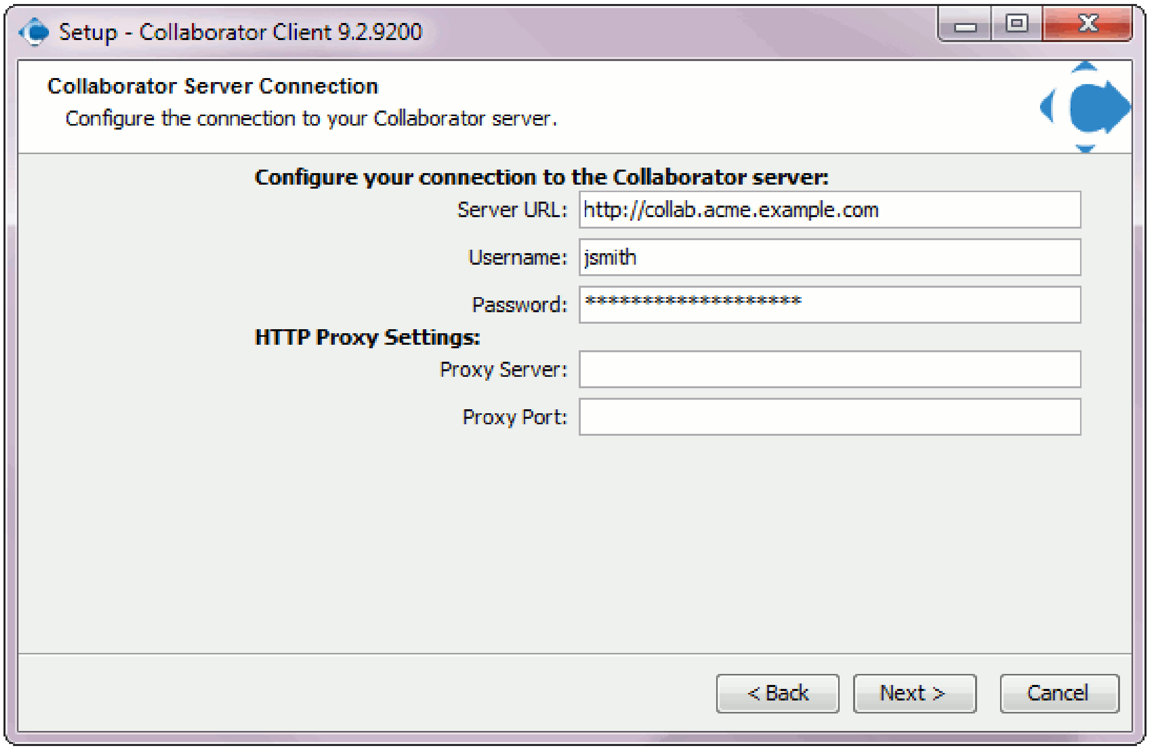
The next screen lets you select where to lay down the files for the installation:



The next screen lets you configure how and if your Start Menu (Windows only) is modified. This does not affect the behavior of the command-line client itself:



Next, you configure your connection to the Collaborator server:

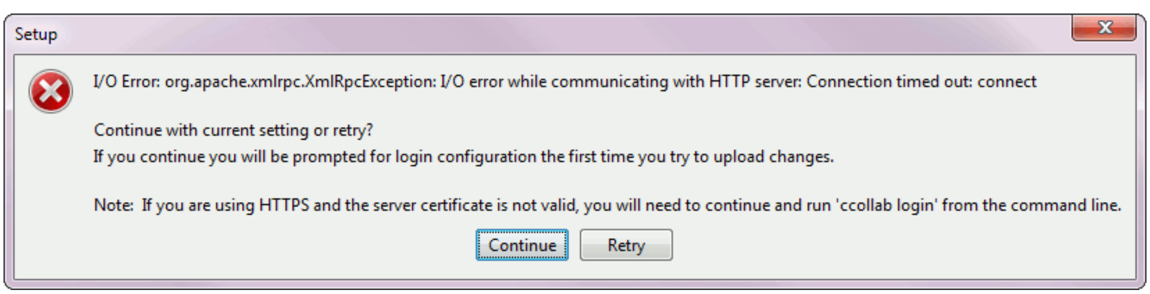


When you configure the URL, be sure to remember to specify the protocol (for example, `http://` or `https://`) and port number, and path. Leaving out one of those things is the most common mistake.

Your username and password must already exist 164 on the server. Log into 230 the server first from a web browser to test your account information.

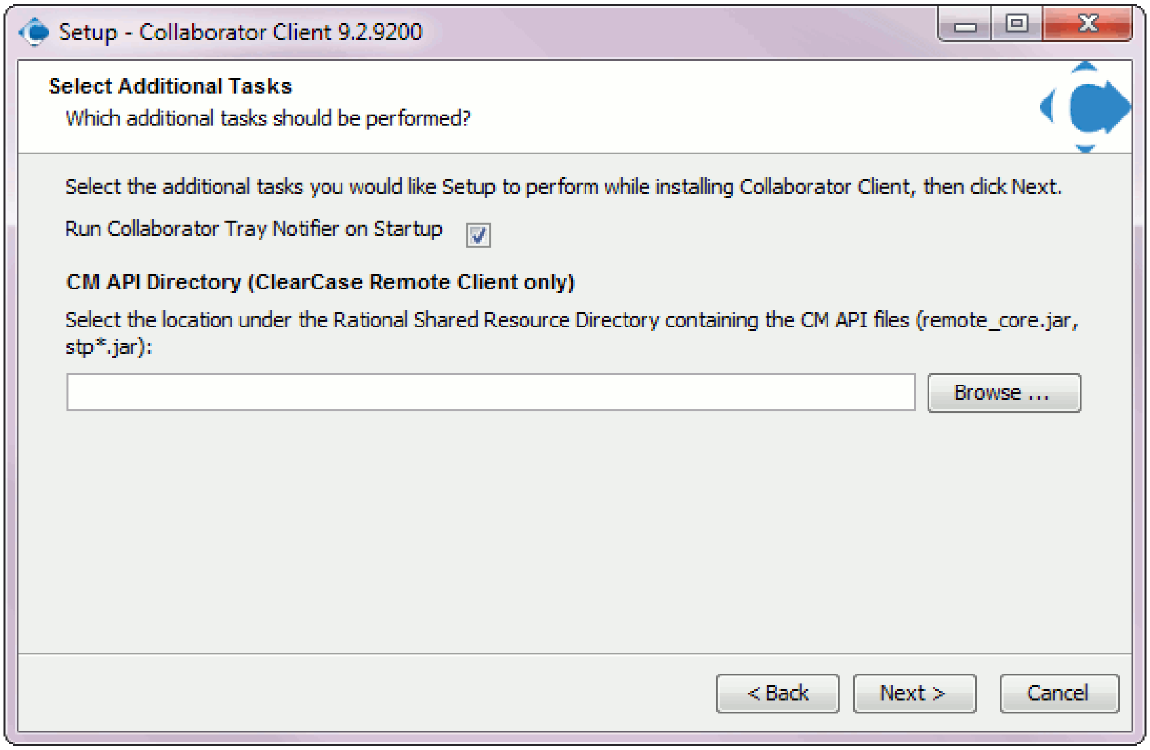
If you use a proxy, supply your proxy information as well.

If the connection to the server cannot be established, you will get an error dialog and an explanation of the problem:

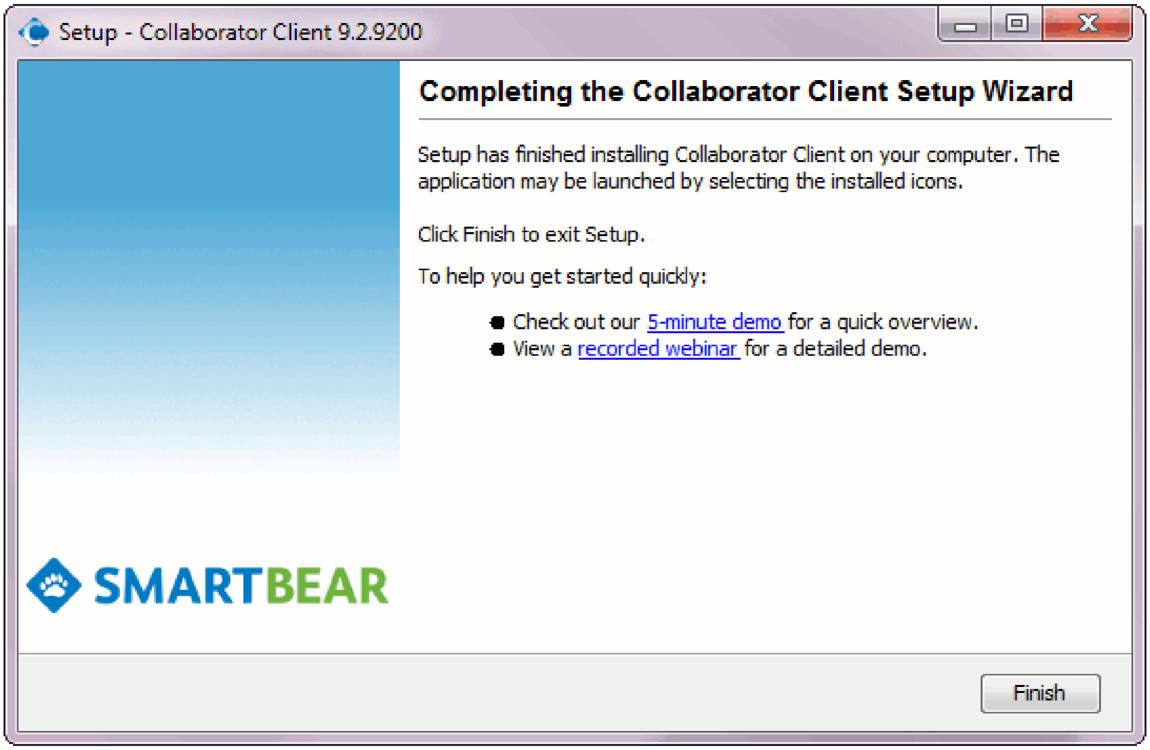


If you select "Retry", you can supply different configuration information and try again. Otherwise, if you select "Continue", the installation will continue but you will still need to set up your configuration 349.

After this step, you will be prompted for additional tasks. On Windows you will have the option to configure the Collaborator Tray Notifier to run on Startup. On all platforms, there will be an option to configure the integrations in the Perforce Visual Tools. If this option is selected, the installer will attempt to configure the P4V and P4Win integrations 557 for the current user. Other users will still need to configure the integrations manually.



Once you click "Next," the installer will complete:



Unattended Installation

To run the installer without a GUI, run it from the command-line using the `-q` switch. In this case, you can also use the `-dir [directory]` switch to specify the target install directory. The -q switch gives you a silent install and will not prompt you for any installation instructions. If you would like to be prompted for installation instructions without using the graphical installer, you can run the installer from the console using the -c command.

This installation technique can also be used to install clients remotely on many workstations.

Warning: When run in unattended mode, the installer cannot verify the client's connection with the Collaborator server. You might have to manually configure the connection with the server.

Installing on a system with multiple JRE installations

See Known Issues with the Collaborator 690 for instructions on selecting a specific JRE to be used by Collaborator.

5.3 Configuration

Clients will need to be configured to both the Collaborator server and the SCM server.

Your client may have been successfully configured to the Collaborator server by the installer during the installation [329] process. If it has not been properly configured, please visit the Server Connection Configuration section [336] for detailed instructions.

Please make sure that your client is also configured to your version control or SCM. For instructions on how to do so, please visit the configuration sections under the appropriate client:

- GUI Client SCM Configuration [341]
- Command-Line Client SCM Configuration [348]

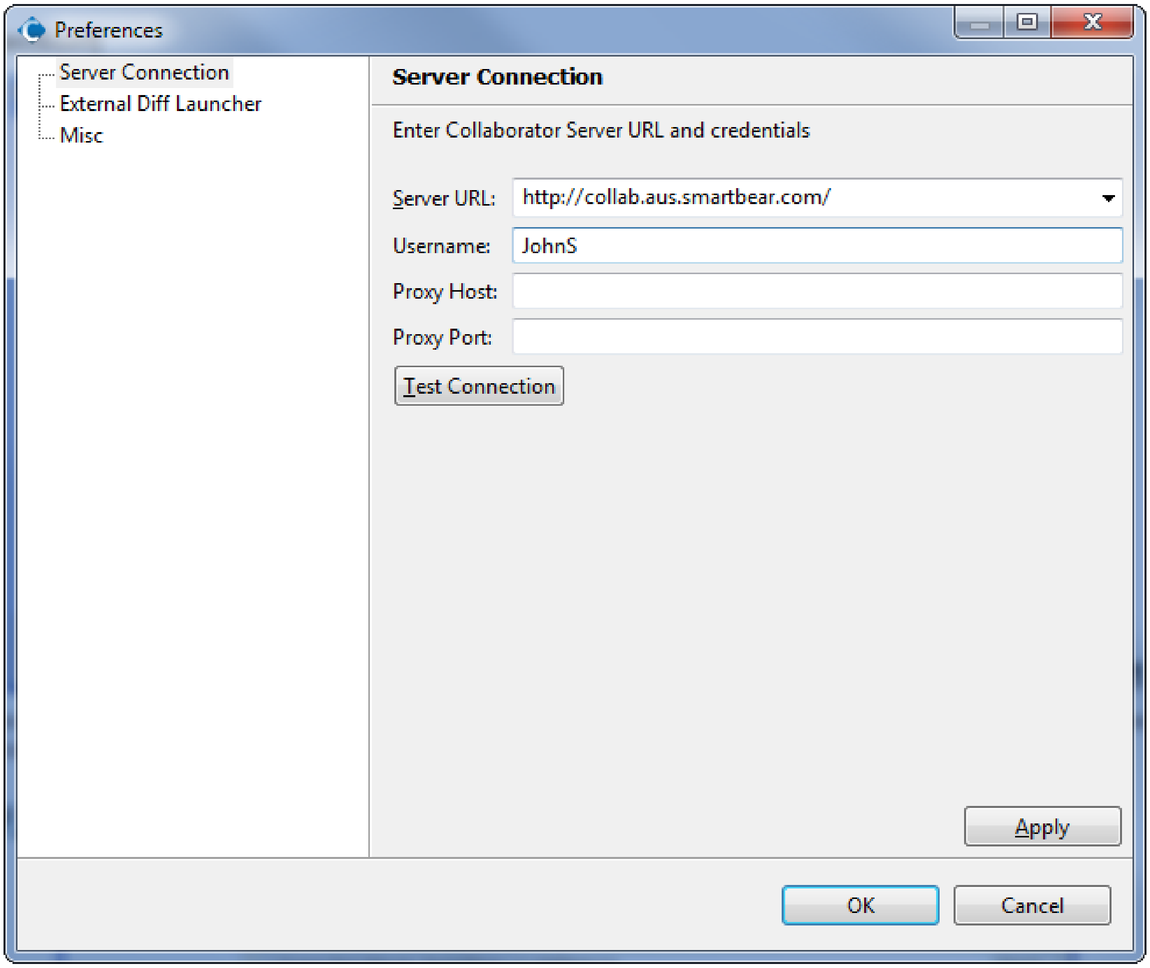
5.3.1 Server Connection Configuration

If you used the graphical installer [330], your connection to the Collaborator Server should be configured already. Otherwise, you will be prompted when you try to connect.

The GUI Client, Command-Line Client, Tray Notifier, and SCM Triggers share a common server connection configuration file [338]. The server connection configuration can be set with a graphical interface [336] using GUI Client or the Tray Notifier, or on the command-line [337] using the Command-Line Client.

Graphical Server Connection Preferences

Selecting *File -> Preferences* on the GUI Client main screen [339] or selecting *Preferences* in the Tray Notifier context menu [405] open the graphical Server Connection preferences page.



GUI Client Server Connection preferences

The *Server URL* must include the correct port number and path if applicable. The user name and password are the same as you use when logging into the web server[230] (the password is requested when you log in for the first time). The proxy settings should be used if you have a client proxy between your workstation and the server.

Use the *Test Connection* button to make sure the connection is working. If it fails, the error message will be helpful.

Command-line Server Connection Global Options

The Command-Line Client uses the following global options[357] to specify the connection to the Collaborator Server:

- url[358] - The server's fully-qualified URL.
- user[358] - The user name for the login (same as web user login[230]). The password is requested and stored the first time you log in.

- server-proxy-host 358 - The proxy's URL (specify if you connect to the Internet via proxy).
- server-proxy-port 358 - The port number to use on the proxy server (if connect via proxy).

Use the `ccollab login` command to connect to the Collaborator Server and save your server connection options to the configuration file.

You can try testing your configuration 349 to verify the configuration is working.

Configuration Files

Collaborator uses several configuration files to store configuration. When a user sets server connection configuration using the graphical interface 336 or the command-line 337, the settings are stored inside a directory called `.smartbear` inside the user's home directory. (Under Windows, the "home directory" is your "`Documents and Settings`" Profile directory.)

The `.smartbear` directory and the configuration files therein can be placed in other locations to establish default behavior. Each of the locations is loaded in a particular order of precedence, with each successive location overriding the settings (if any) in the previous locations:

1. `INSTALLDIR/.smartbear`
   Here `INSTALLDIR` refers to the Collaborator installation directory. This is typically `/opt/ccollab-cmdline` under Unix or `C:\Program Files\Collaborator Client` under Windows.
   This is most useful for system-wide default settings.

2. `PROFILEDIR/.smartbear`
   Here `PROFILEDIR` refers to a directory specified using the Java property `smartbear.profile` on one of the Collaborator Client executables. With this property defined, the client will look in this directory for more configuration.
   This is most useful for executable-specific default settings, such as settings just for SCM server-side triggers.

3. `USERDIR/.smartbear`
   Here `USERDIR` refers to the user's home directory (under Windows, your "`Documents and Settings`" Profile directory).
   This is the default location for configuration settings to be stored, and is useful for user-specific settings.

5.4 GUI Client

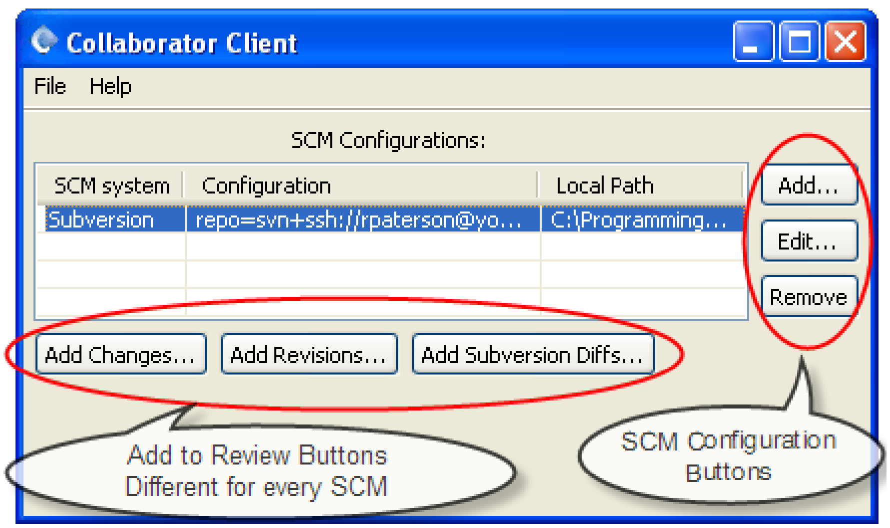
The GUI Client is a cross-platform client interface to the Collaborator server. It is used for uploading files, either before or after check-in.

This chapter includes:

5.4.1 Main Screen

Main Screen

The GUI Client's main screen contains a list of SCM configurations. Each SCM Configuration entry shows its SCM system, Configuration and Local Path (if any). Use the SCM Configuration buttons 339 on the right side of the screen to add or modify an SCM Configuration. Use the Add to Review buttons 340 on the bottom of the screen to upload review materials to the Collaborator Server.



GUI Client Main Screen

Server Connection configuration

If you used the graphical installer 330, your connection to the Collaborator Server should be configured already. Otherwise, you will be prompted when you try to connect. You can also select *File* -> *Preferences* in the system menu to open the Server Connection preferences 336 page.

SCM Configuration buttons

The buttons on the right side of the main screen are used to add or modify an SCM Configuration in the SCM Configurations list.

- *Add...* adds a new SCM Configuration
- *Edit...* edits the selected SCM Configuration
- *Remove* removes the selected SCM Configuration

Add to Review buttons

The buttons on the bottom of the main screen are used to upload materials to a new or existing Review on the Collaborator Server. The buttons available will depend upon the selected SCM Configuration. Different buttons are available for different SCM systems:

- AccuRev 417
- CVS 428
- Git 439
- IBM Rational ClearCase 459
- IBM Rational Synergy 477
- Mercurial 511
- Microsoft Team Foundation Server 519
- PTC Integrity 527
- Perforce 543
- Subversion 574

Keyboard Shortcuts

The GUI Client also offers keyboard shortcuts as follows:

```
File Menu
Alt + F = File menu
Alt + P = Preferences
Alt + X = Exit
Help Menu
Alt + H = Help menu
Alt + L = Capture Debugging Log
Alt + E = Email Support...
Alt + A = About Collaborator
```

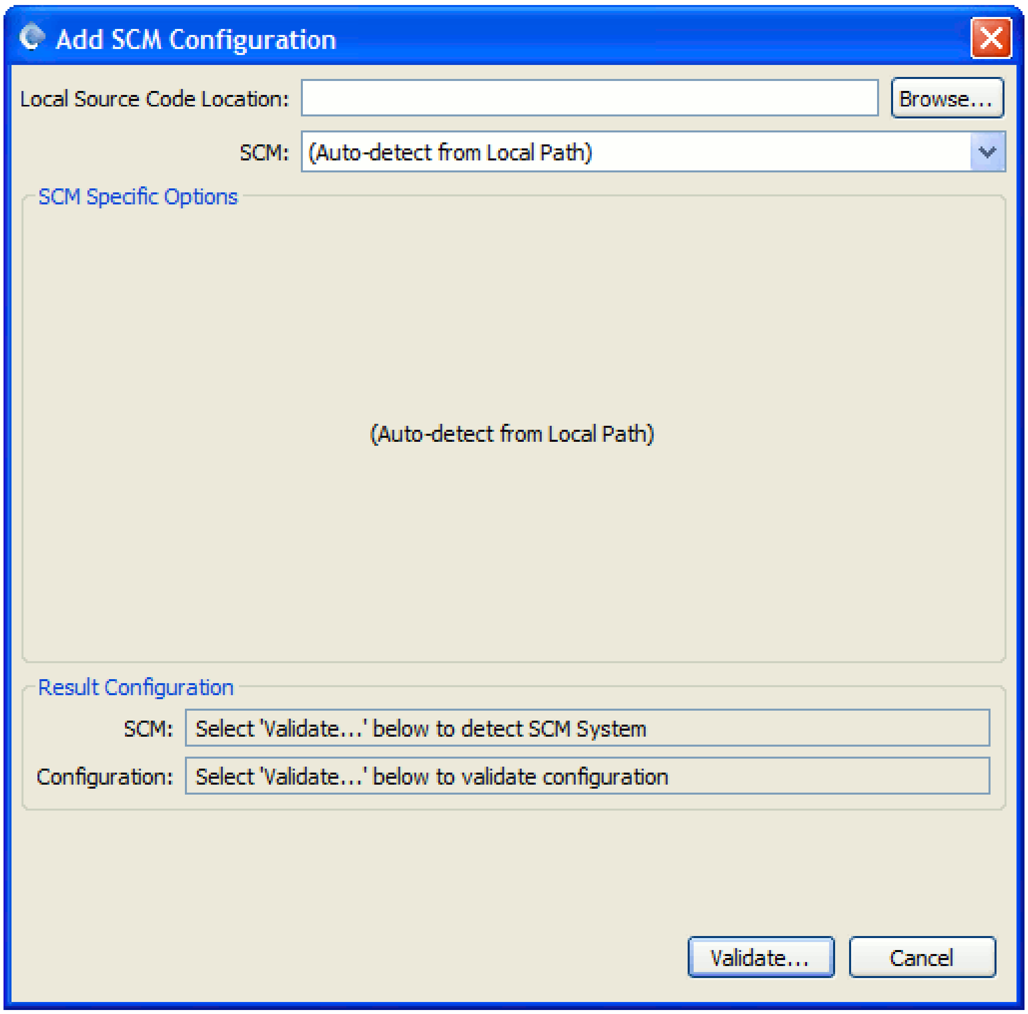
* For Mac users, 'Alt' should be replaced with 'Cmd.'

5.4.2 SCM Configuration

This section will describe how to configure the GUI Client to your SCM or version control. You will also have to configure[336] the client to the Collaborator server.

Configuring Version Control

Pressing the *Add...* or *Edit...* SCM Configuration buttons[339] on the right side of the main screen[339] opens the SCM Configuration dialog.



SCM Configuration dialog

Local Path

If you have a copy of your source on your local machine, enter its location into the optional *Local Path* field using the *Browse* button. Press the *Validate...* button to detect your SCM and SCM Configuration.

Scm Specific Options

If there are additional settings necessary to connect to your SCM system, select your SCM system using the *SCM* drop-down to show the available options. The Collaborator integration requires that a command-line client be installed. There are different options available for each SCM system:

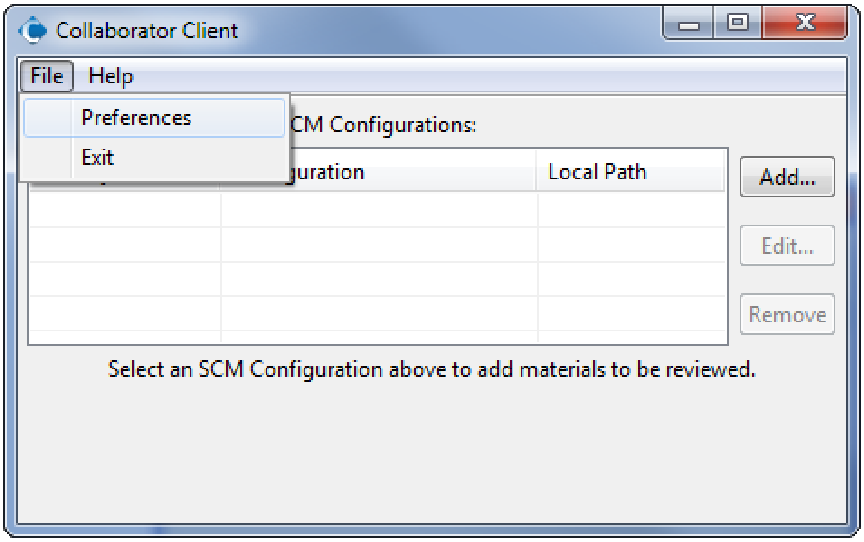
- AccuRev 416
- CVS 428
- Git 439
- IBM Rational ClearCase 458
- IBM Rational Synergy 477
- Mercurial 511
- Microsoft Team Foundation Server 518
- PTC Integrity 526
- Perforce 541
- Subversion 573

5.4.3 Preferences

The Preferences menu will allow you to change the settings for:

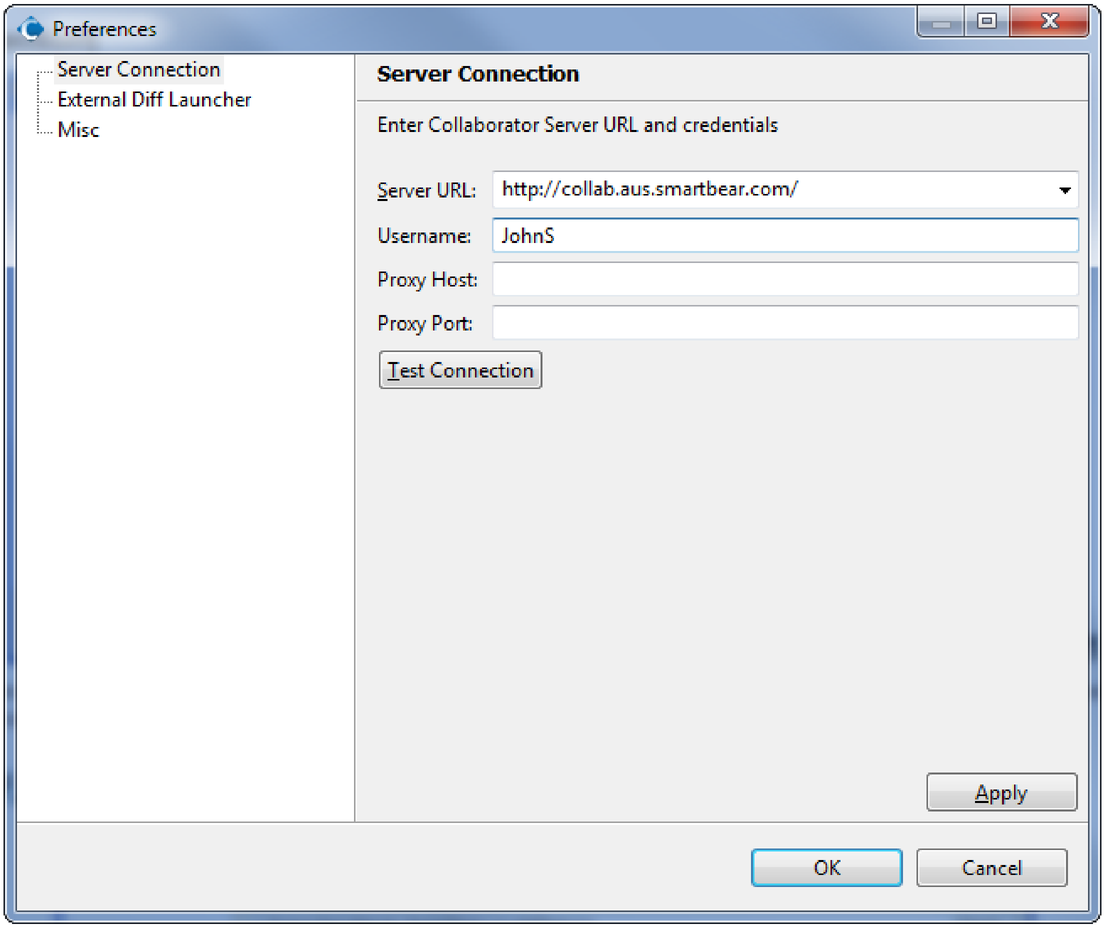
- Server Connection
- External Diff Viewer launcher
- Miscellaneous

To view preferences, click on *File -> Preferences* in the main screen 404 of the GUI Client:



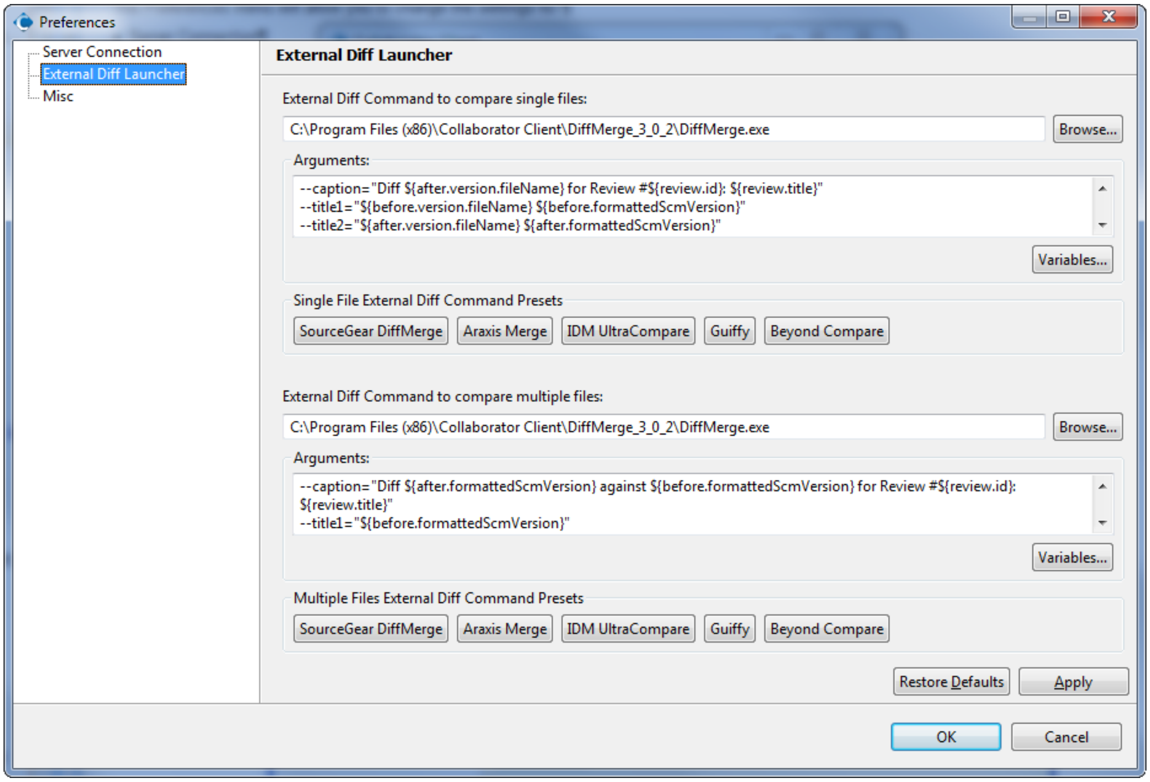
You can also view the Preferences menu via the Context Menu 405 of the Tray Notifier.

Server Connection



Here you can configure the client connection to the server. Please note that if you are connecting to a server using https and the server uses a self-signed certificate, you *must* run "ccollab login" using the command line client first to import the certificate information to your keystore.

External Diff Viewer launcher



Here you can configure settings for the External Diff Viewer launcher.

There are two separate **External Diff Command** settings, one for comparing two versions of a **single file**, and one for comparing **multiple files** (two directory trees).

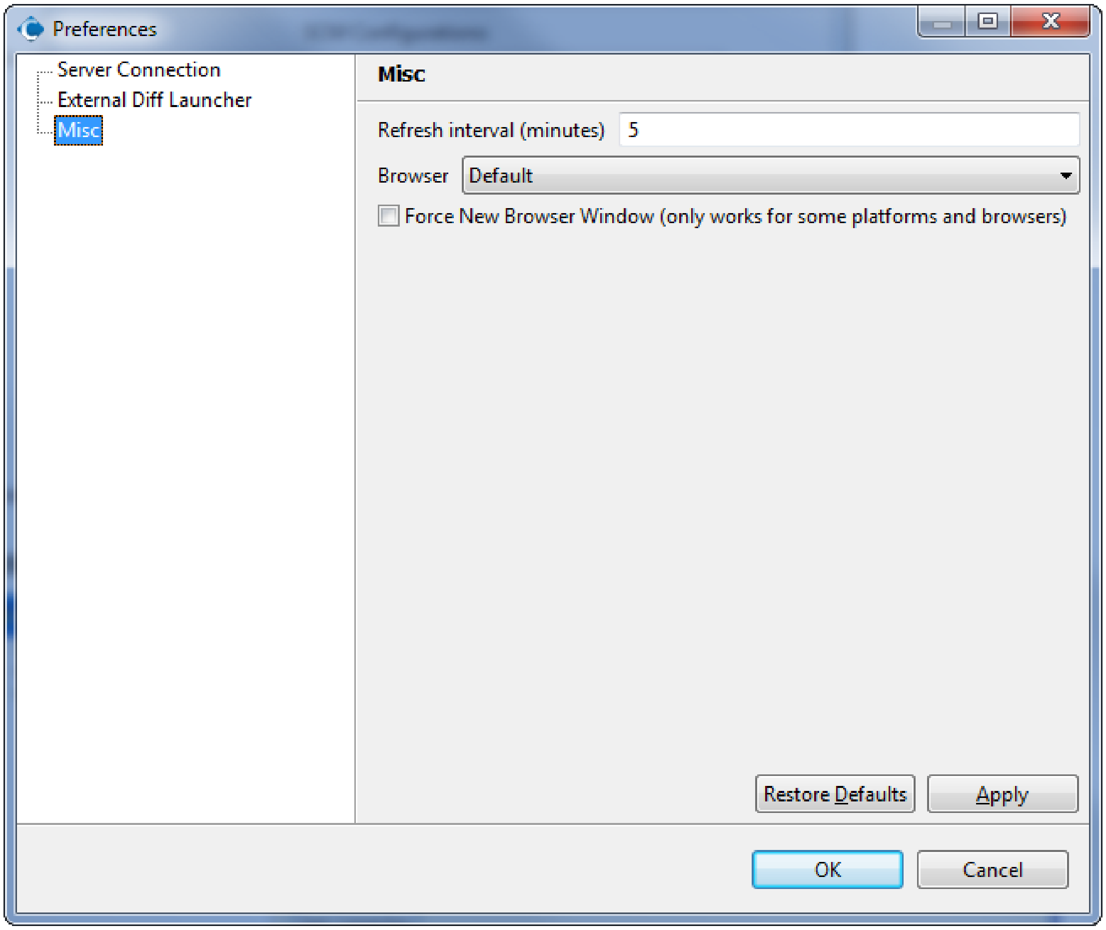
The **External Diff Command** field contains the absolute path to the executable the External Diff Viewer launcher will launch.

The **Arguments** field contains arguments passed to the executable. Certain variables specified in the **Argument** field are substituted when the external diff command is invoked. Click the **Variables** button to view the list of available variables and their descriptions.

As mentioned in the External Diff Viewer launcher section 406, we have included preset arguments to use with the following diff viewers: SourceGear DiffMerge, Araxis Merge, IDM UltraCompare, Guiffy, and Beyond Compare.

To use one of the presets, just click the appropriate button (for example, Guiffy) under **External Diff Command Presets**.

Miscellaneous



In the Miscellaneous tab, you can change the refresh interval (in seconds) and the preferred browser. Checking **Force New Browser Window** will force Collaborator to open any new instances in a new window instead of a new tab in browsers that support such behavior.

5.4.4 Troubleshooting

Anti-Virus Software

If you have any anti-virus software 693 running, first determine whether it is interfering with the Collaborator client.

Known Issues

Check the Known Issues Appendix 689 to see whether SmartBear already knows about this issue.

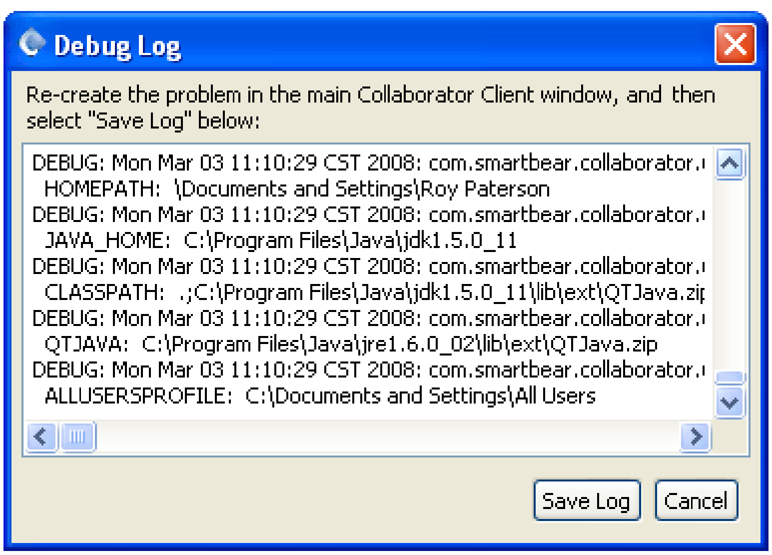
Linux packages

On RedHat Enterprise Linux or Fedora Core, you may need to install the following package names to use our GUI client. If the GUI client will not start successfully, please be sure that these packages are installed.

```
glib2
glibc
gtk2
libX11
libXau
libxcb
libXext
libXi
libXtst
```

Capturing a debugging log

If you are experiencing problems with the GUI Client, especially if the problem is related to your SCM system, it will help SmartBear technical support if you send in a debugging log. To capture a debugging log, select *Help -> Capture Debugging Log* from the system menu on the Main Screen 339.



Debug Log

After the Debug Log window has opened, go back to the Main Screen 339 window and recreate your problem. You should see log messages being created in the Debug Log window. After you have recreated the problem, go back to the Debug Log window and select the Save Log button. This will prompt you for a convenient place on your machine to save the log file.

Please send the log file along with a full description of what you were trying to do when the error occurred to support@smartbear.com.

5.5 Command-Line Client

The Command-Line Client is a cross-platform client interface to the Collaborator server. It can be used by a human for uploading files, integrating with version control, and querying the server, or as a part of an automated script in a sophisticated ALM / build system.

This chapter includes:

5.5.1 Configuration

The Command-Line Client needs to be able to connect with your Collaborator Server, connect with your SCM system, and may need to launch a graphical editor for selecting files to be uploaded to reviews. The following sections describe configuring 336 the Command-Line Client for these actions.

Global Options

The Command-Line Client supports many global options 357 and sub-command options. Global options may be specified on the command-line before the sub-command for each invocation, or they can be saved and applied to all future invocations using the set sub-command.

Default settings for global options can also be set using one or more configuration files 350.

Configuring Collaborator Server Connection

If you used the graphical installer [330], your connection to the Collaborator Server should be configured already. Otherwise, you will be prompted when you try to connect. Try testing your configuration [349] to verify the configuration is detected correctly. You can also manually configure your connection [337] using the `login` sub-command.

Configuring Version Control

In most cases, the Command-Line Client can automatically detect your SCM system configuration. Try testing your configuration [349] to verify the configuration is detected correctly.

If the Command-Line Client is unable to detect your SCM system, or if you want to override the detected settings, you can specify SCM configuration settings using global options [357]:

- AccuRev [422]
- ClearCase [468]
- CVS [432]
- GIT [446]
- PTC Integrity [531]
- Perforce [549]
- Subversion [581]
- Team Foundation [521]

Testing Configuration Settings

To test the current configuration settings, go to working copy of your repository (the place on your local machine where files from an SCM system are checked-out) and execute:

```
ccollab info
```

This prints the current effective Collaborator and version control configuration settings. If you have not specified the scm [358] global option, the Command-Line Client will attempt to automatically detect your SCM configuration.

You will see some error messages if the configuration is not valid. If all goes well you should see something like this:

```
Connecting to Collaborator server http://myserver:8080
Connected as: John Doe (jdoe)
Auto-detecting SCM System for 'C:\mycode'
Detected Subversion
SCM Username: jdoe
SCM Config: repo=http://mysvnserver/repos/myrepo
```

Graphical Editor Configuration

The Command-Line Client uses the default system text editor to display files to be uploaded for review. You can override this to point to any other text editor using the editor 358 global option.

Some editors on some platforms are launched as detached processes. This will cause the Command-Line Client to continue before the editor is closed, losing any changes made to the file list. The editor-prompt 358 global option can be used to pause the Command-Line Client after the editor is launched and wait for user keyboard input before continuing.

Configuration Files

Collaborator uses several configuration files 338 to store default global options. When a user saves a global option 357 setting (using `ccollab set`), the setting is stored inside a directory called .smartbear inside the user's home directory. (Under Windows, the "home directory" is your "Documents and Settings" Profile directory.)

Global options specified by command-line switches 357 override settings stored in the configuration files.

5.5.2 Commands

Basic Commands

The Command-Line Client provides a few basic commands which are unrelated to uploading files to the Collaborator Server:

- `help` - Display help on using the Command-Line Client
- `login` - Verify and/or change connection to the Collaborator Server
- `info` - Validates server connection and SCM configuration

- `set` - Save a global option 357 setting

Upload Commands

The primary function of the Command-Line Client is to upload review materials (files) to the Collaborator Server.

The recommended commands to use vary by Version Control System:

- AccuRev Commands 415
- ClearCase Commands 455
- CVS Commands 426
- Git Commands 436
- Mercurial Integration 510
- PTC Integrity Commands 525
- Perforce Commands 537
- Rational Synergy Commands 476
- Subversion Commands 568
- Team Foundation Commands 517

In addition to the Version Control specific commands, the Command-Line Client provides a few basic upload commands that work for any (or no) Version Control system:

- `addfiles` - Upload local files without diffs
- `addchanges` - Uploads locally modified files controlled by an SCM
- `adddiffs` - Upload local or arbitrary diffs (see Uploading Diffs 352)

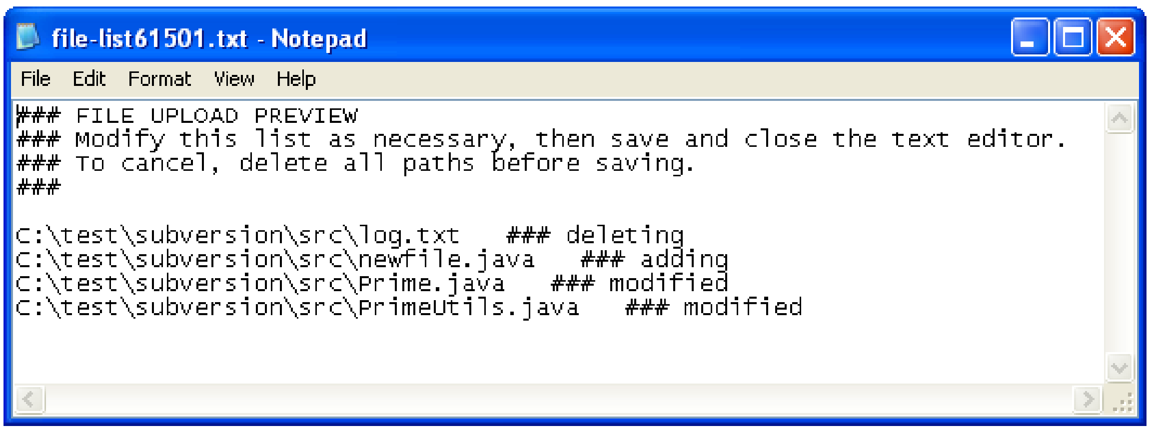
Upload commands that deal with files managed by Version Control systems should be called from any sub-folder within the working copy of your repository (the place on your local machine where files from an SCM system are checked-out). Otherwise, the commands may fail to detect the SCM configuration.

Scripting Commands

The Command-Line Client also includes many commands meant for constructing custom scripts, usually used for integrating with external systems or implementing custom behaviors. For more information see Scripting 638.

5.5.3 Graphical Editor

The addchanges and addactivity 474 commands can launch a graphical editor with a file list so you can review the files about to be uploaded and make any corrections you wish:



The ### sequence is a comment. If all lines with files are deleted the operation is aborted. In this example there are two modified files, one file being added, and one being deleted.

If not otherwise configured, the command-line uses the default system editor to display the file list. See Graphical Editor Configuration 350 for information on specifying a different text editor to be used.

5.5.4 Uploading Diffs

You can upload arbitrary file differences using the `ccollab adddiffs` command. This subject is complex enough to warrant its own section in the manual.

Uploading Local File Diffs

You can upload local file differences with the `adddiffs` command:

```
ccollab adddiffs <review> path-from path-to
```

The `path-from` and `path-to` fields are paths to two files or directories to compare, and <*review*> is an integer review-id, 'new', 'ask', or 'last'. For example, this command would upload any differences found as a change-set as a new review:

```
ccollab adddiffs new /old/directory /new/directory
```

Uploading Arbitrary Diffs

You can also upload arbitrary differences with the `adddiffs` command. Assuming textual diffs have already been generated in a file called `diffs.txt`, use this:

```
ccollab adddiffs review diffs.txt
```

Or you can pipe the results of another diff command right into the `ccollab` process using a single dash instead of a file path. For example, this command uses the GNU `diff` command to generate a unified diff format, then uploads it directly into review #2534:

```
diff -u100 dir1 dir2 | ccollab adddiffs 2534 -
```

After you upload diffs to the server you will see the "changelist" appear similar to this:

Changes from Local Filesystem

	Changelist	Date/Time	Author	Text
[View] [Delete]	c194f4b0	2007-01-03 14:24	jcohen	Uploaded File Differences Generated by Perforce using: p4 diff2 //depot/...@1500 //depot/...@1502

Uploading Differences from Version Control

If you want to upload differences generated by a version control command-line tool, you should use the `ccollab add*diffs` command specific to your version control system (if available) instead of `ccollab adddiffs`.

Version Control specific `add*diffs` commands:

- `addardiffs` 425 (AccuRev 415)
- `addcvsdiffs` 434 (CVS 426)
- `addgitdiffs` 449 (Git 436)
- `addhgdiffs` 516 (Mercurial 510)
- `addp4diffs` 551 (Perforce 537)
- `addsvndiffs` 584 (Subversion 568)

These commands integrate with version control servers and supply exactly the right command-line switches to the underlying version control command-line to minimize server transmissions and maximize features like fully reproducing both previous and current versions of the document.

Many of the pitfalls with diffs described below are avoided when using `ccollab add*diffs`.

Supported Diff Formats

There are many kinds of diff formats out there. Our software supports many of them; if you find a format that is not working, please let us know 29 so we can get your diff format into our unit tests.

- **Unified**
  The unified format starts with a two-line header naming the previous and name versions of a file, plus optional file information. Then it follows with diff-chunks starting with "@@" and then having both unmodified lines and added/removed lines. An exact definition of the format can be found here.
  Any number of these file-diffs can be strung together. Our software parses all of the files and uploads each as a "before" and "after" version. Context lines are preserved; lines skipped are reconstructed (more about this later 355).

- **UltraCompare Text Format**
  We support the proprietary text format emitted by the 3rd party commercial command-line tool UltraCompare.
  This is a Unicode diff with full file context making it an excellent format that preserves all file content.
  Although this utility emits only one file difference at a time, you can concatenate any number of these diffs together and upload them in one shot through the `ccollab` command-line.
  This can be especially handy if you are writing a script to automate this process.

- **Subversion Style**
  Subversion outputs a two-line header for each file; one starts with "Index:" and names the file in question, the next is a row of equal signs. Following the header is any of three types of diff output; we support all three but you should use the unified format for best results 355. Any number of these file-diffs can be strung together.
  Note that with Subversion you should use `addsvndiffs` 584 instead of `adddiffs`.

- **Perforce Style**
  Perforce has a variety of output formats; we support all of them. One is just the Unified format specified above. The other uses a one-line file header that shows the "before" and "after" file paths and version numbers with other file data, and then uses any of three types of diff output to encode the diffs. We support all three but you should use the unified format for best results 355. Any number of these file-diffs can be strung together.
  Note that with Perforce you should use `addp4diffs` 551 instead of `adddiffs`.

- **CVS Style**
  Similar to Subversion Style (see above) but has additional lines of output besides just those two file header markers.
  Note that with CVS you should use `addcvsdiffs` 434 instead of `adddiffs`.

- **GNU Format**
  The GNU format shows just additions, deletions, and modifications with no file context. An exact definition of the format can be found here.
  We do not recommend you use GNU format because (1) it does not support file names or multiple files and (2) it does not support context lines which causes problems when reconstructing files 355.

- **RCS Format**
  The RCS format shows just additions and deletions with no file context.
  We do not recommend you use RCS format because (1) it does not support file names or multiple files and (2) it does not support context lines which causes problems when reconstructing files 355.

- **Araxis Merge, BeyondCompare, GuiffyMerge, GNU diff, xdiff, and other tools**
  With these diff utilities, use an export option that creates unified diffs with lots of context. See the guidelines below 355.

When the command-line utility is uploading diffs it will print out the format that was detected. If it complains that the format is unknown, attach a copy of your diff data to an email to our tech support department 29 so we can add support for your format.

Context Lines and Reconstructing Files

Most diff formats skip over lines that were unchanged, possibly leaving a few lines of "context" around each modification. This might be OK for "patch" utilities but it is not good when you want to do a review. Why not?

When you do the review, if you do not have many lines of context you cannot see much beyond the diffs themselves. Our software is smart enough to reconstruct the two files as well as possible, retaining all line numbers, but of course there will be gaps.

Here is how the side-by-side view 273 looks with some differences that only had three lines of context:

```
*** unspecified line placeholder ***
*** unspecified line placeholder ***
*** unspecified line placeholder ***
    }
}

function preloadImage (object, url) {
  eval (object + " = new Image ()");
  eval (object + ".src = '" + url + "'");
}

preloadImage ("updatingimage", "../images/AIMSAnim.gif");

/******************************\
|*** Show Updating window ***|
called from DCImageButton
*** unspecified line placeholder ***
*** unspecified line placeholder ***
*** unspecified line placeholder ***
```

You can see the "`*** unspecified line placeholder ***`" text where the diff skipped over lines.

How to prevent this? It depends on how you are generating diffs. Here are some guidelines:

- Always use Unified diff format354, not RCS or GNU. Those others do not support lines of context *at all*, nor do they support filenames so your uploads will be "anonymous".
- Always include a lot of context with your Unified diff format. The way to specify this varies depending on your diff utility. For example, using GNU `diff` the command-line option is `-u1000` where "`1000`" is the number of lines of context. Selecting a big number like 1000 is not unreasonable! Reviewers will thank you for it.
- Use the version-control specific `ccollab add*diffs`353 commands whenever you can. This automatically selects the right command-line switches to maximize context while minimizing data transmissions.

5.5.5 Troubleshooting

Check here for common problems and their solutions.

Anti-Virus Software

If you have any anti-virus software 693 running, first determine whether it is interfering with the Collaborator client.

Known Issues

Check the Known Issues Appendix 689 to see whether SmartBear already knows about this issue.

Version History

Check the Version History on the SmartBear website to see if this issue has been resolved in a later release.

I try to run `ccollab` but it says File Not Found.

Under Windows, sometimes the installer is not able to update the PATH variable due to system configuration or permissions. Or the PATH variable is updated but the system requires a log-out or log-in before it is in the PATH.

Under Unix systems, the PATH variable needs to be updated if you did not install in a standard location such as `/bin` or `/usr/bin.`

I try to upload files managed by an SCM system but `ccollab` fails to detect a valid SCM configuration

You should call the upload commands from any sub-folder within the working copy of your repository (the place on your local machine where files from an SCM system are checked-out).

Running with debug logging enabled

Running the command-line client with the --debug 358 option will create a log file called `ccollab.log` in your current working directory. If you contact technical support with a problem and they cannot reproduce it, they will typically ask you to do this and send them that debug log.

5.5.6 Global Options Reference

Description

The following topic lists the available command-line global options.

Global Options can be specified on the command-line, or they can be saved and applied to every command using `ccollab set`.

General Options

Option	Description
`--browser <value>`	Browser to launch (for example, 'firefox', 'ie', or 'default')
`--debug`	Run in debug mode, create a ccollab.log file in current directory
`--editor <value>`	External editor to use for editing file list
`--editor-prompt`	Prompt user for input to signal editing of file list complete
`--force-new-browser`	Force browser to open new window (only works for some platforms and browsers)
`--no-browser`	Do not pop up a web browser when the command completes
`--non-interactive`	do not interact with user
`--password <value>`	Password to use when connecting to the application server
`--quiet`	do not display progress messages
`--scm <value>`	Manually sets the SCM system type, for example, "perforce" or "none" for no SCM System. Clearing this option causes the SCM system to be auto-detected
`--server-proxy-host <value>`	Proxy server URL to use to connect to the application server
`--server-proxy-port <value>`	Proxy server port number to use to connect to the application server
`--url <value>`	URL to use when connecting to the application server
`--user <value>`	Username to use when connecting to the application server
`--use-json-api`	Execute commands using JSON API engine, which works faster. Since Collaborator 9.2.9200, Command-Line Client uses JSON API engine by default. This option is no longer required.

Option	Description
`--use-legacy-api`	Execute commands using the legacy XML RPC engine, which works slower.

AccuRev-specific Options

Option	Description
`--accurev-depot <value>`	AccuRev depot name
`--accurev-exe <value>`	Full path to the `accurev` command-line client
`--accurev-anc-algorithm <value>`	Which algorithm to use when calculating the predecessor, either predecessor, previous-occupant, or basis-version

ClearCase-specific Options

Option	Description
`--ccrc-server-url <value>`	CCRC server URL (for ClearCase Remote Client integration only)
`--ccrc-user <value>`	CCRC username (for ClearCase Remote Client integration only)
`--ccrc-passwd <value>`	CCRC password (for ClearCase Remote Client integration only)
`--clearcase-exe <value>`	Full path to the `cleartool` command-line client
`--clearcase-update-snapshot`	Whether to update ClearCase snapshot views prior to uploading files for review

CVS-specific Options

Option	Description
`--cvs-exe <value>`	Full path to the `cvs` command-line client
`--cvsroot <value>`	Connection to the CVS repository

Git-specific Options

Option	Description
`--git-exe <value>`	Full path to the 'git' command line client
`--git-skip-index`	Should changes be uploaded from the working tree instead of from the index (like `git commit -a`)

Mercurial-specific Options

Option	Description
`--mercurial-exe <value>`	Full path to the 'mercurial (hg)' command line client

PTC Integrity-Specific Options

Option	Description
`--mks-host <value>`	PTC Integrity server name.
`--mks-port <value>`	PTC Integrity server port.
`--mks-user <value>`	PTC Integrity user name.
`--mks-passwd <value>`	PTC Integrity user password.
`--mks-expand-keywords`	Specifies whether to expand keywords in source files.

The arguments use the *--mks* prefix as MKS Integrity is a former name of PTC Integrity.

Perforce-specific Options

Option	Description
`--p4 <value>`	Full path to the P4 executable
`--p4port <value>`	How to connect to the Perforce server
`--p4user <value>`	Perforce user name
`--p4passwd <value>`	Perforce password or ticket
`--p4client <value>`	Mapping of Perforce server data to the local machine
`--p4-ignore-integration-history <value>`	Ignore integration history when calculating predecessor

Option	Description
`--p4charset <value>`	Perforce character set used for translation of Unicode files
`--p4-require-empty-default-changelist`	If true, do not allow uploads if the default changelist contains files
`--p4-specify-command-charset <value>`	Should a character set be specified for communication with Perforce

Rational Synergy-specific Options

Option	Description
`--ccm-exe <value>`	Full path to the `ccm` command-line executable
`--ccm-user <value>`	User Name to use when starting a Rational Synergy session
`--ccm-passwd <value>`	Password to use when starting a Rational Synergy session
`--ccm-engine-host <value>`	Host the Rational Synergy Engine will run on
`--ccm-database-path <value>`	Path of the Rational Synergy database to connect with
`--ccm-local-database-path <value>`	Path of the local Rational Synergy database, typically c:/temp/ccm or /tmp/ccm
`--ccm-remote-client`	Start Rational Synergy sessions as a Remote Client
`--ccm-server-url <value>`	Server URL for Web-Mode Rational Synergy servers

Subversion-specific Options

Option	Description
`--svn-exe <value>`	Full path to the \`svn\` command-line executable
`--svn-look-exe <value>`	Full path to the \`svnlook\` command-line executable (used by Subversion triggers)
`--svn-repo-url <value>`	Subversion repository URL
`--svn-user <value>`	Subversion user name
`--svn-passwd <value>`	Subversion password
`--svn-require-client-certificate-password <value>`	Use this if you have a non-empty and unsaved password for your SSL Client Certificate
`--svn-auto-add`	Treat unversioned files as if they had been added to Subversion
`--svn-recurse-externals`	Recurse in the 'svn:externals' directories as if they were part of the same repository
`--svn-repo-path <value>`	Full path to the repository (used by Subversion Triggers)

Team Foundation Server-specific Options

Option	Description
`--tfs-exe <value>`	The path to Team Foundation "tf" command-line client (tf.exe).
`--tfs-collection <value>`	The URL of Team Foundation Project Collection to work with. (Only for TFS clients 2010 and later.)

Option	Description
`--tfs-server <value>`	The URL of Team Foundation server to work with. (Only for TFS clients 2005 and 2008.)
`--tfs-user <value>`	The name of Team Foundation user.
`--tfs-passwd <value>`	The password of the user.

5.5.7 Command-line Reference

Description

Use the `ccollab` command to perform a number of Collaborator tasks from the command-line.

Command Line Syntax:

```
ccollab [global-options] command [command-options]
```

Sub-Commands

Sub-Command	Description
`help`	Display help on using the Command Line Client
`info`	Validates server connection and SCM configuration
`login`	Verify and/or change connection to the server
`logout`	Clears the stored password and/or login ticket id, and invalidates the user's login ticket on the server
`set`	Save a global option setting
`addchanges`	Attaches locally-modified files to a review
`addfiles`	Attaches local files to a review without diffs

Sub-Command	Description
addchangelist	Attaches an atomic changelist to a review
adddiffs	Attaches file differences to a Review
addsvndiffs 584	Uploads diffs generated from the svn diff command
addardiffs 425	Uploads diffs generated from accurev diff command
addcvsdiffs 434	Uploads diffs generated from cvs diff command
addgitdiffs 449	Uploads diffs generated by git diff command
addhgdiffs 516	Uploads diffs generated by hg diff command
addp4diffs 551	Uploads diffs generated from p4 diff2 command
addversions	Attaches any 2 given versions to a review
addactivity 474	Attaches file versions in a ClearCase activity to a review
actionitems	List current action items
addstream 425	Attaches pending differences from an AccuRev stream
browse	Launch a browser to the Collaborator Server homepage
commit	Commit changes in the review
addp4job 555	Adds all numbered local changes that fix a job to the review
addurls	Attaches urls to a review
admin	Perform administration tasks
gitaddbranch 450	Uploads diffs between the specified git branch and the remote-tracking branch.

5.6 IDE Clients

Collaborator provides a number of plugins for most popular integrated development environments (IDEs).

These plugins allow you to create Collaborator reviews directly from the user interface of your favorite IDE.

See the section below for your IDE:

- Eclipse 366 (including, Eclipse-based applications)
- Microsoft Visual Studio 402

Important: Collaborator IDE Clients are designed to perform code reviews, rather than document reviews. That is, from within the IDE you can review and compare source code and text files, but may fail to review and compare other types of review materials. To review Word documents, Excel tables, PDF files, images, or URLs you should use the Collaborator Web Client 227.

5.6.1 Eclipse Plug-in

The Collaborator Eclipse Plug-in works with many Eclipse-based applications.

Features

- View with Action Item display 374
- Perform Reviews 375 without leaving Eclipse
- Label Decorations 382 for local files under review
- Markers 382 on local files for Defects in Reviews
- Upload files 383 from local hard drive
- Integrates with existing source control plug-ins including AccuRev 389, ClearCase 389, CVS 389, Git 390, Perforce 396, Rational Team Concert 484, and Subversion 399.
- Update site 367 for automatic plug-in install and upgrade.

Compatibility

Eclipse base version 3.4 or higher (released versions only).

Eclipse-based applications known to work with the plug-in:

- Eclipse SDK
- IBM WebSphere

5.6.1.1 Install & Update

Update Site

Eclipse can be configured to automatically download the Collaborator plug-in, and even to check periodically for updates. If you already know how to do this, all you will need to know is that our Eclipse update site is located here:

http://eclipse.smartbear.com/9.0

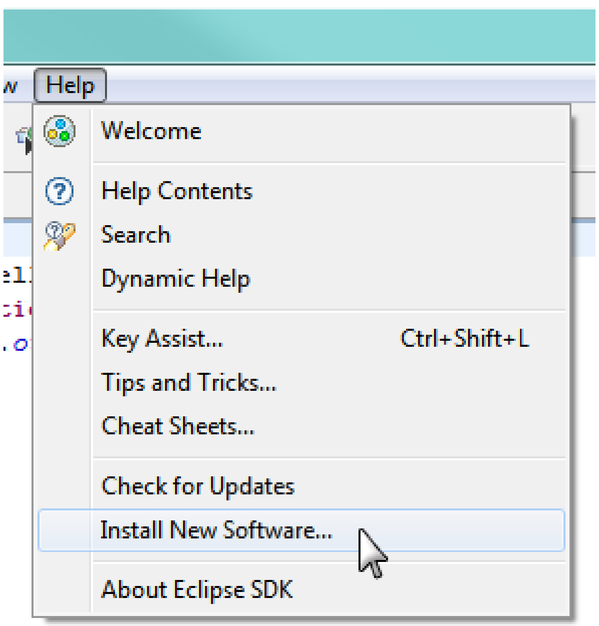
Otherwise, read on for step-by-step installation instructions.

Installation Instructions

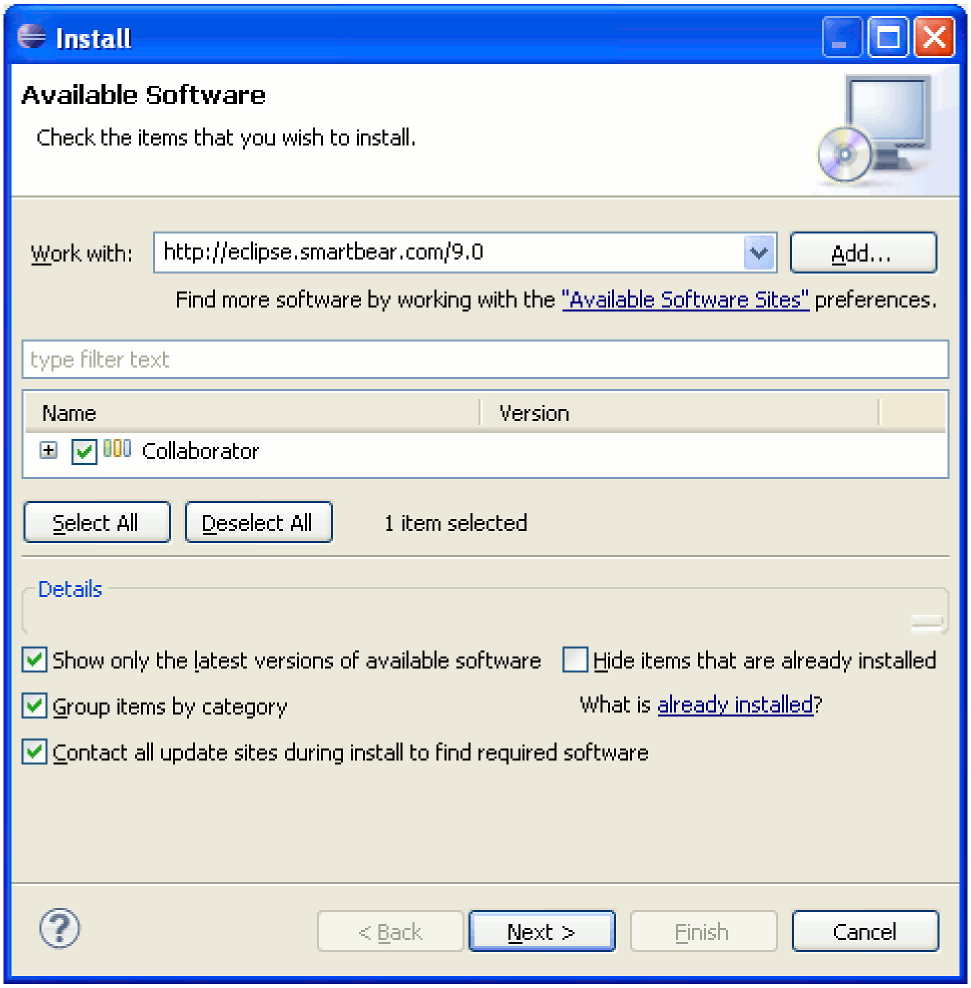
Here are detailed instructions for how to install our plug-in in Eclipse:

1. Open Eclipse IDE.

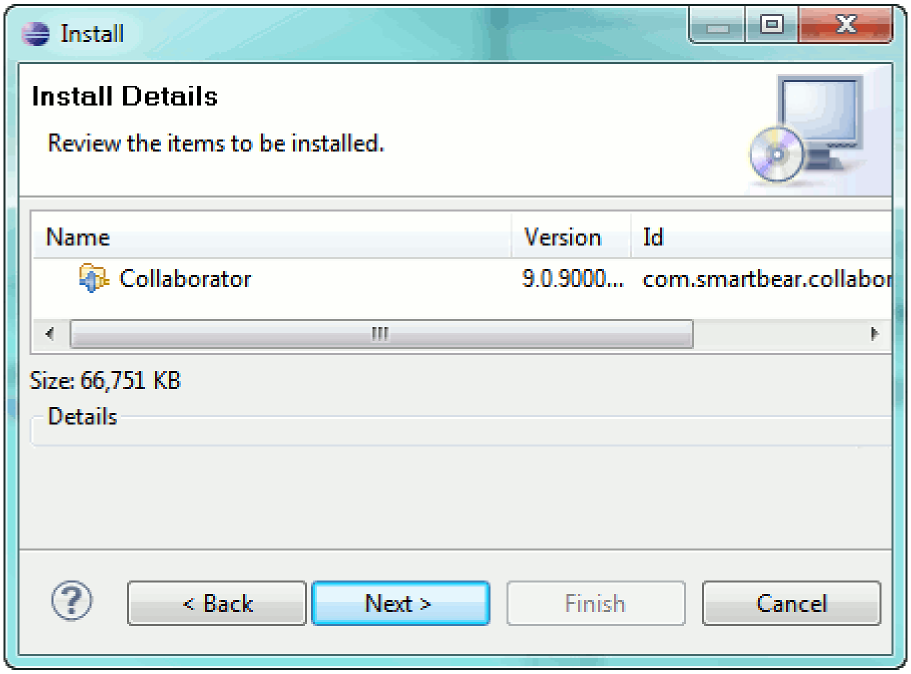
2. Select **Help | Install New Software** from the main menu.



3. Type "http://eclipse.smartbear.com/9.0" in the **Work with** field and press Enter. Then check "Collaborator" and click **Next**.

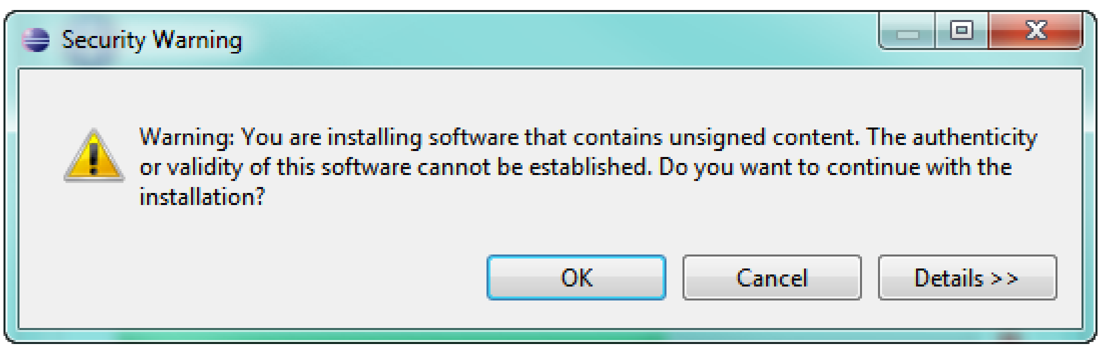


4. Click **Finish** to start the install.



5. A progress dialog appears as Eclipse installs the plug-ins.

6. Some of our plug-ins are not signed. In that case you will get this warning dialog. Just click **OK**.



7. Eclipse might ask you to restart the workbench. You probably should.

8. **Done!**

Uninstallation Instructions

To uninstall the plugin:

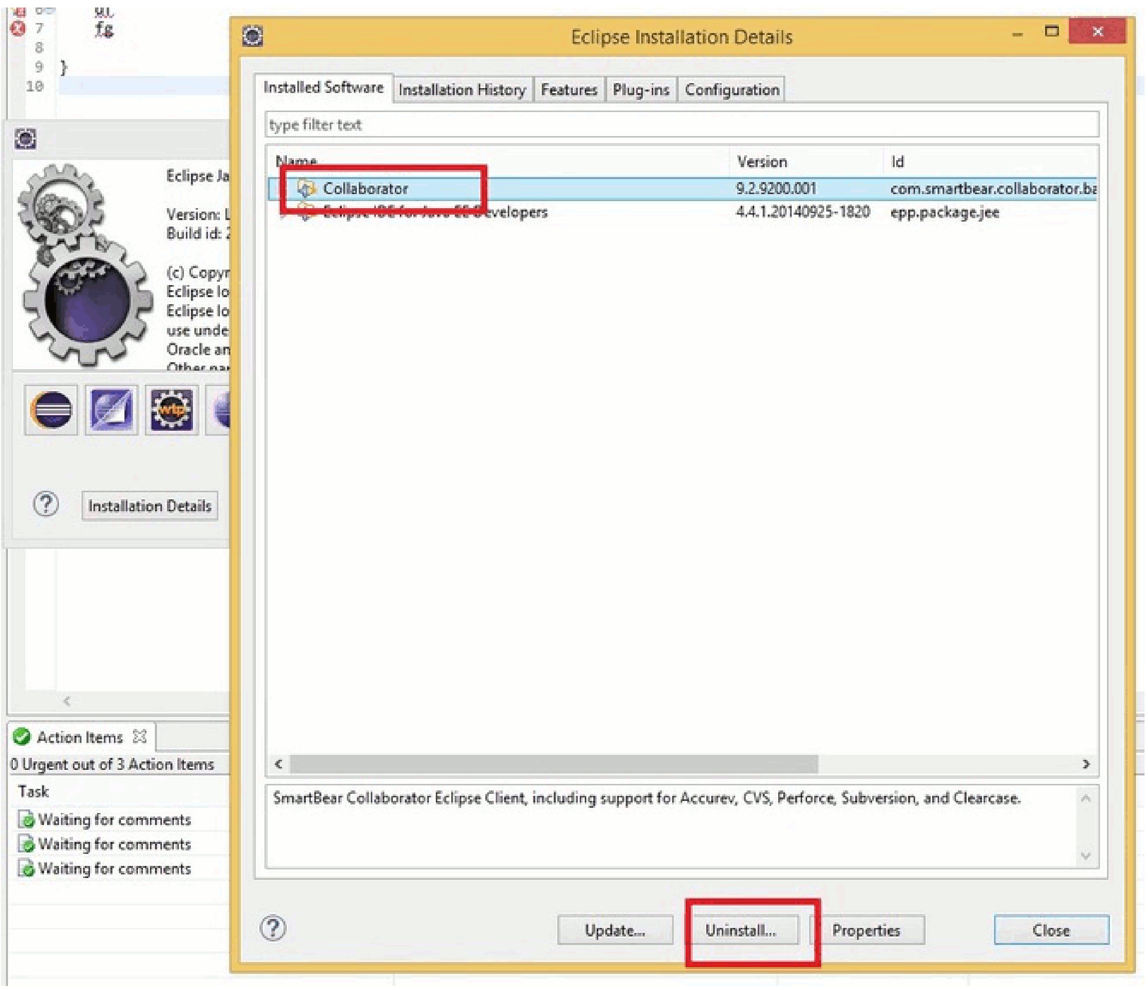
1. Open Eclipse IDE.

2. Select **Help | About** from the main menu.

3. Click **Installation Details**. This will open a dialog with more details about your installation.

4. Click the **Installed Software** tab to see a list of the software items that you have installed into your system.

5. Select Collaborator and click **Uninstall.**



Additionally you will need to remove the Collaborator's Eclipse Plug-in files from the Eclipse plugins folder. This is especially important if you plan to re-install the plugin later.

1. Go to Eclipse plugins folder. It is typically located at the following path:

```
<Program Files>/Eclipse/<EclipseCodeName>/plugins
```

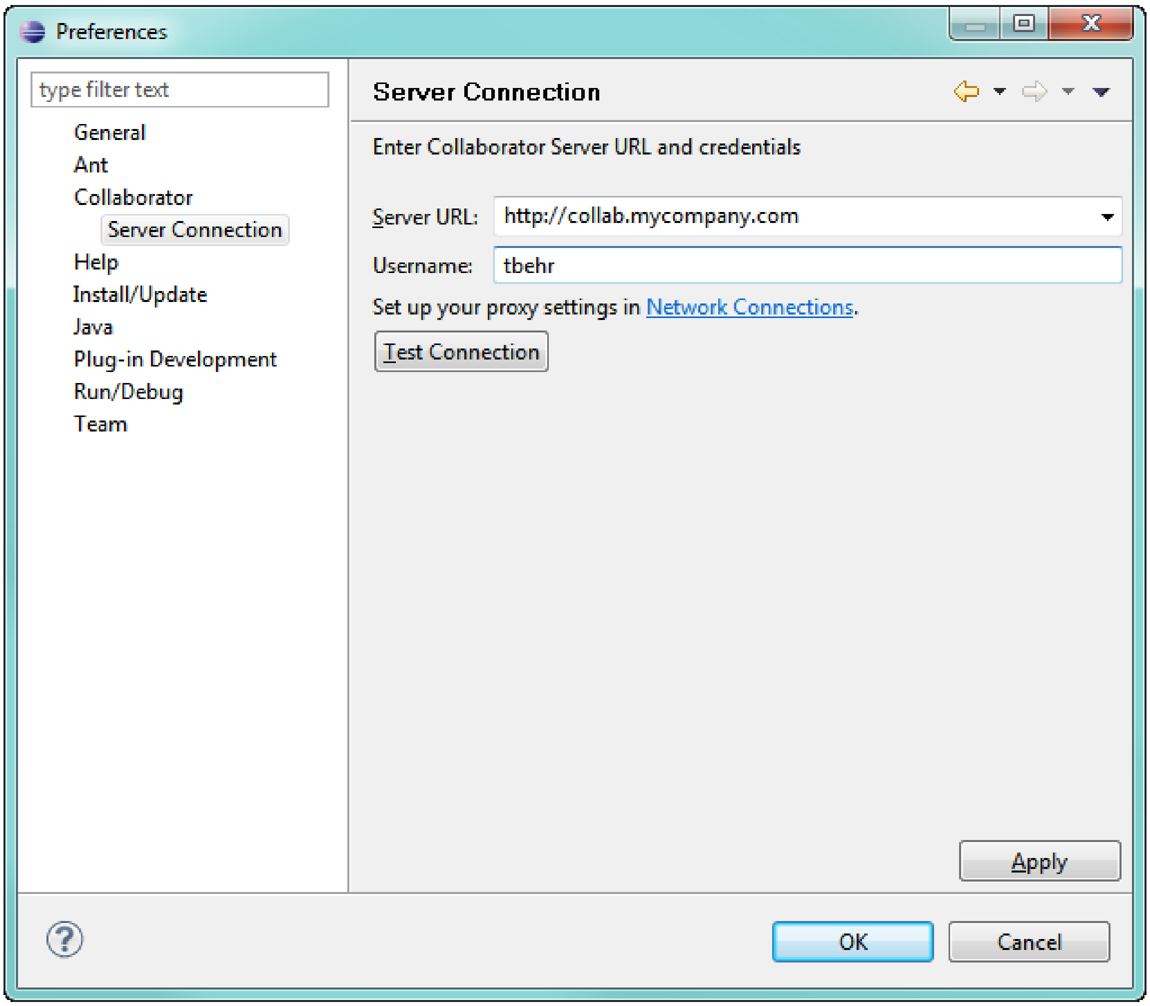
2. Select all jar-files and folders that start with **com.smartbear.collaborator**.

3. Delete these files and folders from the Eclipse plugins folder.

5.6.1.2 Preferences & Configuration

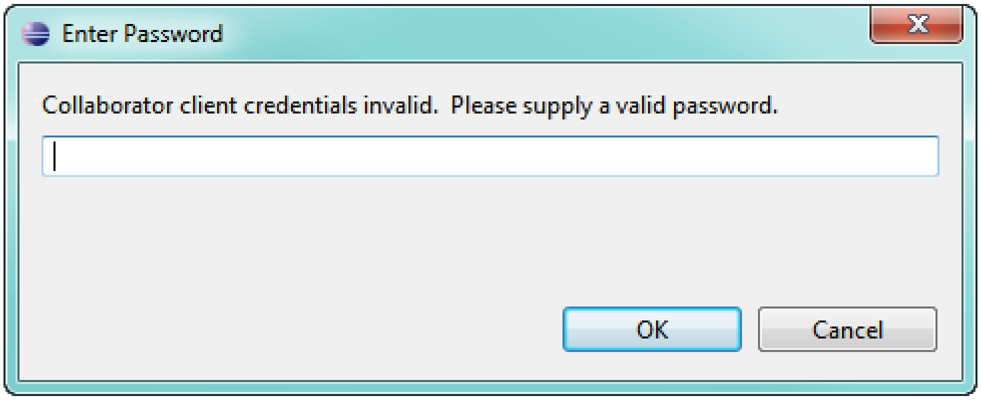
You must configure your connection to the Collaborator server; all other preferences are optional.

You can find the Eclipse Plug-in configuration in the Preferences dialog along with all other application preferences:

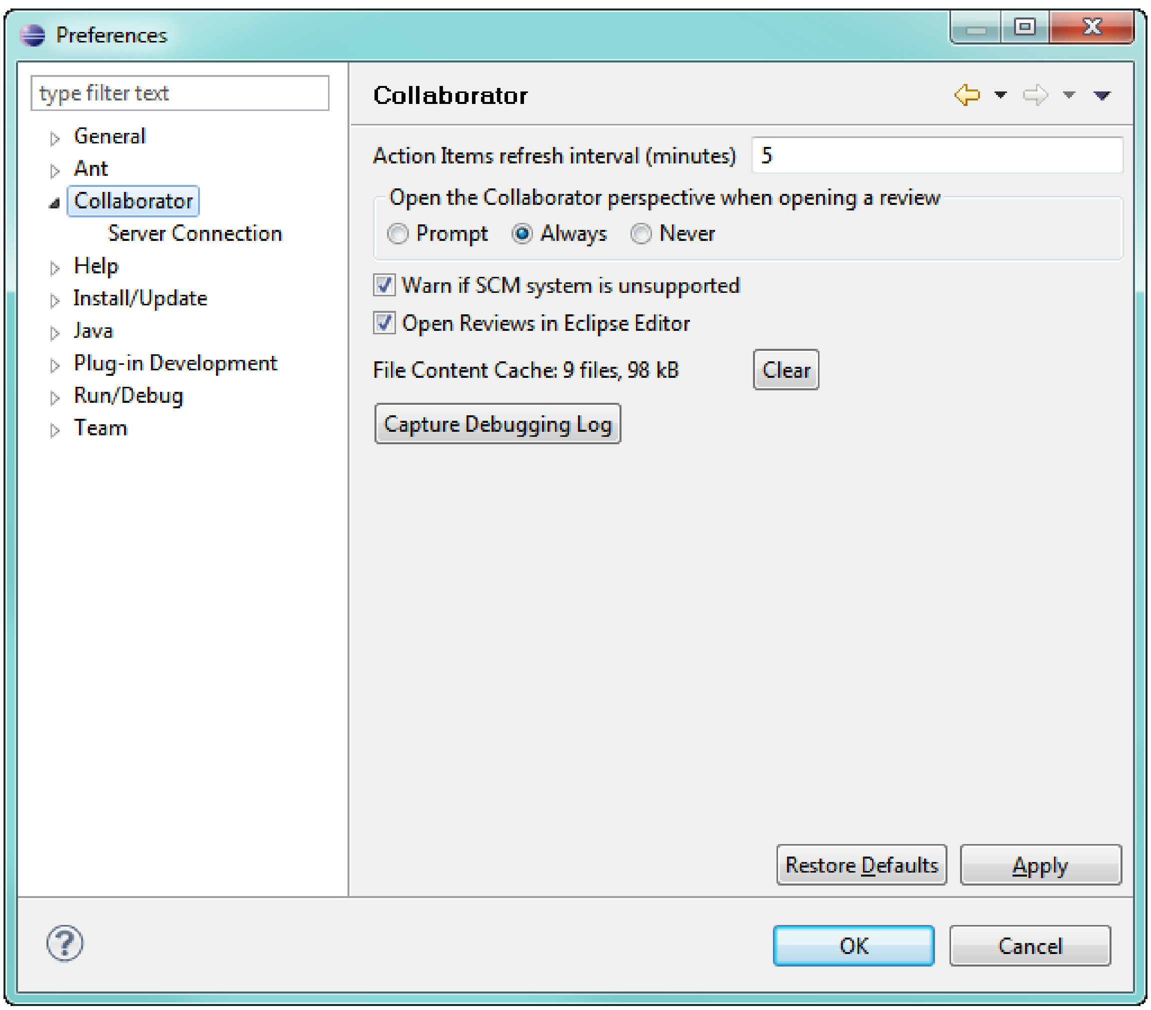


The Server URL must include the correct port number and path if applicable. The Username and Password are the same as you use when logging into the web server 230.

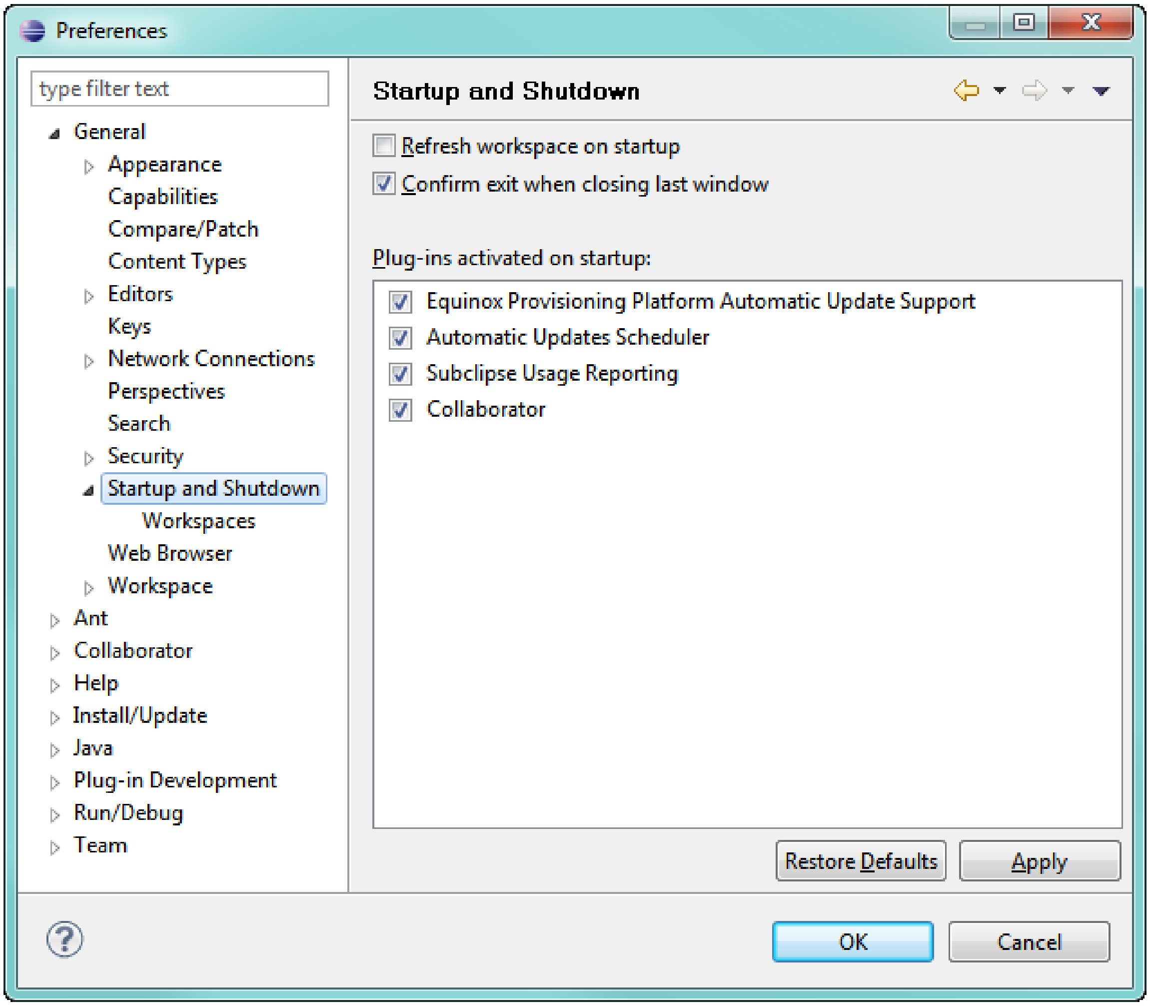
The password entry is presented on the following connection form:



Use the Test Connection button to make sure the connection is working. If it fails the error message will be helpful.



Action Items View refresh interval	How often to refresh the Action Items View [374] with data from the server. Markers [382] and Label Decorations [382] are also refreshed at this time.
Open the Collaborator Perspective when opening a Review	Automatically switch to the Collaborator Perspective [375] when opening a Review.
Warn if SCM system is unsupported	When adding files to a Review [387], warn if SCM system (or client) is not supported.
Open Reviews in Eclipse Editor	Open Reviews in the Eclipse Review Editor [375]. If this option is not checked, Reviews will be opened in a browser.
File Content Cache	The estimated size of the local file content cache. Press Clear to delete the local content cache (content will be automatically downloaded from the server as needed).

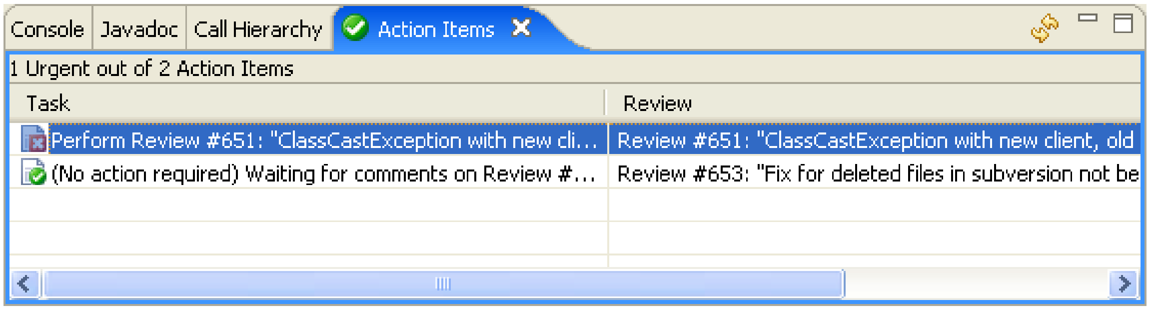


The Collaborator Eclipse Plug-in registers itself with Eclipse to be started automatically when Eclipse starts up. This is necessary to refresh Markers 382 and Label Decorations 382 automatically. If you un-check Collaborator from the Plug-ins activated on startup list then Markers 382 and Label Decorations 382 will not appear until the first time you show the Action Items View 374.

5.6.1.3 Action Items

To open your Collaborator Action Items in Eclipse, select Window -> Show View -> Action Items.

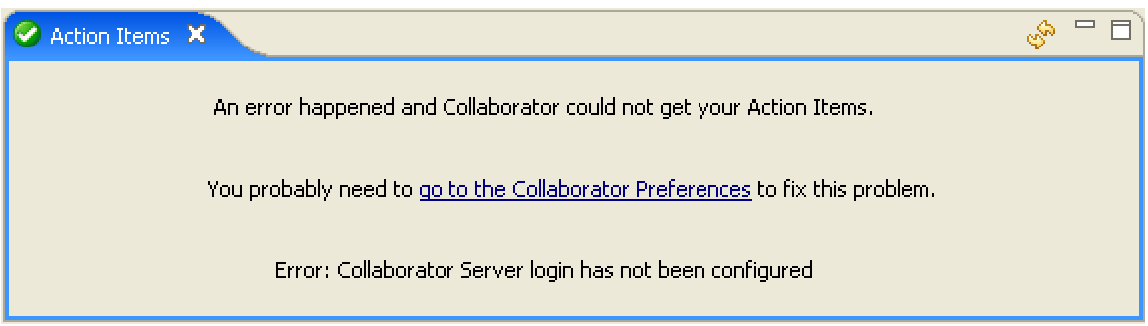
Your Collaborator Action Items appear in Eclipse as a View:



Double-clicking any item will open the Review in the Review Editor 375 or your configured web browser, depending on your preferences 373.

The list of Action Items automatically refreshes periodically (the rate is configurable 373). You can refresh manually using the double-arrow icon in the toolbar. Markers 382 and Label Decorations 382 refresh at the same time as Action Items.

If there was an error communicating with the server, the View will display an error message instead and you might need to visit your preferences 371 to fix connection settings:



5.6.1.4 Collaborator Perspective Window

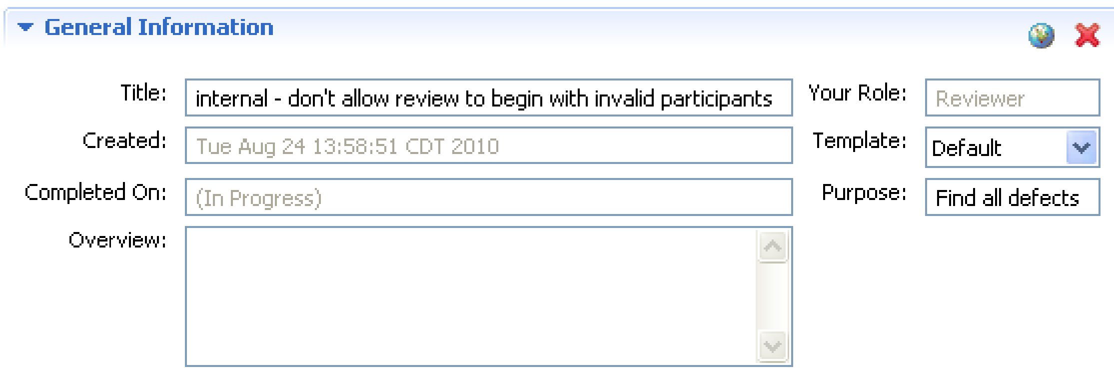
The Collaborator Perspective window is useful for organizing your screen to perform reviews in Eclipse. By default it contains the Editor Area, the Conversations View 379, and the Action Items View 374.

The Collaborator Perspective window can be configured 373 to open automatically when you open a Review from the Action Items View 374.

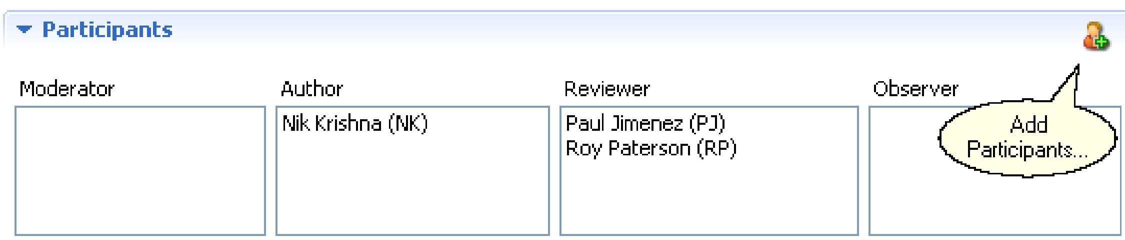
5.6.1.5 Review Editor

Double-clicking an Action Item 374 will open the associated Review in the Review Editor. (If you prefer, you can configure your preferences 373 to open the Review in a web browser instead.) This editor lets you perform a Review without leaving Eclipse. The content of the editor updates automatically as the Review changes (other users make comments, new files are uploaded, and so on).

When the Review Editor is active, the Conversations View 379 will show the overall Review conversation.

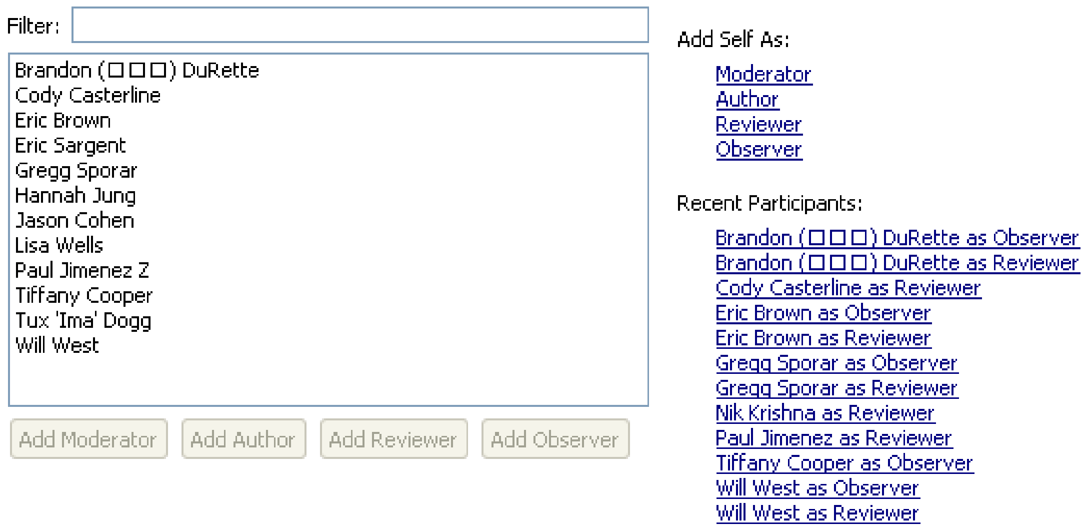


The General Information 252 section shows you information about the Review as a whole, and lets you edit certain fields, including Review custom fields 190.

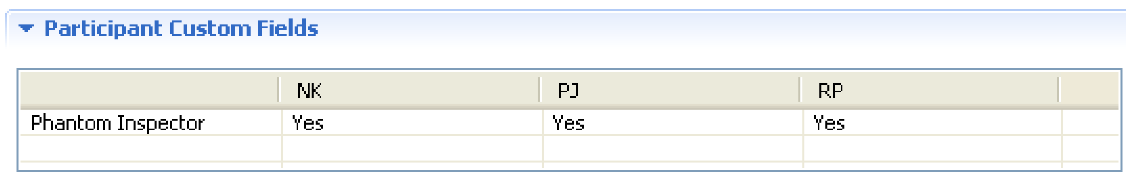


The Participants 254 section shows the users participating in this Review and their Roles. You can change a user's Role by dragging-and-dropping them to a different Role. You can remove a user from the Review by right-clicking and selecting Remove from the context menu.

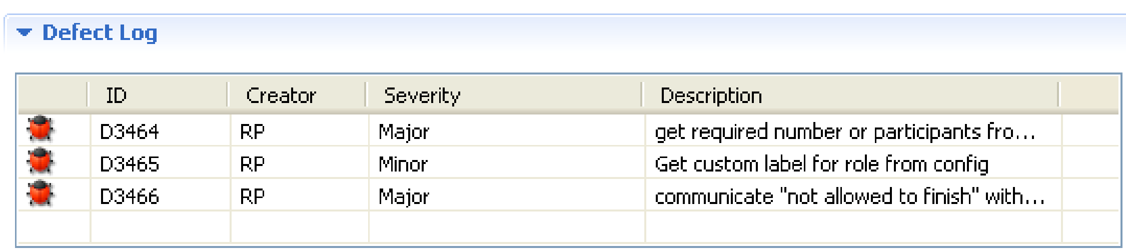
Click the Add Participants... icon in the toolbar of the Participants section to toggle the section for adding a new Participant to the Review.



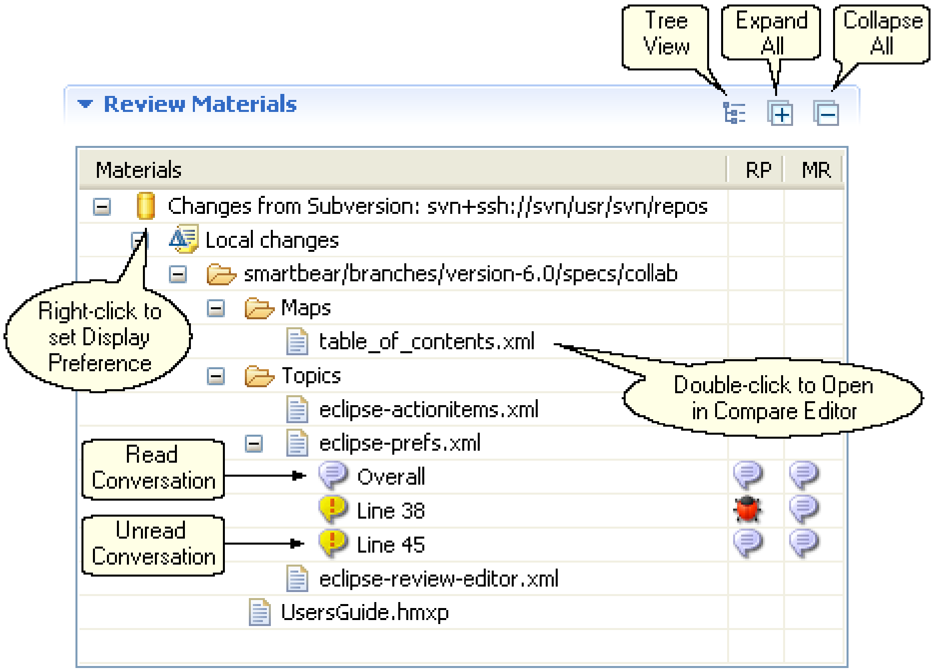
Drag users from the list to one of the Role lists above to add them to the Review in that Role. You can also click one of the **Add <Role>** buttons to add the selected users to the Review in that Role. Click on the links in the **Recent Participants** area to quickly assign recent participants to the Review. Typing in the **Filter** field will filter the users list to help you find the users you want.



The Participant Custom Fields section shows the value of Participant Custom Fields [190] for each Participant. Note this section only appears if the Template [205] of this Review has Participant Custom Fields configured.



The Defect Log [254] section shows all of the Defects in the Review, both overall Review Defects and Defects on files.



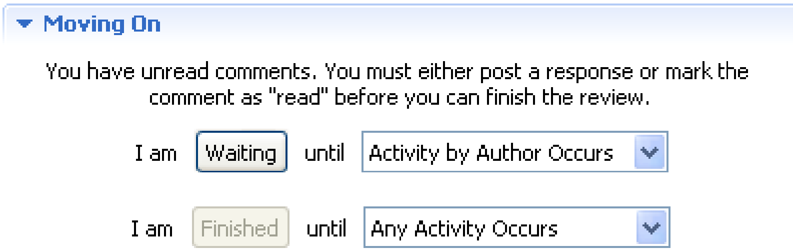
The Review Materials 257 section shows the changelists and files which are part of the Review. Double-click on a file to open it in the Compare Editor.

The section toolbar controls how the materials are presented:

Tree View	The presentation of folders. You can select from **Compressed Tree**, **Tree**, and **Flat**.
Expand All	Expand all levels in the tree.
Collapse All	Collapse all levels in the tree.

Right-click on the "Version Control" icon to set your Display Preference for that Version Control system. Depending on the Version Control system and available changelists, you can select from Do not Roll Up, Roll Up All Changelists, and Roll Up Non-Atomic Changelists.

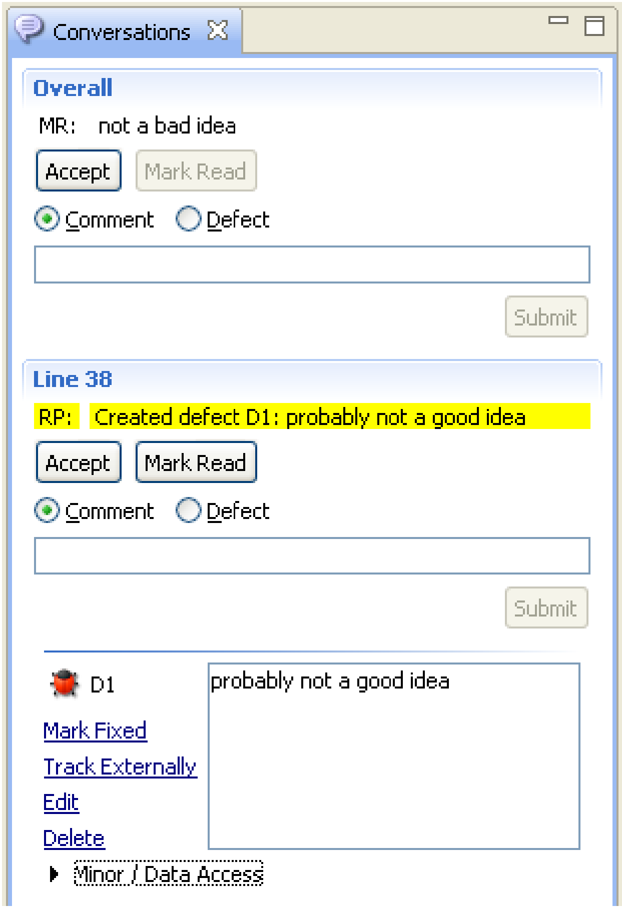
Conversations on files are listed underneath the files in the tree. If the conversation has unread comments the icon is highlighted in yellow.



The Moving On 262 section allows you to specify whether you are **Waiting** on Review activity or have **Finished** with the Review (with the option to re-engage based on future activities). These choices move reviews into different phases. The options in "Moving On" vary depending on the Phase of the Review and your Role. "Moving On" also allows you to control - to a certain extent - the notifications you receive for a particular Review.

5.6.1.6 Conversations View

The Conversations View displays conversations on the most recently focused Review Editor 375 or Compare Editor 381. For the Review Editor 375 the Conversations View shows the overall Review conversation. For the Compare Editor 381 the Conversations View shows all the conversations on the file.



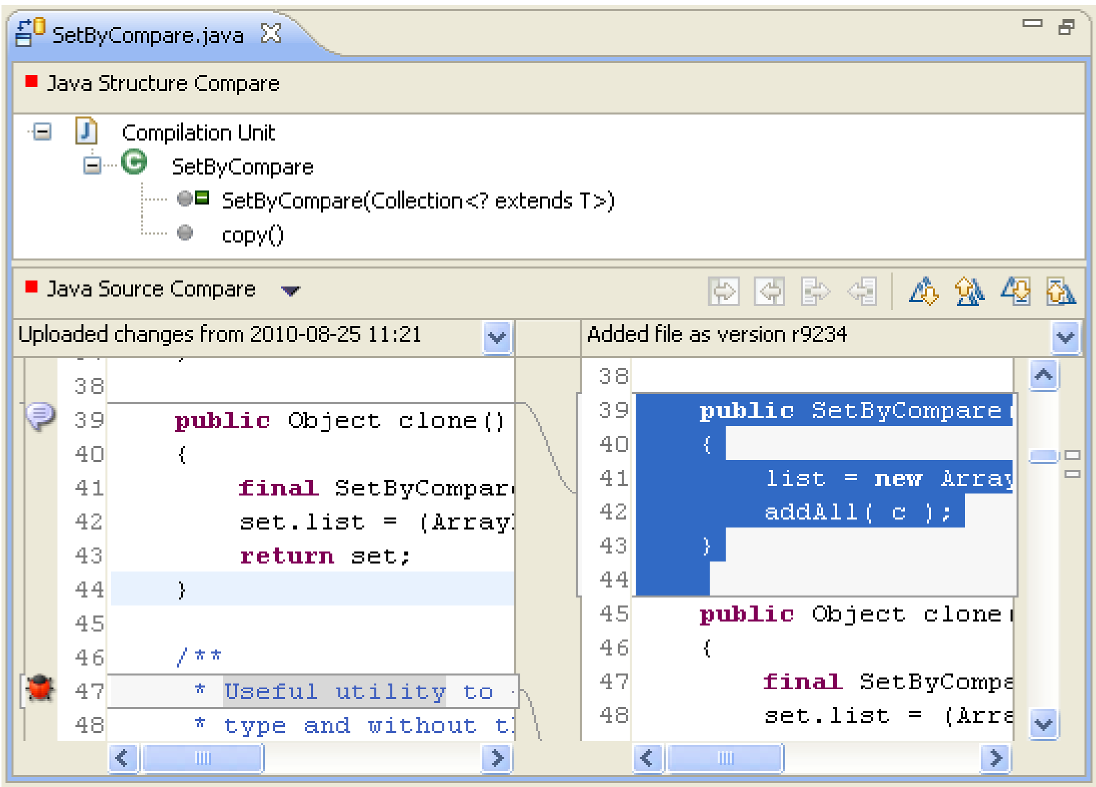
Unread Comments are highlighted with a yellow background. You can mark conversations Accepted or Read. You can add Comments. You can create or modify Defects. You can start a conversation at a new location or add to an existing one.

Right-click on a Comment and select Redact to redact it. Redacted comments are grayed-out.

5.6.1.7 Compare Editor

Double-clicking on a file in the Review Editor 378 opens it in the standard Eclipse Compare Editor.

Important: Collaborator Eclipse Client is designed to perform code reviews, rather than document reviews. That is, from the Compare Editor you can review and compare source code and text files, but may fail to review and compare other types of review materials. To review Word documents, Excel tables, PDF files, images, or URLs you should use the Collaborator Web Client 227.



Conversations on the file are shown in the Conversations View 379 when the Compare Editor is active.

The exact appearance of the Compare Editor depends on the type of file being compared. The Collaborator Eclipse Plug-in uses the compare viewer registered in your Eclipse installation for that file type, and then tries to add review-related controls on a best-effort basis.

Side-by-side Compare Viewers

If the registered compare viewer for the file type is based on the standard Eclipse side-by-side compare viewer, the Collaborator Eclipse Plug-in adds a drop-down menu above each content pane to select which versions of the file you want to compare.

If the file was uploaded from your machine, you can select `Local File` from the menu to compare against the local version of the file. Comparing against the local version of the file lets you navigate the code in your workspace (for example, `ctrl-click` to open a type or method implementation), and edit the code in-place. You can also right-click on the pane containing the local file and select from many of the same context menu options that you can when you right-click on the file in the normal Eclipse editor.

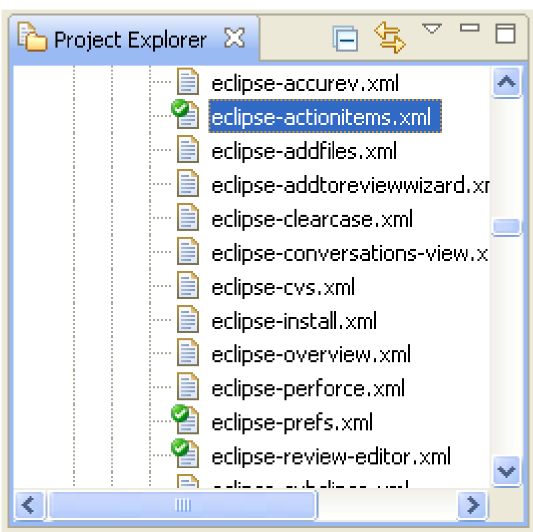
Text Compare Viewers

If the registered compare viewer for the file type is based on the standard Eclipse text compare viewer, the Collaborator Eclipse Plug-in adds a ruler to the left content pane showing the state of each conversation on the file. Clicking on a line selects that conversation in the Conversations View 379, or starts a new conversation if there is not already one on that line.

Syntax highlighting is shown if it is supported by the registered compare viewer for the file type.

5.6.1.8 Label Decorations

A green check-mark is displayed on files in your workspace which are currently under review. This decoration is updated whenever your Action Items 374 refresh. You can disable this decoration using the standard Eclipse preferences page under General->Appearance->Label Decorations->Collaborator.



5.6.1.9 Markers

The Eclipse Plug-in creates Eclipse Markers for every Defect in a Review that is on a file that came from your computer. The Markers are updated when your Action Items 374 refresh.

Problems View

Markers appear as Problems of different severity, depending on the Defect state.

- Open Defect -> Error
- Externalized Defect -> Warning
- Fixed Defect -> Info

Marker Bar

When you open a file in an Eclipse text-based editor, Markers appear in the Eclipse Marker Bar. Different Icons are used for each Defect state.

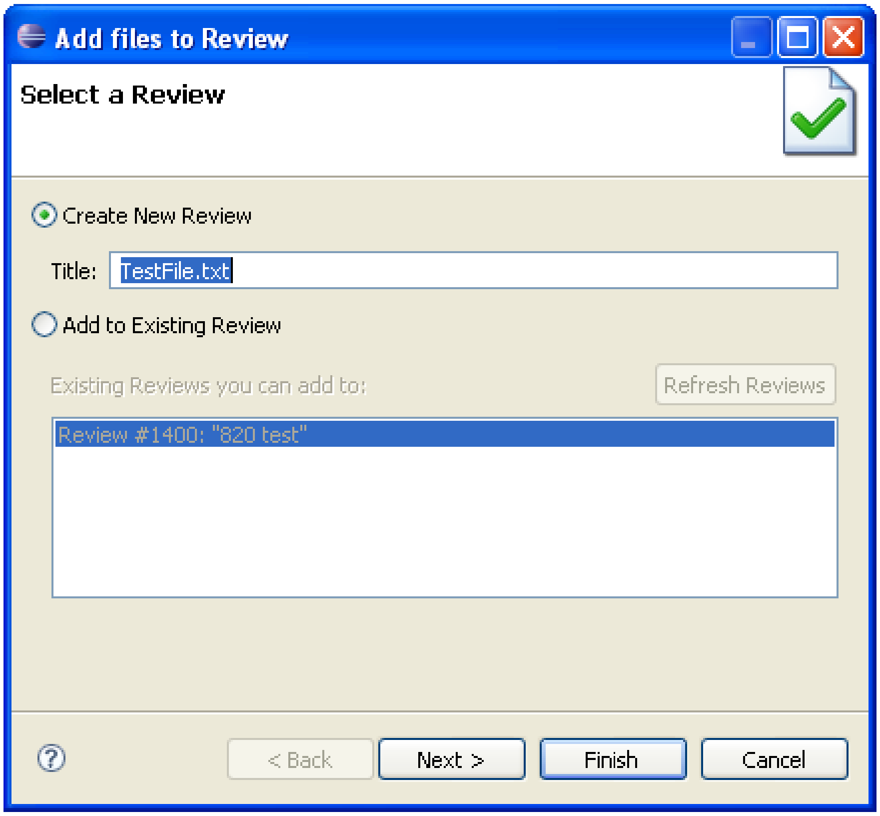
5.6.1.10 Add to Review Wizard

The Add to Review Wizard lets you add review materials to a new review or an already existing review.

The first page of the Add to Review Wizard asks you which review you would like to add materials to. You can create a new review and add the materials into the newly created review, or you can add the review materials to an existing review.

To add materials to a new review, select "Create New Review," and type a title to name your new review.

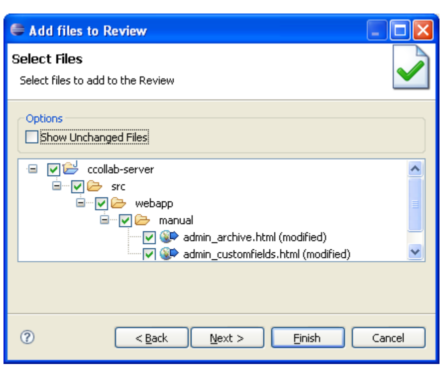
To add materials to an existing review, select "Add to Existing Review". Choose the review you would like to add the materials to. The list of possible reviews is created automatically by querying the server. This will generally be the same as the list of reviews in your Action Items 241 list.

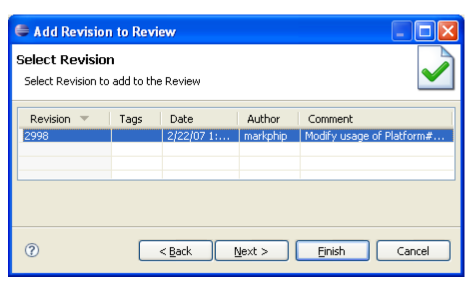


At this point, you can `Finish` the wizard or click `Next` to get more options.

Select Review Materials

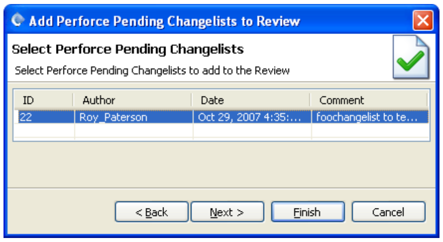
The next page lets you choose exactly which materials are added to the review. This page looks different depending which materials you are adding to the review:

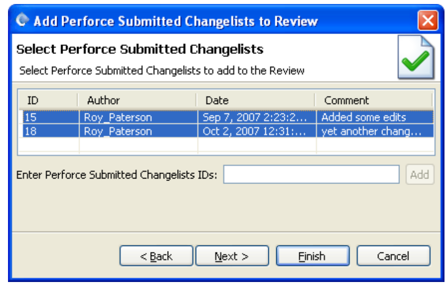




Adding Files to a Review 387

Adding (Subversion) Revisions to a Review 400



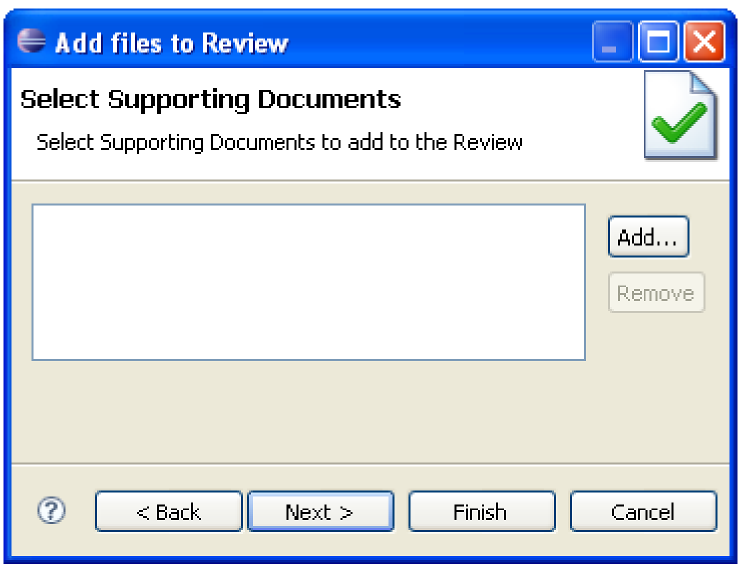


Adding (Perforce) Pending Changelists to a Review 396

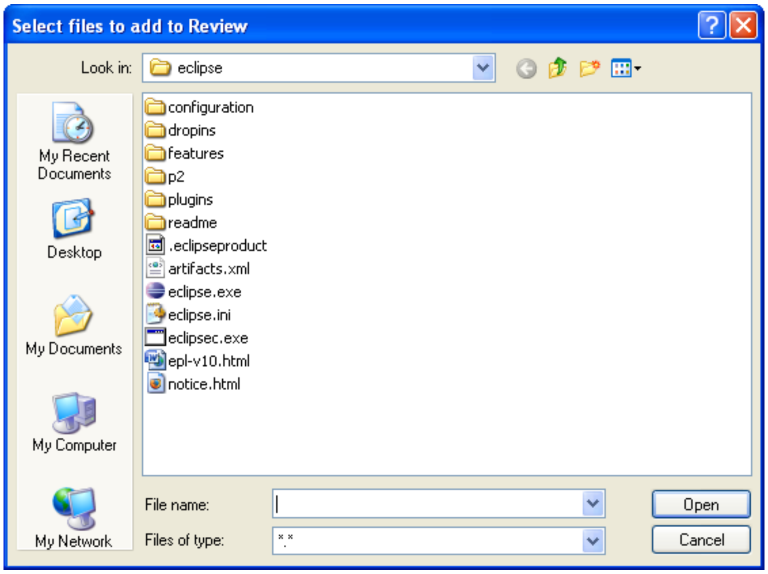
Adding (Perforce) Submitted Changelists to a Review 398

Select Supporting Documents

The next page allows you to upload additional files from anywhere on your local hard drive:



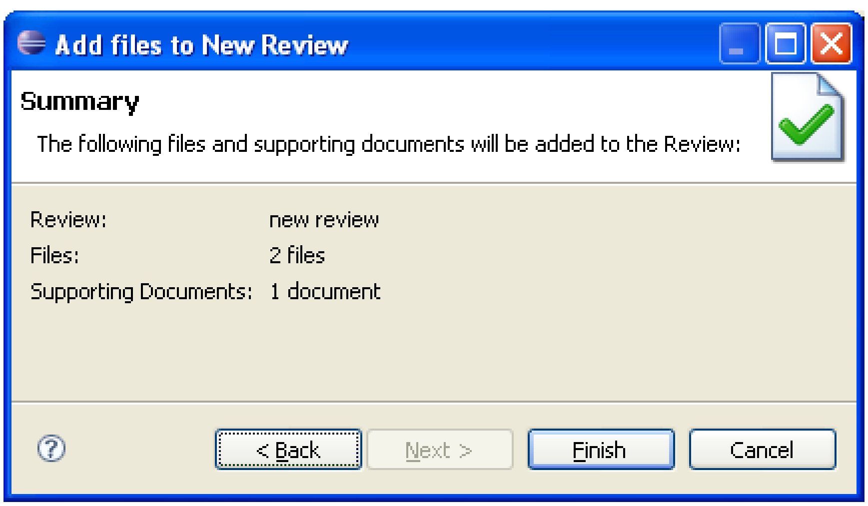
Click "Add" to choose the documents you would like to add:



You can also remove documents by selecting the document in the list above and clicking "Remove".

Summary

The final page summarizes the selections of the previous pages:

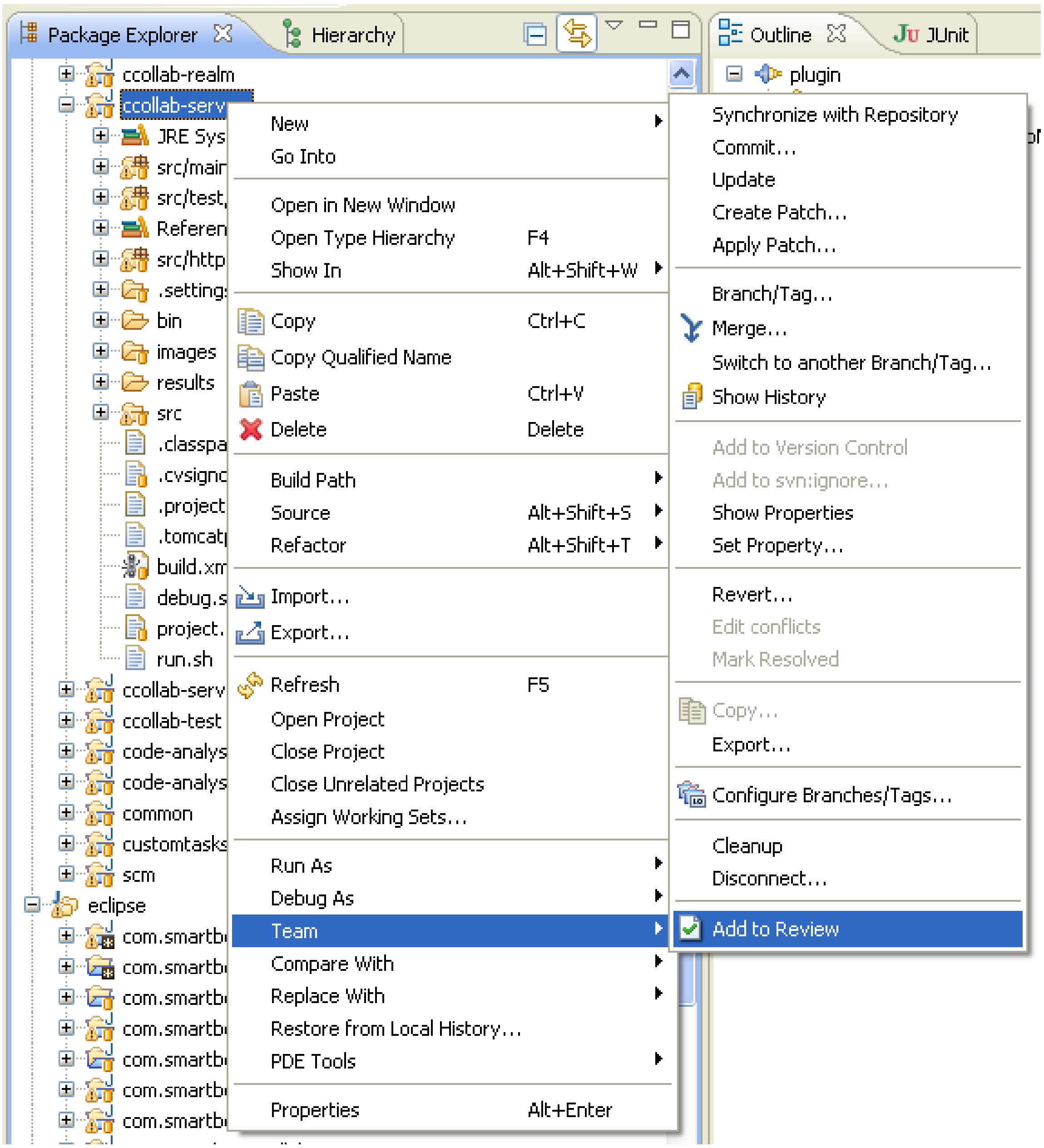


When the Finish button is clicked, all review materials are uploaded to the Collaborator Server for review. If uploading takes a long time, a progress dialog will appear during this operation. The progress dialog can be minimized if you do not want to wait for the operation to complete.

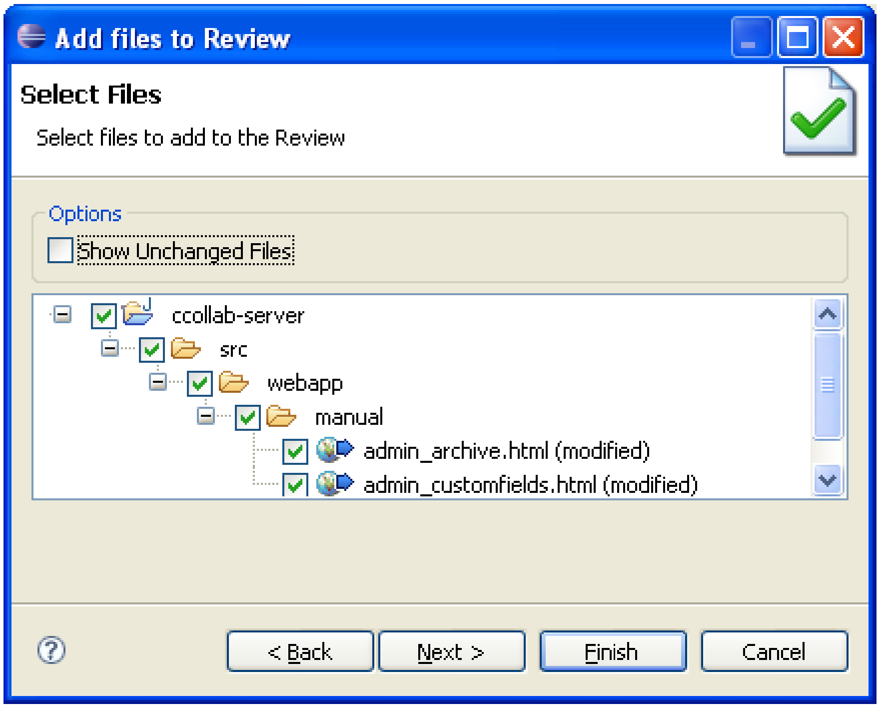
When the operation is complete the Review open in the Review Editor 375, or in the browser based on your preferences 373.

5.6.1.11 Adding Files to a Review

Right-click on any Working Sets, Projects, Folders, or Files and select either `Add to Review` from the `Team` menu.



Clicking Add to Review will launch the [Add to Review Wizard](383). The wizard will include a page that shows the list of resources you selected, allowing you to select exactly which ones you want to upload:



Any files you selected specifically will appear here. If you picked groups of files (that is, directories, projects, and so on), that are managed by AccuRev, ClearCase, CVS, or Subversion these will be scanned for modified files, and those modified will be in the list. Check boxes allow you to pick more or fewer files than you originally selected.

The `Show Unchanged Files` option allows you to select files which have not been modified.

> The `Team | Add to Review` command uploads local copies of selected files. Once uploaded, they will be no longer synchronized with the SCM. To denote this, the Eclipse Plug-in displays an "Unsupported SCM System or Client 373" warning when you try to upload the local copies of files.

To upload files to a review and keep them synchronized with the SCM:

- in CVS, add them from the Synchronize 389 view.
- in Perforce, add them from the P4 Pending Changelists 396 view or from the P4 Submitted Changelists 398 view.
- in Subversion, add them from the Synchronize 399 view or from the History 400 view.

Finishing the Add to Review Wizard 383 will upload your files to the Collaborator Server.

5.6.1.12 AccuRev Integration

The Collaborator Eclipse Plug-in integrates with the AccuRev AccuBridge for Eclipse plugin from http://www.accurev.com/accubridge-eclipse.html.

Adding AccuRev files to a Review

Files managed by AccuRev can be uploaded to the Collaborator Server by Adding Files to a Review 387.

5.6.1.13 ClearCase Integration

The Collaborator Eclipse Plug-in integrates with the IBM Rational ClearCase SCM Adapter Plug-in from http://ibm.com, or the open source ClearCase plugin for Eclipse from http://sourceforge.net/projects/eclipse-ccase. Note - the Collaborator Eclipse Plug-in ClearCase integration requires that the ClearCase cleartool be installed.

Adding ClearCase files to a Review

Files managed by ClearCase can be uploaded to the Collaborator Server by Adding Files to a Review 387.

Supported Versions

The Collaborator Eclipse Plug-in supports versions through ClearCase 8.x.

The Collaborator Eclipse Plug-in supports *only* ClearCase Remote Client (CCRC) v.8.x.

5.6.1.14 CVS Integration

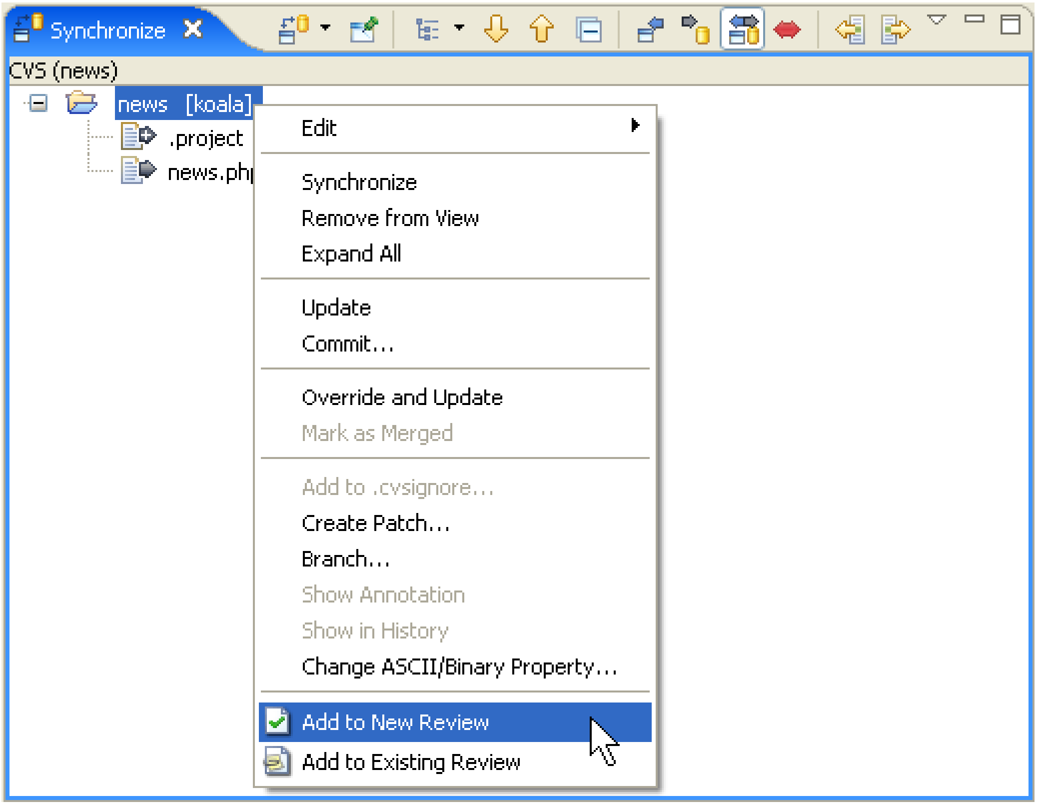
The Collaborator Eclipse Plug-in integrates with the CVS Eclipse Plug-in from http://eclipse.org. (The CVS plug-in usually comes bundled with the base Eclipse install.)

Adding CVS files to a Review

Files managed by CVS can be uploaded to the Collaborator Server by Adding Files to a Review 387.

Adding CVS files to a Review from the Synchronize View

Files managed by CVS can also be added to a review from the `Synchronize` view. Right-click on any projects, folders, or files in the `Synchronize` view and select either `Add to New Review` or `Add to Existing Review.`



The Add to Review Wizard 383 will launch with the selected files.

5.6.1.15 Git Integration

With the Collaborator Eclipse Plug-in, you can add project files, files from Git commits and repository branches to a review directly from the Eclipse IDE. This topic explains how you can do this.

Requirements

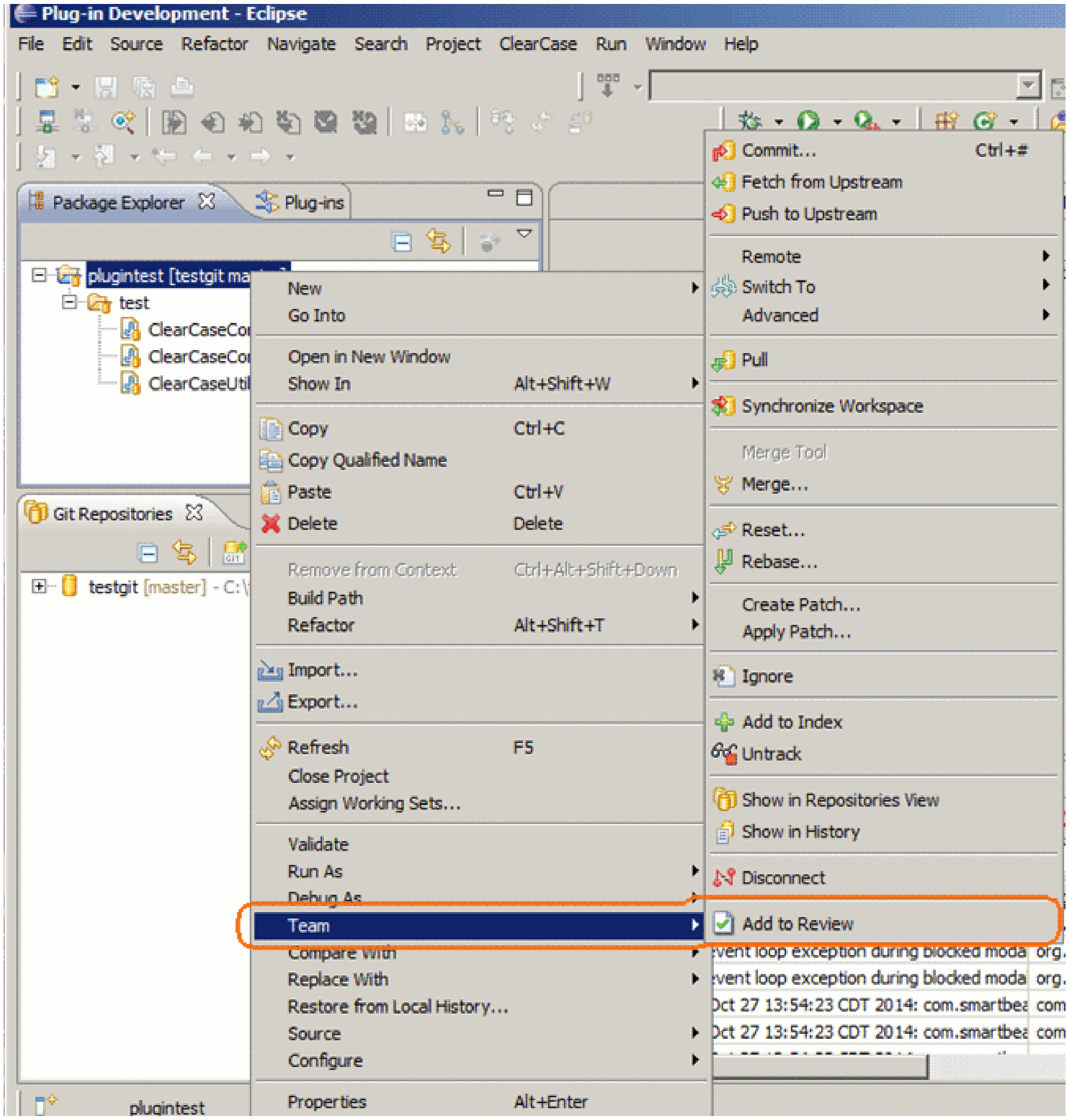
To integrate with Git and Eclipse, Collaborator's Eclipse Plug-in requires that the EGit plug-in to be installed in your Eclipse IDE. The EGit plug-in typically comes bundled with the Eclipse package. For more information on it, see http://wiki.eclipse.org/EGit/User_Guide.

Add Git Files to a Review

To add your project's files to a review, follow these steps:

1. In Eclipse IDE, open the **Package Explorer** view.

2. Right-click your project or any of the project's files and select **Team | Add to Review** from the context menu:



This will invoke the Add to Review 383 wizard.

3. In the wizard, you specify the review name, and the project files and auxiliary documents to be attached to the review.

For detailed information on steps to be completed, see the wizard description 383.

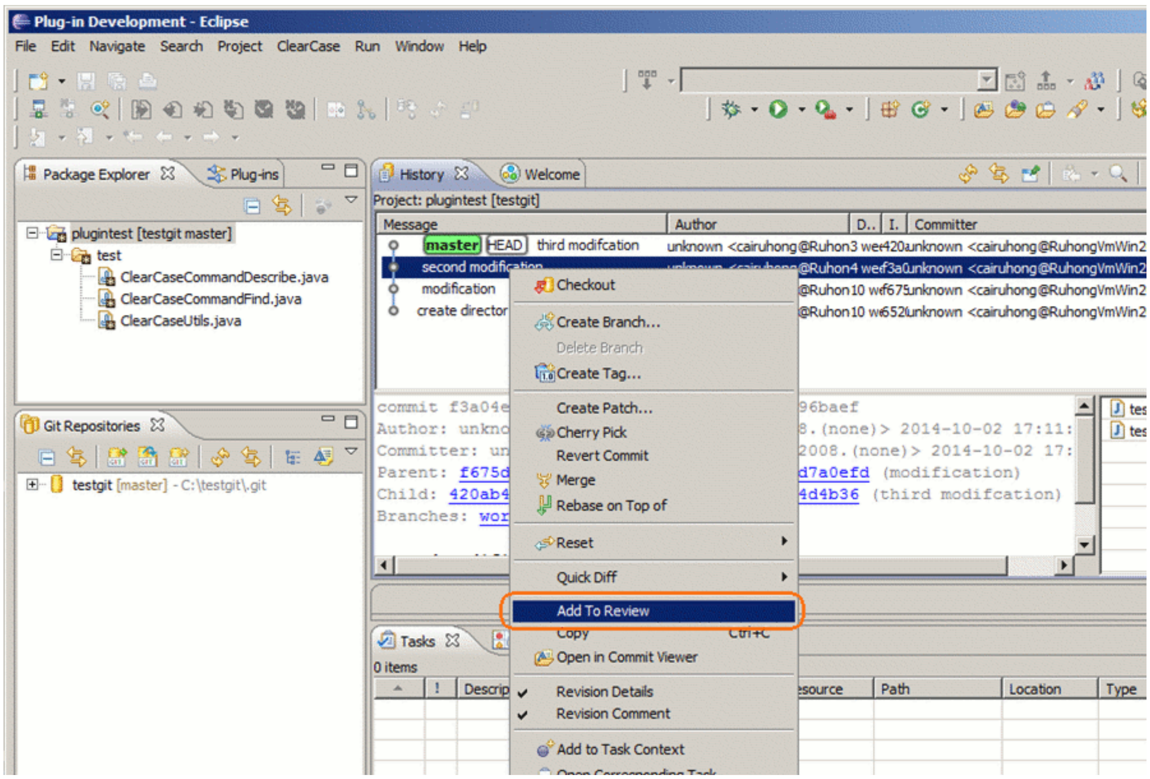
After you click Finish on the last page of the wizard, the wizard will send review data to the Collaborator server.

Adding Git Commits to a Review

Adding a Git commit to a review means including copies of *all* the files of this commit to the review. Follow these steps:

1. In Eclipse IDE, open the **History** view. It lists Git commits.

2. In the History view, right-click a commit and choose **Add to Review** from the context menu:

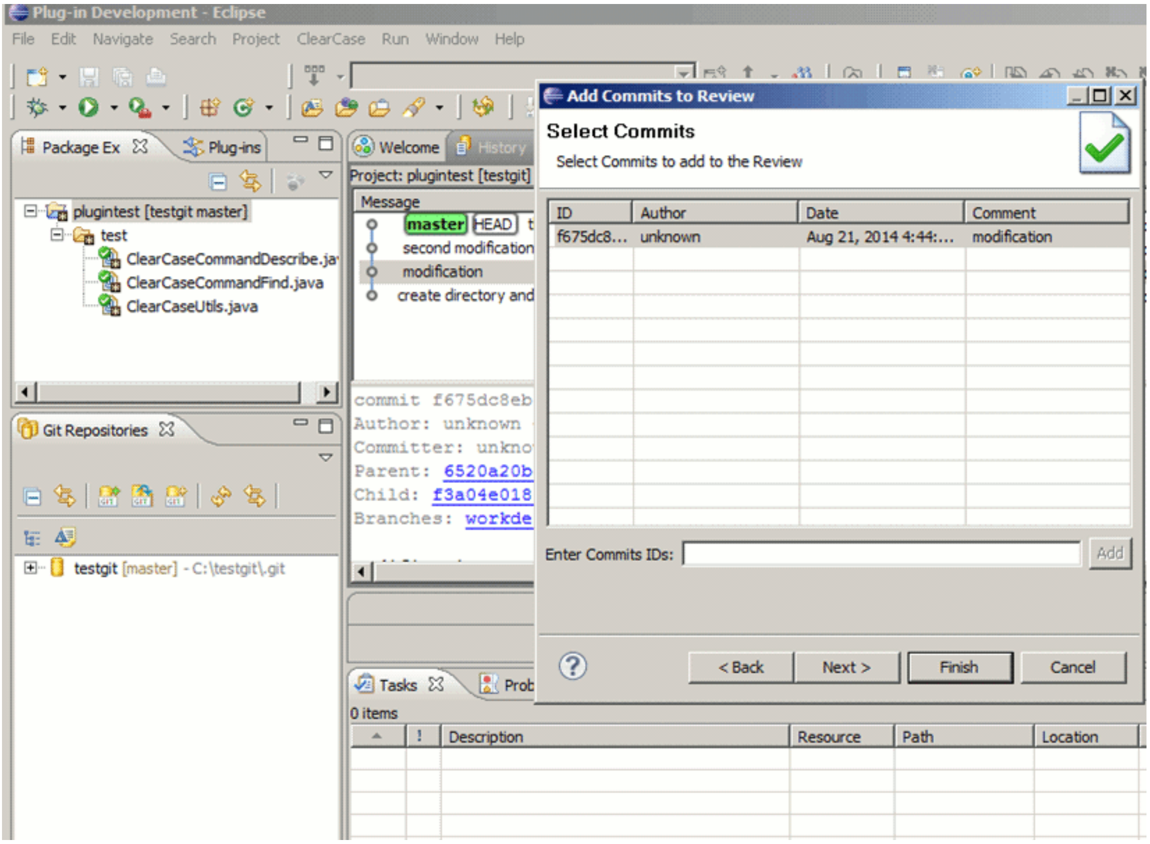


This will invoke the Add to Review 383 wizard.

Known issue: In the Indigo version of the Eclipse IDE, the "Add to Review" item is present in the context menu only when you invoke it for the first time. Later, it is hidden from the menu. To solve the problem re-open the History view.

3. On the first page of the Add to Review wizard, you can select the commits, whose files the review will include.

By default, this page contains only the commit that you selected in the History view. To add more commits to the list, type the commit identifier into the **Enter Commit IDs** text box and click **Add**.



Click **Next** to continue.

4. On the subsequent pages of the wizard, you can specify the review name and auxiliary files to be included into the review.

After you go through all the pages of the wizard, it will upload the review data to the Collaborator server.

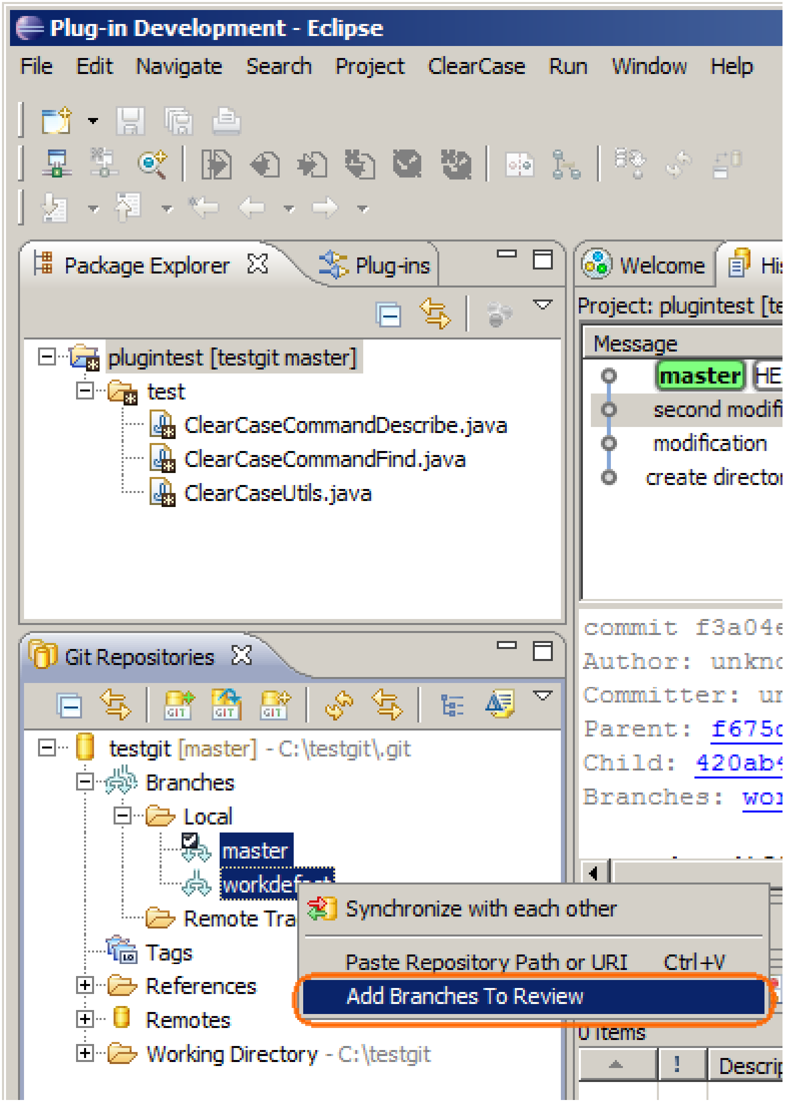
Adding Files From Different Git Branches to a Review

The difference between two branches is in the committed files and the number of commits. Adding "differences" to a review means adding copies of *all* the files of *all* "different" commits to the review. Follow these steps:

1. In Eclipse IDE, switch to the **Git Repositories** view. It displays the contents of your Git repository.

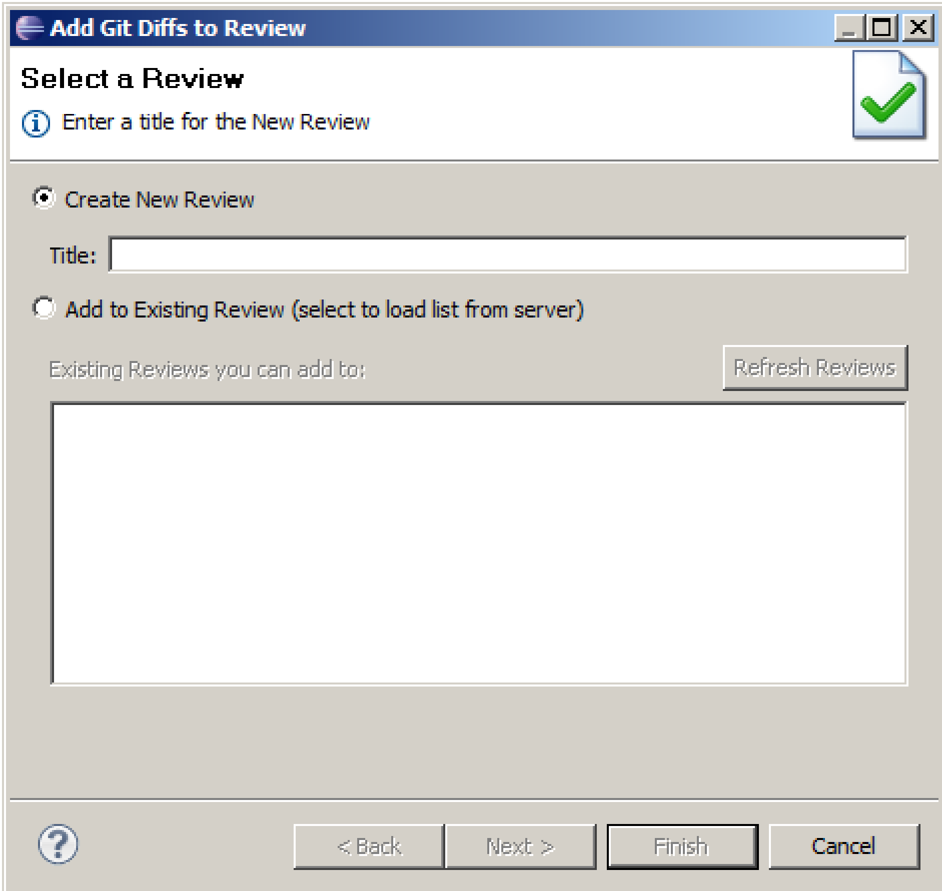
2. In the Get Repositories view, select the the desired branches.

3. Right-click the selection and choose **Add Branches to Review** from the context menu:

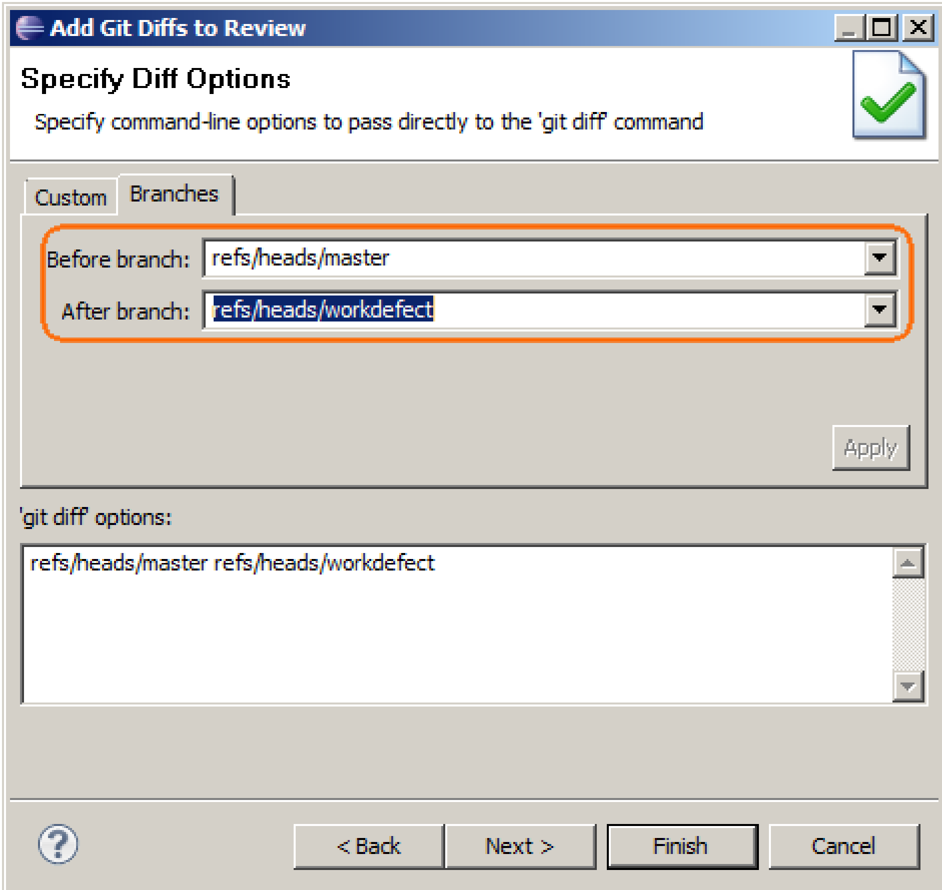


This will invoke the Add Git Diffs to Review wizard.

4. In the wizard, specify the review name --



-- and then select the branches to be passed to the `git diff` command (the Collaborator Eclipse Plug-in calls this command to determine the files to be added to the review):



The *before* and *after* are just Collaborator's terms to differentiate the branches. We suppose that one of these branches matches the original, or main, branch of your repository, and another branch contain the files that you modified while working on some feature.

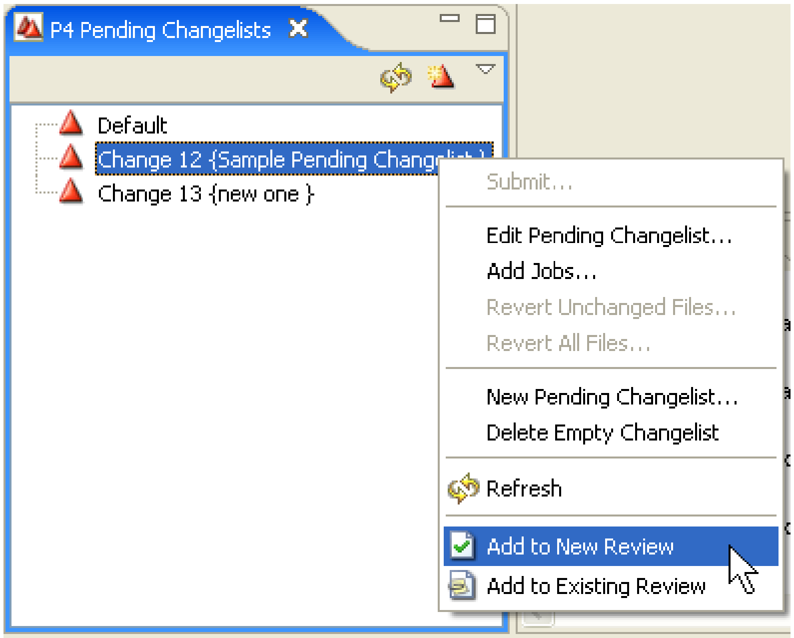
5. Go through other pages of the wizard to complete the review creation.

5.6.1.16 Perforce Integration

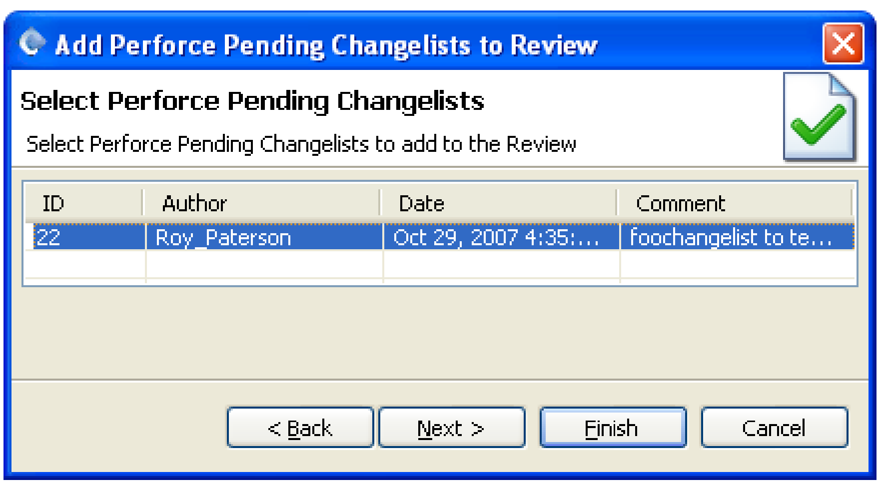
The Collaborator Eclipse Plug-in integrates with the Perforce using the Eclipse (P4Eclipse) Plug-in from http://www.perforce.com/product/components/eclipse-plugin.

Adding a Pending Changelist to a Review

Right-click on one or more Pending Changelists in the `P4 Pending Changelists` view and select `Add to New Review` or `Add to Existing Review`.



Clicking one of the `Add to Review` items will launch the Add to Review Wizard 383. The wizard will include a page that shows the Pending Changelists you selected, allowing you to select exactly which ones you want to upload:

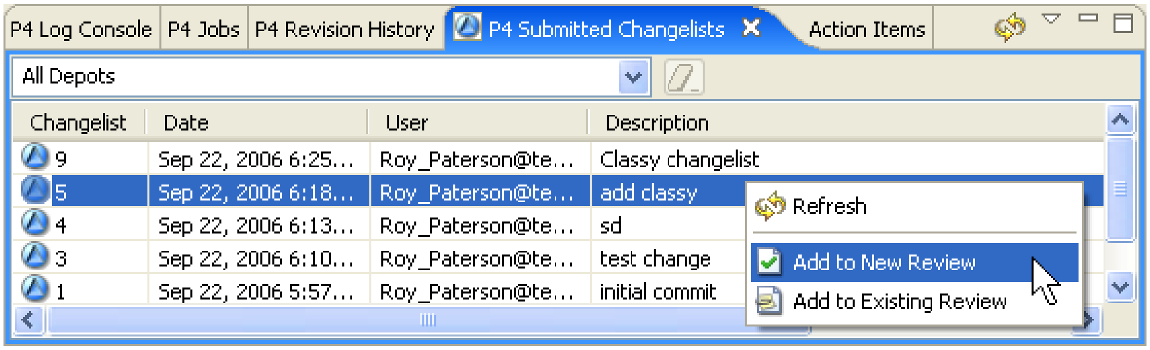


Any Pending Changelists you selected specifically will appear here. You may select more or fewer Pending Changelists than you originally selected.

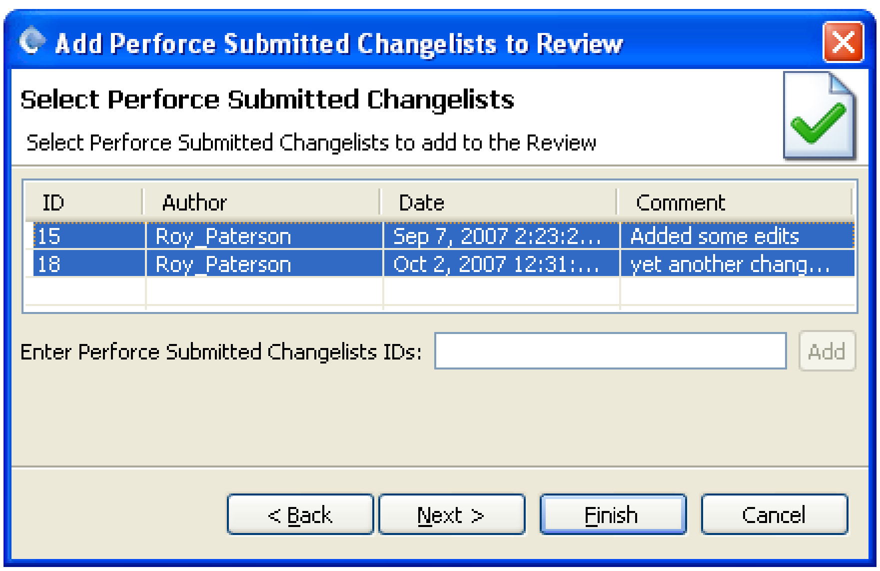
Finishing the Add to Review Wizard 383 will upload your Pending Changelists to the Collaborator Server.

Adding Submitted Changelists to a Review

Right-click on one or more Submitted Changelists in the `P4 Submitted Changelists` view and select `Add to New Review` or `Add to Existing Review`.



Clicking one of the Add to Review items will launch the Add to Review Wizard 383. The wizard will include a page that shows the Submitted Changelists you selected, allowing you to select exactly which ones you want to upload:



Any Submitted Changelists you selected specifically will appear here. You may select more or fewer Submitted Changelists than you originally selected.

Finishing the Add to Review Wizard 383 will upload the Submitted Changelists to the Collaborator Server.

5.6.1.17 Subversion Integration

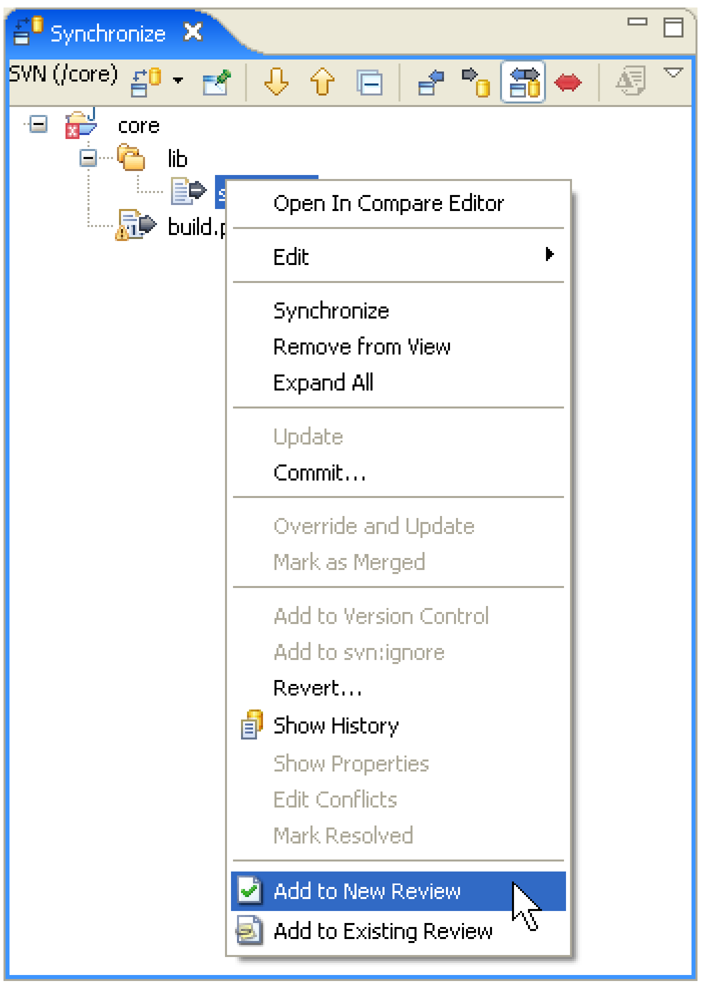
The Collaborator Eclipse Plug-in integrates with the Subclipse and Subversive Subversion Plug-ins.

Adding Subversion files to a Review

Files managed by Subversion can be uploaded to the Collaborator Server by Adding Files to a Review 387.

Adding Subversion files to a Review from the Synchronize View

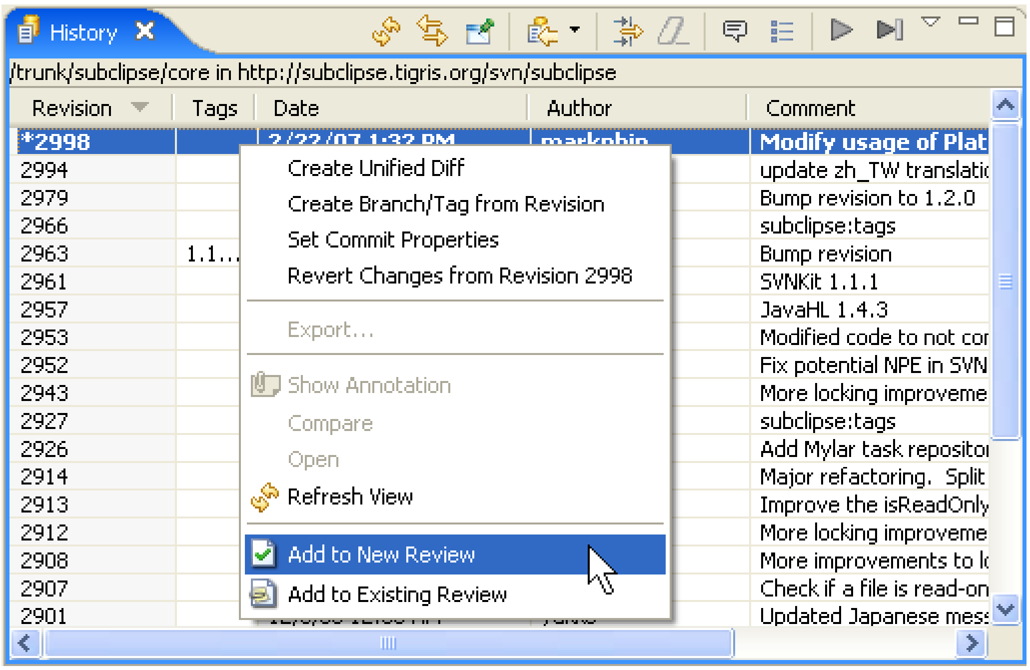
Files managed by Subversion can also be added to a review from the `Synchronize` view. Right-click on any projects, folders, or files in the `Synchronize` view and select `Add to Review.`



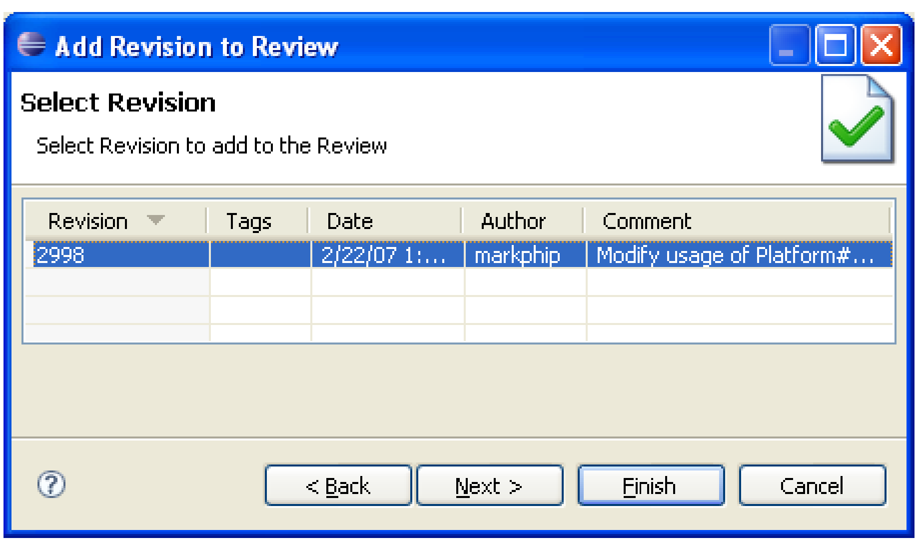
The Add to Review Wizard 383 will launch with the selected files.

Adding a Subversion Revision to a Review

Revisions are shown in the `History` view. Right-click on a Revision and select `Add to Review`.



Clicking Add to Review will launch the [Add to Review Wizard] 383. The wizard will include a page that shows the Revision you selected:



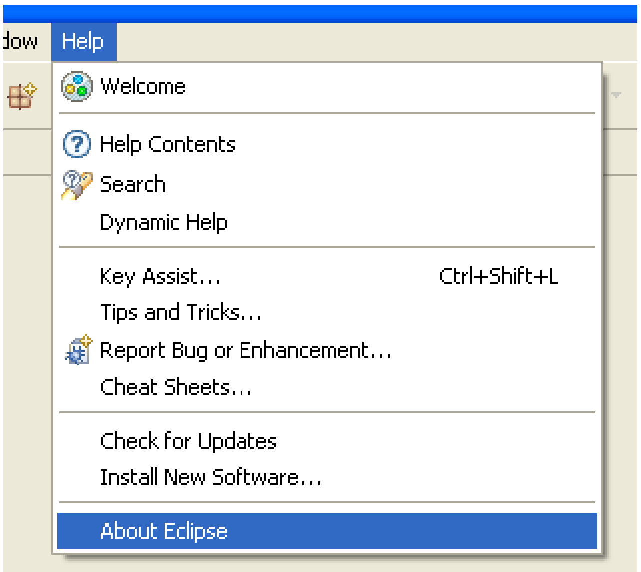
The Revision you selected specifically will appear here. You may select more or fewer Revisions than you originally selected.

Finishing the Add to Review Wizard 383 will upload the Revision to the Collaborator Server.

5.6.1.18 Troubleshooting

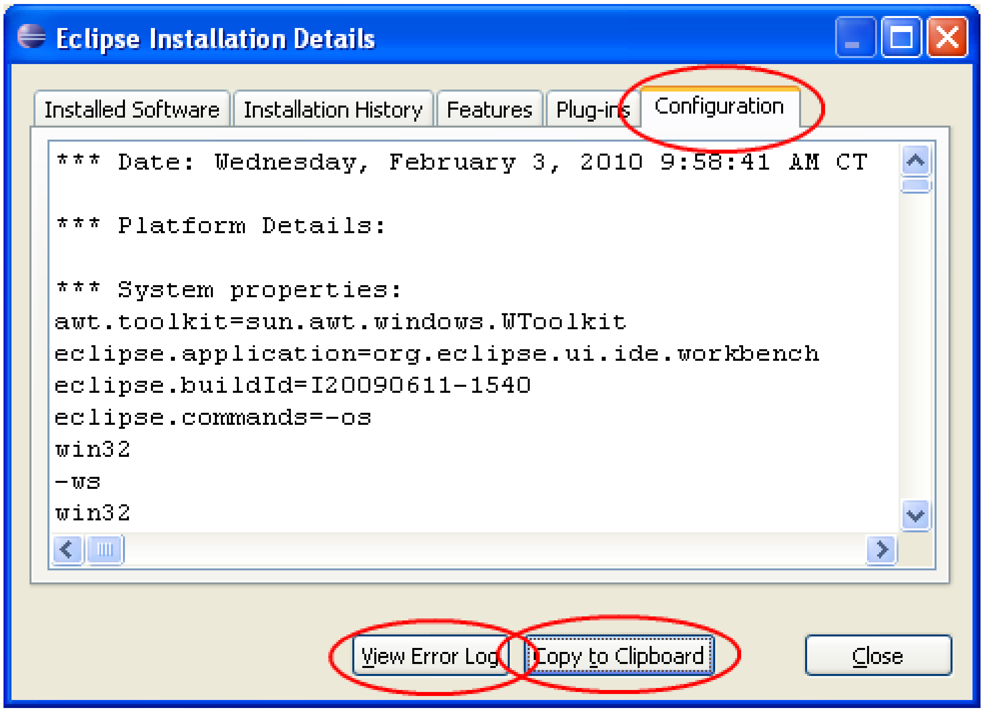
If you run across any issues or problems, send the error log along with your question to Support 29.

To get the error log, go to "Help" -> "About Eclipse".



Under the Help menu, click on "About"

Then, click on "Installation Details".



Click the "Configuration" tab. Click the "Copy to Clipboard" button and save it in a file. Then click "View Error log" and save that information in a file as well. Send both files to Support 29, along with a description of what you were trying to do when you encountered the error.

5.6.2 Visual Studio Add-in

The Visual Studio Add-in is deprecated. We are currently working on a new add-in that will support Visual Studio 2013 and 2015.

The Collaborator Visual Studio Add-in allows files or changelists (for those SCM systems that support them) to be submitted for review from within the Visual Studio Solution Explorer, when the Solution, or when one or more Projects or Folders or Files are selected.

Features

- Integrates with the Solution Explorer in Visual Studio
- Creates or adds to reviews from locally modified files, or from changelists
- Integrates with the SCM system configured for the GUI Client 341

Compatibility

Visual Studio 2005, 2008, 2010, 2012 and 2013.

Installation

Make sure the GUI Client is installed 329 and configured for your Collaborator server 342 and SCM system 341. Then run the Visual Studio Add-in standalone installer, available here.

The Visual Studio Add-in installer does not update the PATH environment variable to include the installed application folder (which is unnecessary if installing to the same application folder as the GUI Client). If installing to a different location, make sure to change your path to include the installed location.

The Visual Studio Add-in requires the .NET 3.5 Framework. If it is not already installed on your system, the installer will prompt you to install the .NET framework first.

To uninstall, run the installer again, or use the Control Panel Add/Remove Programs applet.

Usage

The Visual Studio Add-in is invoked from the Solution Explorer. A right mouse button click on a file, project or solution will bring up the context menu where you can select to Review changes 403 or Review changelists 403.

Review Changes

Selecting the "Collaborator - Review changes" menu item will find modified files under the directory associated with the current Solution Explorer selection to be added to a new or existing review.

Review Changelists

Selecting the "Collaborator - Review changelists" menu item will allow changelists associated with your configured SCM system to be added to a new or existing review.

Limitations and Known Issues

No validation is done for installing the "Collaborator - Review changelists" menu item - not all SCM systems support changelists.

The installer does not update the PATH to include the installed application folder.

Troubleshooting

The Visual Studio Add-in shells out to the GUI Client 338 - if it is is not already configured and working, the Visual Studio Add-in will not work. If you are experiencing issues with the Visual Studio Add-in, first verify the GUI Client works.

For us to look into an issue with Visual Studio Add-in, please enable debug logging and send us the resulting log file. Debug logging is enabled by editing the .config file for the Visual Studio Add-in and setting the Debug value to "1":

```
<add key="Debug" value="1"/>
```

Both the .config file and the .log file reside in the "Smart Bear\Visual Studio Addin" subdirectory under the Common Application Data Folder, which, depending on your Windows platform, is typically one of these directories:

`"%ALLUSERSPROFILE%\SmartBear Software\Visual Studio Addin"` on Windows 7 and Vista, or

`"%ALLUSERSPROFILE%\Application Data\SmartBear Software\Visual Studio Addin"` on Windows XP

Note that the files in this directory do not have general user write permission under Vista and Windows 7. To modify the .config file, either run your editor with administrator privileges, or run the Visual Studio Add-in configuration utility with the "debug" command:

```
CcollabAddinConfig debug
```

Then restart Visual Studio, reproduce the issue, close Visual Studio, and find the debug log file. Contact our technical support 29 and send the debug log file along with problem description. The Visual Studio Add-in configuration utility also has a "nodebug" command to turn off debug logging.

We also welcome any suggestions about the current implementation - usability, appearance, functionality or other feedback that would help improve the Visual Studio Add-in.

To submit problem reports or suggestions, open Add/Remove Programs from the Control Panel and select Support Information under Visual Studio Add-in. Submit the displayed version number along with your description of the issue.

5.7 Tray Notifier

The Tray Notifier is a cross-platform tray notifier client interface to the Collaborator server. It can be used to provide an easy way to see what reviews you are currently participating in, and prompt notification when a review requires your attention.

Starting the Tray Notifier

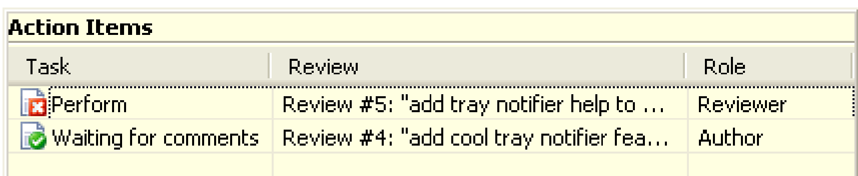
The Tray Notifier is an executable named `ccollabtray`. On Windows machines the graphical installer 330 includes an option to automatically run the Tray Notifier on startup (a shortcut to `ccollabtray` is placed in the Windows Start Menu Startup folder). Non-Windows platforms have to manually start `ccollabtray`.

Configuring the Tray Notifier

If you used the graphical installer 330, your connection to the Collaborator Server should be configured already. Otherwise, you will be prompted when you try to connect. You can also select the *Preferences* item in the context menu 405 to open the preferences dialog. Use the *Server Connection Preferences* 336 page to configure the connection information to your Collaborator Server.

Using the Tray Notifier

Clicking on the Tray Notifier opens a list of your current Action Items.



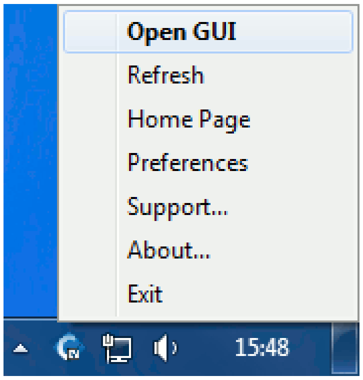
Tray Notifier Action Items

The Action Items list can be resized and moved by dragging it is borders. Action Items which are urgent appear with a red icon. Action Items which are not urgent appear with a green icon. Double-clicking on an Action Item opens a page in a browser window which lets you perform the action. Commit Action Items will open a wizard that will walk you through committing your files. Most changes can be committed with the tray notifier, but often changes to the directory structure will require that you use your SCM's tools directly.

The Tray Notifier icon changes to show a check-mark to alert you when there are new Action Items that require your attention.

Context Menu

The context menu of the Tray Notifier (right-click on Windows) includes several options:



Tray Notifier context menu

- *Open GUI* launches GUI Client
- *Refresh* immediately checks the Collaborator Server for updated Action Items
- *Home Page* opens your Collaborator Home Page 241 in a browser window
- *Preferences* opens the client preferences dialog 336
- *About...* tells you information about your installation
- *Exit* shuts down the Tray Notifier

5.8 External Diff Viewer launcher

The cross- platform External Diff Viewer launcher allows users to use a separate diff viewer of their choice to view diffs related to a particular review. The External Diff Viewer launcher ships with Source Gear DiffMerge 408 but also has preset arguments for the following:

- Araxis Merge
- IDM UltraCompare
- Guiffy
- Beyond Compare.

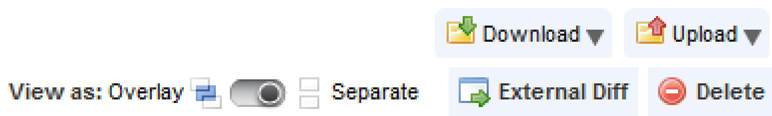
Launching External Diff for a single file

There is an External button in the main diff viewer toolbar 266:

This button will launch the external diff viewer, which will compare the two versions of the single file shown in main diff viewer. You can change the versions shown to any option listed in the Diff Viewer Header [269].

Launching External Diff for multiple files

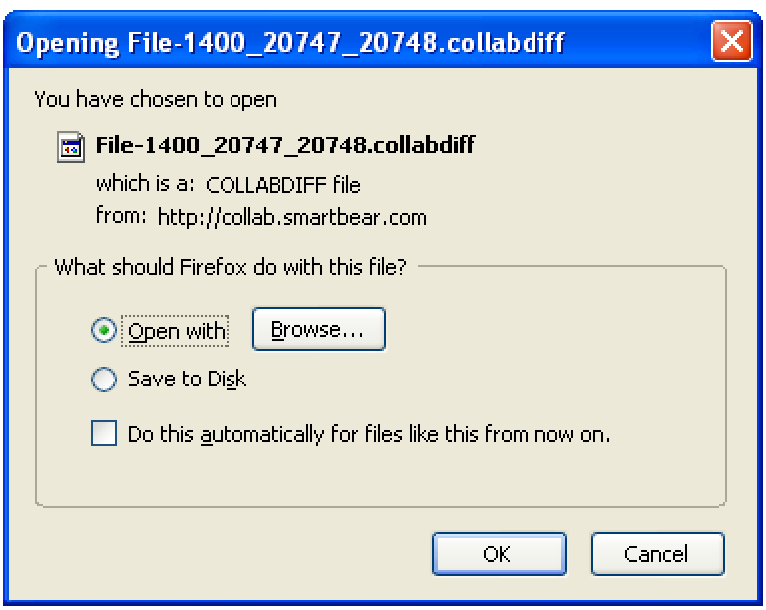
There is an External Diff button for each changelist listed in Review Materials [257]:



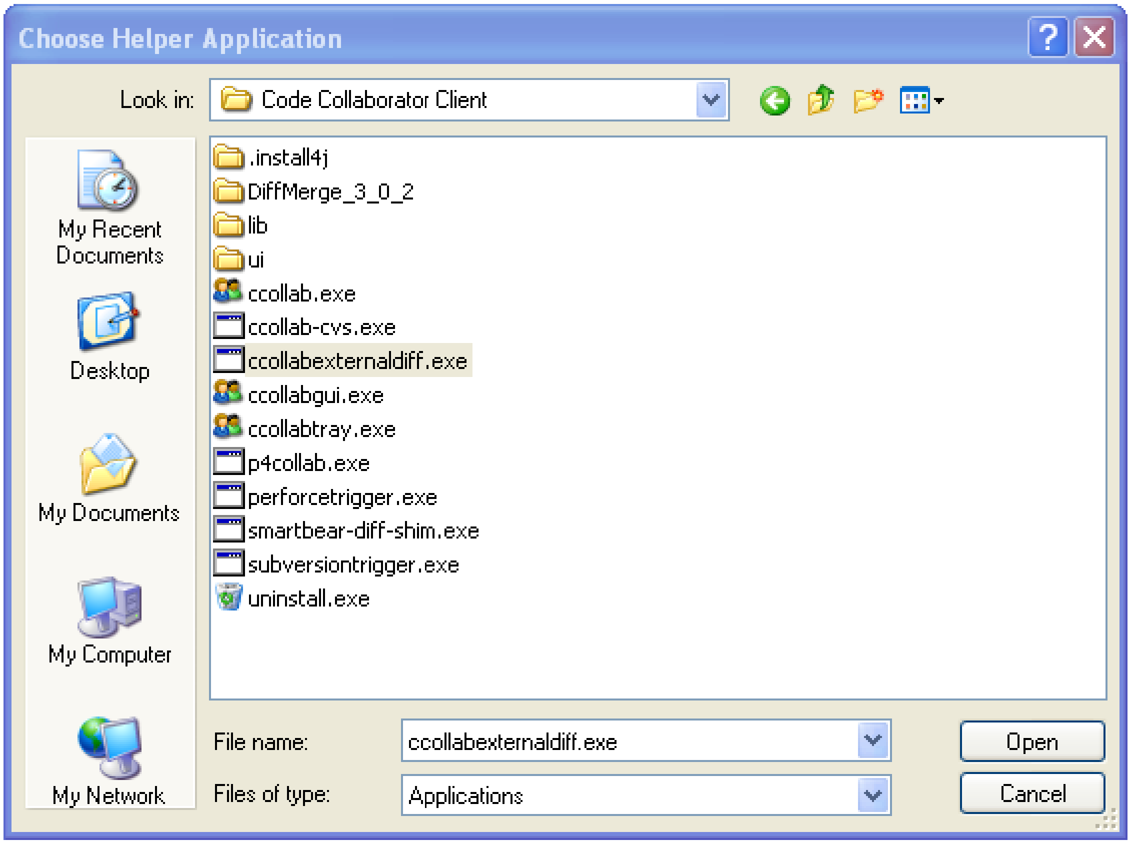
This will allow you to compare multiple files in the external diff viewer.

Starting the External Diff Viewer launcher

When first launching the External Diff Viewer launcher by clicking either of the two buttons above, you may be asked which application you would like to open the file.

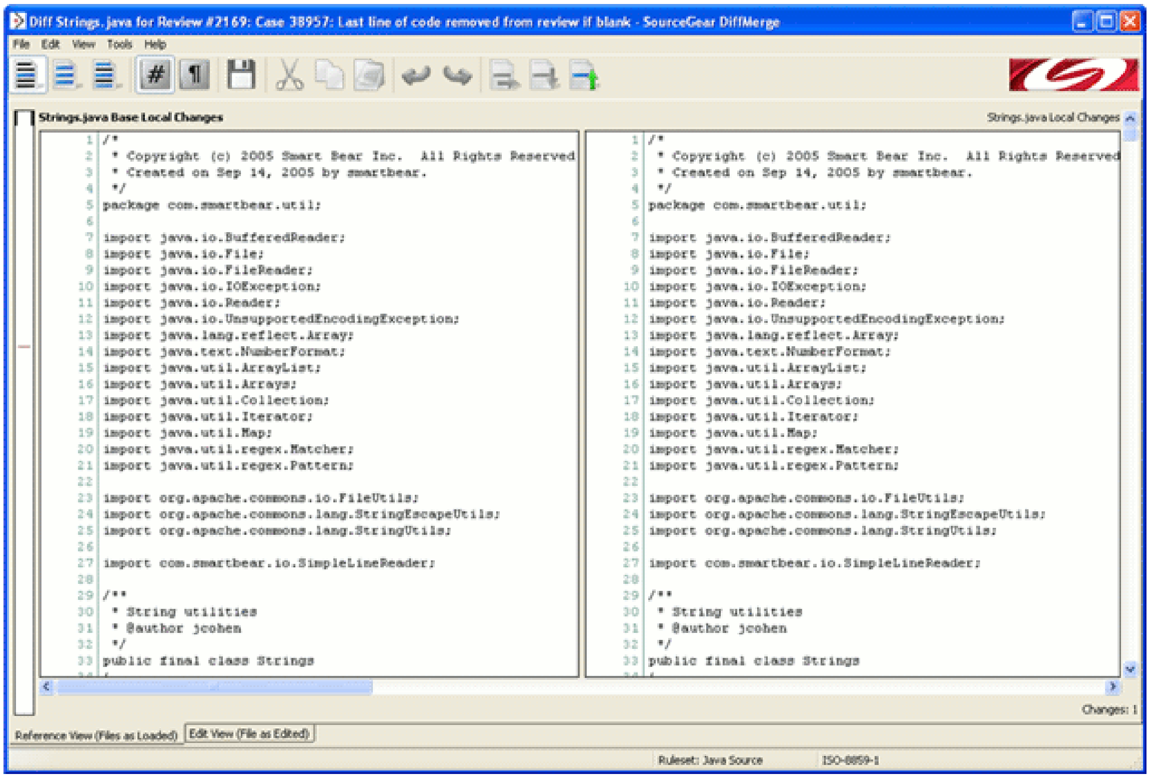


Choose "Open with" and click "Browse". You will be prompted to choose an application:



Choose the "ccollabexternaldiff.exe" under the "Collaborator Client" folder, and click open. In the "Opening File" window, click "Do this automatically for files like this from now on" to save these settings, and click "OK".

The External Diff Viewer launcher will open Source Gear Diff Merge immediately. For more information on Diff Merge, visit http://sourcegear.com/diffmerge/.



Screen shot of single file comparisons in Diff Merge

Preferences

To configure your external diff viewer, visit the Preferences 345 menu in the GUI Client.

5.9 Print To Review

The Print To Review functionality is deprecated and will be removed from the product in future releases. We recommend uploading your documents in Word 277, Excel 280 or PDF 287 formats instead.

SmartBear Print To Review employs a Windows printer driver to submit documents for review. Windows applications can use Print To Review to add their document to a new or existing review. Documents are uploaded as images of the original document.

Features

- Any Windows application that can print is supported.
- Previously unsupported documents formats, for example, Open Office documents, can now be reviewed.

Compatibility

Windows XP SP2, Server 2003, Windows Vista and later Windows releases running on both 32-bit x86 and 64-bit hardware. Not all of these platforms are fully tested. Report any incompatibilities or problems to SmartBear. Please ask us if you are interested in support on other Windows platforms.

Print To Review requires the .NET 3.5 Framework. If it is not already installed on your system, the installer will prompt you to install the .NET framework first.

Image Quality

Like any printer driver, the image quality of documents uploaded for review is a function of the resolution and color depth. The default settings are for 150 DPI and 256 colors with halftoning. For improving font quality on text documents, 300 DPI black and white would be a better setting. For documents where the picture quality and color is important, 300 DPI and true color can be used. Keep in mind, however, that this latter setting can render extremely large documents. The driver compresses the image outputs in PNG format, but at that setting a busy color bitmap (that is, without much compression) can easily generate image sizes upwards of 10MB per page.

Print To Review will not upload documents bigger than the client is allowed to upload (see upload truncation size in client properties 878). Excess pages will be replaced with a page indicating that the document has been truncated.

Installation

Make sure the GUI Client is installed 329 and configured 342. Then run the Print To Review standalone installer, available here.

If the Print To Review is installed to the same directory as the Collaborator client, then the PATH environment variable will not need to be updated. Otherwise, the Print To Review installer will update the PATH to include the installed application folder, and will display a notification that a reboot is necessary before Print To Review can be used.

Uninstalling

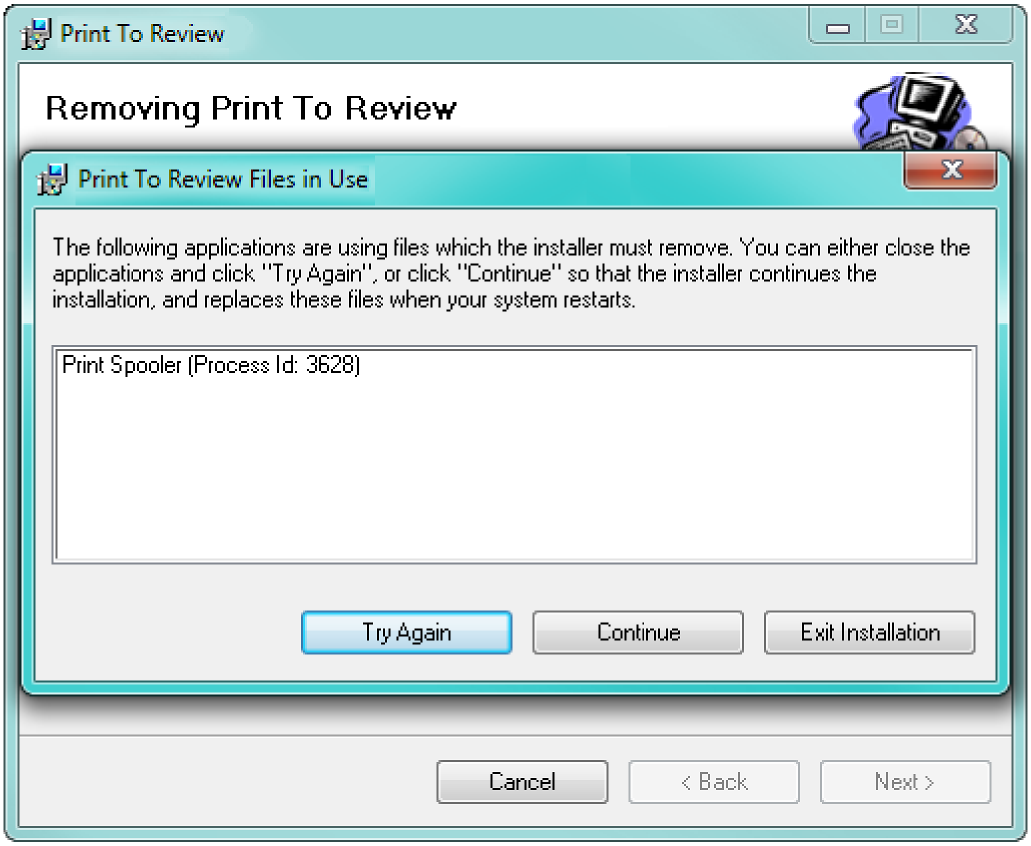
Run the original installer, or uninstall via the Control Panel Add/Remove Programs menu. If a manual uninstall becomes necessary, refer to Advanced User Uninstall 414.

Important Notes for Vista and later Windows Platforms

Windows releases starting with Vista, including Windows 7 and Server 2008, exhibit some different behaviors than previous Windows releases. Most notably, Windows UAC (User Account Control) on these platforms introduces some security features which affect the install, uninstall, and operation of Print To Review.

Install and uninstall for Print To Review should be with an administrator account (not necessarily the Administrator user but a user with administrator privileges) or from a console window run as Administrator, for the most straightforward experience. Otherwise, depending on your UAC settings, you will be prompted during install and uninstall to run with Administrator privileges.

During uninstall, you may be prompted with a notification that the Print Spooler is using the files:



Select Continue at this prompt to uninstall the driver files.

When uninstalling on Windows Vista or later, errors can occur if the spooler still has the driver files locked. This occurs when uninstalling within about a minute of printing to Print To Review and leaves Print To Review in an uninstallable state. The only simple recourse is to reinstall Print To Review and then uninstall again. Any of these steps will avoid this issue:

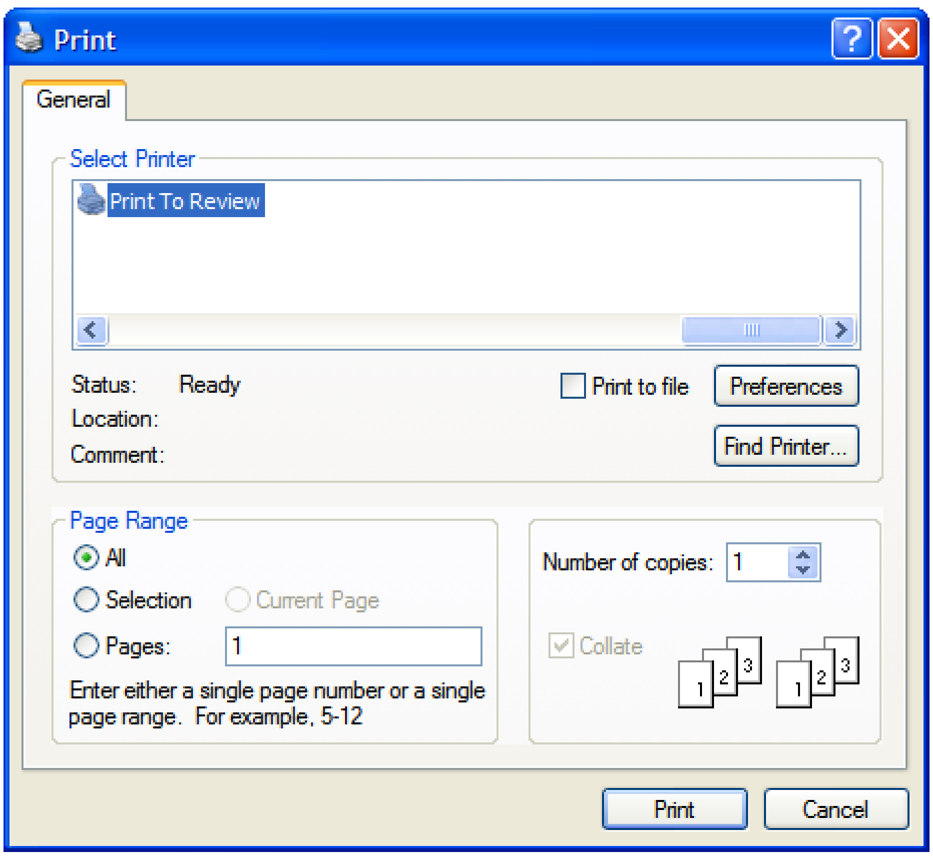
- Wait one minute after printing to Print To Review before uninstalling
- Stop then restart the spooler service before uninstalling
- Restart your system before uninstalling

Upgrading

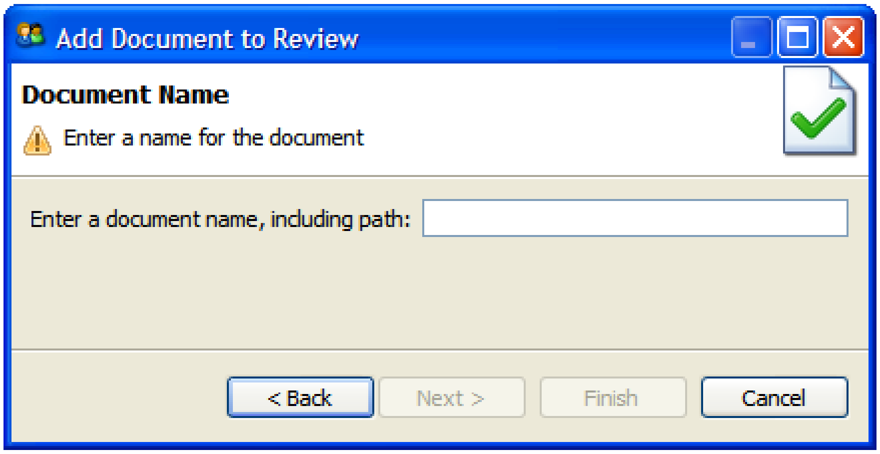
Print To Review does not support upgrades. To install a new version, please follow the uninstall instructions above, restart your system, and then install the desired version.

To Print To Review

From within your Windows application, click Print and select Print To Review as the Printer.



After printing your document, the GUI Client is launched to add the document to a review. On Windows Vista and later, depending on the UAC settings, GUI Client launches without foreground focus, and instead is displayed as a highlighted icon in the task bar and must be selected. Then choose a new or existing review, and next you will be prompted to enter a name for your document. This will be the name associated with the document images in the review:



Note that you may include path characters in the name, and the document name will be displayed with the path in the review. Once you have given the required information and click Finish, a browser window will open pointing to the review with your document images.

Limitations and Known Issues

Documents to be uploaded to the Collaborator server are currently limited in size by the file truncation size defined in the Java VM Client Properties 878. Higher resolutions and color depths of Print To Review jobs increase the document image sizes uploaded for review. For documents that are too large, pages will be uploaded until the file truncation limit is encountered, and the remaining pages are discarded. Print To Review appends a page to these documents indicating the truncation. Printing at a lower resolution or in black and white is a workaround. Otherwise, increase the defined file truncation size.

Printing in a Remote Terminal environment currently cannot launch the GUI Client to print a document. These jobs are held in the print queue.

Troubleshooting

Windows XP SP2 and Server 2003

To submit problem reports or suggestions, open Add/Remove Programs from the Control Panel and select Support Information under Print To Review. Submit the displayed version number along with your description of the issue.

Windows Vista platforms and later

To submit problem reports or suggestion, open Programs and Features and find SmartBear Print To Review. The version number will be listed in the column labeled Version. If the Version column is not shown, click on the column headers and select to add the Version column. Submit the displayed version number along with your description of the issue.

Advanced User Uninstall

We of course recommend using Print To Review as installed by the installer. However, if it is customized in anyway (such as renaming the printer) or if a manual uninstall is otherwise desired, follow these steps.

Print To Review is installed as both an application and a printer driver. Manual uninstall of the driver can be done just as with any other printer driver. The print driver and port monitor can be deleted through the Server Properties dialog in the Print Spooler. The order of uninstalling the driver should be:

- Delete the printer
- Delete the printer driver
- Delete the CCOLLAB: port
- Uninstall the Print To Review application (this will generate errors but will complete)

6 Version Control Integration

Collaborator integrates with many popular Version Control Systems. Integrations include command-line, graphical, and Eclipse plug-in clients and Version Control triggers. Server integration is supported for selected Version Control Systems and requires that a properly configured client be configured on the Collaborator server.

Note: *Support of version control systems varies depending on Collaborator edition. Collaborator Community supports only Git and Subversion. Collaborator Team additionally supports CVS, Mercurial, Perforce and Team Foundation Server. Collaborator Enterprise supports all version control systems listed below. For a complete list of differences between Collaborator editions, please see the comparison page* 3

See the section below for your Version Control System:

- AccuRev 415
- CVS 426
- Git 436
- IBM Rational ClearCase 454
- IBM Rational Synergy 476
- IBM Rational Team Concert 484

- Mercurial 510
- Microsoft Team Foundation Server 517
- PTC Integrity 525
- Perforce 537
- Subversion 568

6.1 AccuRev Integration

This section describes Collaborator integration with AccuRev:

GUI Client 416

The GUI Client can upload local changes to files 418 controlled by AccuRev before they are promoted. This includes both kept and modified files in the local Workspace. The GUI Client can also upload pending changes in a Stream 421, differences in a Transaction 419, and arbitrary AccuRev diffs 420.

Command-Line Client 421

The Command-Line Client can upload local changes to files 422 controlled by AccuRev before they are promoted. This includes both Kept and modified files in the local Workspace. The Command-Line Client can also upload pending changes in a Stream 425, differences in a Transaction 424, and arbitrary AccuRev diffs 425.

Eclipse Plug-in

The Eclipse Plug-in 366 integrates the AccuRev AccuBridge for Eclipse plugin from http://www.accurev.com/accubridge-eclipse.html so you can upload 383 locally modified files to a Review.

Supported Versions

Our Command-Line Client uses your own AccuRev command-line client (`accurev`) to communicate with the server. We support these versions:

- v4.5.3, 5.5

Because we use client applications already present on your computer, we support all protocols, authentications, proxies, and other client configuration options you are currently using.

Support for Copy / Move

Collaborator fully supports AccuRev's file and directory copy/move semantics. Thus, if a file is copied or moved rather than added from scratch, it will show up that way in the various user interfaces.

Support for Directory-level New/Delete/Copy/Move

Collaborator partially supports AccuRev's concept of directories (not just files) being altered.

All files underneath the directories in question will be scanned, uploaded and represented properly in the GUI. The directories themselves will *not* be shown in any GUI, or even in the file list 352 confirmation screen presented by the command-line client.

This all works correctly even if, for example, you move a parent directory *and* alter/add/delete a file within that directory in the same changelist. You will get the correct content for the file but the directory itself will not be listed in the review.

Support for Include / Exclude Rules

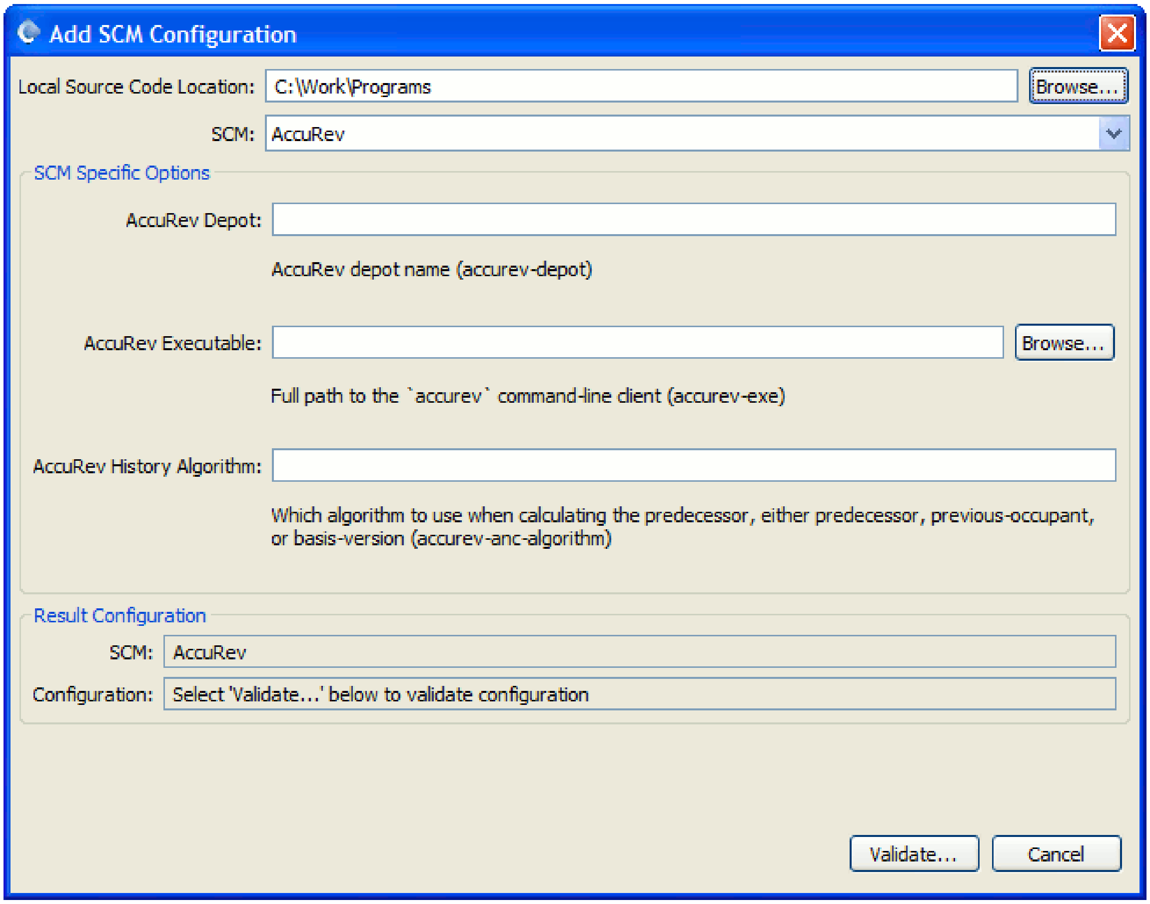
Collaborator treats files or folders that conform to AccuRev's include rules as added or modified files/folders, while files and folders that conform to exclude rules are treated as deletions. To denote files and folders that were added or removed due to include/exclude rules, Collaborator uses the following descriptions of change types:

- `INCLUDED` - The file was added because of include rule.
- `EXCLUDED` - The file was removed because of exclude rule.
- `INCLUDED_DIR` - The folder and all its files and sub-folders were added because of include rule.
- `INCLUDED_DIR_ONLY` - The folder but not any of its files or sub-folders were added because of include rule.
- `EXCLUDED_DIR` - The folder and all its files and sub-folders were removed because of exclude rule.

6.1.1 GUI Client

AccuRev-specific Options

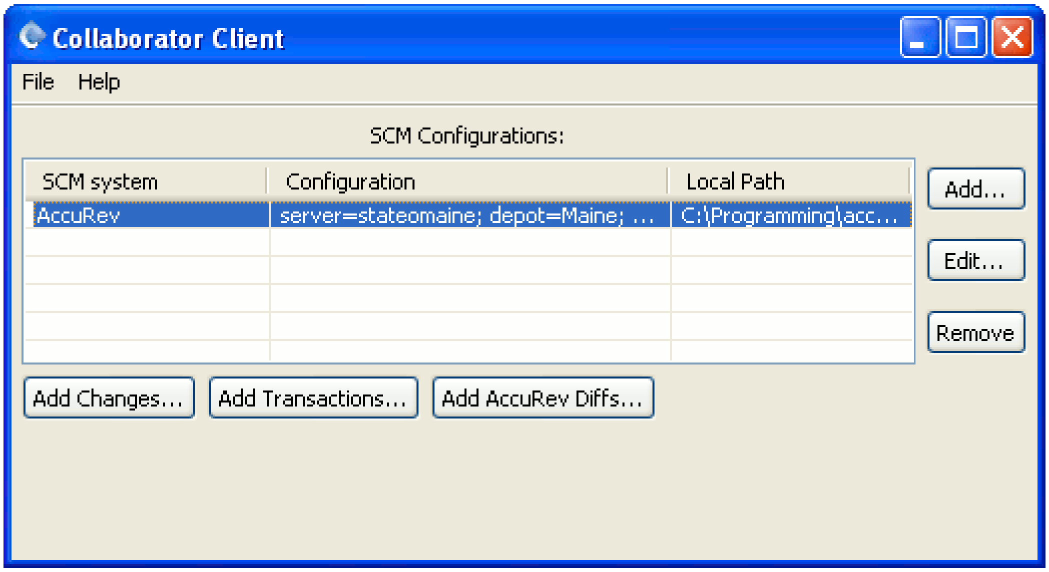
The SCM Configuration dialog 341 has several AccuRev-specific options. If there is no AccuRev Workspace on your machine, you can still review committed AccuRev Transactions by specifying the AccuRev Depot name option.



AccuRev SCM Configuration

Uploading files to a Review

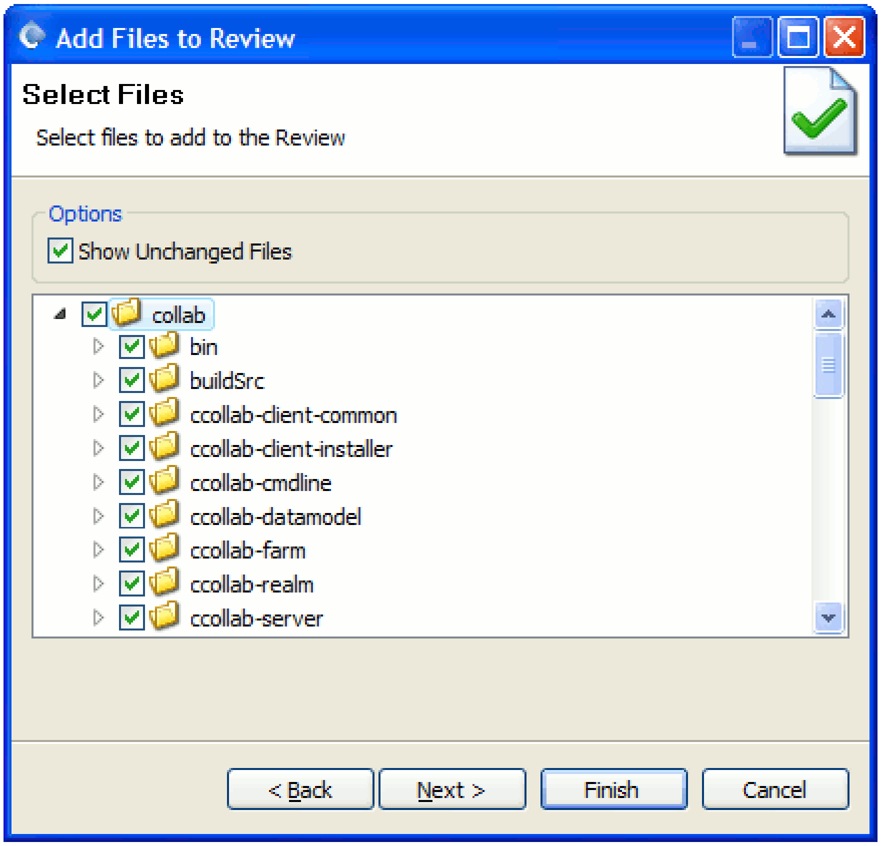
Selecting an AccuRev SCM Configuration in the GUI Client main screen 339 causes three Add to Review buttons to appear. The *Add Changes...* 418 button uploads modified files in a Workspace. The *Add Transactions...* 419 button uploads the files in committed Transactions. The *Add AccuRev Diffs...* 420 button uploads arbitrary diffs, or compares the differences between two Streams 421.



Uploading AccuRev files to a Review

Add Changes

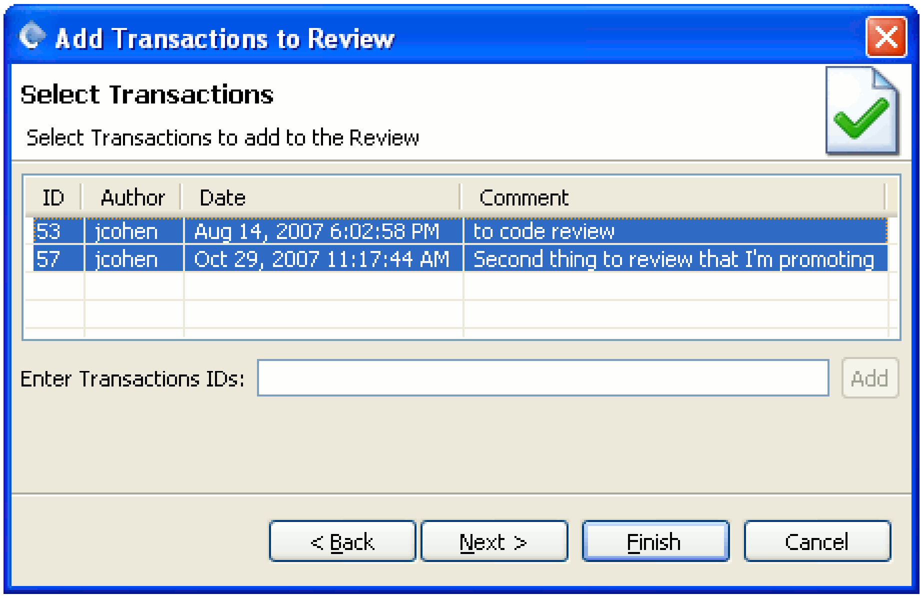
Press the *Add Changes...* button to upload modified files in a Workspace to the Collaborator Server for review.



Add Changes

Add Transactions

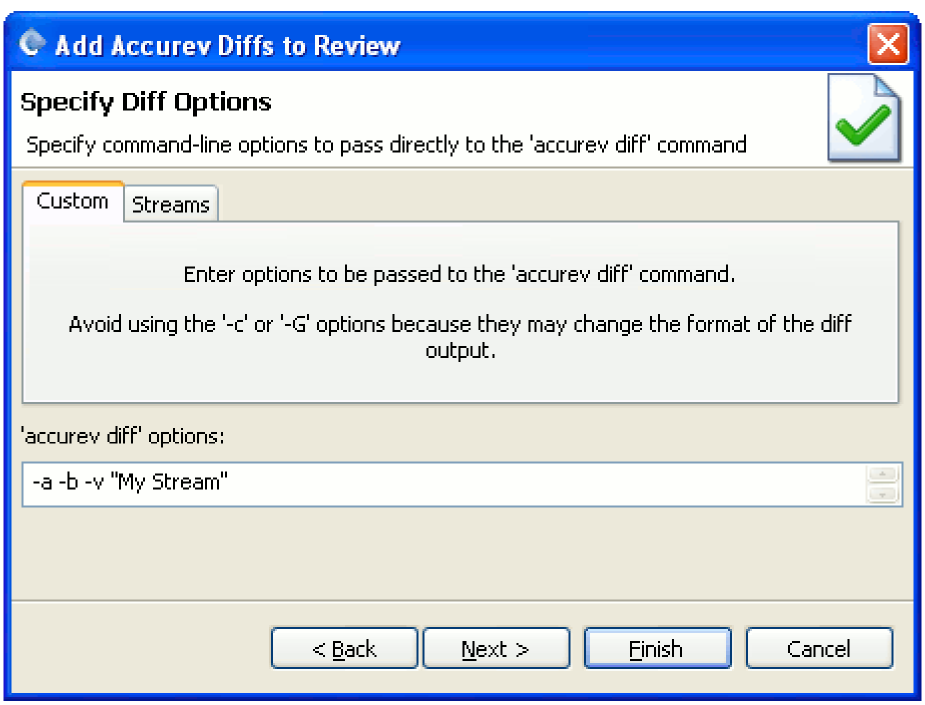
Press the *Add Transactions...* button to upload the files in an AccuRev Transaction to the Collaborator Server for review.



Add Transactions

Add AccuRev Diffs

Press the *Add AccuRev Diffs...* button to upload arbitrary AccuRev diffs to the Collaborator Server for review.

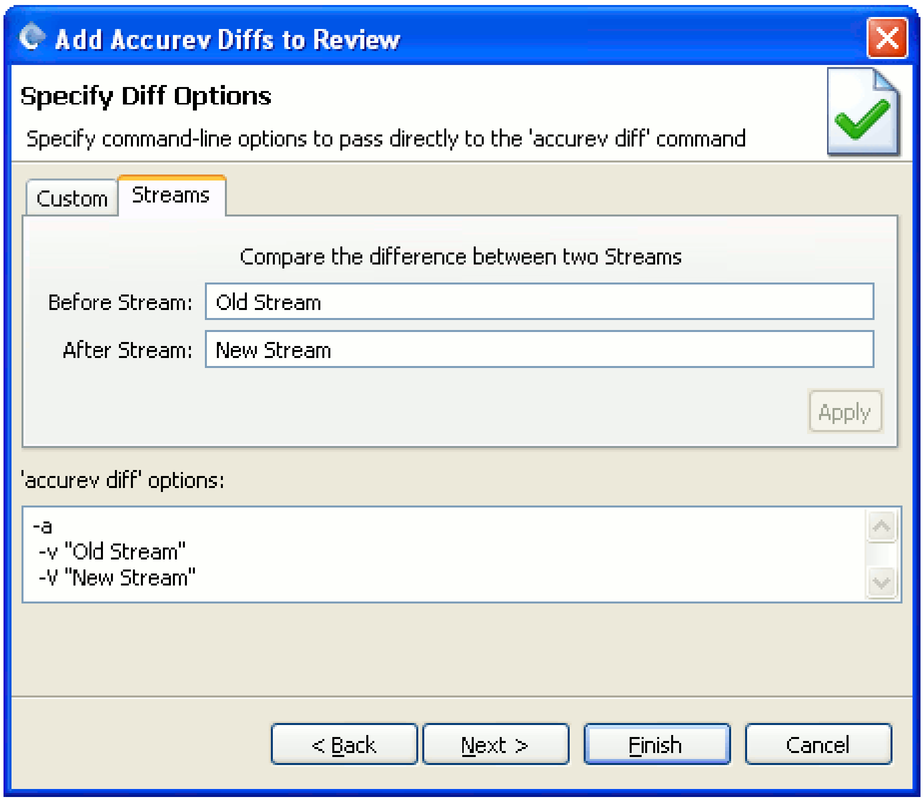


Add AccuRev Diffs

You can enter arbitrary AccuRev diff options, or select the Streams tab 421 to compare the difference between two Streams.

6.1.1.1 Comparing two Streams

Press the *Add AccuRev Diffs...* 420 button on the main screen 339 and then select the *Streams* tab to upload the difference between two Streams.



Upload the difference between two Streams

6.1.2 Command-Line Client

Commands recommended for AccuRev

`ccollab addchanges` 422 - Attaches locally-modified files to a review

`ccollab addchangelist` 424 - Attaches an atomic changelist to a review

`ccollab addardiffs` 425 - Uploads diffs generated from accurev diff command

`ccollab addstream` 425 - Attaches pending differences from an AccuRev stream

The addchanges 422 command will upload local changes to files controlled by AccuRev before they are promoted. This includes both kept and modified files in the local workspace.

The addchangelist 424 command will upload a list of AccuRev transactions.

Configuration

In most cases, the Command-Line Client can automatically detect your AccuRev configuration. Try testing your configuration 349 to verify the configuration is detected correctly.

If the Command-Line Client is unable to detect your AccuRev configuration or you want to override the detected settings, you can manually specify AccuRev settings using global options 359 .

To manually configure the Command-Line Client to use AccuRev, execute the following command:

```
ccollab set scm 358 accurev
```

AccuRev-specific Options

Option	Description
`--accurev-depot <value>`	AccuRev depot name
`--accurev-exe <value>`	Full path to the `accurev` command-line client
`--accurev-anc-algorithm <value>`	Which algorithm to use when calculating the predecessor, either predecessor, previous-occupant, or basis-version

Example:

```
ccollab set accurev-depot MyDepot
```

6.1.2.1 addchanges (for AccuRev)

Description

The `ccollab addchanges` command uploads locally modified files controlled by AccuRev to a review on the Collaborator server.

Command Line Syntax:

```
ccollab [global-options] addchanges [--upload-comment <value>]
<review> <file-spec> [<file-spec> ...]
```

Command Options

Option	Required?	Description
`global-options`	No	A number of global or SCM-specific global options. See Command-line Global Options Reference 357.
`--upload-comment <value>`	No	A comment to be used for the uploaded files. Default is *Local changes*.
`<review>`	Yes	Identifier of the desired review (an integer number), or a *new*, *ask*, or *last* string.
`<file-spec> [<file-spec> ...]`	Yes	Files to be added and/or folders to scan for modified files. Separate multiple file and folder names with spaces. If a file or folder name contains spaces, enclose this name is quotes. `ccollab` scans folders recursively. The resulting list includes the name of modified files. "Modifications" include include edits, additions, deletions, branches, integrations, moves, copies, and so on. After the scan is complete, a file list is presented in a graphical editor so you can review the files to be uploaded and make correct the list, if needed.

Examples:

To create a new review and add all changes in the current directory and below, plus the file foo.txt, you would use:

```
ccollab addchanges new . foo.txt
```

To upload modified files from the current working directory and all subdirectories to review 123:

```
ccollab addchanges 123 .
```

To upload file foo.txt and modified files from c:\dev\project into a brand new review:

```
ccollab addchanges new foo.txt c:\dev\project
```

6.1.2.2 addchangelist (for AccuRev)

Description

The `ccollab addchangelist` command attaches all files from a submitted AccuRev changelist (transaction) to a review on the Collaborator server.

Command Line Syntax:

```
ccollab [global-options] addchangelist <review> <changelist>
[<changelist> ...]
```

Command Options

Option	Required?	Description
`[global-options]`	No	A number of global or AccuRev-specific global options. See Command-line Global Options Reference 357.
`<review>`	Yes	Identifier of the desired review (an integer number), or a *new*, *ask*, or *last* string.
`<changelist> [<changelist> ... ]`	Yes	Identifier(s) of the desired changeset(s) in your source control.

Examples:

To upload Transactions t4321 and t7568 to a new review:

```
ccollab addchangelist new 4321 7568
```

To upload Transactions t5432 and t12654 to review 111:

```
ccollab addchangelist 111 5432 12654
```

6.1.2.3 addardiffs

Description

The `ccollab addardiffs` command uploads differences between arbitrary versions of files in AccuRev. The differences are generated using the native 'accurev diff' command of AccuRev.

Command Line Syntax:

```
ccollab [global-options] addardiffs [--upload-comment <value>]
<review> [<user-diff-arg> [<user-diff-arg> ...]]
```

Command Options

Option	Required?	Description
--upload-comment <value>	No	Comment used to upload files (defaults to command-line arguments)
<review>	Yes	Must be either an integer review-id, 'new', 'ask', or 'last'
<user-diff-arg> [<user-diff-arg> ...]	No	Command-line arguments to pass directly to the diff command

Examples:

```
ccollab addardiffs 698 -a -b -v "My Stream"
```

Remarks:

- Do not use diff arguments that affect the diff output such as '-c' or '-G'. The Collaborator command-line client will automatically select an output format that ensures you will get all the data you need on the server.
- This command does not upload added or deleted files due to AccuRev limitations.

6.1.2.4 addstream

Description

The `ccollab addstream` command uploads differences pending promotion in an AccuRev stream.

Command Line Syntax:

```
ccollab [global-options] addstream [--upload-comment <value>]
<review> [<stream>]
```

Command Options

Option	Required?	Description
`--upload-comment <value>`	No	Comment used to upload files
`<review>`	Yes	Must be either an integer review-id, 'new', 'ask', or 'last'
`<stream>`	No	Specify an AccuRev stream by name, or leave blank to use the current workspace

6.2 CVS Integration

This section describes Collaborator integration with CVS:

GUI Client 428

The GUI Client can upload local changes to files 429 controlled by CVS before they are checked into version control. The GUI Client can also upload arbitrary CVS diffs 430, or the difference between two Labels 430 or dates 431.

Command-Line Client 432

The Command-Line Client can upload local changes to files controlled by CVS before they are checked into version control. The Command-Line Client can also upload arbitrary CVS diffs.

Eclipse Plug-in

The Eclipse Plug-in 366 integrates with the Eclipse CVS team plug-in so you can upload 383 locally modified files with full support from the CVS Eclipse code.

Supported Versions

Our Command-Line Client 348 uses your own CVS command-line client (`cvs`) to communicate with the server. We support these versions:

- v1.11.1 and later
- v1.11.0 and before, only `ccollab addcvsdiffs` 434 is supported
- `CvsNT` (Windows-only)

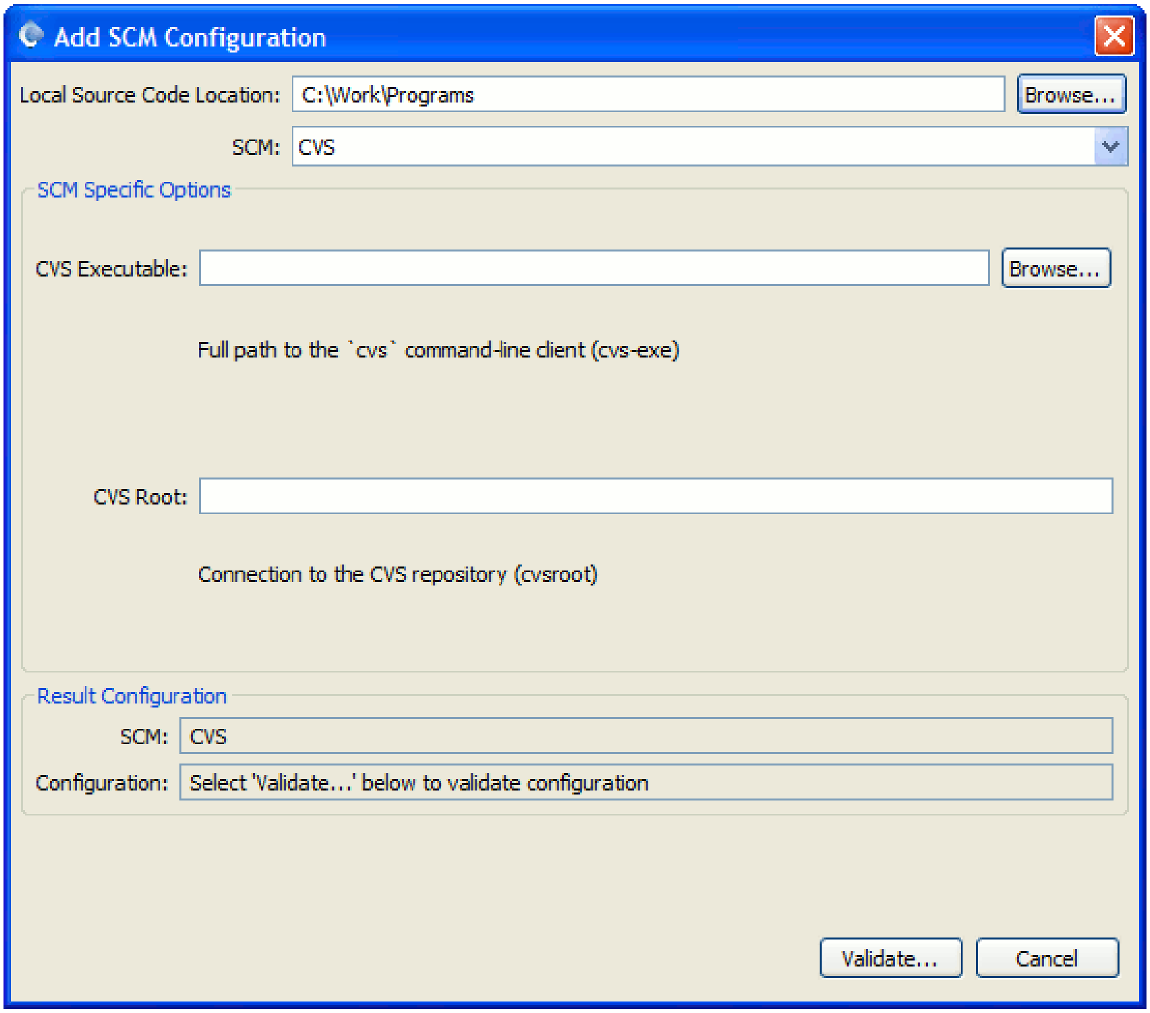
The Eclipse Plug-in 366 uses the Eclipse CVS plug-in to communicate with the CVS server.

Because we use client applications already present on your computer, we support all protocols, authentications, proxies, and other client configuration options you are currently using.

6.2.1 GUI Client

CVS-specific Options

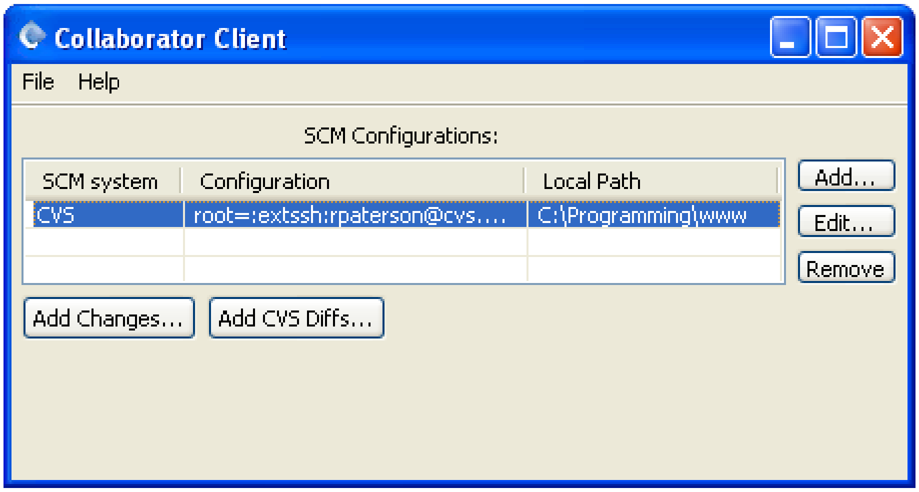
The SCM Configuration dialog 341 has several CVS-specific options.



CVS SCM Configuration

Uploading files to a Review

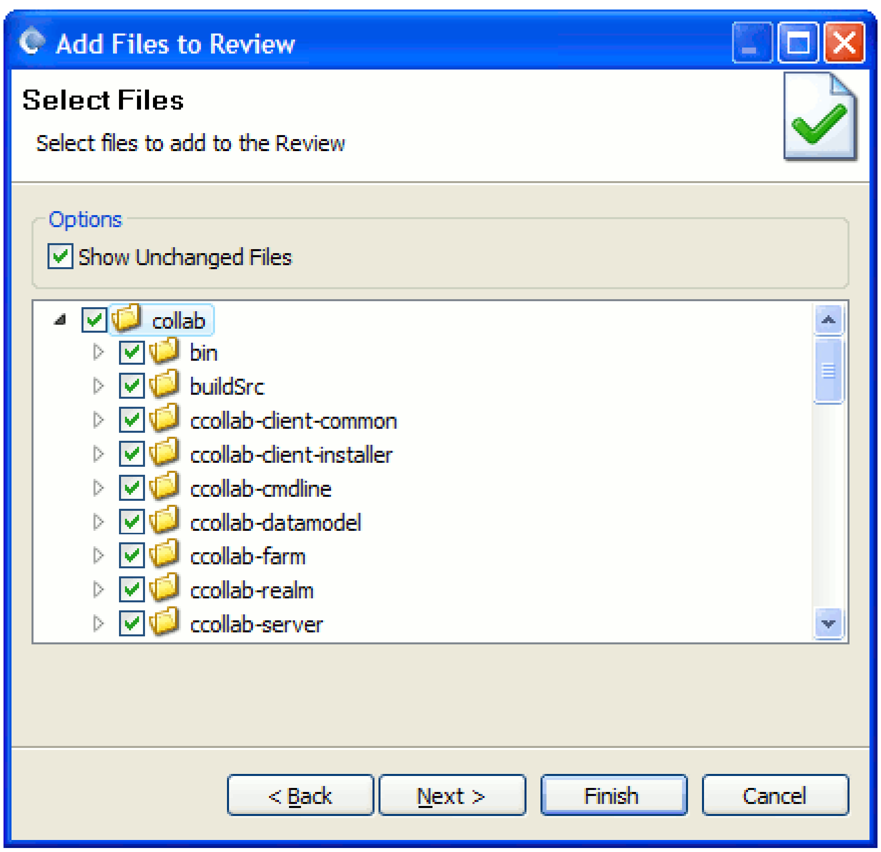
Selecting a CVS SCM Configuration in the GUI Client main screen 339 causes several Add to Review buttons to appear. The *Add Changes...* 429 button uploads modified files in a CVS checkout. The *Add CVS Diffs...* 430 button uploads arbitrary diffs, or compares the difference between two Labels 430 or dates 431.



Uploading CVS files to a Review

Add Changes

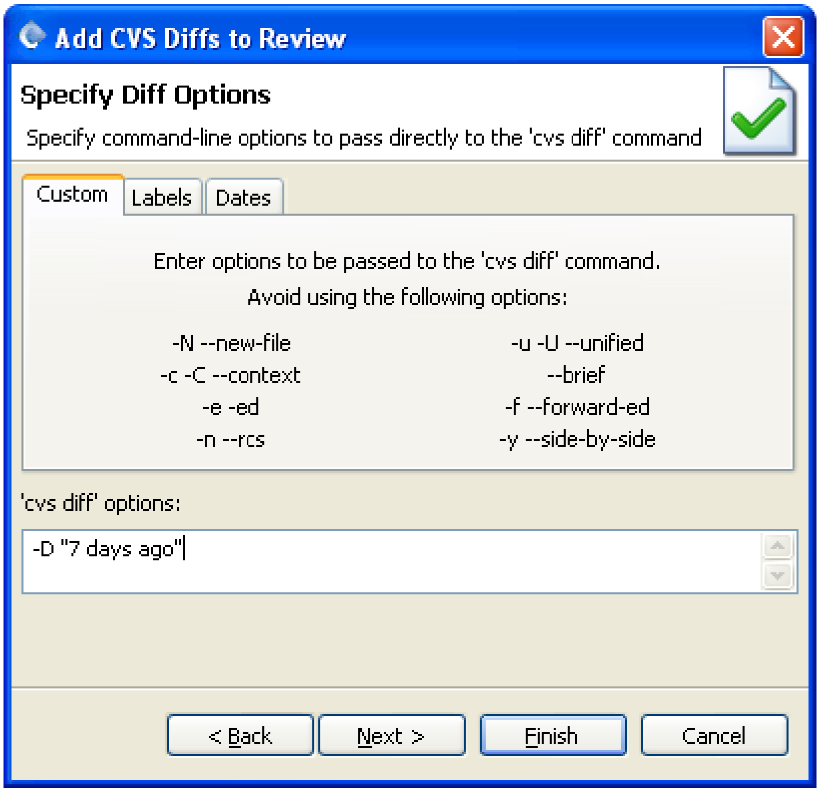
Press the *Add Changes...* button to upload modified files in a CVS checkout to the Collaborator Server for review.



Add Changes

Add CVS Diffs

Press the *Add CVS Diffs...* button to upload arbitrary CVS diffs to the Collaborator Server for review.

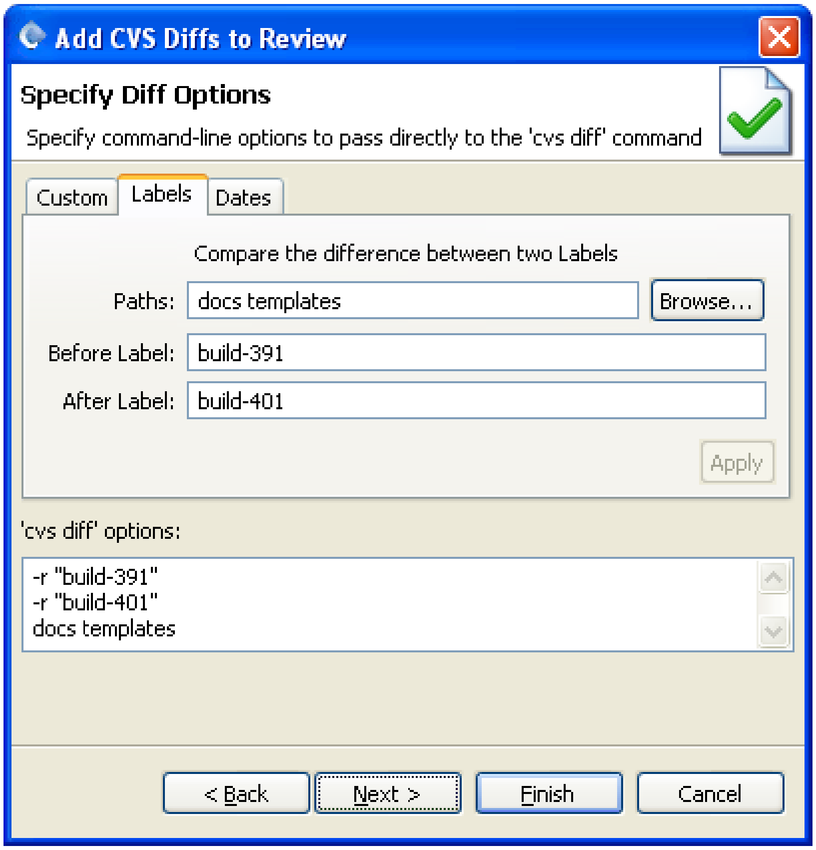


Add CVS Diffs

You can enter arbitrary CVS diff options, or compare the difference between two Labels[430] or dates[431].

6.2.1.1 Comparing two Labels

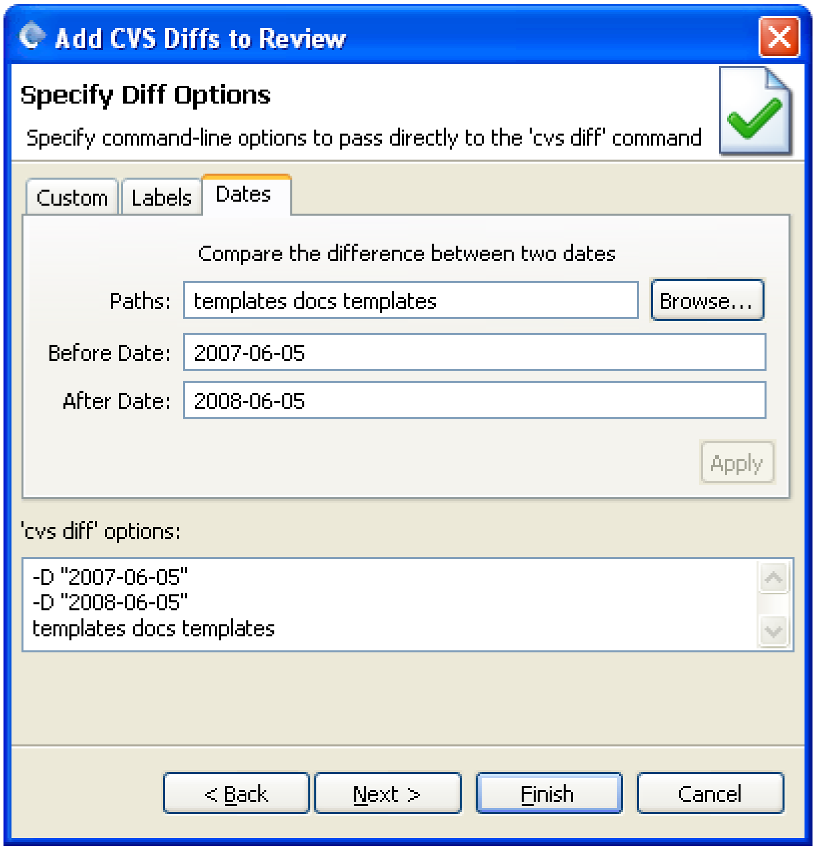
Press the *Add CVS Diffs...*[430] button on the main screen[339] and then select the *Labels* tab to upload the difference between two Labels.



Upload the difference between two Labels

6.2.1.2 Comparing two dates

Press the *Add CVS Diffs...* 430 button on the main screen 339 and then select the *Dates* tab to upload the difference between two dates.



Upload the difference between two dates

6.2.2 Command-Line Client

Commands recommended for CVS

`ccollab addchanges` 433 - Attaches locally-modified files to a review

`ccollab addcvsdiffs` 434 - Uploads diffs generated from cvs diff command

`ccollab commit` 436 - Commit changes in the review

The addchanges 433 command will upload local changes to files controlled by CVS before they are checked into version control.

Configuration

In most cases, the Command-Line Client can automatically detect your CVS configuration. Try testing your configuration 349 to verify the configuration is detected correctly.

If the Command-Line Client is unable to detect your CVS configuration or you want to override the detected settings, you can manually specify CVS settings using global options360.

To manually configure the Command-Line Client to use CVS, execute the following command:

```
ccollab set scm cvs
```
358

CVS-specific Options

Option	Description
`--cvs-exe <value>`	Full path to the `cvs` command-line client
`--cvsroot <value>`	Connection to the CVS repository

6.2.2.1 addchanges (for CVS)

Description

The `ccollab addchanges` command uploads locally modified files controlled by CVS to a review on the Collaborator server.

Command Line Syntax:

```
ccollab [global-options] addchanges [--upload-comment <value>]
<review> <file-spec> [<file-spec> ...]
```

Command Options

Option	Required?	Description
`global-options`	No	A number of global or SCM-specific global options. See Command-line Global Options Reference357.
`--upload-comment <value>`	No	A comment to be used for the uploaded files. Default is *Local changes*.
`<review>`	Yes	Identifier of the desired review (an integer number), or a *new*, *ask*, or *last* string.

Option	Required?	Description
`<file-spec> [<file-spec> ...]`	Yes	Files to be added and/or folders to scan for modified files. Separate multiple file and folder names with spaces. If a file or folder name contains spaces, enclose this name is quotes. `ccollab` scans folders recursively. The resulting list includes the name of modified files. "Modifications" include include edits, additions, deletions, branches, integrations, moves, copies, and so on. After the scan is complete, a file list is presented in a graphical editor so you can review the files to be uploaded and make correct the list, if needed.

Examples:

To create a new review and add all changes in the current directory and below, plus the file foo. txt, you would use:

```
ccollab addchanges new . foo.txt
```

To upload modified files from the current working directory and all subdirectories to review 123:

```
ccollab addchanges 123 .
```

To upload file foo.txt and modified files from c:\dev\project into a brand new review:

```
ccollab addchanges new foo.txt c:\dev\project
```

6.2.2.2 addcvsdiffs

Description

The `ccollab addcvsdiffs` command uploads differences between arbitrary versions of files in CVS. The differences are generated using the native 'cvs diff' command of CVS.

Command Line Syntax:

```
ccollab [global-options] addcvsdiffs [--upload-comment <value>]
<review> [<user-diff-arg> [<user-diff-arg> ...]]
```

Command Options

Option	Required?	Description
`--upload-comment <value>`	No	Comment used to upload files (defaults to command-line arguments)
`<review>`	Yes	Must be either an integer review-id, 'new', 'ask', or 'last'
`-skipN`	No	Specifies whether to skip the `-N --new-file` argument of the cvs diff command. By default, the diffs generated by Collaborator contain information about new files. Use -skipN argument to generate diffs for already committed files.
`<user-diff-arg> [<user-diff-arg> ...]`	No	Command-line arguments to pass directly to the diff command

Remarks:

Do not use diff arguments that affect the diff output such as '-u -U --unified', '-c -C --context', '--brief', '-e -ed', '-f --forward-ed', '-n --rcs', or '-y --side-by-side'. The Collaborator command-line client will automatically select an output format that ensures you will get all the data you need on the server.

Examples:

To upload the changes between labels build-391 and build-401:

```
ccollab addcvsdiffs review -skipN -r build-391 -r build-401
```

To upload the changes between dates 2006-01-01 and 2006-02-01:

```
ccollab addcvsdiffs review -skipN -D 2006-01-01 -D 2006-02-01
```

To upload the changes in the last 7 days:

```
ccollab addcvsdiffs review -skipN -D "7 days ago"
```

6.2.2.3 commit (for CVS)

Description

The `ccollab commit` command submits the changes from a pre-commit review to source control. Be sure to include a relevant comment.

Command Line Syntax:

```
ccollab [global-options] commit [--comment <value>] [--dismiss-only]
[--force] <review>
```

Command Options

Option	Required?	Description
`--comment <value>`	No	Comment for reviewed changes
`--dismiss-only`	No	Just dismiss the Action Item
`--force`	No	Ignore potential problems
`<review>`	Yes	Must be either an integer review-id, 'ask', or 'last'

Example:

```
ccollab commit 25 --comment "my code" --force
```

6.3 Git Integration

This section describes Collaborator integration with Git:

Git Server Integration 437

The Collaborator server can pull commits directly from your Git repository for review, without users needing to install any client programs.

GUI Client 439

The GUI Client can upload arbitrary Git diffs and provides a special user interface for specifying branches as diff arguments. The GUI Client can also upload local changes to files that have been added to the Git index.

Command-Line Client 446

The Command-Line Client can upload arbitrary Git diffs and changes to files that have been added to the Git index.

Supported Versions

Our integration uses your own installed Git command line client executable to generate differences for review. We require Git v1.7.4 or later.

Because we use client applications already present on your computer, we support all protocols, authentications, proxies, and other client configuration options you are currently using.

NOTE: If you intend to add unpushed commits, you must have an upstream tracking branch set. You can tell Git and Collaborator which upstream branch to compare against by running the command:

```
git branch --set-upstream [localbranch] [upstreambranch]
```

Submodule Support

Currently Collaborator ignores and submodule changes when adding changelists or diffs from the super project. To add the submodule differences you must navigate into the submodule itself and add the files from there.

6.3.1 Git Server Integration

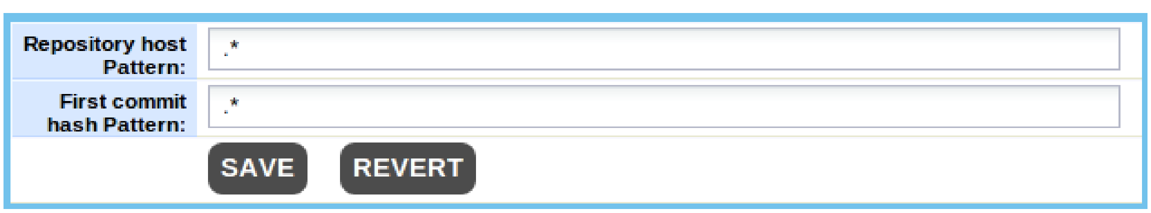
The Collaborator server can be configured to communicate directly with a Git repository. This allows users to review commits completely from the browser, without having to install any client programs. To enable this feature, first install and configure a Git client on the Collaborator server and then create an entry for your Git repository in the Version Control 188 tab of the administration interface. Version control server entries are also created automatically if one of the client programs uploads files from a repository that does not match any of the currently configured servers.

Title	The title is displayed to users, so it should be something that everyone will understand, even if they are going through proxies, VPNs, or other such things. When a version control server entry is created automatically, this is filled in with "Git".
Attach changelists from browser	If enabled, this feature lets users select commits to review directly from the web browser, without having to install any client programs.
Git Executable	Full path to the 'git' command line client
Git Repository	Full path to a Git repository. This is only necessary if you enable "Attach changelists from browser". The repository can be "bare".

Click the ***Test Connection*** to make sure Collaborator can contact your Git repository.

Client Configuration Mapping

You can supply Java-style regular expressions to map changelists from this Git repository uploaded from our client tools. It is important to set up these regular expressions so that files uploaded by the various Collaborator client tools are correctly associated with this server-side Git configuration.

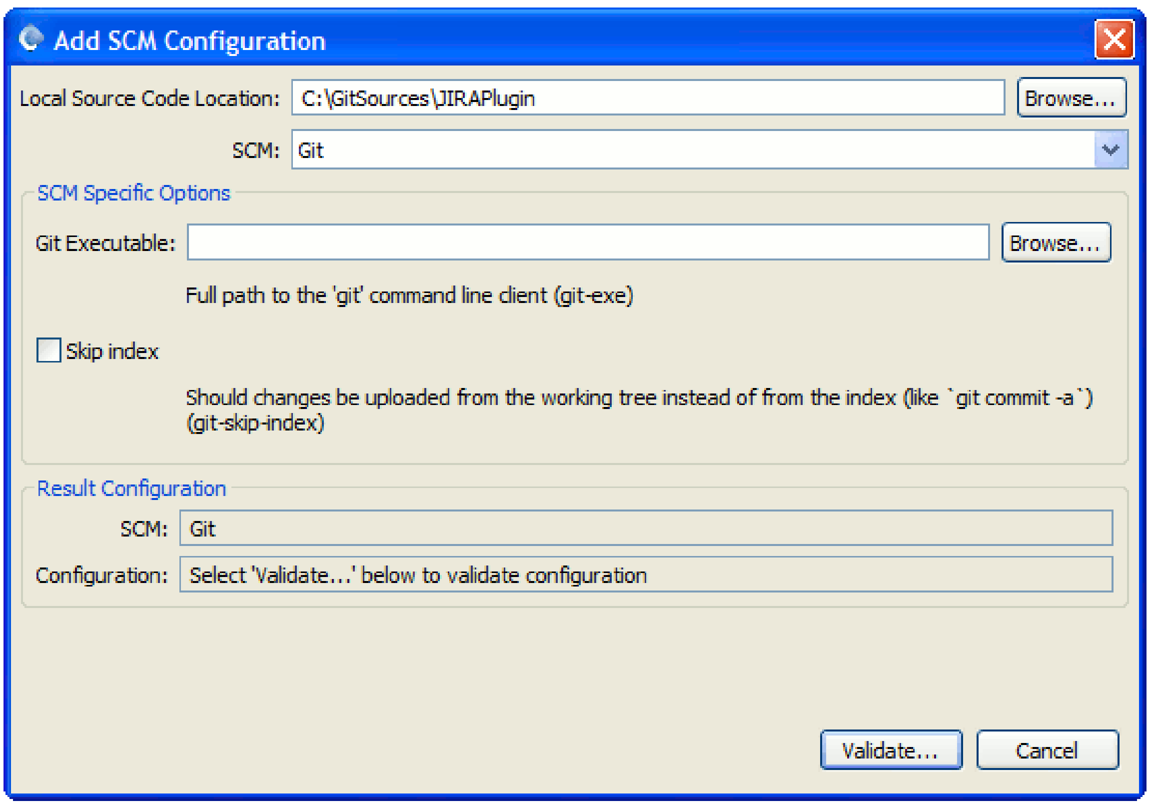


Repository Host Pattern	Match on the client's configured remote origin URL (remote.origin.url). Note clients may have various network configurations that make the URL look different.
First Commit Hash Pattern	Match on the first commit hash returned from running "`git rev-list --max-parents=0` HEAD".

6.3.2 GUI Client

Git-specific Options

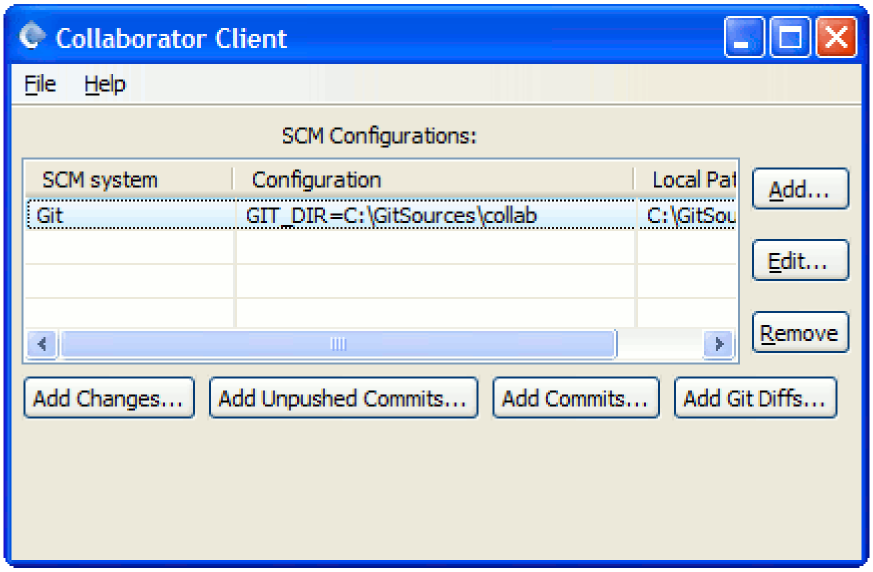
The SCM Configuration dialog 341 has one Git-specific option. The full path to the Git command line executable on your local file system should be specified if it is not already on your system path. Note that for Git *Local Source Code Location* **is not** optional.



Configure client to work with Git

Uploading files to a Review

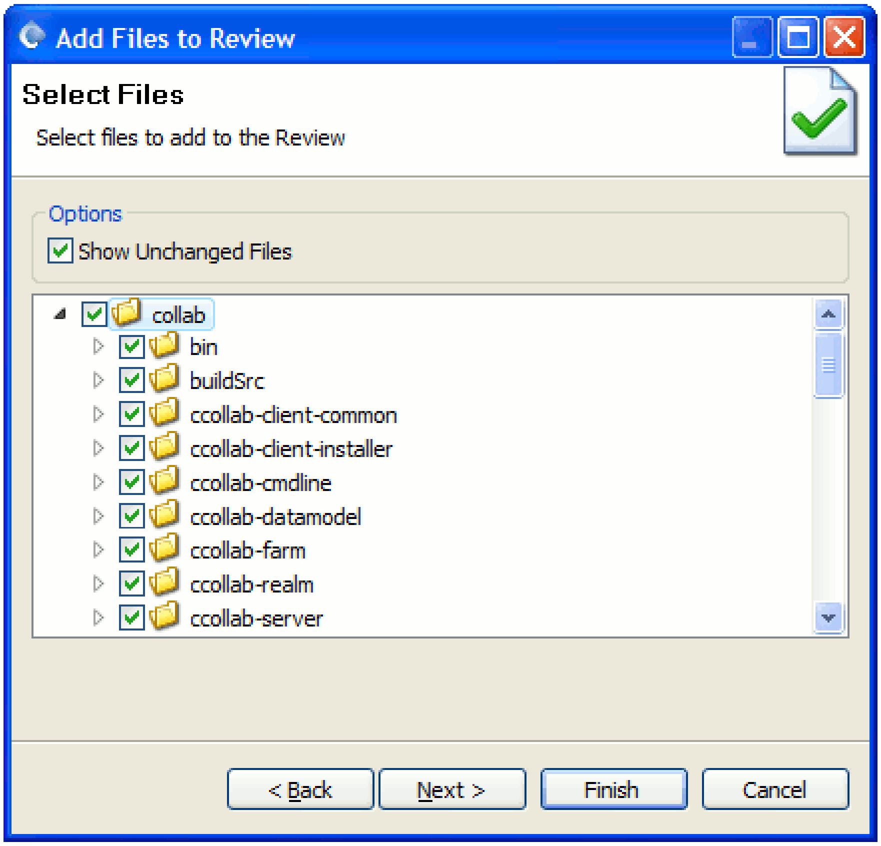
Selecting a Git SCM Configuration in the GUI Client main screen 339 causes *Add to Review buttons* to appear.



Uploading Git files to a review

Add Changes

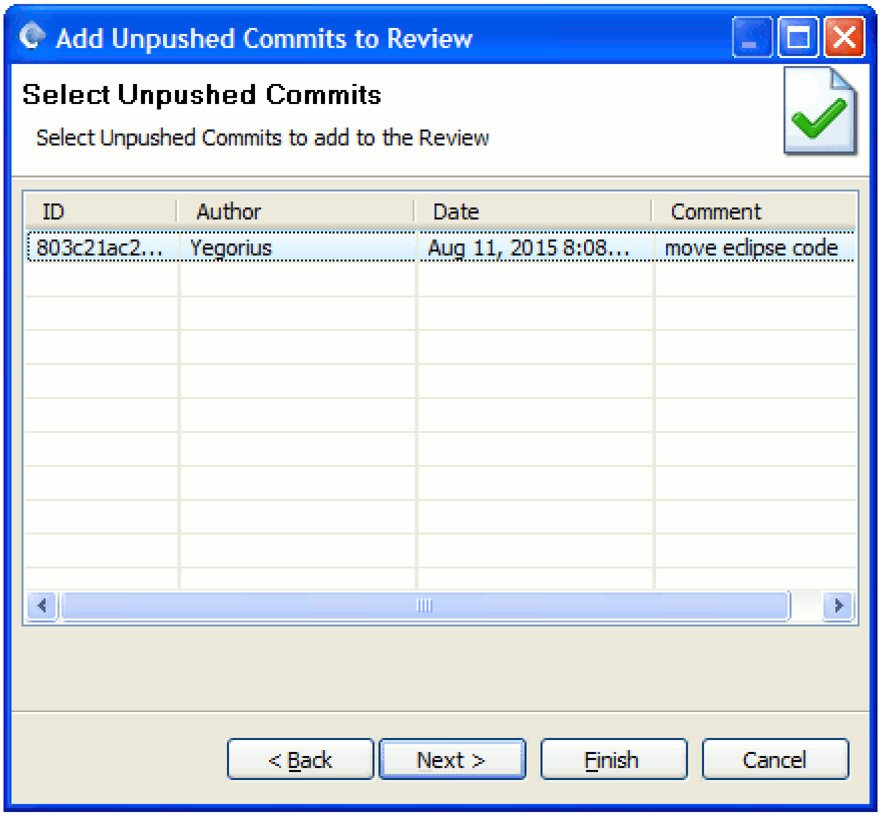
Selecting *Add Changes...* allows you to upload the modifications that are currently in the index. These are the modifications that would be committed if you typed 'git commit' from a command line.



Add Changes

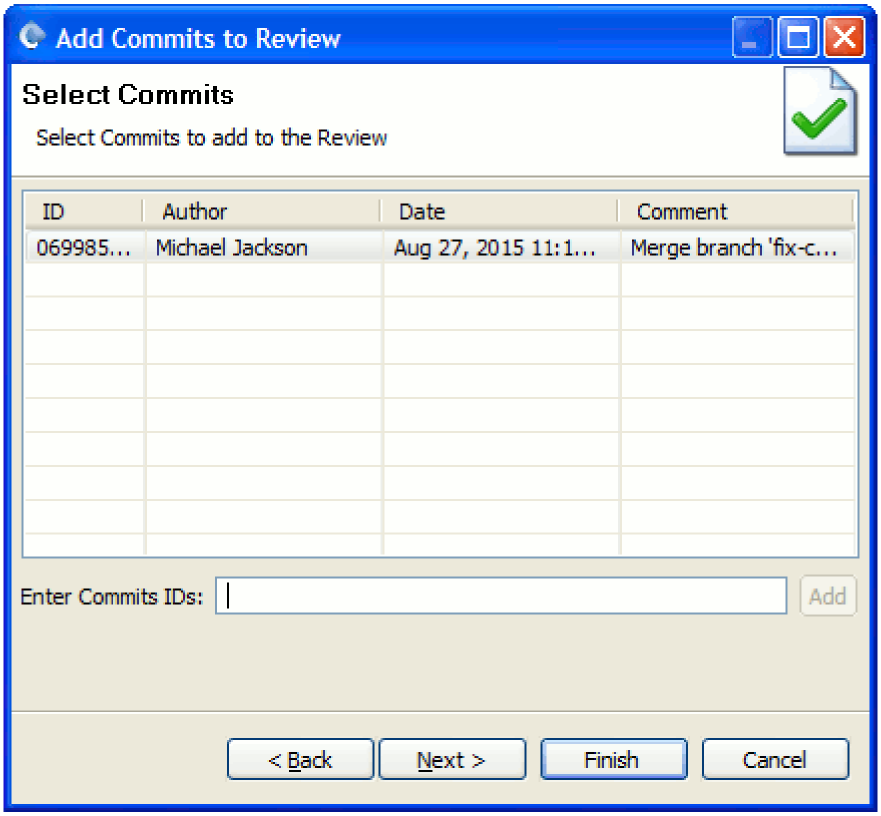
Add Unpushed Commits

Selecting *Add Unpushed Commits...* selects all commits in your local branch that have not been pushed to its tracking branch. NOTE: This assumes that you have set up branch tracking in Git. If you see an error when running *Add Unpushed Commits...* (like, "Error initializing local changelists") make sure that your current branch has a tracking branch set. You can set this up, initially by running "git config branch.autosetupmerge always". You can set this up on an existing branch by running "git branch --set-upstream name-of-branch name-of-upstream".



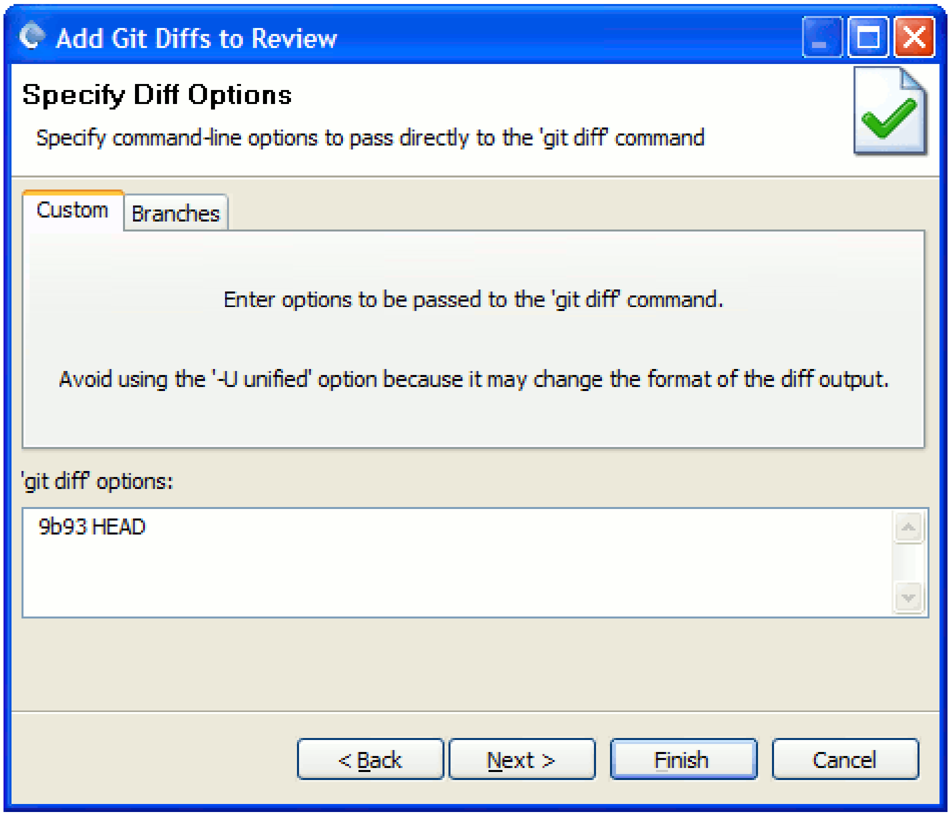
Add Commits

Selecting *Add Commits...* allows you to upload commits, whether they have been pushed or not. You can add a specific commit by adding the commit ID and clicking "Add":



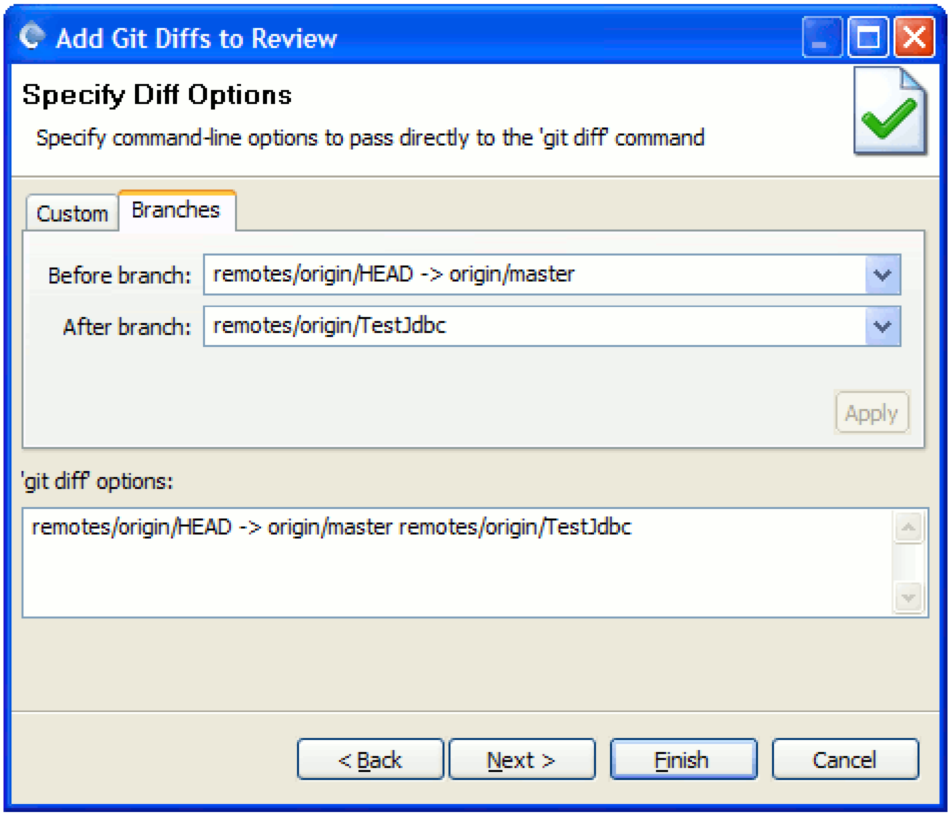
Add Git Diffs

Press the *Add Git Diffs...* button to upload arbitrary Git diffs to the Collaborator Server for review.



Upload arbitrary Git diffs

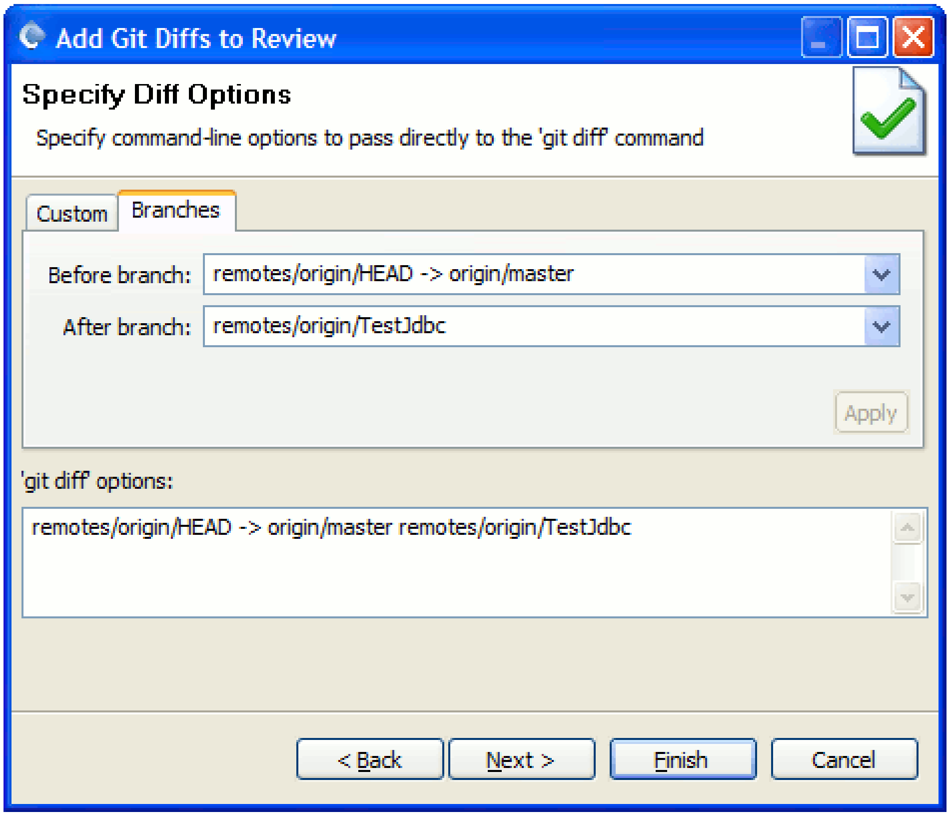
Press the *Add Git Diffs... button* and then click on the *Branches* tab to upload the differences between two branches to a review. Specify the branches by selecting from the *before* and *after* dropdown menus.



Upload the difference between two branches

6.3.2.1 Comparing two branches

Press the *Add Git Diffs...* [439] button on the main screen [339] and then select the *Branches* tab to upload the differences between two branches to a review. Specify the branches by selecting from the *before* and *after* dropdown menus.



Upload the difference between two branches

6.3.3 Command-Line Client

Commands recommended for Git

`ccollab addchanges` [447] - Attaches locally-modified files to a review.

`ccollab addchangelist` [448] - Attaches an atomic changelist to a review.

`ccollab addgitdiffs` [449] - Uploads differences generated by git diff command.

`ccollab gitaddbranch` [450] - Uploads all differences between the specified branch and the remote-tracking branch.

Configuration

No extra configuration is required to use Git with the Command-Line Client.

6.3.3.1 addchanges (for Git)

Description

The `ccollab addchanges` command uploads locally modified files controlled by Git to a review on the Collaborator server.

Command Line Syntax:

```
ccollab [global-options] addchanges [--upload-comment <value>]
<review> <file-spec> [<file-spec> ...]
```

Command Options

Option	Required?	Description
`global-options`	No	A number of global or SCM-specific global options. See Command-line Global Options Reference 357.
`--upload-comment <value>`	No	A comment to be used for the uploaded files. Default is *Local changes*.
`<review>`	Yes	Identifier of the desired review (an integer number), or a *new*, *ask*, or *last* string.
`<file-spec> [<file-spec> ...]`	Yes	Files to be added and/or folders to scan for modified files. Separate multiple file and folder names with spaces. If a file or folder name contains spaces, enclose this name is quotes. `ccollab` scans folders recursively. The resulting list includes the name of modified files. "Modifications" include include edits, additions, deletions, branches, integrations, moves, copies, and so on.

Option	Required?	Description
		After the scan is complete, a file list is presented in a graphical editor so you can review the files to be uploaded and make correct the list, if needed.

Examples:

To create a new review and add all changes in the current directory and below, plus the file foo. txt, you would use:

```
ccollab addchanges new . foo.txt
```

To upload modified files from the current working directory and all subdirectories to review 123:

```
ccollab addchanges 123 .
```

To upload file foo.txt and modified files from c:\dev\project into a brand new review:

```
ccollab addchanges new foo.txt c:\dev\project
```

6.3.3.2 addchangelist (for Git)

Description

The `ccollab addchangelist` command attaches all files from an unpushed or committed Git changelist to a review on the Collaborator server.

Command Line Syntax:

```
ccollab [global-options] addchangelist <review> <changelist>
[<changelist> ...]
```

Command Options

Option	Required?	Description
`[global-options]`	No	A number of global or Git-specific global options. See Command-line Global Options Reference 357.
`<review>`	Yes	Identifier of the desired review (an integer number), or a *new*, *ask*, or *last* string.

Option	Required?	Description
`<changelist> [<changelist> ... ]`	Yes	Identifier(s) of the desired changeset(s) in your source control.

Examples:

To upload Unpushed Commits 4321 and 7568 to a new review:

```
ccollab addchangelist new 4321 7568
```

To upload Commits 5432 and 12654 to review 111:

```
ccollab addchangelist 111 5432 12654
```

6.3.3.3 addgitdiffs

Description

The `ccollab addgitdiffs` command uploads differences between arbitrary versions of files in Git. The differences are generated using the native 'git diff' command of Git.

Command Line Syntax:

```
ccollab [global-options] addgitdiffs [--upload-comment <value>]
<review> [<git-diff-arg> [<git-diff-arg> ...]]
```

Command Options

Option	Required?	Description
`--upload-comment <value>`	No	Comment used to upload files (defaults to command-line arguments)
`<review>`	Yes	Must be either an integer review-id, 'new', 'ask', or 'last'
`<git-diff-arg> [<git-diff-arg> ...]`	No	Options which should be passed to the git diff command

Remarks:

Do not use diff arguments that affect the diff output such as '-U unified'. The Collaborator command-line client will automatically select an output format that ensures you will get all the data you need on the server.

Examples:

To upload all changes between the revision 8 revisions ago and the revision 4 revisions ago:

```
ccollab addgitdiffs review master~8 master~4
```

To upload all changes in your local working directory:

```
ccollab addgitdiffs review
```

6.3.3.4 gitaddbranch

Description

The `ccollab gitaddbranch` command uploads all differences between the given branch and the remote branch being tracked for changes.

Command Line Syntax:

```
ccollab [global-options] gitaddbranch <review> [<branch>]
[<upstream>]
```

Command Options

Option	Required?	Description
`<review>`	Yes	Must be either an integer review-id, 'new', 'ask', or 'last'
`<branch>`	No	Name of a branch whose changes should be added. Default is the current checkout branch.
`<upstream>`	No	Name of the remote-tracking branch to be compared against. If omitted Collaborator will try the default upstream branch (which was set via the git branch --set-upstream-to command-line key).

Examples:

To upload all differences between the "foo_feature" branch and the "origin/master" repository:

```
ccollab gitaddbranch new foo_feature origin/master
```

6.3.4 Git Server Hooks

The ensure-review-started 452 and ensure-reviewed 453 hooks ensure that files cannot be committed unless certain conditions are met. If a user attempts to commit files that do not meet those conditions, an error message describing the unfulfilled conditions will be displayed and the files will not be committed. If the conditions are met, the commit will be allowed to continue normally. The ensure-review-started hook requires that the review exist; ensure-reviewed requires that the review be completed.

If you are familiar with Gerrit (an open source Git-focused review package), you can implement a similar workflow for your engineering staff using Collaborator and git triggers. Further information may be found on the Smart Bear blog in the "Gerrit-Style Code Review with Collaborator" post.

Linking reviews with commits

To use the ensure-review-started 452 and ensure-reviewed 453 hooks, you must require developers to put the review ID somewhere in the Git commit message. The format of this text is completely up to you; you will need to supply a Java-style regular expression that identifies this text and specifically calls out the review ID inside that text. The regular expression is specified using the --review-id-regex hook command option.

Here are some common ways of specifying the review ID and the corresponding regular expressions. Note that regular expressions are *case-insensitive* and you must *identify the review ID portion with parenthesis*:

Text	**--review-id-regex**
`Review: 4233`	`review:\s*(\d+)`
`rID4233`	`rid(\d+)`
`(review 4233)`	`\(review (\d+)\)`

This text can appear in-line with other text or in a more formal "form-style" layout. Because you control the regular expression, you can control exactly what this looks like.

For more information about Git hooks in general, see the Git documentation.

6.3.4.1 ensure-review-started (for Git)

Description

Use the `ensure-reviewed` trigger to ensure that the review that was created for the specified changelist has been completed by the time you submit the changelist to the Git repository. If the review has not been completed, the trigger blocks the submit operation and displays an error message informing the user about the problem.

Command Line Syntax:

```
ccollab [global-options] admin trigger ensure-reviewed [--review-id-regex <value>] <changelist-id>
```

Command Options

Option	Required?	Description
`<changelist-id>`	Yes	The changelist identifier.
`--review-id-regex <value>`	No	A regular expression that identifies the review ID in the commit is comment.

Installation

To install this trigger you will typically create an update hook. If you already have an update hook, you can add our tool wherever it is appropriate; otherwise you will need to create an executable hook as described in the Git documentation. The update hook should iterate over the commits being pushed and call this trigger for each one of them, and then exit with a non-zero exit code if any of the trigger invocations failed.

Example shell script:

```
#!/bin/sh
refname="$1"
oldrev="$2"
newrev="$3"
for commit in `git rev-list $oldrev..$newrev -- ''`
do
 /collab/install/ccollab --url <collabUrl> --user <collabUser> --
password <collabPasswd> --scm git admin trigger ensure-reviewed
$commit
 exitcode=$(($exitcode + $?))
done
exit $exitcode
```

Note our use of "exit" to ensure that the hook script terminates with a non-zero exit code if our trigger rejects one of the commits.

6.3.4.2 ensure-reviewed (for Git)

Description

Use the `ensure-review-started` trigger to ensure that a review for the specified changelist has been started. The trigger blocks the submit operation if there is no review for the changelist in Collaborator, and displays an error message telling that the changes need to be reviewed before submitting them to the Git repository.

Command Line Syntax:

```
ccollab [global-options] admin trigger ensure-review-started [--
review-id-regex <value>] <changelist-id>
```

Command Options

Option	Required?	Description
`<changelist-id>`	Yes	The changelist identifier.
`--review-id-regex <value>`	No	A regular expression that identifies the review ID in the commit is comment.

Installation

To install this trigger you will typically create an update hook. If you already have an update hook, you can add our tool wherever it is appropriate; otherwise you will need to create an executable hook as described in the Git documentation. The update hook should iterate over the commits being pushed and call this trigger for each one of them, and then exit with a non-zero exit code if any of the trigger invocations failed.

Example shell script:

```
#!/bin/sh
refname="$1"
oldrev="$2"
newrev="$3"
for commit in `git rev-list $oldrev..$newrev -- ''`
do
 /collab/install/ccollab --url <collabUrl> --user <collabUser> --
password <collabPasswd> --scm git admin trigger ensure-review-started
$commit
 exitcode=$(($exitcode + $?))
done
exit $exitcode
```

Note our use of "exit" to ensure that the hook script terminates with a non-zero exit code if our trigger rejects one of the commits.

6.4 IBM Rational ClearCase Integration

Topics of this section describe Collaborator integration with IBM Rational ClearCase.

ClearCase Server Integration 457

To take advantage of ClearCase integration, configure the Collaborator server so that it communicates with a ClearCase repository directly, without any client software.

GUI Client 458

The GUI Client can scan ClearCase for checked-out files and upload them before they are checked in 460. It uploads changes from your activities 461 or changes from an activity or activities that you name 462. It can also upload any versions of ClearCase files after they are checked in.

Command-Line Client 467

The Command-Line Client can scan for checked-out files and upload them before they are checked in, upload any versions of ClearCase files after they are checked in, or upload UCM change sets for review.

Eclipse Plug-in

The Eclipse Plug-in 366 integrates with the IBM Rational ClearCase SCM Adapter plug-in or with the open source ClearCase plug-in for Eclipse so you can upload 383 locally modified files with full support from your ClearCase eclipse plug-in.

Supported Versions

Our integration uses your own ClearCase command-line client (`cleartool`) to communicate with the server. We support these versions:

- Rational ClearCase and Rational ClearCase LT, versions 4.1 through 8.x
- Rational ClearCase Remote Client, version 8.x

Because we use client applications already present on your computer, we support all protocols, authentications, proxies, and other client configuration options you are currently using.

Support for ClearCase UCM

Collaborator supports ClearCase UCM activities. The change set associated with a ClearCase activity can be added to a review using the Command-Line Client 348 addactivity 474 command. For each file in the activity, the latest version in the activity and the predecessor of the earliest version in the activity are uploaded to the review.

A Note about ClearCase Activities

Uploading activities for review generates file differences based on Multiple Version Changelists 681. Uploading activities is not supported by Rational ClearCase Remote Client.

Support for ClearCase Remote Client (CCRC 8.x only)

Collaborator integration with CCRC uses the Rational Change Management Server API. When running the Collaborator client installer, there is an edit field allowing you to select the location of the Rational CM API jar files on your system. The required files are:

- remote_core.jar
- stpcc.jar
- stpcmmn.jar
- stpwvcm.jar

These files are installed by the ClearCase Remote Client under the Rational Shared Resource Directory. The directory should look similar to one of the following:

```
C:\Program Files\IBM\IMShared\plugins\com.ibm.rational.teamapi_8.0.0.
v20110916_0625, or
/opt/eclipse/plugins/com.ibm.rational.teamapi_8.0.0.v20110916_0625
```

Find the location of the files on your system and select or enter it during install so the Collaborator installer can make them available to the Collaborator client. The installer will copy them to the following subdirectory under the Collaborator client installation directory:

```
ui/plugins/com.smartbear.collaborator_9.5.xxxx/libs
```

If using the RPM installer, you will have to manually copy these files to the correct subdirectory.

Once installed, create a ClearCase SCM configuration using the the same connection parameters to the ClearCase CM server as your ClearCase Remote Client. These are your username and password, and the ClearCase TeamWeb services URL. For example, if your ClearCase server host name is cc-server, the default server URL would be:

```
http://cc-server:16080/ccrc
```

Be careful to specify your connection parameters correctly. These parameters are not authenticated up front, instead calling back when server activity must take place. If the authentication is wrong, a cascade of errors can occur which can exhaust the RPC connections to the CM server.

Troubleshooting CCRC Views

CCRC views can get corrupted in a way that causes the CM API to generate exceptions when trying to upload CCRC files to a review. We do not know the cause of these exceptions, but selecting "Refresh->Repair->Vob Tag Directories" from the view context menu in the CCRC client, or deleting and recreating the view, fixes this condition.

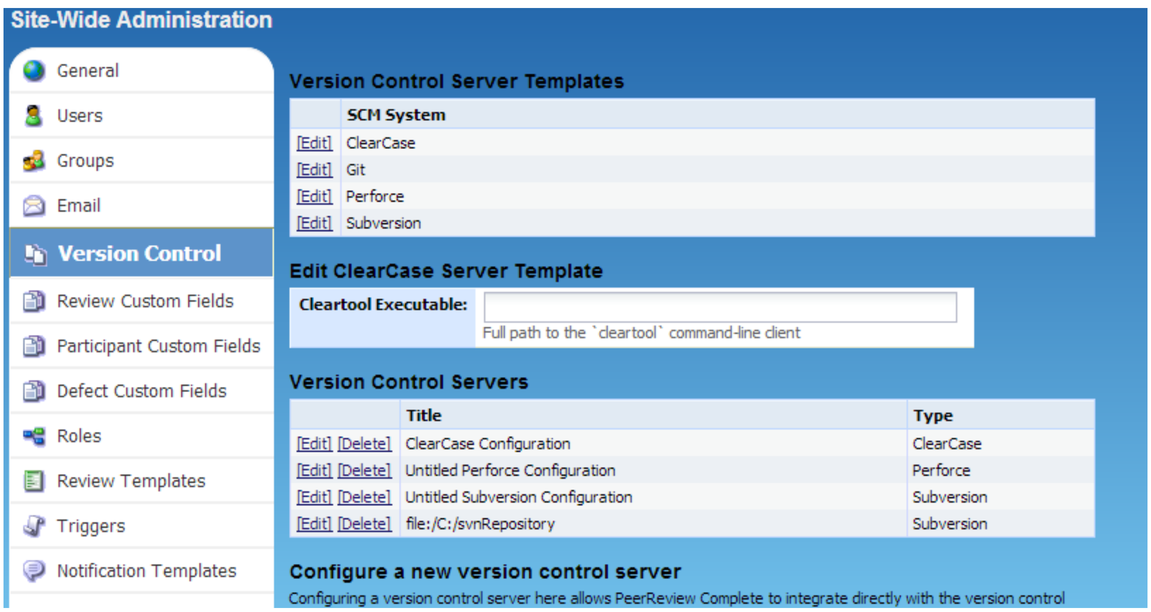
6.4.1 ClearCase Server Integration

The Collaborator server can be configured to communicate directly with a ClearCase repository. This allows users to review commits completely from the browser, without having to install any client programs.

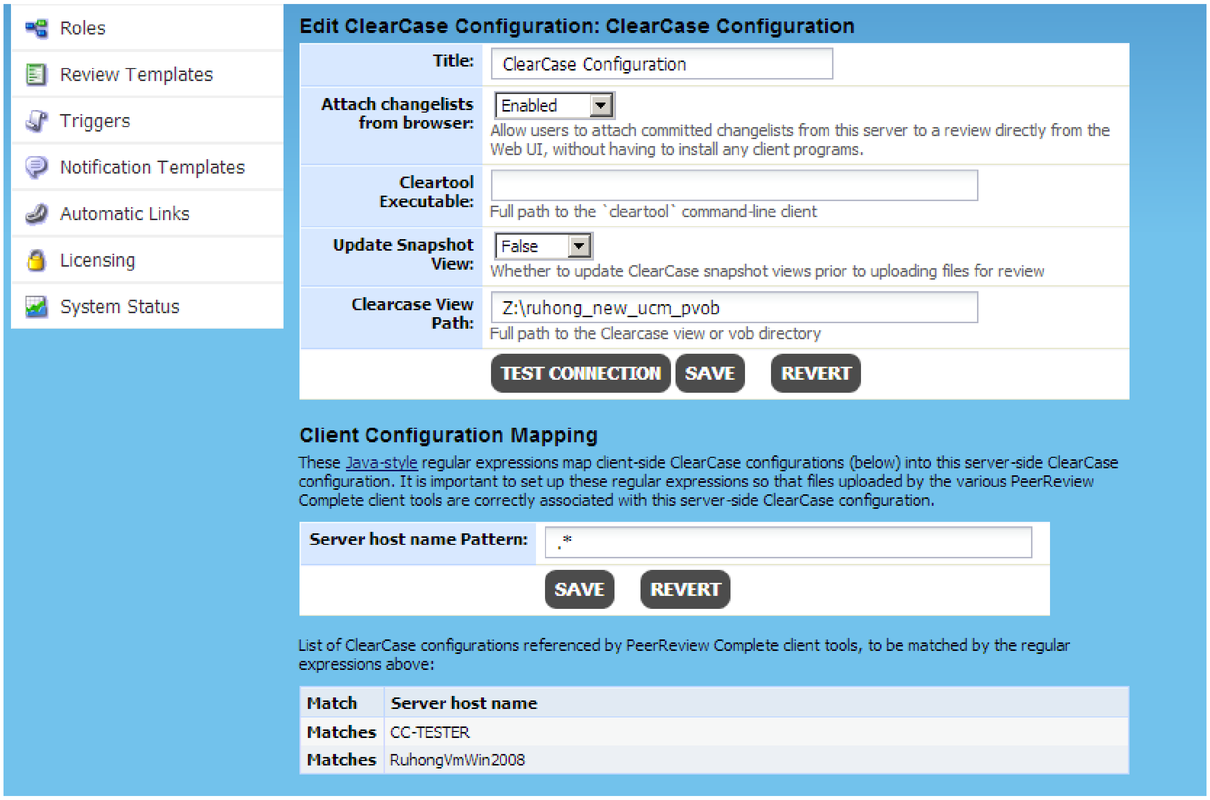
To enable this feature:

1. Install and configure a ClearCase client on the Collaborator server.

2. In Collaborator, click **Admin** on the home page and then select **Version Control** from the menu on the left:



3. Add information about your ClearCase repository to Collaborator. To do this, click **Edit** for the ClearCase item in the **Version Control Server Templates** section. The following edit form will appear. Enter your repository details there:

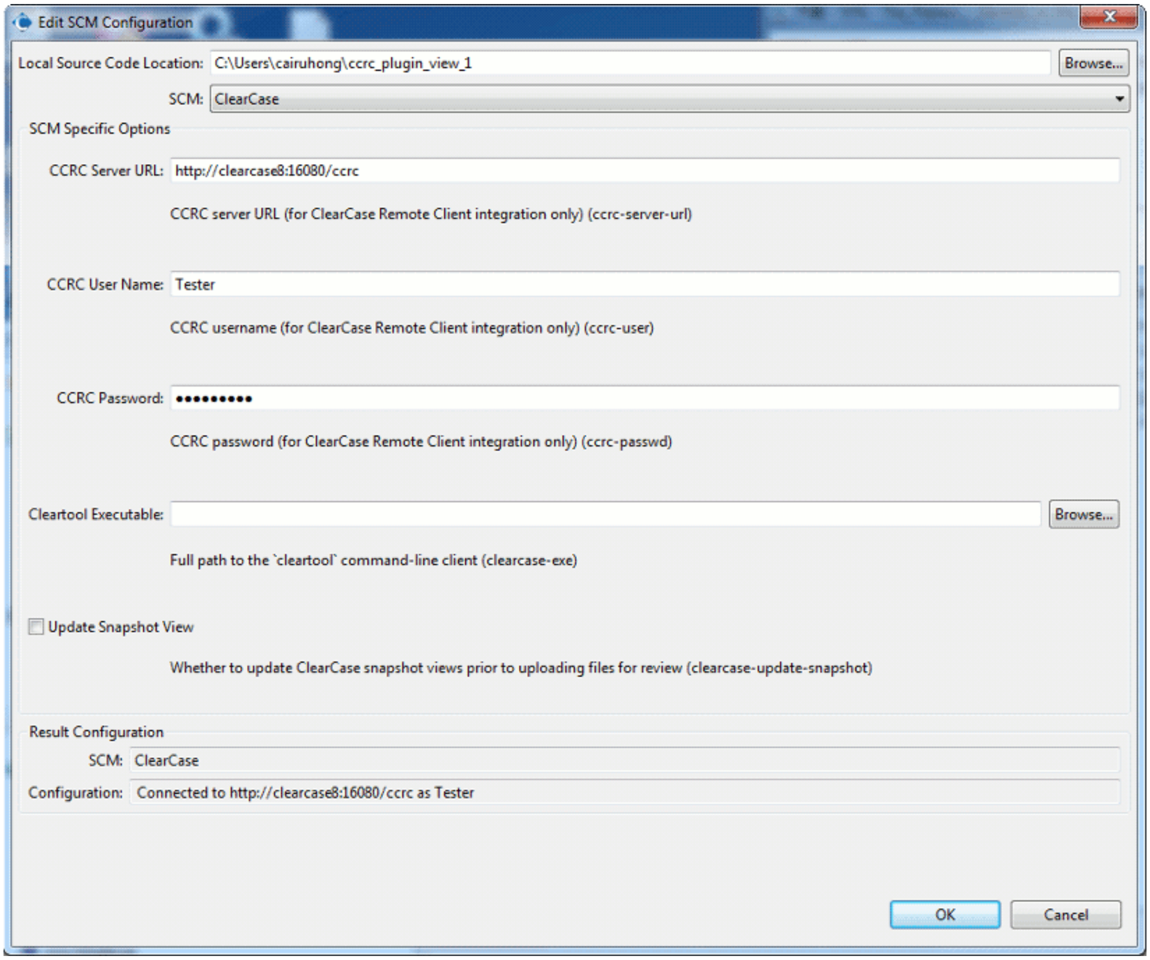


4. Save the changes.

6.4.2 GUI Client

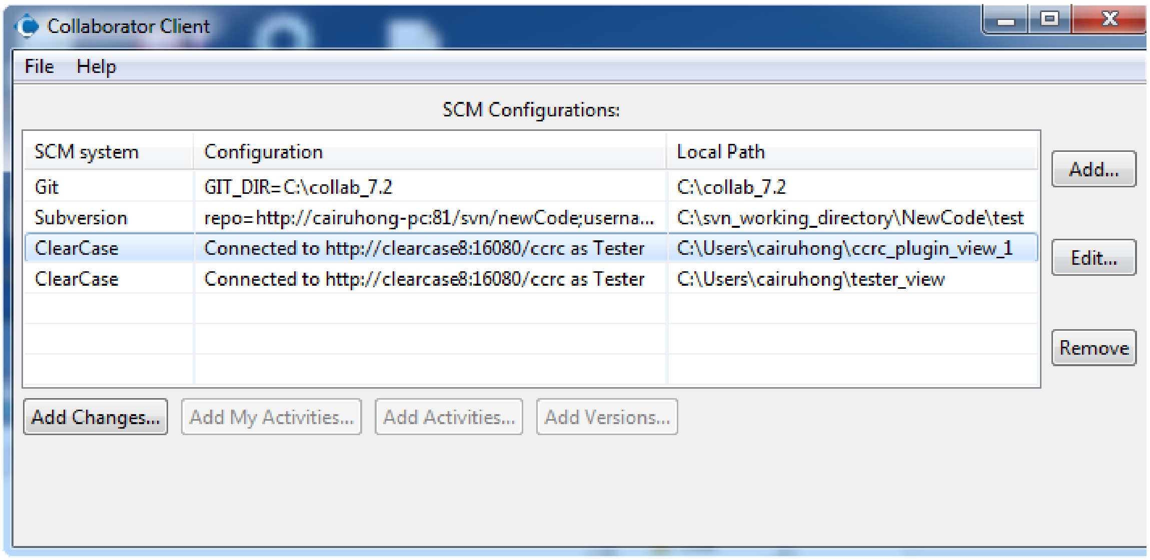
ClearCase-specific Options

The SCM Configuration dialog 341 has one ClearCase-specific option. Select the checkbox *Update snapshot view* if you want your ClearCase snapshot views to be updated prior to uploading files to a review.



Uploading files to a Review

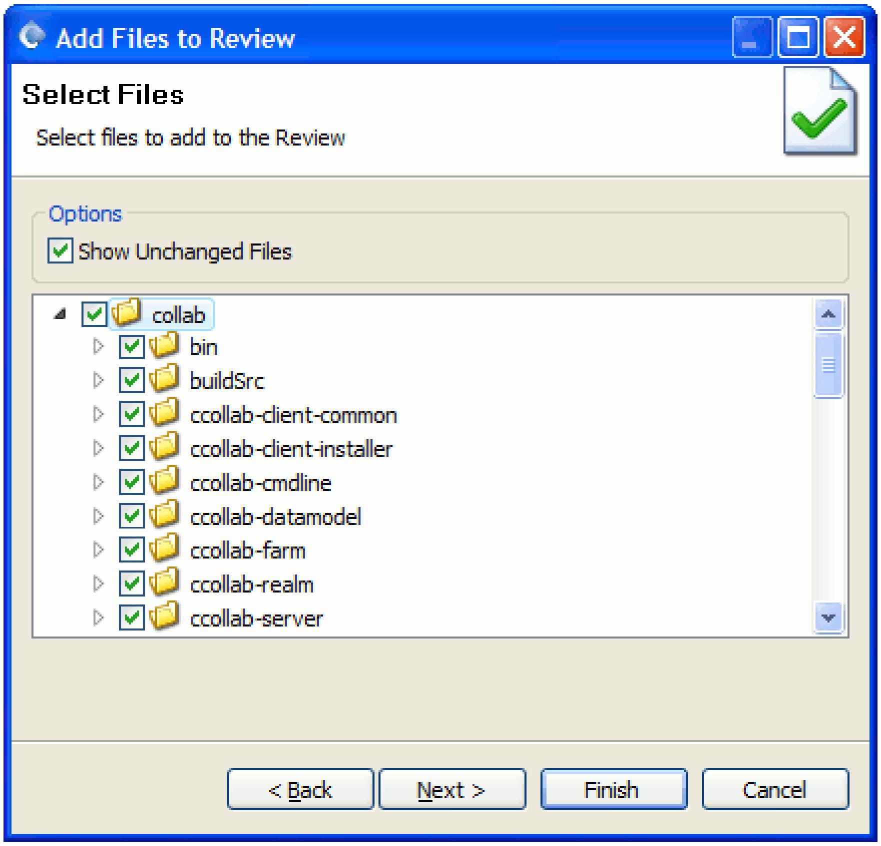
Selecting a ClearCase SCM Configuration in the GUI Client *main screen* 339 enables several options for adding files for review. The *Add Changes...* 460 button finds modified files or allows selection of unmodified files, for uploading to a review. The *Add My Activities...* 461 button uploads changes from your activities. The *Add Activities...* 462 button uploads changes from an activity or activities that you name. The *Add Versions...* 462 button uploads arbitrary versions of files stored in ClearCase.



Uploading ClearCase files to a Review

Add Changes

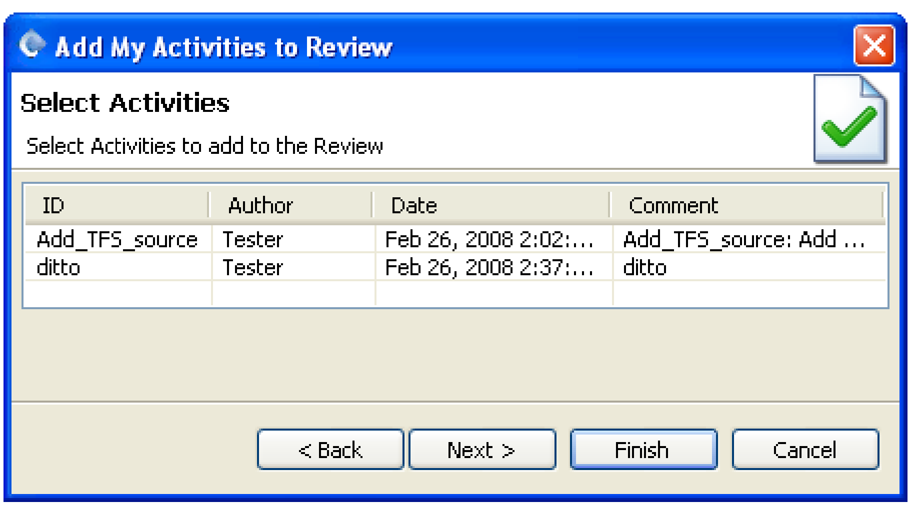
Press the *Add Changes...* button to upload checked-out files to the Collaborator Server for review.



Add Changes

Add My Activities

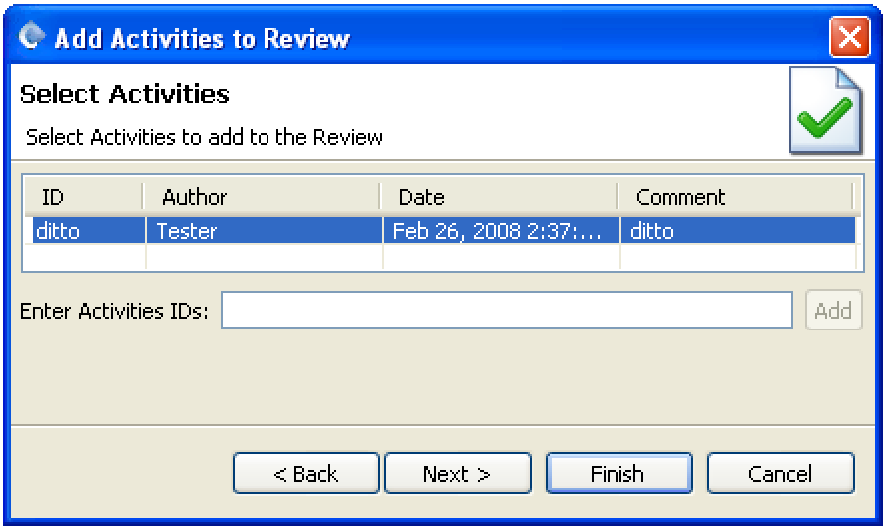
Press the *Add My Activities...* button to upload files from selected activities which you own to the Collaborator Server for review.



Add My Activities

Add Named Activities

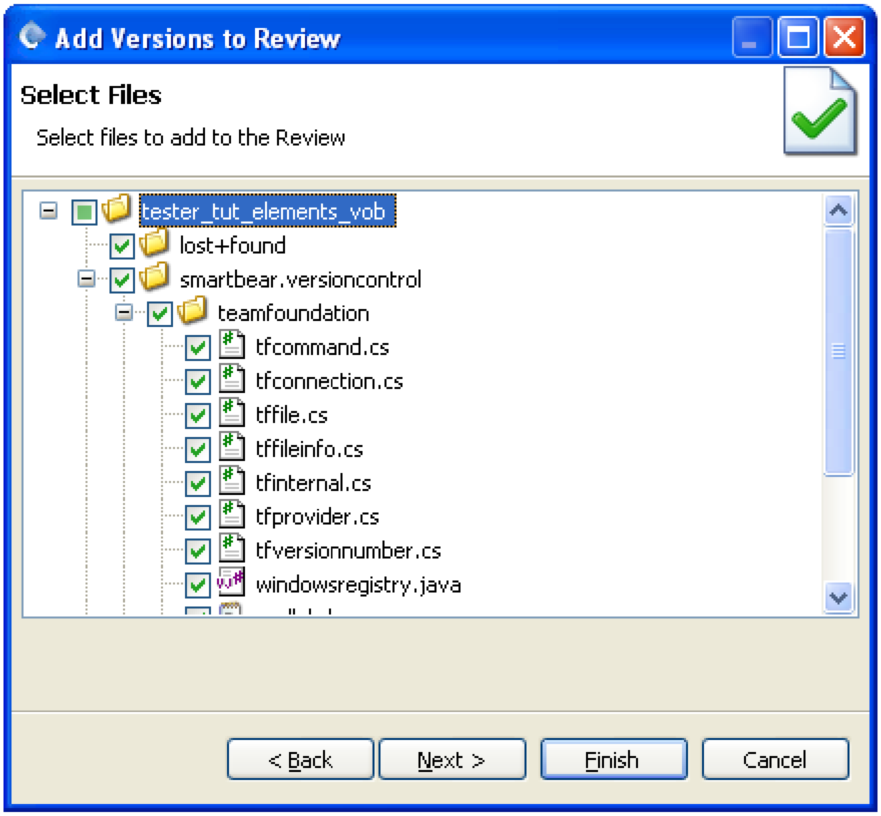
Press the *Add Activities...* button to upload changes from a named ClearCase activity to the Collaborator Server for review. You cannot upload activities that have CHECKEDOUT versions if you are not the activity owner.



Add Named Activities

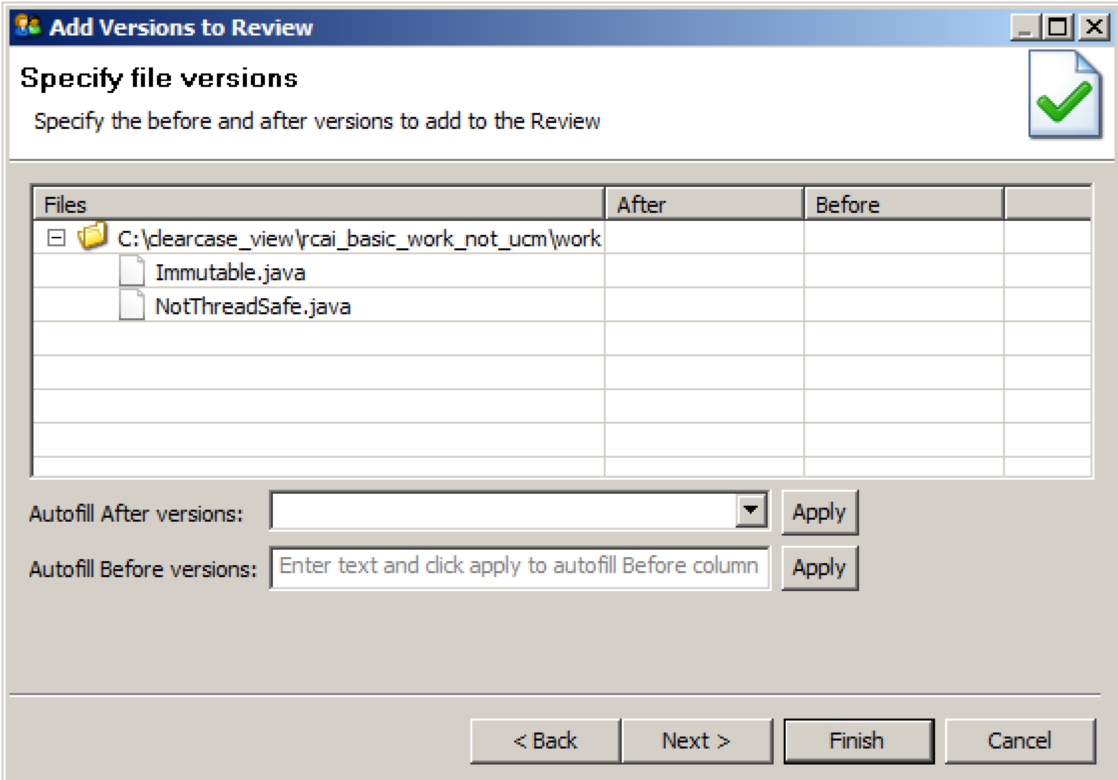
Add Versions

Press the *Add Versions...* button to upload versions of files in your working copy to the Collaborator Server for review. Specify a name for the review or select an existing review and then click Next. You will be prompted to select one or more files in your checkout path (which was specified in the SCM Configuration dialog) 341.



Select files

Click Next. Do not press Finish yet.

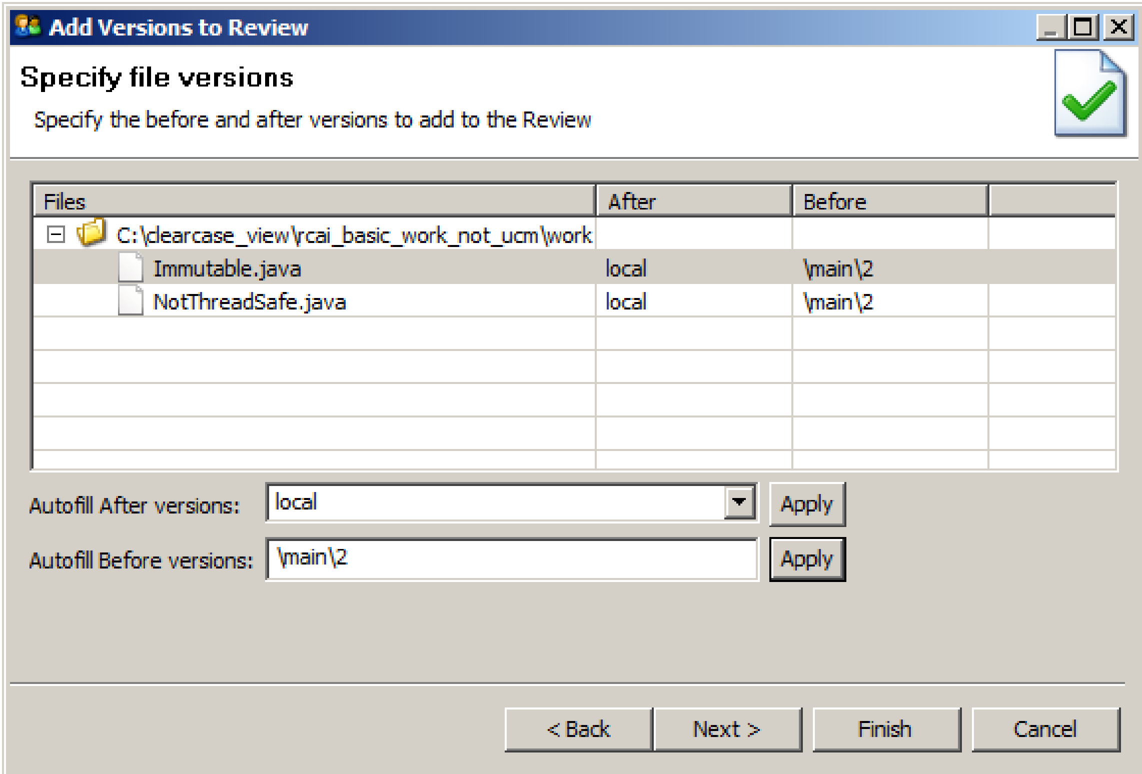


Specify versions

The next page of the wizard lists the files that you have selected. You need to specify which versions of these files should be added to the review.

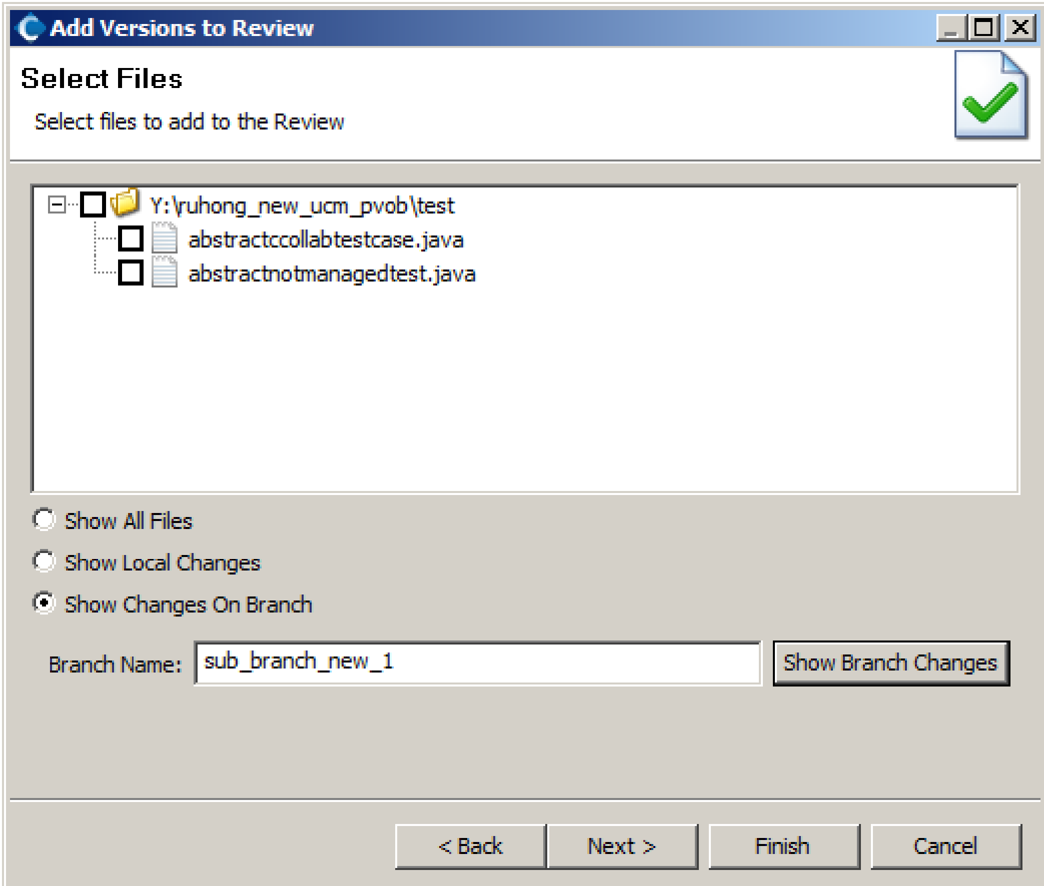
Enter the ClearCase versions of each file to Before and After columns. Rows corresponding to directories are not editable. To specify a ClearCase version you can use the 'local' and 'LATEST' keywords. To learn about these keywords, see ccollab addversions 471 command-line reference.

To fill the before and after versions for all listed files automatically, specify the needed version in the Autofill After versions or Autofill Before versions edit boxes and click Apply. To clear previously specified versions for all listed files, enter empty string to the Autofill edit boxes and click Apply.



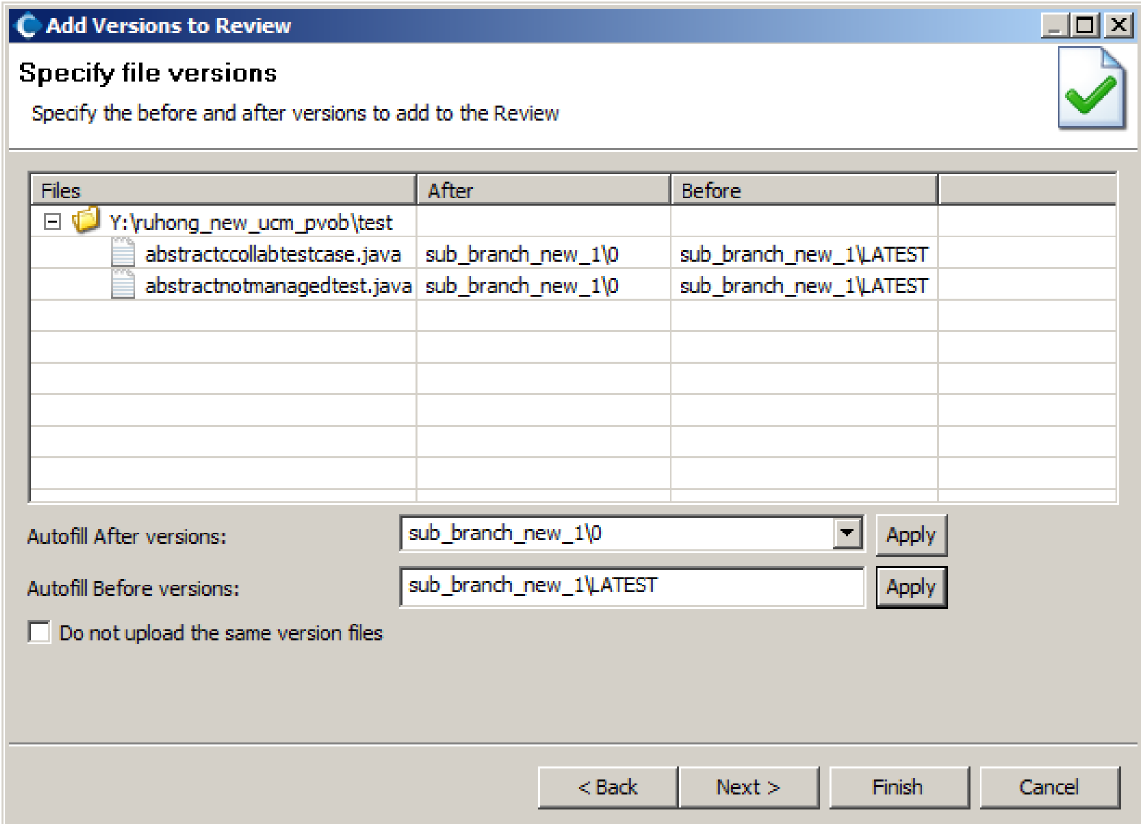
Automatically fill in before/after values

You can also specify a branch you want to work with:



Specifying branch name

You can input the absolute branch version path (for instance, "\main\branch_new_1\sub_branch_new_1\1") or a relative path (like, "\sub_branch_new_1\1").



6.4.3 Command-Line Client

Commands recommended for ClearCase

ccollab addchanges 468 - Attaches locally-modified files to a review

ccollab addchangelist 470 - Attaches an atomic changelist to a review

ccollab addversions 471 - Attaches any 2 given versions to a review

ccollab addactivity 474 - Attaches file versions in a ClearCase activity to a review

ccollab commit 475 - Commit changes in the review

The addchanges 422 command will scan for checked-out files and upload them before they are checked in.

There is an option for the addchanges 468 command that allows local changes to be uploaded with a predecessor version in another branch as the previous version. The --diffbranch 469 option is used for this:

```
ccollab addchanges --diffbranch branch-name review file-or-dir [file-or-dir] ...
```

For example, to create a new review and add all changes in the current directory and below, and compare them to the predecessor versions in the \main branch, you would use:

```
ccollab addchanges --diffbranch main new .
```

You can also use the special branch name pre to refer to the predecessor branch. For example, to add the local changes to hello.c compared to the most recent predecessor version in the previous branch to review 45, you would use:

```
ccollab addchanges --diffbranch pre 45 hello.c
```

The addversions command will upload arbitrary versions of ClearCase files after they are checked in.

The addactivity 474 command will upload UCM change sets for review.

Configuration

In most cases, the Command-Line Client can automatically detect your ClearCase configuration. Try testing your configuration 349 to verify the configuration is detected correctly.

If the Command-Line Client is unable to detect your ClearCase configuration or you want to override the detected settings, you can manually specify ClearCase settings using global options 357.

To manually configure the Command-Line Client to use ClearCase, execute the following command:

```
ccollab set scm 358 clearcase
```

6.4.3.1 addchanges (for ClearCase)

Description

The `ccollab addchanges` command uploads locally modified files controlled by ClearCase to a review on the Collaborator server.

Command Line Syntax:

```
ccollab [global-options] addchanges [--diffbranch <value>] [--upload-comment <value>] <review> <file-spec> [<file-spec> ...]
```

Command Options

Option	Required?	Description
`global-options`	No	A number of global or SCM-specific global options. See Command-line Global Options Reference [357].
`--diffbranch <value>`	No	(ClearCase only) Specify either branch-name or "pre" to determine the earlier version for upload. See Remarks.
`--upload-comment <value>`	No	A comment to be used for the uploaded files. Default is *Local changes*.
`<review>`	Yes	Identifier of the desired review (an integer number), or a *new*, *ask*, or *last* string.
`<file-spec> [<file-spec> ...]`	Yes	Files to be added and/or folders to scan for modified files. Separate multiple file and folder names with spaces. If a file or folder name contains spaces, enclose this name is quotes. `ccollab` scans folders recursively. The resulting list includes the name of modified files. "Modifications" include include edits, additions, deletions, branches, integrations, moves, copies, and so on. After the scan is complete, a file list is presented in a graphical editor so you can review the files to be uploaded and make correct the list, if needed.

Remarks:

The '--diffbranch' option allows local changes to be uploaded with a predecessor version in another branch as the previous version.

For example, to create a new review and add all changes in the current directory and below, and compare them to the predecessor versions in the \main branch, you would use:

```
ccollab addchanges --diffbranch main new .
```

You can also use the special branch name 'pre' to refer to the predecessor branch. For example, to add the local changes to hello.c compared to the most recent predecessor version in the previous branch to review 45, you would use:

```
ccollab addchanges --diffbranch pre 45 hello.c
```

Examples:

To create a new review and add all changes in the current directory and below, plus the file foo. txt, you would use:

```
ccollab addchanges new . foo.txt
```

To upload modified files from the current working directory and all subdirectories to review 123:

```
ccollab addchanges 123 .
```

To upload file foo.txt and modified files from c:\dev\project into a brand new review:

```
ccollab addchanges new foo.txt c:\dev\project
```

6.4.3.2 addchangelist (for ClearCase)

Description

The `ccollab addchangelist` command attaches all files from a submitted ClearCase changelist (activity) to a review on the Collaborator server.

Command Line Syntax:

```
ccollab [global-options] addchangelist <review> <changelist>
[<changelist> ...]
```

Command Options

Option	Required?	Description
[global-options]	No	A number of global or ClearCase-specific global options. See Command-line Global Options Reference[357].

Option	Required?	Description
`<review>`	Yes	Identifier of the desired review (an integer number), or a *new*, *ask*, or *last* string.
`<changelist> [<changelist> ... ]`	Yes	Identifier(s) or names of the desired activity (ies) in your source control.

Examples:

To upload Activities add_new_scm_support and add_extended_version_parsing to a new review:

```
ccollab addchangelist new add_new_scm_support
add_extended_version_parsing
```

To upload Activities AnActivity and AnotherActivity to review 111:

```
ccollab addchangelist 111 AnActivity AnotherActivity
```

6.4.3.3 addversions (for ClearCase)

Description

The `ccollab addversions` command appends the specified versions (revisions) of a file controlled by ClearCase on your computer to a review.

Command Line Syntax:

```
ccollab [global-options] addversions [--upload-comment <value>] [--
version-spec <value> [<value> ...]] <review> [<file-path>]
[<version>] [<predecessor-version>]
```

Command Options

Option	Required?	Description
`[global-options]`	No	A number of global or SCM-specific global options. See Command-line Global Options Reference 357.
`--upload-comment <value>`	No	A comment to be used for the uploaded files. Default is *Local changes*.

Option	Required?	Description
`--version-spec <value> [<value> ...]`	No	The version to be added to a review. A version-spec value consist of three components: *path version* [*previous-version*], where *path* is the file name or server path of the file, *version* is the file version to be reviewed, and *previous-version* is an optional version, against which *version* should be compared. If any of these arguments contains spaces, enclose it in quotes. Typically a version-spec is not used in the command line. We recommend specifying the file and version using the <file-path>, <version> and the <predecessor-version> arguments (see below).
`<review>`	Yes	Identifier of the desired review (an integer number), or a *new*, *ask*, or *last* string.
`<file-path>`	No	The name and path of the file, whose versions are to be added to the review. **Important:** If you use this option, you should also specify <version> (see below).
`<version>`	No	Required, if <file-path> is specified. The version (revision) of the file to be added to the review. You can specify the keyword *local* to tell the command to use the local version of the file.
`<predecessor-version>`	No	Preceding file version to be added to the review. If you skip this argument, Collaborator will attempt to determine the preceding version based on the information from the source control.

Remarks

- If you skip the predecessor version, Collaborator will generate diffs using the predecessor version reported by your source control system.

- By default, the command lets you add versions of one file only. To add versions of multiple files, create a text file and specify this file in the command line as the standard input stream (stdin):

  ```
  ccollab addversions last < versionlist.txt
  ```

  Each line in the file must consist of the following components: *path version* [*predecessor-version*].

  For information on them, see description of the `version-spec` arguments.

- If you skip the file name and versions in the command line, the command will expect to read them from the standard input stream (stdin). Below are some examples for reading versions from the standard input:

  ```
  ccollab addversions 86753

  ccollab addversions last < versionlist.txt

  cat versionlist.txt | ccollab addversions new
  ```

- When specifying the version in the command line or in an input file, you can use the keyword *local* to denote the version corresponding to the local version of the file. The *local* keyword can only be used for the first version argument, not for the predecessor version.

Examples:

Some examples of specifying versions on the command line for ClearCase:

```
ccollab addversions new hello.c \main\mydev\6 \main\8

ccollab addversions last Main.java /main/dev/31
```

To compare the local version of the ClearCase file/directory to a previous version in an edit list or input list, use 'local' as the initial version. If the file/directory is checked out as '/main/CHECKEDOUT', then 'local' is equivalent to using '/main/CHECKEDOUT' as the initial version. Otherwise 'local' would refer to the latest version of the file/directory. For example, if the local file hello.c is at version '/main/9' and has predecessor '/main/8' then all of the following lines would be equivalent:

```
hello.c /main/9

hello.c local

hello.c /main/9 /main/8

hello.c local /main/8
```

You can also reference a LATEST version, for example:

```
ccollab addversions new hello.c \main\ga_1.0\6 \main\LATEST
```

To upload a version with no predecessor version, use '\main\0':

```
ccollab addversions new hello.c \main\ga_1.0\6 \main\0
```

To compare the version "/main/2" of the directory "W:/user_name_ccrctut_pvob/server" to the version "/main/3" , please run the following command and the difference will be uploaded to Collaborator.

```
ccollab addversions new W:/user_name_ccrctut_pvob/server /main/2 /
main/3
```

6.4.3.4 addactivity

Description

The `ccollab addactivity` command attaches file versions from one or more ClearCase activities to a review.

Command Line Syntax:

```
ccollab [global-options] addactivity [--diffintegration] [--upload-
comment <value>] <review> <activity-name> [<activity-name> ...]
```

Command Options

Option	Required?	Description
`--diffintegration`	No	Use LATEST version from default integration stream, if available, as the predecessor version
`--upload-comment <value>`	No	Comment used to upload files (default is "Local changes")
`<review>`	Yes	Must be either an integer review-id, 'new', 'ask', or 'last'
`<activity-name> [<activity-name> ...]`	Yes	Specify one or more ClearCase activities by name, or use 'all' to include all activities in the current view

Remarks:

- For each file in the activity, the latest version in the activity and the predecessor of the earliest version in the activity are uploaded to the review.
- You can specify multiple activity names on the command line. You can also use the word 'all' as the activity name to include all activities in the current view. If multiple activities are given, the changeset uploaded is the union of all changes in each of the activities.
- You can use the --diffintegration option to include the default integration stream in determining version content for review. For the most recent version, this option will scan the versions of each file in the given activity as well as the versions of those files in any associated rebase activities, to determine the most recent version. For the previous version for each file in the activity, this option will use the LATEST version in the default integration branch (if available) as the previous version.
- IBM Rational ClearCase Remote Client (CCRC) does not support the `addactivity` command.

6.4.3.5 commit (for ClearCase)

Description

The `ccollab commit` command submits the changes from a pre-commit review to source control. Be sure to include a relevant comment.

Command Line Syntax:

```
ccollab [global-options] commit [--comment <value>] [--dismiss-only]
[--force] <review>
```

Command Options

Option	Required?	Description
`--comment <value>`	No	Comment for reviewed changes
`--dismiss-only`	No	Just dismiss the Action Item
`--force`	No	Ignore potential problems
`<review>`	Yes	Must be either an integer review-id, 'ask', or 'last'

Example:

```
ccollab commit 25 --comment "my code" --force
```

6.5 IBM Rational Synergy Integration

This section describes Collaborator integration with Rational Synergy:

GUI Client 477

The GUI Client can upload Tasks into Collaborator. You can upload Pending 478 or Completed 479 Tasks

Command-Line Client 480

The Command-Line Client can upload Tasks into Command-Line Client.

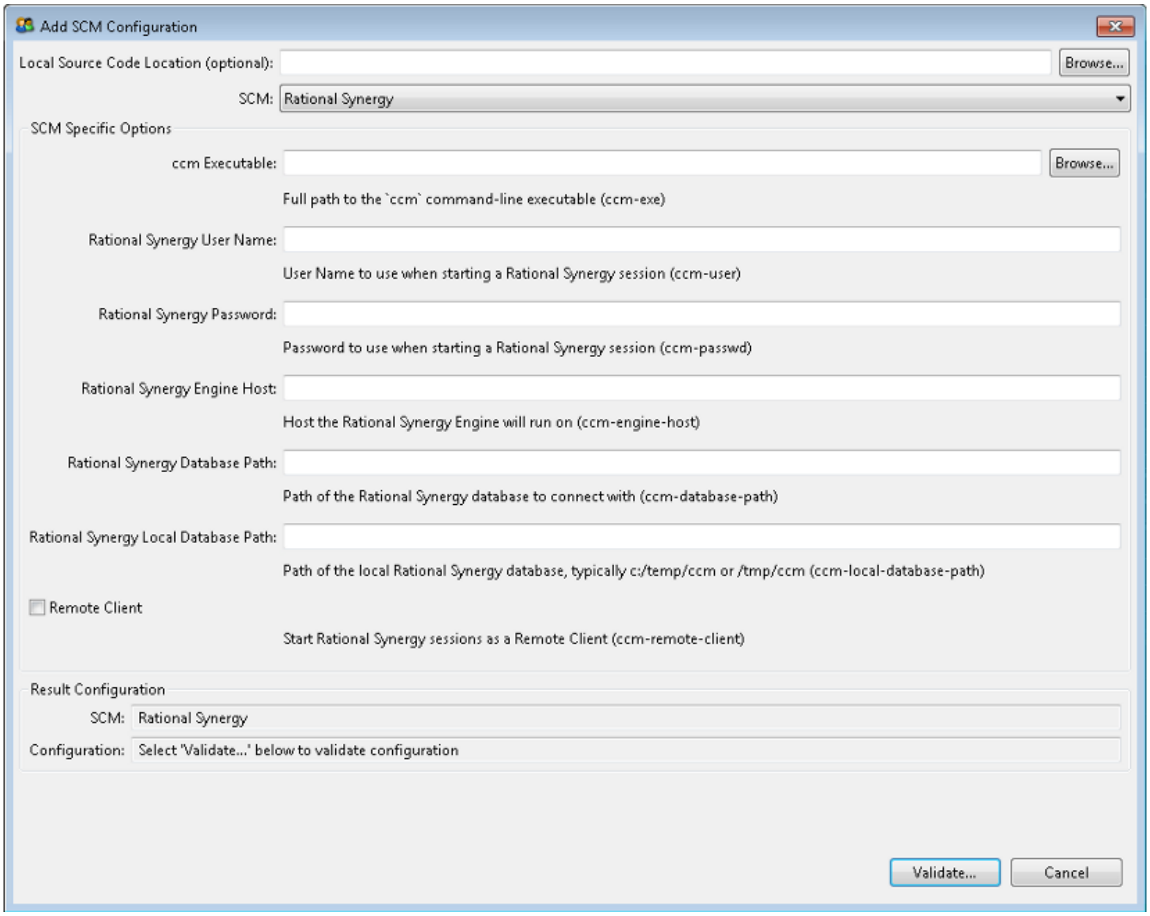
Supported Versions

Our integration uses your own Rational Synergy command-line client (ccm) to communicate with the server. The integration was developed against the Rational Synergy 7.1 toolset, and should work with the latest 6.x and 7.x releases.

6.5.1 GUI Client

Rational Synergy-specific Options

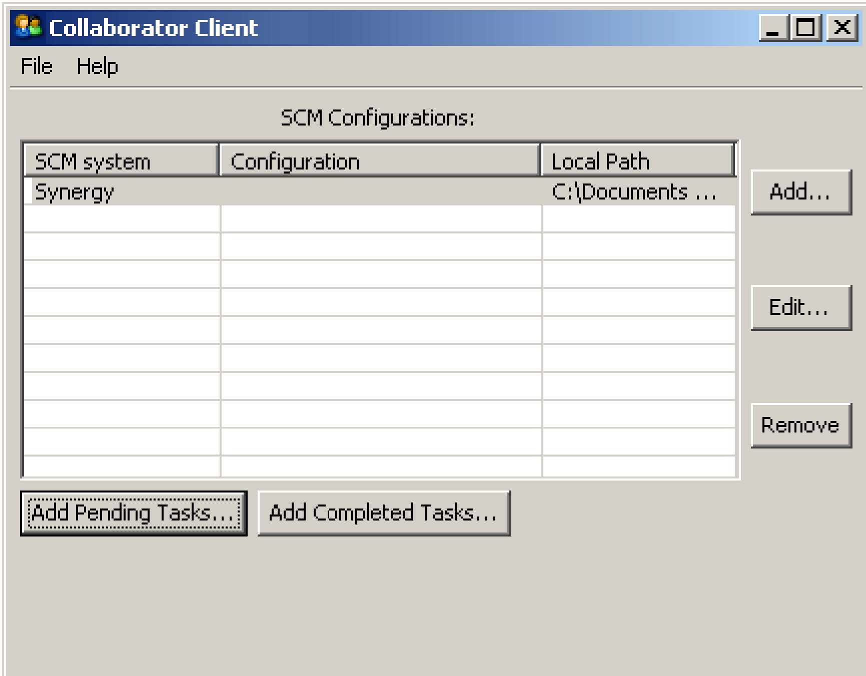
The SCM Configuration dialog 341 has several Rational Synergy-specific options. These can be set as necessary to override Rational Synergy options derived from the environment.



Synergy SCM Configuration

Uploading files to a Review

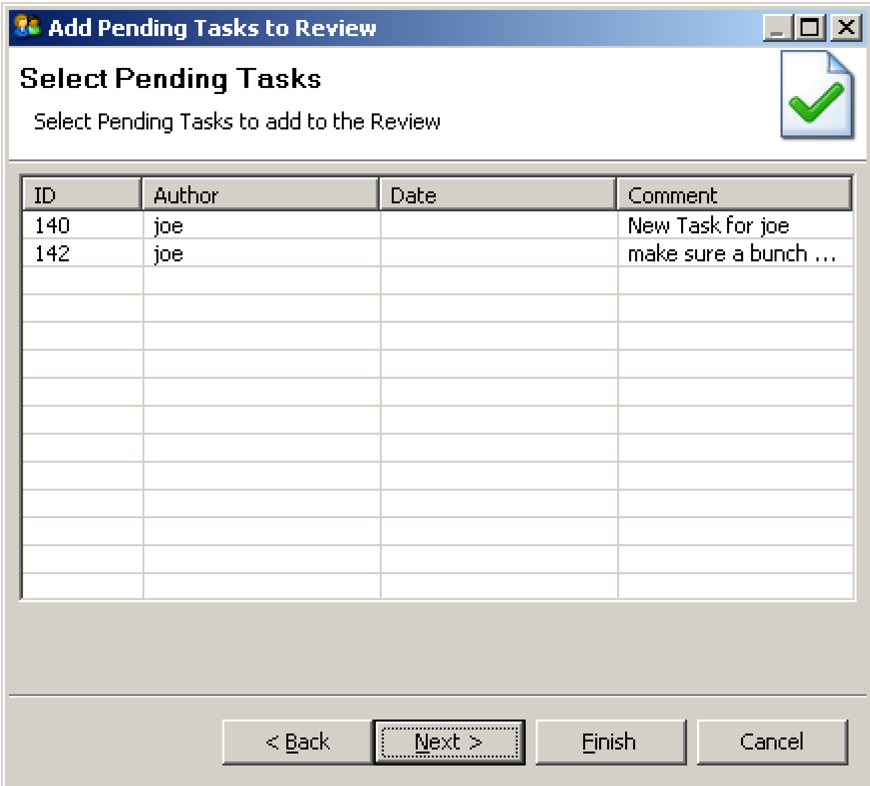
Selecting a Rational Synergy SCM Configuration in the GUI Client main screen 339 causes several Add to Review buttons to appear. The *Add Pending Tasks...* 478 button uploads pending changelists. The *Add Submitted Changelists...* 544 button uploads submitted changelists.



Uploading Synergy Files to a Review

Add Pending Tasks

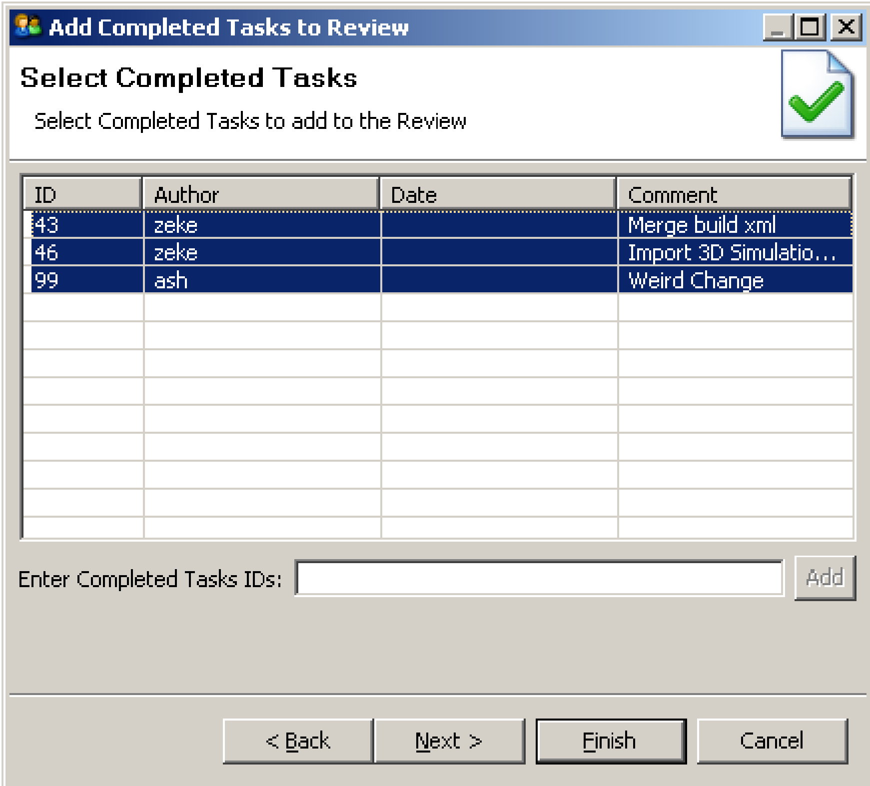
Press the *Add Pending Tasks...* button to upload the files in a pending Task to the Collaborator Server for review.



Add Rational Synergy Pending Tasks

Add Rational Synergy Completed Tasks

Press the *Add Completed Tasks...* button to upload the files in a completed Task to the Collaborator Server for review.



Add Rational Synergy Completed Task

6.5.2 Command-Line Client

Commands recommended for Rational Synergy

`ccollab addchangelist` 481 - Attaches an atomic changelist to a review

`ccollab addversions` 482 - Attaches any 2 given versions to a review

The addchangelist 550 command will upload Rational Synergy tasks into Collaborator. You can upload tasks either before or after they are completed.

Configuration

The Command-Line Client can may need some configuration. Try testing your configuration 349 to verify the configuration is detected correctly.

If the Command-Line Client is unable to detect your Rational Synergy configuration or you want to override the detected settings, you can manually specify Rational Synergy settings using global options 361.

To manually configure the Command-Line Client to use Rational Synergy, execute the following command:

```
ccollab set scm 358 synergy
```

Rational Synergy-specific Options

Option	Description
`--ccm-exe <value>`	Full path to the `ccm` command-line executable
`--ccm-user <value>`	User Name to use when starting a Rational Synergy session
`--ccm-passwd <value>`	Password to use when starting a Rational Synergy session
`--ccm-engine-host <value>`	Host the Rational Synergy Engine will run on
`--ccm-database-path <value>`	Path of the Rational Synergy database to connect with
`--ccm-local-database-path <value>`	Path of the local Rational Synergy database, typically c:/temp/ccm or /tmp/ccm
`--ccm-remote-client`	Start Rational Synergy sessions as a Remote Client
`--ccm-server-url <value>`	Server URL for Web-Mode Rational Synergy servers

6.5.2.1 addchangelist (for Rational Synergy)

Description

The `ccollab addchangelist` command attaches all files from a pending or a completed Rational Synergy changelist (tasks) to a review on the Collaborator server.

Command Line Syntax:

```
ccollab [global-options] addchangelist <review> <changelist>
[<changelist> ...]
```

Command Options

Option	Required?	Description
[global-options]	No	A number of global or SCM-specific global options. See Command-line Global Options Reference 357.
<review>	Yes	Identifier of the desired review (an integer number), or a *new*, *ask*, or *last* string.
<changelist> [<changelist> ...]	Yes	Identifier(s) of the desired changeset(s) in your source control.

The first argument is the review specifier, subsequent arguments are the IDs of the Pending Tasks or Completed Tasks to upload.

Examples:

To upload Pending Tasks 4321 and 7568 to a new review:

```
ccollab addchangelist new 4321 7568
```

To upload Completed Tasks 5432 and 12654 to review 111:

```
ccollab addchangelist 111 5432 12654
```

6.5.2.2 addversions (for Rational Synergy)

Description

The `ccollab addversions` command appends the specified versions (revisions) of a file controlled by Rational Synergy on your computer to a review.

Command Line Syntax:

```
ccollab [global-options] addversions [--upload-comment <value>] [--
version-spec <value> [<value> ...]] <review> [<file-path>]
[<version>] [<predecessor-version>]
```

Command Options

Option	Required?	Description
[global-options]	No	A number of global or SCM-specific global options. See Command-line Global Options Reference 357.
--upload-comment <value>	No	A comment to be used for the uploaded files. Default is *Local changes*.
--version-spec <value> [<value> ...]	No	The version to be added to a review. A version-spec value consist of three components: *path version* [*previous-version*], where *path* is the file name or server path of the file, *version* is the file version to be reviewed, and *previous-version* is an optional version, against which *version* should be compared. If any of these arguments contains spaces, enclose it in quotes. Typically a version-spec is not used in the command line. We recommend specifying the file and version using the <file-path>, <version> and the <predecessor-version> arguments (see below).
<review>	Yes	Identifier of the desired review (an integer number), or a *new*, *ask*, or *last* string.
<file-path>	No	The name and path of the file, whose versions are to be added to the review. **Important:** If you use this option, you should also specify <version> (see below).
<version>	No	Required, if <file-path> is specified. The version (revision) of the file to be added to the review. You can specify the keyword *local* to tell the command to use the local version of the file.

Option	Required?	Description
`<predecessor-version>`	No	Preceding file version to be added to the review. If you skip this argument, Collaborator will attempt to determine the preceding version based on the information from the source control.

Remarks

- If you skip the predecessor version, Collaborator will generate diffs using the predecessor version reported by your source control system.
- By default, the command lets you add versions of one file only. To add versions of multiple files, create a text file and specify this file in the command line as the standard input stream (stdin):

  ```
  ccollab addversions last < versionlist.txt
  ```

  Each line in the file must consist of the following components: *path version* [*predecessor-version*].

  For information on them, see description of the `version-spec` arguments.

- If you skip the file name and versions in the command line, the command will expect to read them from the standard input stream (stdin). Below are some examples for reading versions from the standard input:

  ```
  ccollab addversions 86753
  ccollab addversions last < versionlist.txt
  cat versionlist.txt | ccollab addversions new
  ```

- When specifying the version in the command line or in an input file, you can use the keyword *local* to denote the version corresponding to the local version of the file. The *local* keyword can only be used for the first version argument, not for the predecessor version.

Example:

```
ccollab addversions review hello.c:csrc:1 3.2.5 3.2
```

6.6 IBM Rational Team Concert Integration

Collaborator integrates with Rational Team Concert allowing you to automatically synchronize the approver lists of Collaborator reviews and Team Concert work items, and automatically create reviews for change sets. Topics of this section provide detailed information on the integration.

In This Section

6.6.1 Overview

About Integration

Collaborator tightly integrates with Rational Team Concert. The integration helps you easily create reviews for Team Concert's work items, synchronize the list of reviewer participants and work item's approvers, and update the state attribute of users in the Approvals list automatically when the review status changes. For detailed information on the features, see **How Integration Features Work** 486.

Required Plug-Ins

The integration functionality is provided by two plug-ins:

- One of them is installed on the Rational Team Concert server machine (Collaborator Plug-In for Rational Team Concert Server).
- Another plug-in can be installed on user computers that have the Eclipse IDE (Collaborator Plug-In for Eclipse).

Both plug-ins can download from our web site:

http://support.smartbear.com/downloads/collaborator/

For information on installing and configuring the plug-ins and servers, see topics of the **Configuring Servers and Plug-Ins** 489 section. We strongly recommend that you read it.

Requirements

- Integration with Rational Team Concert requires Rational Team Concert versions 2 - 6. Collaborator 7 and later supports Rational Team Concert versions 4 and 6. If you have Team Concert versions 2 or 3, you need to use CodeCollaborator version 6.
- To use some of the features, you need to have an Rational Team Concert plug-in for the Eclipse IDE on the computer, where you have Eclipse installed.

6.6.2 How Integration Features Work

Important: This topic describes how Collaborator integrates with Rational Team Concert and Eclipse. In order for the described integration features work, you need to configure the Rational Team Concert and Collaborator servers properly. See Configuring Servers and Plug-Ins 489.

Creating Reviews Automatically

Collaborator's plug-in for Rational Team Concert tracks the changes of a work item state. If you change the state of a work item *and* if the work item has a changeset linked to it, the plug-in creates a review for that work item in Collaborator and attaches the changeset to this review. The plug-in also creates a review, if you add a changeset to a work item that has no changesets associated with it.

If a review was created in this way, Collaborator will track changes in the work item's Approvals list and update the review's Participants list appropriately. Also, you will see the status of a user work on the review in the **State** column of the Approvals list.

Note: The plug-in does not update a review, if you update an existing changeset.

Requirements:

- To use automatic review creation, you need to --

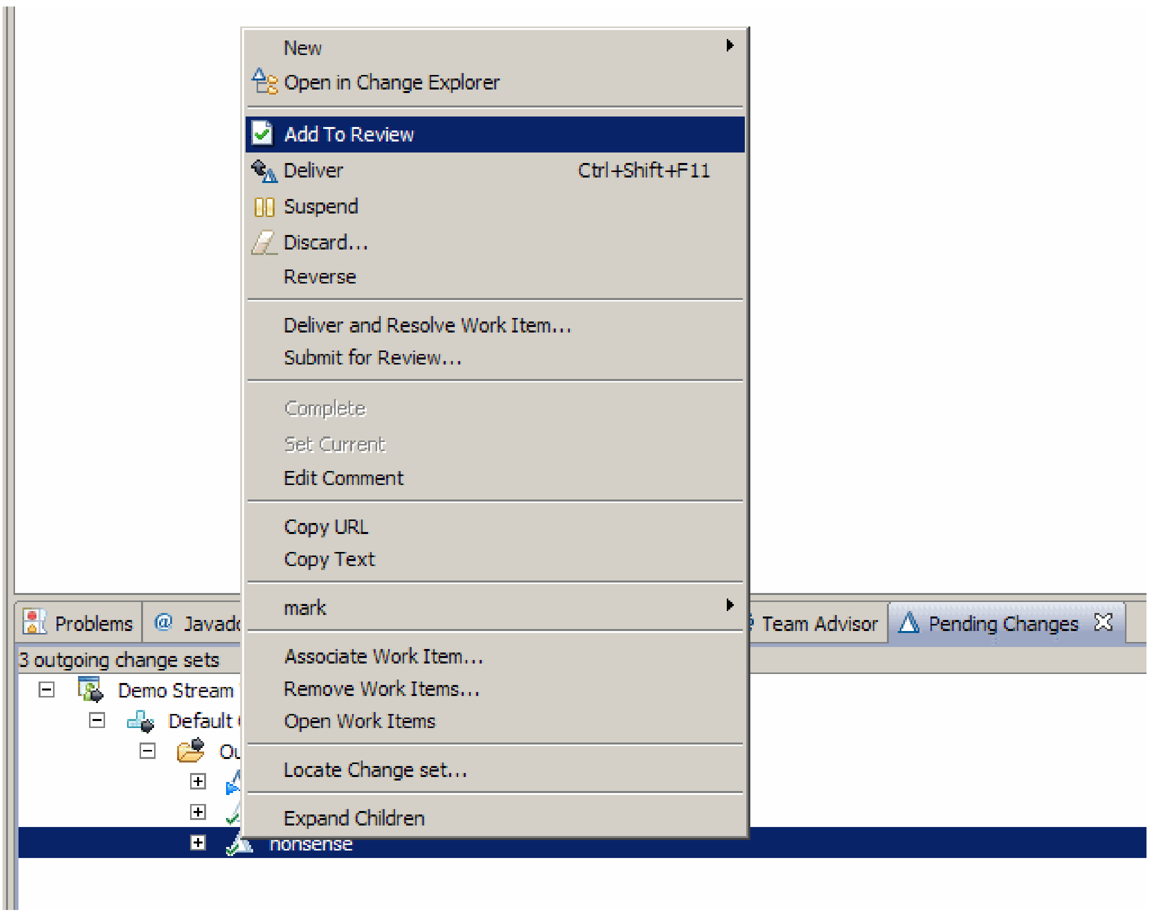
- Install 493 and configure 496 the Collaborator plug-in for Rational Team Concert.
- Set up 498 follow-up actions in Rational Team Concert.

- To take advantage of user list and state synchronization, you also need to configure 490 the Collaborator server.

Creating Reviews From Eclipse Manually

Rational Team Concert plug-in for Eclipse extends the Eclipse IDE with the Pending Changes view.

Collaborator's Eclipse plug-in inserts a new **Add To Review** item to the context menu of this view:



Creating a review from a changeset

Select this item and then follow instructions of the subsequent wizard to create a review for the changeset or to attach the changeset to an existing review.

Note: Collaborator does not support synchronization of the Approvals and Participants user lists and tracking the state for such reviews. These features work only for reviews that are created automatically (see above).

Requirements: to use this feature, you need to --

- Have Rational Team Concert plug-ins installed into your Eclipse IDE.
- Install 492 the Collaborator plug-in for Eclipse.

Synchronizing the Approvals and Participants Lists

For reviews that were created automatically on the work item's state change, Collaborator synchronizes the contents of the work item's Approvals list and the review's Participant list:

- When you append a Reviewer entry (user) to the Approvals list, Collaborator includes the same user into the Participants list of the review as a *Reviewer*. This also works in the opposite way: if you add users to participants, they are also added to approvers.
- Synchronization also works for deletion: if you remove a user from participants in Collaborator, the plug-in will remove that user from the Approvals list of your work item. Note, however, that the opposite deletion operation is not available at the moment, that is, if you delete a user from the Approvals list of a work item, Collaborator will not remove that user from the Participants list.

Notes:

- In order for this feature to work, the user must have the same name in Collaborator and in Rational Team Concert.
- When tracking changes made to the Approvals list, Collaborator tracks the addition of Reviewer entries only. If you add an entry of the Approver type, the review's Participants list will not be updated.
- Collaborator updates the Approvals list after the review left the Planning phase and moved to the Annotating phase. Any participant that was added during the Planning phase will also be included into the work item once you move the review to the Annotating phase.
- Collaborator synchronizes only those users, whose role allows them to finish the review. Participants that do not need to finish the review (for example, Observers) are not added to the work item's Approvals list. Similarly, if you remove such a user from the Participants list, they will not be deleted from the Approvals list. If you assign a participant a role that does not allow them to finish review (for example, change the role from *Reviewer* to *Observer*), Collaborator will delete this participant from the Approvals list.
- Once again, synchronization works for those reviews that were created automatically. It does not work for the reviews that were created through the "Add To Review" menu command.

If you do not want automatic updates of the user list, disable the *Add reviewers* and *Remove reviewers* settings of the Collaborator server. See Configuring 490 Collaborator Server 490.

Requirements: to use this feature, you need to --

* Configure 490 the Collaborator server.
* Install 493 and configure 496 the Collaborator plug-in for Rational Team Concert.
* Set up 498 follow-up actions in Rational Team Concert.

Updating Approver State

If a review was created automatically on the work item's state change, Collaborator tracks the changes made to the review phase. If a user completes the review, or cancels or rejects it, Collaborator updates the State attribute of that user in the Approvals list.

* If a user completed the review, the state is changed to **Approved**.
* If a user cancels or rejects the review, the state is changed to **Rejected**.

Requirements: to use this feature, you need to --

* Configure 490 the Collaborator server.
* Install 493 and configure 496 the Collaborator plug-in for Rational Team Concert.
* Set up 498 follow-up actions in Rational Team Concert.

Demonstration

Watch the following video to see Collaborator's integration with Rational Team Concert:

http://www.youtube.com/watch?v=DGVi0gjvpUg

Troubleshooting

See Troubleshooting 507.

6.6.3 Configuring Servers and Plug-Ins

Topics of this section describes how to configure the Collaborator server and plug-ins to use the Rational Team Concert integration features.

In This Section

Installing Collaborator Plug-In for Eclipse 492

Installing Collaborator Plug-In for Rational Team Concert Server 493

Configuring the Collaborator Plug-In on the Rational Team Concert Server 496

Setting Up and Configuring Follow-Up Actions 498

Mapping Configurations 503

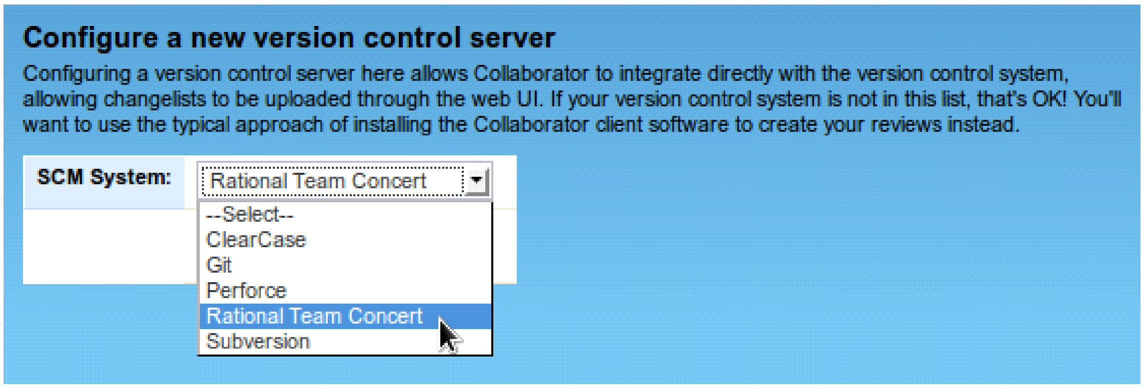
6.6.3.1 Configuring Collaborator Server

To use Collaborator with Rational Team Concert, you need to configure your Collaborator server. Follow these steps:

1. Download the "Rational Team Concert Plain Java Client" libraries that match your Rational Team Concert version to your Collaborator server computer from the https://jazz.net/downloads/rational-team-concert/ web site.
2. Extract the files from the downloaded .zip to some temporary directory.
3. Delete the following .jar files from the temporary folder. This will prevent conflicts with libraries that the Collaborator server already uses.
   The .jar file names may include version numbers. Delete the files that matches the names below, regardless of the version number in their name:
   - commons-io
   - org.apache.commons.codec
   - org.apache.commons.httpclient
   - org.apache.commons.logging
   - javax.servlet
4. Stop the Collaborator server.
5. Copy the extracted .jar files from the temporary directory to *<Your_Collaborator_Server_Dir>/tomcat/webapps/ROOT/WEB-INF/lib.*

Important: This directory is a work directory of the tomcat server. Its contents is deleted when you install (or re-install) Collaborator. So, make sure to have the Collaborator server installed before copying the .jar files. Otherwise, these files will be deleted during Collaborator installation (or re-installation).

6. Start the Collaborator server.
7. Open the Collaborator Web Client. Select **Admin** from the main menu. This will open the Administration settings page.
8. Choose **Version Control** from the menu on the left. Scroll the page down to the **Configure a new version control server** section (it is at the end of the page).
9. Create a new configuration for Rational Team Concert:
   - Select **Rational Team Concert** from the **SCM System** drop-down list and click **Create**:



   - Specify the new configuration's settings:

Title	The configuration name. It identifies the configuration in Collaborator.
Server URI	The address of your Rational Team Concert server. Typically, this is a Public URI of the server. If the Public URI is inaccessible to you for some reason, you can specify the server's IP address.
Admin user name, and	The user account and password that Collaborator will use to connect to the Rational Team Concert server.
Admin password	**Note:** This account must have administrator permissions in Rational Team Concert.
Add reviewers	Specifies whether Collaborator will track addition of new entries (users) to a work item's Approvals list and adds the appropriate users to a review's Participants list. See How Integration Features Work 486.
Remove reviewers	Specifies whether Collaborator will track deletion of entries (users) in the Participants list and update the work item's Approvals list accordingly. See How Integration Features Work 486.
Update assignments	Specifies whether Collaborator updates the **State** attribute of a user in a work item's Approvals list when that user completes, cancels or rejects the review. See How Integration Features Work 486.

Click **Save** after you specified the settings.

To check if the settings are correct click **Test Connection** (do this after saving the settings). If the test succeeds, you will see a notification message at the top of the page.

10. **Important:** To take advantage of all integration features, you need to map the Rational Team Concert configurations you have in Collaborator. To do this, you need to have at least one review created through Rational Team Concert. For step-by-step explanation, see Mapping Configurations 503.

Other Configuration Actions

In addition to configuring the Collaborator server, you also need to install and configure special plug-ins for Rational Team Concert. For complete information on this, see topics of the Configuring Servers and Plug-Ins 489 section.

6.6.3.2 Installing Collaborator Plug-In for Eclipse

To create Collaborator reviews manually 486 from the Eclipse IDE, you need to install and configure the Collaborator plug-in for Eclipse. This topic provides detailed information on this.

Note: The Collaborator plug-in for Eclipse extends the functionality of Rational Team Concert plug-ins for Eclipse. If these Team Concert plug-ins are not installed, the Collaborator plug-in for Eclipse will not work.

To install and configure the Collaborator plug-in for Eclipse:

1. Download the update site .zip package with the plug-in from our web site:

   - Open this web page in a web browser:

     http://support.smartbear.com/downloads/collaborator/

   - To start downloading, click the **Eclipse Plug-In: Update Site & Instructions** link.

   Important: Rational Team Concert Client 3 installs with and requires Java 5. To work with that version of the Team Concert Client, you need CodeCollaborator 6.5. If you download and use the update site package of Collaborator ver. 7 or later, the plug-in's functionality will be limited. The workaround is to modify the eclipse.ini file to point to Java 7 (see below).

2. Follow the Eclipse plug-in's Install & Update instructions 367 to setup and configure the Eclipse plug-in.

3. If your version of Eclipse uses Java 5 or 6, then it is necessary to change the eclipse.ini file to use Java 7. Details about this change can be found at the following site:

   http://wiki.eclipse.org/FAQ_How_do_I_run_Eclipse%3F

Here is an example of the change:

```
-vm C:\Program Files\Java\jdk1.7\jre\bin\javaw.exe
```

Other Configuration Actions

If you are going to create reviews manually, then all you need is to install and configure the Collaborator plug-in for Eclipse. To use other integration features 486, you need to install configure the Collaborator server and install and configure special plug-ins for Rational Team Concert. For complete information on this, see topics of the Configuring Servers and Plug-Ins 489 section.

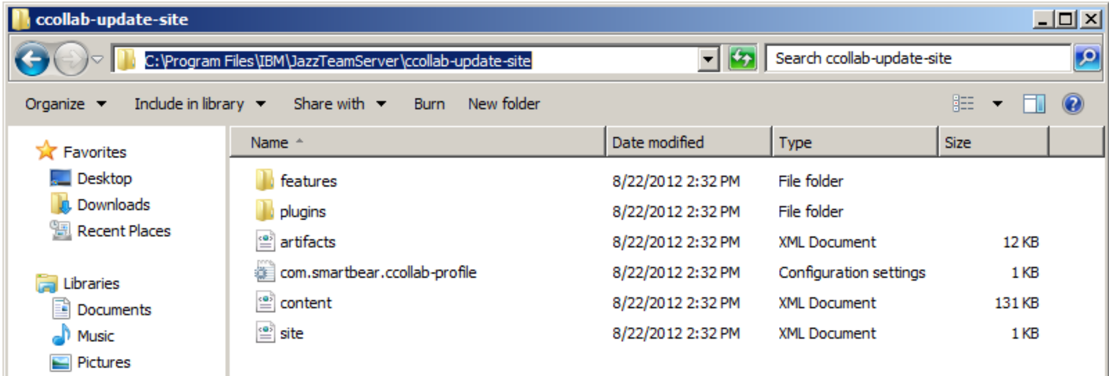
6.6.3.3 Installing Collaborator Plug-In for Rational Team Concert Server

This topic explains how to install the Collaborator plug-in for Rational Team Concert.

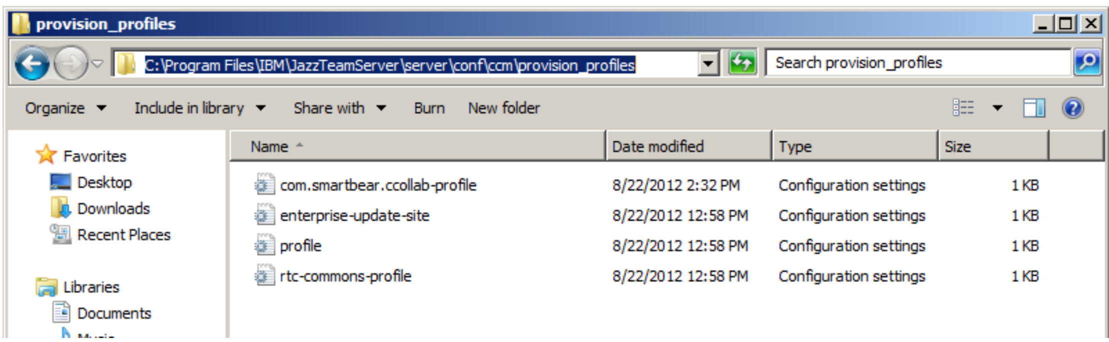
> **Important:** Since version 8.5 Collaborator requires Java 7. Whereas, Rational Team Concert 4.x - 6.x require Java 6, and RTC 3.x requires Java 5.
> Therefore to integrate Collaborator and Rational Team Concert you will need to install a specific version of Rational Team Concert Plug-In.
> To integrate with Rational Team Concert 3.x you also need to downgrade your Collaborator (both Server and Client components) to CodeCollaborator/ PeerReview Complete version 6.5.x (as only these versions supported Java 5).

1. Download the update site .zip package with the plug-in from our web site:
   - For Rational Team Concert Server versions 4.x - 6.x download Rational Team Concert Plug-In version 8.4.8406.001.
   - For Rational Team Concert Server versions 3.x download Rational Team Concert Plug-In version 6.5.6511.

2. Extract files from the downloaded .zip archive to the <$JAZZ_ROOT>/ccollab-update-site folder on the Rational Team Concert server computer. For example, the folder name can be like C:\Program Files\IBM\JazzTeamServer\ccollab-update-site.



3. Copy the *com.smartbear.ccollab-profile.ini* file from this folder to the *<$JAZZ_ROOT>\server\conf\ccm\provision_profiles* folder.



4. Now you need to reset your Jazz Team Server:

- Open the following web page in your web browser:

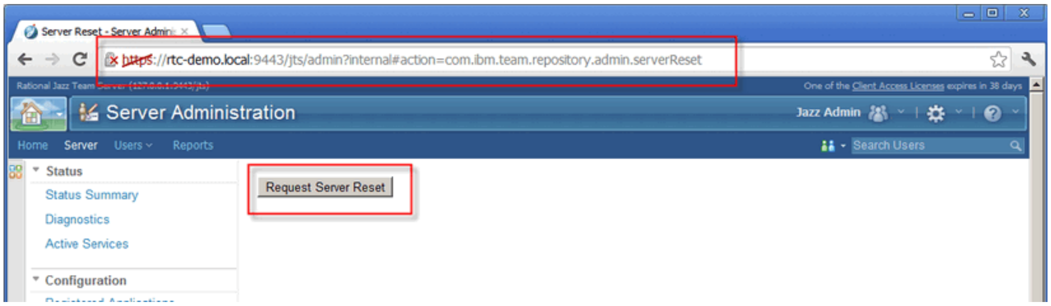
  If you use Rational Team Concert 4-6:

  https://$Your_Jazz_server/jts/admin?internal#action=com.ibm.team.repository.admin.serverReset

  If you use Rational Team Concert 3 or earlier:

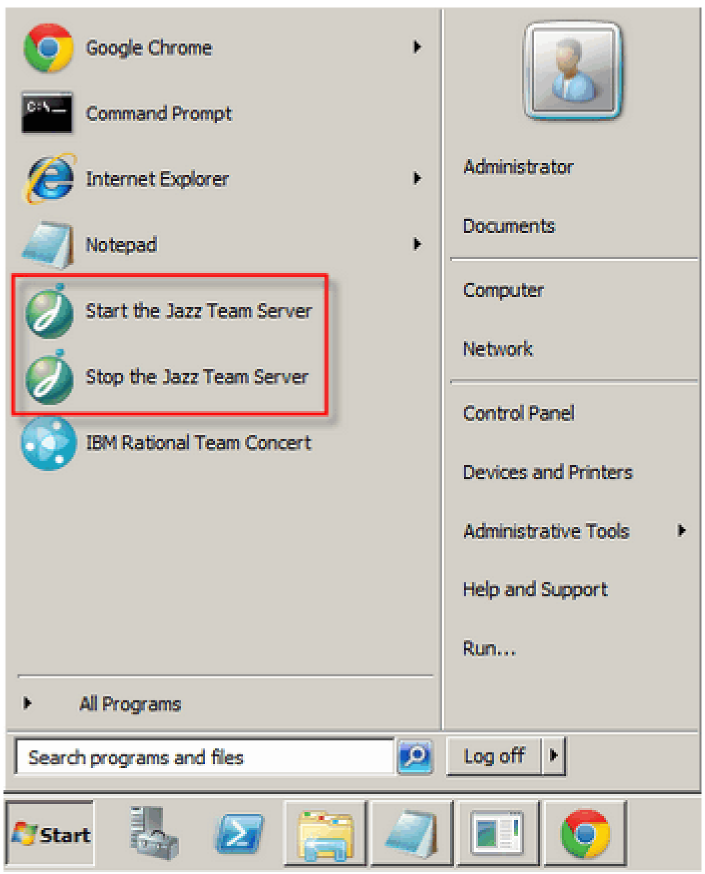
  https://$Your_Jazz_server/jazz/admin?internal=true

- On the page, click **Request Server Reset**. This will command Rational Team Concert to load the Collaborator plug-in next time the Rational Team Concert service restarts.



5. Restart the Jazz Server. To do this:

- Select **Stop the Jazz Team Server** from Windows' Program Files menu, or run the *shutdown.bat* file in the Jazz Install directory.
- Run the server by selecting **Start the Jazz Team Server** from the Program Files menu:

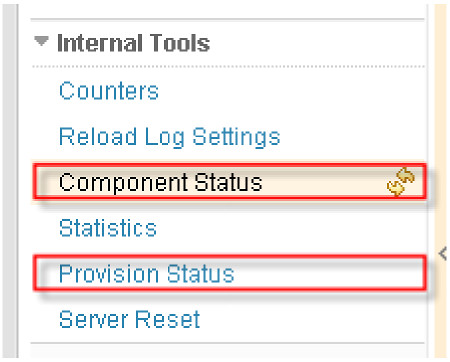


6. Check whether the plug-in is loaded:

- Open the Component Status page:

https://$Your_Jazz_server/ccm/admin?internal=true#action=com.ibm.team.repository.admin.componentStatus

- Click the refresh icon next to the **Component Status** item in the left-side menu to update the page after it loads.
- Check that the *com.smartbear.rtc.process.ICodeCollaboratorService* service is active.
- Now click Provision Status in the menu menu entry:

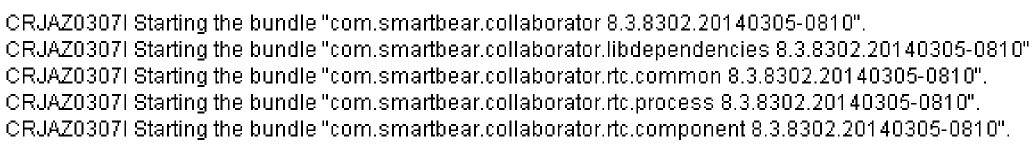


- Search for *smartbear* on the page and make sure that the plug-in has been installed and initialized.

Provision Status page: Checking whether the plug-in is installed

```
CRJAZ0300I This feature is being installed: "com.smartbear.collaborator.rtc.process.feature_8.3.8302.20140305-0810".
CRJAZ0299I Installing bundle from the URL "file:/C%3a/Users/mz/RTC/server/conf/../../ccollab-update-site/plugins/com.smartbear.collaborator_8.3.8302.20140305-0810.jar".
CRJAZ0299I Installing bundle from the URL "file:/C%3a/Users/mz/RTC/server/conf/../../ccollab-update-site/plugins/com.smartbear.collaborator.libdependencies_8.3.8302.20140305-0810.jar".
CRJAZ0299I Installing bundle from the URL "file:/C%3a/Users/mz/RTC/server/conf/../../ccollab-update-site/plugins/com.smartbear.collaborator.rtc.common_8.3.8302.20140305-0810.jar".
CRJAZ0299I Installing bundle from the URL "file:/C%3a/Users/mz/RTC/server/conf/../../ccollab-update-site/plugins/com.smartbear.collaborator.rtc.process_8.3.8302.20140305-0810.jar".
CRJAZ0299I Installing bundle from the URL "file:/C%3a/Users/mz/RTC/server/conf/../../ccollab-update-site/plugins/com.smartbear.collaborator.rtc.component_8.3.8302.20140305-0810.jar".
```

Provision Status page: Checking whether the plug-in is started



```
CRJAZ0307I Starting the bundle "com.smartbear.collaborator 8.3.8302.20140305-0810".
CRJAZ0307I Starting the bundle "com.smartbear.collaborator.libdependencies 8.3.8302.20140305-0810".
CRJAZ0307I Starting the bundle "com.smartbear.collaborator.rtc.common 8.3.8302.20140305-0810".
CRJAZ0307I Starting the bundle "com.smartbear.collaborator.rtc.process 8.3.8302.20140305-0810".
CRJAZ0307I Starting the bundle "com.smartbear.collaborator.rtc.component 8.3.8302.20140305-0810".
```

Other Configuration Actions

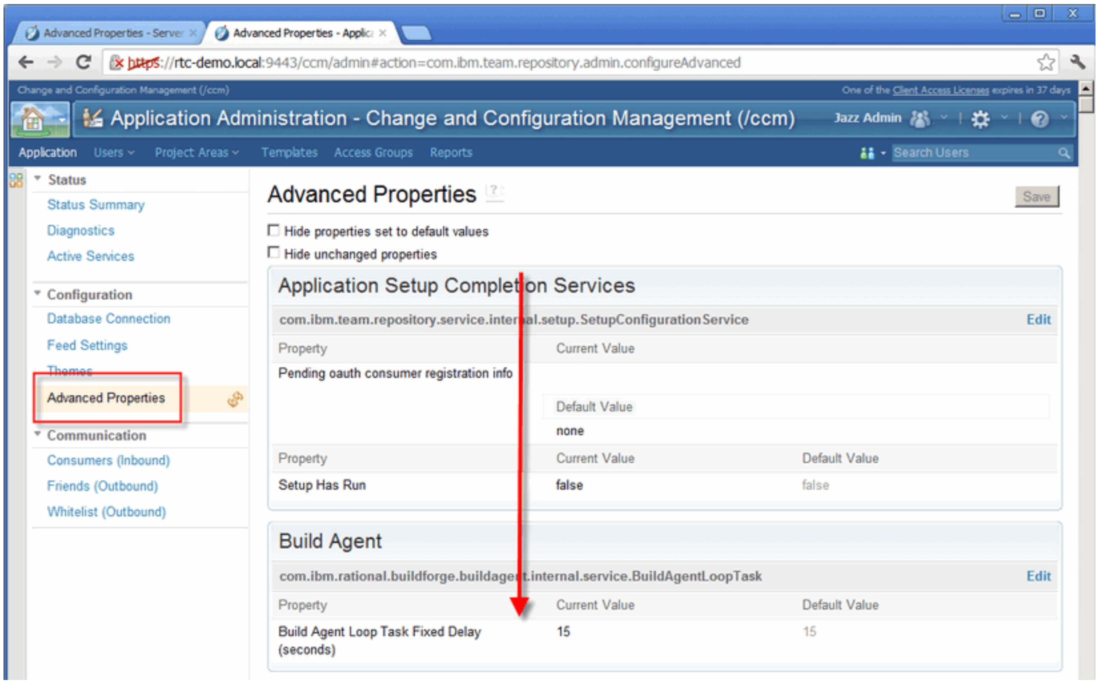
After you installed the plug-in, you need to configure it. See Configuring the Collaborator Plug-In for Rational Team Concert 496.

6.6.3.4 Configuring Collaborator Plug-In for Rational Team Concert Server

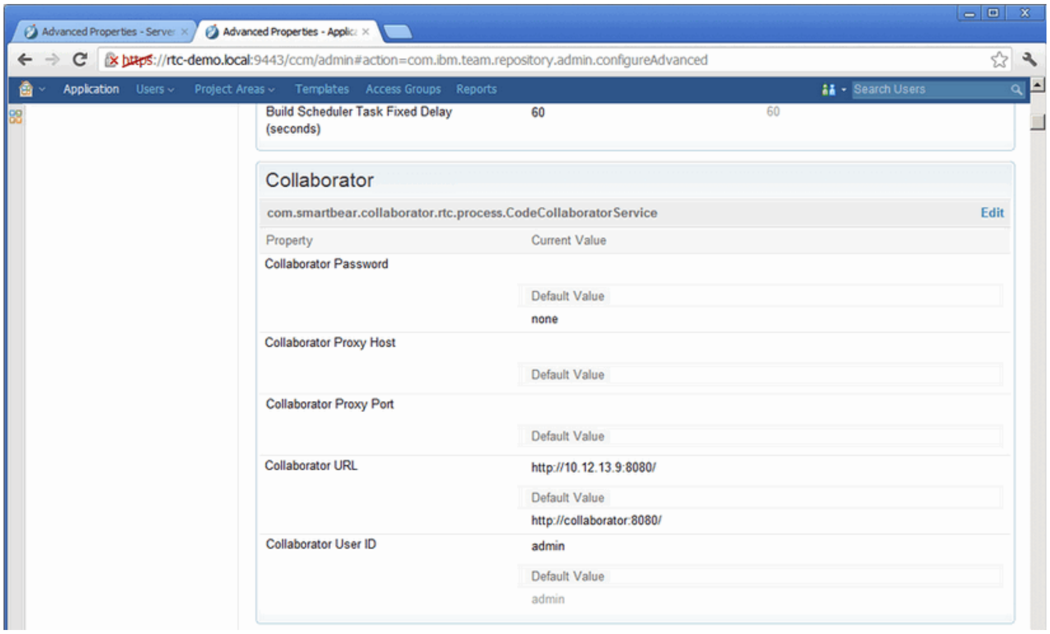
After installing the Collaborator plug-in for Rational Team Concert, you need to configure it. Follow these steps:

1. Login to the Change and Configuration Manager at https://***$Your_Jazz_server***/ccm/admin, for example, https://rtc-demo.local:9443/ccm/admin.

2. Select **Advanced Properties** from the menu on the left and then scroll down to the Collaborator section:



3. Configure the settings and save them (see the image below). The settings have self-descriptive names, and hardly require explanation.
   Two notes:
   - The Collaborator User ID setting specifies the user account that sends notifications on file uploads. Uploads from RTC to Collaborator will appear to have been done by this user. Collaborator is unable to display the name of the RTC user that actually made the changes, this is a limitation of the RTC/Collaborator integration. This account should have *administrator permissions* in Collaborator.
   - Specify host and port if you connect to Collaborator via proxy.



Other Configuration Actions

After configuring the plug-in, you can proceed with setting up the follow-up actions 498 in Rational Team Concert.

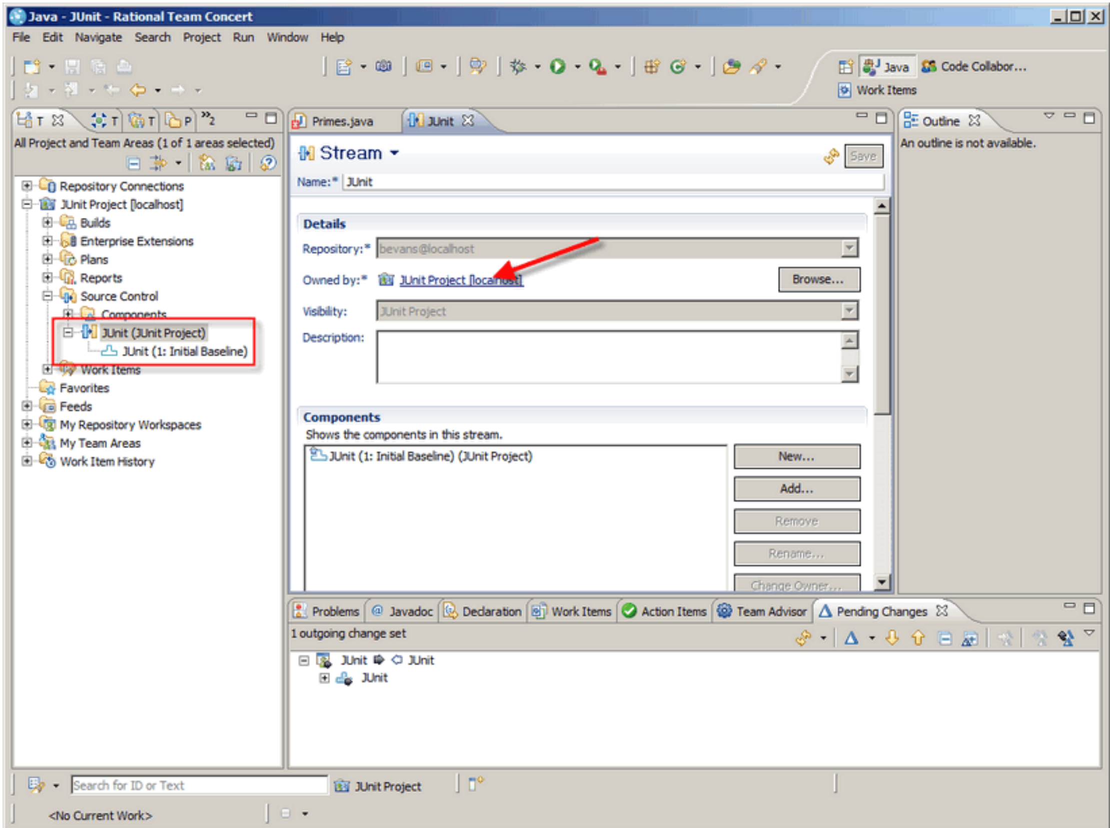
Also, after you created your first review from Rational Team Concert, you need to map configurations 503 in Collaborator settings.

6.6.3.5 Setting and Configuring Follow-Up Actions

After you installed 493 the Collaborator plug-in for Rational Team Concert, you need to configure follow-up actions in Team Concert.

Creating Follow-Up Actions

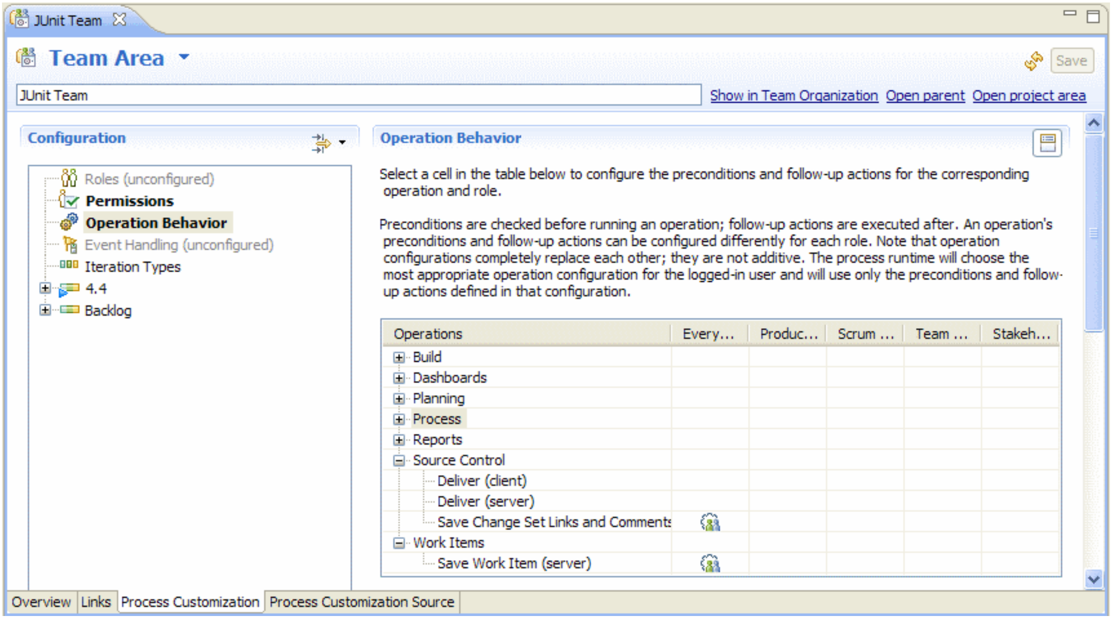
1. In the Rational Team Concert Client, open your project by clicking its name in the **Stream** section:



This will open the Team Area view.

2. In the Team Area view, select **Operation Behavior** from the tree on the left and then go to **Source Control | Save Change Set Links and Comments** on the right and add a follow-up action **Update reviews for each linked work item** to it.

3. Select **Operation Behavior** from the tree on the left, then choose **Work Items | Save Work Item (server)** on the right, and add the follow-up **Upload changes from work item** to it:



Action Parameters

Update Reviews for Each Linked Work Item

This follow-up action creates a review associated to a work item when a new changeset is added to that work item.

The changeset must be new. If you add changes to some existing changeset associated with the work item, the review is not automatically updated. In this case, you need to change the work item's state and save the changes. If you have another follow-up action configured (see below) this will update the review.

The action's settings are stored in an XML file. You can change the action settings, and they will override the plug-in's settings 496. To do this, simply edit the XML file of the action. Below is a sample XML snippet with action settings:

```
<followup-action description="Collaborator - Update Reviews for each
linked Work Item" id="com.smartbear.collaborator.rtc.process.
ChangeSetModified" name="Collaborator - Update Reviews for each
linked Work Item">
 <CollaboratorURL value="http://localhost:8080"/>
 <CollaboratorProxyHost value="proxyhost"/>
 <CollaboratorProxyPort value="22"/>
 <CollaboratorUserID value="admin"/>
 <CollaboratorUserPassword value="123"/>
```

```
 <retries value="1"/>
 <retryDelayMs value="500"/>
</followup-action>
```

Here are some notes on the file contents:

- All child elements of the followup-action element are optional. If you do not specify some values, they are taken from the global plug-in settings.
- The `CollaboratorProxyPort` and `CollaboratorProxyPort` can have empty values to override the global plug-in settings.
- If you need to specify the user that will work for multiple Collaborator servers, create a user with the same name and password on all the needed Collaborator servers and then specify this user name and password in the global plug-in settings.
- The password is stored as plain text on the XML configuration.
- The action requests some information from the Team Concert repository. This information may be unavailable at the moment the action runs, so the action may need to wait for an answer.

  To prevent possible issues dues to these delays, use the `retries` and `retryDelayMs` values. The `retries` value specifies the number of times the follow-up action repeats its requests, and the `retryDelayMs` value indicates the number of milliseconds the action will wait for a response. Both settings accept only positive integer numbers as their values.

  Since the delay can depend on the Rational Team Concert server settings, there are no pre-defined value that will work on every server configuration. You can start using small numbers for the values (like 3 retries and 500 ms delay) and then increase or decrease these values until you find a configuration that works best for you.

Upload Changes From Work Item

The Collaborator plug-in uses this follow-up action to track the changes of a work item state.

The action's settings are stored in an XML file. You can change the action settings, and they will override the plug-in's settings 496. To do this, simply edit the XML file of the action. Below is a sample XML snippet with action settings:

```
<followup-action id="com.smartbear.collaborator.rtc.process.
UploadToCollab">
 <CollaboratorURL value="http://localhost:8080"/>
 <CollaboratorProxyHost value="proxyhost"/>
 <CollaboratorProxyPort value="22"/>
 <CollaboratorUserID value="admin"/>
 <CollaboratorUserPassword value="123"/>
 <type value="Defect"/>
 <type value="Enhancement"/>
```

```
 <type value="Task"/>
 <StateChangedTo value="New"/>
 <OnStatus type="Story" state="Implemented"/>
 <updateReviewers value="false"/>
 <newReviewOnCancel value="false"/>
</followup-action>
```

Here are some notes on the file contents:

- All the elements are optional.
- The settings `CollaboratorURL`, `CollaboratorProxyHost`, `CollaboratorProxyPort`, `CollaboratorUserID`, and `CollaboratorUserPassword` override the plug-in settings' values 496.
- There are several elements that define the scope of work items, for which Collaborator will create reviews automatically:
  - `type` specifies the work item types for that Collaborator will create reviews. You can specify multiple `type` elements in the settings.
    You specify a type by its display name, not by its id. This name is case-sensitive.
  - `StateChangedTo` specifies the work item states that Collaborator will trace (Collaborator will create a review for a work item when this work item is switched to the specified state). You can use multiple `StateChangedTo` elements in the settings.
  - `OnStatus` combines functionality of both `type` and `StateChangedTo`. It specifies a couple of values (type and state) in one setting. These values can be types and states specified by the `type` and `StateChangeTo` elements, or any other types and states. That is, `OnStatus` elements is just one more way to define the conditions that trigger review creation. There can be multiple `OnStatus` elements in the settings.
- The Collaborator plug-in can trace changes in the Approvals list of a work item. When you add an entry of the Reviewer type to this list, the plug-in sends a command to the Collaborator server to update the Participants list of the review associated with that work item. See How Integration Features Work 486.

  The `updateReviewers` setting lets you enable or disable this functionality. If the value is `true` or not specified, the Collaborator will update the Participants list of a review. To disable this functionality, set the value to `false`.
- The `newReviewOnCancel` option specifies whether the follow-up action will create a new review for a work item, if its previous review was canceled or rejected. At that, all the changes from the work item changesets will be added to the new review. After the new review is created, the action replaces a link to the previous review with a new review link. The work item will have only one link to a review.

Other Configuration Actions

In addition to configuring the Collaborator plug-in for Rational Team Concert and follow-up actions, you also need to configure the Collaborator server. For detailed information on this, see topics of the Configuring Servers and Plug-Ins 489 section.

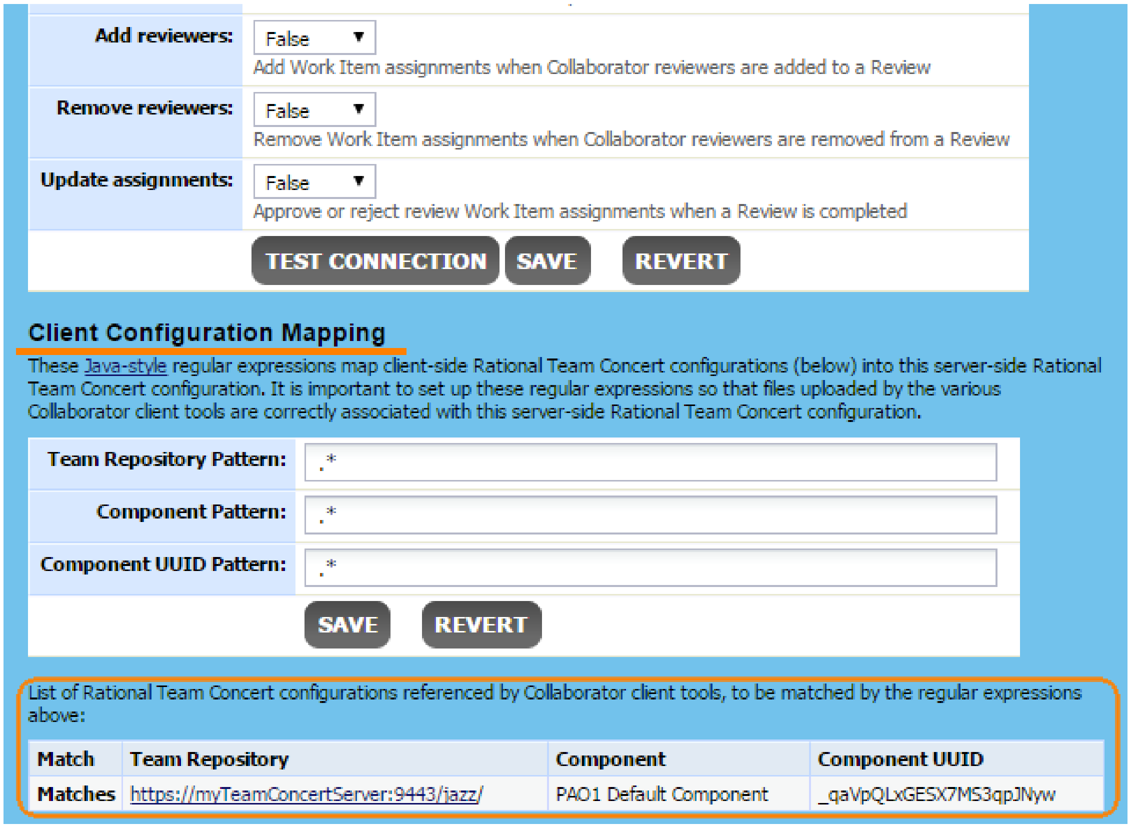
6.6.3.6 Mapping Configurations

Why Configuration Mapping Is Needed

To exchange data with Rational Team Concert, Collaborator uses two types of configurations:

- A version control configuration that you create in Collaborator (on the **Admin > Version Control** setting page. See Configuring Collaborator Server 490). This configuration is needed to send data from Collaborator to Rational Team Concert. Let's call it *client Team Concert configuration* as it is created on the Collaborator side, which is client for your Rational Team Concert instance.

- Automatically stored information about the Team Concert server you are using. Collaborator automatically captures and stores this data when you are creating a review from Team Concert. You can see it in the **Client Configuration Mapping** section in Collaborator's Version Control setting page (see the image below). Collaborator uses this information later for proper functioning of integration functions. Let's call this configuration a *server Team Concert configuration* as it contains server properties:



Suppose, that in Collaborator you change a review that came from Team Concert. To send information about the changes to Team Concert, Collaborator will use the client configuration. However, it needs to know to what Team Concert instance the client configuration corresponds (because in general, you can have several Team Concert servers and can use different configuration properties for them). By mapping configurations of the client and server types, you can set this correspondence.

You need to map configurations only once, there is no need to do this every time you create a review.

Requirements

To map client and server Team Concert configurations, you need to have at least one review that came from Team Concert (that is, that was created through the Collaborator plugin for Team Concert). Else, the list of server configurations in the Client Configuration Mapping section will be empty.

Mapping Steps

1. Log in to Collaborator as administrator.

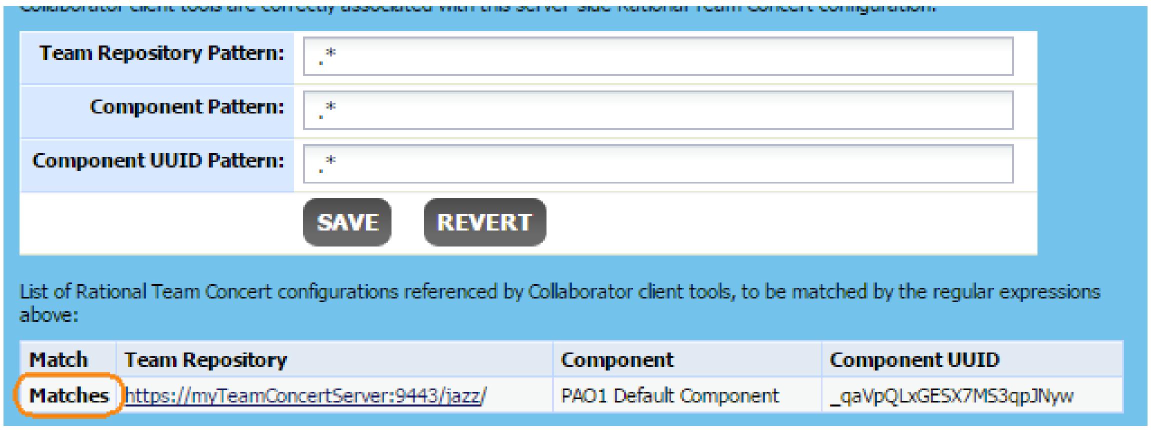
2. Go to **Admin > Version Control** settings.

3. Select your Rational Team Concert configuration for editing.

4. Look at the list of server configurations and specify Java-style regular expressions in the **Team Repository Pattern**, **Component Pattern** and **Component UUID Pattern** edit boxes.

Note: if you use only one Team Concert project, specify **.*** in all the edit box (like on the image below).

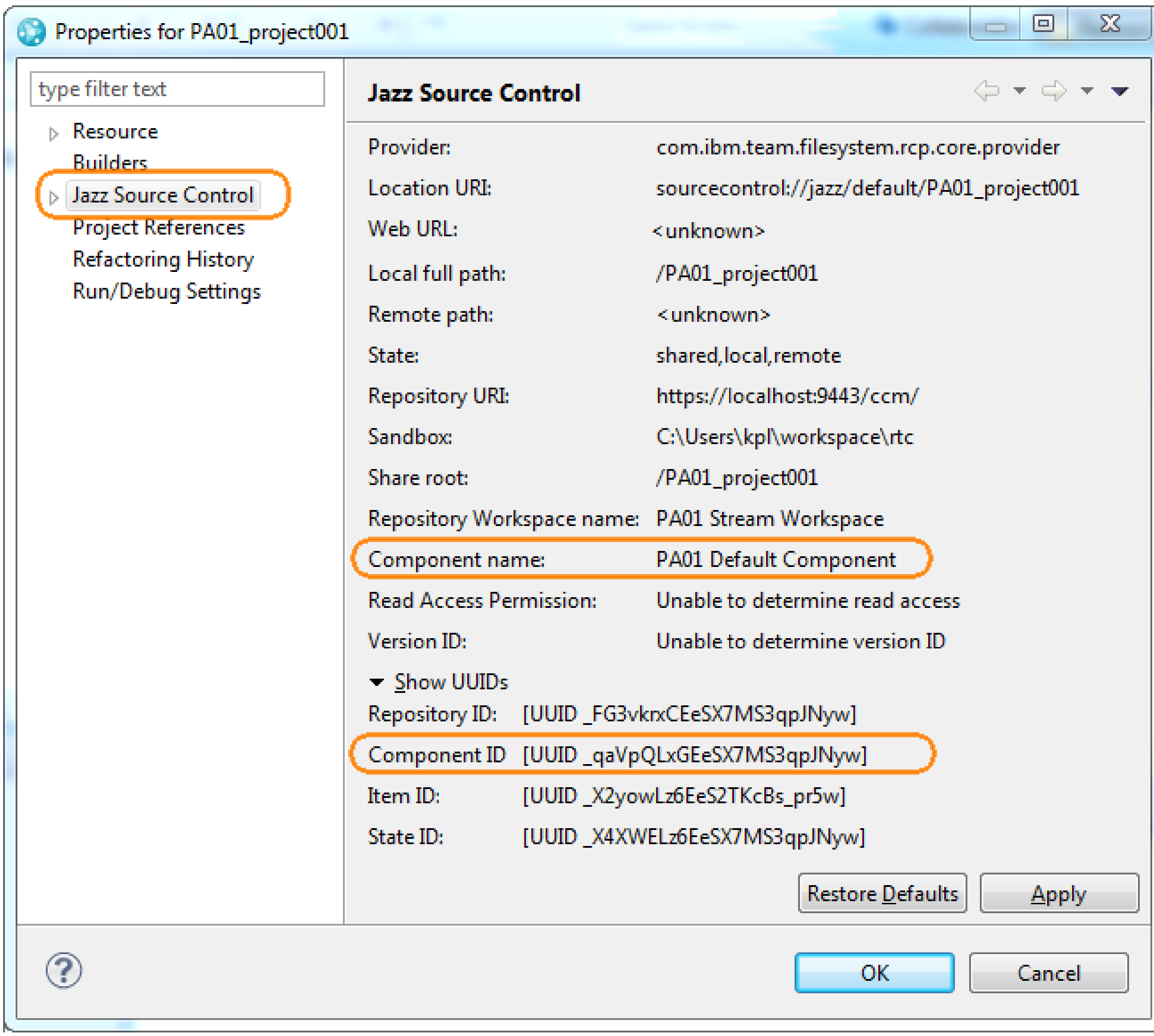
5. Click **Save**. The **Matches** column will indicate if a server configuration matches the specified regular expressions:



Server Configuration Parameters

Parameter	Description
Team repository	The URL of your Team Concert repository.

Parameter	Description
Component and **Component UUID**	Parameters of your Team Concert project. To view them: • In Eclipse, in **Project Explorer**, right-click the project and select **Properties** from the context menu. • In the subsequent Properties dialog, select **Jazz Source Control** from the tree on the left. Find the parameter values on the right:



Other Configuration Actions

In addition to configuring the Collaborator server, you also need to install and configure special plug-ins for Rational Team Concert. For complete information on this, see topics of the Configuring Servers and Plug-Ins 489 section.

6.6.4 Troubleshooting

This topic lists typical issues for the Collaborator integration with Team Concert and possible solutions for them.

General Notes

In order for Collaborator and Rational Team Concert to integrate successfully, you need to configure the Rational Team Concert and Collaborator servers, as well as install and configure special plugins. If some feature is not working, then most likely some setting is invalid. Check the settings according to the information in the Configuring Servers and Plug-Ins 489 section.

Issues

Synchronizing the Review Participants List

For reviews that were created automatically, Collaborator synchronizes the work item's Approvals and the review's Participants lists (see How Integration Features Work 488). If the synchronization does not work, check the following:

- Look at the review phase. Collaborator does not synchronizes the lists if the review is in the Planning phase.

- The review must be created automatically. Synchronization does not work for the reviews that were created with the "Add to Review" command.
- Check if the user has the same names in Collaborator and Team Concert. Users with different names are not synchronized.
- Make sure the *Add reviewers* and *Remove reviewers* settings of the Collaborator server are enabled. See Configuring 490Collaborator Server 490.
- Check the connection between Collaborator and Team Concert. To do this, log in to Collaborator as administrator, go to **Admin > Version Control**, find your Rational Team Concert configuration there and click **Test Connection**.
- Check the user's roles in Collaborator and Team Concert.
  In Collaborator, the user should have a role that allows the user to finish reviews. By default, this is the *Reviewer* role, *Observers* are ignored.
  In Team Concert's, the user be added to the *Approvals* list as a Reviewer. *Approvers* are ignored.
- Check the **Client Configuration Mapping** settings of Collaborator and make sure the configuration matches the desired Team Concert server. See Mapping Configurations 503.

Automatic Review Creation and File Uploading

If Collaborator does not create reviews automatically when a work item's state changes, or if the files failed to upload to the review, check the following:

- Check the user names in Collaborator and Team Concert. They should be the same. Otherwise, errors will occur.
- Check if the Collaborator plugin for the Rational Team Concert server is installed and enabled. To do this, request the Provision Status page from the Team Concert server (`https://<`*`your-team-concert-server`*`:`*`port`*`>/ccm/admin?internal=true#com.ibm.team.repository.admin.provisionStatus`) and search for *smartbear* on it. The page should say the Collaborator is installed and enabled. For information on installing and configuring the plugin, see Installing Collaborator Plug-In for Team Concert 493 and Configuring Collaborator Plug-in for Team Concert 496.
- Get the `ccm.log` file from the Team Concert server (see below). If the log says that follow-up actions of Collaborator cannot be found, set up and configure these actions. See Setting and Configuring Follow-Up Actions 498.
- If Collaborator does not create reviews, or creates them for unexpected item states, check the follow-up actions' settings.
- Check the work item categories in Team Concert. For example, if you are trying to create a review for work item that belongs to a team area, make sure this item does not use the project configuration.

- Get the log file from the Team Concert Client (see below). If the log reports about issues with class versions, make sure you installed the appropriate version of Collaborator's Eclipse plugin. If you use Rational Team Concert 3, you need to use the plugin from previous version of Collaborator. See a note in Installing Collaborator Plug-In for Rational Team Concert 493.

Manual Review Creation

If you experience issues when creating reviews manually from the Team Concert client in Eclipse IDE, then most likely there are issues with the Collaborator's Eclipse plugin:

- Check the installation folder of your Team Concert client. If it is installed in the *<Program Files>* folder, this may cause problems for Eclipse. In this case, we recommend that your user account has administrator privileges and that you run the Client as administrator.

- Get the log file from the Team Concert Client (see below). If the log reports about issues with class versions, make sure you installed the appropriate version of Collaborator's Eclipse plugin. If you use Rational Team Concert 3, you need to use the plugin from previous version of Collaborator. See a note in Installing Collaborator Plug-In for Rational Team Concert 493.

Getting Client and Server Logs

When some functionality does not work, you need to examine the Team Concert logs to understand what went wrong.

To get the log of an Eclipse-based Team Concert client:

- In the Team Concert client, select **Help > About Rational Team Concert** from the main menu.
- In the subsequent About dialog box, click **Installation Details**.
- In the subsequent dialog, switch to the **Configuration** tab and click **View Error Log** there.

To get the server log of Team Concert:

- On the server computer, go to the `<Jazz Team Server>/server/logs` folder.
- View the `ccm.log` file.

If the Team Concert server is installed on WebSphere, the log file will be in the `logs` directory of the Application server where Team Concert is installed.

6.7 Mercurial Integration

This section describes Collaborator integration with Mercurial:

GUI Client 511

The GUI Client can upload arbitrary Mercurial diffs. The GUI Client can also upload local changes to files that are managed by Mercurial.

Command-Line Client 514

The Command-Line Client can upload arbitrary Mercurial diffs and uncommitted changes to files that are managed by Mercurial.

Supported Versions

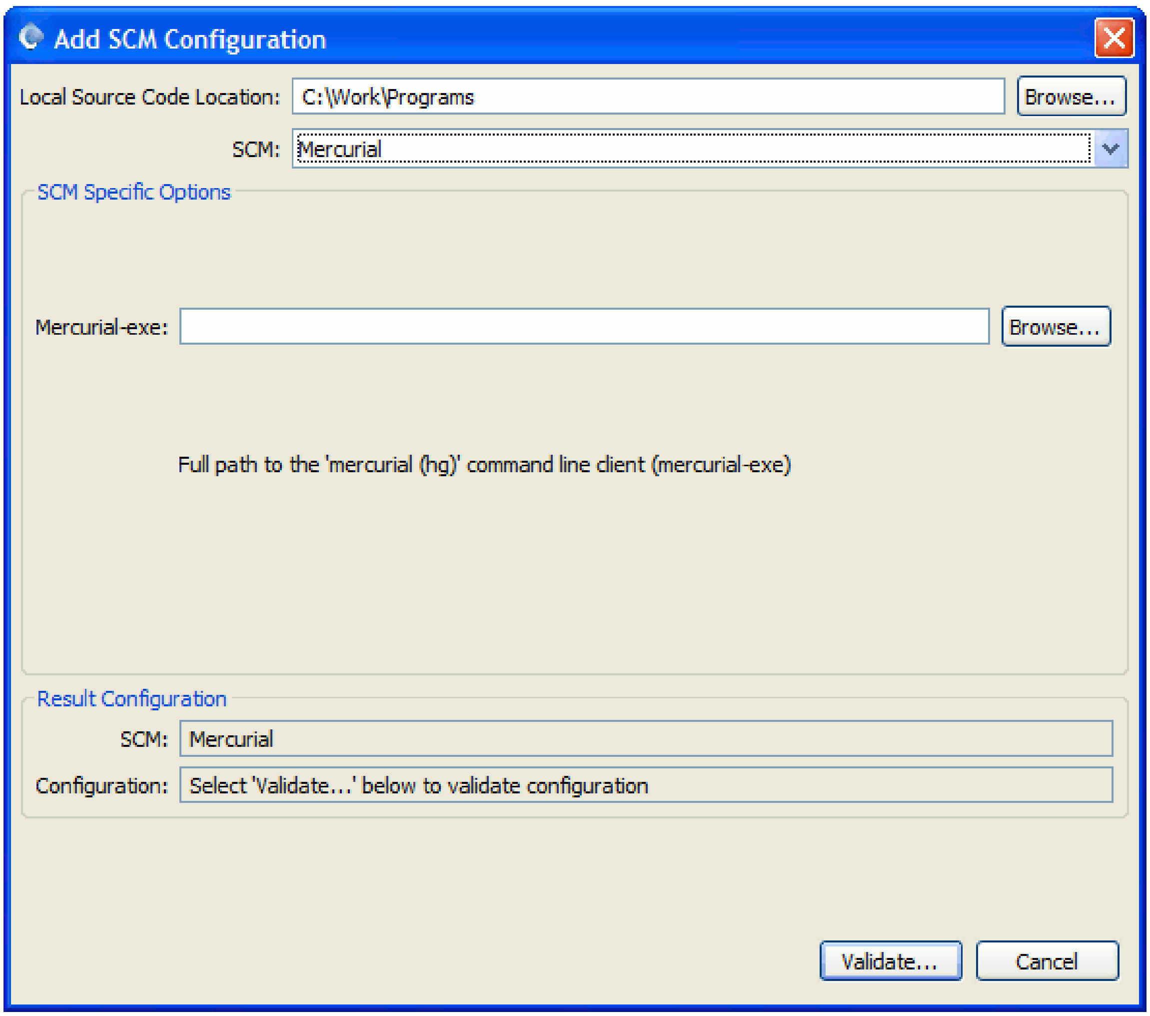
Our integration uses your own installed Mercurial command line client executable to generate differences for review. We require hg v1.0 or later, as we use the -U flag to provide full context lines of differences so that the uploaded versions can contain the full file content of the previous and current file versions. The TortoiseHg client is not supported.

Because we use client applications already present on your computer, we support all protocols, authentications, proxies, and other client configuration options you are currently using.

6.7.1 GUI Client

Mercurial-specific Options

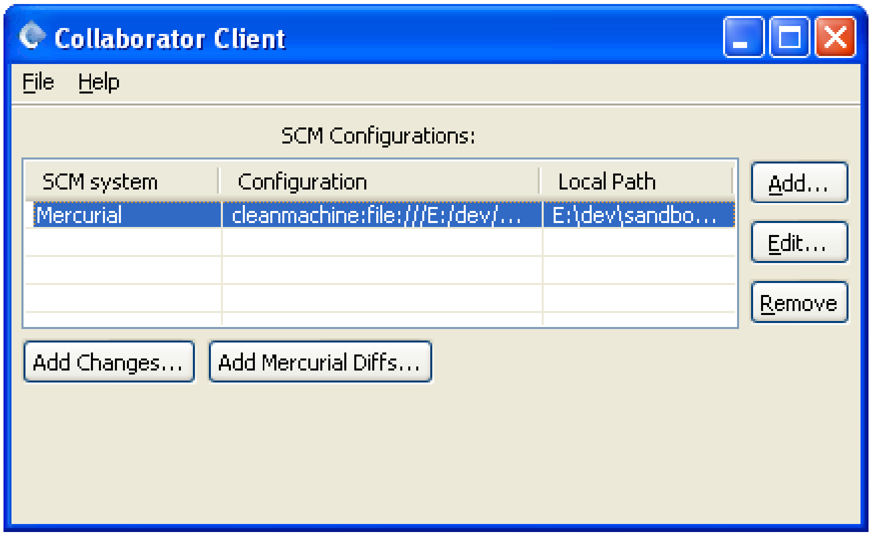
The SCM Configuration dialog 341 has one Mercurial-specific option. The full path to the Mercurial command line executable on your local file system should be specified if it is not already on your system path.



Configure client to work with Mercurial

Uploading files to a Review

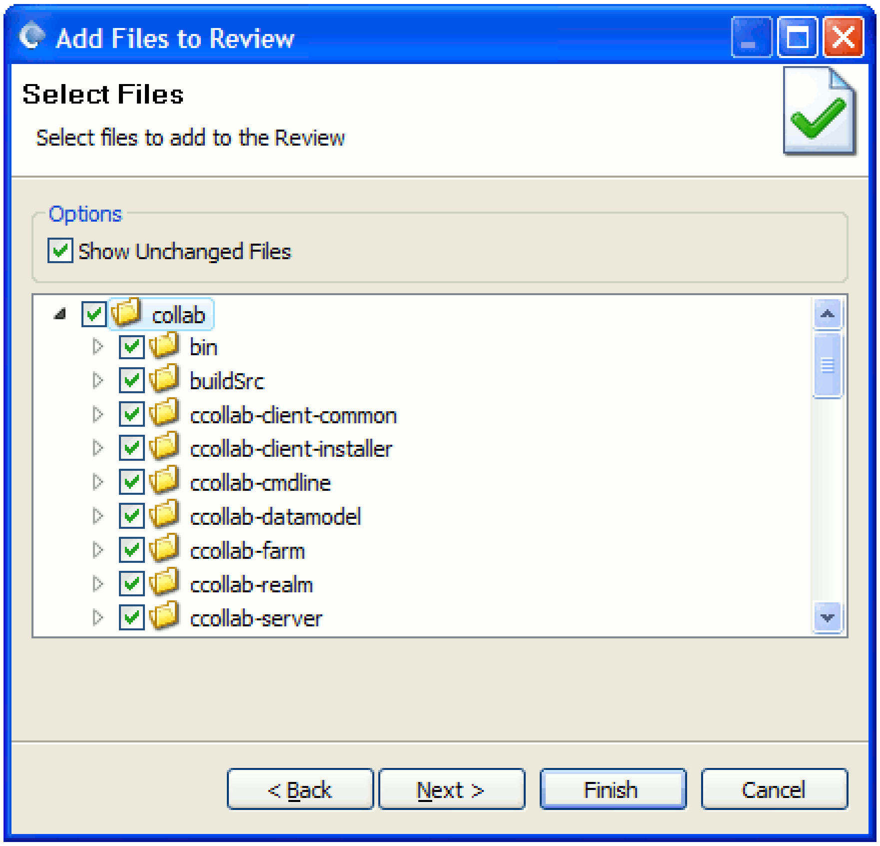
Selecting a Mercurial SCM Configuration in the GUI Client main screen 339 causes *Add to Review buttons* to appear.



Uploading Mercurial files to a review

Add Changes

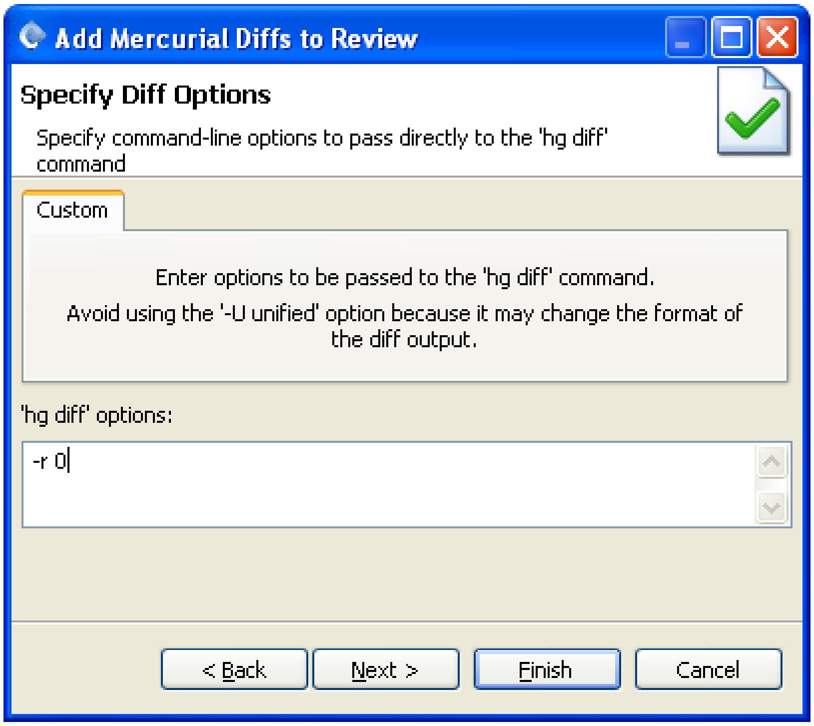
The Add Changes... button will be disabled if you have not specified a working copy in the Local Path field of the SCM Configuration dialog 341. Selecting Add Changes... allows you to upload your local modifications. These are the modifications that would be committed if you typed 'hg commit' from a command line.



Add Changes

Add Mercurial Diffs

Press the *Add Mercurial Diffs...* button to upload arbitrary Mercurial diffs to the Collaborator Server for review. Note that if you did not specify a Local Source Code Location in the SCM Configuration dialog 341, then you will need to provide absolute paths in your diff options.



Upload arbitrary Mercurial diffs

6.7.2 Command-Line Client

Commands recommended for Mercurial

ccollab addchanges 514 - Attaches locally-modified files to a review

ccollab addhgdiffs 516 - Uploads diffs generated by hg diff command

Configuration

No extra configuration is required to use Mercurial with the Command-Line Client

6.7.2.1 addchanges (for Mercurial)

Description

The `ccollab addchanges` command uploads locally modified files controlled by Mercurial to a review on the Collaborator server.

Command Line Syntax:

```
ccollab [global-options] addchanges [--upload-comment <value>]
<review> <file-spec> [<file-spec> ...]
```

Command Options

Option	Required?	Description
`global-options`	No	A number of global or SCM-specific global options. See Command-line Global Options Reference 357.
`--upload-comment <value>`	No	A comment to be used for the uploaded files. Default is *Local changes*.
`<review>`	Yes	Identifier of the desired review (an integer number), or a *new*, *ask*, or *last* string.
`<file-spec> [<file-spec> ...]`	Yes	Files to be added and/or folders to scan for modified files. Separate multiple file and folder names with spaces. If a file or folder name contains spaces, enclose this name is quotes. `ccollab` scans folders recursively. The resulting list includes the name of modified files. "Modifications" include include edits, additions, deletions, branches, integrations, moves, copies, and so on. After the scan is complete, a file list is presented in a graphical editor so you can review the files to be uploaded and make correct the list, if needed.

Examples:

To create a new review and add all changes in the current directory and below, plus the file foo.txt, you would use:

```
ccollab addchanges new . foo.txt
```

To upload modified files from the current working directory and all subdirectories to review 123:

```
ccollab addchanges 123 .
```

To upload file foo.txt and modified files from c:\dev\project into a brand new review:

```
ccollab addchanges new foo.txt c:\dev\project
```

6.7.2.2 addhgdiffs

Description

The `ccollab addhgdiffs` command uploads differences between arbitrary versions of files in Mercurial. The differences are generated using the native 'hg diff' command of Mercurial.

Command Line Syntax:

```
ccollab [global-options] addhgdiffs [--upload-comment <value>]
<review> [<user-diff-arg> [<user-diff-arg> ...]]
```

Command Options

Option	Required?	Description
`--upload-comment <value>`	No	Comment used to upload files (defaults to command-line arguments)
`<review>`	Yes	Must be either an integer review-id, 'new', 'ask', or 'last'
`<user-diff-arg> [<user-diff-arg> ...]`	No	Command-line arguments to pass directly to the diff command

Remarks:

Do not use diff arguments that affect the diff output such as '-U unified'. The Collaborator command-line client will automatically select an output format that ensures you will get all the data you need on the server.

Examples:

To upload all changes between revisions 4 and 8:

```
ccollab addhgdiffs new -r 4 -r 8
```

To upload all changes in your local working directory:

```
ccollab addhgdiffs new .
```

6.8 Microsoft Team Foundation Server Integration

This section describes Collaborator integration with Team Foundation Server.

GUI Client 518

The GUI Client can upload local changes to files 519 in a Team Foundation Server Workspace. The GUI Client can also upload the files in a Shelveset 520 or Changeset 521.

Command-Line Client 521

The Command-Line Client can upload local changes to files 522 controlled by Team Foundation Server before they are checked in. The Command-Line Client can also upload the files in a Shelveset 524 or Changeset 524.

Supported Versions

Team Foundation Server versions 2005 through 2015 are supported by the Command-Line Client 521 and the GUI Client 518.

Our client integrations use the installed TF command line client executable (tf.exe) to communicate with Team Foundation Server. Because we use client applications already present on your computer, we support all protocols, authentications, proxies, and other client configuration options you are currently using.

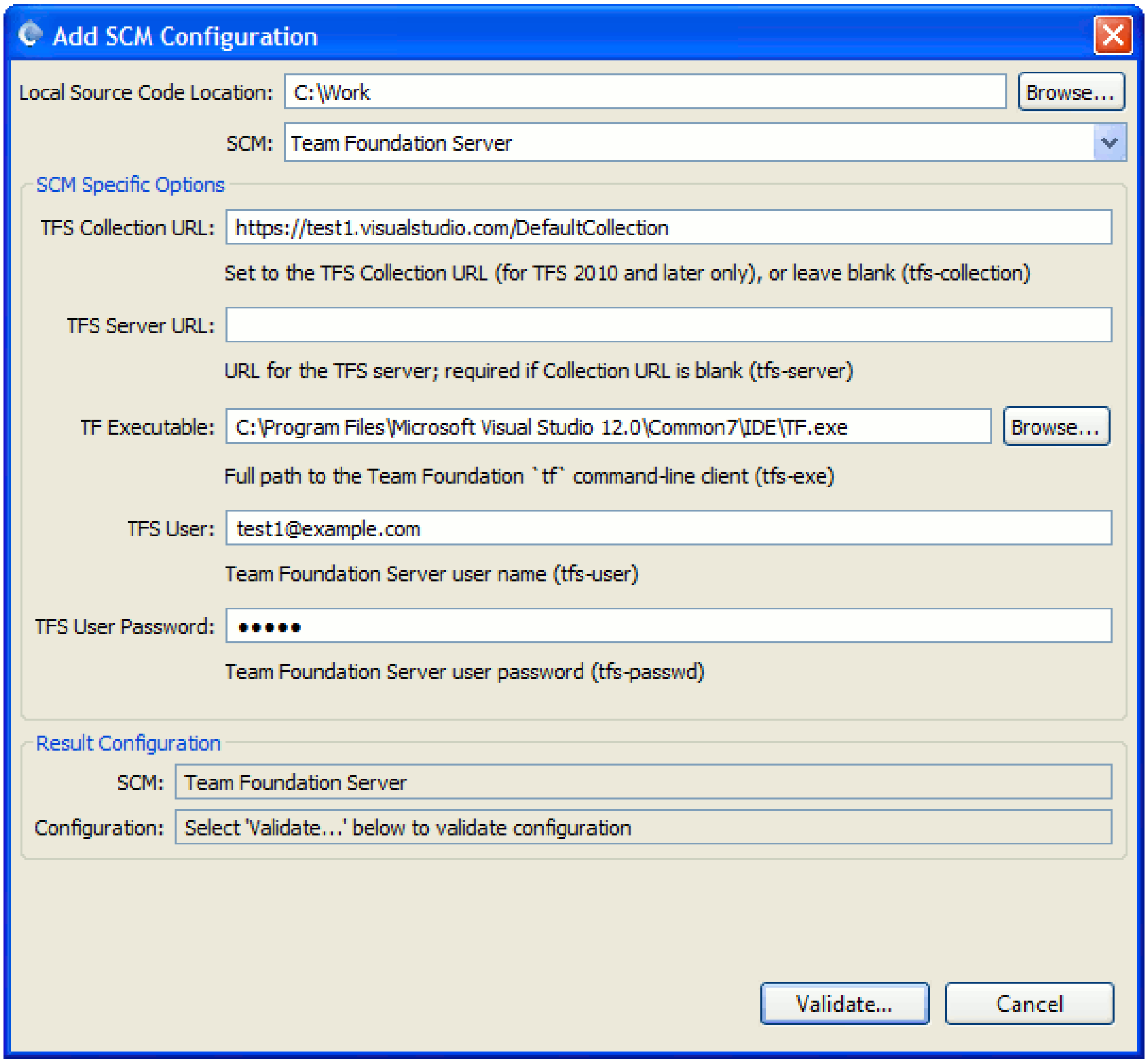
The Team Foundation Server integration will not work with non-English installations of Visual Studio .NET. Regional settings for other locales are supported, but installing a non-English Visual Studio prevents correct parsing of the TF command line output.

When using Team Explorer Everywhere clients our client will need access to the server for changelist information without being prompted for a password. To do this you will need to save your login information to your credentials cache using the TF_AUTO_SAVE_CREDENTIALS environment variable, which is documented here. Once you have set this you will need to use a mutating command (such as checkout, checkin, and so on) and enter your credentials one more time for it to stick.

6.8.1 GUI Client

Team Foundation specific Options

The SCM Configuration dialog [341] has several Team Foundation specific options.



Team Foundation SCM Configuration

In most cases it is enough to specify the path to Team Foundation Workspace on your computer to the "Local Source Code Location" setting and the path to Team Foundation command-line client to "TF Executable" setting.

If you have no Team Foundation Workspace on your computer, you can still review Team Foundation Shelvesets or Changesets. In this case you will need to specify the following options:

TFS Collection URL - The URL of Team Foundation Project Collection to work with. (This option is valid only for TFS clients 2010 and later)

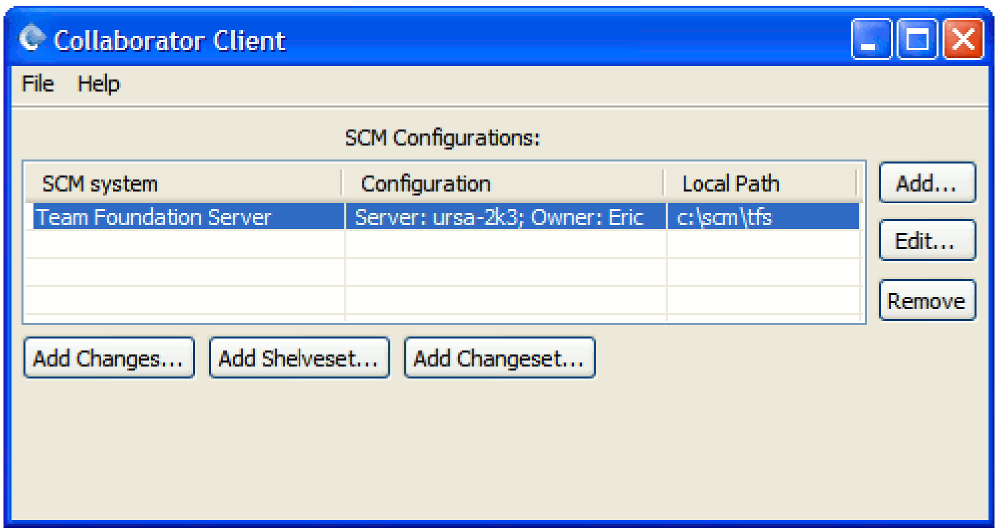
TFS Server URL - The URL of Team Foundation server to work with. (For TFS clients 2005 and 2008)

TFS User - The name of Team Foundation user.

TFS User Password - The password of the user.

Uploading files to a Review

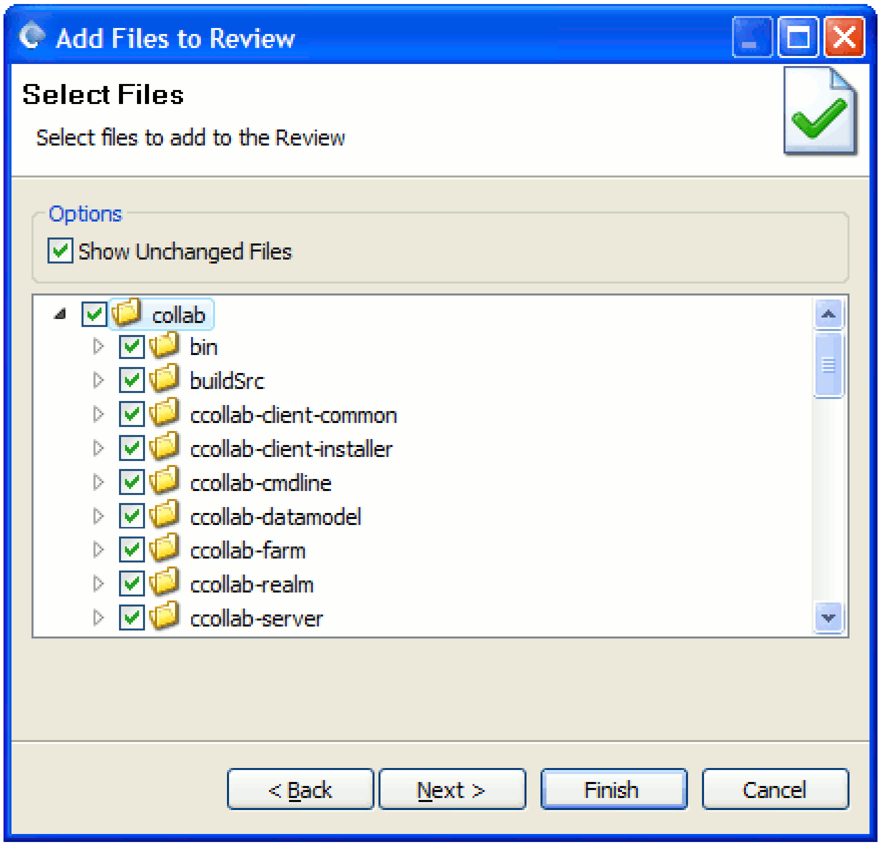
Selecting an Team Foundation SCM Configuration in the GUI Client main screen 339 causes three Add to Review buttons to appear. The *Add Changes...* 519 button uploads modified files in a Workspace. The *Add Shelvesets...* 520 button uploads the files in Shelvesets. The *Add Changesets...* 521 button uploads the files in committed Team Foundation Changesets.



Uploading Team Foundation files to a Review

Add Changes

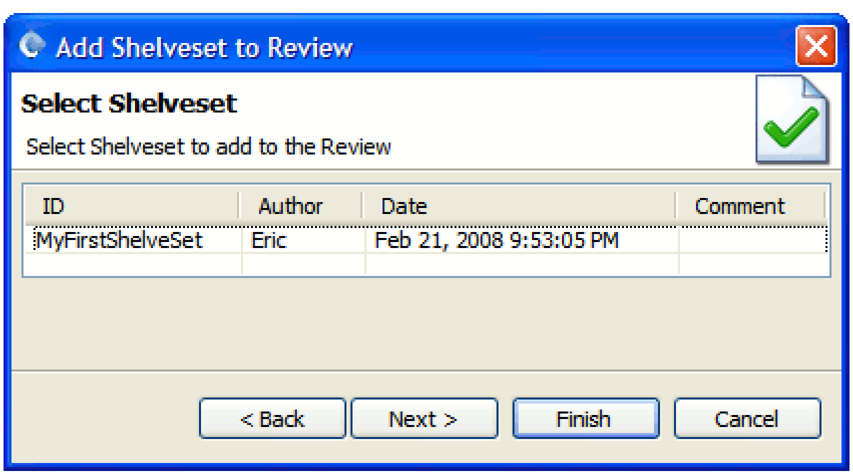
Press the *Add Changes...* button to upload modified files in a Workspace to the Collaborator Server for review.



Add Changes

Add Shelvesets

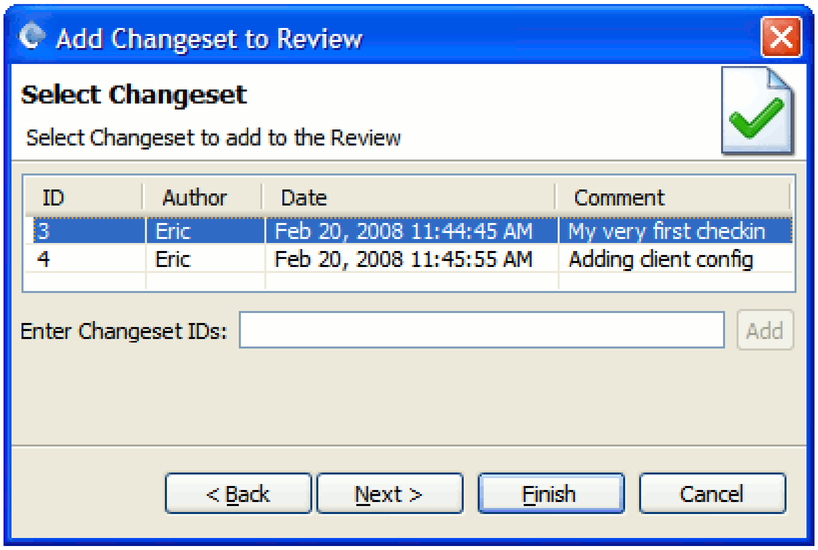
Press the *Add Shelvesets...* button to upload the files in a Shelveset to the Collaborator Server for review. See the *Add Changesets...* button if you want to add a Shelveset to the review that's not in your list of shelvesets.



Add Shelvesets

Add Changesets

Press the *Add Changesets...* button to upload the files in a Team Foundation Changeset to the Collaborator Server for review. You can also add a named Shelveset to the review in this dialog by entering a shelveset name instead of a changeset number.



Add Changesets

6.8.2 Command-Line Client

Commands recommended for Team Foundation Server

`ccollab addchanges` 522 - Attaches locally-modified files to a review

`ccollab addchangelist` 524 - Attaches an atomic changelist to a review

`ccollab commit` 525 - Commit changes in the review

The addchanges 522 command will upload local changes to files controlled by Team Foundation before they are checked in.

The addchangelist 524 command will upload a the files in a Shelveset or Changeset.

Configuration

In most cases, the Command-Line Client can automatically detect your Team Foundation configuration. Try testing your configuration 349 to verify the configuration is detected correctly.

If the Command-Line Client is unable to detect your Team Foundation configuration or you want to override the detected settings, you can manually specify Team Foundation settings using global options 357.

To manually configure the Command-Line Client to use Team Foundation, execute the following command:

```
ccollab set scm 358 tfs
```

Team Foundation Server-specific Options

Option	Description
--tfs-exe <value>	The path to Team Foundation "tf" command-line client (tf.exe).
--tfs-collection <value>	The URL of Team Foundation Project Collection to work with. (Only for TFS clients 2010 and later.)
--tfs-server <value>	The URL of Team Foundation server to work with. (Only for TFS clients 2005 and 2008.)
--tfs-user <value>	The name of Team Foundation user.
--tfs-passwd <value>	The password of the user.

6.8.2.1 addchanges (for Team Foundation Server)

Description

The ccollab addchanges command uploads locally modified files controlled by Team Foundation Server to a review on the Collaborator server.

Command Line Syntax:

```
ccollab [global-options] addchanges [--upload-comment <value>]
<review> <file-spec> [<file-spec> ...]
```

Command Options

Option	Required?	Description
`global-options`	No	A number of global or SCM-specific global options. See Command-line Global Options Reference 357.
`--upload-comment <value>`	No	A comment to be used for the uploaded files. Default is *Local changes*.
`<review>`	Yes	Identifier of the desired review (an integer number), or a *new*, *ask*, or *last* string.
`<file-spec> [<file-spec> ...]`	Yes	Files to be added and/or folders to scan for modified files. Separate multiple file and folder names with spaces. If a file or folder name contains spaces, enclose this name is quotes. `ccollab` scans folders recursively. The resulting list includes the name of modified files. "Modifications" include include edits, additions, deletions, branches, integrations, moves, copies, and so on. After the scan is complete, a file list is presented in a graphical editor so you can review the files to be uploaded and make correct the list, if needed.

Examples:

To create a new review and add all changes in the current directory and below, plus the file foo. txt, you would use:

```
ccollab addchanges new . foo.txt
```

To upload modified files from the current working directory and all subdirectories to review 123:

```
ccollab addchanges 123 .
```

To upload file foo.txt and modified files from c:\dev\project into a brand new review:

```
ccollab addchanges new foo.txt c:\dev\project
```

6.8.2.2 addchangelist (for Team Foundation Server)

Description

The `ccollab addchangelist` command attaches all files from Team Foundation Server shelvesets or changesets to a review on the Collaborator server.

Command Line Syntax:

```
ccollab [global-options] addchangelist <review> <changelist>
[<changelist> ...]
```

Command Options

Option	Required?	Description
`[global-options]`	No	A number of global or AccuRev-specific global options. See Command-line Global Options Reference 357.
`<review>`	Yes	Identifier of the desired review (an integer number), or a *new*, *ask*, or *last* string.
`<changelist> [<changelist> ... ]`	Yes	Identifier(s) of the desired changeset(s) or shelveset(s) in your source control.

The first argument is the review specifier, subsequent arguments are the IDs of the Shelvesets or Changesets to upload.

Note that the changesets are searched first - if a changeset is found, it will be added to the review. To avoid any naming conflicts, always use at least one non-numeric character in your shelveset names.

Examples:

To upload Shelvesets MyShelveset and todays_work to a new review:

```
ccollab addchangelist new MyShelveset todays_work
```

To upload Changesets C3 and C12654 to review 111:

```
ccollab addchangelist 111 3 12654
```

6.8.2.3 commit (for Team Foundation Server)

Description

The `ccollab commit` command submits the changes from a pre-commit review to source control. Be sure to include a relevant comment.

Command Line Syntax:

```
ccollab [global-options] commit [--comment <value>] [--dismiss-only]
[--force] <review>
```

Command Options

Option	Required?	Description
`--comment <value>`	No	Comment for reviewed changes
`--dismiss-only`	No	Just dismiss the Action Item
`--force`	No	Ignore potential problems
`<review>`	Yes	Must be either an integer review-id, 'ask', or 'last'

Example:

```
ccollab commit 25 --comment "my code" --force
```

6.9 PTC Integrity Integration

Both GUI and command-line clients of Collaborator integrate with PTC Integrity:

- GUI Client 526

  The GUI Client can find and upload changes by pending or committed PTC Change Packages, by specific file version number, or by modified working files in local sandboxes.

- Command-Line Client 531

  The Command-Line Client can find and upload changes by pending or committed PTC Change Packages, or by modified working files in local sandboxes.

Supported PTC Integrity Versions

Collaborator uses Java client API that communicates with the PTC client (PTC Source) installed on your system. Collaborator supports the client versions starting from MKS Source 2007 and later (MKS Source and MKS Integrity are former names of PTC Source and PTC Integrity). MKS 2006 clients with the latest fix packs are also supported.

Since Collaborator works with a client applications that is installed on your computer, it supports all the protocols, authentication types, proxies, and other configuration options that you are using.

Windows Installation

On Windows operating systems, Collaborator's integration modules require 32-bit Java Runtime Environment. 64-bit JRE is not supported at the moment.

Linux Installation

To integrate with PTC Source on Linux, Collaborator's Java client API requires the following environment variables to be set:

```
export PATH=[integrity-client-install-dir]/bin:$PATH
export LD_LIBRARY_PATH=[integrity-client-install-dir]/lib/
linux:$LD_LIBRARY_PATH
```

6.9.1 GUI Client

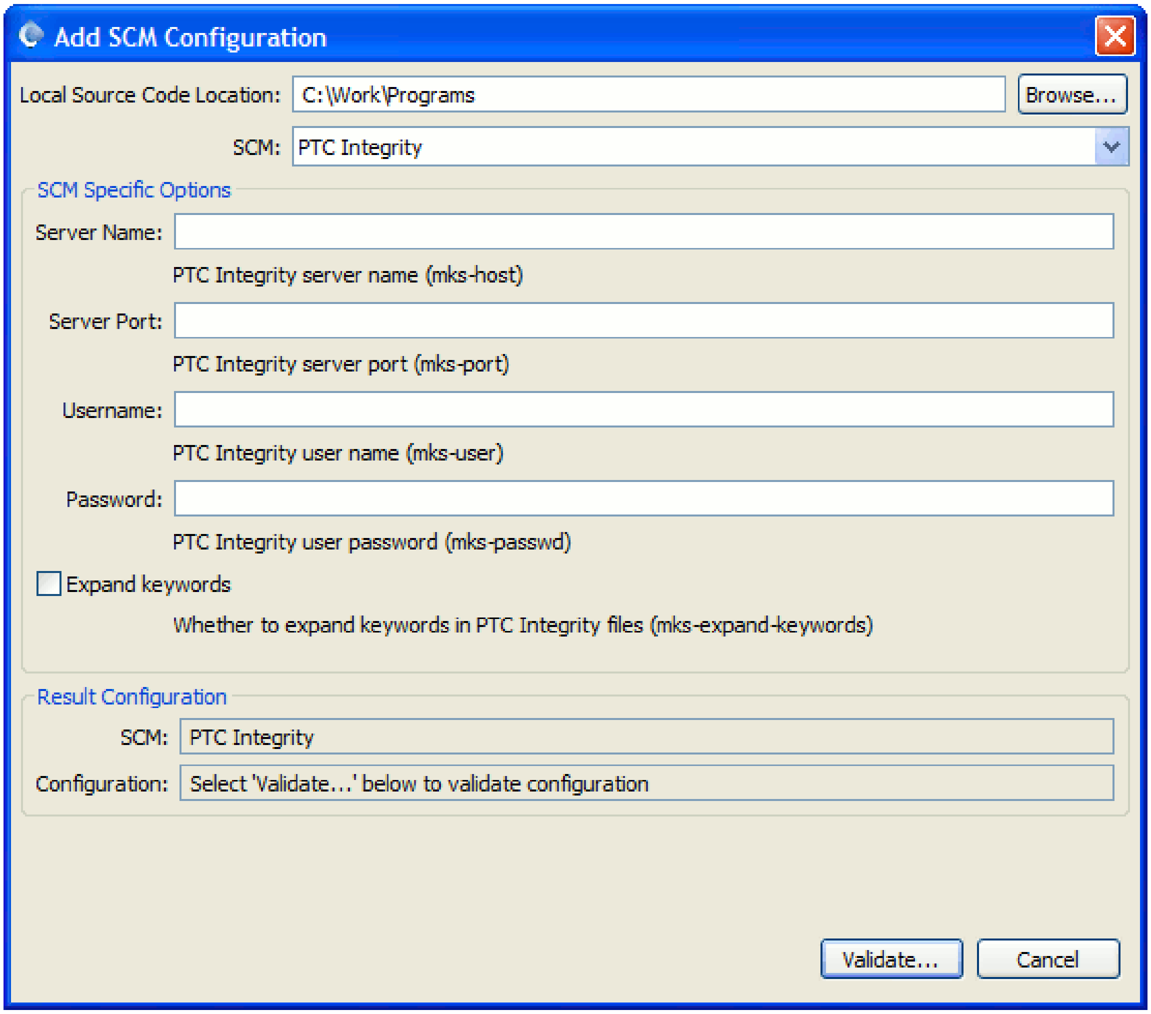
Setting PTC Integration Options

In order for Collaborator to be able to work with PTC Integrity, you need to specify connection settings in Collaborator's GUI Client.

To do this:

1. Launch the GUI Client.

2. Click **Add** on the main screen.
   The Add SCM Configuration 341 dialog will appear:



PTC Source Control Settings

3. In the dialog:

- Select **MKS Source** in the **SCM** drop-down list.

- Specify the desired PTC Integrity server (host), port, user name and password.

  We would like to remind that there is no need to specify some or all of these settings, if your PTC Integrity client automatically connects to the PTC Integrity server using default local settings.

After you close the dialog, your PTC Integrity configuration will be added to the SCM Configurations list on the main window of the GUI Client.

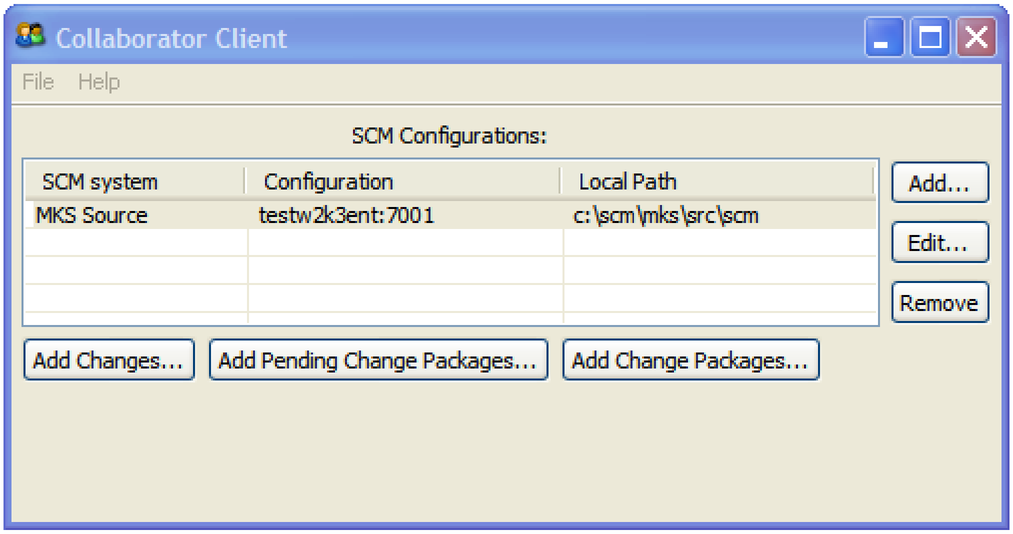
Adding Files to Review

To add files to a review:

1. In the **SCM Configurations** list on the GUI Client's main screen, select your PTC Integrity configuration.

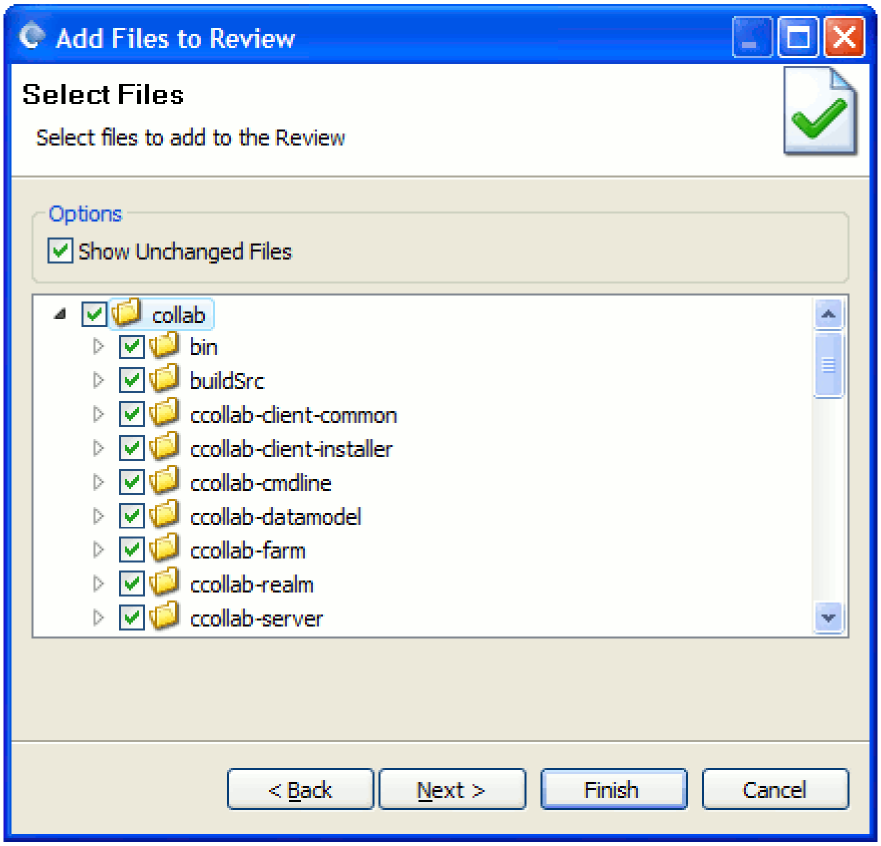
   This will enable several "Add" buttons below the list.

2. Click these buttons to append files to a review on the Collaborator server.

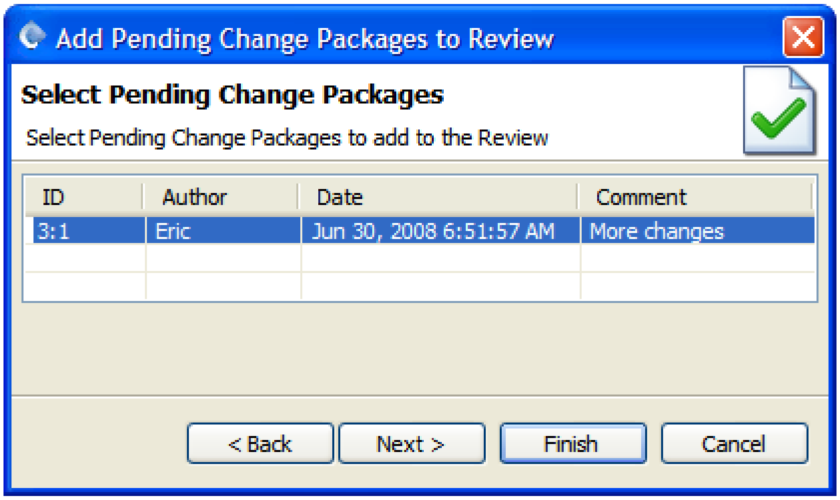


What Buttons Do

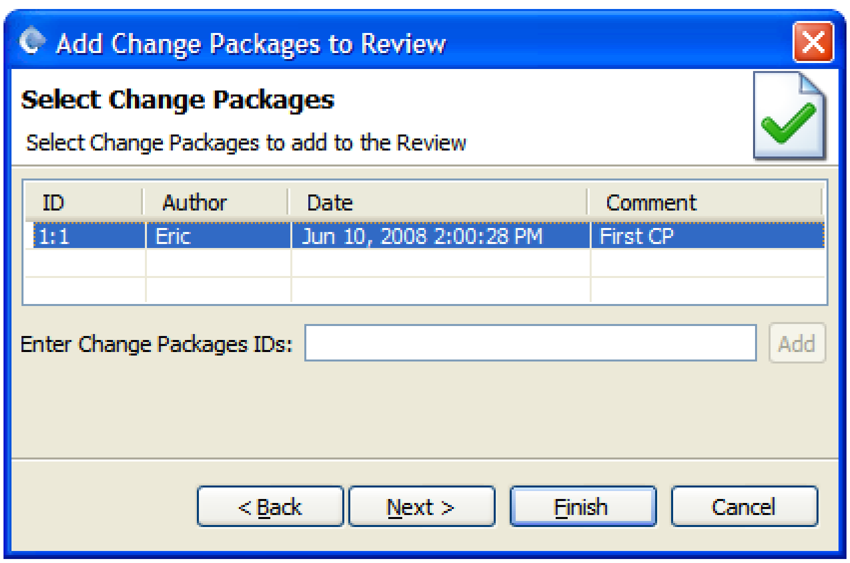
- **Add Changes** - Appends modified files from local PTC sandboxes.
  After you click the button, you can choose the files to be added:



- **Add Pending Change Packages** - Append all the files from a *pending* change package. Click the button and select the change package you need:



- **Add Change Packages** - Appends files from a *committed* change package to a review. Click the button and select the desired change package:



Note on Adding Change Packages

Adding a pending or committed change package to a review generates file differences based on Multiple Version Changelists 681.

6.9.2 Command-Line Client

To work with PTC source clients, you can use the following Collaborator's:

- `ccollab addchanges`
- `ccollab addchangelist`
- `ccollab addversions`

Configuration

In most cases, the Command-Line Client can automatically detect your PTC configuration and connection settings. Try testing your configuration 349 to check whether the settings are detected correctly.

If the Command-Line Client is unable to detect your PTC configuration, or if you want to override the detected settings, you can manually specify PTC settings using global PTC settings 357.

To manually configure the Command-Line Client to use PTC, run the following command-line:

```
ccollab set scm 358 mks
```

Global PTC-Specific Command-Line Options

Option	Description
`--mks-host <value>`	PTC Integrity server name.
`--mks-port <value>`	PTC Integrity server port.
`--mks-user <value>`	PTC Integrity user name.
`--mks-passwd <value>`	PTC Integrity user password.
`--mks-expand-keywords`	Specifies whether to expand keywords in source files.

The arguments use the *--mks* prefix as MKS Integrity is a former name of PTC Integrity.

6.9.2.1 addchanges (PTC Integrity Integration)

Description

The `ccollab addchanges` command appends files that are controlled by PTC Integrity client (PTC Source) and that are located on your computer to a review on the Collaborator server.

Command Line Syntax:

```
ccollab [global-options] addchanges [--upload-comment <value>]
<review> <file-spec> [<file-spec> ...]
```

Command Options

Option	Required?	Description
global-options	No	A number of global or PTC-specific global options. See Command-line Global Options Reference 357.
--upload-comment <value>	No	A comment to be used for the uploaded files. Default is *Local changes*.
<review>	Yes	Identifier of the desired review (an integer number), or a *new*, *ask*, or *last* string.
<file-spec> [<file-spec> ...]	Yes	Files to be added and/or folders to scan for modified files. Separate multiple file and folder names with spaces. If a file or folder name contains spaces, enclose this name is quotes. `ccollab` scans folders recursively. The resulting list includes the name of modified files. "Modifications" include include edits, additions, deletions, branches, integrations, moves, copies, and so on. After the scan is complete, a file list is presented in a graphical editor so you can review the files to be uploaded and make correct the list, if needed.

Examples:

The following command line creates a new review and add all changes in the current folder and its subfolders, plus the *foo.txt* file, to the new review:

```
ccollab addchanges new . foo.txt
```

The following command line uploads modified files from the current working folder and its subfolders to review with the identifier 157:

```
ccollab addchanges 157 .
```

The following command uploads the *foo.txt* file and modified files from the *c:\dev\project* folder to the review, to which you uploaded files last time:

```
ccollab addchanges last foo.txt c:\dev\project
```

6.9.2.2 addchangelist (PTC Integrity Integrtion)

Description

The `ccollab addchangelist` command attaches all files from a change package controlled by PTC Integrity client (PTC Source) to a review on the Collaborator server.

Command Line Syntax:

```
ccollab [global-options] addchangelist <review> <changelist>
[<changelist> ...]
```

Command Options

Option	Required?	Description
`[global-options]`	No	A number of global or PTC-specific global options. See Command-line Global Options Reference 357.
`<review>`	Yes	Identifier of the desired review (an integer number), or a *new*, *ask*, or *last* string.
`<changelist> [<changelist> ... ]`	Yes	Identifier(s) of the desired changeset(s) in your source control.

Examples:

The following command uploads the change packages 1:2 and 3:2 to a new review:

```
ccollab addchangelist new 1:2 3:2
```

The following command adds the change packages 1:1 and 3:1 to the review with the identifier 182:

```
ccollab addchangelist 182 1:1 3:1
```

6.9.2.3 addversions (PTC Integrity Integration)

Description

The `ccollab addversions` command appends the specified versions (revisions) of a file controlled by the PTC Integrity client (PTC Source) on your computer to a review.

Command Line Syntax:

```
ccollab [global-options] addversions [--upload-comment <value>] [--version-spec <value> [<value> ...]] <review> [<file-path>] [<version>] [<predecessor-version>]
```

Command Options

Option	Required?	Description
`[global-options]`	No	A number of global or PTC-specific global options. See Command-line Global Options Reference 357.
`--upload-comment <value>`	No	A comment to be used for the uploaded files. Default is *Local changes*.
`--version-spec <value> [<value> ...]`	No	The version to be added to a review. A version-spec value consist of three components: *path version* [*previous-version*], where *path* is the file name or server path of the file, *version* is the file version to be reviewed, and *previous-version* is an optional version, against which *version* should be compared. If any of these arguments contains spaces, enclose it in quotes. Typically a version-spec is not used in the command line. We recommend specifying the file and version using the <file-path>, <version> and the <predecessor-version> arguments (see below).
`<review>`	Yes	Identifier of the desired review (an integer number), or a *new*, *ask*, or *last* string.
`<file-path>`	No	The name and path of the file, whose versions are to be added to the review.

Option	Required?	Description
		Important: If you use this option, you should also specify <version> (see below).
`<version>`	No	Required, if <file-path> is specified. The version (revision) of the file to be added to the review. You can specify the keyword *local* to tell the command to use the local version of the file.
`<predecessor-version>`	No	Preceding file version to be added to the review. If you skip this argument, Collaborator will attempt to determine the preceding version based on the information from the PTC Integrity source control.

Examples:

The following command line adds versions (revisions) 1.95 and 1.88 of the hello.c file to the review 861:

```
ccollab addversions 861 hello.c 1.95 1.88
```

The following command adds these revisions to a new review:

```
ccollab addversions new hello.c 1.95 1.88
```

Remarks

- If you skip the predecessor version, Collaborator will generate diffs using the predecessor version reported by your source control system.
- By default, the command lets you add versions of one file only. To add versions of multiple files, create a text file and specify this file in the command line as the standard input stream (stdin):

  ```
  ccollab addversions last < versionlist.txt
  ```

  Each line in the file must consist of the following components: *path version* [*predecessor-version*].

  For information on them, see description of the `version-spec` arguments.
- If you skip the file name and versions in the command line, the command will expect to read them from the standard input stream (stdin). Below are some examples for reading versions from the standard input:

  ```
  ccollab addversions 86753
  ```

```
ccollab addversions last < versionlist.txt
cat versionlist.txt | ccollab addversions new
```

- When specifying the version in the command line or in an input file, you can use the keyword *local* to denote the version corresponding to the local version of the file. The *local* keyword can only be used for the first version argument, not for the predecessor version.

6.10 Perforce Integration

This section describes Collaborator integration with Perforce:

Perforce Server Integration 539

The Collaborator server can pull submitted changelists directly from your Perforce server for review, without users needing to install any client programs. It can also enforce file content access permissions 540 (protections) configured in Perforce.

GUI Client 541

The GUI Client can upload Changelists into Collaborator. You can upload Pending 543 or Submitted 544 Changelists, but you cannot upload the Default Changelist. The GUI Client can also upload arbitrary Perforce diffs 544, files in a Branch 545, or the difference between two Labels 546 or dates 547.

Command-Line Client 548

The Command-Line Client can upload Changelists into Command-Line Client. You can upload Changelists Pending or Submitted Changelists, but you cannot upload the Default Changelist. The Command-Line Client can also upload arbitrary Perforce diffs.

Eclipse Plug-in

The Eclipse Plug-in 366 can upload 383 Perforce changelists. Just right-click on any changelist entry in Eclipse, either before or after it is submitted.

P4V and P4Win

Collaborator comes with plug-ins to P4V and P4Win 557 that let you right-click on any changelist (pending or submitted) and add to a new or existing review.

Perforce Server Triggers

Perforce server-side triggers can ensure code is reviewed 559. There is also a trigger to automatically update a changelist 559 with information about the review of that changelist.

Perforce Changelist Renumbering

Perforce nearly always renumbers changelists upon submission, but when you are doing pre-commit reviews Collaborator always has the pre-submit number. We have included a script you can customize that will ask Perforce what a changelist's number was before it was submitted, and update changelists in Collaborator to have the new number. This requires a Collaborator client and server **5.0.5005** or better, and a Perforce client and server **2007.3** or later. This script is intended to be run periodically via cron or a similar task scheduler. Perforce Changelist Renumbering Script

Supported Versions

Our integration uses your own Perforce command-line client (p4) to communicate with the server. We support all client and server versions later than **2002.1**. Our Eclipse Plug-in supports Perforce's eclipse plugin version **2009.2.234487** or later.

Because we use client applications already present on your computer, we support all protocols, authentications, proxies, and other client configuration options you are currently using. This includes configuration from environment variables, `$P4CONFIG` files, `p4 set` registry values, and so forth.

Support for Branch / Integrate

Collaborator fully supports Perforce's file branching and integration semantics.

If files in a changelist are marked for branching, they are not considered "changed". The file content itself is not changed; only the file paths are being changed.

If files in a changelist are being integrated, this works just like a regular change. Many customers choose to review integrations especially carefully since the changes might interact in unexpected ways.

Support for Copy / Move

Collaborator fully supports Perforce's file copy/move semantics. Thus, if a file is copied or moved rather than added from scratch, it will show up that way in the various user interfaces.

Support for Directory-level New/Delete/Copy/Move

Collaborator partially supports Perforce's concept of directories (not just files) being altered.

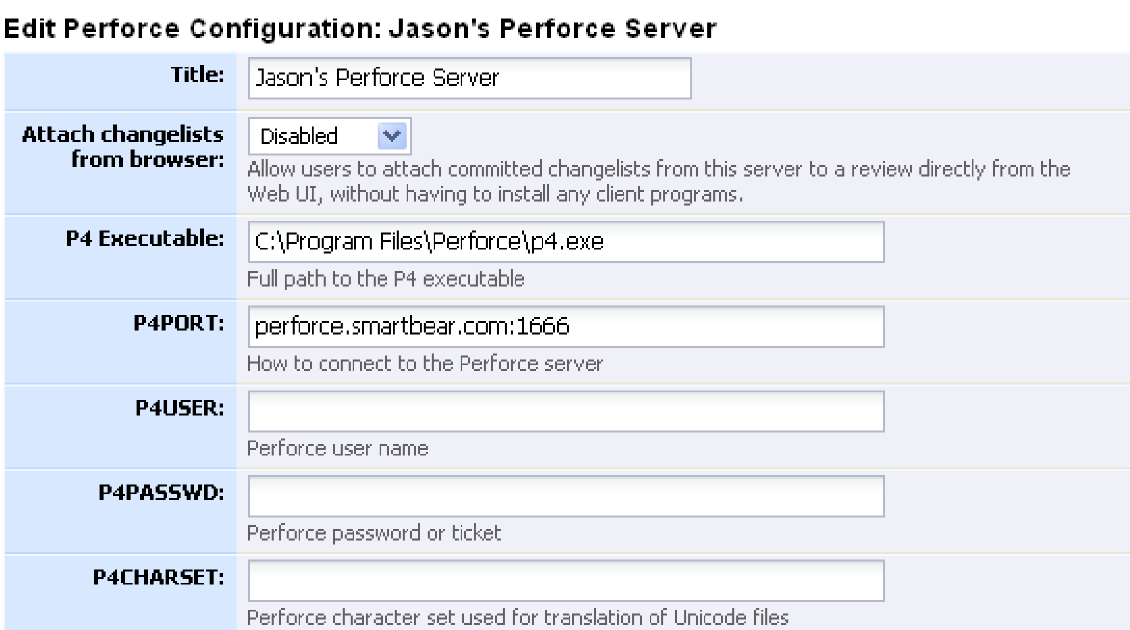
All files underneath the directories in question will be scanned, uploaded and represented properly in the GUI. The directories themselves will *not* be shown in any GUI.

Support for Shelvesets

Collaborator supports adding Perforce Shelvesets to reviews.

6.10.1 Perforce Server Integration

The Collaborator server can be configured to communicate directly with your Perforce server. This allows users to review submitted changelists completely from the browser, without having to install any client programs. To enable this feature, first install and configure a Perforce client on the Collaborator server and then create an entry for your Perforce server in the Version Control 188 tab of the administration interface. Version control server entries are also created automatically if one of the client programs uploads files from a server that does not match any of the currently configured servers.

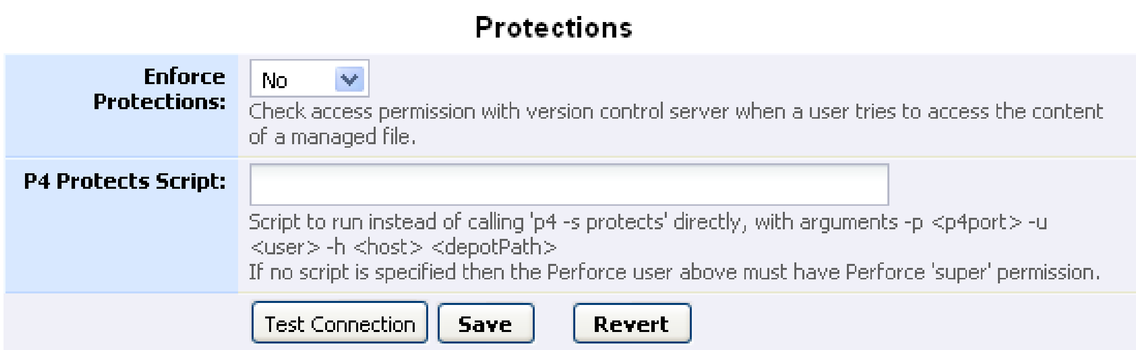


Title	The title is displayed to users, so it should be something that everyone will understand, even if they are going through proxies, VPNs, or other such things. When a version control server entry is created automatically, this is filled in with the server address (p4port) of the server.
Attach changelists from browser	If enabled, this feature lets users select submitted changelists to review directly from the web browser, without having to install any client programs.

P4 Executable	Full path to the P4 executable
P4PORT	Address to use to connect to the server. When a version control server entry is created automatically, this is filled in with the server address obtained from the client.
P4USER	Perforce user name
P4PASSWD	Perforce password or ticket
P4CHARSET	Perforce character set used for translation of Unicode files

Perforce Protections

The Collaborator server can be configured to check Perforce protections with the Perforce server whenever a user tries to access a file.



When enabled, Collaborator will check access permission with your Perforce server whenever a user tries to access the content of a file managed by this server. Note that this assumes that the user's Perforce username is the same as their Collaborator login.

To check Perforce protections the configured P4USER 540 must have Perforce "super" permission. If you do not want to provide an account with that level of permission, you can instead configure a script for Collaborator to run instead of calling 'p4 -s protects' directly.

The script will be passed arguments "-p <p4port> -u <user> -h <host> <depotPath>". For example, this script could be implemented as a Windows batch file:

```
@p4 -u admin -s -p %2 protects -u %4 -h %6 %7
```

The script must produce *exactly* the same stdin, stdout, and process error code as if Collaborator ran "`p4 -s protects`" directly. Also make sure the script runs as fast as possible, because it will be invoked every time any user tries to view the contents a file from this server.

Client Configuration Mapping

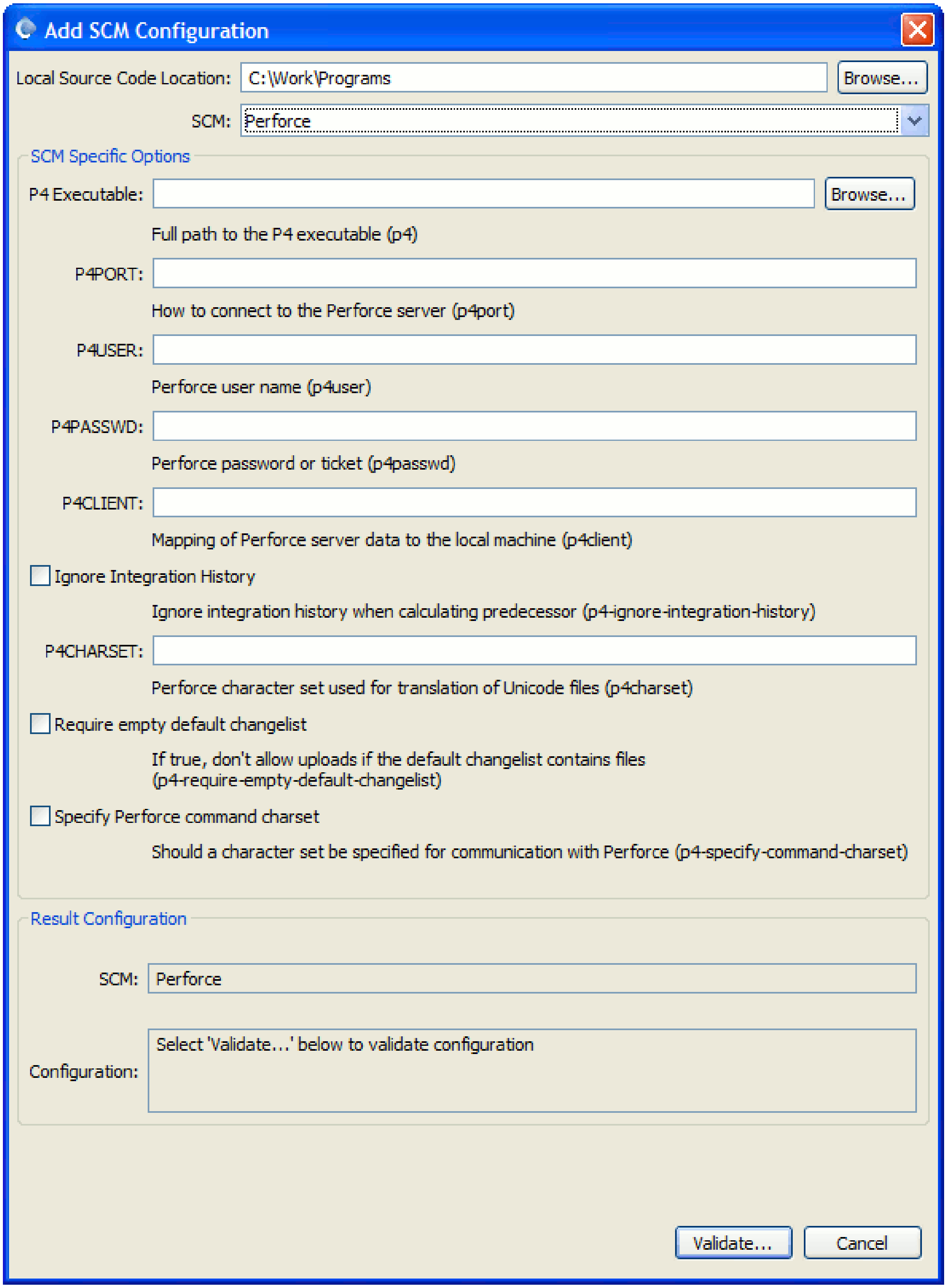
You can supply Java-style regular expressions to map changelists uploaded from our client tools to this Perforce server. It is important to set up these regular expressions so that files uploaded by the various Collaborator client tools are correctly associated with this server-side Perforce configuration.

P4PORT Pattern	Match on the client's configured P4PORT. Using the Server Address Pattern 541 is better, but clients before 5.0.5009 did not upload "Server Address", so you can configure this as a fallback.
Server Address Pattern	Match on the "Server Address" returned from running "`p4 -p <p4port> info`" on the client. This is generally more reliable than matching on the P4PORT, and works through Perforce proxy servers and other complications. When a version control server entry is created automatically, this is filled in with the server address obtained from the client.

6.10.2 GUI Client

Perforce-specific Options

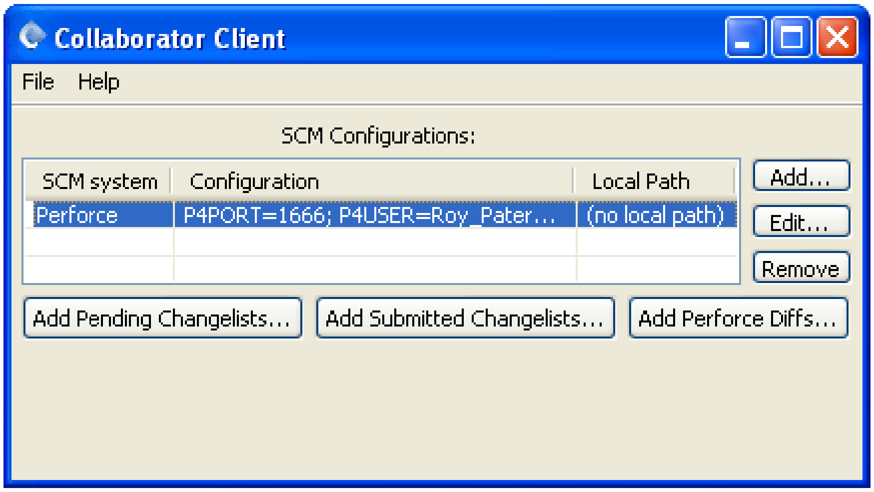
The SCM Configuration dialog 341 has several Perforce-specific options. These can be set as necessary to override Perforce options derived from the environment.



Perforce SCM Configuration

Uploading files to a Review

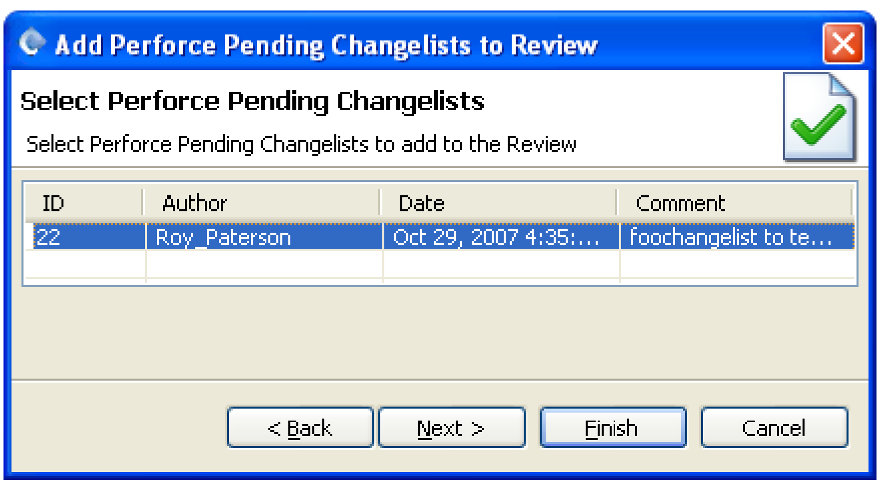
Selecting a Perforce SCM Configuration in the GUI Client main screen 339 causes several Add to Review buttons to appear. The *Add Pending Changelists...* 543 button uploads numbered, pending changelists. The *Add Submitted Changelists...* 544 button uploads submitted changelists. The *Add Perforce Diffs...* 544 button uploads arbitrary diffs, compares files in a Branch 545, or compares the difference between two Labels 546 or dates 547.



Uploading Perforce files to a Review

Add Perforce Pending Changelists

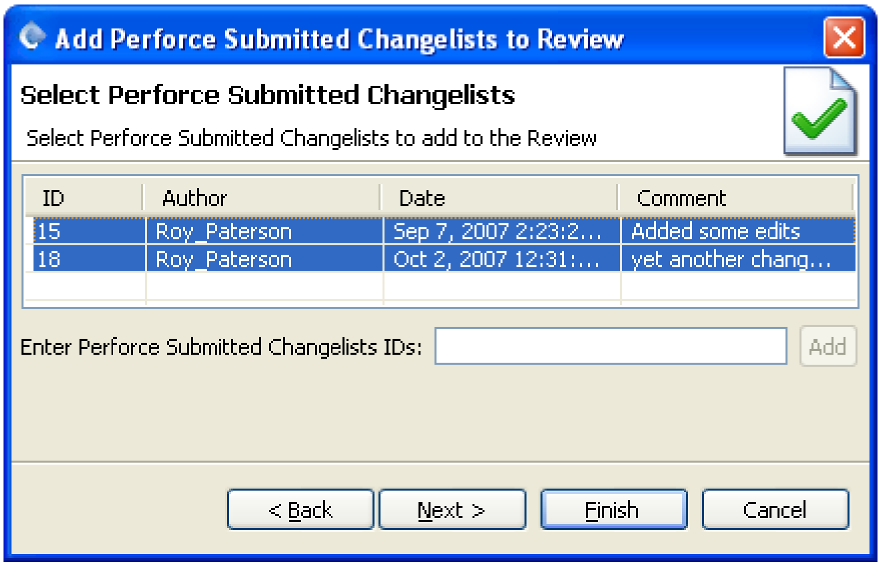
Press the *Add Perforce Pending Changelists...* button to upload the files in a Perforce pending changelist to the Collaborator Server for review. You cannot upload the default changelist.



Add Perforce Pending Changelists

Add Perforce Submitted Changelists

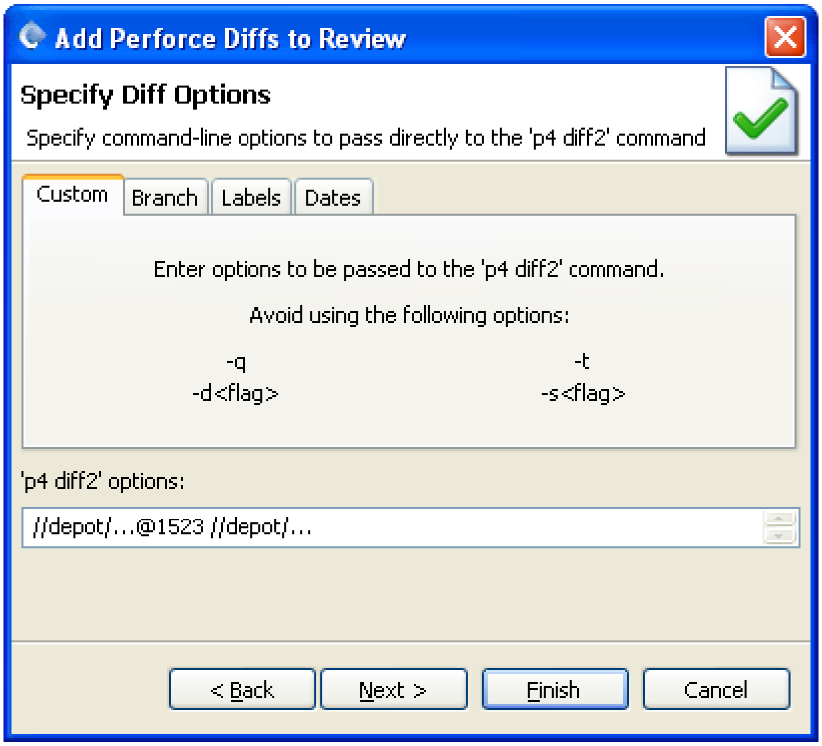
Press the *Add Perforce Submitted Changelists...* button to upload the files in a Perforce submitted changelist to the Collaborator Server for review.



Add Perforce Submitted Changelists

Add Perforce Diffs

Press the *Add Perforce Diffs...* button to upload arbitrary Perforce diffs to the Collaborator Server for review.

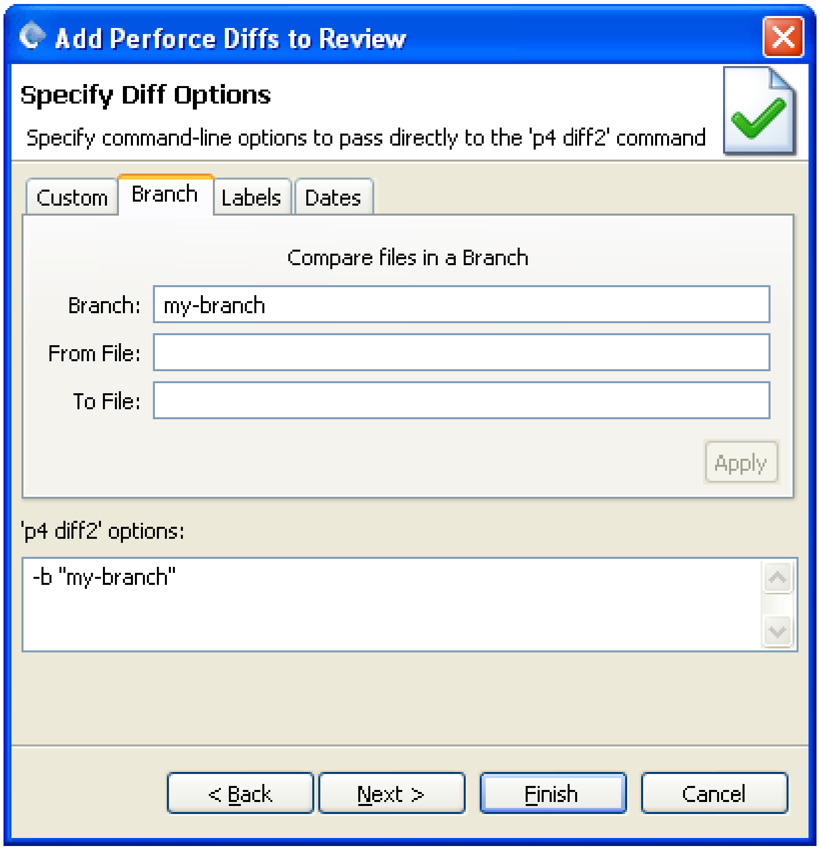


Add Perforce Diffs

You can enter arbitrary Perforce diff options, compare files in a Branch [545], or compare the difference between two Labels [546] or dates [547].

6.10.2.1 Comparing files in a Branch

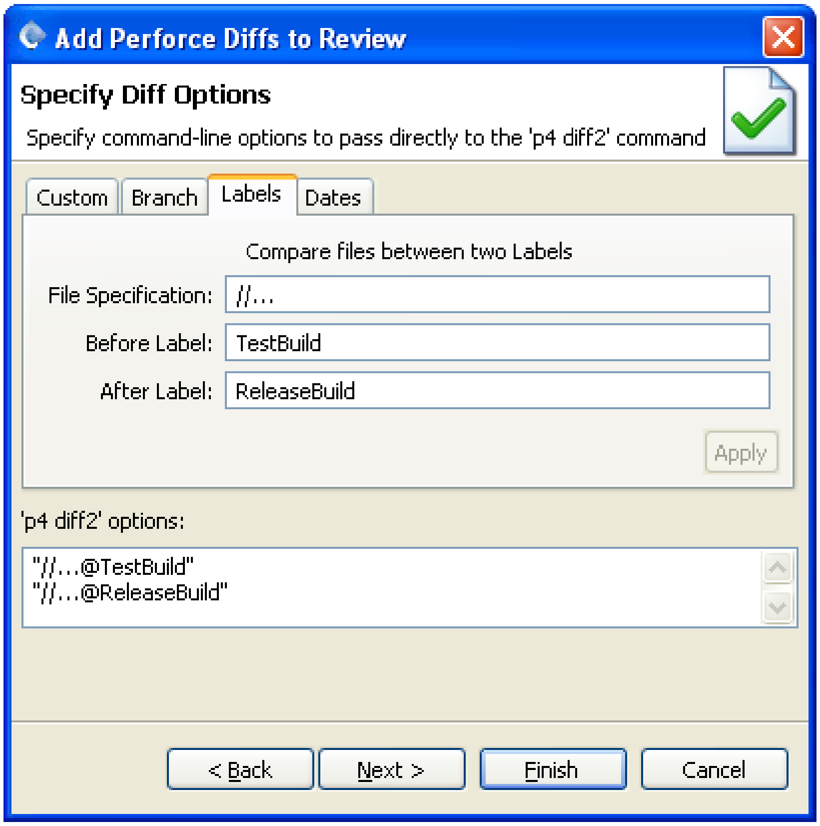
Press the *Add Perforce Diffs...* [544] button on the main screen [339] and then select the *Branch* tab to upload the files in a Branch.



Upload the files in a Branch

6.10.2.2 Comparing two Labels

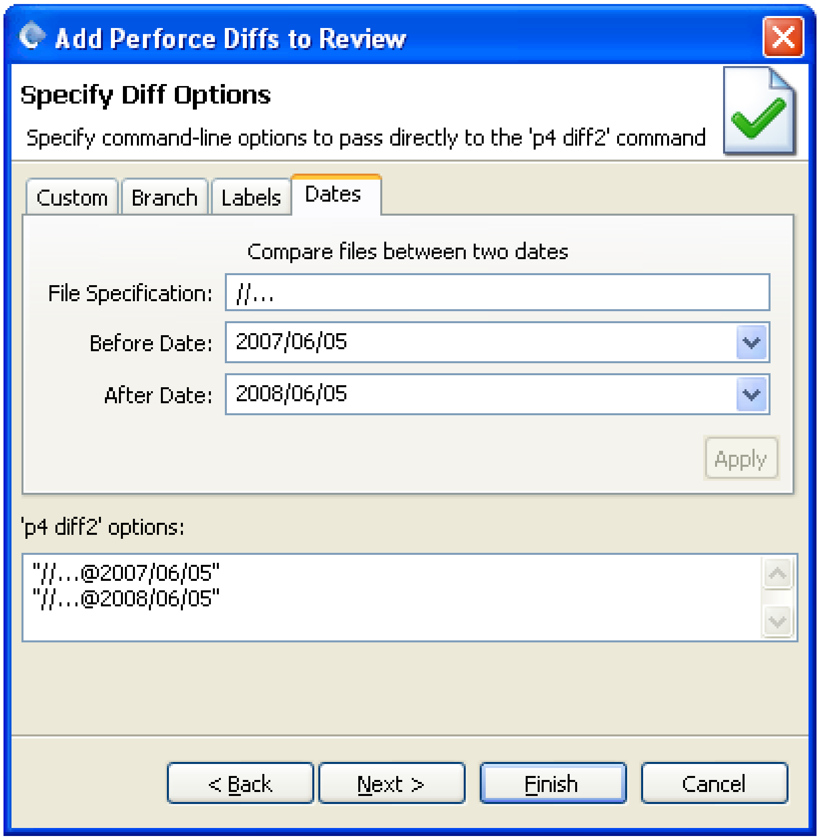
Press the *Add Perforce Diffs...* 544 button on the main screen 339 and then select the *Labels* tab to upload the difference between two Labels.



Upload the difference between two Labels

6.10.2.3 Comparing two dates

Press the Add Perforce Diffs... 544 button on the main screen 339 and then select the Dates tab to upload the difference between two dates.



Upload the difference between two dates

6.10.3 Command-Line Client

Commands recommended for Perforce

ccollab addchangelist 550 - Attaches an atomic changelist to a review

ccollab addp4diffs 551 - Uploads diffs generated from p4 diff2 command

ccollab addversions 552 - Attaches any 2 given versions to a review

ccollab commit 555 - Commit changes in the review

ccollab addp4job 555 - Adds all numbered local changes that fix a job to the review

ccollab admin syncusers 556 - Synchronizes the Perforce user list with the Collaborator server

ccollab admin changelist update-id 556 - Updates the changelist ID so Collaborator reflects the renumbered Perforce changelist ID

The addchangelist 550 command will upload Perforce changelists into Collaborator. You can upload changelists either before or after they are submitted, but you cannot upload the default changelist.

Configuration

In most cases, the Command-Line Client can automatically detect your Perforce configuration. Try testing your configuration 349 to verify the configuration is detected correctly.

If the Command-Line Client is unable to detect your Perforce configuration or you want to override the detected settings, you can manually specify Perforce settings using global options 361 .

To manually configure the Command-Line Client to use Perforce, execute the following command:

```
ccollab set scm perforce
```

Perforce-specific Options

Option	Description
`--p4 <value>`	Full path to the P4 executable
`--p4port <value>`	How to connect to the Perforce server
`--p4user <value>`	Perforce user name
`--p4passwd <value>`	Perforce password or ticket
`--p4client <value>`	Mapping of Perforce server data to the local machine
`--p4-ignore-integration-history <value>`	Ignore integration history when calculating predecessor
`--p4charset <value>`	Perforce character set used for translation of Unicode files
`--p4-require-empty-default-changelist`	If true, do not allow uploads if the default changelist contains files

Option	Description
`--p4-specify-command-charset <value>`	Should a character set be specified for communication with Perforce

If your Perforce server requires ticket-based authentication (server security level 3) then the configured p4passwd will be used to automatically issue 'p4 login' and acquire a new ticket as necessary.

If you want to ignore the integration history of files when determining the previous version of the file and look only at the path you should set p4-ignore-integration-history to yes like so:

```
ccollab set p4-ignore-integration-history yes
```

6.10.3.1 addchangelist (for Perforce)

Description

The `ccollab addchangelist` command attaches all files from a pending or a submitted Perforce changelist to a review on the Collaborator server.

Command Line Syntax:

```
ccollab [global-options] addchangelist <review> <changelist>
[<changelist> ...]
```

Command Options

Option	Required?	Description
`[global-options]`	No	A number of global or Perforce-specific global options. See Command-line Global Options Reference[357].
`<review>`	Yes	Identifier of the desired review (an integer number), or a *new*, *ask*, or *last* string.
`<changelist> [<changelist> ... ]`	Yes	Identifier(s) of the desired changeset(s) in your source control.

The first argument is the review specifier, subsequent arguments are the IDs of the Pending Changelists or Submitted Changelists to upload.

You cannot specify the default changelist.

Examples:

To upload Pending Changelists @4321 and @7568 to a new review:

```
ccollab addchangelist new 4321 7568
```

To upload Submitted Changelists @5432 and @12654 to review 111:

```
ccollab addchangelist 111 5432 12654
```

6.10.3.2 addp4diffs

Description

The `ccollab addp4diffs` command uploads differences between arbitrary versions of files in Perforce. The differences are generated using the native 'p4 diff2' command of Perforce.

Command Line Syntax:

```
ccollab [global-options] addp4diffs [--upload-comment <value>]
<review> [<p4-diff-arg> [<p4-diff-arg> ...]]
```

Command Options

Option	Required?	Description
`--upload-comment <value>`	No	Comment used to upload files (defaults to command-line arguments)
`<review>`	Yes	Must be either an integer review-id, 'new', 'ask', or 'last'
`<p4-diff-arg> [<p4-diff-arg> ...]`	No	Options which should be passed to the p4 diff2 command

Remarks:

Do not use diff arguments that affect the diff output such as `'-q', '-t', '-d<flag>'`, or `'-s<flag>'`. The Collaborator command-line client will automatically select an output format that ensures you will get all the data you need on the server.

Examples:

```
ccollab addp4diffs 698 //depot/file1 //depot/file2
ccollab addp4diffs new //depot/...@1523 //depot/...
ccollab addp4diffs 698 -b my-branch
```

6.10.3.3 addversions (for Perforce)

Description

The `ccollab addversions` command appends the specified versions (revisions) of a file controlled by Perforce on your computer to a review.

Command Line Syntax:

```
ccollab [global-options] addversions [--upload-comment <value>] [--version-spec <value> [<value> ...]] <review> [<file-path>] [<version>] [<predecessor-version>]
```

Command Options

Option	Required?	Description
`[global-options]`	No	A number of global or Perforce-specific global options. See Command-line Global Options Reference 357.
`--upload-comment <value>`	No	A comment to be used for the uploaded files. Default is *Local changes*.
`--version-spec <value> [<value> ...]`	No	The version to be added to a review. A version-spec value consist of three components: *path version* [*previous-version*], where *path* is the file name or server path of the file, *version* is the file version to be reviewed, and *previous-version* is an optional version, against which *version* should be compared. If any of these arguments contains spaces, enclose it in quotes. Typically a version-spec is not used in the command line. We recommend specifying the file and version using the <file-path>, <version> and the <predecessor-version> arguments (see below).
`<review>`	Yes	Identifier of the desired review (an integer number), or a *new*, *ask*, or *last* string.
`<file-path>`	No	The name and path of the file, whose versions are to be added to the review. **Important:** If you use this option, you should also specify <version> (see below).
`<version>`	No	Required, if <file-path> is specified. The version (revision) of the file to be added to the review. You can specify the keyword *local* to tell the command to use the local version of the file.

Option	Required?	Description
`<predecessor-version>`	No	Preceding file version to be added to the review. If you skip this argument, Collaborator will attempt to determine the preceding version based on the information from the source control.

Examples:

The following command line adds versions (revisions) 1.95 and 1.88 of the hello.c file to the review 861:

```
ccollab addversions 861 hello.c 1.95 1.88
```

The following command adds these revisions to a new review:

```
ccollab addversions new hello.c 1.95 1.88
```

Remarks

- If you skip the predecessor version, Collaborator will generate diffs using the predecessor version reported by your source control system.

- By default, the command lets you add versions of one file only. To add versions of multiple files, create a text file and specify this file in the command line as the standard input stream (stdin):

  ```
  ccollab addversions last < versionlist.txt
  ```

  Each line in the file must consist of the following components: *path version* [*predecessor-version*].

  For information on them, see description of the `version-spec` arguments.

- If you skip the file name and versions in the command line, the command will expect to read them from the standard input stream (stdin). Below are some examples for reading versions from the standard input:

  ```
  ccollab addversions 86753

  ccollab addversions last < versionlist.txt

  cat versionlist.txt | ccollab addversions new
  ```

- When specifying the version in the command line or in an input file, you can use the keyword *local* to denote the version corresponding to the local version of the file. The *local* keyword can only be used for the first version argument, not for the predecessor version.

6.10.3.4 commit (for Perforce)

Description

The `ccollab commit` command submits the changes from a pre-commit review to source control. Be sure to include a relevant comment.

Command Line Syntax:

```
ccollab [global-options] commit [--comment <value>] [--dismiss-only]
[--force] <review>
```

Command Options

Option	Required?	Description
`--comment <value>`	No	Comment for reviewed changes
`--dismiss-only`	No	Just dismiss the Action Item
`--force`	No	Ignore potential problems
`<review>`	Yes	Must be either an integer review-id, 'ask', or 'last'

Example:

```
ccollab commit 25 --comment "my code" --force
```

6.10.3.5 addp4job

Description

The `ccollab commit` command adds all numbered local changes that fix a job to the review.

Command Line Syntax:

```
ccollab [global-options] addp4job <review> <job-name>
```

Command Options

Option	Required?	Description
<review>	Yes	Must be either an integer review-id, 'new', 'ask', or 'last'
<job-name>	Yes	Perforce changes that fix this job will be added to the review

Example:

```
ccollab addp4job new new_job
```

6.10.3.6 syncusers

Description

The `ccollab admin syncusers` command synchronizes the Perforce user list with the Collaborator server. All users from Perforce will be be mirrored into Collaborator.

Command Line Syntax:

```
ccollab [global-options] admin syncusers
```

Remarks:

- The algorithm is smart enough not to overwrite existing users, only adding new users, so this can be run periodically by a script to keep the lists in sync.
- This is not necessary -- or desirable -- if you are using LDAP authentication.
- You must be logged in as an administrator to execute this command.

6.10.3.7 update-id

Description

The `ccollab admin changelist update-id` command updates all references to the old changelist ID so Collaborator reflects the renumbered Perforce changelist ID.

Command Line Syntax:

```
ccollab [global-options] admin changelist update-id <old-id> <new-id>
```

Command Options

Option	Required?	Description
`<old-id>`	Yes	Old ID of Perforce changelist.
`<new-id>`	Yes	New ID of Perforce changelist.

Example:

```
ccollab --scm p4 --p4port p4server:1666 admin changelist update-id 123 147
```

6.10.4 P4V / P4Win Integration

The Collaborator client installer includes an integration point with **P4V** and **P4Win**. When you right-click on one or more Changelists in the GUI a new menu item appears at the bottom of the Tools menu allowing you to add those Changelists to a Review.

Installation

If you installed the client yourself and opted to "Configure Addons To Perforce Visual Tools 334", then you should not have to manually configure the Perforce visual tools integrations. However, if the Collaborator client was installed by an administrator on your computer, or the configuration failed at install time, you can manually configure them as follows:

P4V Installation

Go to the "`Tools`" menu in P4V and choose "`Manage Custom Tools...`". In the dialog box click "`Import Tools...`". In the ensuing open-file dialog, navigate to the Collaborator Client installation directory and select the `P4V-Tools-Import.txt` or `P4V-Tools-Import.xml` file.

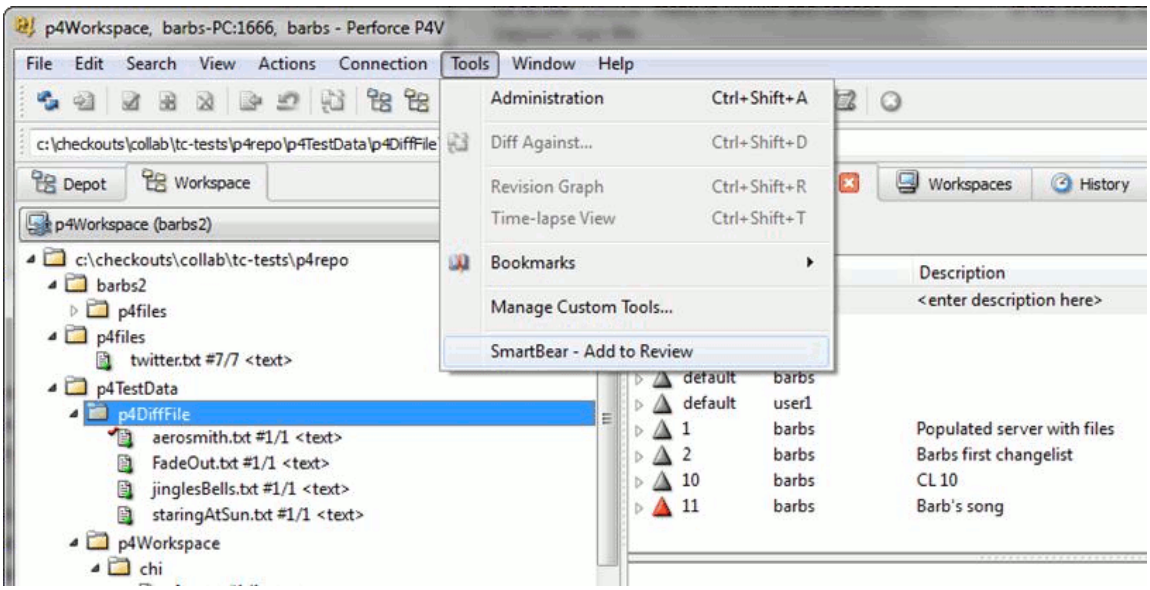
P4Win Installation

Go to the "Tools" menu in P4Win and choose "Import..".. In the ensuing open-file dialog, navigate to the Collaborator Client installation directory and select the P4Win-Tools-Import.txt file.

There should now be a menu item under "`Tools`" with the text "SmartBear - Add to Review". It will be dimmed unless a Changelist is selected.

> **Warning:** The plug-ins will work only if the Perforce command-line tool (p4) is in your PATH environment variable.

It is also available in the pop-up menu when you right-click a Changelist:



Working with multiple Perforce workspaces and servers

The P4V/P4Win plug-ins work perfectly and automatically with multiple Perforce servers and servers.

All the Perforce connectivity parameters are taken from the UI, so whatever workspace, server, and authentication you are currently using when you right-click the item will be used automatically be the plug-in.

None of this affects the behavior or configuration of the command-line client 349, so you can freely use the plug-ins without disturbing that configuration.

Troubleshooting

If you are experiencing problems with the P4V/P4Win plug-ins, it will help SmartBear technical support if you send in a debugging log. To do this, edit the custom tool configuration (Tools > Manage Custom Tools > Edit), and add a --debug argument to the beginning of the arguments list. This will create a ccollab.log file in the "current working directory" which is either the Perforce install directory or the "Start in" directory specified in the Custom Tool configuration.

Please contact our technical support 29 and send the log file along with a full description of what you were trying to do when the error occurred.

6.10.5 Perforce Server Triggers

Topics of this section provide information on the Collaborator-specific triggers added to Perforce by Collaborator's Perforce Server Integration package.

Triggers

Follow the links below to learn more about a trigger:

Trigger	Description
ensure-review-started 559	Ensures that a review has been started (created in Collaborator) for the submitted changelist.
ensure-reviewed 561	Ensures that a review has been completed for the submitted changelist.
ensure-content-reviewed 563	Ensures that a review has been completed for the submitted changelist, and that the changelist was not changed after the review was over (that is, that the file contents and the file list are the same).
update-changelist 565	Appends or updates review-specific information in a changelist's description.

Related Materials

For general information on Perforce triggers, see Chapter 6 of the Perforce System Administrator's Guide.

6.10.5.1 ensure-review-started (for Perforce)

Description

Use the `ensure-review-started` trigger to ensure that a review for the specified changelist has been started. The trigger blocks the submit operation if there is no review for the changelist in Collaborator, and displays an error message telling that the changes need to be reviewed before submitting them to the Perforce repository.

For Perforce this trigger has "change-content" type and is invoked after the changelist creation and file transfer, but before file commit.

Command Line Syntax:

```
ccollab [global-options] admin trigger ensure-review-started [--ignore-integrate] [--review-id-regex <value>] <changelist-id>
```

Command Options

Option	Required?	Description
`<changelist-id>`	Yes	The changelist identifier.
`--ignore-integrate`	No	If specified, Collaborator ignores the merge changes to the source control (that is, the trigger is not fired for these changes. See below).
`--review-id-regex <value>`	No	A regular expression that identifies the review ID in the commit is comment.

Installation

To install the trigger, add a line like this to your Perforce Triggers list:

```
ccollab content //depot/... "/usr/bin/ccollab --url <collabUrl> --user <collabUser> --password <collabPasswd> --scm perforce --p4port <p4port> --p4client %client% --p4user <p4user> --p4passwd <p4passwd> admin trigger ensure-review-started %changelist%"
```

Some notes:

- Specify your installation directory for `ccollab` and replace *<values>* with appropriate data. Also, type all parameters in a single line even though the text above occupies several lines.
- The Perforce user that you specify must have at least read-only access to the repository.
- On Unix systems, Perforce incorrectly recognizes arguments that include spaces. It ignores quotes and other standard ways of indicating that the data with spaces is actually one argument. The workaround is to use a separate bash script to call our trigger.

Remarks

- The trigger ignores changelists that correspond to new branch creation. Creating a new branch does not involve changes in code, so it does not require a review.
- Perforce treats branch merge changelists like ordinary changelists as they bring changes to source code and can introduce bugs. So, by default, the trigger handles this type of changes. However, since the merge changelists often include a large number of files and since you often need to merge several branches, this approach could require cumbersome reviews to be performed many times.
  To avoid possible issues, use the `--ignore-integrate` command-line option. If it is specified, the trigger will ignore changelists that include "merge" changes only. Make sure to review changes in one branch before merging them with other branches.
- For information on Perforce triggers, see Chapter 6 of the Perforce System Administrator's Guide.

6.10.5.2 ensure-reviewed (for Perforce)

Description

Use the `ensure-reviewed` trigger to ensure that the review that was created for the specified changelist has been completed by the time you submit the changelist to the Perforce repository. If the review has not been completed, the trigger blocks the submit operation and displays an error message informing the user about the problem.

For Perforce this trigger has "change-content" type and is invoked after the changelist creation and file transfer, but before file commit.

Command Line Syntax:

```
ccollab [global-options] admin trigger ensure-reviewed [--ignore-integrate] [--review-id-regex <value>] <changelist-id>
```

Command Options

Option	Required?	Description
`<changelist-id>`	Yes	The changelist identifier.

Option	Required?	Description
`--ignore-integrate`	No	If specified, Collaborator ignores the merge changes to the source control (that is, the trigger is not fired for these changes. See below).
`--review-id-regex <value>`	No	A regular expression that identifies the review ID in the commit is comment.

Installation

To install the trigger, add a line like this to your Perforce Triggers list:

```
ccollab content //depot/... "/usr/bin/ccollab --url <collabUrl> --
user <collabUser> --password <collabPasswd> --scm perforce --p4port
<p4port> --p4client %client% --p4user <p4user> --p4passwd <p4passwd>
admin trigger ensure-reviewed %changelist%"
```

Some notes:

- Specify your installation directory for `ccollab` and replace *<values>* with appropriate data. Also, type all parameters in a single line even though the text above occupies several lines.
- The Perforce user that you specify must have at least read-only access to the repository.
- On Unix systems, Perforce incorrectly recognizes arguments that include spaces. It ignores quotes and other standard ways of indicating that the data with spaces is actually one argument. The workaround is to use a separate bash script to call our trigger.

Remarks

- The trigger ignores changelists that correspond to new branch creation. Creating a new branch does not involve changes in code, so it does not require a review.
- Perforce treats branch merge changelists like ordinary changelists as they bring changes to source code and can introduce bugs. So, by default, the trigger handles this type of changes. However, since the merge changelists often include a large number of files and since you often need to merge several branches, this approach could require cumbersome reviews to be performed many times.
  To avoid possible issues, use the `--ignore-integrate` command-line option. If it is specified, the trigger will ignore changelists that include "merge" changes only. Make sure to review changes in one branch before merging them with other branches.

- For information on Perforce triggers, see Chapter 6 of the Perforce System Administrator's Guide.

6.10.5.3 ensure-content-reviewed

Description

Use the `ensure-content-reviewed` trigger to ensure that the review created for the specified changelist has been completed and that the file list and file contents were not changed by the time you submit the changelist. If the review has not been completed or if the review contains changed files or updated file list, the trigger blocks the submit operation and displays an error message informing the user about the problem.

Command Line Syntax:

```
ccollab [global-options] admin trigger ensure-content-reviewed [--ignore-integrate] [--no-keywords --review-id-regex <value>] <changelist-id>
```

Command Options

Option	Required?	Description
`<changelist-id>`	Yes	The changelist identifier.
`--ignore-integrate`	No	(Perforce only.) If specified, Collaborator ignores the merge changes to the source control (that is, the trigger is not fired for these changes. See below).
`--no-keywords`	No	If specified, this option disallows keyword expansion in source files. Expanding the keywords may cause Perforce to consider the files as changed.
`--review-id-regex <value>`	No	A regular expression that identifies the review ID in the commit is comment.

Installation

To install the trigger, add a line like this to your Perforce Triggers list:

```
ccollab content //depot/... "/usr/bin/ccollab --url <collabUrl> --
user <collabUser> --password <collabPasswd> --scm perforce --p4port
<p4port> --p4client %client% --p4user <p4user> --p4passwd <p4passwd>
admin trigger ensure-content-reviewed %changelist%"
```

Some notes:

- Specify your installation directory for `ccollab` and replace `<values>` with appropriate data. Also, type all parameters in a single line even though the text above occupies several lines.
- The Perforce user that you specify must have at least read-only access to the repository.
- On Unix systems, Perforce incorrectly recognizes arguments that include spaces. It ignores quotes and other standard ways of indicating that the data with spaces is actually one argument. The workaround is to use a separate bash script to call our trigger.

Remarks

- The trigger ignores changelists that correspond to new branch creation. Creating a new branch does not involve changes in code, so it does not require a review.
- If your source files use Perforce RCS keywords, we would recommend using the `--no-keywords` command-line option to prevent keyword expansion. Expanded keywords (like `$Date$`, `$Change$` and some others) may cause changes to the source code.
- Perforce treats branch merge changelists like ordinary changelists as they bring changes to source code and can introduce bugs. So, by default, the trigger handles this type of changes. However, since the merge changelists often include a large number of files and since you often need to merge several branches, this approach could require cumbersome reviews to be performed many times.
  To avoid possible issues, use the `--ignore-integrate` command-line option. If it is specified, the trigger will ignore changelists that include "merge" changes only. Make sure to review changes in one branch before merging them with other branches.
- For information on Perforce triggers, see Chapter 6 of the Perforce System Administrator's Guide.

6.10.5.4 update-changelist

Description

It is convenient to have information like review id and participants' names in the description of a changelist, for which you created a review in Collaborator. Use this trigger to append review-specific information to or update it in the description automatically.

If you use this trigger as a "submit" trigger, it will add or update review-specific values in the description of a pending changelist when you are submitting this changelist to the repository. If you use this trigger as a "form-in change" trigger, then users will see the updated description whenever they edit the changelist.

All review-specific values appear in a single line in the description. You specify the values to be added in the command line (see below).

Command Line Syntax:

```
ccollab [global-options] admin trigger update-changelist [--description-prefix <value>] [--description-template <value>] <changelist-spec>
```

Command Options

Option	Required?	Description
`--description-prefix <value>`	Yes	Specifies the prefix text for the review line in changelist description. The trigger uses this text to find the review line in the description (see the Remarks section below566).
`--description-template <value>`	Yes	A single-line string that contains an arbitrary text and review-specific data to be posted to the changelist description. To insert review-specific values, use Collaborator variables129 (`${...}`). See examples in the Installation section below566.
`<changelist-spec>`	Yes	`%changelist%` for a trigger of the *submit* or *commit* type, or `%formfile%` for a trigger of the *form-in* type.

Installation

To install the trigger, add a line like one of those below to your Perforce Triggers list:

- Example 1: Adding the trigger as a submit trigger:

```
ccollabupdatechangelist change-commit //depot/... "/usr/bin/ccollab
--url <collabUrl> --user <collabUser> --password <collabPasswd> --scm
perforce --p4port <p4port> --p4user <p4user> --p4passwd <p4passwd> --
p4client <p4client> admin trigger update-changelist --description-
prefix %quote%Review: %quote% --description-template %quote%ID
${review.id} by ${review.participants.rolename}%quote% %changelist%"
```

- Example 2: Adding the trigger as a form-in trigger:

```
ccollabupdatechangelist form-in change "/usr/bin/ccollab --url
<collabUrl> --user <collabUser> --password <collabPasswd> --scm
perforce --p4port <p4port> --p4user <p4user> --p4passwd <p4passwd>
admin trigger update-changelist --description-prefix %quote%Review: %
quote% --description-template %quote%ID ${review.id} by ${review.
participants.rolename}%quote% %formfile%"
```

Some notes:

- Specify your installation directory for `ccollab` and replace *<values>* with appropriate data. Also, type all parameters in a single line even though the text above occupies several lines.
- The Perforce user that you specify must have read-write access to the changelist.
- On Unix systems, Perforce incorrectly recognizes arguments that include spaces. It ignores quotes and other standard ways of indicating that the data with spaces is actually one argument. The workaround is to use a separate bash script to call our trigger.

Remarks

- The *--description-prefix* option serves as an identifier of the review line in the changelist description. The trigger uses it to find the review-specific string within the description. If the string is found, the trigger updates information in-place. If the string is not found, the trigger appends a new line with review-specific data to the end of the description.

- If there is a review in Collaborator that matches the specified changelist, the changelist description is always updated (either in-place, or appended as it was described above).
  If there is no review for the specified changelist, the description is updated only if the prefix is already present in the description. If the prefix is not found, the trigger does not append review-specific data to the description.

- If the specified changelist is used in several reviews, then the `${review.id}` variable will refer to the most recent of these reviews.

- For information on variables that you use to insert review-specific data, see Variable Substitution 129. The examples in the Installation section insert the review identifier and a list of participants, plus the appropriate English words.

- For information on Perforce triggers, see Chapter 6 of the Perforce System Administrator's Guide.

6.11 Subversion Integration

Topics of this section describes Collaborator integration with Subversion.

Overview

- **Server Integration**
  The Collaborator server can upload files from committed revisions directly from your Subversion server to a review, without users needing to install any client programs. See Subversion Server Integration [570].
  Subversion server-side hooks can ensure code is reviewed [586] or automatically create reviews [586].
- **GUI Client Integration**

  Collaborator's GUI Client can upload local changes to files [574] in a Working Copy, or upload files in Revisions [575]. The GUI Client can also upload arbitrary Subversion diffs [576], or the difference between two Revisions [577], branches/tags [578], or dates [579]. See Integrating Through Collaborator [573].
- **Command-Line Client Integration**

  Collaborator's Command-Line Client can upload local changes to files in a Working Copy, or upload the files in committed Revisions. The Command-Line Client can also upload arbitrary Subversion diffs. See Integrating Through Command-Line Client [580].
- **Eclipse Plug-in Integration**

  Collaborator's Eclipse Plug-in [366] integrates with the Subclipse and Subversive plug-ins, so you can upload locally modified files [383] or the files in Revisions [400].

Supported Subversion Versions

Collaborator's Command-Line and GUI clients use the Subversion command-line client (`svn`) to communicate with the Subversion server.

They supports Subversion 1.4.x - 1.9.x. For versions 1.3.x and earlier only the `ccollab addsvndiffs` [584] command is supported.

The TortoiseSVN client is not supported, unless it is installed along with the "command line client tools" option.

Since Collaborator clients work through the Subversion command-line client that is already present on your computer, Collaborator supports all protocols, authentications, proxies, and other client configuration options that you are currently using.

Collaborator's Eclipse Plug-in integrates with the Subclipse and Subversive Eclipse plug-ins and supports the following versions of these plug-ins:

- Subclipse 1.6.x
- Subclipse 1.4.x

- Subversive 0.7.9.20110207-1700

Support for Directory-Level Changes

Collaborator partially supports Subversion's concept of directories (not just files) being altered.

All the files in directories in question will be scanned, uploaded and represented properly in the Collaborator's GUI. The directories themselves will *not* be shown, or even in the file list confirmation screen presented by the command-line client.

This works correctly even in cases, when you move a parent directory *and* change, add or delete a file in that directory. In the review, you will get the correct content for the file, but the directory itself will not be listed.

Note this limitation affects "commit" functionality. If a directory and a file in it were included in a review and then modified, the Collaborator client will not be able to commit them automatically. The workaround is to commit the changes manually and then "dismiss" the commit Action Item.

Support for `svn+ssh`

The Collaborator clients support running Subversion over SSH (the `svn+ssh`:// protocol). On some systems, especially those under Unix, Mac OS X or Cygwin/Windows, this will probably work correctly out-of-the-box.

If your SSH connection displays a banner, this will interfere with the client being able to parse the Subversion output correctly. We would recommend suppressing banner output by adding the "-q" option to your SSH executable --

```
svn_ssh = ssh -q
```

-- or by creating a local SSH configuration file and adding the following line to it:

```
LogLevel QUIET
```

On some Windows computers, you might have to configure Subversion to default to your SSH client. To do this:

- Go to the `<Documents and Settings>\`*`username`*`\Application Data\Subversion` folder, and open the `config` file for editing.
- In the `[tunnels]` section of this file, find a line that starts with `ssh=`.
- In the line, specify your SSH client. For example:

  ```
  ssh = "C:\\Program Files\\PuTTY\\Plink.exe" -l <your username>
  ```

  Note: It is important to use double slashes.

Support for Symlinks

Collaborator partially supports Subversion's ability to version symlinks. If a committed revision contains a symlink, and you attached this revision to a review, Collaborator will be able to display the symlink contents correctly. However, if a symlink was added to a review before you commit the changes to Subversion, Collaborator displays an incorrect content for the symlink (the symlink will be traversed).

Changes to Properties

Collaborator does not support reviews of the changes made to Subversion properties.

6.11.1 Subversion Server Integration

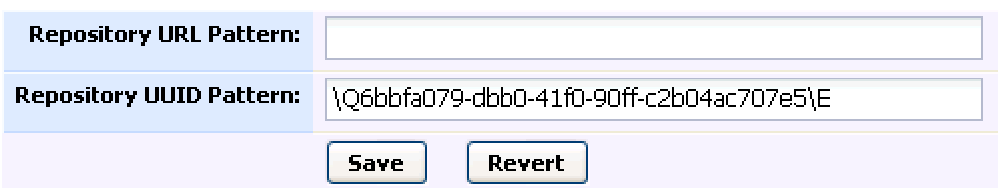
The Collaborator server can be configured to communicate directly with your Subversion server. This allows users to review committed revisions completely from the browser, without having to install any client programs. To enable this feature, first install and configure a Subversion client on the Collaborator server and then create an entry for your Subversion server in the Version Control 188 tab of the administration interface. Version control server entries are also created automatically if one of the client programs uploads files from a server that does not match any of the currently configured servers.

Title	The title is displayed to users, so it should be something that everyone will understand, even if they are going through proxies, VPNs, or other such things. When a version control server entry is created automatically, this is filled in with the URL the client used to connect to the Subversion server.
Attach changelists from browser	If enabled, this feature lets users select committed revisions to review directly from the web browser, without having to install any client programs.
svn Executable	Full path to the 'svn' executable
Repository URL	Subversion repository URL. When a version control server entry is created automatically, this is filled in with the URL the client used to connect to the Subversion server.
Username	Subversion user name
Password	Subversion password

Click the ***Test Connection*** to make sure Collaborator can contact your Subversion server. If you get an "untrusted certificate authority" error, this is probably because your Subversion server is using a self-signed certificate. You can click ***Accept Certificate*** to tell Collaborator to permanently accept the certificate.

Client Configuration Mapping

You can supply Java-style regular expressions to map changelists uploaded from our client tools to this Subversion server. It is important to set up these regular expressions so that files uploaded by the various Collaborator client tools are correctly associated with this server-side Subversion configuration.



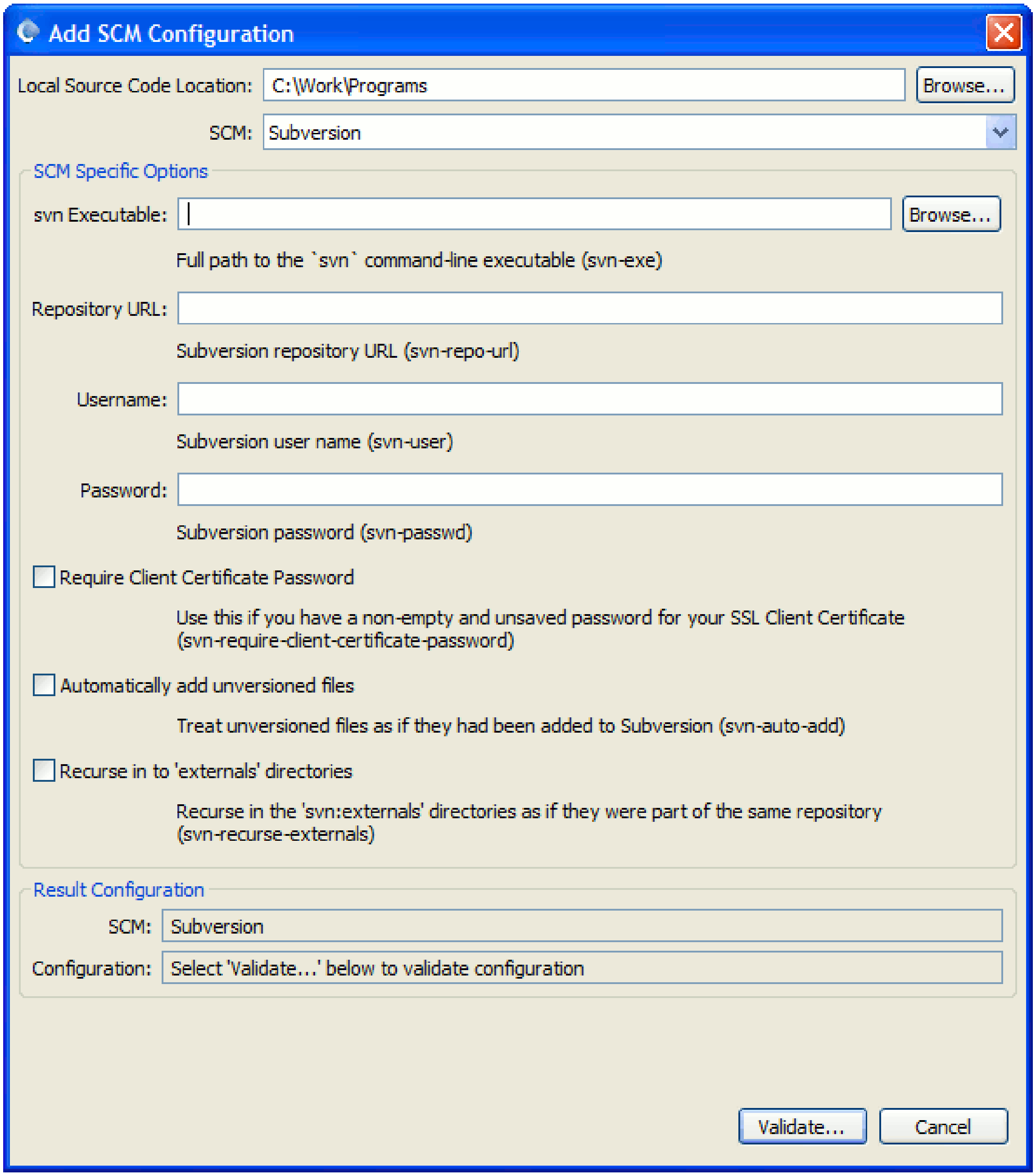
Repository URL Pattern	Match on the client's configured repository URL. This is not very reliable because clients may have various network configurations that make the URL look different. It is usually far better to use the Repository UUID Pattern 572.

Repository UUID Pattern	Match on the "Repository UUID" returned from running "`svn info`". This is a unique ID generated by every Subversion repository, and usually works perfectly for identifying uploads to this Subversion server. When a version control server entry is created automatically, this is filled in with the "Repository UUID" obtained from the client.

6.11.2 GUI Client

Subversion-specific Options

The SCM Configuration dialog [341] has several Subversion-specific options.

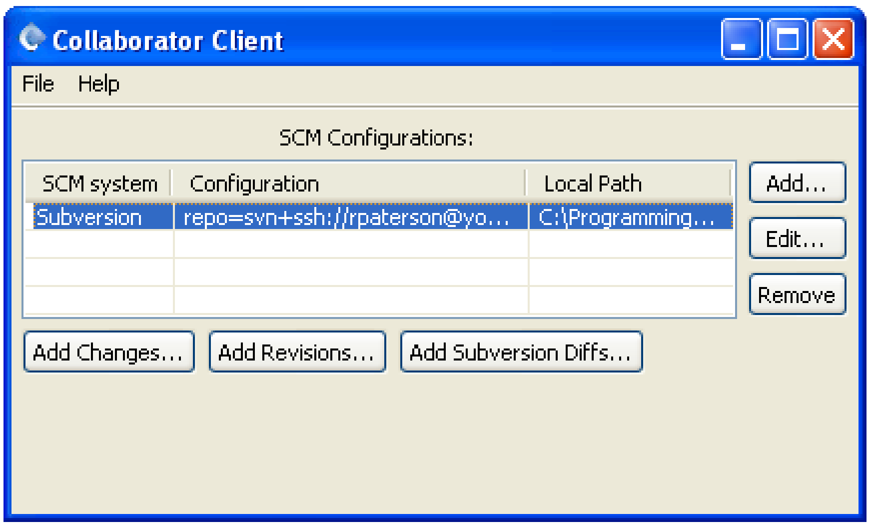


Subversion SCM Configuration

Uploading files to a Review

Selecting a Subversion SCM Configuration in the GUI Client main screen 339 causes several Add to Review buttons to appear. The *Add Changes...* button will be disabled if you have not specified a working copy in the *Local Path* field of the SCM Configuration dialog 573.

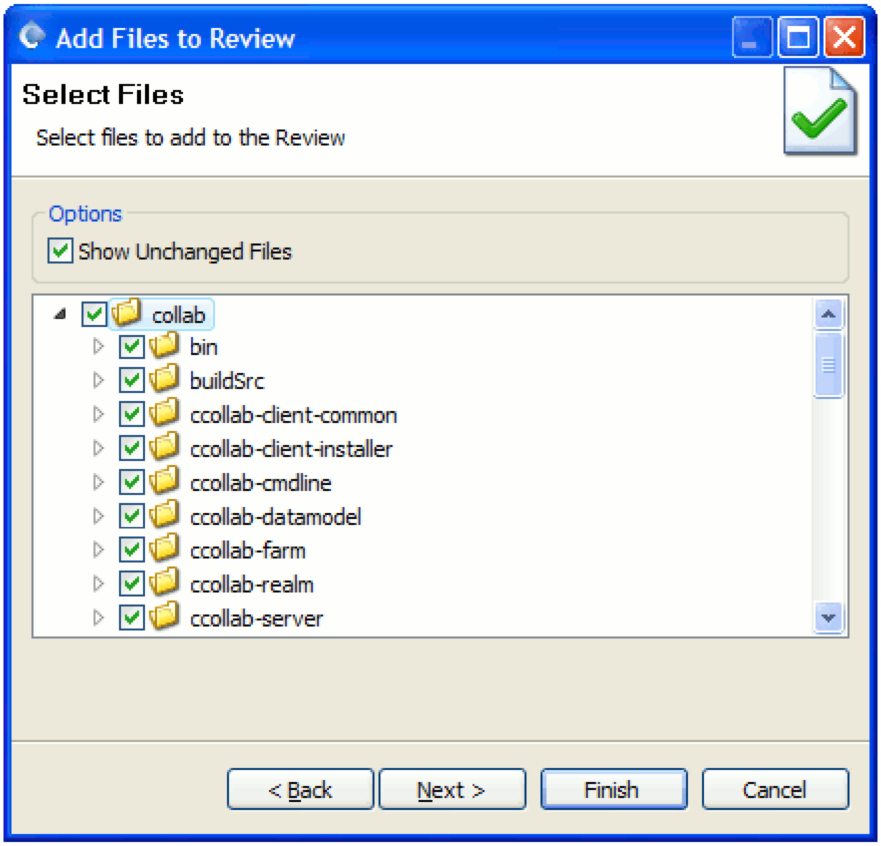
The *Add Changes...* 574 button uploads modified files from a Working Copy. The *Add Revisions...* 575 button uploads files in committed Revisions. The *Add Subversion Diffs...* 576 button uploads arbitrary diffs, or compares the difference between two Revisions 577, branches / tags 578, or dates 579.



Uploading Subersion files to a Review

Add Changes

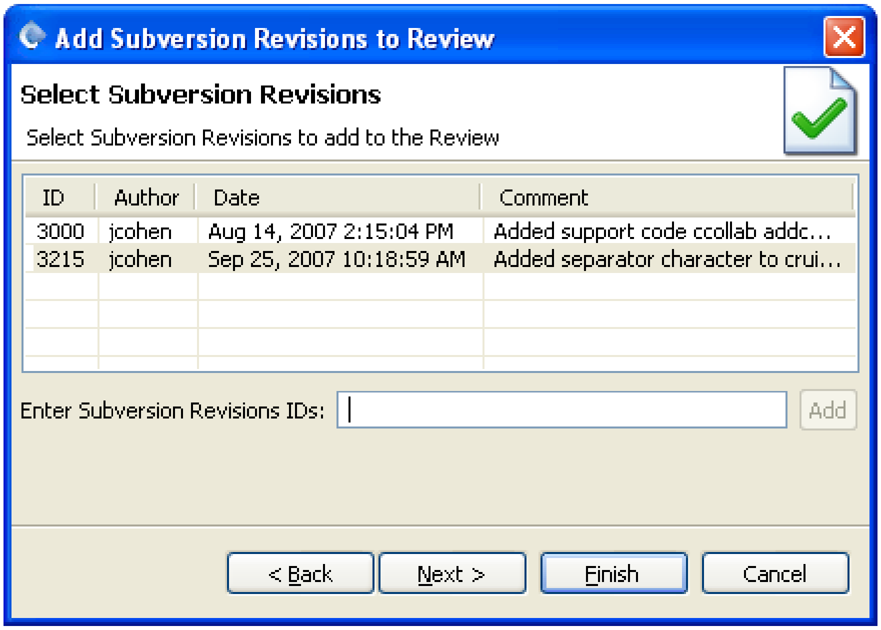
Press the *Add Changes...* button to upload modified files in a Subversion working copy to the Collaborator Server for review. The *Add Changes...* button will be disabled if you have not specified a working copy in the *Local Path* field of the SCM Configuration dialog 573.



Add Changes

Add Revisions

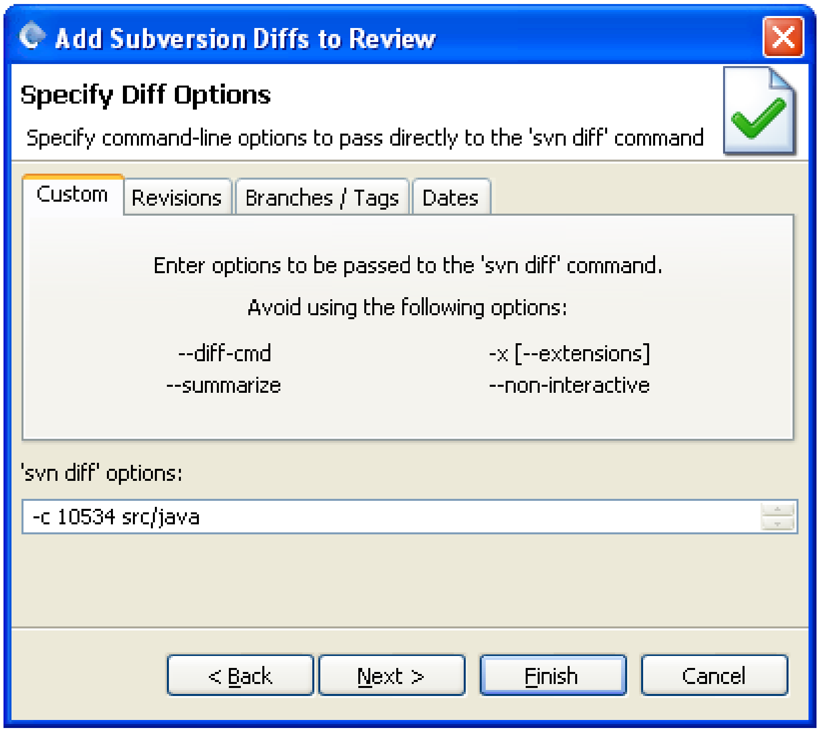
Press the *Add Revisions...* button to upload committed Revisions to the Collaborator Server for review. All of the files modified in the selected Revisions will be uploaded.



Add Subversion Revisions

Add Subversion Diffs

Press the *Add Subversion Diffs...* button to upload arbitrary Subversion diffs to the Collaborator Server for review.

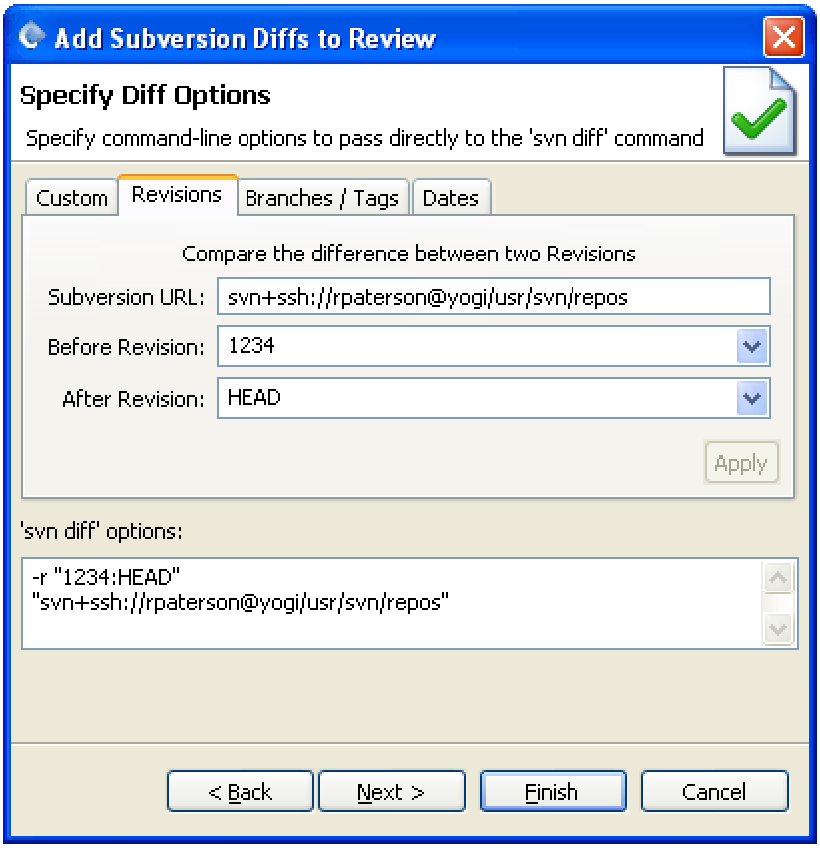


Add Subversion Diffs

You can enter arbitrary Subversion diff options, or compare the difference between two Revisions 577, branches / tags 578, or dates 579.

6.11.2.1 Comparing two Revisions

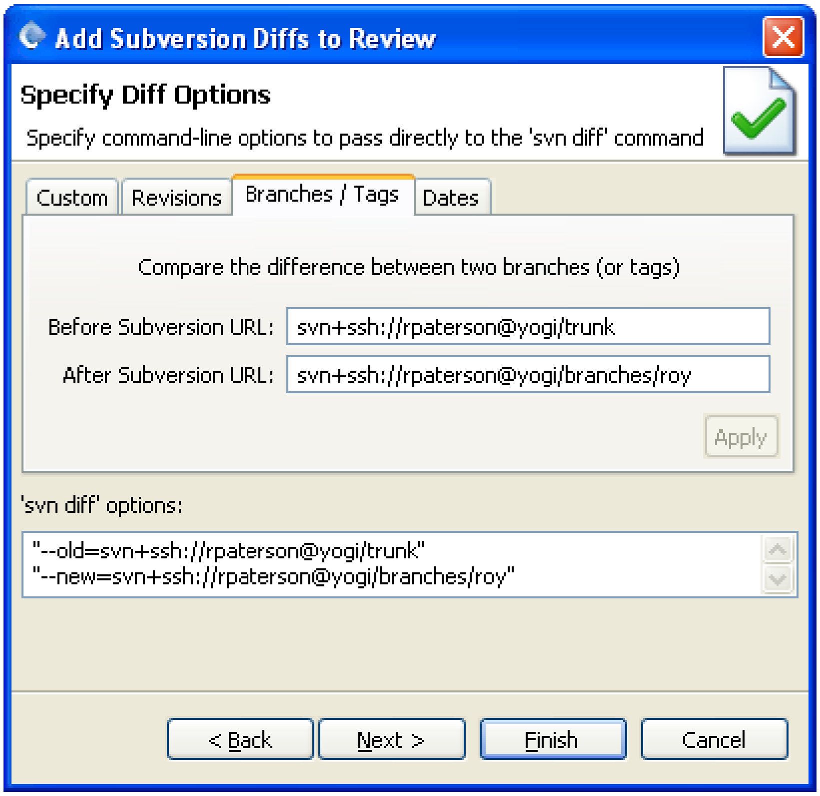
Press the *Add Subversion Diffs...* 576 button on the main screen 339 and then select the *Revisions* tab to upload the difference between two Revisions.



Upload the difference between two Revisions

6.11.2.2 Comparing two branches / tags

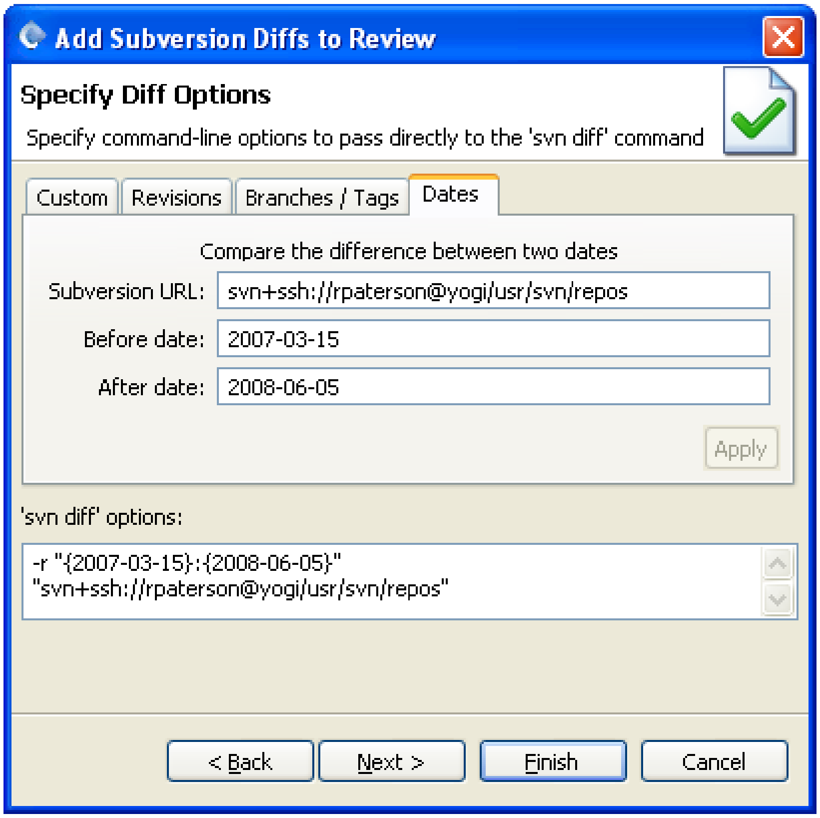
Press the *Add Subversion Diffs...* 576 button on the main screen 339 and then select the *Branches* tab to upload the difference between two branches / tags.



Upload the difference between two branches / tags

6.11.2.3 Comparing two dates

Press the *Add Subversion Diffs...* 576 button on the main screen 339 and then select the *Dates* tab to upload the difference between two dates.



Upload the difference between two dates

6.11.3 Command-Line Client

Commands recommended for Subversion

ccollab addchanges 582 - Attaches locally-modified files to a review

ccollab addchangelist 583 - Attaches an atomic changelist to a review

ccollab addsvndiffs 584 - Uploads diffs generated from the svn diff command

ccollab commit 585 - Commit changes in the review

The addchanges 582 command will upload local changes to files controlled by Subversion before they are checked into version control.

The addchangelist 583 command will upload committed Subversion revisions. The changelist 584 id is the Subversion Revision number. All the files involved in the Revision are uploaded.

Configuration

In most cases, the Command-Line Client can automatically detect your Subversion configuration. Try testing your configuration 349 to verify the configuration is detected correctly.

If the Command-Line Client is unable to detect your Subversion configuration or you want to override the detected settings, you can manually specify Subversion settings using global options 363.

To manually configure the Command-Line Client to use Subversion, execute the following command:

```
ccollab set scm 358 subversion
```

Subversion-specific Options

Option	Description
`--svn-exe <value>`	Full path to the `svn` command-line executable
`--svn-look-exe <value>`	Full path to the `svnlook` command-line executable (used by Subversion triggers)
`--svn-repo-url <value>`	Subversion repository URL
`--svn-user <value>`	Subversion user name
`--svn-passwd <value>`	Subversion password
`--svn-require-client-certificate-password <value>`	Use this if you have a non-empty and unsaved password for your SSL Client Certificate
`--svn-auto-add`	Treat unversioned files as if they had been added to Subversion
`--svn-recurse-externals`	Recurse in the 'svn:externals' directories as if they were part of the same repository
`--svn-repo-path <value>`	Full path to the repository (used by Subversion Triggers)

If you want to review committed Subversion revisions but you do not have a working copy checked out, you must configure your Subversion URL using `svn-repo-url`.

6.11.3.1 addchanges (for Subversion)

Description

The `ccollab addchanges` command locally modified files controlled by Subversion to a review on the Collaborator server.

Command Line Syntax:

```
ccollab [global-options] addchanges [--upload-comment <value>]
<review> <file-spec> [<file-spec> ...]
```

Command Options

Option	Required?	Description
global-options	No	A number of global or Subversion-specific global options. See Command-line Global Options Reference 357.
--upload-comment <value>	No	A comment to be used for the uploaded files. Default is *Local changes*.
<review>	Yes	Identifier of the desired review (an integer number), or a *new*, *ask*, or *last* string.
<file-spec> [<file-spec> ...]	Yes	Files to be added and/or folders to scan for modified files. Separate multiple file and folder names with spaces. If a file or folder name contains spaces, enclose this name is quotes. `ccollab` scans folders recursively. The resulting list includes the name of modified files. "Modifications" include include edits, additions, deletions, branches, integrations, moves, copies, and so on.

Option	Required?	Description
		After the scan is complete, a file list is presented in a graphical editor so you can review the files to be uploaded and make correct the list, if needed.

Examples:

To create a new review and add all changes in the current directory and below, plus the file foo.txt, you would use:

```
ccollab addchanges new . foo.txt
```

To upload modified files from the current working directory and all subdirectories to review 123:

```
ccollab addchanges 123 .
```

To upload file foo.txt and modified files from c:\dev\project into a brand new review:

```
ccollab addchanges new foo.txt c:\dev\project
```

6.11.3.2 addchangelist (for Subversion)

Description

The `ccollab addchangelist` command attaches all files from a submitted Subversion changelist (revision) to a review on the Collaborator server.

Command Line Syntax:

```
ccollab [global-options] addchangelist <review> <changelist>
[<changelist> ...]
```

Command Options

Option	Required?	Description
`[global-options]`	No	A number of global or PTC-specific global options. See Command-line Global Options Reference 357.
`<review>`	Yes	Identifier of the desired review (an integer number), or a *new*, *ask*, or *last* string.

Option	Required?	Description
`<changelist> [<changelist> ... ]`	Yes	Identifier(s) of the desired changeset(s) in your source control.

Examples:

To upload revisions r4321 and r7568 to a new review:

```
ccollab addchangelist new 4321 7568
```

To upload revisions r5432 and r12654 to review 111:

```
ccollab addchangelist 111 5432 12654
```

6.11.3.3 addsvndiffs

Description

The `ccollab addsvndiffs` command uploads differences between arbitrary versions of files in Subversion. The differences are generated using the native '`svn diff`' command of Subversion.

Command Line Syntax:

```
ccollab [global-options] addsvndiffs [--upload-comment <value>]
<review> [<user-diff-arg> [<user-diff-arg> ...]]
```

Command Options

Option	Required?	Description
`--upload-comment <value>`	No	Comment used to upload files (defaults to command-line arguments)
`<review>`	Yes	Must be either an integer review-id, 'new', 'ask', or 'last'
`<user-diff-arg> [<user-diff-arg> ...]`	No	Command-line arguments to pass directly to the diff command

Remarks:

Do not use diff arguments that affect the diff output such as '`--diff-cmd`', '`-x [--extensions]`', '`--summarize`', or '`--non-interactive`'. The Collaborator command-line client will automatically select an output format that ensures you will get all the data you need on the server.

Examples:

```
ccollab addsvndiffs 698 -r 2:16
ccollab addsvndiffs new -r PREV http://my.svn.server/svn/repo
ccollab addsvndiffs 698 -c 10534 src/java
ccollab addsvndiffs new OLDURL[@OLDREV] NEWURL[@NEWREV]
```

6.11.3.4 commit (for Subversion)

Description

The `ccollab commit` command submits the changes from a pre-commit review to source control. Be sure to include a relevant comment.

Command Line Syntax:

```
ccollab [global-options] commit [--comment <value>] [--dismiss-only]
[--force] <review>
```

Command Options

Option	Required?	Description
`--comment <value>`	No	Comment for reviewed changes
`--dismiss-only`	No	Just dismiss the Action Item
`--force`	No	Ignore potential problems
`<review>`	Yes	Must be either an integer review-id, 'ask', or 'last'

Example:

```
ccollab commit 25 --comment "my code" --force
```

6.11.4 Subversion Server Hooks

Triggers recommended for Subversion

`ccollab admin trigger ensure-review-started` 587 - Changelist cannot be submitted until review of this changelist exists

`ccollab admin trigger ensure-reviewed` 589 - Changelist cannot be submitted until review of this changelist has been completed

`ccollab admin trigger create-review` 591 - Creates a new Review for a changelist if no Review already exists

The ensure-review-started 587 and ensure-reviewed 589 hooks ensure that files cannot be committed unless certain conditions are met. If a user attempts to commit files that do not meet those conditions, an error message describing the unfulfilled conditions will be displayed and the files will not be committed. If the conditions are met, the commit will be allowed to continue normally. The ensure-review-started hook requires that the review exist; ensure-reviewed requires that the review be completed.

The create-review 591 hook automatically creates a review in Collaborator after the revision is committed to the Subversion server. Because you can supply the regular expression for identifying reviews, you can provide users with the ability to review before check-in without having an additional review automatically created after the check-in. This way some groups (or just some check-ins arbitrarily) can use pre-commit review and others post-commit, and either way you know all code has been reviewed or at least that a review of all code exists in the system.

Linking reviews with commits

To use the ensure-review-started 587 and ensure-reviewed 589 hooks, you must first require developers to put the review ID somewhere in the Subversion commit message (also optionally for the create-review 591 hook). The format of this text is completely up to you; you will need to supply a Java-style regular expression that identifies this text and specifically calls out the review ID inside that text. The regular expression is specified using the --review-id-regex hook command option.

Here are some common ways of specifying the review ID and the corresponding regular expressions. Note that regular expressions are *case-insensitive* and you must *identify the review ID portion with parenthesis*:

Text	**--review-id-regex**
`Review: 4233`	`review:\s*(\d+)`
`rID4233`	`rid(\d+)`
`(review 4233)`	`\(review (\d+)\)`

This text can appear in-line with other text or in a more formal "form-style" layout. Because you control the regular expression, you can control exactly what this looks like.

For more information about Subversion hooks in general, see the Subversion documentation.

6.11.4.1 ensure-review-started (for Subversion)

Description

Use the `ensure-review-started` trigger to ensure that a review for the specified changelist has been started. The trigger blocks the submit operation if there is no review for the changelist in Collaborator, and displays an error message telling that the changes need to be reviewed before submitting them to the Subversion repository.

Command Line Syntax:

```
ccollab [global-options] admin trigger ensure-review-started [--
review-id-regex <value>] <changelist-id>
```

Command Options

Option	Required?	Description
`<changelist-id>`	Yes	The changelist identifier.
`--review-id-regex <value>`	No	A regular expression that identifies the review ID in the commit is comment.

Installation

To install this trigger you will need to create a pre-commit hook. If you already have a pre-commit hook, you can add our tool wherever it is appropriate; otherwise you will need to create an executable hook as described in the Subversion documentation (typically a batch file under Windows or a shell script under Linux/Mac).

Example Windows batch file:

```
"C:\Program Files\Collaborator Client\ccollab.exe" --url <collabUrl>
--user <collabUser> --password <collabPasswd> --scm subversion --svn-
user <svnUser> --svn-passwd <svnPasswd> --svn-repo-path %1 --svn-
look-exe "C:\Program Files\Subversion\bin\svnlook.exe" admin trigger
ensure-review-started --review-id-regex "review:\s+(\d+)" %2 || exit
1
```

Example Linux/OSX shell script:

```
/collab/install/ccollab --url <collabUrl> --user <collabUser> --
password <collabPasswd> --scm subversion --svn-user <svnUser> --svn-
passwd <svnPasswd> --svn-repo-path $1 --svn-look-exe /usr/bin/svnlook
admin trigger ensure-review-started --review-id-regex "review:\s+(\d
+)" $2 || exit 1
```

Note our use of "exit 1" to ensure that the script terminates with a non-zero exit code if our trigger application fails.

Remarks

- You must specify the --svn-repo-path and --svn-look-exe global options.
- You need to specify the --svn-user and --svn-passwd global options. At that, in order for this hook to work smoothly you will need your Subversion usernames and Collaborator logins to match (differs at most in capitalization). This ensures that when a developer checks in code the review is created under his Collaborator account. If you do not do this the hook will still work, but reviews will be created under the system administrator's account. Someone will have to log into the system with that account and assign the review to someone else.
- You must require developers to put the review ID somewhere in the Subversion commit message. The format of this text is completely up to you; you must supply a Java-style regular expression that identifies this text and specifically calls out the review ID inside that text using the --review-id-regex command option.

6.11.4.2 ensure-reviewed (for Subversion)

Description

Use the `ensure-reviewed` trigger to ensure that the review that was created for the specified changelist has been completed by the time you submit the changelist to the Subversion repository. If the review has not been completed, the trigger blocks the submit operation and displays an error message informing the user about the problem.

Command Line Syntax:

```
ccollab [global-options] admin trigger ensure-reviewed [--review-id-regex <value>] <changelist-id>
```

Command Options

Option	Required?	Description
`<changelist-id>`	Yes	The changelist identifier.
`--review-id-regex <value>`	No	A regular expression that identifies the review ID in the commit is comment.

Installation

To install this trigger you will need to create a pre-commit hook. If you already have a pre-commit hook, you can add our tool wherever it is appropriate; otherwise you will need to create an executable hook as described in the Subversion documentation (typically a batch file under Windows or a shell script under Linux/Mac).

Example Windows batch file:

```
"C:\Program Files\Collaborator Client\ccollab.exe" --url <collabUrl>
--user <collabUser> --password <collabPasswd> --scm subversion --svn-
user <svnUser> --svn-passwd <svnPasswd> --svn-repo-path %1 --svn-
look-exe "C:\Program Files\Subversion\bin\svnlook.exe" admin trigger
ensure-reviewed --review-id-regex "review:\s+(\d+)" %2 || exit 1
```

Example Linux/OSX shell script:

```
/collab/install/ccollab --url <collabUrl> --user <collabUser> --
password <collabPasswd> --scm subversion --svn-user <svnUser> --svn-
passwd <svnPasswd> --svn-repo-path $1 --svn-look-exe /usr/bin/svnlook
admin trigger ensure-reviewed --review-id-regex "review:\s+(\d+)" $2
|| exit 1
```

Note our use of "exit 1" to ensure that the script terminates with a non-zero exit code if our trigger application fails.

Remarks:

- You must specify the --svn-repo-path and --svn-look-exe global options.
- You need to specify the --svn-user and --svn-passwd global options. At that, in order for this hook to work smoothly you will need your Subversion usernames and Collaborator logins to match (differs at most in capitalization). This ensures that when a developer checks in code the review is created under his Collaborator account. If you do not do this the hook will still work, but reviews will be created under the system administrator's account. Someone will have to log into the system with that account and assign the review to someone else.
- You must require developers to put the review ID somewhere in the Subversion commit message. The format of this text is completely up to you; you must supply a Java-style regular expression that identifies this text and specifically calls out the review ID inside that text using the --review-id-regex command option.

6.11.4.3 create-review

Description

The `admin trigger create-review` trigger automatically creates a review in Collaborator after the change is committed to the Subversion server. It is smart enough to not create reviews if they have already been created for this code.

Command Line Syntax:

```
ccollab [global-options] admin trigger create-review [--add-on-match <value>] [--review-id-regex <value>] <changelist>
```

Command Options

Option	Required?	Description
`--add-on-match <value>`	No	If a review ID regex matches, add this changelist to the review
`--review-id-regex <value>`	No	Regular Expression that identifies Review ID in commit comment
`<changelist>`	Yes	SCM-specific ID of an atomic set of changes

Installation

For Subversion, to install this trigger you will need to create a post-commit hook. If you already have a post-commit hook, you can add our tool wherever it is appropriate; otherwise you will need to create an executable hook as described in the Subversion documentation (typically a batch file under Windows or a shell script under Linux/Mac).

Example Windows batch file:

```
"C:\Program Files\Collaborator Client\ccollab.exe" --url <collabUrl> --user <collabUser> --password <collabPasswd> --scm subversion --svn-user <svnUser> --svn-passwd <svnPasswd> --svn-repo-url svn://url/to/repo --svn-exe "C:\Program Files\Subversion\bin\svn.exe" admin trigger create-review --review-id-regex "review:\s+(\d+)" %2 || exit 1
```

Example Linux/OSX shell script:

```
/collab/install/ccollab --url <collabUrl> --user <collabUser> --
password <collabPasswd> --scm subversion --svn-user <svnUser> --svn-
passwd <svnPasswd> --svn-repo-url svn://url/to/repo --svn-exe /usr/
bin/svn admin trigger create-review --review-id-regex "review:\s+(\d
+)" $2 || exit 1
```

Note our use of "exit 1" to ensure that the script terminates with a non-zero exit code if our trigger application fails.

Remarks:

- You need to specify the --svn-user and --svn-passwd global options.
- For this hook to work smoothly you will need your Subversion usernames and Collaborator logins to match. Here "match" means "differs at most in capitalization". This ensures that when a developer checks in code the review is created under his Collaborator account.
  If you do not do this the hook will still work, but reviews will be created under the system administrator's account. Someone will have to log into the system with that account and assign the review to someone else.
- You may optionally specify a regular expression that identifies a Collaborator review ID inside a Subversion commit message. If you supply the regular expression, the create-review hook will check for this text in commit messages and automatically not create a new review if a non-canceled review with that ID already exists. This allows some users to do pre-commit review and others post-commit, and either way you know all code has been reviewed or at least that a review of all code exists in the system.

6.11.5 Subversion-Specific Tips

- Error messages about "inconsistent line ending style" indicate that the file(s) being operated on have mixed line endings (typically Unix and DOS-style) and that one or more of them has the subversion property svn:eol-style set to native. This is a fatal error as subversion stops processing when the condition is found. The fix is to either force the line endings to a consistent state (that is, typically either all unix or all DOS-style) or propdel the svn property if there is a need for mixed line endings. A variety of methods are available to automate conversion of line ending styles; the free utility unix2dos/dos2unix exists for many platforms for example.

7 External Integrations

Integrating Collaborator into other systems, scripts, and processes is easy. A wide variety of integration mechanisms is available.

Reporting-writing tools 594

Collaborator comes with a few built-in reports 317, but almost everyone wants to make reports of their own.

You can use any external reporting system including Excel, Access, Crystal Reports, and Business Objects.

Bug-tracking systems 612

Collaborator can integrate with external issue-tracking systems such as TeamTrack, Bugzilla, JIRA, and FogBugz. Integration can be done in several ways depending on the type of integration you require.

JIRA Integration 614

Collaborator provides advanced support for JIRA, giving you the possibility to easily integrate these two products into your work processes. This allows you to create Collaborator reviews from JIRA tickets' linked commits or use JIRA as notification channel.

GitHub Integration 632

Collaborator provides support for GitHub and GitHub Enterprise, giving you the possibility to review the changes pushed to GitHub repository or pull requests in that repository. The integration saves the time and efforts needed to synchronize your commits on GitHub and Collaborator reviews.

Scripting 638

Scripting is the way to implement custom behaviors in Collaborator. You can run scripts on your user's machines, or from the server machine, possible invoked with a trigger. Almost any action you can do in the Web Client can be done from a script.

Web Services 655

Collaborator server has two versions of web services: SOAP and JSON. Web service runs on a server and waits for special kind of requests. Upon receiving a request the server processes it and sends the results in response. You can use SOAP and JSON services from various applications to interact with the Collaborator server.

7.1 Creating Custom Reports

Collaborator comes with a number of pre-built and customizable reports 317. However, if you would like to automate a report for integration with external tools or applications, or if you would like to create your own reports, you can access the underlying database directly.

(Note: SmartBear does not support querying Hypersonic 54 databases. You will need to use one of the other databases 54 supported by Collaborator.)

Creating Custom SQL Reports

In many cases, you may want report output slightly different than one of the existing customizable reports. In these cases, it may be simplest to begin with a report that outputs most of the data that you want, then modify its database query as needed.

1. Open a customizable report 317 that best matches the type of report you would like to create.

2. Choose the columns you wish to display in the report, and the criteria by which you would like to filter the results.

3. Click the "Save" button.

4. Verify that the first few results contain the data you expect.

5. Click the "SQL" link at the top-right of the Results pane. This will download a SQL query appropriate for your database which you can use as a starting point for your custom report.

6. Reference the Collaborator database schema 594 and documentation for your database's SQL dialect (MySQL, Oracle, or Microsoft SQL) to modify the query as you see fit.

7. Execute the query directly against the database using whatever SQL tool you like. Some tools that can run SQL queries include: Excel, Access, Crystal Reports, and Business Objects.

Custom XSL Reports

You can alternatively use the Command-Line Client to retrieve XML data regarding a review. For samples of this, see: Example XPath and XSL 609.

7.1.1 Database Schema

This section covers the Collaborator database schema and some special features of the database we created specifically to support external custom reporting applications.

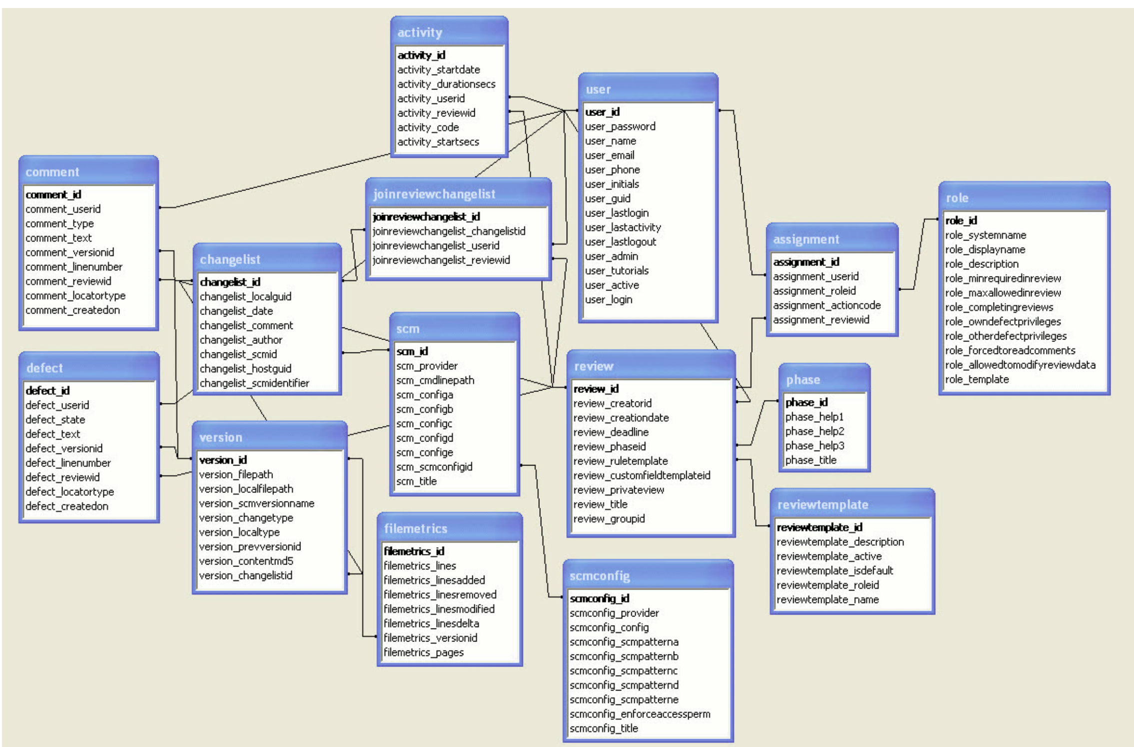
The Database is Read-Only!

Never change data in the database directly. Although we support read-only access to the database for reporting and automation, if you make changes to data in the database yourself **you could irreparably destroy the integrity of the database.**

Database Schema

The diagram below shows *only the major tables* in the Collaborator database and which files should be linked with which other fields when creating queries.

There are more tables which are either (a) purposefully undocumented or (b) described below but which do not have relationships to other tables. The diagram does not contain those tables in the interest of simplicity:



Database Schema

> **Warning:** SmartBear reserves the right to change any of the table definitions whenever there is a minor point-release of the product.
>
> Note: The table/view names above are approximations. In some cases, the names may be altered slightly (for example,,,,,, vowels are removed).
>
> We are committed to backwards-compatibility with the reporting views 600, and with our own client software 348.

Here is a brief description of each table:

`activity`	Activity log of users' actions during review. This is used to compute metrics such as inspection rate. Each row represents a slice of time where the user was active. There might be many slices for a given user in a single review. Each slice includes a duration (in seconds) and a "start time" that is encoded both as a database date/time (`activity_startdate`) and as a number of seconds since 1970-01-01 00:00:00 GMT (`activity_startsecs`). The activity action code (`activity_code`) tells whether the user was acting in the capacity of an author (A), reviewer (R), or was doing rework (F) as opposed to actually reviewing. Also there is a code for when someone views the review but is not a participant (P). It almost always best to use the reporting views 600 to access activity data so you do not get your query wrong. The technique and motivation behind this system is described in our metrics section 683.
`assignment`	List of user <--> review combinations. For each user who was "assigned" to a review, notes the role associated with that user. The `assignment_actioncode` field is used internally to understand what general status that user has in the review currently. You should not depend on this field as we might change it in the future. Refer to the `assignment_state` view for names and descriptions for these codes.
`changelist`	Every time a set of files is uploaded to the server a "changelist" record is created. Most changelists will be associated with a review through `joinreviewchangelist`, but some may not be for various reasons. Changelists are linked to `version` where the actual file content is represented.

	If the changelist is of files from a local hard drive, the "local GUID" field will contain a globally-unique made-up identifier for that upload. If the changelist was derived from something already checked into version control (for example, a Perforce or Subversion changelist), then this field will be blank. The date, author, and check-in comment are all listed if known. To the extent possible this will match usernames with version control. Also linked is the SCM table ID. This ties the changelist to a specific version control server. Changelists from different servers might match in other details but are actually unrelated. If the changelist happened to have an associated identifier in a version control system, that is also recorded. Otherwise that field is blank.
`comment`	Represents a comment made by a user in some conversation. This includes not only actual chat but indirect events such as "marked read" and "created defect" and "new file uploaded". Also included is the file (`version`) and line number the comment is associated with, however both of those fields are optional. They are linked to user ID and review ID as well.
`defect`	Represents a defect made by a user in some conversation. Also included is the file (`version`) and line number the defect is associated with, however both of those fields are optional. They are linked to user ID and review ID as well. A state field indicates whether the defect is still open or fixed. We will be adding more state to this field in the future.
`filemetrics`	Holds basic change metrics for file versions. Each `filemetrics` record is tied to one `version` record. You should only depend on the values of this table for versions directly associated with changelists. The other metrics are often incomplete. There are technical reasons for this; we will not be changing this behavior.
`groupdescription`	Represents a group 169. Some of the groups are defined in the web UI and some are built-in internal groups automatically defined by Collaborator
`groupusers`	Joins the `groupdescription` table with the `user` table to represent the users that are direct members of a group. A user can be a member of zero, one, or many groups.

groupgroups	Joins the `groupdescription` table with itself to represent the groups that are direct members of a group. A group can be a member of zero, one, or many groups.
groupancestry	*The behavior of this table is intentionally undocumented.*
joinreviewchangelist	Joins reviews and changelists. A changelist can be associated with zero, one, or many reviews, and a review can be associated with zero, one, or many changelists.
metadatadescription metadatavaluecharacter metadatavaluedate metadatavalueinteger metadatavaluestring metadatavaluestringbig	All of these tables have to do with "meta-data" which means any data where the data schema itself is dynamic. Most notably, all review and defect custom fields 190 are a kind of meta-data. You should not use the meta-data tables directly. Their relationships are very complex and we change how they work regularly as we add more features. Instead, access meta-data through the reporting views described below 600. This contains all the information you need for custom fields and formats it nicely as an added bonus.
metadataselectitem	Information for all the drop-down items in any custom field. Each item is matched to a particular custom field. The "title" is the text displayed to end users. A "sequence" number defines the order of the elements (the IDs are not an order). Items can also be individually enabled or disabled.
notification	Holds the history of notification messages that have been sent out to clients. Clients might choose (or not) to get notifications by email, RSS feed, and so on. This table is periodically cleaned out by the server. There will always be some backlog of events for each user (for example, for use in creating the RSS feed for a user), but you cannot depend on any particular number of events to be saved.
reportcategory reportfilter reporttemplate	*Internal server use. Do not depend on this table.*
review	Holds one record for each review in the system.

	The "creator" is the user who created the review, or the system administrator if the review was created automatically. Use the review custom field view 600 to access review custom field data.
`reviewtemplate`	*Internal server use. Do not depend on this table.*
`role`	Represents all of the roles from all role-sets. Each role has a "standard" name that never changes and the custom name that was set by the user.
`scm`	Contains one record for each SCM server that has ever been reported by a client. It is OK if there are duplicate records for a given SCM system. This separates changelists from different systems. This table will probably change in the future.
`user`	One record for each user who can log into the system. User ID 1 is the special system administrator. Key user information and preferences are stored here. Additional user preference information is stored as meta-data and is accessible from the special `userprefs` view. The `user_initials` field is deprecated and should be ignored. Passwords are stored in hashed form so that a casual observer cannot deduce a password. If you need to reset a password, set this field to: `d41d8cd98f00b204e9800998ecf8427e`

`version`	One record for every version of every file that has ever been uploaded to the server. Join with `changelist` to see the group they were uploaded with.
	
	Each version includes the full file path to the original document. If this file was retrieved from version control, this will be the version control server path, not the path on the user's local hard drive.
	
	The version name is the version control-specific name of the version of the file. This is typically a number or set of numbers.
	
	The version change-type indicates whether this represents a file addition, deletion, modification, and so on. Sometimes the system does not know. You should use this as a guide but not depend on it because there are exceptions to the "type" rules and we add new types periodically. The current values are:
	`? - Unknown`
	`A - Added`
	`B - Branched`
	`D - Deleted`
	`I - Integrated`

	M - Modified R - Reverted U - Uploaded Sometimes the version will have a "previous" version. This typically means the version that came before it in version control. This is used internally and is tricky; there are lots of exceptions and we can change exactly what this means. The content MD5 is the MD5 sum of the raw content of the file. This can be used to link a version with the on-disk file content stored in the content cache. It can also be used as a check to see whether two versions are identical.

Reporting Views

For databases that support the concept of a "View," Collaborator creates a set of Views specifically for the purpose of external report-writers. You should use these Views whenever possible; we will make sure that the definitions of these Views remain the same even if we change the database schema in future versions.

You can also use these Views as a guide for how to create other custom queries.

Here are the special reporting Views:

`assignment_view`	Contains columns from the assignment table which will be maintained in the event of a future schema change.
`assignment_state`	Contains names and descriptions for the codes used in the `actioncode` column of the `assignment` table.
`defects_by_path`	One row per review reporting file path, lines of code reviewed, and number of defects.
`defectcustom`	These are the custom fields you have defined for defects, one row for each defect. If you change the custom field definition, the layout of this table will change as well (automatically, and immediately). Warning: Because the exact custom field titles are used for column names, if you change the title of a custom field it will change the definition of this view. With review workflows 205, each review might have a different subset of custom fields. In this case fields are `NULL` when they are not applicable.

defectcustom_compat	Same as `defectcustom`, but column names are in the form `custom_id_N` where "N" is the custom field ID as displayed in the custom fields admin page 190. The columns are ordered exactly the same as `defectcustom`, so you can also tell which is which by comparing the two views.
defect_custom_dropdowns	This table contains a list of the possible values as defined in drop-down and multi-select Defect Custom Fields.
defect_state	Contains "defect state" codes and names. Join on this table if you would like to display more user-friendly defect state names.
defect_view	Contains columns from the defect table which will be maintained in the event of a future schema change.
participant_singleline_values	Shows Participant Custom Field values that users have selected in reviews. This table only shows values for "Single-Line Text" type custom fields. A NULL value means that a custom field was defined for a review's template, but the user did not specify a value.
participant_multiline_values	Shows Participant Custom Field values that users have selected in reviews. This table only shows values for "Multi-Line Text" type custom fields. A NULL value means that a custom field was defined for a review's template, but the user did not specify a value.
participant_select_values	Shows Participant Custom Field values that users have selected in reviews. This table shows values for "Drop-Down" and "Multi-Select" type custom fields. A NULL value means that a custom field was defined for a review's template, but the user did not specify a value. In the case of Multi-Select fields, if a user selected multiple values then multiple rows will appear in the results, one for each selection.
phase	Represents the various phases a review can be in.
review_activity	For each unique combination of review, user, and role, reports the person-hours 684 spent. This includes data for current review participants only. If a user was a participant but is not now, that person will not be included in this result. However that time will be included in the `review_activity_summary` view.
review_activity_summary	One row per review reporting author, reviewer, rework hours, and total person-hours 684 spent in the review.

	• total_person_hours -- a total of all time spent in the review • author_rework_hours -- time spent by the author during the "rework" phase. • author_hours -- time spent by the author outside of the rework phase. • reviewer_hours -- total time spent by reviewers. (active & passive) • active_reviewer_hours -- time spent by "active" reviewers (that is, reviewers required to finish a review.) • passive_reviewer_hours -- time spent by "passive" reviewers (that is, those not required to finish a review.)
`review_comment_summary`	One row per review reporting author, reviewer, and total number of comments made in the review.
`review_defect_summary`	One row per review reporting the number of defects created in that review.
`review_metrics_summary`	One row per review reporting a variety of standard metrics such as inspection rate, defect rate, defect density, and the individual numbers used to form those ratios. Some values will contain `NULL` values because of divide-by-zero errors.
`review_version_list`	Lists all versions actually associated with a review, although with the associated review.
`review_version_summary`	One row per review reporting the number of files and line metrics 683 (total, added, modified, removed) for all files in the review.
`reviewcustom`	These are the custom fields you have defined for reviews, one row for each review. If you change the custom field definition, the layout of this table will change as well (automatically, and immediately). With review workflows 205, each review might have a different subset of custom fields. In this case fields are `NULL` when they are not applicable.

reviewcustom_compat	Same as `reviewcustom`, but column names are in the form `custom_id_N` where "N" is the custom field ID as displayed in the custom fields admin page 190. The columns are ordered exactly the same as `reviewcustom`, so you can also tell which is which by comparing the two views.
review_custom_dropdowns	This table contains a list of the possible values as defined in drop-down and multi-select Review Custom Fields.
review_view	Contains columns from the review table which will be maintained in the event of a future schema change.
role_view	Contains columns from the role table which will be maintained in the event of a future schema change.
userprefs	Additional user preferences, one row per user. Most user information and preferences are stored in the `user` table; the rest is here.
userprefs_compat	Same as userprefs, but column names are in the form custom_id_N where "N" is an internal ID used to store user preferences. The columns are ordered exactly the same as userprefs, so you can tell which is which by comparing the two views.
user_view	Contains columns from the user table which will be maintained in the event of a future schema change.

7.1.2 Example SQL: Participant Custom Fields

What Are Participant Custom Fields?

In Collaborator, we introduced Per-Participant Custom Fields 190. This allows you to create a field in a review (via its review template) to which each review participant can assign his or her own value. This allows collection of any type of data that may be different for each participant.

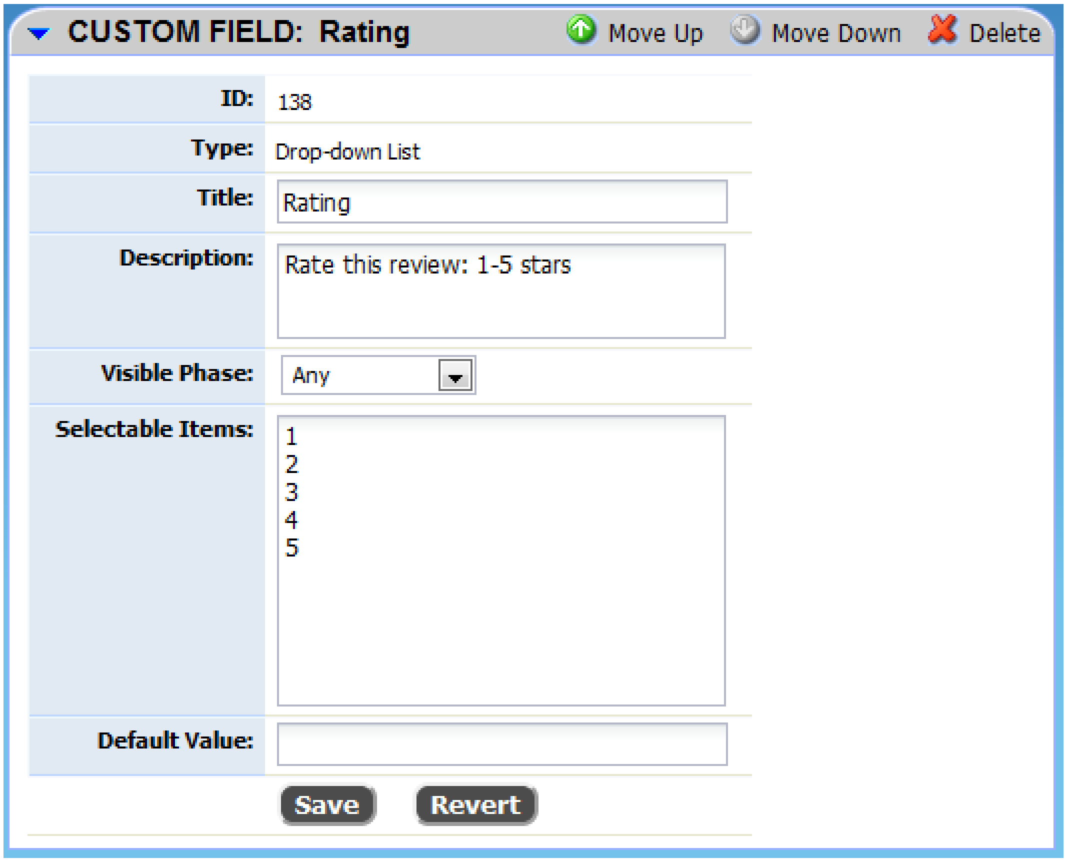
Representing this data in table/column style is sometimes less than useful, especially since, generally, you will want to perform some calculation on the data before displaying it. To aid you in this, we have created views in the database to help you retrieve these values and perform calculations on them.

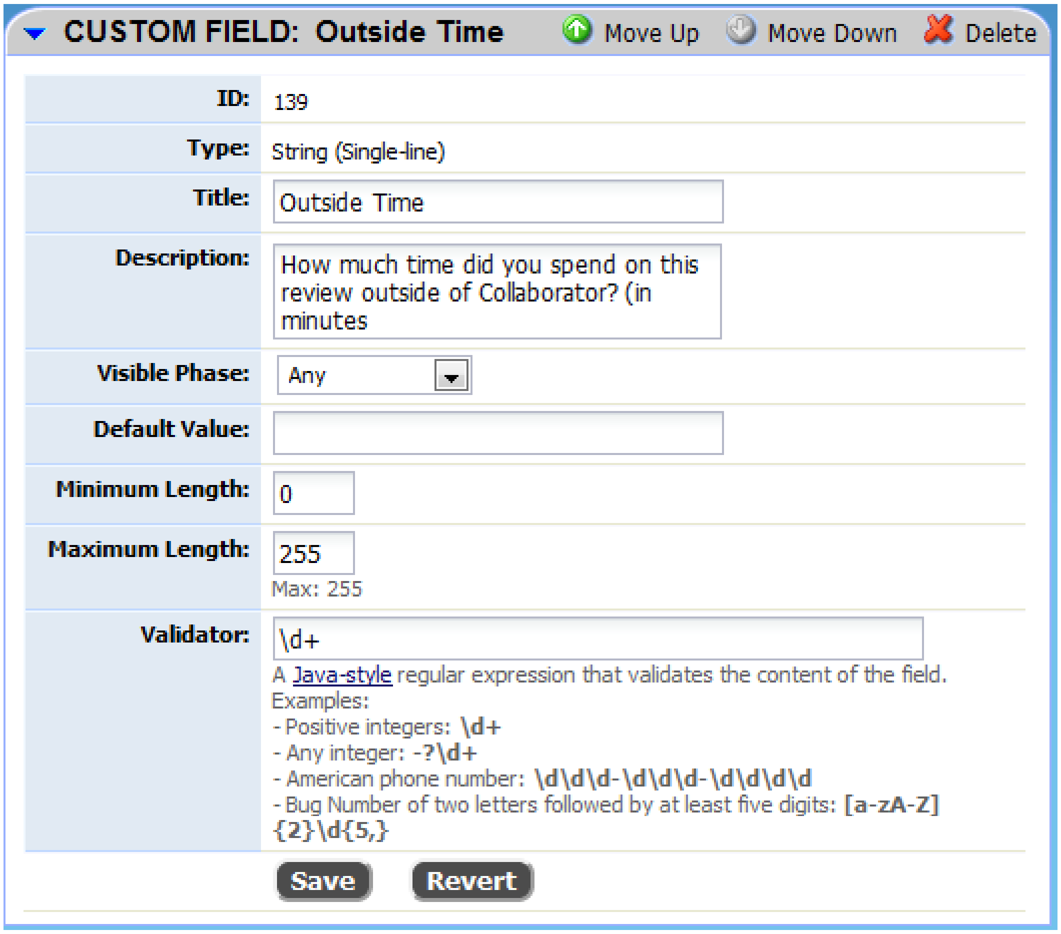
Examples in MySQL

Below is a sample of how to query Participant Custom Fields in MySQL 55, using MySQL Workbench to connect directly to the database. The syntax will be similar for Oracle and MSSQL, though you may need to reference the documentation for your particular database. You will also need to use a SQL query tool that is able to connect to those databases.

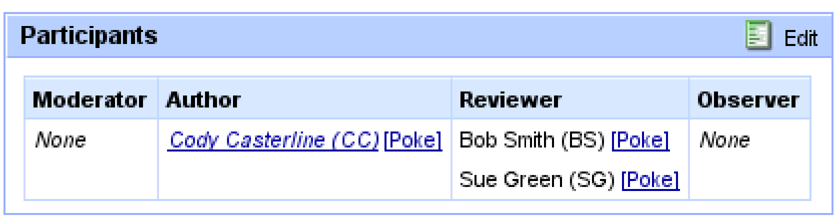
Participant Custom Fields

In these examples, we will use the following Participant Custom Fields:





We will also use a review (#3919) with some sample data entered for the custom fields:



Participants Edit

Moderator	Author	Reviewer	Observer
None	*Cody Casterline (CC)* [Poke]	Bob Smith (BS) [Poke] Sue Green (SG) [Poke]	*None*

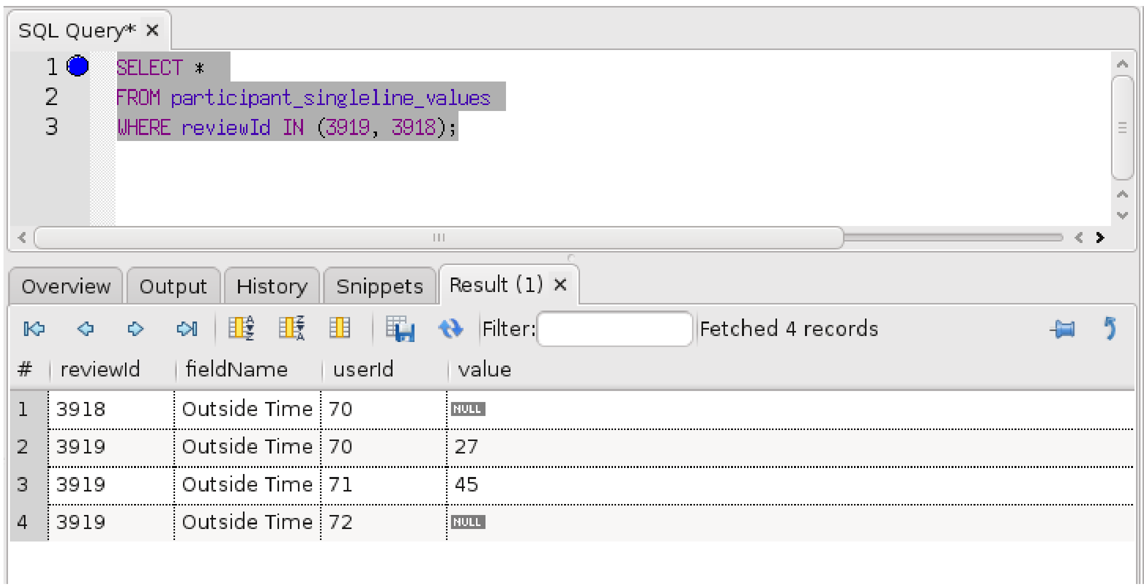
Participant Custom Fields Edit

	CC	BS	SG
Rating:	5	2	
Outside Time:	27	45	0

Simple Data

The simplest method of selecting the data from the database is just to show the values as they were entered by users. To do this, we will use one of the views 594 for Participant Custom Fields that have been defined in the database.

```
SELECT *
FROM participant_singleline_values
WHERE reviewId IN (3919, 3918);
```



Note that, for the purposes of these examples, we are limiting the results to two reviews.

Review #3918 only has one participant (it is still in planing phase), who has not yet specified a value for Outside Time.

Review #3919 has three users, two of which have specified values for Outside Time.

A Note About Database Data Types

Collaborator stores all values for Custom Fields as strings, or sequences of letters and numbers. This is fine for the purposes of displaying the data (as above), but if you want to perform calculations on the data, you will need to tell your database to convert the strings into a meaningful number type, such as an integer, or a floating point number.

In MySQL, you perform this data conversion using the CONVERT() function.

SQL also contains a 'NULL' value, which represents the absence of a specified value. If you want to replace NULL values with some meaningful default value, use the [IFNULL()]() function. Generally, aggregate functions like SUM() and AVG() will exclude NULL values from their calculations, so you will not need this function.

Sums

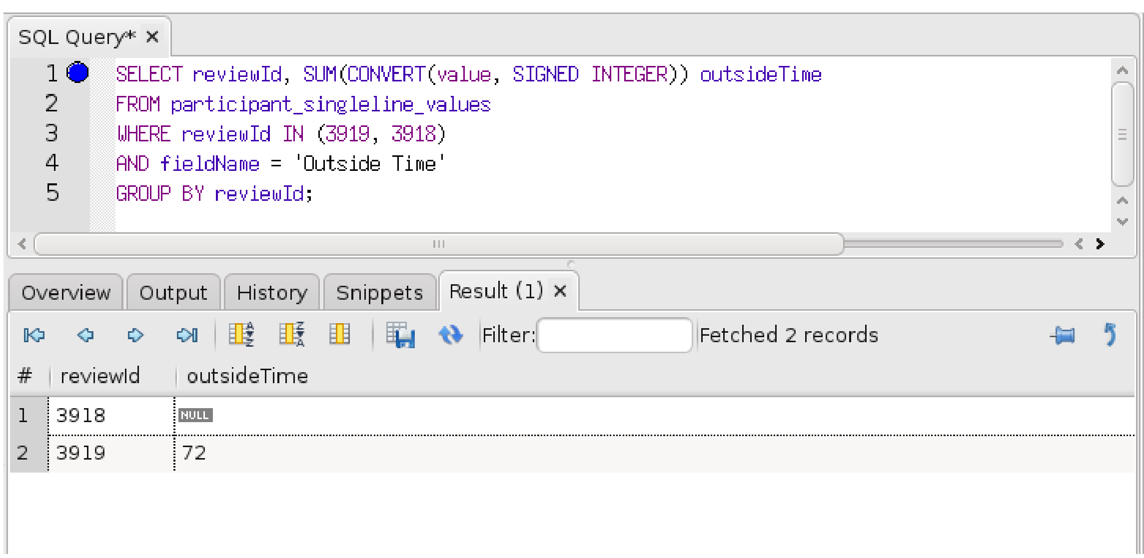
If we would like to find the sum of Outside Time for each review, we can modify the query to be:

```
SELECT reviewId, SUM(CONVERT(value, SIGNED INTEGER)) outsideTime
FROM participant_singleline_values
WHERE reviewId IN (3919, 3918)
AND fieldName = 'Outside Time'
GROUP BY reviewId;
```

In the SELECT line, we now explicitly list each of the columns we wish to select. We use the CONVERT() function to convert the values to (signed) integers, and then the SUM() function to add them up. We also specify that the summed value should be named "outsideTime".

In the WHERE clause, we have added an additional 'AND' clause. This makes sure that we only sum up values of the correct field type: 'Outside Time'.

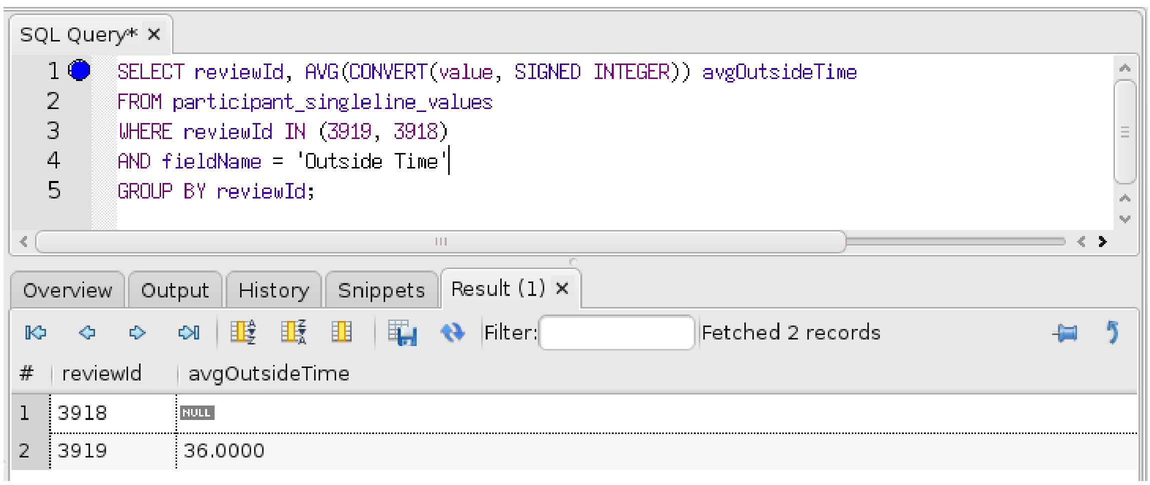
Because we are using an aggregate function (SUM()), we have to specify which pieces of data we want to perform that calculation on. In this case, we want the sum for each review, so we specify "GROUP BY reviewId". The database server first groups all results with the same review ID together, then sums the values for each of those groups.



Averages

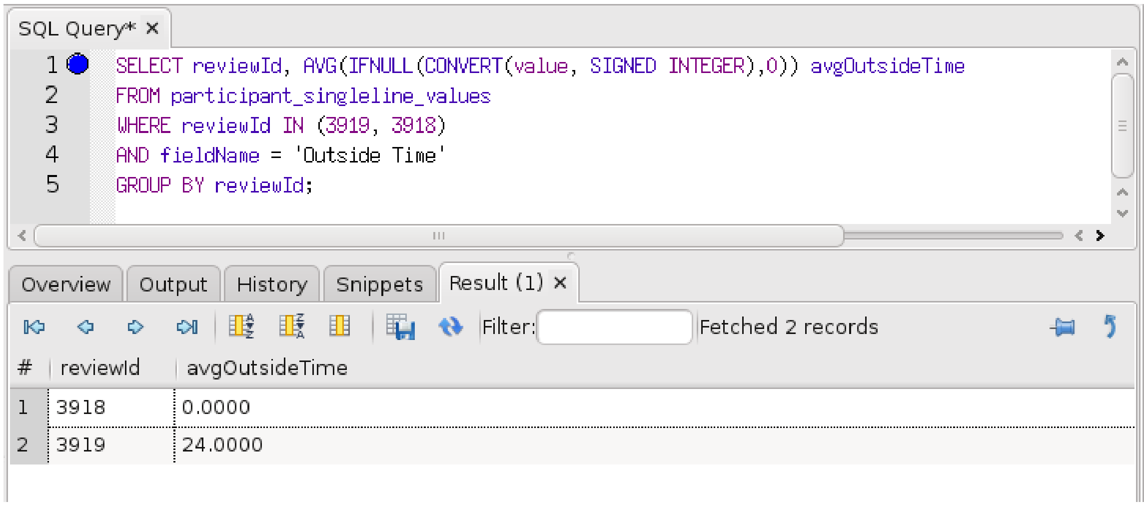
To perform averages, the query is nearly identical, we just replace the SUM() function with the average function, AVG():

```
SELECT reviewId, AVG(CONVERT(value, SIGNED INTEGER)) avgOutsideTime
FROM participant_singleline_values
WHERE reviewId IN (3919, 3918)
AND fieldName = 'Outside Time'
GROUP BY reviewId;
```



Note that these may or may not be the results you were expecting, depending on how you wish to treat NULL values. In the above results, NULL values have been excluded from the calculation of the average, so what we are really seeing is the average of 27 and 45. If you instead want to treat NULL values as if they were 0, you need to specify that in your query using the IFNULL() function. IFNULL(x,y) says that if x is NULL, return y. (Otherwise, it just returns x.) So we will modify our query like this to treat NULLs as if they were 0:

```
SELECT reviewId, AVG(IFNULL(CONVERT(value, SIGNED INTEGER),0))
avgOutsideTime
FROM participant_singleline_values
WHERE reviewId IN (3919, 3918)
AND fieldName = 'Outside Time'
GROUP BY reviewId;
```



Note that, now that we treat missing (NULL) values as zeros, the average Outside Time for Review #3919 is the average of 27, 45, and 0. Also note that the missing values for Review #3918 are also interpreted as zeros, so we get a 0 result instead of a NULL.

7.1.3 Example XPath and XSL

If you feel more comfortable handling XML conversions than connecting directly to a database, you can instead get data about reviews using the command ccollab admin review-xml. This command has one required argument, the review ID. By default, it will output the entire XML document for the review. However, there are optional arguments of --xpath and --xsl-file which allow you to query the resulting document for particular information.

XPath

[XPath](#) allows you to address XML elements in an XML document much like paths in a file system. The hierarchy in an XPath expression tells the XPath parser where in the XML document to find elements.

For example, to get the section of the review-xml document that contains participant custom fields, you would use an XPath expression like this:

```
/reviews/review/participant-custom-fields
```

Below is an example command invocation and its response:

```
$ ccollab admin review-xml 3919 --xpath /reviews/review/participant-
custom-fields
```

```
<participant-custom-fields>
 <user userId="70">
 <outside-time metaDataId="198" title="Outside Time">27</outside-
time>
 <affected-components metaDataId="199" title="Affected
Components">APIs
Business Logic
Database Back-end</affected-components>
 <rating metaDataId="197" title="Rating">5</rating>
 </user>
 <user userId="71">
 <outside-time metaDataId="198" title="Outside Time">45</outside-
time>
 <affected-components metaDataId="199" title="Affected Components"/>
 <rating metaDataId="197" title="Rating">2</rating>
 </user>
 <user userId="72">
 <outside-time metaDataId="198" title="Outside Time">0</outside-time>
 <affected-components metaDataId="199" title="Affected Components"/>
 <rating metaDataId="197" title="Rating"/>
 </user>
</participant-custom-fields>
```

Finding Particular Values

To get all values of a particular type, you will need to specify a few more path elements. Note in the sample above that all of the Participant Custom Fields are grouped by the user that specified them. Within that user tag, each of the fields gets a unique XML tag which is a normalized form of the title of the custom field title. The value for that field is stored as text inside of that field's tag. So, to get the values for the Rating field, you would use the following XPath expression:

```
/reviews/review/participant-custom-fields/user/rating/text()
```

Below is an example invocation, and its output:

```
ccollab admin review-xml 3919 --xpath "/reviews/review/participant-custm-fields/user/rating/text()"


5
2
```

Note that we had to quote the XPath expression because some command-line shells interpret parentheses as non-literal characters.

XSLT

XSLT (Extensible Stylesheet Language Transformation) is a subset of XSL which can be used to transform an XML document into another format. You can use XPath expressions along with XSLT to perform more complicated data queries. For example, if we want to show all "rating" values and the user ID of the user who set them, we can use a file like this:

File: sample.xslt

```
<?xml version="1.0" encoding="iso-8859-1"?>
<xsl:stylesheet version="1.0" xmlns:xsl="http://www.w3.org/1999/XSL/Transform">
<xsl:output method="text"/>
<xsl:template match="/">
 <!-- Output CSV of Participant Custom Fields -->

 <!-- Header: -->
 <xsl:text>UserID</xsl:text>
 <xsl:text>, </xsl:text>
 <xsl:text>Field Name</xsl:text>
 <xsl:text>, </xsl:text>
 <xsl:text>Field Value</xsl:text>
 <xsl:text>&#10;</xsl:text><!-- linefeed -->

 <xsl:for-each select="/reviews/review/participant-custom-fields/user">
```

```
<xsl:value-of select="@userId"/>
<xsl:text>, </xsl:text>
<xsl:value-of select="rating/@title"/>
<xsl:text>, </xsl:text>
<xsl:value-of select="rating/text()"/>
<xsl:text>&#10;</xsl:text>
</xsl:for-each>

</xsl:template>
</xsl:stylesheet>
```

Here is how you would use the above XSL file, and some sample results:

```
$ ccollab admin review-xml 3919 --xsl-file sample.xslt

UserID, Field Name, Field Value
70, Rating, 5
71, Rating, 2
72, Rating,
```

Note that user #72 has not specified a value for Rating, so that value is empty.

7.2 Bug-Tracking Integration

Collaborator can integrate with external issue-tracking systems such as TeamTrack, Bugzilla, JIRA, and FogBugz. Integration can be done in several ways depending on the type of integration you require.

Hyperlinked Issues

Collaborator can identify external issue references in titles, custom fields, comments, defects, and more, and automatically hyperlink them to the right web page in your external issue tracker.

For example, here at SmartBear we use the word "`Case`" followed by a number to identify a issue in our bug system. So we configured Collaborator to search for text in the (regular expression) form of "`\bcase\s*(\d+)`" and automatically hyperlink the number part (in the grouping symbols) to FogBugz, our external issue tracker.

See this section 219 for details on how to do this configuration.

Referring to issues in the Review Overview

It is common to want to associate one or more issues with each review. The easiest way to do this is to create a custom review field 190 and set the regular expression validator to ensure that only properly-formatted issues are entered in.

You should also set up the issue-hyperlink feature described above so that these fields are interactive.

Externalizing: Moving a defect from Collaborator to an external issue tracker

Sometimes you find a defect during review that you do not want to fix just now. In this case you want to move the defect from Collaborator into an external issue tracker. You also want to record this state and audit trail in the review.

The externalized defects 306 feature allows you to do just that. See that section of the manual for details.

It is unusual to integrate beyond this point

This is the extent to which most of our customers go with integration. Most people do not want review defects mirrored into an external issue tracker because these defects were never "delivered".

For example, if you had done the peer review side-by-side with someone, you would not enter in defects then -- you would just fix them!

Usually the QA department runs off the issue tracker for verification. How can QA verify something that was not necessarily externally broken (for example, some function was not checking input values carefully) or something just in the file (for example, some method was not documented properly).

Mirroring defects from Collaborator into an external issue tracking system

You can use the server-side trigger 208 that runs every time a defect is added, edited, marked fixed, or deleted. Your trigger would locate the corresponding external issue record and update it. This integration takes a bit of work. We do not have it pre-built because everyone's external issue-tracking system is different.

For an example see this scripting tutorial 640.

7.3 JIRA Integration

Collaborator provides advanced support for JIRA, giving you the possibility to easily integrate these two products into your work processes. This allows you to create Collaborator reviews from JIRA tickets' linked commits or use JIRA as notification channel.

The integration saves the time and efforts needed to synchronize your JIRA items and Collaborator reviews, and helps you be concentrated on your business tasks rather than on the integration procedures.

How the Integration Works

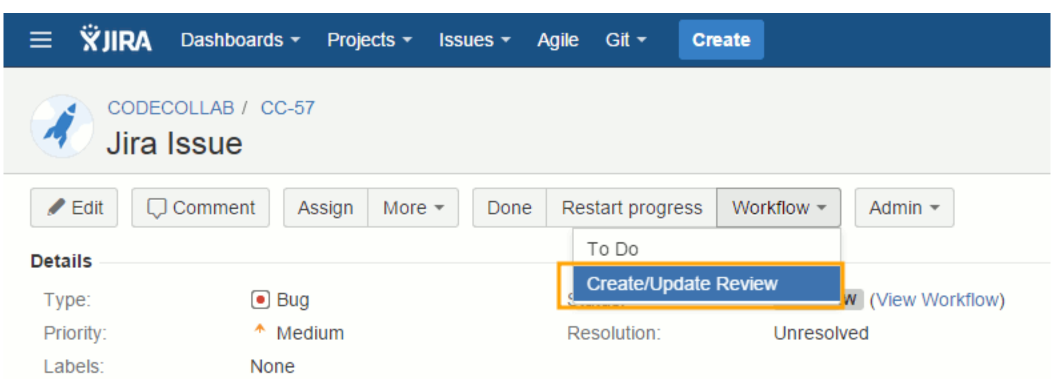
The integration means that --

- You can create JIRA tickets directly from the Collaborator user interface:

Use this functionality to create a JIRA item for your colleagues to remind them to review documents.

For more information, see Creating JIRA Tickets From Collaborator 615.

- You can create Collaborator's reviews from within the JIRA item screens --



(The items must have Git or Subversion commits attached via Atlassian FishEye.)

This feature significantly streamlines the review creation process.

For more information, see Creating Collaborator Reviews From JIRA 616.

Requirements

Atlassian JIRA versions 5-7.

To use the integration features, you need to configure certain settings on your JIRA and Collaborator servers.

Additionally, to be able to create Collaborator's reviews from JIRA, you will need to install and configure Atlassian FishEye and install and configure the **Collaborator** plugin for JIRA.

For detailed information, see Configuring JIRA and Collaborator Servers 618.

7.3.1 Creating JIRA Tickets From Collaborator

When integration between JIRA and Collaborator is enabled and properly configured, you can create JIRA tickets/items directly from the Collaborator user interface.

To create JIRA ticket, do the following:

1. Login to Collaborator Web Client

2. Open the desired review in the Review Summary Screen 250.

3. In the **General Information** section find the **JIRA project** field and select a JIRA project where you want to create the new item.

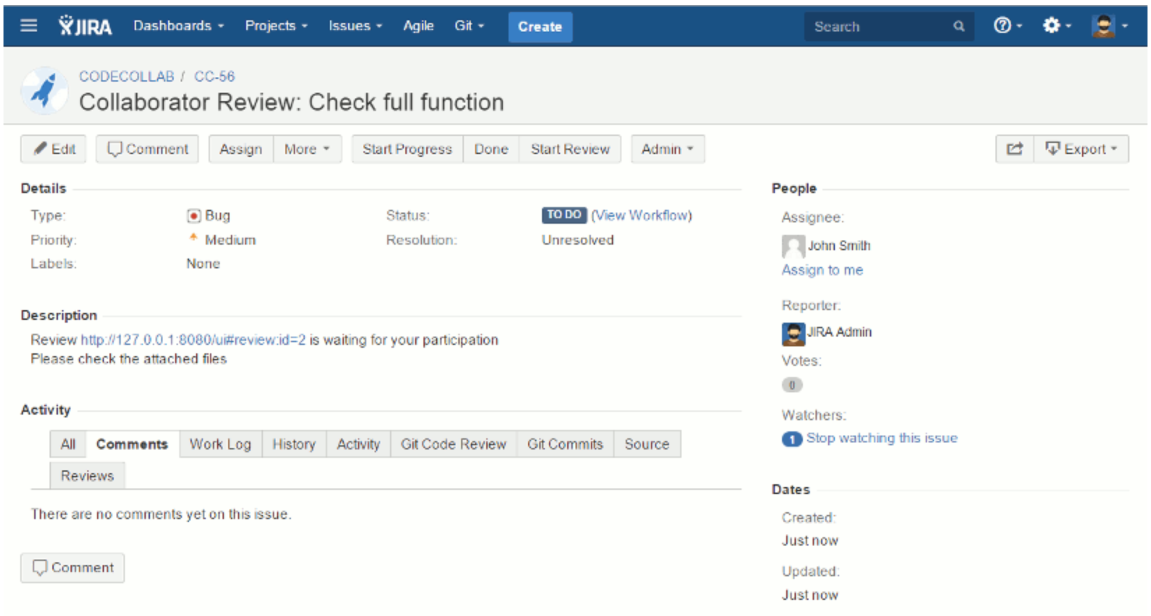
4. Scroll to the **Participants** section.

5. Click the **Create JIRA ticket** link next to the participant name.

Collaborator will perform the following actions:

- Create a new item in the specified project,
- Fill-in item's Title and Description with the information from the review,
- Assign this item to a JIRA account linked 237 with the chosen participant,
- Add a link to the created JIRA ticket in the **Participants** section.

The newly created JIRA item will look like this:



Known Issues:

- Currently, Collaborator cannot populate values of arbitrary custom fields. If your JIRA server requires certain custom fields to be set during the creation of tickets/items, then Collaborator will be unable to create new tickets/items.

7.3.2 Creating Collaborator Reviews From JIRA

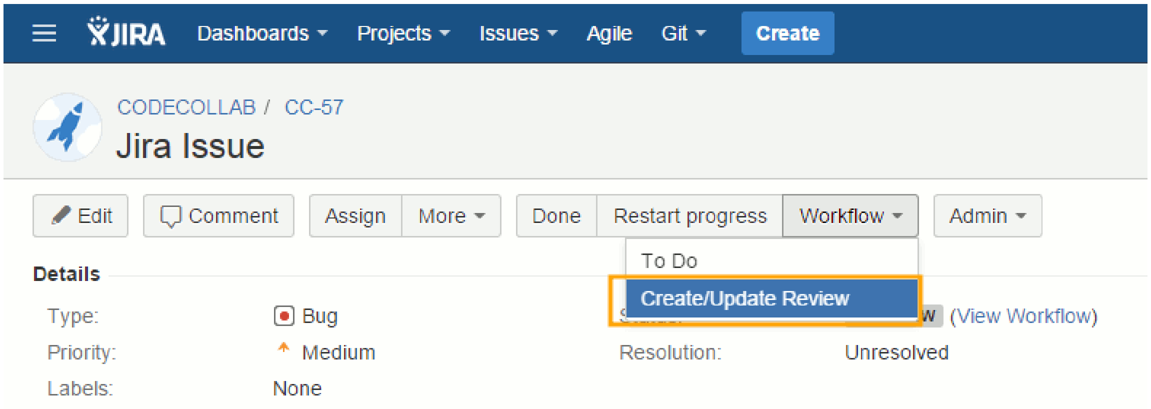
Once FishEye integration with JIRA is established, commits from the source code systems can be linked to JIRA tickets. This allows to quickly monitor what changes were made and with what ticket they are related. Collaborator integration with JIRA expands this duo and allows to unite commits from the source code systems, JIRA tickets and code reviews.

When integration between JIRA and Collaborator is enabled and properly configured, JIRA users gain ability to create Collaborator reviews from within the JIRA item screens.

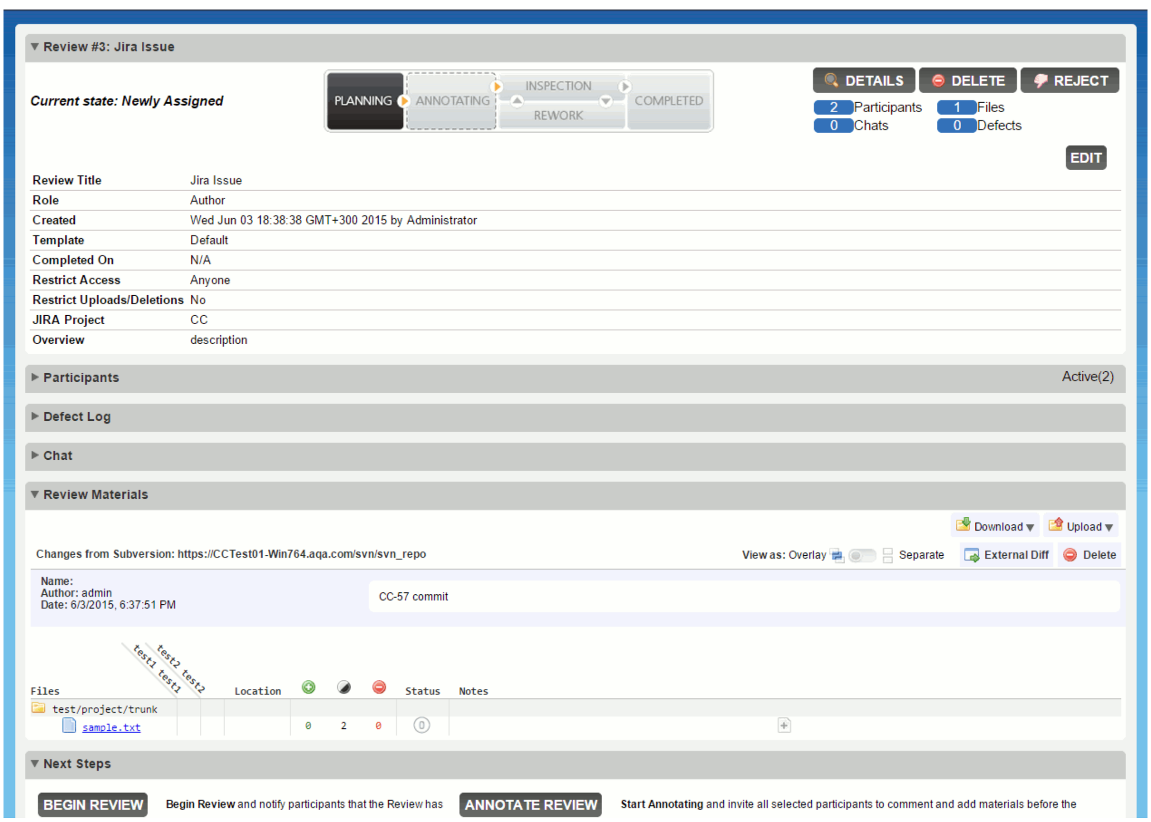
To create a Collaborator review from JIRA item screen, do the following:

1. Open a JIRA item which has some Git or Subversion commits attached.

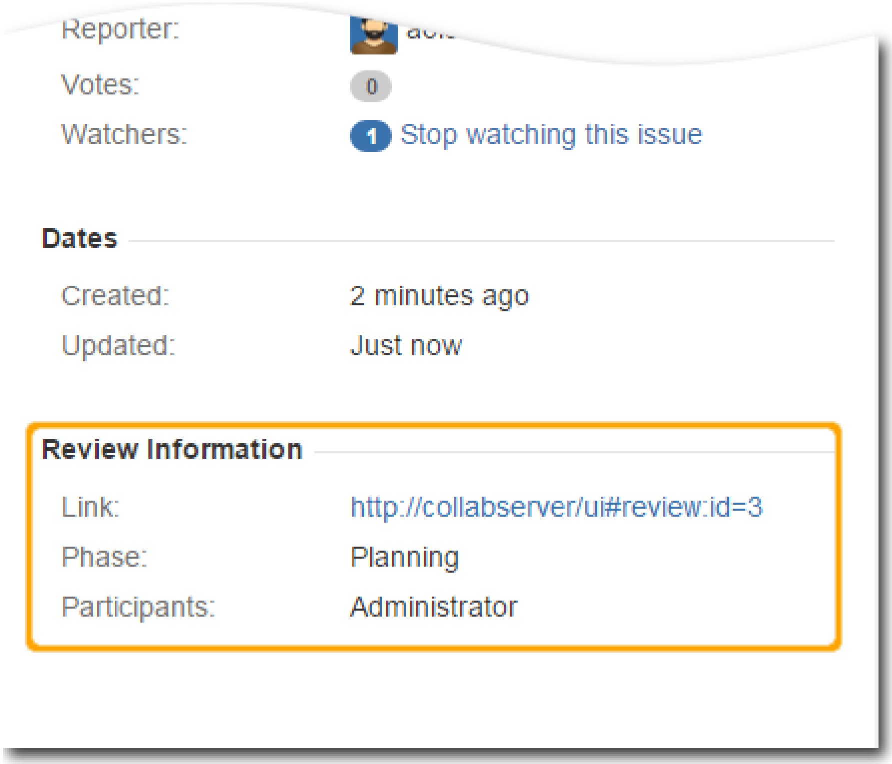
2. Press the Create/Update Review button (at the top-left of the 'view issue' page)



This will creates a new review in Collaborator. The new review gets a link to the original JIRA issue and the Review Materials section of new review contains the same commits that were linked to the original JIRA item.



Once the review is created, the JIRA item screens display new block named "Review Information".



This block displays the link to the associated review, its current phase and list of review participants.

Note for JIRA 7 users: Due to technical issues, JIRA 7 cannot display the "Review Information" block automatically. As a workaround you can manually make the Review Id, Review Participants, Review Phase and Review Link fields be visible on your JIRA screens.

7.3.3 Configuring JIRA and Collaborator Servers

In order to enable integration between JIRA and Collaborator, you need to prepare both JIRA and Collaborator servers.

Besides, in order to create Collaborator's reviews from JIRA, you will need to install and configure Atlassian FishEye and Collaborator Plugin for JIRA.

Preparing JIRA Server

1. Install and Configure Atlassian FishEye. 619 (Needed for creating Collaborator reviews from JIRA.)

2. Install Collaborator Plugin for JIRA. 620 (Needed for creating Collaborator reviews from JIRA.)

3. Configure Collaborator Plugin for JIRA. 621 (Needed for creating Collaborator reviews from JIRA.)

4. Configure JIRA Fields. 625

Preparing Collaborator Server

5. Create JIRA Configuration and Enable the Integration. 629

6. Configure User Remote Accounts. 631

7.3.3.1 1. Installing and Configuring FishEye

To be able to create Collaborator reviews from JIRA items, you will need to establish the integration between FishEye and JIRA. If this feature is not required, you may skip the steps of this section and proceed to Configuring JIRA Fields 625.

What is FishEye?

Atlassian FishEye is a server tool that allows you to track changes in source control repositories. FishEye integrates with JIRA to allow users link commits in source controls with JIRA items.

Installing and Configuring FishEye

To enable the integration between FishEye and JIRA follow the steps below:

1. Install and start FishEye on your server. For detailed instructions how to do this, please see Installing FishEye on Windows and Installing FishEye on Linux and Mac in FishEye's documentation.

2. Specify which source control repositories FishEye should monitor. This must be a Git or a Subversion repository, as other source control systems are not yet supported by Collaborator Plugin. For detailed instructions how to do this, please see Starting to use FishEye and Adding an external repository in FishEye's documentation.

Ok, now we can install the Collaborator Plugin for JIRA 620.

7.3.3.2 2. Installing the Collaborator Plugin for JIRA

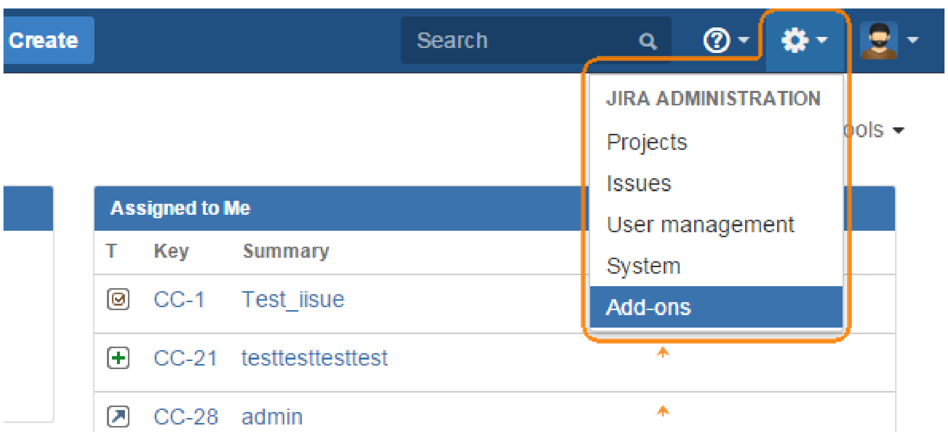
To be able to create Collaborator reviews from JIRA items, you will need to install and configure special Collaborator plugin for JIRA. If this feature is not required, you may skip the steps of this section and proceed to Configuring JIRA Fields 625.

The Collaborator plugin for JIRA serves to exchange data between Collaborator and JIRA. Follow the steps below to install it:

1. Download the plugin from the SmartBear repository on GitHub: https://github.com/SmartBear/jira-collaborator-plugin. The **target** subfolder of this repository contains a compiled plugin: collab-jira-integration-N.N.N.jar.

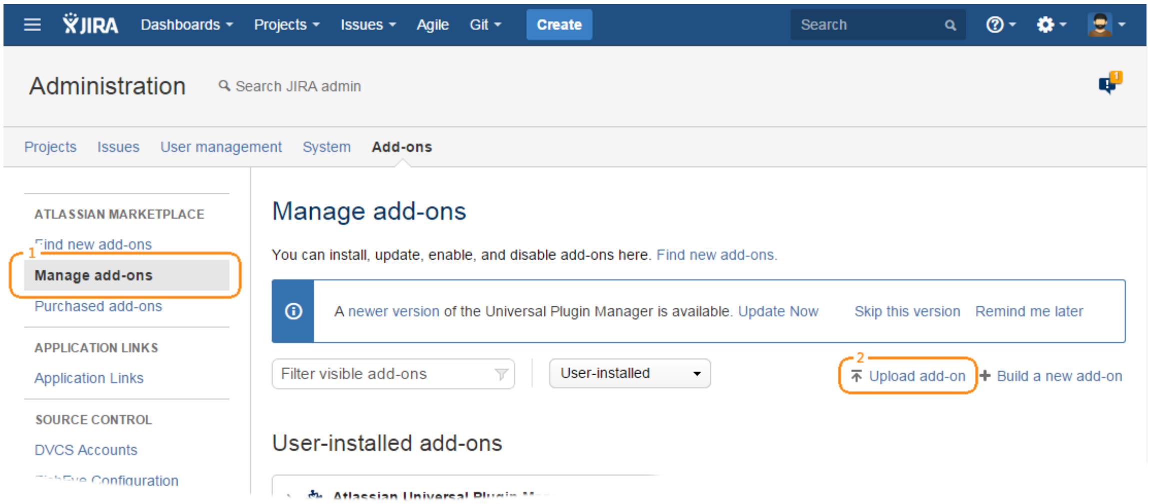
2. Log in to your JIRA as an administrator (or a user with administrator permissions).

3. In JIRA, go to **JIRA Administration > Add-ons**:

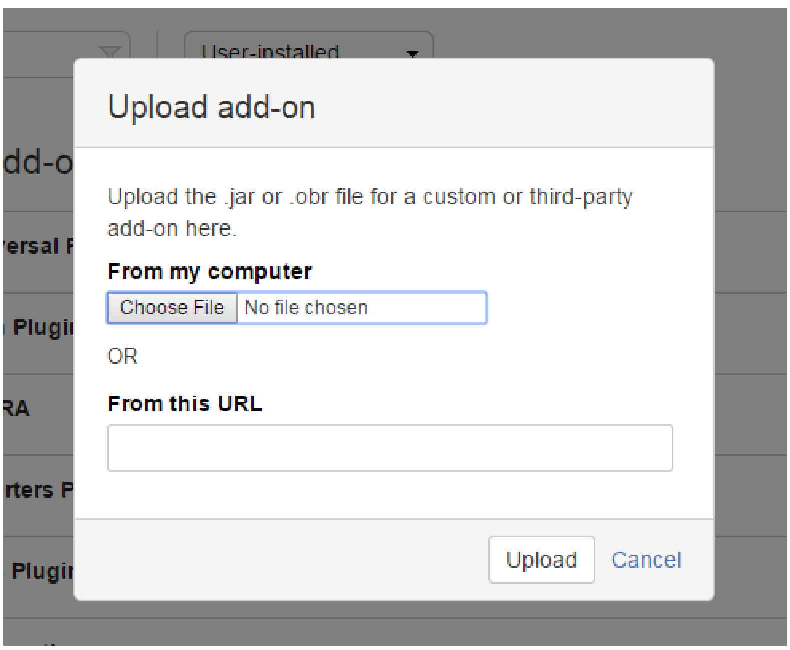


JIRA can ask you to enter the user name and password once again.

4. On the next screen, select **Manage Add-ons** on the left and then click **Upload add-on** on the right:



5. In the subsequent dialog box, specify the plugin's file name and click **Upload**:



The plugin will be installed in JIRA. You will see it at the end of the add-on list.

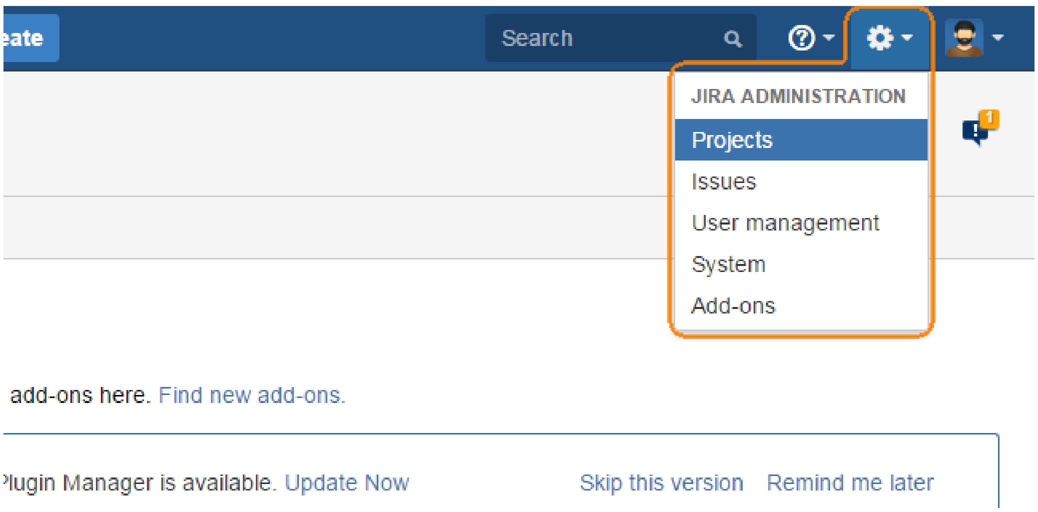
After installing the plugin, you need to configure its settings 621.

7.3.3.3 3. Configuring the Collaborator Plugin for JIRA

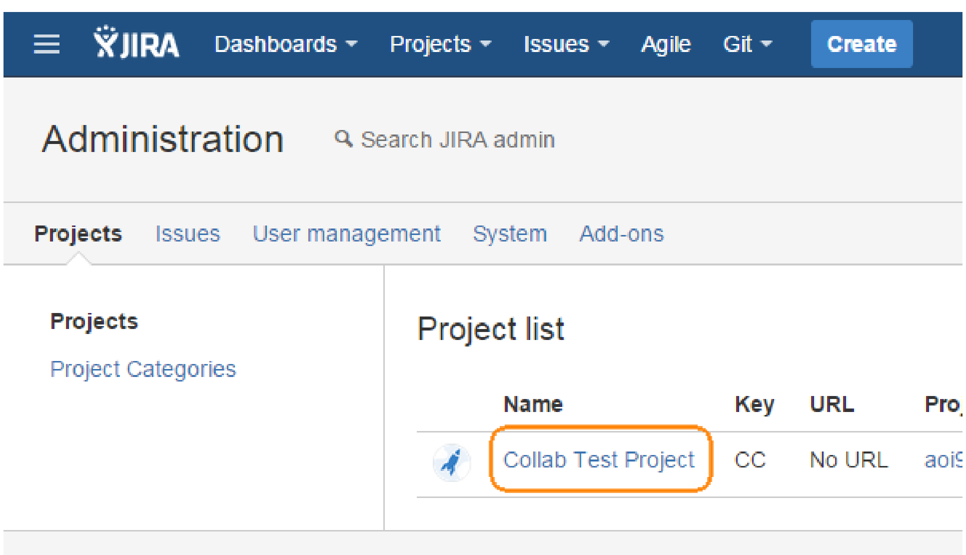
To be able to create Collaborator reviews from JIRA items, you will need to configure the Collaborator plugin for JIRA. If this feature is not required, you may skip the steps of this section and proceed to Configuring JIRA Fields 625.

After installing 620 the Collaborator plugin in JIRA, you need to configure it. Follow these steps:

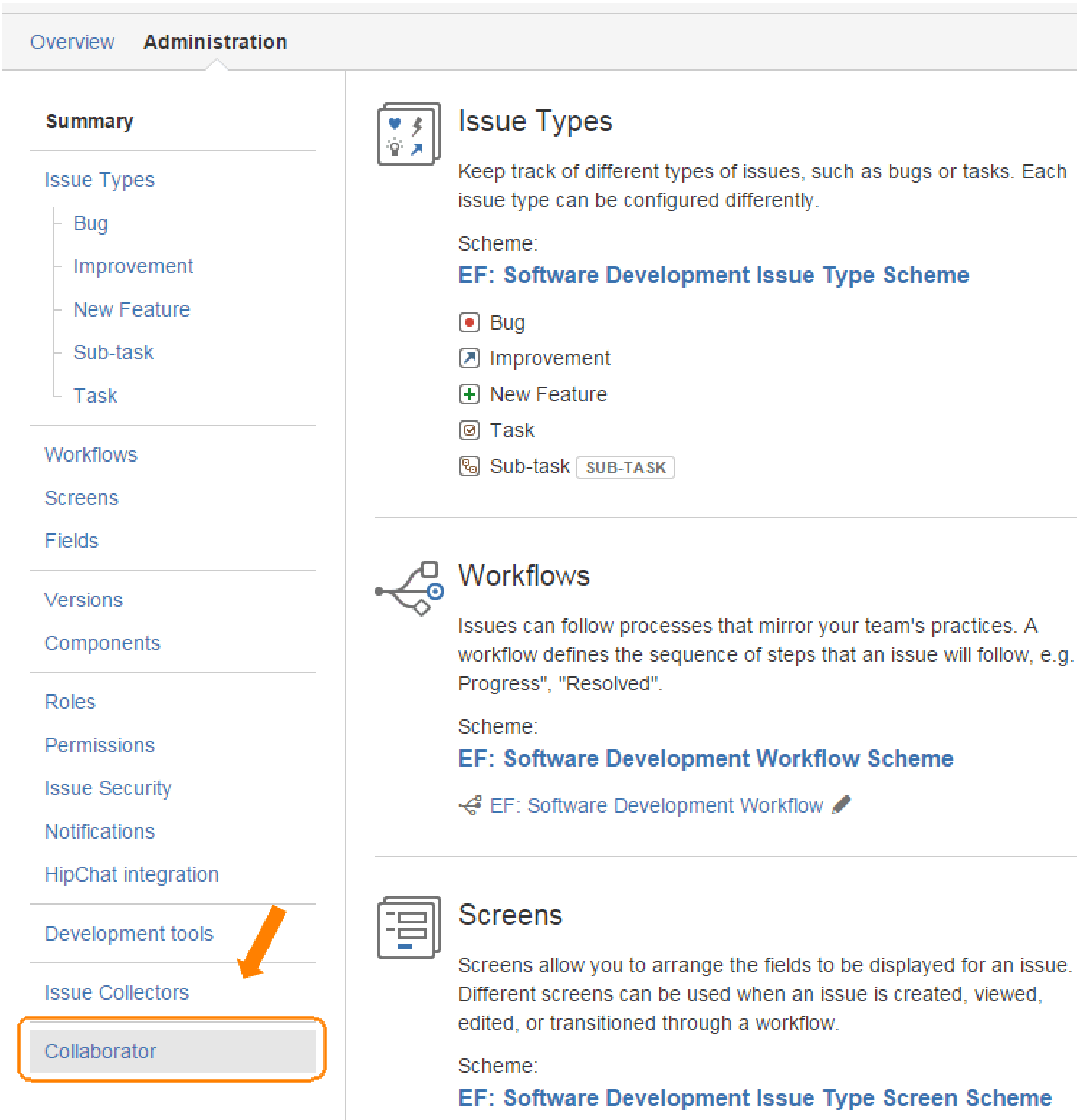
1. In JIRA, go to **JIRA Administration** > **Projects**:



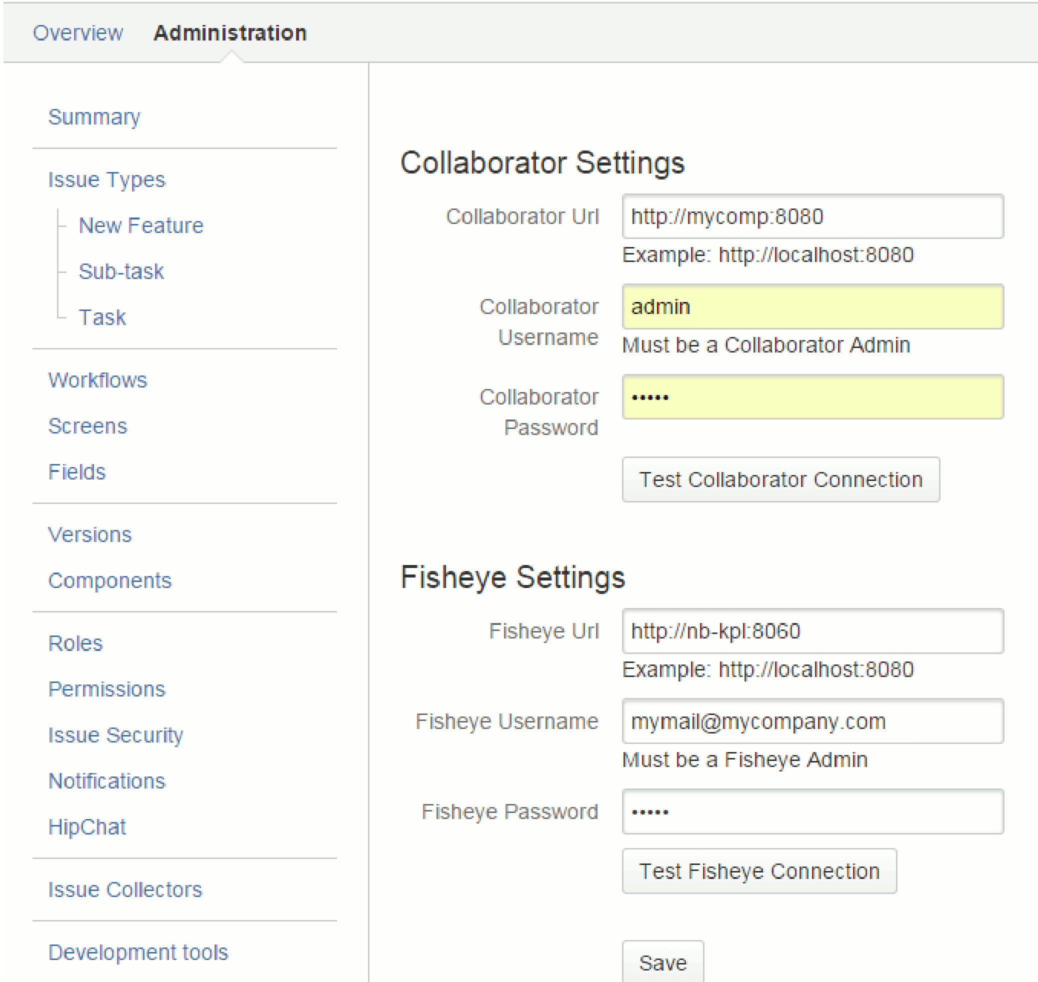
2. Click your project in the list:



3. Scroll the subsequent screen down and click **Collaborator** at the bottom left:



You will see the Collaborator plugin's settings:



4. Specify the settings' values:

Collaborator Settings

Setting	Description
Collaborator Url	The address and port of the Collaborator server.
Collaborator Username and Password	The user name and password that the plugin will use for connecting to the specified Collaborator server. Important: the user should have administrator permissions in Collaborator.

After specifying these values, you can click **Test Collaborator Connection** to verify if you entered data correctly.

FishEye Settings

The Collaborator plugin uses FishEye to get information on files to be included in a review, when you are creating a Collaborator's review from JIRA.

Setting	Description
FishEye Url	The address and port of the FishEye server.
FishEye Username	The name of the FishEye account that the plugin will use for monitoring source control commits. **Important:** the user should have administrator permissions in FishEye.
FishEye Password	The password for connecting to FishEye.

After specifying these values, you can click **Test FishEye Connection** to verify if you entered data correctly.

5. After you specified the setting values, click **Save**.

Besides configuring the Collaborator plugin for JIRA, you also need to configure the visibility of certain JIRA fields 625.

7.3.3.4 4. Configuring JIRA Fields

To exchange data between Collaborator and JIRA, the Collaborator Plugin uses a number of JIRA fields.

To create JIRA tickets, the integration uses **Summary**, **Issue Type** and **Assignee** built-in fields. In order to create new tickets successfully, these built-in fields must be visible on JIRA screens that you use to create and update issues. These fields are visible by default.

To update information about current review status and list of review participants, the integration creates a number of custom fields - **Review Id, Review Link, Review Participants** and **Review Phase**.

To be able to update the review status and participants, these custom fields must be visible on JIRA screens that you use to create and update issues. These fields are hidden by default.

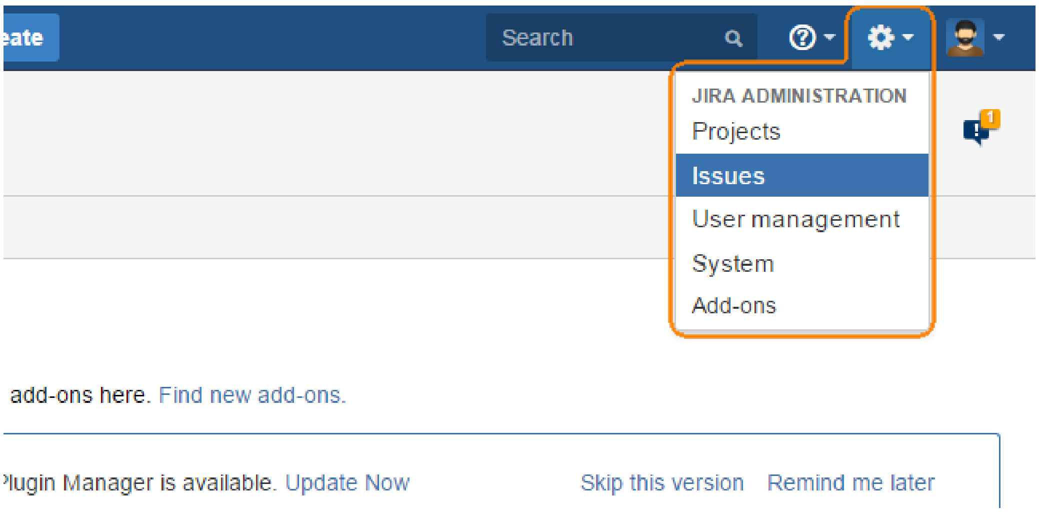
Typically the "Default screen" is used both for creating and updating issues in JIRA, however this may vary depending on your JIRA configuration.

If some of required JIRA fields are hidden, Collaborator will display the "Field <name> cannot be set" error.

To configure the fields:

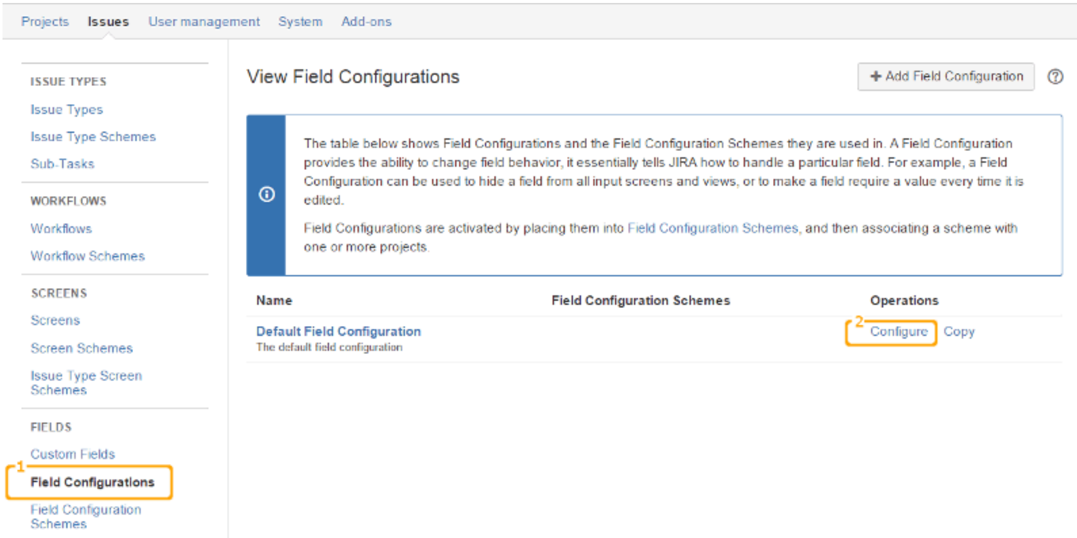
1. Log in to JIRA as an administrator.

2. Go to **JIRA Administration > Issues**:



3. Select **Fields > Field Configurations** to open the View Field Configurations page, which lists all your field configurations.

4. Select the desired field configuration and click the **Configure** link.



5. In the ensuing View Field Configuration page locate the following fields:

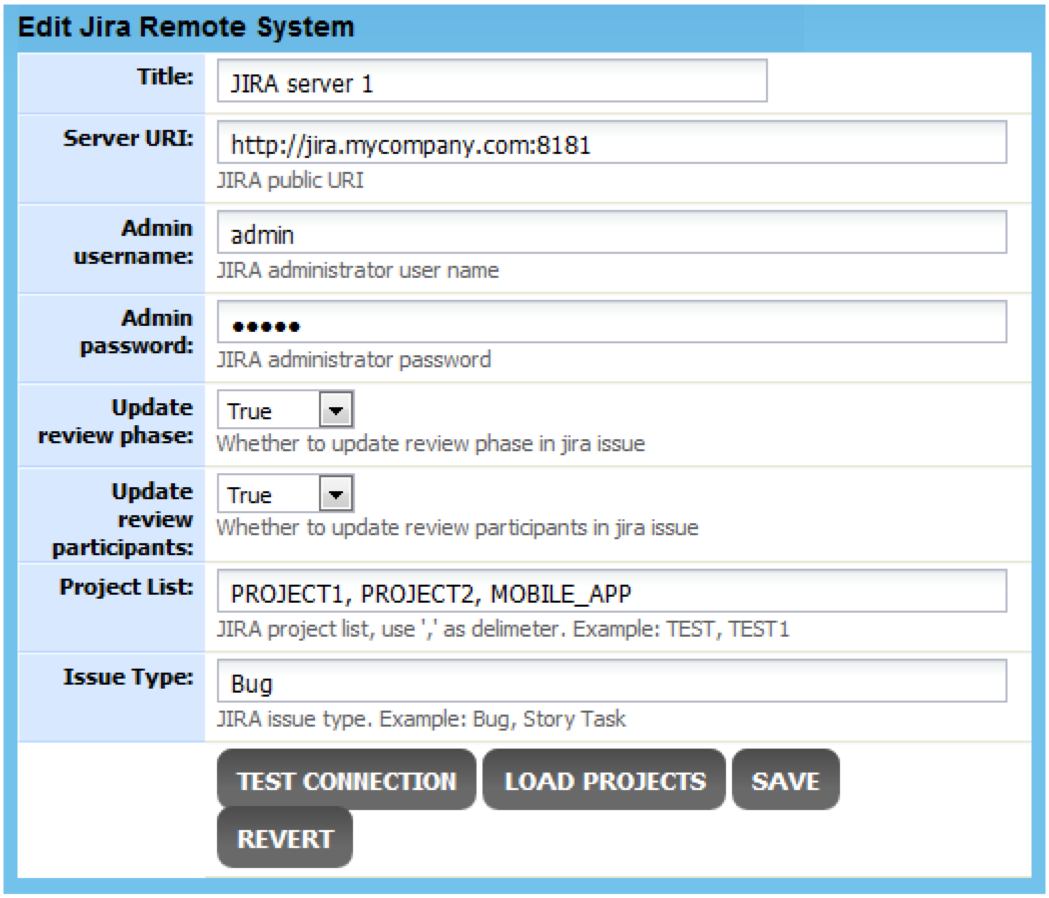
- **Summary**
- **Issue Type**
- **Assignee**
- **Review Id**
- **Review Link**
- **Review Participants**
- **Review Phase**

6. Make sure these fields are visible in current configuration. To display a field that is currently hidden, click **Show** link next to its name:

You have prepared your JIRA server for integration with Collaborator. You will also need to change certain settings on the Collaborator server.

7.3.3.5 5. Creating JIRA Configuration and Enabling the Integration

1. Open the Collaborator login page in a browser, and log in to Collaborator as an administrator.
2. In Collaborator, go to **Admin > Remote System Integration**
3. Under **Configure a new remote system**, select **JIRA** and click **Create.**
4. This will display the configuration settings.



5. Specify the setting values:

Setting	Description
Title	The configuration name as it will be displayed in Collaborator's user interface.
Server URI	The JIRA server's URL and port.
Admin username, and **Admin password**	The user name and password that the plugin will use for connecting to JIRA.

	It is recommended that the specified user has administrator permissions in JIRA.

After specifying these values, you can click **TEST CONNECTION** to verify if you entered data correctly.

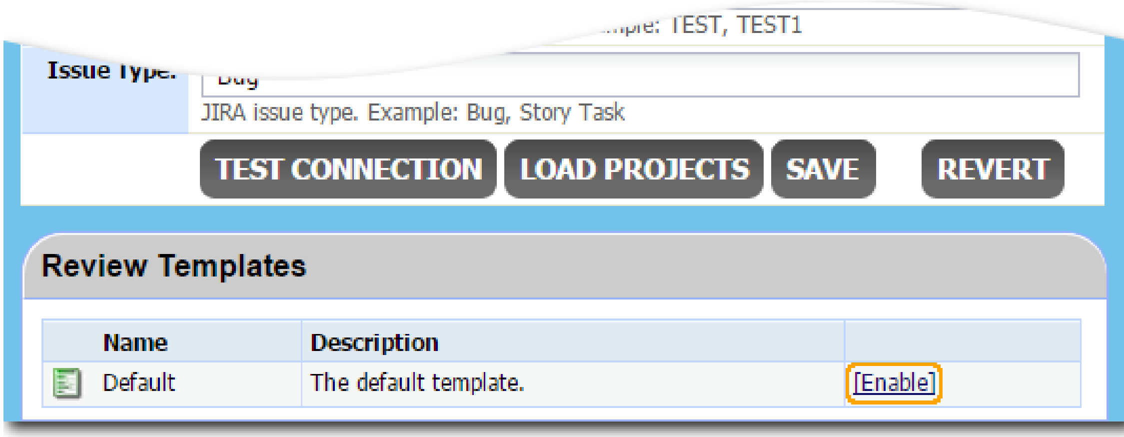
Setting	Description
Update review phase	Specifies if the Collaborator plugin will automatically update the review status in JIRA items that are connected with that review.
Update review participants	Specifies if the Collaborator plugin will automatically update the list of review participants in JIRA items that are connected with that review.
Project List	A string containing the keys of JIRA projects, to which Collaborator will add new items. This setting's value is used as a default value for the JIRA Project custom field (see below). If you are going to create items in several projects, enter several keys and separate them with commas. **Tip:** click **LOAD PROJECTS** to read project keys from the JIRA instance specified by the *Server URI* setting. Project keys are case-insensitive.
Issue Type	The type of the JIRA items to be created from Collaborator. You can specify one item type only. **Important:** This setting is case-sensitive. Specify the type exactly as it is written in JIRA settings.

6. After you specified the values, click **Save**. This will create a JIRA configuration.

7. Scroll the **Admin > Remote System Integration** screen up to the **Integration Status** section. This section allows you to quickly enable or disable integrations with remote systems.

8. Locate the **Enable JIRA Integration** setting and change it to **Yes**.

9. Once the JIRA configuration is enabled, Collaborator automatically creates a new review custom field 190 named **JIRA Project** and displays the **Review Templates** panel. In this panel you need to specify which of the templates should display the **JIRA Project** field.
JIRA Project is a drop-down field which lists JIRA projects, to which Collaborator can add new items. Just after the creation, the JIRA Project field is hidden. To show this field in the desired template, just click the **Enable** link next to template name.



Now the integration between Collaborator and JIRA is configured and running. The last thing we need to do is to link Collaborator user accounts with JIRA user accounts.

7.3.3.6 6. Configuring User Remote Accounts

When you create a JIRA item from Collaborator, the latter should know the assignee user name in JIRA. Similarly, when you create a Collaborator review from JIRA, the Collaborator plugin should know your user name in Collaborator to specify the review participants correctly.

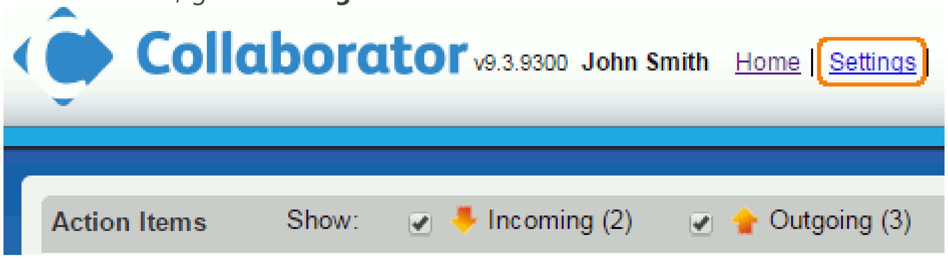
If the name of Collaborator user account **coincides** with the name of JIRA user account, then integration will link these two accounts automatically.

If the name of Collaborator user account **differs** from the name of JIRA user account, then this user **must** specify his/her JIRA account name in the Remote Accounts 237 section of User Preferences 232 of Collaborator.

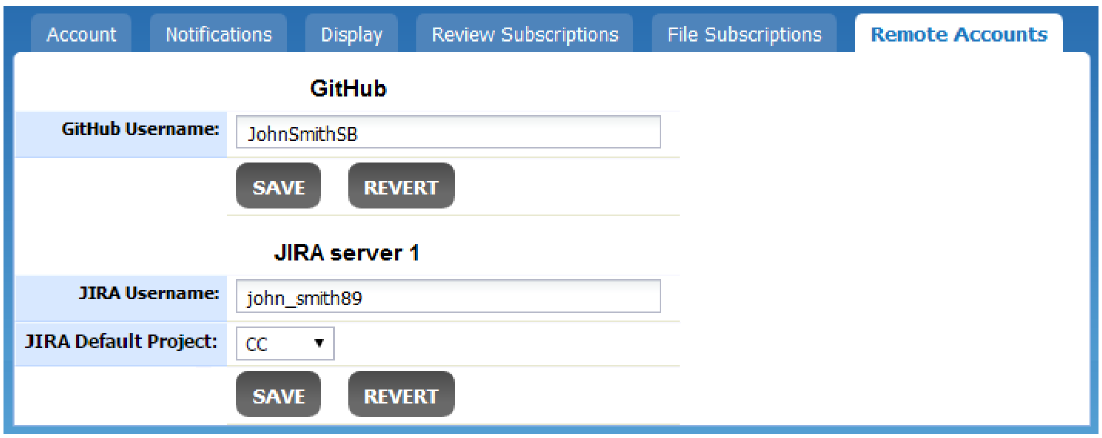
To do this:

1. Open the Collaborator login page in a browser, and log in to Collaborator

2. In Collaborator, go to **Settings**.



3. Switch to **Remote Accounts** section.



4. Enter your JIRA account name into the **JIRA Username** field and press **Save**.

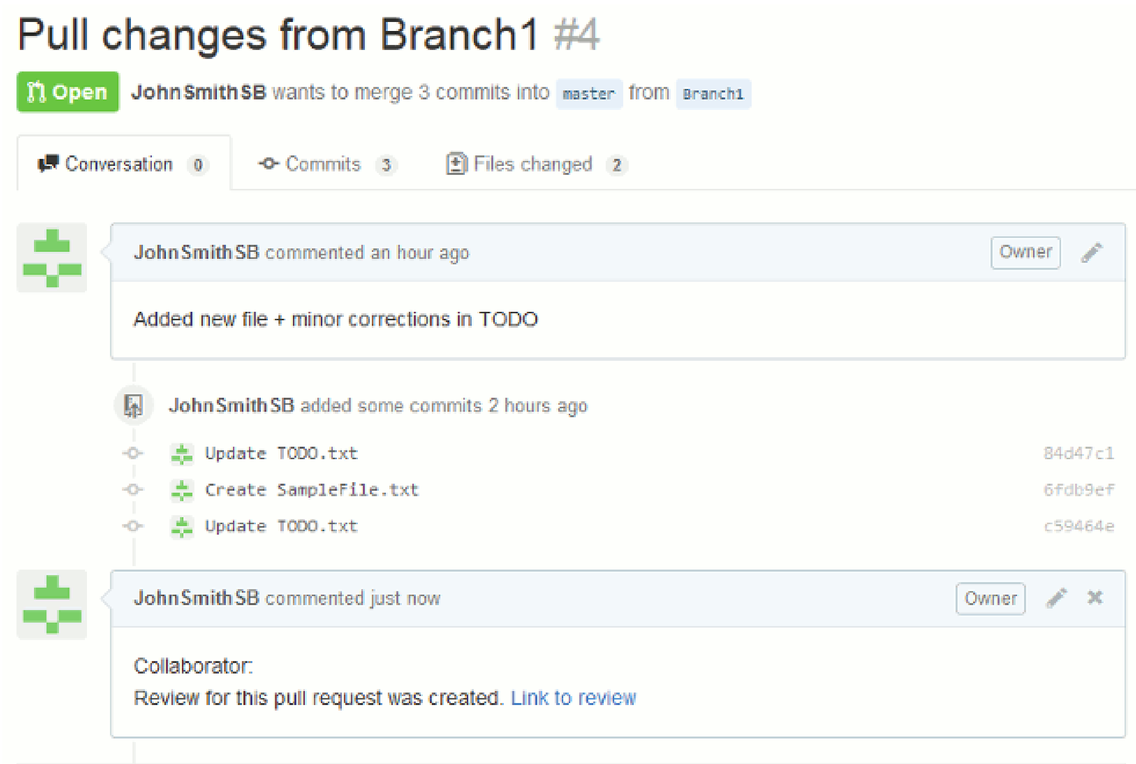
7.4 GitHub Integration

Collaborator provides support for GitHub and GitHub Enterprise, giving you the possibility to easily integrate these two products into your work processes. The integration saves the time and efforts needed to synchronize your commits on GitHub and Collaborator reviews.

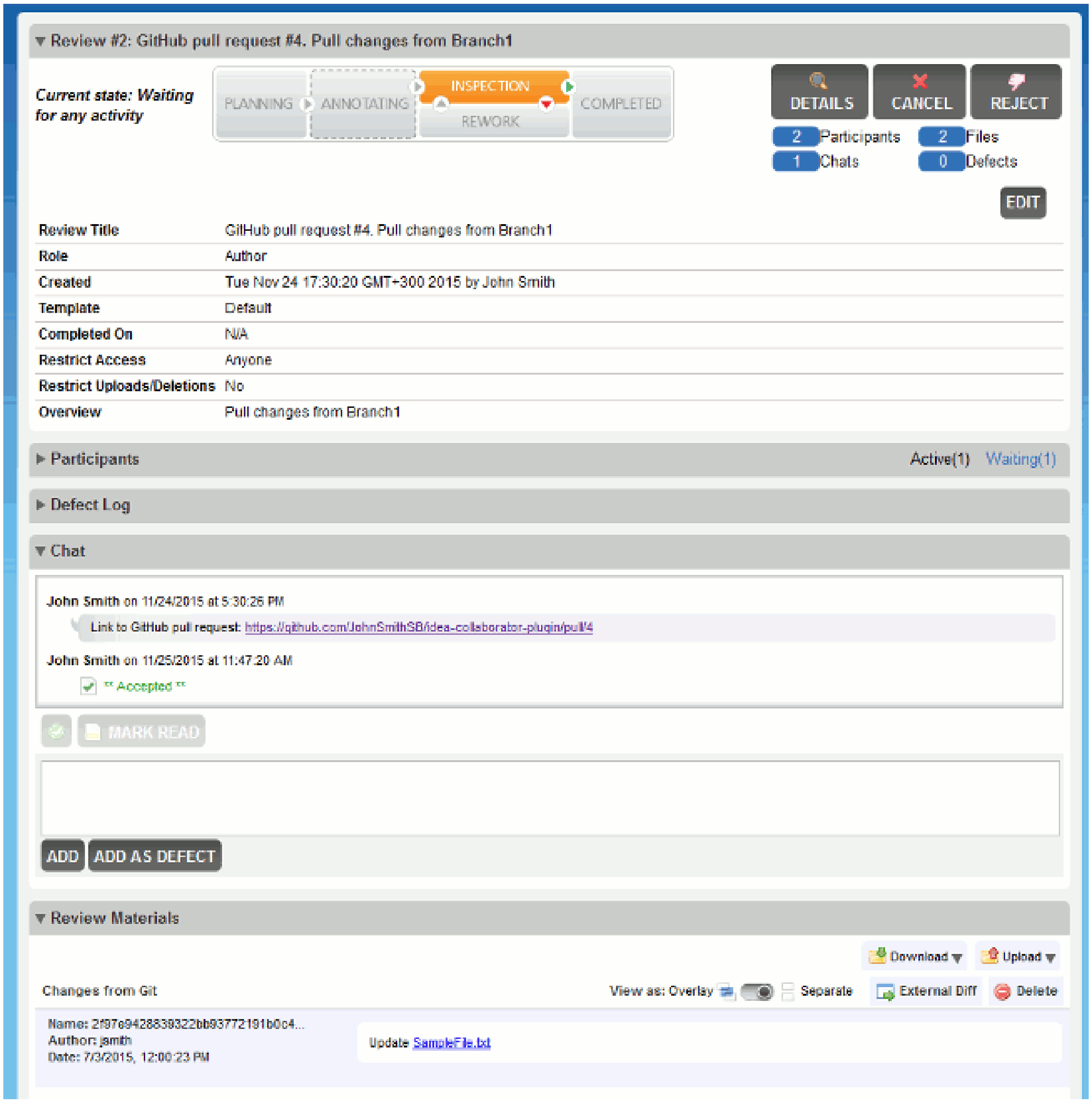
How the Integration Works

Collaborator tracks changes at pre-defined GitHub repository and automatically creates reviews in Collaborator upon:

- pull requests in one or several specified branches of the repository,
- pushes to one or several specified branches of the repository. (The latter can be suppressed via the "Ignore pushes for branches 222" setting.)



On the Collaborator server, the review is assigned to the user who has associated username filled in the Remote Accounts 237 tab of their settings panel. The Review Materials section will hold the files that were modified on the GitHub server.



Besides, the integration updates data in a previously created reviews, when:

- further commits are made in a branch which initiated a pull request,
- a commit was made that resolves file merge conflict.

Requirements

To use the integration features, you need to obtain a personal access token on GitHub and configure certain settings on the Collaborator server. Read Configuring GitHub Integration 635 for detailed instructions.

Technical Details

- When a review is created, the integration uploads a copy of files that were modified on the GitHub server. That is, Collaborator does not depend on commit IDs or any other references to modified files, since it gets the files itself.
  Keep this information in mind when rebasing a pull request. Collaborator does not track commit IDs and does not pull the source when needed. If you rebase in such a way that remote branch can be fast-forwarded then no problems are to expect. If you use "git push --force" we cannot guarantee flawless operation. Also, it might be a problem with "comments" in chat.

- Integration creates reviews on any pull requests - no matter whether it came from the same repository of from forked repository.

- When a pull requests causes file conflict, the integration acts as follows. Once a file conflict could be resolved automatically, the merge commit will not be added to the review. If a file conflict was resolved manually (that is, if some files have been changed to complete the merge), then GitHub integration will update the review with the changes from the resolving commit.

Known Issues

- Due to limitations of the GitHub API, it is not presently possible to sync over review materials larger than 1MB (for example, large image or document files); to be clear this applies to individual files of greater than 1MB size.

7.4.1 Configuring GitHub Integration

In order to enable integration between GitHub and Collaborator, you need to:

1. Create GitHub Configuration and Enable the Integration 636
2. Link the owner of GitHub repository with some of Collaborator users 637

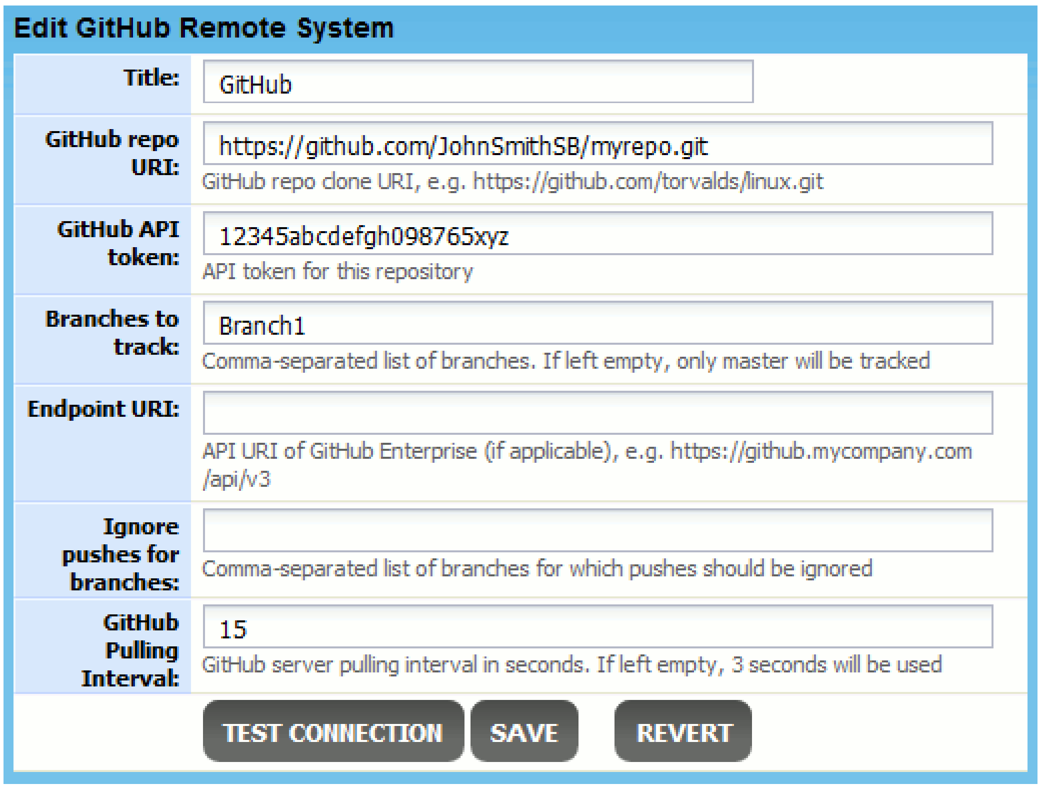
7.4.1.1 1. Creating GitHub Configuration and Enabling the Integration

1. Open the Collaborator login page in a browser, and log in to Collaborator as an administrator.

2. In Collaborator, go to **Admin > Remote System Integration**

3. Under **Configure a new remote system**, select **GitHub** and click **Create.**

4. This will display the configuration settings.



5. Specify the setting values:

Setting	Description
Title	The configuration name as it will be displayed in Collaborator's user interface.
GitHub repo URI	The URL of GitHub repository to be tracked. You can copy it from the Clone URL field of the repository's main page on GitHub.
GitHub API token	The personal access token for the GitHub account to be tracked. Read Creating an access token for command-line use on GitHub documentation to learn how to obtain it. The default set of token scopes is enough for integration with Collaborator.

Branch to track	One or several coma-separated names of branches to track. If this field is empty, "master" branch will be tracked.
Endpoint URI	This setting is needed for repositories hosted on GitHub Enterprise servers. It specifies the API URI of your GitHub Enterprise server.
Ignore pushes for branches	Optional. One or several coma-separated names of branches to ignore. Collaborator will not create reviews for pushes to the specified branches.
GitHub pulling interval	Optional. Specifies how often to check for the changes on the GitHub repository. 3 seconds by default.

After specifying these values, you can click **TEST CONNECTION** to verify if you entered data correctly.

6. After you specified the values, click **Save**. This will create a GitHub configuration.

7. Scroll the **Admin > Remote System Integration** screen up to the **Integration Status** section. This section allows you to quickly enable or disable integrations with remote systems.

8. Locate the **Enable GitHub Integration** setting and change it to **Yes**.

Now the integration between Collaborator and GitHub is configured and running.

Also we need to link some Collaborator user account to the GitHub account 637 of repository owner.

7.4.1.2 2. Configuring User Remote Accounts

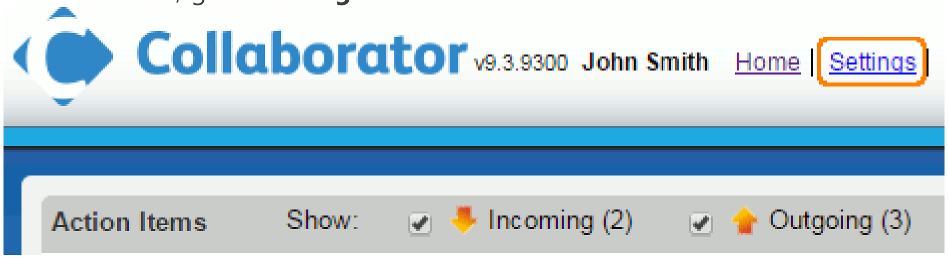
In order to assign GitHub reviews to the appropriate person, we need to link the owner of GitHub repository with some of Collaborator user accounts. If Collaborator fails to match the GitHub repository owner with any of Collaborator users, then it will not create any reviews from GitHub.

If the name of a Collaborator user account coincides with the name of a GitHub user account, then integration will link these two accounts automatically.

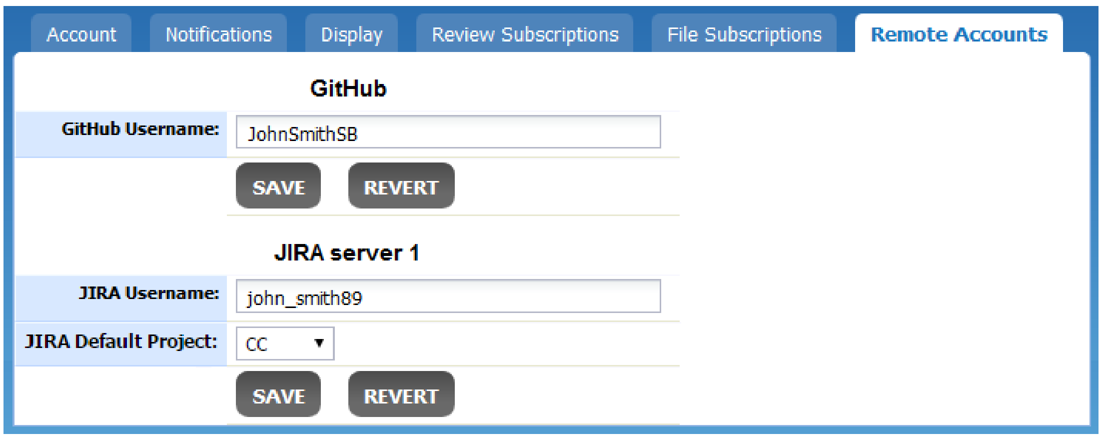
If the name of a Collaborator user account differs from the name of a GitHub user account, then this user must specify their GitHub account name in Collaborator's User Preferences 232 > Remote Accounts 237. To do this:

1. Open the Collaborator login page in a browser, and log in to Collaborator.

2. In Collaborator, go to **Settings**.



3. Switch to **Remote Accounts** section.



4. Enter the name of GitHub repository owner into the **GitHub Username** field and press **Save**.

Now GitHub integration is fully configured.

7.5 Scripting

Scripting is the easiest way to implement custom behaviors with Collaborator.

Command-Line Client

You can use the Command-Line Client to script actions on your user's machines, or install it on the same machine as the Collaborator Server and invoke it with a trigger 208.

The Command-Line Client can create, delete, and edit reviews, including templates and review custom fields. It can assign or remove participants within a review, and even move reviews to the next phase (for example, from "planning" to "inspection"). It can also create comments and defects, including defect custom fields, and mark defects as external.

You can use the Command-Line Client to create, edit, enable or disable user accounts. It can be used to set up user information like email addresses and phone numbers. It can also be used to set up author or file-based subscriptions.

Batching Commands

Often when scripting you find that you need to run multiple Command-Line Client commands. It is OK to simply run them one after the other in your script, but it is more efficient to group them together using the `ccollab admin batch` command. The `batch` command takes as input an XML file which lists the commands to be run and optionally global options to use to run them.

It is faster to run multiple commands using the `batch` command because the Command-Line Client only has to connect and authenticate with the Collaborator Server once. Also the XML input format is useful if the data you are passing to the Command-Line Client contains characters difficult to encode on the command-line like line feeds, quotes, or multi-byte characters.

Extracting Data

The `ccollab admin review-xml` command lets you extract data from one or more reviews in your script. You can supply an XSL file to format the output, or an XPATH expression to select only the specific data you need. You can even use XPATH functions to perform some computation.

You can also query the server for a list of reviews using the built-in reports 317, and then use the `ccollab admin wget` command to download the CSV output format 319 to be parsed by your script. Note the CSV output format of the reports does not consume a license. For example, to get a list of the reviews currently in progress run:

```
ccollab admin wget "/go?
page=ReportReviewList&formSubmittedreportConfig=1&reviewIdVis=y&revie
wTitleVis=y&data-format=csv&phaseFilter=inprogress"
```

Prompting

You can disable all interactive prompting by specifying the `non-interactive` 358 global option.

If `non-interactive` 358 is not specified, the Command-Line Client will automatically prompt for server `url` 358, `user` 358, and `password` 358 as necessary when it connects to the Collaborator Server.

You can also use the special value "*ask*" when specifying the `review` parameter. Using "*ask*" will cause the Command-Line Client to interactively prompt the user with the list of reviews they are currently involved in.

If you are invoking more than one command, you can use the special value "*last*" in combination with "*ask*". Using "*last*" will cause the Command-Line Client to address the review most recently accessed by the Command-Line Client. Typically the first command in the script will use "*ask*" and then subsequent commands use "*last*" to access the same review.

Opening a Browser

Collaborator is fundamentally a web-based tool and the actual reviewing goes on in a browser. Many Command-Line Client commands automatically open a browser to allow the user to take the next step. You can prevent the Command-Line Client from opening a browser by specifying the `no-browser` 358 global option.

You can also explicitly open a browser using the `ccollab browse` command. Note the `browse` command ignores the `no-browser` 358 global option.

"Virtual" Script Users

Often when setting up scripting it is convenient to create a Collaborator user which the script will use to log in to the Collaborator server. Simply create a user in the normal way and give the credentials (login and password) to the script. The command-line scripting commands will not cause the "virtual" script user to consume a license (except `ccollab admin wget`, if the URL it is loading consumes a license).

Downloading file version content

A special URL lets you download the binary contents of any file version efficiently. The URL is authenticated, so you have to use `ccollab admin wget`. Note the version content URL does not consume a license.

For example, to get a file version with ID `12345`:

```
ccollab admin wget "/data/server?versionid=12345"
```

The 'wget' command can also be used to:

Get all diffs in a review:

```
ccollab admin wget "/diff?context=<context>&reviewid=<review id>"
```

Get diffs from two specific versions:

```
ccollab admin wget "/diff?context=<context>&reviewid=<review
id>&versionids=<version a>,<version b>
```

7.5.1 Mirroring Defects to an external issue-tracker

In this tutorial we will set up a script that will automatically mirror defects found during a peer review in Collaborator to an external issue-tracking system. In this tutorial we will mirror defects to FogBugz, but the steps in this tutorial can be modified to mirror defects to any external issue-tracker.

Outline

When a Defect is created in Collaborator the Defect activity trigger 208 invokes a script which creates a new "Case" in FogBugz with a link back to the review. Then the Defect in Collaborator is marked "external" with a link to the mirrored Case in FogBugz.

Prerequisites

The script in this example is written in Perl, so the server must have the Perl runtime installed. The script invokes the Collaborator Command-Line Client, so that needs to be installed on your server machine as well. Be sure to install these prerequisites so that they are accessible and executable by the system user which is running the Collaborator server (this is especially important on Unix systems).

Script Step 1: Set up constants

The script will need to know a few values to do it is work. These will be hard-coded in to the script:

```
# URL to the Collaborator Server
$CCOLLAB_URL = "http://localhost:8080";

# Login of Collaborator User who will mark the Defect as external
$CCOLLAB_USER = "admin";

# Password of Collaborator User who will mark Defect as external
$CCOLLAB_PASSWORD = "";

# URL to the FogBugz server
$FOGBUGZ_URL = "http://bugs";

# Email of user to use to create Case in to FogBugz
$FOGBUGZ_USER_EMAIL = "person\@yourcompany.com";

# Password of user to use to create Case in to FogBugz
$FOGBUGZ_USER_PASSWORD = "yourpasswordhere";
```

Script Step 2: Read parameters from command-line

The Review ID, Defect ID, and Defect title will be supplied by Collaborator as parameters when it invokes the script from the trigger (we set that up in Step 9 644). The script needs to read those parameters from the command-line:

```
# read parameters from command-line
$reviewId = $ARGV[0];
$defectId = $ARGV[1];
$defectTitle = $ARGV[2];
```

Script Step 3: Logon to FogBugz

The script will use the FogBugz web services API to mirror the Defect in to FogBugz. In order to use the API we first have to "logon" and acquire an "authentication token":

```
# logon to FogBugz
my $response = get("$FOGBUGZ_URL/api.php?
cmd=logon&email=$FOGBUGZ_USER_EMAIL&password=$FOGBUGZ_USER_PASSWORD")
;

# extract authentication token
$response =~ /<token>(?:<!\[CDATA\[)?([^\]]+)(?:\]\]>)?<\/token>/;
my $token = $1;
```

Script Step 4: Create Case in FogBugz

The script creates a "Case" in FogBugz, setting the title of the Case to the text from the Collaborator Defect, and putting a link back to the Collaborator server in the description of the Case. Note that the Defect title and Case description have to be escaped because they are going in to a "get" URI. The script extracts the resulting Case ID and saves it for later:

```
# create new Case
$defectTitle = uri_escape($defectTitle);
$description = uri_escape("Defect D$defectId mirrored from
Collaborator Review $reviewId ($CCOLLAB_URL/index.jsp?
page=ReviewDisplay&reviewid=$reviewId)");
$response = get("$FOGBUGZ_URL/api.php?
token=$token&cmd=new&sTitle=$defectTitle&sEvent=$description");
```

```
# extract Case ID
$response =~ /ixBug="(\d+)"/;
my $case = $1;
```

Script Step 5: Logoff from FogBugz

The script logs off from FogBugz, invalidating the authentication token:

```
# log off from FogBugz (invalidate authentication token)
$response = get("$FOGBUGZ_URL/api.php?token=$token&cmd=logoff");
```

Script Step 6: Mark Collaborator Defect as "external"

The script runs the Command-Line Client `ccollab admin review defect mark-external` command to mark the Defect as external. The "external-name" of the Defect is the Case number in FogBugz (which will appear as a link after Step 8 644):

```
# mark Defect as "external" in Collaborator
$ccollabOptions = "--url $CCOLLAB_URL";
$ccollabOptions .= " --user $CCOLLAB_USER";
$ccollabOptions .= " --password \"$CCOLLAB_PASSWORD\"";
$ccollabOptions .= " --quiet --non-interactive";
system("ccollab $CCOLLAB_OPTIONS admin review defect mark-external
$defectId \"Case $case\"");
```

This step in the script works fine if you have configured Collaborator to work with MySQL. With any other database, the process is slightly more complicated - please contact technical support 29 for more details.

Step 7: Test the script from the command-line

That is our whole script! Here it is in finished form: `mirror-defect.pl` (opens in a new window). Do not forget to replace the constants in the script (urls, users, passwords and so on) with the appropriate values for your environment, then copy the script to an accessible place on your server. The script needs to be readable by the system user which is running the Collaborator server.

Before you configure the Collaborator server to invoke the script automatically, test it manually by opening a console on your server machine running it on the command-line. **Be sure to log in to your server machine as the user which is running the Collaborator server.** First create a review and create a defect in the review, then run the script.

For example, if you created Review 1234 with Defect D5678, then run the script with this command:

```
C:\Perl\perl.exe "C:\Program Files\Collaborator Server\mirror-defect.
pl" 1234 5678 "mirrored Defect title"
```

You should see output similar to this:

```
Mirrored Defect D5678 in FogBugz as Case 91011
Connecting to Collaborator Server http://localhost:8080
Connected as: Collaborator Administrator (admin).
D5678 marked as external
```

When you refresh your browser in Collaborator you should see the Defect has been marked as external, with the description "Case 91011".

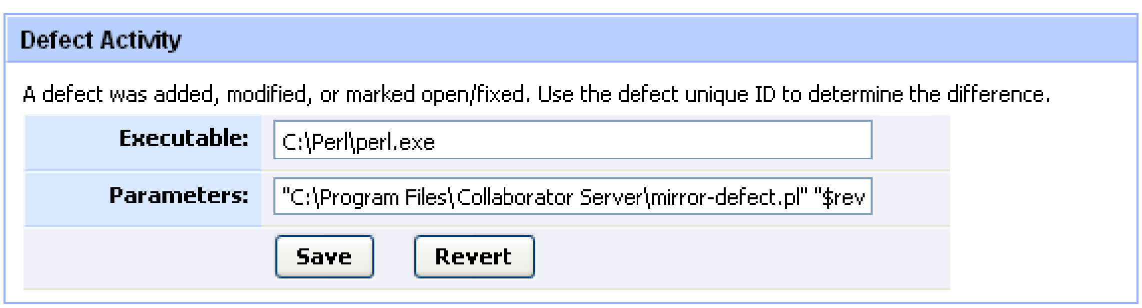
Step 8: Set up Bug-Tracking integration link

Using the Collaborator built-in Bug-Tracking hyperlink function, set up the text "Case <number>" to automatically hyperlink to that Case number in FogBugz 612. Now if you go back to look at Defect D5678 in Collaborator the text "Case 91011" should be a hyperlink to Case 91011 in FogBugz.

Step 9: Invoke Script from a trigger

Make sure you have Step 7 643 working before you move on to this step. The last thing we need to do is tell the Collaborator server to automatically invoke the `mirror-defect.pl` script when a Defect is created. We do this with the Defect Activity trigger 208. We will use these values:

```
Executable: C:\Perl\perl.exe
Parameters: "C:\Program Files\merge2.2\specs\collab\Baggage\mirror-
defect.pl" "$review.id" "$defect.id" "$defect.txt"
```



Defect Activity Trigger

Note that it is important to use the FULL PATH of both the Perl runtime and the `mirror-defect.pl` script. Also note that the parameters are enclosed in quotes in case they have spaces in them. The Review id 130, Defect id 132, and Defect text 132 come from substitution variables 129.

Finished

That is it! Now when anyone creates a Defect in Collaborator it will be automatically mirrored to FogBugz, and the Defect will be "marked as external" with a link to the Case in FogBugz. Note that for performance reasons the trigger runs *after* the Defect is created in a separate thread, so you may have to refresh your browser a couple of seconds after creating the Defect to see it automatically externalized.

7.5.2 Syncing users from Perforce

In this tutorial we will write a script that will create a corresponding Collaborator user for every Perforce user. The script can be run periodically to pick up any new Perforce users.

This script performs the same actions as the `ccollab admin syncusers` 556 command.

Outline

The script runs the Perforce `p4 users` command, parses the output, and then calls the Collaborator Command-Line Client `ccollab admin user create` command for every user. If the user already exists then the `ccollab admin user create` command fails and the script goes on to the next user.

Prerequisites

The script in this example is written in Perl, so you must have the Perl runtime installed. The script invokes the Collaborator Command-Line Client, so that needs to be installed as well. Note you must be a Collaborator Administrator in order for this script to work.

Script Step 1: Get users from Perforce

The script runs the `p4 users` command to get the a list of all user records from Perforce.

```
# Get users from Perforce

@p4Users = `p4 users`;
```

Script Step 2: Parse fields from Perforce user record

The script extracts the user name, email, and full name from the Perforce user record.

```
#parse fields from Perforce user record

$p4User =~ /(\S+)\s*<([^>]*)>\s*\((.*?)\)\s*accessed.*/;
```

```
$user = $1;
$email = $2;
$fullName = $3;
```

Script Step 3: Create user in Collaborator

The script runs the Command-Line Client `ccollab admin user create` command to create the user in Collaborator. If a user with that name already exists, the command fails and the script goes on to the next user.

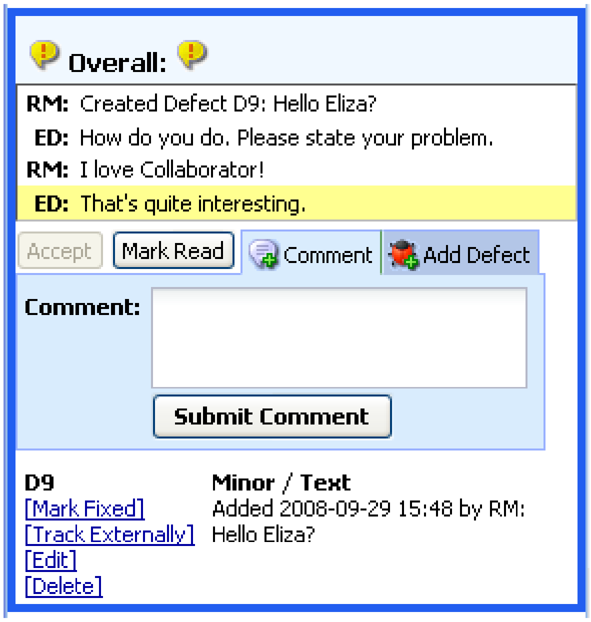
```
#create user in Collaborator - does nothing if user already exists
system("ccollab admin user create \"$user\" --email \"$email\" --
full-name \"$fullName\"");
```

Finished

That is it! Here is the script in finished form: `syncusers-p4.pl` (opens in a new window). You can run this script periodically (for example, with a `cron` job) and it will keep your Perforce users and Collaborator in sync.

7.5.3 Conversation with Eliza

In this tutorial we will set up a script that will let a user have a conversation with the classic ELIZA program. Eliza will appear to chat using comments in a Review. Eliza will only respond to comments in conversations that have a Defect containing her name.



Conversation with Eliza

Outline

When a Defect is created in Collaborator the Defect Activity trigger 208 launches a Perl script in the background. The script polls Collaborator for comments using the Command-Line Client. When it finds a new comment, it passes the comment to an implementation of the ELIZA program, and then posts Eliza's response to the conversation using the Command-Line Client.

The script runs indefinitely until the Defect is marked fixed or deleted, or the Review is finished.

Prerequisites

The script in this example is written in Perl, so you must have the Perl runtime installed.

The Perl script invokes the Collaborator Command-Line Client, so that needs to be installed on your server machine. Be sure to install the Command-Line Client so that it is accessible and executable by the system user which is running the Collaborator server (this is especially important on Unix systems).

The script uses a clone of ELIZA written in Perl called Chatbot::Eliza which must be installed.

Script Step 1: Set up constants

The script will need to know a few values to do it is work. These will be hard-coded in to the script:

```
# URL to the Collaborator Server
```

```
$CCOLLAB_URL = "http://localhost:8080";

# Login of Collaborator User who Eliza will use for chat
# should be a Collaborator administrator
$CCOLLAB_USER = "eliza";

# Password of Collaborator User who Eliza will use for chat
$CCOLLAB_PASSWORD = "eliza";

# Seconds to sleep before polling for new chat
$REFRESH_DELAY_SECONDS = 4;
```

Script Step 2: Read parameters from command-line

The Review ID and Defect ID will be supplied by Collaborator as parameters when it invokes the script from the trigger (we set that up in Step 12 654). The script needs to read those parameters from the command-line:

```
# read parameters from command-line
$reviewId = $ARGV[0];
$defectId = $ARGV[1];
```

Script Step 3: Create XSL Transform

The script needs to extract multiple pieces of information from the Collaborator server. To do that more efficiently it uses an XSL Transform to extract everything in a single call to ccollab admin review-xml (Step 6 650). The XSL is inlined in the Perl script using "here-document" syntax.

```
#xslt file we will use to extract info from Collaborator
$xslt = <<XSLT;
<?xml version="1.0" encoding="UTF-8"?>
<xsl:stylesheet xmlns:xsl='http://www.w3.org/1999/XSL/Transform'
version='1.0'>

 <xsl:template match='//reviews/review'>

       <!-- get review phase -->
       <xsl:value-of select='general/phase'/><xsl:text>
```

```
</xsl:text>

       <!-- find defect -->
       <xsl:for-each select='defects/defect[\@defectId=$defectId]'>

             <!-- get defect status -->
             <xsl:value-of select='status'/><xsl:text>
</xsl:text>

             <!-- get defect text-->
             <xsl:value-of select='text'/><xsl:text>
</xsl:text>


       </xsl:for-each>

       <!-- find the conversation we are talking on (the one with the
defect) -->
       <xsl:for-each select='conversations/conversation[defects/
conversation-defect/\@defect-id=$defectId]'>

             <!-- find last comment in conversation -->
             <xsl:for-each select='comments/comment[last()]'>

                   <!-- get author -->
                   <xsl:value-of select='\@creator'/><xsl:text>
</xsl:text>

                   <!-- get text -->
                   <xsl:value-of select='text()'/><xsl:text>
</xsl:text>

             </xsl:for-each>


             <!-- get file-path (empty for overall comment) -->
```

```
            <xsl:value-of select='\@file-path'/><xsl:text>
</xsl:text>

            <!-- get line-number (empty for overall comment or file
overall comment) -->
            <xsl:value-of select='\@line-number'/><xsl:text>
</xsl:text>

       </xsl:for-each>

 </xsl:template>
</xsl:stylesheet>
XSLT
```

Script Step 4: Initialize Eliza

The Chatbot::Eliza program is initialized by a simple constructor.

```
# initialize Eliza
$eliza = new Chatbot::Eliza;
```

Script Step 5: Sleep for a few seconds

The rest of the script loops until the script decides to exit (Step 7 651). Every time it starts the loop, the script first sleeps for a few seconds to make sure it does not put too much load on the server.

```
# sleep so we do not hammer the server
sleep($REFRESH_DELAY_SECONDS);
```

Script Step 6: Query Collaborator server for info

The script invokes the `ccollab admin review-xml` command, passing in the XSL created in Step 3 648 on STDIN. The output is then parsed to get the Review Phase, Defect status, Defect text, comment Author, comment text, and optionally file path and line number.

```
# Query Collaborator server for info
$pid = open2(*CCOLLAB_OUTPUT, *XSL_INPUT, "ccollab $ccollabOptions
admin review-xml $reviewId --xsl-file -");
print XSL_INPUT $xslt;
close(XSL_INPUT);
```

```
chomp(($spacer, $reviewPhase, $defectStatus, $defectText, $author,
$inputChat, $filePath, $lineNumber) = <CCOLLAB_OUTPUT>);
close(CCOLLAB_OUTPUT);
waitpid($pid,0);

#cleanup filePath and lineNumber
chop($filePath);
chop($lineNumber);

#debug
print "reviewPhase = $reviewPhase\n";
print "defectStatus = $defectStatus\n";
print "defectText = $defectText\n";
print "author = $author\n";
print "inputChat = $inputChat\n";
print "filePath = \"$filePath\"\n";
print "lineNumber = \"$lineNumber\"\n";
print "\n";
```

Script Step 7: Stop script if appropriate

The script runs in an infinite loop, but we do not really want it to go forever! The script exits if any of the following conditions are true:

- The Review finishes (no longer in inspection phase)
- The Defect is fixed or deleted (no longer open)
- The Defect text does not mention Eliza

```
# safety - quit if review is not in Inspection phase
die ("Review is no longer in Inspection phase") if ($reviewPhase !~ /
Inspection/);

# safety - quit if defect is not open
die ("Defect $defectId is no longer open") if ($defectStatus !~ /
open/);
```

```
# safety - quit if defect text does not mention "Eliza"
die ("Defect $defectId text does not mention Eliza") if
($defectText !~ /Eliza/);
```

Script Step 8: Ignore comment if appropriate

The script checks whether the comment is a "system" comment like "** Marked Read**" or if the last comment in the conversation was made by Eliza herself. In both of these cases the script skips back to the top of the loop.

```
# Eliza should not respond to system messages, like "** Marked Read
**" or "** Accepted **"
next if ($inputChat =~ /^\*\*/);

# Eliza should not talk to herself
next if ($author =~ /$CCOLLAB_USER/);
```

Script Step 9: Get response from ELIZA

The script passes the user's comment to the ELIZA program and gets back her response.

```
# Get response from Eliza
$outputChat = $eliza->transform($inputChat);

#debug
print "$outputChat\n";
print "\n";
```

Script Step 10: Upload Eliza's response to Collaborator

The script uploads Eliza's response to the conversation using the ccollab admin review comment create command.

```
# build command to upload Eliza's comment to Collaborator
$uploadCommand = "ccollab $ccollabOptions admin review comment create
$reviewId \"$outputChat\"";

# file path is optional (no file path for overall review chat)
```

```
if ($filePath) {
 $uploadCommand .= " --file \"$filePath\"";
}

# line number is optional (no line number for overall review chat or
overall file chat)
if ($lineNumber) {
 $uploadCommand .= " --line-number $lineNumber";
}

#debug
print "Running $uploadCommand\n";

# upload Eliza's comment to Collaborator
system("$uploadCommand");
```

Step 11: Test the script from the command-line

That is our whole script! Here it is in finished form: `eliza.pl` (opens in a new window). Do not forget to replace the constants in the script (url, user, password) with the appropriate values for your environment, then copy the script to an accessible place on your server. The script needs to be readable by the system user which is running the Collaborator server.

Before you configure the Collaborator server to invoke the script automatically, test it manually by opening a console on your server machine running it on the command-line. **Be sure to log in to your server machine as the user which is running the Collaborator server.** First create a Review and create a Defect in the Review with the word "Eliza" in it, then run the script.

For example, if you created Review 1234 with Defect D5678, then run the script with this command:

```
/usr/bin/perl /home/rpaterson/eliza.pl 1234 5678
```

You should see output similar to this:

```
reviewPhase = Inspection
defectStatus = open
defectText = Hello Eliza?
author = rpaterson
inputChat = Created Defect D11: Hello Eliza?
filePath = "SymlinkTest.java"
```

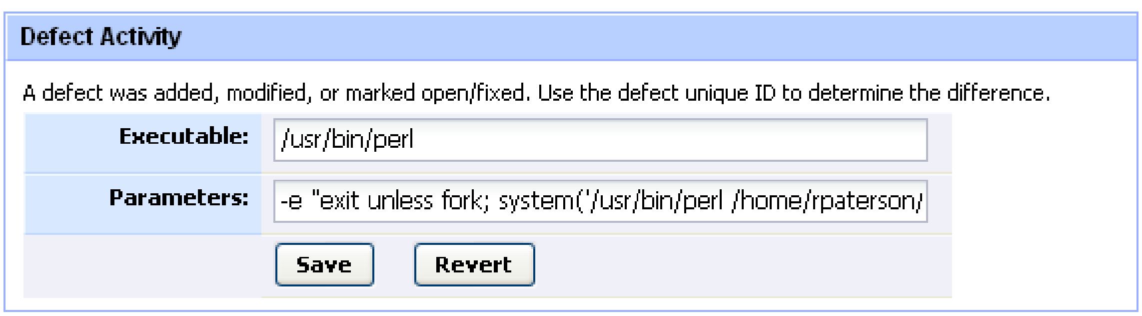
```
lineNumber = "73"


How do you do. Please state your problem.


Running ccollab --url http://localhost:8080 --user eliza --password
"eliza"
 --quiet --non-interactive admin review comment create 1234
"How do you do. Please state your problem". --file "SymlinkTest.java"
--line-number 73
```

The script will loop until you mark the Defect fixed or deleted, or finish the Review. When you refresh your browser in Collaborator you should see Eliza's comment.

Step 12: Invoke Script from a trigger

Make sure you have Step 11 [653] working before you move on to this step. The last thing we need to do is tell the Collaborator server to automatically invoke the `eliza.pl` script when a Defect is created. We do this with the Defect Activity trigger [208]. We will use these values:

```
Executable: /usr/bin/perl
Parameters: -e "exit unless fork; system('/usr/bin/perl /home/
rpaterson/eliza.pl ${review.id} ${defect.id} ');""
```



Defect Activity Trigger

Note that it is important to use the FULL PATH of both the Perl runtime and the `eliza.pl` script. Also note the quotes and spaces - they are important. The Review id [130], and Defect id [132] come from substitution variables [129]. The Perl snippet included in the Parameters field causes the script to be launched in a background process.

Finished

That is it! Now when anyone creates a Defect in Collaborator the script will be invoked. If the Defect has the word "Eliza" in it then the script will monitor that conversation for comments and have Eliza respond to them.

7.6 Web Services

Web services provide external programmatic interfaces to Collaborator server. You can use web services from different client applications to run various commands on a server.

Currently Collaborator offers two types of services: SOAP and JSON.

To exchange data with **SOAP web services**, you can use any programming language that has a SOAP client library. To learn how to use these services, see SOAP API Web Services 655.

To exchange data with **JSON web services**, you can use in any client application that can send and process HTTP requests. To learn how to use these services, see JSON API Web Services 658.

> We recommend using JSON services, because they are faster and resource friendly. SOAP services were introduced in version 7 and are now obsolete.

7.6.1 SOAP API Web Services

> SOAP web services were introduced in version 7 and are now obsolete. We recommend using JSON web services 658, because they are faster and resource friendly.

Using the service

The service resides on your Collaborator server at the following URL:

- **http(s)://*yourServer.com*/services/**

The service receives and sends data using Simple Object Access protocol (SOAP).

SOAP API Reference

Complete reference on all API objects and methods is available at:

- **http(s)://*yourServer.com*/javadoc/SOAP/**

Note that, while we use the standard Javadoc format to document the methods available in the API, as a SOAP service, it can still be used from multiple programming languages. The exact names of methods and types in your programming language will depend on how the programming language and SOAP library interpreted the WSDL.

If you have requests or suggestions regarding our web services, please contact support 29. We would love to hear your feedback.

Sample Code

The below code is written in Java, and uses the Apache CXF SOAP library to make a few sample calls to Collaborator. But you can use similar code with other SOAP libraries and in other programming languages. Please see the documentation for those libraries/languages for details.

First, we begin by running the wsdl2java utility, which contacts the server, requests the WSDL definition of the web services, and creates Java classes which mirror the functionality offered by the server:

```
wsdl2java -compile -client http://collab.aus.smartbear.com/services/
CodeCollaborator_7001?wsdl
```

Once those classes are generated and compiled, we can import them into our sample Java app and use them to talk to the web service:

```
import com.smartbear.ccollab.service.api.v7001.CodeCollaborator;
import com.smartbear.ccollab.service.api.v7001.ActionItem;
import org.apache.cxf.jaxws.JaxWsProxyFactoryBean;
import java.util.List;


/** Sample of getting Action Items from the server in Java with CXF:
 * Follows http://cxf.apache.org/docs/a-simple-jax-ws-service.html
 */
public class ShowActionItems
{
 public static void main(String[] args) throws Exception
 {

 // Request an implementation of the interface CodeCollaborator from
CXF:
```

```
JaxWsProxyFactoryBean factory = new JaxWsProxyFactoryBean();
factory.setServiceClass(CodeCollaborator.class) ;
// Point to your server, obviously. :)
factory.setAddress("http://collab.aus.smartbear.com/services/
CodeCollaborator_7001");
CodeCollaborator client = (CodeCollaborator) factory.create();

// A few commands can be run without any kind of authentication:
String version = client.getProductVersion();
System.out.println("Server version: " + version);

// But most commands require authentication and will fail if you
// are not authenticated:
try { client.getActionItems(); }
catch (Exception e) { System.out.println("Got exception w/o auth: "
+ e.toString()); }



// So, let's authenticate:
String username = args[0];
String password = args[1];

// Collaborator uses ticket-based authentication so that you do not
have
// to send username/pass w/ every request.
// More savvy clients should SAVE the login ticket (not the
password)
// and re-use it across invocations .
// Here, we just call getLoginTicket() every time ShowActionItems is
run.
String ticket = client.getLoginTicket(username, password);
if (ticket == null)
```

```
{
System.out.println("Username/password incorrect".);
return;
}

// Methods that require authentication expect to find username/
ticket in HTTP basic auth.
// We will create a new client that sends those with each request:
factory.setUsername(username);
factory.setPassword(ticket); // (Yep, ticket! Not password.)
client = (CodeCollaborator) factory.create();


// NOW our call to the method that requires authentication will
succeed:
List<ActionItem> items = client.getActionItems();
for (ActionItem item: items)
{
System.out.println(item.getText());
}
}
}
```

7.6.2 JSON API Web Services

This section describes the JSON API version of the web services. Using web services you can easily integrate your application with Collaborator.

The benefit of JSON API version of the services is that you can exchange data with almost any client application. (Unlike SOAP API that requires special libraries for implementation.)

The section covers the following questions:

Using JSON API Web Service 659

Gives general overview of the web service API and demonstrates how to use it from Web Client and from client applications.

JSON Syntax and Data Formats 662

Describes the syntax of request and response objects.

Authentication 664

Explains different variants of logging into a server.

Error Handling 666

Tells about server reaction on errors and describes the format of error list.

JSON API Reference 667

Gives a link to the complete reference on all objects and commands of JSON API and describes how to work with this reference.

How To 668

Describes how to perform typical tasks using JSON API.

7.6.2.1 Using JSON API Web Service

JSON API lets you integrate any external tool with Collaborator. To do this, you need to exchange data between your application and your Collaborator server. To use the web service you need to send requests to web service endpoint URL and receive responses from it. The service receives and sends data in JavaScript Object Notation (JSON). For detailed information on JavaScript Object Notation, see JSON Syntax and Data Formats 662.

Endpoint URL

The web service resides on your Collaborator server at the following endpoint URL:

- **`http(s)://`*`yourServer.com`*`/services/json/v1`**

Using JSON API Web Client

To get acquainted with service requests and responses, you can open the endpoint URL in a web browser. It will display a simple form, where you can write JSON commands and get service responses within the same page.

Let us try to call some JSON commands manually:

1. Open a web browser and navigate to JSON API web service URL:

- **http(s)://*yourServer.com*/services/json/v1**

2. Enter the following command into the input field:

```
[
 {"command" : "ServerInfoService.getVersion"},
 {"command" : "Examples.echo","args" : {"echo" : "Some text."}}
]
```

3. Press "Submit Query" button.

After the page is reloaded you will get the response from the service with the results of your commands:

```
[ {
  "result" : {
       "version" : "9.0.9000"
  }
}, {
  "result" : {
       "echo" : "Some text."
  }
} ]
```

Later on you can use JSON API web interface to try and debug JSON commands manually before sending them programmatically from your client application.

Using JSON API From Client Applications

The client and server exchange data in the JSON format via HTTP(s) requests and responses. Client application must send POST requests to JSON web service endpoint URL. The requests should contain a JSON object in their body or in the POST variable named "json". For multipart requests the JSON object must be either in a "json" string part or in a "json" query parameter.

A JSON object in a request specifies a list of commands to be executed and arguments for these commands.

Here is an example of a POST request:

```
POST http://yourServer.com/services/json/v1 HTTP/1.1
User-Agent: JSON API
Content-Type: application/json;charset=utf-8
```

```
Host: yourServer.com
Content-Length: 138

[
 {"command" : "ServerInfoService.getVersion"},
 {"command" : "Examples.echo","args" : {"echo" : "Some text."}}
]
```

A multipart variant of the same request will be:

```
POST http://yourServer.com/services/json/v1 HTTP/1.1
Content-Type: multipart/form-data; boundary=-------------------------
acebdf13572468
User-Agent: JSON API
Host: yourServer.com
Content-Length: 265

---------------------------acebdf13572468
Content-Disposition: form-data; name="json"
Content-type: text/plain;charset=utf-8

[
 {"command" : "ServerInfoService.getVersion"},
 {"command" : "Examples.echo","args" : {"echo" : "Some text."}}
]
---------------------------acebdf13572468--
```

On receiving the request, the server processes each command in order and builds up a response. The JSON object in response contains a list of results corresponding to each of the command that you submitted. Each result consists of either the return values for that command, or a list of errors returned by the command. See Error Handling 666.

The response to the any of the requests above will be:

```
HTTP/1.1 200 OK
Server: Apache-Coyote/1.1
Content-Type: application/json;charset=utf-8
```

```
Content-Length: 68
Date: Thu, 27 Nov 2014 10:55:25 GMT

[{"result":{"version":"9.0.9000"}},{"result":{"echo":"Some text."}}]
```

In further examples of this section, we will omit request and response headers (when their content is not important) and give only the examples of JSON parts.

7.6.2.2 JSON Syntax and Data Formats

All data-interchange with the service is performed in JavaScript Object Notation (JSON).

JSON uses two data structures: a collection of name/value pairs and an ordered list of values. JSON engine ignores whitespace, tabulation, and newline characters, however you can use them to improve readability.

JSON Objects In Requests

A JSON object that is sent in web service requests (**request object**) specifies a list of commands to be executed and arguments for these commands.

The simplest variant of a JSON request object is:

```
[
 {"command" : "MethodName1"}
]
```

The `"command" : "MethodName1"` pair defines which command a server should run. The method name is specified using dot notation. For example "ServerInfoService.getVersion", or "Examples.checkLoggedIn".

If a method needs some arguments, then you will need to add the "args" : { } pair which specifies a list of arguments:

```
[
 {"command" : "MethodName1",
       "args" :
{"argumentName1":"value1","argumentName2":"value2",..."argumentNameN"
:"valueN"}
 }
]
```

The `"argumentName" : "value"` pairs define argument names and their values. A value can be a string in double quotes, or a number, or true or false or null, or an object or an array. When a method needs more then one argument, the `"argumentName" : "value"` pairs are separated by commas. Argument pairs can be specified in any order.

You can create batch commands, that is, pass several commands in one JSON request object. Different commands should be separated by commas. For example:

```
[
 {"command" : "ServerInfoService.getVersion"
 },
 {"command" : "Examples.echo",
       "args" : {"echo" : "Some text."}
 },
 {"command" : "SessionService.setMetadata",
       "args" : {
             "clientName" : "HTML JSON API Tester",
             "expectedServerVersion" : "9.0.9000"
       }
 }
]
```

JSON Objects In Responses

A JSON object that is received in web service responses (**response object**) contains a list of results corresponding to each of the command that was submitted. Each result consists of either the "result" : { } pair that lists the command return values (if any), or the "errors" : [ ] pair that lists the errors returned by the command. (See Error Handling 666 for details).

Results for several commands that were passed in a single JSON request object are returned as a comma separated list. For example the response object for the previous request will be:

```
[
 { "result" : { "version" : "9.0.9000" } },
 { "result" : { "echo" : "Some text." } },
 { "result" : { } }
]
```

Date and Time Format

To specify date and time values, use strings having the format "YYYY-MM-DDTHH:mm:ssZ". For example: "2008-01-01T22:50:00Z" or "2008-01-01T16:50:00-06:00".

The table below describes the parts of this format.

YYYY	Year
MM	Month
DD	Day of the month
T	Specifies the start of a time notation.
HH	Hours
mm	Minutes
ss	Seconds
Z	Time zone. The value in this position can be one of the following: Z - indicates UTC time +hh:mm - indicates that the input time is the specified offset after UTC time. -hh:mm - indicates that the input time is the absolute value of the specified offset before UTC time.

7.6.2.3 Authentication

For the majority of commands, you will need to be logged in to the server. Therefore you may need to pass your authentication information along with the request.

Important: All data (including user credentials) that is sent via HTTP protocol is sent in plain text format. We recommend using HTTPS protocol for secure client/server communication. Read Configuring HTTPS 111 to learn how to enable it.

General Information

JSON API web service uses session authentication. Authentication data are valid only while executing batch commands were sent in the same request. Authentication takes place inside of the JSON request. No special cookie handling is required.

To execute the commands from another request you will need to pass authentication information again.

Tip: To verify if you are logged in for the current batch of commands, call the `Examples.checkLoggedIn` command.

The preferred way to authenticate is to send a user login and a special alpha-numeric identifier called **login ticket.** The benefit of login ticket is that you do not have to specify your password explicitly. Using login tickets works faster if a server uses LDAP authentication 102. Besides, the users will have an option of invalidating login tickets 160 if they want to make very sure they are logged out of the system everywhere.

Generating Login Tickets

To perform first-time authentication and generate a login ticket, use the `SessionService.getLoginTicket` command. It accepts user login and password as input arguments and returns a login ticket which you can use in your subsequent requests.

The following request logs in as "`jsmith`" and obtains a login ticket for further usage:

```
[
 {"command" : "Examples.checkLoggedIn"},
 {"command" : "SessionService.getLoginTicket",
       "args":{"login":"jsmith","password":"qwerty12345"}},
 {"command" : "Examples.checkLoggedIn"}
]
```

The server will send the following response:

```
[
 { "result" : { "loggedIn" : false } },
```

```
 { "result" : { "loginTicket" :
"0123456789abcdef0123456789abcdef" } },
 { "result" : { "loggedIn" : true } }
]
```

Authenticating With Login and Login Ticket

To authenticate using a login and login ticket use the `SessionService.authenticate` method. It accepts user login and login ticket as input arguments.

The following request logs in using a login ticket:

```
[
 {"command" : "Examples.checkLoggedIn"},
 {"command" : "SessionService.authenticate",
       "args":
{"login":"jsmith","ticket":"0123456789abcdef0123456789abcdef"}},
 {"command" : "Examples.checkLoggedIn"}
]
```

The server response will be:

```
[
 { "result" : { "loggedIn" : false } },
 { "result" : {} },
 { "result" : { "loggedIn" : true } }
]
```

7.6.2.4 Error Handling

Responses form the JSON API web service contain a list of results corresponding to each of the command that was submitted. Each result may contain either a "result" : { } pair that lists the command return values (if any), or the "errors" : [ ] pair that lists the errors returned by the command.

If an error occurs during processing a request having multiple commands, the service stops execution of further commands and sends a response object with the results of preceding commands and the error description for the current command.

The Format of Error Descriptions

The returned "errors" : [ ] pair holds an array with one or more error descriptions. Each error description has the following fields:

1. "code" - Short error code, which you can use for error handling.
2. "message" - More detailed description of the error. This message can be displayed to the end-users.
3. "data" - Any extra data that is relevant for the particular error. This is an optional field and it may be omitted.

Sample Error Descriptions

Below are several examples of error descriptions:

- Unneeded parenthesis in command name:

```
[ { "errors" : [
       { "code" : "NoSuchCommand",
       "message" : "The command 'ServerInfoService.getVersion()' does
not exist." } ]
} ]
```

- Incorrect authentication:

```
[ { "errors" : [
        { "code" : "AuthenticationFailed",
       "message" : "Could not authenticate user 'jsmith' using
password provided." } ]
} ]
```

7.6.2.5 JSON API Reference

Complete reference on all API objects and methods is available at the following URL:

- **http(s)://yourServer.com/javadoc/jsonapi/**

The reference lists all the commands that are available to JSON web service and describes the fields of the request and response objects.

API reference documentation uses Javadoc notation to describe the objects, methods and interfaces. In order to use the command, object or field in your JSON requests, you need to convert the Javadoc notation to Java Script Object Notation.

To determine a name of the desired JSON field, remove the "get" prefix from the method name and put the first letter to lower case.

For example, a Javadoc description for the `LoginTicketRequest` interface says that it has the `getLogin` and `getPassword` methods.

A JSON object that corresponds to this interface will look like this:

```
{"login": "jsmith", "password": "js123"}
```

7.6.2.6 How To

This topic demonstrates how to perform some typical tasks via JSON API Web services:

Manage Reviews and Review Participants 669

1. List reviews assigned to a specified user
2. Create new review
3. Add/change participants of a review

Upload Review Materials 672

1. Add files through a /content upload servlet
2. Add files with a multipart HTTP requests

Manage Users and User Groups 677

1. Create new user
2. Add user to group

In order to perform all these tasks you need to be logged in to Collaborator server. Therefore in each sample below we will first call the `SessionService.authenticate` command to provide user credentials. See Authentication 664 topic for details.

7.6.2.6.1 Manage Reviews and Review Participants

To manage reviews and review participants use the `ReviewService` interface. It provides methods for creating and editing reviews, adding, updating, removing and poking participants, adding review materials, changing review phases, managing comments and conversations and so on.

1. List reviews assigned to a specified user 669
2. Create new review 670
3. Add/change participants of a review 671

List reviews assigned to a specified user

To get a list of reviews we will use the `UserService.getActionItems` command which returns a list of incoming and outgoing action items 241 a user is included in.

Request:


```
[       {"command" : "SessionService.authenticate",
        "args":
{"login":"jsmith","ticket":"0123456789abcdef0123456789abcdef"}},
        {"command" : "UserService.getActionItems"}
]
```


Response example:


```
[       { "result" : { } },
 { "result" : { "actionItems" : [
  { "nextActionText" : "Waiting for comments", "text" : "(No action
required) Waiting for comments: Review #10254: \"Fix for case 34534
\"" },
  { "nextActionText" : "Finish creating", "text" : "Finish creating:
Review #10435: \"Documentation review\"" },
  { "nextActionText" : "Waiting for Defect rework", "text" : "(No
action required) Waiting for Defect rework: Review #10188: \"Message
Templates\"" }
  ] } }
 ]
```

Create new review

To create a review use the `ReviewService.createReview` command. It accepts a number of arguments that define the creator (`creator`), review title (`title`), deadline date and time (`deadline`), specify who can access the review (`accessPolicy`) and other parameters. All parameters are optional.

Deadline date and time should be specified in a "YYYY-MM-DDTHH:mm:ssZ" format described in JSON Syntax and Data Formats 662. The `accessPolicy` argument may have one of the following constants: `ANYONE, GROUP, PARTICIPANTS, GROUP_AND_PARTICIPANTS, GROUP_OR_PARTICIPANTS`.

The request below creates a new review:

```
[      {"command" : "SessionService.authenticate",
       "args":
{"login":"jsmith","ticket":"0123456789abcdef0123456789abcdef"}},
{"command" : "ReviewService.createReview",
       "args" :{
 "creator" : "jsmith",
 "title" : "Check JDK version",
 "deadline" : "2015-02-01T09:00:00Z",
 "accessPolicy" : "PARTICIPANTS",
 "customFields": [
       {"name":"Overview", "value":["Please check the JDK version
that we use."]},
       {"name":"Incident ID", "value":["1321654"]}
  ]
 }
}]
```

On success the command returns an identifier of a newly created review.

Response example:

```
[ { "result" : { } },
 { "result" : { "reviewId" : 10463 } }
]
```

NOTE: A newly created review is not yet ready for working on it. To processed, we need to assign review participants 671 and add review materials 672.

Add/change participants of a review

Web service API offers two commands for assigning participants of the review: `ReviewService.setAssignments` and `ReviewService.updateAssignments`. The `setAssignments` command clears the list of existing review participants (if any) and assigns participants and roles anew. The `updateAssignments` command adds new participants and changes the roles of existing participants.

Both commands have the same set of arguments:

`reviewId` - the ID of the review whose participants we want to add or modify.

`assignments` - an array that defines review participants and their roles.

Each element of the array must be either a `{"user", "role"}` object or a `{"poolGuid", "role"}` object. In the first case the object will denote an individual participant and his role, while in the second it will denote a group of users (review pool 680) that can partake in a review and the role for this group.

The `"role"` argument can be one of the following constants: `AUTHOR`, `MODERATOR`, `OBSERVER`, `READER`, `REVIEWER`, `TESTER`.

```
[      {"command" : "SessionService.authenticate",
       "args":
{"login":"jsmith","ticket":"0123456789abcdef0123456789abcdef"}},
 {"command" : "ReviewService.updateAssignments",
       "args":{"reviewId":"10463",
       "assignments": [
             {"user":"jsmith", "role":"AUTHOR"},
             {"user":"mike", "role":"REVIEWER"},
             {"poolGuid":"1234567890", "role":"OBSERVER"}
       ]}
 }
]
```

7.6.2.6.2 Upload Review Materials

To upload review materials use the the `ReviewService.addFiles` command. This command is rather complex and allows different variants of adding materials to a review. The files may reside on your local computer or be stored in a source code management system. Moreover, the command can add files to an existing review or to create a new review.

You will describe the following use-cases:

1. Adding local files through a /content upload servlet 673
2. Adding local files with a multipart HTTP requests 675

Depending on the particular use-case, the syntax of the `addFiles` command and the number of its arguments will vary. For example, to add materials to an existing review you need to specify the "`reviewID`" argument. If this argument is omitted, the `addFiles` command will create a new review with the attached files.

On success the `addFiles` command returns an ID of the review where the files were added.

Add files to a review

To add files that are stored on a local computer you need to archive them beforehand. The archived files must follow special conventions described bellow.

Once the archive is created you can send it to a Collaborator server and attach files to a review. There are two ways to do this:

- Use the /contentupload servlet to upload the archive and the subsequent JSON request to attach files.
- Send a single multipart request containing both "json" commands and the archive.

Preparing files for upload

Prior to uploading files to the Collaborator server you need to prepare them as follows:

1. Copy the needed files to a temporary folder.
2. Rename each file to its MD5 checksum. In lower-case letters, without any extension. Suppose that we want to upload a file named "listobject.h" having an MD5 checksum of 198575c00a884ae27968e2fcf7d0a26d. Then the file must be renamed to "198575c00a884ae27968e2fcf7d0a26d".
3. Pack the files into a Zip archive. The name of the resulting Zip archive is not important.

Uploading files via /contentupload servlet

Every Collaborator server has a servlet for uploading data to reviews. It resides at the following URL: `yourServer.com/contentupload`

The servlet accepts multipart HTTP requests that contain Zip archives with files. The file upload request must conform to RFC 1867: Form-based File Upload in HTML.

The servlet requires authentication parameters in the request before processing file uploads. Authentication can be provided with the following methods:

- Header: Authorization header that conforms to the Basic Authentication Scheme from RFC 2617.

```
Authorization: Basic bXl1c2VyOm15cGFzcw==
```

- Header cookies: CodeCollaboratorLogin and CodeCollaboratorTicketId. (To obtain a valid `CodeCollaboratorTicketId` you need to login via web-interface.)

```
Cookie: CodeCollaboratorLogin=jsmith;
CodeCollaboratorTicketId=0123456789abcdef0123456789;
```

If the upload is successful, the servlet will respond with a 200 (OK) status.

Below is an example of multipart HTTP request to the /contentupload servlet:

```
POST http://yourServer.com/contentupload HTTP/1.1
Content-Type: multipart/form-data; boundary=-------------------------
acebdf13572468
User-Agent: JSON API
Host: yourServer.com/
Cookie: CodeCollaboratorLogin=jsmith;
CodeCollaboratorTicketId=0123456789abcdef0123456789;
Content-Length: 1394

--------------------------acebdf13572468
Content-Disposition: form-data; name="file"; filename="localFiles.
zip"
```

```
Content-Type: application/x-zip-compressed


<Binary data of the localFiles.zip file>
---------------------------acebdf13572468--
```

Once the archive is uploaded successfully, the server unpacks it. Later on the you need to send a command to add an already uploaded files to reviews. To add files that were uploaded beforehand, use the following syntax of the `addFiles` command:

```
{"command" : "ReviewService.addFiles",
 "args" : {
 "reviewId": "<Id>", OPTIONAL
 "changelists" : [{ REQUIRED
      "commitInfo" : {<commitInfo>}, OPTIONAL
      "versions" : [ { REQUIRED
            "md5" : "<md5Checksum>", REQUIRED
            "localPath" : "<LocalPathToFile>", OPTIONAL
            "scmPath" : "<PathToFileInSCM>", OPTIONAL
            "action" : "<ActionType>", OPTIONAL
            "source" : "<SourceType>", OPTIONAL
            "baseVersion" : OPTIONAL
            }, {<version2>},..., {<versionN>}]
      }, {<changelist2>},..., {<changelistN>}]
 }
```

When adding already uploaded files, we should specify their MD5 checksums (`md5`) and either their local paths (`localPath`) or their paths in SCM (`scmPath`). All other arguments are optional. Notice that archive name is not specified, as the archive has already been unpacked.

The example below, attaches an uploaded file to the specified review:

```
[{"command" : "SessionService.authenticate",
      "args" : {"login" : "jsmith","ticket" :
"0123456789abcdef0123456789abcdef"}},
 {"command" : "ReviewService.addFiles",
 "args" : {
```

```
 "reviewId" : "10463",
 "changelists" : [{
        "versions" : [ { "md5" : "198575c00a884ae27968e2fcf7d0a26d",
       "localPath" : "c:\\work\\collab\\files\\listobject.h",
        "source" : "LOCAL" } ]
        }]
 }
}]
```

Uploading files with a multipart request

In this approach both the JSON commands and one or more archives to be attached are sent in the same multipart request.

The JSON request must be sent in a string part named "json" or as part of the query string as "json" parameter. The attached files must be sent in parts whose names coincides with the archive names. See [RFC 1341: The Multipart Content-Type]() for detailed description of multipart requests.

To add files that are sent within the same HTTP request, use the following syntax of the `addFiles` command:

```
 {"command" : "ReviewService.addFiles",
  "args" : {
  "reviewId": "<Id>", OPTIONAL
  "zipName" : "<zipNameForCommand>", OPTIONAL
  "changelists" : [{ REQUIRED
       "commitInfo" : {<commitInfo>}, OPTIONAL
       "versions" : [ { REQUIRED
             "md5" : "<md5Checksum>", REQUIRED
             "zipName" : "<zipNameForChangelist>", OPTIONAL
             "localPath" : "<LocalPathToFile>", OPTIONAL
             "scmPath" : "<PathToFileInSCM>", OPTIONAL
             "action" : "<ActionType>", OPTIONAL
             "source" : "<SourceType>", OPTIONAL
             "baseVersion" : OPTIONAL
             }, {<version2>},..., {<versionN>}]
       }, {<changelist2>},..., {<changelistN>}]
```

```
  }
```

When adding files with a multipart request, we should specify the names of archive (`zipName`), MD5 checksums of individual files (`md5`) and either their local paths (`localPath`) or their paths in SCM (`scmPath`). The archive name (`zipName`) can be given at the command level or per changelist. The `zipName` arguments are interchangeable, however at least one of them must be specified. All other arguments are optional.

As mentioned above, the attached files must be sent in parts whose names matches the values of `zipName` arguments of the `AddFiles` command:

```
--boundary separator
Content-Disposition: form-data; name="<zipName>";
filename="<zipName>"
Content-Type: application/x-zip-compressed

<Binary data of the archive file>
```

The overall example of a multipart request may look like this:

```
POST http://yourServer.com/services/json/v1 HTTP/1.1
Content-Type: multipart/form-data; boundary=------------------------
acebdf13572468
User-Agent: JSON API
Host: yourServer.com
Content-Length: 2041

---------------------------acebdf13572468
Content-Disposition: form-data; name="json"
Content-Type: application/json;charset=utf-8

[{"command" : "SessionService.authenticate",
       "args" : {"login" : "jsmith","ticket" :
"0123456789abcdef0123456789abcdef"}},
 {"command" : "ReviewService.addFiles",
 "args" : {
 "reviewId" : "10463",
```

```
 "changelists" : [{
 "zipName" : "localFiles.zip",
 "versions" : [ { "md5" : "198575c00a884ae27968e2fcf7d0a26d",
"localPath" : "c:\\work\\collab\\files\\listobject.h",
 "source" : "LOCAL" } ]
 }]
 }
}]
---------------------------acebdf13572468
Content-Disposition: form-data; name="localFiles.zip"; filename="
localFiles.zip"
Content-Type: application/x-zip-compressed

<Binary data of the localFiles.zip file>
---------------------------acebdf13572468--
```


7.6.2.6.3 Manage Users and User Groups

To perform administrative operations over the users of Collaborator server use the `UserService` interface. It has methods for creating, editing and deleting users and user subscriptions.

To perform administrative operations over user groups use the `GroupService` interface. It has methods for creating, editing and deleting groups, adding subgroups, add users to groups, excluding users from groups and so forth.

To call any of the `UserService` or `GroupService` commands the current user (that is a user who requests to run the command) **must have administrator privileges** on the Collaborator server.

Create new user

To create new user, we will call the `UserService.create` command. It has two obligatory parameters: `login` and `password.` Additionally you can enter the users full name (`fullName`), phone number (`phone`), email (`email`) and specify whether it will be an active user (`enabled`) and whether the user will have administrative privileges (`admin`).

```
[      {"command" : "SessionService.authenticate",
```

```
      "args":
{"login":"jsmith","ticket":"0123456789abcdef0123456789abcdef"}},
 {"command" : "UserService.create", "args" : {
      "login" : "alice",
      "password" : "alice",
      "fullName" : "alice alice",
      "phone" : "345345345",
      "email" : "alice@alice.com",
      "enabled" : "true",
      "admin" : "false"}
 }
]
```

Add user to a group

To add a user to some existing group, we will call the `GroupService.addUser` command. The command has two parameters: a login of a user to be added (`memberLogin`) and group identifier 173 (`guid`).

```
[      {"command" : "SessionService.authenticate",
       "args":
{"login":"jsmith","ticket":"0123456789abcdef0123456789abcdef"}},
 { "command" : "GroupService.addUser",
       "args" : {
       "memberLogin" : "alice",
       "guid" : "549ce60e-ea35-46fb-9e39-54529a049abf" }
 }
]
```

8 Techniques & Best Practices

At SmartBear, we are experts in all kinds of peer review.

In this part of the manual, we cover techniques and best practices in code review and in Collaborator.

Topics covered include:

8.1 Invite A Colleague

Overview

A person currently cannot be added as a participant in a Review until they have a Collaborator user account. This is created the first time they login (even with LDAP integration enabled). The "Invite a colleague" feature makes it possible to invite someone to a Review even if they do not currently have a Collaborator user account, though they will have to create one.

Admin Setting

A setting under Admin -> General -> Access Restrictions 153 allows administrators to specify a regular expression that must match against email addresses being invited to Review. The regular expression must match the entire email address, by default it is ".*" which should match all email addresses entered. The administrator can narrow the available addresses by modifying the regular expression.

For example: ".*@mycompany.com" or ".*@mycompany.com|.*@contractor.com". If an administrator want to disable this feature entirely they can simply enter "This feature is disabled"., which will not match any email address.

Using the Feature

When the feature is enabled, each comment added in the Web UI (in any phase other than the Planning phase) will be evaluated to see if it includes e-mail addresses that matches the regular expression. If so, the user is presented with a dialog stating:

"Your comment mentioned an email address. Would you like to invite [list of email addresses in comment] to this Review?"

If the user selects "Yes", their default e-mail client will be opened with a standard invitation that they can edit and send.

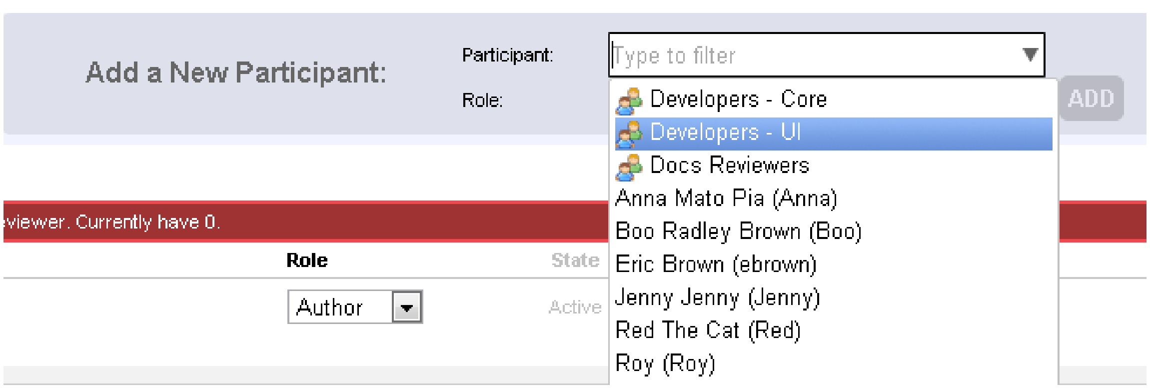
If the user selects "No", the email address is ignored.

NOTE: In addition to the regular expression mechanism for configuring and disabling this feature, the user may be presented with different dialogues depending on other access control specifications. For example, if participant-based access restrictions are in place, the user will be notified that the invited users will not be able to access this review. If group-based access restrictions are in place, the system cannot know whether the invited individual will be able to access the review, or not. In this case, the user is notified that the invited person may not be able to access the review.

8.2 Review Pools

Using Review Pools

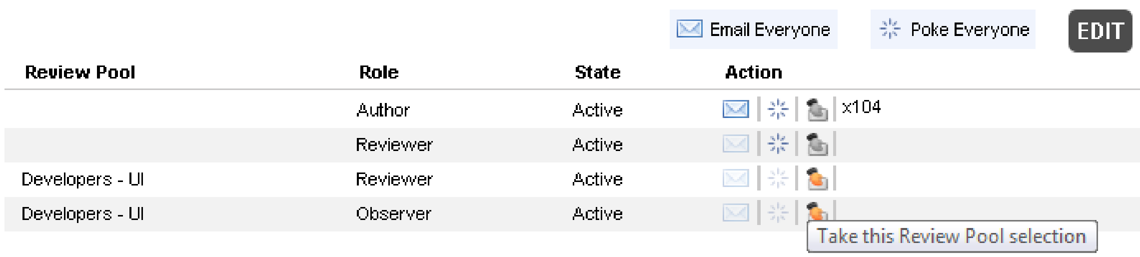
Review Pools allow an Author to select a Group as a participant, for a given Role, in a review. Groups which have been configured for use as Review Pools 182 will be displayed in the New Participant dropdown on the Review Summary page.



Any number of Review Pool selections can be made, each designating a Role of the participants from each group. Selections can be made only during the Planning and Annotating phases. When Planning is complete, the Author moves the review to the Annotating phase to notify Review Pool participants there is a Review for which they may designate themselves as the participant. All members of the selected Review Pool group will receive notifications that they are invited to participant. Email notifications are sent, if configured. Note that Begin Review will also start the Annotating phase if there are pending Review Pool assignments.

Taking a Review Pool Selection

For each Review Pool assignment, the Participants section of the Review Summary page displays a Take button, which is enabled for eligible participants (members of the Review Pool group). The first eligible participant to go the the Review Summary page and select the Take button becomes a participant with the given Role in the Review.



The Review remains in Annotating until all pending Review Pool assignments are taken - the Inspection is not allowed to begin until then.

A review in the Annotating phase with pending Review Pool assignments will automatically begin the Inspection phase once the last review pool selection is made, as long as other participant constraints have been met.

Configuring For Review Pools

In order to enable Review Pools, a Collaborator Administrator will need to configure Groups to be used for Review Pools 182.

8.3 Multiple Change Changelists

A changelist is a generic SCM concept representing a set of changes in version control. Changelists for some SCM systems like Perforce and Subversion are atomic entities, representing a single unit of changes that occur at the same time. Other SCM systems have changelists that accumulate changes to file versions over time, allowing multiple changes (versions) of any given file within the same changelist. Some examples of this latter type of changelist are ClearCase

Activities and PTC Change Packages.

For these multiple-version changelists, the changelist represents an accumulation of changes to each of the source files in it. In most cases, in the context of a review or in thinking about what the changelist represents, users are interested in the difference represented by the accumulation of changes in the changelist, that is, for each source file the difference between the latest version occurring in the changelist and the version content that existed before the first change in the changelist. Collaborator calculates differences based on this, when a multiple-version changelist is uploaded to a review.

This can be confusing in some circumstances. If an added file is part of the changelist, and there are subsequent changes to that file in the changelist, then uploading this changelist for review will result in the latest change to that file appearing as an add in the changelist. In other words, it will have no predecessor. In an SCM system where added files are always version 1.1, a review of a changelist having version 1.5 of a file with no predecessor is incongruent with the versioning of the SCM system. Yet this is exactly what the accumulation of changes to that file in the changelist represent - a sum total of changes that did not exist before the changelist.

While it might be possible to find and upload all versions of each file that occur in a multiple-version changelist and make them available for comparison in Collaborator, in our experience this makes for an unnecessarily complicated review - this is less of a peer review feature and more of a version history browser feature. If a review is to be conducted on successive revisions to a file in this way, the review should be conducted at each iteration of the changelist. Uploading the same changelist to the same review as each successive set of changes is made as part of the rework step of the review will result in all of the versions of each file being available in the it, and each version being available for inspection by the other review participants.

8.4 Optimal Review Size

We sometimes get asked by customers how large their reviews should be. It is a difficult question to answer because it depends a lot on the review culture of the team and the nature of the content being reviewed. Opinions vary widely on what the optimal size should be.

Creating many tiny reviews is not optimal because of there is some static overhead for each review (setting up participants and metadata, and so forth). There is also a mental penalty for "context switching" when a reviewer changes their attention between two different reviews.

Creating a few giant reviews is not optimal because there is a limited amount of time a reviewer can truly concentrate on a review. Our studies have shown the maximum time to be about 90 minutes. If the review is too large to process in 90 minutes then the review is less effective - defects will be missed and time will be wasted as the reviewer's attention wanders.

Based on our research we recommend the following Optimal Size for reviews, with the understanding that one size does not fit all:

- 3 participants
- 15 files, 3 versions each (3 changelists)

- 2 overall defects, 5 file defects
- 30 file conversations
- 8 comments per conversation

Collaborator is designed to give the best experience at this size. However we do try to support a wide range of sizes so that customers can do what works best for them. Note though that reviews that are more than an order of magnitude larger than this Optimal Size will start to perform sluggishly.

See also

- Best practices for peer code review - a web site article that describes a successful peer review strategy.

8.5 Metrics: Definitions

Collaborator collects a variety of raw metrics automatically. This section defines these metrics; a later section 685 discusses what these metrics can tell us.

Lines of Code

The most obvious raw metric is "number of lines of source code". This is "lines" in a text-file context. Often this is abbreviated "LOC".

Collaborator does not distinguish between different kinds of lines. For example, it does not separately track source lines versus comment lines versus whitespace lines.

For code review metrics, often you usually want to use general lines of code and not break it down by type. Often the code comments are just as much a part of the review as the code itself -- check for consistency and ensuring that other developers will be able to understand what is happening and why.

Collaborator calculates LOC metrics as the lines that are different than the original version of the SCM controlled files. In this context, LOC metrics do not make sense for files that are not managed by a SCM or for non-source files (for example, Office documents).

The uploaded lines value from the review details report counts all lines on the source files, including unchanged lines, while the changed lines value only counts lines that are different than the original version of the source file.

The LOC metrics displayed on the Review Summary page include added lines, changed lines and deleted lines. These numbers are calculated comparing the latest uploaded version of each SCM managed file against the original version of that file. If there is more than one version of a file in the review, only the metrics for the latest upload will be displayed in the Overlay view in the materials section. On the other hand, if the Separate view is selected in the materials section, the LOC metrics of each individual version against its base version will be displayed.

Time in Review

How much time (person-hours) did each person spend doing the review? Collaborator computes this automatically. This raw metric is useful in several other contexts, usually when compared to the amount of file content reviewed.

Developers (rightly) hate using stopwatches to track their activity, but how can Collaborator -- a web server -- automatically compute this number properly?

Our technique for accurately computing person-hours came from an empirical study we did at a mid-sized customer site. The goal was to create a heuristic for predicting on-task person-hours from detailed web logs alone.

We gave all review authors and reviewers physical stop-watches and had them carefully time their use of the tool. Start the stopwatch when they began a review, pause if they break for any reason -- email, bathroom, instant messenger. The times were recorded with each review and brought together in a spreadsheet.

At the same time, we collected detailed logs of web server activity. Who accessed which pages, when, and so forth. Log data could easily be correlated with reviews and people so we could "line up" this amalgamation of server data with the empirical stopwatch times.

Then we sat down to see if we could make a heuristic. We determined two interesting things:

First, a formula did appear. It goes along these lines: If a person hits a web page, then 7 seconds later hits another page, it is clear that the person was on-task on the review for the whole 7 seconds. If a person hits a web page, then 4 hours later hits another page, it is clear that the person was not doing the review for the vast majority of that time. By playing with various threshold values for timings, we created a formula that worked very well -- error on the order of 15%.

Second, it turns out that humans are awful at collecting timing metrics. The stopwatch numbers were all over the map. People constantly forgot to start them and to stop them. Then they would make up numbers that "felt right," but it was clear upon close inspection that their guesses were wrong. Some people intentionally submitted different numbers, thinking this would make them look good (that is, "Look how fast I am at reviewing!").

So the bottom line is: Our automated technique is not only accurate, it is more accurate than actually having reviewers use stopwatches. The intrinsic error of the prediction heuristic is less than the error humans introduce when asked to do this themselves.

Total Person-Time

The total of all recorded time that all the users were looking at review. **Total Person-Time** is an aggregate value for all users taking part in a review, while **Time in Review** is counted for each separate user.

Reviewer Time and **Author Time** are subsets of Total Person-Time, limited to the time that was spent in the reviewer and author roles, respectively.

Defect Count

How many defects did we find during this review? Because reviewers explicitly create defects during reviews, it is easy for the server to maintain a count of how many defects were found.

Furthermore, the system administrator can establish any number of custom fields 190 for each defect, usually in the form of a drop-down list. This can be used to subdivide defects by severity, type, phase-injected, and so on.

File Count

How many files did we review? Usually the LOC metric 683 is a better measure of "how much did we review," but sometimes having both LOC and number of files is helpful together.

For example, a review of 100 files, each with a one-line change, is quite different from a review of one file with 100 lines changed. In the former case, this might be a relatively simple refactoring; with tool support, this might require only a brief scan by a human. In the latter case, several methods might have been added or rewritten; this would require much more attention from a reviewer.

Wall-Clock Time, Review Wall-Clock Duration

How much time has passed since the review was created and till the review was completed (or now, if the review is still in progress). This is a useful metric if you want to make sure all reviews are completed in a timely manner.

8.6 Metrics: Analysis

It is fine to collect metrics, but what do they tell us? It is tempting to apply them in many different contexts, but when are metrics telling us something and when are we reading too much into the numbers?

Defect Density

Defect Density is computed by: (number of defects) / (1000 lines of code).

This is the number of defects found, normalized to a unit amount of code. 1000 lines of code, or "kLOC" is often used as a standard base measure. The higher the defect density, the more defects you are uncovering.

It is impossible to give an "expected" value for defect density. Mature, stable code might have defect densities as low as 5 defects/kLOC; new code written by junior developers may have 100-200.

What can defect density tell us?

Let's make an experiment. We take a reviewer and have him inspect many different source files. Source files vary in size from 50 lines to 2000 lines. The reviewer inspects about 200 lines at a time so as not to get tired. We will record the number of defects found for each file.

What would we expect to find? First, longer files ought to have more defects than shorter ones, simply because there is more code. More code means more that could go wrong. Second, some files should contain more defects than others because they are "risky" -- maybe because they are complex, or because their routines are difficult to unit-test, or because their routines are reused by most of the system and therefore must be very accurately specified and implemented.

If we measure defect density here, we handle the first effect by normalizing "number of defects" to the amount of code under review, so now we can sensibly compare small and large files. So the remaining variation in defect density might have a lot to do with the file's "risk" in the system. This is, in fact, the effect we find from experiments in the field.

So defect density can, among other things, determine which files are risky, which in turn might help you plan how much code review, design work, testing, and time to allocate when modifying one of those files.

Now let's make another experiment. We will take a chunk of code with 5 known algorithm bugs and give it to various reviewers. We will see how many of the defects each review can find in 20 minutes. The more defects a reviewer finds, the more effective that reviewer was at finding the defects. This is a simple way to see how effective each reviewer is at reviewing that kind of code.

Of course in real life the nature of the code and the amount of code under review varies greatly, so you cannot just look at the number of defects found in each review -- you naturally expect more defects from a 200-line change than from a 2-line change. Defect density provides this normalization so you can compare reviewers across many reviews.

If you are comparing defect density across many reviews done by a single person, you are measuring the relative "risk" of various files and modules.

Inspection Rate

Inspection Rate is computed by: (Lines of Code Reviewed) / (Total Person-Time).

This is a measure of how fast we review code. A sensible rate for complex code might be 100 LOC/hour; generally good reviews will be in the range of 200-500 LOC/hour. Anything 800 LOC/hour or higher indicates the reviewer has not really looked at the code -- we have found by experiment that this is too fast to actually read and critique source code.

Some managers insist that their developers try to increase their inspection rate. After all this means "review efficiency" is improving. *This is a fallacy*. In fact, the *slower* the review is, the *better* job the reviewers are doing. Careful work means taking your time.

Instead, use inspection rate to help you predict the amount of time needed to complete some code change. If you know this is roughly a "1000-line change" and your typical inspection rate is 200 LOC/hour, you can budget 5 hours for the code review step in your development.

If anything, a manager might insist on a slower inspection rate, especially on a stable branch, core module, or close to product release when everyone wants to be more careful about what changes in the code.

Inspection Rate (Changed) metric counts only lines of code that were changed (added, removed, or modified).

Inspection Rate (Uploaded) metric counts only lines of code that were uploaded in the review.

Defect Rate

Defect Rate is computed by: (Number of defects) / (Total Person-Time).

This is the speed at which reviewers uncover defects in code. Typical values range between 5 and 20 defects/hour, possibly less for mature code, but not usually much greater.

The same caveats about encouraging faster or slower inspection rates apply also to defect rates. Read the Inspection Rate section for details.

Metrics Applied

If we have learned one thing about metrics and code review it is: *Every group is different, but most groups are self-consistent*. This means that metrics and trends that apply to one group do not necessarily apply to another, but within a single group metrics are usually fairly consistent.

This between-group difference can be attributed to the myriad of variables that enter into software development: The background, experience, and domain knowledge of the authors and reviewers, programming languages and libraries, development patterns at different stages of a product's life-cycle, project management techniques, local culture, the number of developers on the team, whether the team members are physically together or separate, and so forth.

8.7 Tips and Tricks

This section will describe workarounds and tricks we use for Collaborator.

Picking reviews through the Command-Line Client

When sending files to a review through the Command-Line Client, use "last" instead of the review ID to pick the last review or "ask" to be prompted with choices to pick.

Custom Fields with Date and Times

Collaborator does not have date or time custom fields, but you can closely approximate a date or time by using regular expression validation of single line text fields. For dates, the following regular expression requires a date in the 20th or 21st century that is approximately valid (yes, it accepts 31 days each month):

```
(?:19|20)\d\d-(?:0[1-9]|1[012])-(?:0[1-9]|[12][0-9]|3[01])
```

The following regular expression validates a time on a 24 hour clock:

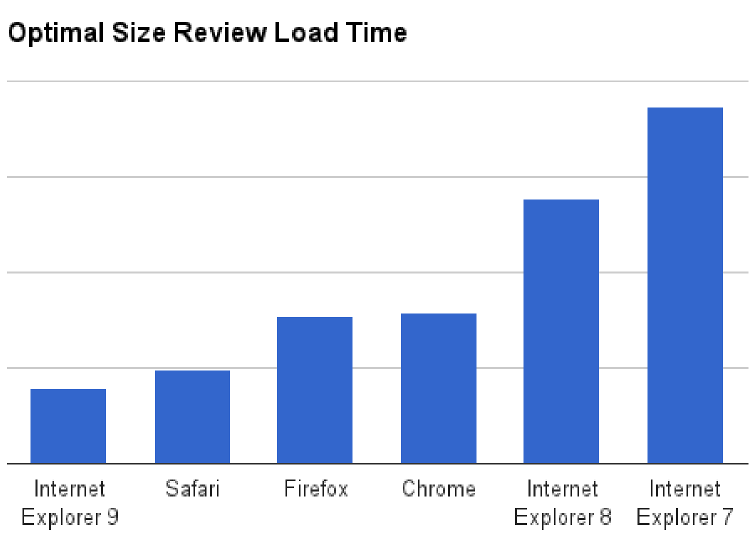
```
(?:[01][0-9]|2[0-3]):[0-5][0-9]
```

The two could be combined to accept a date and time field. Be sure you set the description of the field to describe exactly the format you are looking for so that users do not have to parse the regular expression to know what to enter.

8.8 Improving Performance

If your Collaborator server is not working as fast as you would like there are a couple of things you can try:

1) Use a modern browser. The latest versions of Internet Explorer, Firefox, Chrome, and Safari all render much faster than Internet Explorer 7 or 8:



2) Make your reviews a reasonable size. Collaborator supports a wide range of review sizes, but reviews that are larger than 10x our recommended optimal size 682 can become uncomfortably slow.

3) Make sure your database is fast. Collaborator spends much of its time accessing the database, so this needs to be as fast as possible. If the database is not located on the same physical server as Collaborator, make the network connection to the database as fast as possible.

4) Try a different database. MySQL is convenient for small to medium environments, but with larger databases (~100k reviews or more) SQL Server or Oracle often perform better.

5) Tune the server parameters. Try increasing the maximum heap size 875 and/or tweaking the sizes of the various server caches.

9 Appendices

Appendix A: Known Issues & Errata 689

Current known issues in the server and various client components, including integrations with other systems.

Appendix B: Version History 695

Complete version history for each public release of the various components.

Appendix C: Java VM Options 875

Overview of Java options useful for Collaborator configuration.

Appendix D: Java Compatibility Matrix 881

Describes which versions of Java environment are required to run different versions of Collaborator.

9.1 Appendix A: Known Issues

These are the major known issues currently known for all Collaborator components.

Many of the issues have workarounds; those are given here as well.

Get notified automatically when a new version is available!

SmartBear announces new publicly-available versions of Collaborator at our forum located at:

http://community.smartbear.com/t5/Collaborator/Collaborator-Release-Notifications/td-p/97024

Known Issues with the Collaborator

- After updating to Collaborator 9.3, some review materials that had pushpins may end up with duplicated pin numbers (pin numbering being related to the new review archiving feature). This has no impact on review material conversations, defeects, etc. only the numbering of the pins. This problem would occur only in reviews that existed prior to update; all reviews created afterwards would be unaffected.

- Due to limitations of the GitHub API, it is not presently possible to sync over review materials larger than 1Mb (for example, large image or document files); to be clear this applies to individual files of greater than 1Mb size.

- The built-in PDF viewer of Windows 8, 8.1 and 10 do not support overlay layers in PDF files. Collaborator uses such layers to render coordinate comments (pushpins) 296 in PDF versions of review materials for archived reviews 133. Because of this, pushpins will not be displayed if the PDF file from the archive is opened in the built-in PDF viewer of Windows 8, 8.1 and 10. As a workaround, please install the Adobe Acrobat Reader or any other full-featured PDF viewer.

- Excel files with high column counts may cause severe performance degradation when viewed in the Collaborator web application (for example, for review of differences). Depending on the processor and memory resources of the client machine, this may be noticed at varying numbers of column counts. For a typical desktop, experimentally we have noticed that approximately 500 columns is where performance begins to suffer noticeably and 3000 columns is the point at which it becomes infeasible to effectively work with the Excel file in question.

- 8.2.8200 does not work with Oracle databases (field name exceeds Oracle's 30-character limit). 8.2.8201 corrects this problem and works with all supported databases.

- Double quote characters (") in custom field names may break Oracle reporting views. Custom field names become column headers in the views, and Oracle does not allow double quotes in column names. Because of this, Collaborator removes double quote characters from the names of custom fields when it creates reporting views for Oracle databases.
  If some custom field names differ only by double quotes this would result in an "ORA-00957: duplicate column name" error in server logs. To resolve the issue, you may either remove one of duplicate column names from the reporting view, or rename the custom fields to avoid coincidence.

- 8.2 - There is a known issue with Excel diffs. Some changes may not be highlighted in the way that people would expect. We are aware of this and intend to make resulting diffs more understandable in the future.

- PDF files that contain a blank page will cause the following exception when opened in the Diff Viewer: `BinaryFileConversionException: Conversion failed.`The third party library we use for document conversion is not handling the blank page properly. Until this library is fixed by the third party vendor, there is a workaround to this issue: Remove the blank page from the PDF file and upload the new version to the review. If you see this error in the Diff Viewer, simply click 'OK' to dismiss the error, and choose another version of the file to review, from the drop down menu in the Diff Viewer, that does not contain a blank page.

- Drag and Drop and HTML 5 uploads do work in IE 10 - but you have to set the browser to 'standards' mode.

- Known Issue for MSSQL with Code Collaborator versions < 6505 or 7017: When importing a CC dump, older versions of Code Collaborator will try to import an entire table's data in a single transaction, which may overflow your SQL server's transaction log and cause an error during import. If you need to do an import using one of these versions (as part of a data migration), please use one of the following workarounds:

  1) Adjust the maximum size of transactions in your MSSQL server so that the import can finish.

  2) If you are migrating FROM another MSSQL server, you can do the migration using native MSSQL dump/restore.

- Internet Explorer 7 (IE7) suffers from performance issues with the latest versions. This is due to limitations in that browser that forced alternate implementations that are not as efficient. We recommend users upgrade to a newer version of the browser.

- The "Pricepeep" addon for Firefox is incompatible with Collaborator and has been reported to result in browser instability and crashing.

- Customers using GIT will need to use 7.x clients with 7.x servers as 6.x clients will not correctly add versioning information for the 7.x server.

- Loading large dump files to Oracle may take up to a full day to complete. This appears to be an issue with Oracle driver and is under investigation.

- The ability to perform diffs on PDF files has been added, but this applies only to newly uploaded PDF files. PDF files added to reviews prior to the upgrade will not have diff or comment promotion support and should continue to treated as images, as in previous versions.

- Chat panel may not select correct comment when clicking on a comment near the top or bottom of the chat panel. The workaround for this behavior is to use the previous and next buttons in the diff viewer toolbar to navigate the comment list.

- OSX Mountain Lion sometimes gives the "Installer.app is damaged and cannot be opened" error message. This is actually bad messaging on Apple's part. To fix this, go to your System Preferences window and then click on Security and Privacy. From the general tab, change the "Allow Applications Downloaded From" section to have "Anywhere" selected. The installer should then work as expected.

- If the installer cannot find a JRE on your system, it will prompt you for the location of a suitable JRE. On systems with multiple JREs installed, it may be necessary to specify to the installer which JRE should be used for Collaborator. On Windows platforms, running the installer with the `-manual` argument will suppress the JRE search and cause the installer to prompt for the JRE location (specifically, java.exe). On *nix platforms, you can specify the JRE location by setting the `INSTALL4J_JAVA_HOME_OVERRIDE` environment variable to the `JAVA_HOME` value.

Known Issues with the Server Component 51

- Case 65225: Using the web client to connect to a server on localhost will prevent uploads from the flash player - which is used on IE to allow uploads from the review summary page.
- Case 34564: Reports have missing data. When the server is running on Linux systems, there can be issues with unavailable fonts or available fonts with sufficiently different font metrics that can cause the reporting engine to not render content. Workaround: Install the Microsoft True Type fonts (msttcorefonts on Debian-based systems).
- Case 61360: Some pre-operation trigger scripts may need to add a sleep/delay in order to function correctly, as the triggers run prior to saving in-flight data to the database.
- Case 64684: SOAP support incompatible with Java 1.6.0_03

Known Issues with the Web Browser Client 228

- If your charts are not being displayed, verify that <collab server install dir>/tomcat/temp exists and is writable by the user that runs the server.
- Drag and drop of documents to reviews does not work in versions of Firefox prior to 8 and does not work with Internet Explorer or Safari. (IE users with the latest flash can upload multiple files using the "Upload Files" link on the Review Summary page.
- PeerReview Complete 2012 Beta - Internet Explorer 7 is not supported during the beta.
- Debug log in 7.0 (Click "Report Error" link in footer): Done/Cancel buttons disappear if the user navigates to a legacy screen without the new UI elements.
- Case 26177: Chat log 299 incorrectly encodes leading spaces, so sometimes when entering, for example, code snippets the text does not come out as expected.
  Workaround: Put a little character (for example, a period) at the beginning of the line.
- Case 43101: When clicking on the link of a file in the Review Overview page the file will not be displayed at front if IE is set up to open pop-ups in tabs.
  Workaround: Go to Tools -> Internet Options -> Tab Settings -> Select "Always open pop-ups in a new window.
- Sometimes, after an upgrade, when a user logs in she sees a CSS page dump in the browser instead of going to the home page. Workaround: Just go directly to the homepage. Because you are already authenticated, that will work.
- Case 30131: In some very special cases the intra-line difference-engine does not properly highlight the inside of the line. The entire line is still highlighted, so users are still properly shown the main lines of the differences.

- Case 27502: Increasing the default font size in Firefox v1.5.0.7 or IE 7 can result in a very distracting (but still functional) user interface.
  Workaround: Change back to the default font size.

- Safari 3 is supported, but there are known issues with Safari 2.x.

- When running Firefox with the Firebug or Greasemonkey plug-in, the Side-by-Side view is sluggish to load. This is even true when Firebug is marked "disabled".

- Search results may not return all results without noting the truncation. This can happen if many results match the search but are inaccessible to the user.

- Diff viewer keyboard shortcuts do not work in Opera. In general, Opera is not a supported browser 228. While most functionality is available, some features, such as keyboard shortcuts do not work.

- When upgrading from 2.1 to 4.0 the server sometimes starts up with a JDBC error. Solution: Check the database and LDAP password fields in `*installation-directory*/tomcat/conf/Catalina/localhost/ROOT.xml`. Repeated dollar signs ('$'), necessary in Collaborator 2.1, are not required. Remove them and restart.

- Custom reports with a large number active columns or filters; or with long filter text can break the bookmark, SQL, Printable, and CSV links in Internet Explorer. Because the links contain all the filter information, the URL's can exceed the IE's maximum URL length (2083 characters).
  Workaround: Use Firefox for complex reports

- Character set differences that change the location or number of line breaks can change the way comments get promoted.
  Workaround: If necessary, use the auto-detected character set to make comments and mark conversations read.

- Character set differences that change the location or number of line breaks result in metrics that may not be perfectly correct. The metrics for files are computed using the auto-detected character set.

- If there are multiple files with the same filename (but different paths) in a review the automatically linked filenames in review text (custom fields, chat, and so forth) may not link to the intended file.

Known Issues with Anti-Virus Software

- Anti-virus software is known to interfere with launching sub-processes and communicating with SCM clients. If you experience any problems with a Collaborator client hanging or getting unexpected results, and you have anti-virus software running, disable the anti-virus software and try reproducing the problem. If you subsequently contact technical support, let them know that you have anti-virus software running.

Known Issues with the Command-Line Client 348

- Case 31758: Can get an `ClassCastException` using the new v2.0 client against a v1.x server with certain commands and with certain v1.x servers.
  Workaround: Make sure your client and server versions match.

- Case 24209, 23958: The system PATH variable is not always updated properly by the installer 329, or the PATH variable is updated but running applications are not notified, so it takes the user logging out of Windows or even rebooting before the command-line client can be used.
  Workaround 356: Reboot your machine. Or try just logging out and logging back in to Windows.

- Case 34477: Command-line echo passwords back when you type them.
  Workaround: Use Java v1.7.

- Control Characters in text are replaced with the Unicode Replacement Character. This is most often encountered with smart quotes pasted into changelist descriptions.

- Also see issues for specific version control integrations below.

Known Issues with the Eclipse Plug-in 366

- 7.3 servers are incompatible with older Eclipse clients.

Known Issues with the GUI Client 338

- Git users on Windows systems may need to modify their path to allow the client to detect their SCM. The default Windows system PATH entry defaults to "...\git\cmd". Changing this to "...git\bin" should allow the client to properly detect the SCM when the client is launched from the tray notifier.

Known Issues with the Tray Notifier 404

- Dock Icon on MacOS: The tray notifier process creates an icon in the MacOS dock. If you launch the GUI Client it creates another copy of the same dock icon.

Known Issues with CVS Integration 426

- Case 42393: Error initializing Add to Review Wizard occurs with reason `'CVSROOT may only specify a postive, non-zero integer port'`. This is an error reported by the CVS command line client (cvs.exe) when there is an unexpected colon in the the CVSROOT value. The Collaborator client requires that cvs.exe work normally on the repository. Using a different CVS client, such as the Cygwin client, can fix this problem.

Known Issues with Perforce Integration 537

- Case 34890: Files on certain changelists show up as new files -- without a "previous version" diff.
  Workaround: This is known to happen with certain 2005 versions of Perforce. Upgrading to the latest Perforce client fixes this issue.

Known Issues with Subversion Integration 568

- Directory entries are ignored - so adding an entire directory does not show up in a review.
- Symlinks are not supported pre-commit - a Symlink uploaded pre-commit will show invalid content in a review.

Known Issues with Team Foundation Server Integration 517

- Case 42153: "Unable to determine the source control server" error can occur when adding modified files. There must be a corresponding Team Foundation Server working folder for the directory configured in the GUI client, or the directory specified for the command line client to avoid this error.
- Case 42787: Team Foundation Server integration will not work with non-English installations of Visual Studio .NET. Regional settings for other locales are supported, but installing a non-English Visual Studio prevents correct parsing of `tf.exe` output.

Known Issues with JIRA Integration 614

- Currently, Collaborator cannot populate values of arbitrary custom fields. If your JIRA server requires certain custom fields to be set during the creation of tickets/items, then Collaborator will be unable to create new tickets/items.
- Due to technical issues, JIRA 7 cannot display the "Review Information" block automatically. As a workaround you can manually make the Review Id, Review Participants, Review Phase and Review Link fields be visible on your JIRA screens.

9.2 Appendix B: Version History

Get notified automatically when a new version is available!

SmartBear announces new publicly-available versions of Collaborator using a forum thread.

If you want to subscribe to the Release Notification thread to get all release notifications, you can do so here:

http://community.smartbear.com/t5/Collaborator/Collaborator-Release-Notifications/td-p/97024

Links to individual versions:

9.2.1 Version 9

9.5.9501 - April 1st, 2016

- added - configurable polling interval for GitHub integration (COLLAB-1320)
- added - link to GitHub Pull Request in reviews created from them (COLLAB-1389)
- added - enhance diff viewer support for COBOL files (COLLAB-1528)
- fixed - spurious reviews created when GitHub and JIRA integrations simultaneously configured (dependency issue affecting JIRA triggers) (COLLAB-1600)
- fixed - legacy xmlrpc API support broken in 9.5 (COLLAB-1598)
- fixed - NullPointerException when editing non-existent review via command line (COLLAB-1557)
- fixed - PDF file not rendered properly in diff viewer (requires 3rd party library update) (COLLAB-1525)
- fixed - ensure that duplicate GitHub remote system configurations are not allowed (COLLAB-1377, COLLAB-1603)
- fixed - allow multi-line values to be passed for custom fields from the command line (COLLAB-1239)

- fixed - 9.5.9500 breaks client compatibility with some SCMs requiring native libs (e.g. TFS) (COLLAB-1618)
- fixed - Error while uploading .docx files to review materials (COLLAB-1589)

9.5.9500 - March 8, 2016

- added - Integration with Single Sign-On servers 117 (COLLAB-361)
- added - JIRA integration was improved to comply with JIRA 7 API (COLLAB-1402)
- fixed - Updated Apache Tomcat server to version 8.0.28 to resolve a number of performance and security issues (COLLAB-583)
- fixed - DiffViewer: Previous diff showing in HTML code for review sourced from JIRA (COLLAB-1477)
- fixed - ccollab admin review edit command for custom field changes group to "All Users" (COLLAB-1451)
- fixed - ccollab adddiffs does not work because of JSON API issue (COLLAB-1450)
- fixed - Doubled pushpins with wrong locations between uploaded material's versions (COLLAB-1446)
- fixed - StringIndexOutOfBoundsException being thrown from GitHub event handler (COLLAB-1440)
- fixed - Wrong child group reflection in participant drop-down (COLLAB-1434)
- fixed - "ccollab admin review edit --deadline" successfully executed with '0' in the admin settings of the UI (COLLAB-1426)
- fixed - Server cannot be upgraded to 9401 because of pushpin issue (COLLAB-1421)
- fixed - MKSAPI.JAR contains an unsupported version of Apache HttpClient (COLLAB-1420)
- fixed - Client cannot parse the "p4 -G change -o" output if it contains Perforce's additional messages (COLLAB-1414)
- fixed - IllegalStateException raised when running a diagnostic (COLLAB-1403)
- fixed - Participant’s filter does not correctly show an account with a blank space in the “Full name” field (COLLAB-1397)
- fixed - Review custom fields of Multi Select type are not highlighted (COLLAB-1374)
- fixed - "ccollab admin review finish ask" does not work properly (COLLAB-1363)
- fixed - Cannot execute addchangelist if password is omitted (COLLAB-1340)

- fixed - CMVC, StarTeam, Surround, VSS and Vault support with older clients is broken on the server (COLLAB-1334)
- fixed - JSON API: UserService: login values are case insensitive (COLLAB-1327)
- fixed - Add "HTTPOnly" marker in the browsers session cookie (COLLAB-1243)
- fixed - Add "Secure" marker in the browsers session cookie (COLLAB-1242)
- fixed - "--restrict-access" parameter does not work with JSON API (COLLAB-1214)
- fixed - Wrong groupId="1" in review then creating review via GUI Client (COLLAB-1143)
- fixed - "Edit" button is grayed for uncompleted reviews (COLLAB-629)

9.4.9401 - December 16, 2015

- fixed - Unable to open file in diff viewer that was added to review by MS Word add-in (COLLAB-1393)
- fixed - improvements to GitHub pull request handling (COLLAB-1401)
- added - Digital signatures on Windows installers updated
- added - Windows and OSX installers use bundled JRE if none available (COLLAB-1392)

9.4.9400 - December 8, 2015

- added - Rejected and Cancelled reviews can also be archived to Zip 133 (COLLAB-1323)
- added - Support for Rational Team Concert 6.0 (COLLAB-999)
- added - Use CSRF tokens during web transactions to prevent cross-site request forgery (COLLAB-1241)
- added - Administrators can specify a list of file types restricted for upload 161 (to avoid malicious file uploads) (COLLAB-1234)
- added - Filter user-input to avoid cross-site scripting vulnerability (COLLAB-1233)
- added - Commands to administer remote system integrations via Command-Line Client (COLLAB-1306)

- added - File upload security improvement. (COLLAB-1102) Web clients, by default, use an HTML5-based component for file uploads instead of the older Adobe Flash method. This is supported in Microsoft Edge, Mozilla Firefox 40 and later, Google Chrome 43 and later, and Apple Safari 8 and later. However, the HTML5 method is not supported by Internet Explorer. Should file uploads by IE clients be required, please ask your administrator to re-enable Flash upload support via the relevant setting in the Collaborator server's vmoptions 876 file.

- added - GitHub integration: New "Ignore pushes for branches 222" setting to skip review creation for raw pushes to the specified branches.

- fixed - GitHub integration: Polling thread stops if a comment exists on the pull request before Collab processes it (COLLAB-1373)

- fixed - GitHub integration creates multiple reviews with a single push to master (COLLAB-1352)

- fixed - Critical error when upgrading from 9.0 if database misses version data for some comments (COLLAB-1338)

- fixed - JSON API: UserService: login values are case insensitive (COLLAB-1327)

- fixed - Cannot click on a pushpin and have it select the conversation (COLLAB-1310)

- fixed - GitHub integration is pulling extra commits into reviews (COLLAB-1299)

- fixed - GitHub integration commits in the diff viewer show wrong timestamp (COLLAB-1298)

- fixed - Some groups are missing from the pick-list of new reviews (COLLAB-1273)

- fixed - Use TLSv1.2 protocol on Java 1.6 clients (COLLAB-1213)

- fixed - Incorrect time stamp is displayed in DiffViewer for ClearCase Activity in 9200 Client (COLLAB-1174)

- fixed - Updated Apache PDFBox library to version 1.8.10 to resolve a number of PDF-related document handling issues (COLLAB-1091)

- fixed - Eclipse client dependency for JGit makes it difficult to install into RTC Eclipse client (COLLAB-962)

- fixed - DiffViewer does not show upload number correctly when uploading git diffs multiple times (COLLAB-885)

- fixed - The --non-interactive option is ignored when SSL certificate cannot be validated (COLLAB-357)

- deprecated - Print To Review 409 virtual printer driver - Collaborator now offers the ability to attach Word 277, Excel 280 and PDF 287 documents directly to a review. Additionally, you can install Collaborator add-ins for Word and PowerPoint.

- deprecated - SOAP API [655] - Collaborator introduced a new JSON API in January 2015 and the limited SOAP API is no longer needed.

- deprecated - XML-RPC API - Collaborator's XML-RPC API is no longer needed because of the introduction of the JSON API.

- deprecated - Visual Studio Add-in [402] - We are currently working on a new add-in that will support Visual Studio 2013 and 2015 (and, hopefully, provide a much better user experience than the existing one).

9.3.9300 - October 13, 2015

- added - Completed reviews can now be archived to Zip [133]. (COLLAB-1105)

- added - The style of coordinate comments and defects [296] (pushpins) have been changed.

  Now the pushpins display an integer number in their head:  The number corresponds to the order in which that pushpin was added to the document page or image. (COLLAB-1179)
  Note: During the upgrade to Collaborator 9.3 all **in-progress** reviews have been updated and their pushpins (if any) were numbered. Converting only in-progress reviews during the upgrade, ensures that upgrading the server to 9.3 does not take too long. To append ordinal numbers to pushpins in all completed reviews, your administrators can use the respective command in the Diagnostic Utility [136]. (This however may take some time to accomplish.)

- added - Collaborator News panel in the WebUI [228]. (COLLAB-1104) This panel displays news, release announcements, webinar invitations and other information from the SmartBear.

- added - AES-256 encryption [96] for database and LDAP passwords. (COLLAB-1077)

- added - Send notification to the administrator when a user access was denied due to license limit [83]. (COLLAB-985)

- added - Support for Oracle 12c database. (COLLAB-1121)

- added - Support for Microsoft Team Foundation Server 2015. (COLLAB-1144)

- added - Support for Microsoft Windows 10 (both server and client components of Collaborator). (COLLAB-1095)

- added - Support for Microsoft Edge browser in Web Client. (COLLAB-1096)

- fixed - Changes of document(s) uploaded to a review were not highlighted. (COLLAB-1145)

- fixed - JIRA Configuration did not remove the trailing slash from Server URI. (COLLAB-1138)

- fixed - Git's "The file will have its original line endings in your working directory." message was not ignored. (COLLAB-1107)

- fixed - Collaborator did not apply the ASCII expansion to Perforce wildcards. (COLLAB-1103)

- fixed - JSON API was not implemented for the "ccollab admin review-xml" command. (COLLAB-1084)
- fixed - Customer's completed reviews showed the "overdue" status. (COLLAB-1066)
- fixed - The `smartbear.ccollab.upload.ignore.binary.file` property was ignored by JSON APIs. (COLLAB-998)
- fixed - Private or non-SCM files prevented review uploads from Eclipse Plug-in. (COLLAB-945)
- fixed - The location data for defects within documents was displayed incorrectly in the Defect report. (919)
- fixed - Some users could log in even if all floating licenses was consumed. (COLLAB-694)
- fixed - The filters of the Diff Viewer's chat panel did not function properly. (COLLAB-710)
- fixed - The Before and After drop-down lists of the Diff Viewer displayed file ids rather than commit ids for GitHub files.
- fixed - Diff Viewer navigates between files alphabetically even when File View is set to "Compressed Tree". (COLLAB-389)

9.2.9200 - July 9, 2015

- added - JIRA integration 614
- added - GitHub integration 632
- added - Electronic signatures 158 can now be configured on templates basis (COLLAB-633)
- added (open source, beta): IntelliJ IDEA plugin (https://github.com/SmartBear/idea-collaborator-plugin)
- added - Eclipse Plug-in, GUI Client, and Command-Line Client all now use the JSON API completely and by default (to get old behavior specify --use-legacy-api 359 option with Command-Line Client)
- fixed - fixed HostGUID handling by JSON API; primarily affecting Perforce environments (COLLAB-1053)
- fixed - Table naming issue in Oracle-based environments (COLLAB-1041)
- fixed - Defect marking in Eclipse conversation tab stops changing colors (COLLAB-1035)
- fixed - Action item list not refreshing after defect creation in Eclipse plugin (COLLAB-1034)
- fixed - Respect a Perforce changelist's comment when submitting it to Collaborator (COLLAB-1021)

- fixed - Diff viewer should handle empty and broken files (COLLAB-1005)
- fixed - Collab tray notifier UnsupportedOperationException error (COLLAB-1003)
- fixed - NullPointerException when ccollab addchangeslist is run with Perforce (COLLAB-966)
- fixed - Eclipse client could not create line defects (COLLAB-979)
- fixed - Failure to create new review in GUI client when debug was turned on (COLLAB-964)
- fixed - Always allow listed authors to upload content to a review, regardless of restrictions (COLLAB-959)
- fixed - Unclear GUI client error message during "test connection" if a 9.x client is used with a < 9.0 server (COLLAB-955)
- fixed - Improved client support for copy-participants operation (COLLAB-954)
- fixed - Improved client support for saving defect id on creation/editing (for "last" argument) (COLLAB-953)
- fixed - Made checking mandatory custom fields consistent for defect commands in CLI in both legacy and JSON API modes (COLLAB-952,1069,1070)
- fixed - Mandatory review custom field was not working for annotating phase (COLLAB-948)
- fixed - Mandatory review custom field was not made obvious with the typical red label for mandatory fields (COLLAB-947)
- fixed - Incorrect "send to completed" button and associated description for author in a "formal inspection" template review (COLLAB-937)
- fixed - Clarified docs and enhanced behavior of assignReviewPool API call (COLLAB-923)
- fixed - Made sure that review phase "Rework" always identifies as such w/ trigger substitution variables ${review.phase}/${review.phase.previous} (COLLAB-918)
- fixed - Cannot delete .docx documents from review materials (COLLAB-878)
- fixed - addcvsdiffs does not work w/ -N cvs option; use -skipN option to addcvsdiffs if needed (COLLAB-738)
- fixed - Verify that we can run on JRE 8 (COLLAB-682)
- fixed - Perforce update-changelist trigger fails when workspace has the "Host" field specified (COLLAB-667)
- fixed - Uploading a new version of a file changed chat icons from acceptance to chat icon (COLLAB-226)

9.1.9101 - April 15, 2015

- added - New "First uploaded vs. Last uploaded" option for the Diff Viewer Default Version Comparison 235 setting (COLLAB-841)
- added - JSON API: Allow defects and comments to be queried by review/user (COLLAB-840)
- added - JSON API protocol implementation for trigger commands (COLLAB-799)
- added - Allow pre-configuration of scale parameters during server installation (COLLAB-884)
- fixed - Download Client Installers button points to version 8 download page (COLLAB-910)
- fixed - Infinite Loading message when clicking Next button in diff viewer (COLLAB-888)
- fixed - Mandatory review subscriptions prevent review from moving to completed phase (COLLAB-797)
- fixed - Browser launching is broken in all *nix operating systems, including mac for all client apps (COLLAB-603)
- fixed - Author receives "Respond to comments" email when all review pool slots are taken and review begins (COLLAB-601)
- fixed - AccuRev addchanges fails when getting item transaction (COLLAB-503)
- fixed - Blank default start menu folder name for client install (COLLAB-917)
- fixed - addhgdiffs command with JSON causes NullPointer exception (COLLAB-886)
- fixed - addfiles command does not allow to load "local" files when SCM set to "perforce" (COLLAB-867)

9.1.9100 - March 25, 2015

- added - Most Command-Line Client commands (except for triggers) now support the `--use-json-api` 358 global option.
- added - Support for JSON API in GUI Client. Now this API is the default for GUI Client (COLLAB-779)
- added - Support for JSON API in Eclipse Plug-in (COLLAB-855)
- added - Add participant state to the Detailed Report (COLLAB-804)
- added - Track user file activity from the Review Detail Reports (COLLAB-743)

- added - The caption of the Approve button now changes depending on the next phase (COLLAB-564)
- added - Add Collaborator to the list of web browser's search engines 312 (COLLAB-821)
- added - Support for Microsoft Internet Explorer 11 browser in Web Client. (COLLAB-818)
- fixed - Restrict upload if restrict access is set to "Yes" (COLLAB-849)
- fixed - Running the ccollab admin review create command with the --use-json-api option requires the template ID (COLLAB-848)
- fixed - Command line output for admin user create is confusing (COLLAB-833)
- fixed - ccollab logout fails on Linux (COLLAB-832)
- fixed - Eclipse client will not connect to 9.0 server (COLLAB-829)
- fixed - JSON API with addchangelist and invalid login ticket dies, instead of prompting for password (COLLAB-819)
- fixed - Reverted file are not removed from the review (COLLAB-567)
- fixed - Git/Eclipse: Cannot add multiple commits (COLLAB-811)
- fixed - RTC work item approvals do not get updated when a review is deleted in Collaborator (COLLAB-839)
- fixed - Word document-handling memory consumption issues (COLLAB-539)
- fixed - Perforce syncusers command issues; refactoring to fully support --use-json-api (COLLAB-801)

9.0.9001 - February 3, 2015

- added - JSON API: review deletion, adding urls to review, dismiss commit todo, move review to annotate (COLLAB-760)
- added - JSON API: findByGuid and getMembers added to GroupService (COLLAB-789)
- added - JSON API: findByGuid and findByLogin to UserService (COLLAB-790)
- added - JSON API: findById and getParticipants to ReviewService (COLLAB-788)
- fixed - JSON API: fixed admin group create (COLLAB-771)
- fixed - JSON API: fixed missing Action categories (COLLAB-715)

- fixed - review pool notifications should send even if review has started (COLLAB-741)
- added - added ability to stop users from deleting review pools via vmoptions (COLLAB-780)
- fixed - handling of first git commit (COLLAB-769)
- fixed - emailing everyone now includes all members of assigned review pools (COLLAB-742)
- fixed - changed review title (COLLAB-767)
- fixed - MKS products now referred to as PTC in UI after company acquisition (COLLAB-753)
- fixed - Eclipse plugin client author field autofills (COLLAB-758)
- fixed - review xml now includes review pool data (COLLAB-580)

9.0.9000 - January 20, 2015

* FIRST RELEASE OF v9.0! *

Major features:

- JSON API web service 658 - a fast and effective way to exchange data between your application and Collaborator server.
- Git integration with Collaborator Eclipse Plug-in
- Command-line APIs were refactored.
- Support for Visual Studio 2013, SQL Server 2014, SVN 1.8.
- [beta] Ability to move comments in MS Word documents (.doc and .docx) 280, PDFs 290 and images 287. Supported in Chrome and Firefox only.

- added — Command-Line Client now has the `--use-json-api` 358 global option. If this option is specified, the Collaborator server will use a faster JSON API to execute commands.
- added — Display full path in a tooltip for truncated file path at top of diff viewer (COLLAB-452)
- fixed — Server-side debugging contains plain text passwords (COLLAB-699)

- fixed — Cannot approve a review due to unread comments, but there are no unread comments (COLLAB-721)
- fixed — CVS does not upload all the file as "cvs diff" (COLLAB-299)
- fixed — Child group loses its child relationship when modified by group admin (COLLAB-683)
- fixed — Spaces removed after PDF conversion (COLLAB-686)
- fixed — Schema check misidentifies standard Oracle triggers (COLLAB-557)
- fixed — Inviting a colleague sends an invalid link to the review (COLLAB-652)
- fixed — broken I/O behavior around password prompts (COLLAB-735)
- fixed — Changing review template wipes file-subscription's participants (COLLAB-534)
- fixed — Populated mandatory review custom field prevents review from changing phases (COLLAB-720)
- fixed — Square bracket in custom field name breaks database views in MS SQL (COLLAB-547)
- fixed — Unable to login after upgrade from v.8100.008: Logging install4j errors and ErrorCode404Handler info entries (COLLAB-56)

9.2.2 Version 8

8.5.8502 - November 11, 2014

- fixed — Coordinate locators limited to 1 million across the whole server (COLLAB-631)
- fixed — Web UI Slow loading additional lines of code when p4protects is enabled (COLLAB-634)
- added — Support for Subversive in Eclipse Luna (COLLAB-514)
- fixed — Notification Table Cleanup Task does not work (COLLAB-590)
- fixed — Action Item list retrieval is unacceptably slow (COLLAB-608)
- fixed — Add pending changelist for Perforce fails (COLLAB-656)
- fixed — Error parsing variables added as key: value in p4 set (COLLAB-651)
- fixed — Improve user message for ensure-diffs-reviewed errors (COLLAB-609)
- fixed — Disable "Delete" button when "Restrict Uploads to Review:" is set to Yes (COLLAB-661)
- fixed — Modifying and saving a local file from the diff viewer in Eclipse does not save the file to disk (COLLAB-626)

- fixed — Redact accidental inclusion of plaintext password from command-line debug log (COLLAB-616)
- fixed — Eclipse: error with svnkit 1.7+ (COLLAB-545)
- fixed — enhanced error messages from ensure-diffs-reviewed (COLLAB-609)
- fixed — clarified initial configuration screen on product installation (COLLAB-660)
- fixed — improve error messaging when git HEAD revision can not be found (COLLAB-640)
- discontinued support — we have stopped supporting the following outdated and rarely used SCMs: IBM CMVC, Borland StarTeam, Seapine Surround SCM, SourceGear Vault and Microsoft Visual Source Safe.
- Installers are now digitally signed on applicable platforms (Windows, OSX).

8.5.8501 - September 30, 2014

- feature — Allow obfuscation of LDAP passwords in ROOT.xml (COLLAB-330)
- fixed — addgitdiffs does not generate LOC metrics (COLLAB-597)
- fixed — Issue of converting pdf files with empty pages at the end (COLLAB-576)
- fixed — Mac Installer cannot find Java JRE (COLLAB-577)
- fixed — Orphaned row in assignment table breaks group admin page (COLLAB-572)
- fixed — Client Installer - Ubuntu- Installer does not create links to executables (COLLAB-559)
- fixed — Discarded MKS change packages showing in GUI client (COLLAB-252)
- fixed — PDF conversion error (COLLAB-594)

8.5.8500 - August 26, 2014

- feature — Collaborator Server now can run on MySQL version 4.1, 5.0, 5.1, 5.4, 5.5 and 5.6. (COLLAB-305)
- feature — Added syntax highlighting for XML and XAML files (COLLAB-494)
- fixed — p4 addchangelist uses too much memory when checking file integrations on some cases (COLLAB-454)
- fixed — Discarded MKS change packages showing in GUI client (COLLAB-252)
- fixed — ensure-diffs-reviewed selects contained diffs as possible conflicts (COLLAB-515)

- fixed — Prevent the uploading of certain binary files based on Admin settings 162 and Collaborator Client configuration 878 (COLLAB-448)
- fixed — smartbear.ccollab.upload.truncate.size no longer works (COLLAB-440)
- fixed — Numbered/lettered bullet list adds extra spaces in diff viewer (COLLAB-469)
- fixed — Problem with php file on diff viewer due to syntax coloring display setting (COLLAB-477)
- fixed — Removed hardcoded timeout (30s) for triggers, timeout is configurable via VM option now (COLLAB-442)
- fixed — Participant custom fields cannot be modified in the completed phase (COLLAB-439)
- fixed — Defect and comment timestamp is not displayed in the Web UI on the non-compact view (COLLAB-436)
- fixed — Regression - We do not support parentless git commits on 8405, but it was supported on Collab 6507 (COLLAB-445)
- fixed — DOM error when clicking next file (COLLAB-487)
- fixed — Exception when clicking review from action items (COLLAB-486)
- fixed — Slow diff viewer refresh performance for Excel spreadsheets (COLLAB-460)
- fixed — Apparent unresponsiveness when interacting with comments in the diff viewer (COLLAB-460)
- fixed — Select Custom field with its values changed causes issue on reviews with the old values selected (COLLAB-473)
- fixed — Wrong file name and extension for review file from mercurial (COLLAB-489)
- fixed — Participant list gets truncated after 10k users (COLLAB-77)
- fixed — No action items for review pool participants (COLLAB-507)
- fixed — p4 - broken symbolic links cause issues with ensure-reviewed triggers (COLLAB-457)
- fixed — Document Diff viewer throws exception before document is finished converting (COLLAB-498)
- fixed — Support MKS Integrity 10 (COLLAB-411)
- fixed — Document conversion failure when restricted fonts are included (COLLAB-316)
- fixed — ClearCase \main\LATEST does not work anymore (COLLAB-535)

- fixed — Eclipse - Support for Subversive in Eclipse Luna (COLLAB-514)
- fixed — Update mysql jdbc driver, 5.1.6->5.1.31 (COLLAB-305)
- fixed — Review Pools: Can move a review forward without one (COLLAB-500)
- fixed — ClearCase "local" keyword does not work in Client (COLLAB-556)

8.4.8406 - June 17, 2014

- feature — Added new status for AccuRev incl/excl (COLLAB-269)
- feature — Added new setting to user roles configuration: "Minimum number required to finish review". It defines a minimum number of approval required in order to complete the review.
- fixed — Document converts incorrectly with extra lines (COLLAB-358)
- fixed — Include offending diff output on ensure-diffs-reviewed response (COLLAB-349)
- fixed — Link button in reports is saving URL's that are too large (COLLAB-435)
- fixed — Change default from 'Any Activity' to 'File Activity' (COLLAB-344)
- fixed — ensure-diffs-reviewed fails when there are shared changes between collab and the scm (COLLAB-406)
- fixed — New version of Chrome (and IE9) does not auto-scroll while typing in long diff comments (COLLAB-186)
- fixed — Workflow around Review Pools is not ideal (COLLAB-262)
- fixed — NPE in admin batch execution of adding a git changelist (COLLAB-397)
- fixed — Excel files cannot be viewed in IE8 (COLLAB-368)
- fixed — Populated and expanded defect custom fields hidden from view (COLLAB-418)
- fixed — ClearCase supports relative branch path in “AddVersions" (COLLAB-398); ClearCase should recover the input version information when error occurs (COLLAB-399); ClearCase AddVersion should provide an option to allow if unchanged CHECKOUT files are loaded (COLLAB-400),Show All Files > Branch Name not working properly (COLLAB-421), Review #10161
- fixed — Fixed Database Integrity errors and checks on the Assignment and FileMetrics tables (COLLAB-293)
- fixed — make initialization error page clearer (COLLAB-366)
- fixed — ClearCase > Add Versions > Show All Files > Branch Name not working properly (COLLAB-421)

- fixed — ClearCase supports relative branch path in "AddVersions"(COLLAB-398); ClearCase should recover the input version information when error occurs (COLLAB-399);ClearCase AddVersion should provide an option to allow if unchanged CHECKOUT files are loaded (COLLAB-400)
- fixed — Suppress stacktrace output for document conversion failure (COLLAB-331)
- fixed — Diff Viewer - Display order of after before in bottom detail pane (COLLAB-131)
- fixed — Extra spaces show up in diff viewer in IE11 (COLLAB-362)
- fixed — Perforce Server integration. Adding changelists from server bypasses user access (COLLAB-359)
- fixed — Cannot sort Defect ID column on the defect log of the review summary page (COLLAB-356)
- fixed — addfiles sends an email for each file (COLLAB-303)
- fixed — scmFindOrCreate does not send all info to the server (COLLAB-378)
- fixed — RTC - Incorrect "Pending" label on the "Add to Review" dialog (Case COLLAB-324)
- fixed — The external URL admin setting is reset when the server starts with no DB connection (COLLAB-392)
- fixed — Environment P4CLIENT overrides command's P4CLIENT on p4v (Windows) (COLLAB-369)
- fixed — Make git ignore warning: lines on stderr from commands
- fixed — AccuRev - Incorrect conversion of changelist date (COLLAB-388)
- fixed — Change default from 'Any Activity' to 'File Activity' (COLLAB-344)
- fixed — Fail to load in the dump file which contains the specific character (COLLAB-372)

8.4.8405 - May 13, 2014

- fixed — Improved performance of chat message/defect rendering for large reviews (COLLAB-313)
- fixed — Solved issue where addfiles command improperly calculated LOC metrics for non-SCM files (COLLAB-373)
- added — Made comment locations clickable in search results (COLLAB-294)

8.4.8404 - May 6, 2014

- fixed — Minimum client version set as "0" in server vs client version error message (COLLAB-308)
- fixed — License logging does not work and need to record license denials in the license.log file (COLLAB-335 & COLLAB-348)
- fixed — Notifications - Back in Inspection Phase email sent at the wrong time (COLLAB-281)
- fixed — Cannot add to existing review with Collaborator and SVN or Git (COLLAB-317)
- fixed — Replace the loading indicator (COLLAB-310)
- fixed — Non-SCM files, documents and spreadsheets are calculating LOC metrics when they should not (COLLAB-140)
- fixed — Problem with compare/sort on 1.7+ JREs (COLLAB-338)
- fixed — ClearCase Addversion fails when there is only one input version (COLLAB-353)
- fixed — License logging does not work and need to record license denials in the license.log file (COLLAB-335 & COLLAB-348)
- fixed — Calculation for number of comments in review detail report includes "accepted" comments (COLLAB-312)
- fixed — Failed uploads result in a missing path in VersionData (COLLAB-337)
- fixed — Calculation for number of comments in review detail report includes "accepted" comments (COLLAB-312)
- fixed — WebUI displays (no comment) when there is not a comment (COLLAB-346)
- fixed — Open the diff viewer with the upload in which the defect was created as the "after" version (COLLAB-133)
- fixed — Collaborator sends a notification email for each uploaded file (ClearCase) whether the file changed or not (COLLAB-325)
- fixed — First cut at resolving client date issues (COLLAB-320)
- fixed — Diff viewer gives no clear indication that reworked files are new (COLLAB-253)
- fixed — Home Displays user has no Action Items on home page before it really determines if the user has Action Items (COLLAB-136)
- fixed — RTC - Changelists are uploaded in wrong order (COLLAB-53)
- fixed — Materials section. Some of the materials disappear when switching between overlay and separate (COLLAB-49)

- fixed — RTC - Changing Work Item state re-uploads unmodified files (COLLAB-289)
- fixed — RTC - Add context menu to add delivered change sets to a review from the History view (COLLAB-307)
- fixed — Group Admins cant set the 'All Users' flag of a group to true (COLLAB-212)
- fixed — Send author inspection notice to users with notification preference set to MINIMAL (COLLAB-268)

8.4.8403 - March 25, 2014

- added — ability to obscure database passwords in ROOT.xml (COLLAB-261)
- added — admin has ability to limit subscriber role (COLLAB-57)
- fixed — Eliminated duplicate logins when trailing spaces are included (COLLAB-69)
- fixed — Fixed issue with Previous/Next diff filter (COLLAB-78)
- fixed — Authors are now notified if they are not the creator of the review (COLLAB-85)
- fixed — Memory issue with AccuRev loading (COLLAB-126)
- fixed — Issue with non-participants having certain edit permissions (COLLAB-135)
- fixed — Issue with user selecting a new template and getting error (COLLAB-142)
- fixed — Database integrity diagnostic JoinReviewChangelist error after failed web upload in IE (COLLAB-148)
- fixed — UI issue with General Info area being overwritten (COLLAB-157)
- fixed — Footer incorrect (COLLAB-166)
- fixed — Issue with Group members creating a review that includes non-Group members as the reviewer. Can’t check off items in checklist (COLLAB-167)
- fixed — Lack of warning when mandatory participant is removed from a review (COLLAB-174)
- fixed — Exception error with review pools (COLLAB-176)
- fixed — P4 passwords showing in Web UI debug logs (COLLAB-178)
- fixed — ClearCase issue with addversions if there are changes in subdirectory (COLLAB-181)
- fixed — Issue with plugins newer than the server version of Eclipse (COLLAB-183)
- fixed — Get email/full name data upon account creation (COLLAB-205)

- fixed — Field not cleared after creating a group (COLLAB-210)
- fixed — Style issue in the diff viewer – breaks if the conversation is resized (COLLAB-216)
- fixed — Ensure diffs reviewed does not automatically detect merged changes (COLLAB-218)
- fixed — Raise notification subject line to 256 characters (COLLAB-222)
- fixed — List Review Stalled notification template using Review Stalled Author template (COLLAB-227)
- fixed — Fields not cleaned after creating user (COLLAB-234)
- fixed — Reviews not appearing in action items for author (COLLAB-236)
- fixed — Setting "Review template" to the same template in the command line wipes out participants (COLLAB-239)
- fixed — Unable to remove group admins using group sync (COLLAB-240)
- fixed — Review general information: Admin can see only groups where he is a member of. (COLLAB-245)
- fixed — Make all searches case insensitive (COLLAB-247)
- fixed — Memory issue with SCM.Uploadchangeset() with Subversion (COLLAB-250)
- fixed — Action item arrow is red even though no action can be done (COLLAB-254)
- fixed — Review Creator cannot edit General Info (COLLAB-271)
- fixed — GIT issue if there is a file named HEAD in the directory (COLLAB-275)
- fixed — P4 addchangelists broken for certain versions (COLLAB-286)
- fixed — Add option to allow uploading other user's perforce pending changelists (COLLAB-287)
- fixed — "AddChanges" fails in CVS (COLLAB-290)
- fixed — RTC: “Save change set links and Comments” follow up is now triggered. (COLLAB-54)
- fixed — RTC: No new reviews are generated if Work Items are linked to rejected or cancelled review (COLLAB-204)
- fixed — RTC - All changesets are not uploaded if one is empty (COLLAB-279)
- fixed — RTC: “Add to Review” to be available for changesets in RTC that have been delivered (COLLAB-208)

- fixed — Clearcase: Adding changes via addchanges from parent directories cause the changes to be added as "uploaded files" (COLLAB-238)
- fixed — ClearCase addversions/addchanges fails when using relative path for Windows (COLLAB-298)

8.4.8402 - March 6, 2014

- fixed — Oracle support hotfix (COLLAB-257)

8.4.8401 - February 19, 2014

- added — **Accepted** messages now shown on review reports (COLLAB-38)
- added — Added comment link in search results screen (COLLAB-42)
- fixed — Calendar week starts on Monday instead of Sunday (COLLAB-15)
- fixed — Single-Review dumps contain LabelLocation records for all reviews (COLLAB-27)
- fixed — PDF Conversion causes long query warnings (COLLAB-23)
- fixed — Vertical Tab control code breaks Review-XML parser (COLLAB-25)
- fixed — Checklist records not cleaned up when Review is deleted (COLLAB-29)
- fixed — Config only dumps sometimes will not load due to false positive on Duplicate Meta-Data (COLLAB-30)
- fixed — DOCX upload never completes (COLLAB-40)
- fixed — Deleting Admin email now generates error instead of going to first run initialization screen (COLLAB-41)
- fixed — Hourly time calculations in reports stop at 24 hours instead of 30 hours now before rolling into days (COLLAB-55)
- fixed — Notification errors in some cases in Collab.log (COLLAB-24)
- fixed — Adding a review pool group to two different parent groups breaks participants list (COLLAB-76)
- fixed — MS Office graphics objects do not render in diff viewer (COLLAB-79)
- fixed — Broken keyboard shortcuts in Diff Viewer (COLLAB-90)
- fixed — Changing template in completed review causes a hang (COLLAB-112)
- fixed — Diff convos scrolled off screen when you click them (COLLAB-122)

- fixed — Could not select the participant from specific group (COLLAB-124)
- fixed — Loading AccuRev history used too much memory (COLLAB-126)
- fixed — Overview text box is now larger (COLLAB-127)
- fixed — ClearCase 'Local' does not work in 'addversions' command (COLLAB-130)
- fixed — DB import fails with "java.io.IOException: Data format error: Character reference "&#" (COLLAB-134)
- fixed — Cannot display timeline of deleted reviews (COLLAB-145)
- fixed — Perforce client-ownership check does not respect case-sensitivity setting (COLLAB-152)
- fixed — MS SQL Server 2012 - unable to import system dump files (COLLAB-168)
- fixed — Review deadline is showing dummy data on the Reports (COLLAB-170)
- fixed — RTC - Reopening a review does not change the Work Item approval status (COLLAB-175)
- fixed — RTC - Cannot upload change sets when the number of changes is hidden in the RTC client (COLLAB-187)
- fixed — Option to filter users when adding them to groups does not work properly (COLLAB-192)
- fixed — CodeReviewer webpage showing when clicking Help from Collaborator (COLLAB-194)

8.3.8301 - December 10, 2013

- added — Major performance boost for files with many convos (Case 66490)
- added — Delete work item assignments when a reviewer is removed from a review (Case 76684)
- added — RTC - automatic Work Item approvals (Case 71231)
- added — Respect max rows in printable and csv report versions (Case 76670).
- added — Invite emails mentioned in comment to Review (Case 76479)
- added — RTC - Add Collaborator reviewers as Work Item assignments (Case 73575)
- fixed — Checklist - If you enter two CL items with same name, you simply get kicked to a new screen with an error, lose work (Case 76056).

- fixed — 8.3 Triggers failing on locked clients on 2011.1 (Case 71642)
- fixed — Fixed server memory leak w/ large uploaded files. (Case 76672)
- fixed — 8.3 - Group Synch XML Functionality (Case 76644)
- fixed — Recognize emails with '+' (Case 76652)
- fixed — 8.3: Uploaded file chat message may link 'wrong' version of the file (Case 74198)
- fixed — Remove user agent XSS vulnerability (Case 76661)
- fixed — Search button gradient (Case 75989)
- fixed — Fix alignment of "Next Steps" and "Search" buttons (Case 76656)
- fixed — Explain existing Review load in 'Add to Review' wizard (Case 76651)
- fixed — Deadlines change automatically with timezones (Case 76640)
- fixed — 8.3 - Capturing connection errors deeper than one level(Case 76643)
- fixed — TEE clients were breaking when trying to get the properties or content of a deleted file (SF Case 8309)
- fixed — Support Directory in ClearCase(Case 69826, Review#9789)
- fixed — AddDiffs relative tag causing issues to arise in some cases when trying to add comments/defects in the diff viewer (SF case 8413)
- fixed — roles who are not allowed to modify the general information section of a review can now check/uncheck checklist items and modify participant custom fields (case 76610)
- fixed — deadline column not sortable on home page (case 76192)

8.2.8202 - October 29, 2013

- added — Support http://www.opensearch.org (Case 75699)
- added — Decouple "eval formulas" detail toggle and option (Case 75243)
- added — "Home" link on the dashboard refreshes action items (Case 75323)
- added — Support for Excel ".xlsm" file format (Case 75461)
- added — Sign/decline reviews in Eclipse (Case 74648)
- added — Command-line scripting commands for signatures (Case 74648)
- added — Add "Signature Status" to review list reports (Case 74649)

- added — View for reporting on Electronic Signatures (Case 74649)
- added — Create Views in embedded database (Case 74150)
- added — Show signature status in 'ccollab admin review-xml' (Case 74649)
- added — Show signature status in Review Detail Report (Case 74649)
- added — "Signed/Pending signature/Declined by" filter to reports (Case 74649)
- fixed — Reduced memory usage, improving server performance. Should reduce OOM errors with large document reviews. (Case 75814)
- fixed — Eclipse plugin: fail to create new review. (Case 76312)
- fixed — Display more detail about web upload errors (Case 75990)
- fixed — Reduce db queries for Review Summary page (Case 76239)
- fixed — Search cannot find drop-down custom fields in Embedded database (Case 75833)
- fixed — Show "N/A" instead of "null" when deadlines disabled (Case 76000)
- fixed — Grey disabled list options in IE8 (Case 75998)
- fixed — Load "existing reviews" in GUI just-in-time (Case 75606)
- fixed — Link community section to active forum (Case 75668)
- fixed — Better error message converting old Excel files (Case 75317)
- fixed — Reordering Excel sheets shows bogus modifications (Case 75937)
- fixed — Checklist - Add more line items functionality (Case 75209).
- fixed — RTC - Reviews are created for work items with no changesets (Case 74785)
- fixed — Add possibility to add group admins in group sync and fix documentation for group sync command (Case 75608)
- fixed — RTC - Cannot upload new changes from Work Item when previous review is deleted (Case 72633)
- fixed — Command-line help displays args in wrong order (Case 75743)
- fixed — Synergy - Make Windows-only parameter -n optional (Case 75851)
- fixed — Text diff options do not work after changing "Wrap Lines" (Case 75614)
- fixed — RTC: Reviews are generated for the work item creator and not the owner (Case 73064)

- fixed — Preserve review pool status for groups in group-sync when the review pool flag is not given again (Case 75562)
- fixed — Materials with the same name from different components are munged together (Case 75454)
- fixed — Only showing one tab in Spreadsheet diff (Case 75369)
- fixed — Changelist names and descriptions are wrong (Case 75061).
- fixed — Electronic Signature enabled, signatory not included in review participants (Case 75512)
- fixed — Changelist names and descriptions are wrong (Case 75061).
- fixed — Link downloads wrong version in diff viewer (Case 75738)
- fixed — Make web UI buttons look less "flat" (Case 75319)
- fixed — Review Summary page scrolls when checklist clicked (Case 75148)
- fixed — Overview shows participant count of previous review (Case 74904)
- fixed — Zoom image diff correctly on window resize (Case 75371)
- fixed — Make web UI buttons less "flat" (Case 75319)
- fixed — Better error message on old Excel formats (Case 75317)
- fixed — Show participant signature status in Eclipse (Case 74648)
- fixed — checklists with spaces make review-xml malformed (Case 75491).
- fixed — Retain leading whitespace in comments (Case 74970).
- fixed — Checklist - Add more line items functionality (Case 75209).
- fixed — Triggers failing on locked clients on 2011.1 (Case 71642)
- fixed — Suppress "encode illegal character" warning (Case 74809)
- fixed — "View As" label sometimes misaligned (Case 75170)
- fixed — Re-layout custom field sections on show/hide (Case 74406)
- fixed — RTC - Error uploading deleted file when file already exists on review and has comments (Case 75251)
- fixed — Unused column in admin/users view (Case 74884).
- fixed — Unused column in admin/users view (Case 74884).

- fixed — Navigate to next/prev diff in spreadsheets (Case 74961)
- fixed — Materials sections columns collapse in "compressed" mode (Case 74469)
- fixed — Commit Comments not displayed for ClearCase(Case 75806)
- fixed — Commit Comments not displayed for ClearCase(Case 75806)
- fixed — Problem in 8.2 when adding a changelist and a folder was modified but not moved (case 75556)
- fixed — comment text wrapping problems(Case 75598).
- fixed — Error uploading changelist in subversion when NodeKind was invalid (case 75444)
- fixed — Support a version-extended base filename for Clearcase Addversions(Case 69562, fix unit test)
- fixed — Eclipse - Review Pools do not show up in list of addable participants in Eclipse(Case 70282, fix unit test)
- fixed — reviews sometimes showing up multiple times in action items after a template change (case 75216)
- fixed — 8.2.8200 had upgrade issues with Oracle backed servers (case 75426)
- fixed — Allow upload of multiple changelists in web UI (Case 71476)
- fixed — can now add TFS shelvesets with a leading or trailing space (case 73868)
- fixed — Users are now allowed to accept if they have opened a defect in a chat thread and users can no longer accept the same thread multiple times in a row (case 72236)
- fixed — creating custom fields no longer automatically adds them to a template (case 74089)
- fixed — Participant status no longer switches to 'Approved' upon review cancellation or rejection, the status stays as it was (case 73163)
- fixed — Support a version-extended base filename for Clearcase Addversions(Case 69562, Review #9462)
- fixed — you can no longer set the maximum value for the length of a custom field to be less than the minimum value (case 74440)
- fixed — invalid subscriptions are no longer allowed to be created, added diagnostic to remove invalid subscriptions already in place (case 68450)
- fixed — Support a version-extended base filename for Clearcase Addversions(Case 69562)

- fixed — Eclipse - Review Pools do not show up in list of addable participants in Eclipse(Case 70282)

8.2.8201 - August 28, 2013

- fixed — Corrected a field name that prevented Oracle databases from starting with 8.2.8200 (Case 75426)

8.2.8200 - August 27, 2013

- added — Excel Support
- added — Checklist Support
- added — Make custom fields mandatory by a phase in the review (Case 71847)
- added — RTC - Implement switch to add reviewers to review from work item assignments (Case 73574)
- added — Git support to "ensure-reviewed" and "ensure-review-started" triggers (Case 68627)
- added — RTC - Indicate which work item types under which states should trigger generating/ updating review (Case 73572)
- added — Installer includes Active Directory authentication option (Case 73443)
- added — RTC - Allow multiple Collaborator servers per RTC server (Case 73571)
- added — Verify Database Schema now run at server start (Case 69166)
- added — Diagnostics now add their results to the log file. (Case 69166)
- fixed — BOTH - Perforce: Error when submitting a deleted symlink (Case 74037).
- fixed — Clicking file convo location links with spaces do not focus&scroll convo in diff viewer (Case 71652).
- fixed — Collaborator: Community section should be disabled by default (Case 74924)
- fixed — "Next Steps" shows too many buttons in Planning with review pools (Case 70425)
- fixed — Custom Defect Field Description Placement (Case 70746)
- fixed — Problem opening reviews due to invalid role ID (Case 70705)
- fixed — master - Review Summary - View separate - Status shows 'Initial' on all changelists (Case 70703).
- fixed — master - Can add user to review even when user does not have access (Case 73065)
- fixed — 'local' modifier is broken for perforce addversions (Case 73758)

- fixed — Defect Custom Fields Ignore Default Value Params (Case 74591).
- fixed — Master - workflow should stay in Rework until Author kicks it out (Case 65518)
- fixed — Master - Group and Template inputs can only display 25 elements (Case 73546).
- fixed — Supportability: Set default lazy-upgrade value to '1' instead of blank (Case 74602).
- fixed — Changelists rolled up under 'View as: Separate' (Case 74174)
- fixed — no padding around community section. (Case 74288)
- fixed — do not block web UI while triggers running (Case 69159)
- fixed — Triggers run after database transaction complete (Case 74260)
- fixed — Possible deadlock promoting convos on documents (Case 73356)
- fixed — Add pref to disable decorating workspace files (Case 72153)
- fixed — Error opening diff viewer in Eclipse 4.3 Kepler (Case 74171)
- fixed — Cannot open diff viewer in Eclipse 4.x (Case 70492)
- fixed — Validate Automatic Link regex works in Javascript (Case 73901)
- fixed — Handle Automatic Link errors (Case 73901)
- fixed — Incorrect Quoting in ExternalDiffLauncher (Case 72222)
- fixed — Action items do not have urls if "external URL" not specified (Case 70688)
- fixed — Error uploading files with HTTPS and Proxy (Case 73807)
- fixed — Hide "take review pool" icon for non-pool participants (Case 72882)
- fixed — Cannot reject review with certain "reasons" (Case 73549)
- fixed — Both - Upload P4 shelved files from Web UI uploads empty diffs when there are pending files in the changelist. (Case 70421)
- fixed — P4 Passwords are output in plaintext by DebugCommandRunner (Case 73062)
- fixed — Web debug log stack traces not deobfuscated correctly (Case 73595)
- fixed — directory contents after a directory move not being shown when adding subversion revisions, initial commit. (Case 73161)
- fixed — Review Summary - View separate - Status shows "Initial" on all changelists (Case 70703)

- fixed — Page keeps reloading if fails "single server" check (Case 73467)
- fixed — Subversion triggers respect "Restrict Access" rules (Case 72912)
- fixed — Perforce triggers respect "Restrict Access" rules (Case 72912)
- fixed — Report on Review access restrictions (Case 73202)
- fixed — do not log scary warning about client log file (Case 67725)
- fixed — Uploading .pdf, .doc, and .docx files leaks memory. (Case 72595)
- fixed — Stuck at dancing bear if try to go "back" (Case 72007)
- fixed — Improved rendering speed for large text diffs (Case 72135)
- fixed — Disable "Email Everyone" when no one to email (Case 72710)
- fixed — Action items error when Review Pool user cannot access Review (Case 73200)
- fixed — Check Permissions for Report & Version access (Case 73040)
- fixed — Community section has misleading text when cannot show online version (Case 72940)
- fixed — Error leaving Review in Phase with invisible PCF (Case 74333)
- fixed — Defect log entries should open latest version of file (Case 73748)
- fixed — Defaults for custom fields are now stored properly so changes in a default do not change the history of reviews. (case 73999)
- fixed — Addchanges from the GUI client now works with SVN 1.8 (case 73980)
- fixed — CCRC 8.0 plugin support (Case 72806)
- fixed — review-xml now does not show metrics section if user does not have access to reports (case 70738)
- fixed — review, version, and changelist data accessable even when there is no user by navigating to data/urls. Initial commit (case 70738)
- fixed — Edit participant custom fields on Review Summary page (Case 72275)
- fixed — review-xml now does not show metrics section if user does not have access to reports (case 70738)
- fixed — review, version, and changelist data accessable even when there is no user by navigating to data/urls. Initial commit (case 70738)
- fixed — Review summary error with review pools and restrict access (Case 73201)

8.1.8100 - May 29, 2013

- Initial release of CodeReviewer and CodeReviewer Pro
- added — daily automatic backups for HSQLDB (Case 70617)
- added — FREE, PRO, Collaborator: Community page (Case 71082)
- fixed — "Recent Participants" links not displayed in Eclipse (Case 72881)
- fixed — Recent participants section not showing recent participants when 'All Users' Group is selected (Case 72022)
- fixed — Confusing version information for added files (Case 70637)
- fixed — Before and After not displaying correctly (Case 72263)
- fixed — Typing in comment box slow on IE8 (Case 72402)
- fixed — No markers displayed on PDF file when lots of defects are added (Case 72551)
- fixed — Prevent Cross-site-scripting attacks by correctly escaping parameters before re-displaying on some pages (Case 72282)
- fixed — Prevent cross-frame-scripting attacks by adding header X-FRAME-OPTIONS: SAMEORIGIN to HTTP Responses (Case 72283)
- fixed — Typing in comment box slow on IE8 (Case 72402)
- fixed — Document Review - Pushpins in wrong location (Case 70455)
- fixed — FREE: Free version links to support phone and email(Case 72904)
- fixed — FREE: Admin page "Additional Features" list is difficult to read(Case 72794)
- fixed — CodeReviewer - GUIClient shows all SCM instead of git and SVN only.(Case 72734)
- fixed — CodeReviewer: The "My Activity" button needs to be disabled.(Case 72736)
- fixed — CodeReviewer - Version Control: available features that should not be.(Case 72702)
- fixed — DiffViewer throws exception when Empty Document file(.docx) in version 0 (Case 72191)
- fixed — review not changing state to approved after reviewers were moved to observers (case 72023)
- fixed — Error Viewing PDF Documents After Upgrade(blank page pdf) (Case 70154)
- fixed — corrupted VSS diffs hang client (case 71910)

- fixed — TFS gated build changesets generate 'Missing changeset date' error (case 71790)
- fixed — NoClassDefFoundError creating TFS shelvesets (cases 71641, 71771)
- fixed — do not npe if changelist is missing (cases 71068, 71767)
- fixed — multiple issues when communicating with newer Subclipse clients using SVN 1.7 (case 70330)

8.0.8003 - April 15, 2013

- added — Detect OpenJDK (Case 71563)
- fixed — Review: Materials and Participant Section break after user takes review pool. (Case 71711)
- fixed — NPE when adding a review pool and mandatory subscriptions are enabled (case 71395)
- fixed — GUI client runs out of window handles (case 70850, case 71368)
- fixed — Increase default PermGen space to alleviate OutOfMemory errors (Case 70849)
- fixed — warn when participants cannot access review (Case 70794)
- fixed — Hidden mandatory custom field error trying to Begin Review (Case 71719)
- fixed — Renaming Root.xml does not work in 8.0 (Case 71591)
- fixed — Error uploading .docx to review (Case 66861, Case 70376)
- fixed — Could not Begin Review when there is invisible custom field selected (Case 71451)
- fixed — phase view does not include new 7.0 phases (case 70869)
- fixed — Issue with "Done Editing" (Case 71033)
- fixed — CCRC 8.0 and CCRC getVersions support(Case 66839)
- fixed — client installer effectively freezes when installing p4 tools under certain conditions (Case 70975)
- fixed — disable review pools in "participants" drop-down if not allowed to add (Case 70424)
- fixed — Review Materials Section: Columns are not lining up (Case 70046)
- fixed — HCF with no valid values causes error (Case 71184)
- fixed — Errors when adding a changeset that contains an "evil twin" scenario (Case 71298)

- fixed — Could begin Review even when the required custom Fields has no value yet (Case 70976)
- fixed — Drop-down series custom field name overflows column (Case 71032)
- fixed — better error message for Moved Temporarily / Moved Permanently errors while accessing /contentupload (Case 70157)
- fixed — do not prompt user to enable debug mode (Case 69595)
- fixed — custom fields replicate when navigating from home screen and reviews (Case 70968)
- fixed — Update changelist trigger needs to run as change-submit (Case 70793)
- fixed — Problem adding this Word document to a review (Case 69591)
- fixed — Line numbers overlapping in diff viewer (Case 70302)
- fixed — Action Item missing link if External URL not configured (Case 70688)
- fixed — Fully reset search box when going to next file (Case 70831)
- fixed — Use "Enter" to navigate to next search result (Case 70319)
- fixed — do not scroll to center when clicking convo (Case 69780)
- fixed — Truncate phone number with ellipsis if too long (Case 70393)
- fixed — Better tolerance for missing or corrupted documents (Case 69706)
- fixed — Error using Group-based access restrictions when Review not associated with Group (Case 70530)
- fixed — Cannot submit error report from login or "upgrade db" views (Case 70573)
- fixed — Update browser window title when review title changes (Case 70207)
- fixed — Make Drop-down series custom fields horizontal (Case 70218)
- fixed — Problem adding this Word document to a review (Case 69591)
- fixed — Line numbers overlapping in diff viewer (Case 70302)
- fixed — Review Subs - Able to remove Mandatory do not Enforce subs from reviews (Case 70404)
- fixed — Stack overflow caused by circular dependency on version history (Case 70562)

8.0.8001 - March 5, 2013

- NEW — Merged CodeCollaborator and PeerReview Complete as Collaborator!
- added — The Review Summary screen has now replaced the old create and edit review screens (Case 62189)
- added — You can now search .doc and .docx files in the diff viewer
- added — Review pools: groups of users that can be assigned to 'take' a participatory position in a review
- added — Add revert control to fields on Review General Information in edit mode (Case 69589)
- added — Edit Review: Add updating spinner next to each field and update revert control image (Case 69796)
- fixed — Removed RPM installer support (Case 69471)
- fixed — Edit participant issues with disabled templates (Case 70280)
- fixed — Edit review - template selection - will not save change if template names are same (Case 70284)
- fixed — Defect HCF custom field area has strange red bar (Case 70105)
- fixed — Group select too short (Case 70187)
- fixed — "Done Editing" participants button does not work after going to file (Case 70061)
- fixed — Line up the Files and Defect boxes under the left edge of the Cancel button (Case 70172)
- fixed — Error sorting table by clicking header (Case 69987)
- fixed — Auto-save causes cursor to jump on text fields (Case 70063)
- fixed — The Edit buttons for general info and participants section do not line up (Case 69894)
- fixed — Better tolerance for missing or corrupted documents (Case 69706)
- fixed — Review Summary - No warning when changing review templates (Case 69805)
- fixed — Eclipse & RTC - Find and replace CodeCollaborator & PeerReview Complete logos and icons (Case 69813)
- fixed — Error refreshing diff viewer after changing versions (Case 69892)
- fixed — Bogus "pending updates" warning after editing title (Case 69662)
- fixed — "Download Diff" button returns backwards diff (Case 69869)

- fixed — Log warnings about missing document fonts (Case 69799)
- fixed — Page up/down should scroll the diff viewer (Case 66640)
- fixed — Error when clicking through diff viewer before file fully loaded (Case 69637)
- fixed — Edit button in participant section needs to respect whyNotAllowedToModifyReview (Case 69534)
- fixed — Edit review general info: validation issue with groups when the group select is not visible (Case 69765)
- fixed — Parts of the general info edit drop-downs not clickable (Case 69664)
- fixed — Calculate Download/Upload menu positions dynamically (Case 69593)
- fixed — Autocomplete URL with default protocol when Attaching URL's (Case 69663)
- fixed — "Directory Found not in Git Repo" when "git" not in PATH (Case 69434)
- fixed — Remove bogus 'lastCommentCreationDate' log warning (Case 69412)
- fixed — 'Missing changeset Items' error parsing TFS changeset (Case 67093)
- fixed — Review Summary - Hierarchical custom fields are not hierarchical anymore(Case 69986)
- fixed — Begin Review should be disabled when General Info wait for input of the required fields(Case 69927, Review# 8846)
- fixed — Review title cannot be null or over 255 characters long(Case 69850, Review #8819)
- fixed — Document CollabFormAuthenticator's new functionality (Case 69887)
- fixed — Review should not move to next phase if still in edit mode for either the general info section or the participants section(Case 69913)
- fixed — Better error when uploading a URL/changelist to a completed review(Case 69851)
- fixed — Template list contains disabled ReviewTemplates(Case 69787, Review #)
- fixed — Author subscription user dropdown not working(Case 69783)
- fixed — "There is no current object" and other document problems (Case 69591)
- fixed — Admin Review Templates - cannot create a new template(Case 69792)
- fixed — Admin - More intuitive UI for Review Template edits(Case 69011, Review #8687)
- fixed — Client - always use configured URL to contact the server(Case 68993, Review#8698)

- fixed — Fixed — Client - always use configured URL to contact the server(Case 68993)
- fixed — Increased supportability for various SCMs by removing the word 'optional' when users are inputting the source path in the GUI client (case 61880)
- fixed — NPE in p4 implementation when a filepath is expected to be a symlink and it is not (case 64001)
- fixed — Missing or wrong changelist "external diff" button (Case 68873)
- fixed — Admin - More intuitive UI for Review Template edits(Case 69011)
- fixed — When in "Side by Side", "After" and "Before" drop-down text do not change properly (Case 68917)
- fixed — Adding shelvesets from Team Explorer now has expected behavior (case 67093)

9.2.3 Version 7

7.3.7304 - July 2, 2013

- fixed --- Incorrect Quoting in ExternalDiffLauncher (Case 72222)
- fixed --- Action items do not have urls if "external URL" not specified (Case 70688)
- fixed --- Error uploading files with HTTPS and Proxy (Case 73807)
- fixed --- Both - Upload P4 shelved files from Web UI uploads empty diffs when there are pending files in the changelist. (Case 70421)
- fixed --- P4 Passwords are output in plaintext by DebugCommandRunner (Case 73062)
- fixed --- Web debug log stack traces not deobfuscated correctly (Case 73595)
- fixed --- Page keeps reloading if fails "single server" check (Case 73467)
- fixed --- Subversion triggers respect "Restrict Access" rules (Case 72912)
- fixed --- Perforce triggers respect "Restrict Access" rules (Case 72912)
- fixed --- Report on Review access restrictions (Case 73202)
- fixed --- do not log scary warning about client log file (Case 67725)
- fixed --- Uploading .pdf, .doc, and .docx files leaks memory. (Case 72595)
- fixed --- Stuck at dancing bear if try to go "back" (Case 72007)
- fixed --- Check Permissions for Report & Version access (Case 73040)

- fixed --- Typing in comment box slow on IE8 (Case 72402)
- fixed --- Errors when adding a changeset that contains an "evil twin" scenario (Case 71298)
- fixed --- better error message for Moved Temporarily / Moved Permanently errors while accessing /contentupload (Case 70157)
- fixed --- do not prompt user to enable debug mode (Case 69595)
- fixed --- Update changelist trigger needs to run as change-submit (Case 70793)
- fixed --- Problem adding this Word document to a review (Case 69591)
- fixed --- Line numbers overlapping in diff viewer (Case 70302)
- fixed --- do not scroll to center when clicking convo (Case 69780)
- fixed --- Error using Group-based access restrictions when Review not associated with Group (Case 70530)
- fixed --- Cannot submit error report from login or "upgrade db" views (Case 70573)
- fixed --- Error sorting table by clicking header (Case 69987)
- fixed --- Better tolerance for missing or corrupted documents (Case 69706)
- fixed --- Error refreshing diff viewer after changing versions (Case 69892)
- fixed --- "Download Diff" button returns backwards diff (Case 69869)
- fixed --- Log warnings about missing document fonts (Case 69799)
- fixed --- "Directory Found not in Git Repo" when "git" not in PATH (Case 69434)
- fixed --- Remove bogus 'lastCommentCreationDate' log warning (Case 69412)
- fixed --- 'Missing changeset Items' error parsing TFS changeset (Case 67093)
- fixed --- 'Missing changeset Items' error parsing TFS changeset (Case 67093)
- fixed --- review-xml now does not show metrics section if user does not have access to reports (Case 70738)
- fixed --- review, version, and changelist data accessable even when there is no user by navigating to data/urls. Initial commit (Case 70738)
- fixed --- corrupted VSS diffs hang client (Case 71910)
- fixed --- TFS gated build changesets generate 'Missing changeset date' error (Case 71790)
- fixed --- NoClassDefFoundError creating TFS shelvesets (Cases 71641, 71771)

- fixed --- do not npe if changelist is missing (Cases 71068, 71767)
- fixed --- phase view does not include new 7.0 phases (Case 70869)
- fixed --- multiple issues when communicating with newer Subclipse clients using SVN 1.7 (Case 70330)
- fixed ---"There is no current object" and other document problems (Case 69591)
- fixed --- Increased supportability for various SCMs by removing the word 'optional' when users are inputting the source path in the GUI client (Case 61880)
- fixed --- Missing or wrong changelist "external diff" button (Case 68873)
- fixed --- When in "Side by Side", "After" and "Before" drop-down text do not change properly (Case 68917)
- fixed --- adding shelvesets from Team Explorer now has expected behavior (Case 67093)

7.3.7303 - January 18, 2013

- added --- Syntax highlighting for .hss, .ss and .ts files
- added --- Syntax highlighting for ECMA script (.es) files
- fixed --- Files showing wrong upload order (Case 66561)
- fixed --- Generic error popup when not allowed to access review (Case 67902)
- fixed --- missing spaces on review summary page (Case 67496)
- fixed --- RTC: Uploading a merged changeset results in incorrect version diff (Case 67862)
- fixed --- Flat vs compressed tree (Case 62144)
- fixed --- Next/Prev file button troubles in new version (Case 68084)
- fixed --- Compact view causes word wrap in chat panel to not work (Case 68589)
- fixed --- Error editing partially reworked changelist in separate view (Case 68506)
- fixed --- better error handling for ReviewAccessException (Case 68200)
- fixed --- Stuck at dancing bear after leaving diff viewer (Case 67949)
- fixed --- Chat icons not showing in materials section (Case 68184)
- fixed --- Materials section does not refresh correctly after review event (Case 68382)

- fixed --- Diff Viewer - Prev/Next buttons do not see next diffs when a comment is made on the first diff(Case 67680)
- fixed --- Conversation toolbar disappears when you select different line during defect creation (Case 67931)
- fixed --- Change user agent matcher in Browser.java to match new Gecko version string (Case 67979)
- fixed --- Errors after leaving diff viewer before diff is loaded (Case 67949)
- fixed --- Use ticket instead of user/pass if user/pass is passed in (Case 67749)
- fixed --- Cannot get electronic signatures to consistently work (Case 66367)
- fixed --- Enabling electronic signatures adds completed reviews to action items (Case 68587)
- fixed --- Not using External URL in some places (Case 68153)
- fixed --- Diff Viewer - Next/Prev Line keyboard shortcuts do not work (Case 68218)
- fixed --- Diff viewer Add Comment and Add As Defect buttons should be disabled if create not allowed (case 68373)
- fixed --- Add "external name" to custom defect list reports (Case 56067)
- fixed --- Error showing new version in diff viewer (Case 68219)
- fixed --- Diff Viewer - Prev/Next buttons do not see next diffs when a comment is made on the first diff (Case 67680)
- fixed --- AddVersion(Clearcase) from command line does not work in 7.3 (Case 67726)
- fixed --- Loading port monitor dll from install directory (case 67338)

7.3.7302 - November 21, 2012

- fixed --- Add time zone info to dates in UTC reports (Case 67610)
- fixed --- Unread comments improved for accessibility features (Case 67648)
- fixed --- Clicking 'Create Bug in Bug Tracker' should open in a new tab (Case 65863)
- fixed --- Able to modify roles without error (Case 67348)
- fixed --- Allow some copy/paste functionality in text diff viewer (Case 65946)
- fixed --- Blended reviews (Case 67514)
- fixed --- Handling for symlinks in perforce (Case 67550)

- fixed --- UI limit expanded beyond 10,000 users (Case 66400)
- fixed --- diff viewer now shows side-by-side diffs of identically versioned text files (Case 65933)
- fixed --- Print To Review no longer clips left margin (Case 66562)
- fixed --- Debug logging no longer creates infinitely huge log files in temp (Case 65617)
- fixed --- Scrolling on Firefox improved (Case 67051)
- fixed --- Synchronized locking code to avoid overlapping file lock (Case 66667)
- fixed --- "Show More Lines" button behavior corrected when used with wrap lines (Case 67052)
- fixed --- Password showing in GUI client in plaintext (Case 66089)
- fixed --- Oracle upgrade issues resolved (Case 67040)
- fixed --- User_lastactivity updates while user idles on the home screen (Case 66986)
- fixed --- Corrected NPE with action items if the user had no items(Case 65565)
- fixed --- Changed log level from 'warn' to 'error' for some DB migration issues (Case 64473)
- fixed --- Updated 'addardiffs' command documentation to cover AccuRev limitations (Case 66130)
- fixed --- Catch error from P4 when files are not opened for edit (Case 66901)
- fixed --- Corrected AccuRev error when file system root is inaccessible (Case 66503)
- fixed --- Resize comment box as you type (Case 65616)

7.3.7301 - October 26, 2012

- Added --- Compact view options for Review Summary and Diff Viewer pages.
- Added --- Improved content information on collapsed sections of Review Summary page
- Added --- Authenticated SMTP support
- Added --- Easy, in-application upgrade path from CodeCollaborator to PeerReview Complete
- Added --- Support for Visual Studio 2012 and Windows 8
- fixed --- Oracle upgrade issue from 7222 to 723 (Case 67040)
- fixed --- Reduced load on database from diff viewer (Case 65373)

- fixed --- Reject review reason is no longer a custom field (Case 61600)
- fixed --- Surround 'Unexpected empty version for path' error handling (Case 66261)
- fixed --- Several IE bugs in diff viewer (Case 65579)
- fixed --- git addchanges now works with unchanged, managed files (Case 66417)
- fixed --- Accurev error handling when file system root is inaccessible (Case 66503)
- fixed --- Changing version in Eclipse compare editor no longer breaks connection (Case 65305)
- fixed --- Deleted files no longer show reverted icons in Review Materials section (Case 65580)
- fixed --- Reduced DB contention when updating user activity (Case 66273)
- fixed --- Support .DOC and .DOCX uppercase extension names (Case 66112)
- fixed --- Clearcase Server Integration (Case 64295)
- fixed --- Integration to CCRC with a Bad Password no longer causes lockout (Case 65551)
- fixed --- Pipe symbols in custom fields now work correctly (Case 66161)
- fixed --- Review Summary screen now displays while still loading materials
- fixed --- Auto-adding of unversioned directories now supported on newer subclipse clients
- fixed --- Eliminated a 'jump' in chat when working with defects (Case 65350)
- fixed --- Non-participant comments no longer highlighted until read (Case 65102)
- fixed --- Improved TFS date parsing by adding he_IL locale
- fixed --- Diff viewer refreshing when no longer visible (Case 66082)
- fixed --- Support for Synergy web mode (Case 63794)
- fixed --- TFS date parsing no longer fails for English India locale (Case 65220)
- fixed --- Handle null state passed by P4Version (Case 64548)
- fixed --- Resolve null pointer exception (Case 64653)
- fixed --- P4V and add pending changelist commands now grab shelved changes (Case 64460)
- fixed --- ClassCastException calling protects command (Case 63322)

- fixed --- P4 Error "Unicode clients require unicode enabled server is now resolved automatically (Case 64450)
- fixed --- Upgrade doc conversion utility (Case 64799)
- fixed --- AccuRev diff error "9002" or "9005" (Cases 65481, 65568, 65482)
- fixed --- Error uploading files with proxy to server not at root (Case 65078)
- fixed --- Clients now able to work on systems that do not support file locking (Case 65567)
- fixed --- Correct problems running multiple commands at one time (Case 56660)
- fixed --- Add template as one of the fields that can be added to a custom report (Case 64403)
- fixed --- Concurrent modification exception from Eclipse client (Case 65498)
- fixed --- Hide SVN "Require Client Cert Password" option on server (Case 65483)

7.2.7237 - August 16, 2012

- Added --- PDF document diff support! (PeerReview Complete, only)
- Added --- Multiple file upload support for IE from review summary page.
- Added --- Support additional file extensions for Gosu and xml file types (case 64942)
- Added --- "Synchronize Scrolling" option in non-wrapped side-by-side diff
- Added --- Added functionality to upload multiple files that works in IE (using Flash)
- Added --- Added another "mark all read" button at top of diff convos (Case 64110)
- Updated --- Known issues 689 for this release have been updated clearing out some of the beta notes and adding new information.
- fixed --- PrintToReview will now print documents for doc-diff that are more than 1 page (Case 65443, Case 65361)
- fixed --- ClassCastException calling protects command (case 63322)
- fixed --- Resolved null pointer exception on ensure-diffs-reviewed (Case 64653)
- fixed --- subclipse addfiles throwing nullpointer in some instances if auto add is enabled
- fixed --- make IE use standards mode, even on intranet sites (Case 65013)
- fixed --- Problems with running multiple commands at one time.(Case 56660)
- fixed --- better handling of web UI upload errors (Case 65036)

- fixed --- cursor position reset labeling new convo in IE (Case 65068)
- fixed --- error after switching to new version of file via popup (Case 64853)
- fixed --- pressing <enter> in login fields no longer tries to log in twice
- fixed --- Grabbing values set by P4CONFIG into the client connection except the ones we override (Case 64262)
- fixed --- Disable login button while waiting for login response
- fixed --- New users will not get created twice (Case 64356)
- fixed --- review details page now hidden if the user does not have access to reports (case 64940)
- fixed --- do not show system message in diff viewer (part 2 of Case 65013)
- fixed --- do not linkify javascript: and other unsafe URL's
- fixed --- trust admin-configured Automatic Links (Case 65011)
- fixed --- fixed issue trying to add a file with haveRev #none to a review (Case 64653)
- fixed --- StarTeam format diffs not auto-detected by 'ccollab adddiffs' (case 63719)
- fixed --- p4 submitoptions other than submitunchanged could not handle edit-less changelists (case 64897)
- fixed --- P4 Error "Unicode clients require unicode enabled server" is now resolved automatically (Case 64450)
- fixed --- Allow adding yourself to a review
- fixed --- Show better UI for license errors
- fixed --- add ability to enter license code when upgrading(Case 63831)
- fixed --- Preserve p4 jobs data in update-changelist trigger (Case 64252)
- fixed --- Making a comment with no label will no longer break the review screen (Case 64738)
- fixed --- Addhgdiffs no longer throws a null pointer if not inside hg repo
- fixed --- Error with defect custom field of type Drop-down Series (Case 64773)
- fixed --- Change "Character Encoding" option form radio group to select box
- fixed --- Chat History and Review Materials sections not displayed (case 64534)
- fixed --- Line number linkifying does not function(Case 57351)

- fixed --- StarTeam current diff revision should be specified by -cfgd (case 64255)
- fixed --- support cvs 1.12.9 date format (case 64129)
- fixed --- Added files in Surround committed changelists are blank (case 64149)
- fixed --- Setting system clock back no longer prevents login or logout (Case 64526)
- fixed --- old urls not pointing at new resource locations (Case 63149)
- fixed --- Installing RTC Eclipse plugin: Make HCF compatible with 6.5 plugin clients (Case 64232)
- fixed --- Home screen filter bug (Case 63804)
- fixed --- annotation dialog and defect text detail appear over login screen
- fixed --- modal error dialog does not "grey out" rest of screen
- fixed --- show "new version available" popup in diff viewer (Case 64268)
- fixed --- always list all available versions in diff viewer drop-down
- fixed --- git diff neglected deletes (Case 61431)
- fixed --- automatically refresh to work around race condition for fresh servers(Case 63598)
- fixed --- error clicking in diff viewer after adding more context (Case 65479)
- fixed --- subversion filenames with embedded at symbols (case 63425)
- fixed --- Cannot load obfuscated dumps (Case 63339)
- fixed --- Diff setting "latest accepted revision" seems to be broken (Case 62421)
- fixed --- Fix web mode parameter -s for Synergy (Case 63794)
- fixed --- allow global options to "ccollabtray" (for example, "ccollabtray --debug)
- fixed --- save zip of all log files when running ccollabgui in debug mode (Case 61874)
- fixed --- Line number linkifying does not function (Case 57351)
- fixed --- tweak appearance of diff viewer header (Case 64543)
- fixed --- requested file subscriptions now working
- fixed --- Action Items: Outgoing filter is not filtering outgoing(Case 64213 and Case 63804)
- fixed --- Support path which is both file and folder in web UI (Case 64265)

- fixed --- On the Review Summary page: selecting any "You are waiting and will be notified when" radio button: no longer causes IE7 screen to shake (Case 64243)
- fixed --- Selecting 'no file content' on a review dump no longer results in a zip that contains files (Case 64487)
- fixed --- The custom defect fields of a new defect no longer populate with the values of the previously created defect.(Case 63320)
- fixed --- lines wrap in text diff with "wrap lines" disabled (Case 64229)
- fixed --- text highlighting in single file no longer jumps around and highlights multiple line numbers (Case 63808)
- fixed --- do not skip changed lines when comparing a file verison with itself (Case 64076)
- fixed --- popup a warning and fallback if local storage quota exceeded (Case 64270)
- fixed --- Support "email all" with Outlook 2003 and 2007 (Case 63212)
- fixed --- Diff Viewer: Pusphins show over version drop down (Case 64317)
- fixed --- Send debug log message appears behind drag and drop screen. User cannot send debug log (Case 63883)
- fixed --- use admin-configured support email address (Case 61909)
- fixed --- Cannot rename custom fields. (Case 64109)
- fixed --- New pushpins not visible in the other version if on same page but off screen (Case 64312)
- fixed --- do not offer to reset password if using LDAP authentication (Case 64167)
- fixed --- making selected marker visible when hiding the rest (Case 64250)
- fixed --- Added files in Surround committed changelists are blank (case 64149)
- fixed --- Displaying Review Materials for large reviews is now faster. (Case 64090)
- fixed --- Participants section does not use up available width on FireFox (Case 64089)
- fixed --- navigate document diffs with prev/next button

7.2.7218 - June 25, 2012

- PeerReview Complete 2012 - Official release!
- Added --- Diff Viewer 264 completely overhauled with new and improved display and navigation options.

- Added --- Electronic signatures 263 (PRC only)
- Added --- .doc and .docx diff support 277 with comment promotion (PRC only)
- Added --- More detailed performance logging in debug mode for web UI
- Added --- Image over-under Diff view (Case 62865)
- Added -- Page Width and Full Page zoom options. Zoom options now a ListBox (Case 61239)
- fixed --- Diff Viewer no longer produces exceptions with images in IE8 (Case 64346)
- fixed --- Doc diffs display correctly in IE (Case 64210)
- fixed --- Consecutive Git commits should not be seen as a rebase
- fixed --- Eliminated error when clicking 'External Diff' (Case 64120)
- fixed --- CcollabGui client hangs forever on mac when closing when changes added to review from P4V (Case 63049)
- fixed --- latest rebase should not trump latest accepted for LATEST_ACCEPTED preference (case 62421)
- fixed --- preserve scroll when going back to review summary from diff
- fixed --- Syntax highlighting failure means php file will not display in Code Collaborator (Case 63930)
- fixed --- Overlapping icons in defect log section (Case 63686)
- fixed --- Check type of dragged item in order to determine overlay display (Case 63882)
- fixed --- Subclipse NPE on file with Subversion missing status (case 63812)
- fixed --- mercurial auto detect always returns true if .hg exists on the path ignoring errors
- fixed --- Fix for move/delete and move/added (Case 62688)
- fixed --- Chat panel will not place focus on selected comment if it is located toward the top or bottom of the panel (Case 63891)
- fixed --- Modified check for fileapi support asking for specific functions supported (Case 63753)
- fixed --- Corrected version Descriptions to avoid 'latest upload' error (Case 63923)
- fixed --- Subclipse NPE on file with Subversion missing status (case 63812)
- fixed --- respect "display order" pref in diff viewer, refactoring (Case 63611)

- fixed --- Document diffs carry over to PDF and Image diff viewers
- fixed --- Error selecting modified lines in side-by-side (Case 63809)
- fixed --- no error popup for unexpected server errors
- fixed --- duplicate text diff context if user clicks too quickly
- fixed --- Fixed issues with the tooltip creation and with tooltips dissapearing when going to next/prev files (Case 63625)
- fixed --- Subversive integration does not upload deleted files
- fixed --- Changing labels for Over/Under transparency control (Case 63585)
- fixed --- always expand selected convo (Case 63591)
- fixed --- Fix for glitchy behavior in the drag and drop div when you hover content over the 'Drop files here' legend. (Case 63576)
- fixed --- Reviews can be created from Eclipse when using a proxy on the Eclipse network connection settings (Case 62217)
- fixed --- add "--p4client" to "ccollab ensure-content-reviewed" doc (Case 63413)
- fixed --- improved cache performance when loading Review Overview
- fixed --- improved performance of DiffCache, used when loading reviews
- fixed --- do not wrap defect edit buttons

7.2.7208 - May 29, 2012

- PeerReview Complete 2012 Beta
- Added --- New diff viewer
- Added --- Initial support for doc/docx diffs

7.1.7111 - May 11, 2012

- fixed --- list reports are now displayed when selected (Case 63480)

7.1.7110 - May 7, 2012

- Added --- new user pref for saving overlay/separate display (Case 62262)
- Added --- drag/drop support for reviews
- Updated --- Performance improvements for new UI

- Updated --- Changed review summary screen to support collapsible sections (Not in IE7)
- Updated --- Diff viewer chat panel is now condensed and easier to use
- fixed --- Updated font in diff viewer chat panel (Case 63281)
- fixed --- Still display "Flat" as a view option from the prefs->Display tab (Case 63270)
- fixed --- Typo in web UI "form" -> "from" (Case 63256)
- fixed --- Drag and Drop div is visible in IE7 (Case 63263)
- fixed --- Disabled collapsible sections in IE7 (Case 63032)
- fixed --- Hierarchical custom fields now work for defects(Case 62193)
- fixed --- Pushpin placement has been corrected (Case 61491)
- fixed --- The highlight for the selected chat (Chat blue borders) is now displayed properly (Case 63195, Case 63207)
- fixed --- Change chat comment text to 10pt font(Case 63199)
- fixed --- Users should be able to add themselves to reviews if they are a member of the associated group (Case 63013)
- fixed --- subclipse 1.8 throwing null pointer exception when attempting add to review (case 62794)
- fixed --- Show comment input fields only for the active conversation.(Case 63094)
- fixed --- Refresh review summary page when diff viewer changes
- fixed --- "Submit error" UI should display the created case number (Case 63031)
- fixed --- Participant setting Group By None should be saved(Case 62533)
- fixed --- Links are no longer removed from the chat log when the overlay vs separate widget is clicked (Case 62792)
- fixed --- Fixed participant headers alignment for all supported browsers and reduced vertical space used by the file table (Case 63020)
- fixed --- Make login page work with browser "Remember Password" functionality (Case 61024)
- fixed --- Update CCRC .jar filename in manual (case 63047)
- fixed --- Conversation selection in diff viewer steals clicks (Case 62243)
- fixed --- Error pops up when opening review (Case 62982)

- fixed --- http proxies do not like /contentupload (case 61786)
- fixed --- As a user the separate vs overlay slider is confusing when there is only one changelist.(Case 62583)
- fixed --- Add header tags to important sections of the page (Case 62691)
- fixed --- Replace sprites with image elements for meaningful images (Case 62575)
- fixed --- performance improvements for diffcache misses. (Case 62893)
- fixed --- Support MKS variant branches in sandbox (case 62577)
- fixed --- RTC server side plugin missing dependency in feature.xml (case 62670)
- fixed --- Rework status now displays correctly in both overlay and separate views (Case 61955)
- fixed --- preserve scroll position of active element when page updates
- fixed --- Improve performance of GWT pages (Case 62142)
- fixed --- Root context not respected from links on report page (Case 61943)
- fixed --- addchangelist now parses git log messages with timezones greater than UTC (Case 62442)
- fixed --- IE7 issued warning on every page load over HTTPS (Case 62228)
- fixed --- CollabExternalDiff viewer breaking if the version/changelist ID contained invalid filename characters (case 62184)
- fixed --- filtering outgoing by author (case 62148)
- fixed --- 7.x clients once again respect SSL/proxy settings. (Case 62248)
- fixed --- Improve response time of the SimpleTable widget with deferred rendering (Case 62142)
- fixed --- better tooltip for 'Add and Include Defect' button, and use fix Label/Text inconsistency in defect log (cases 62285, 62532)
- fixed --- browse command now correctly only opens browser when specifically called
- fixed --- Class Cast exception while checking if the default changelist was empty (Case 62079)
- fixed --- Ignoring trailing strings after perforce year.release-number string in order to retrieve support for shelveset correctly (Case 61812)

- fixed --- Added specific client to fstat and resolved commands when executing from a different client (case 61752)
- fixed --- Web UI inaccessible over SSL VPN such as Juniper IVE based SA (Case 62508)
- fixed --- Added dismiss button when review is completed and marked for commit. (Case 62261)
- fixed --- Root context not respected from links on report page (Case 61943)
- fixed --- external diff viewer not working on OSX (case 56192)
- fixed --- Grabbing p4 charset options correctly in command runner (Case 62349)
- fixed --- Highlight whole row of unread conversation in materials section
- fixed --- author should be able to begin review from Annotating phase (case 62401)
- fixed --- Download Latest Client Installer Link in dashboard view (Case 62007)
- fixed --- Added text to clarify which waiting option is selected. Fixed bug that showed wrong selection when browsing through different reviews (Case 62266)
- fixed --- Handle Line wrapping (Case 61829)
- fixed --- reduce download size of Review Summary page by ~65% for large Reviews
- fixed --- Fix accessibility issue: add "alt" property to images (Case 62154)
- fixed --- Disabling filters for action items and adding loading indicator when the table is yet loading (Case 62232)
- fixed --- Perforce "renumber changelists" script hangs (Case 62206)
- fixed --- Reports page SQL and CSV links now working in IE browsers (case 61805)
- fixed --- Changed check for unchanged files so it only checks if the client has any open files (Case 61949)
- fixed --- edits now work on change-content-trigger (Case 61958)
- fixed --- links in redacted comments now look more redacted (Case 61840)
- fixed --- Hidden error popups block "init database" screen in debug mode (Case 61636)
- fixed --- Review summary page performance improvements (Case 61501)
- fixed --- Line wrapping corrected in diff viewer (Case 61829)
- fixed --- Ignoring trailing strings after perforce year.release-number string in order to retrieve support for shelvesets correctly (Case 61812)

7.0.7027 - March 19, 2012

- fixed --- replaced accessibility tag information (Case 62154)
- fixed --- http proxies should now work with /contentupload (Case 61786)
- fixed --- renames causing TimeBuilder to error. (Case 62317, 62359)
- fixed --- Perforce "renumber changelists" script hangs (Case 62206)
- fixed --- Fixed typo in approve message (Case 62224)
- fixed --- No Admin phone number causes Menu options still in V6 format to disapper (case 61914)
- fixed --- Support Surround dates with '.' separators (case 62034)
- fixed --- Archive Content Cache should go away (Case 61901)
- fixed --- Added specific client to fstat and resolved commands when executing from a different client (case 61752)
- fixed --- Ignoring trailing strings after perforce year.release-number string in order to retrieve support for shelvesets correctly (Case 61812)
- fixed --- Typo in CC licensing message (Case 61582)
- fixed --- 7.0 UI: "An unexpected error occurred" should not be presented for user errors (case 61605)
- fixed --- Approving a review when unread comments are loaded causes an error (case 61660)
- fixed --- RTC plugin failed to create review with long title (case 61740)

7.0.7024 - February 17, 2012

- added --- UI tweaks for diff viewer chat panel (Requirements 101488)
- fixed --- Menu headers are now correctly aligned and "Home" image (Case 61820)
- fixed --- Added links to several manual pages for added GIT information (61679)
- fixed --- RTC plugin failed to create review with long title (case 61740)
- fixed --- Approve button is disabled when there is nothing more to do. (case 61710)
- fixed --- Error with svn 1.7 when user does not have access to repo root (case 61682)
- fixed --- User is erroneously prompted to configure full name if full name and login name match (Case 61639)

- fixed --- Display better error message in web popup
- fixed --- Installer appears to hang when DB port is set to empty (Case 61692)
- fixed --- Show better error message if database misconfigured (Case 61657)
- fixed --- Commit from TFS reviews in a single changeset (case 61723)
- fixed --- Diff Compare Dopdown Is Broken (case 61549)
- fixed --- User has 'You have not configured' action item if full name matches login name (Case 61639)
- fixed --- Login names with spaces in them get munged oddly on logout (Case 61329).
- fixed --- We do not have a reject review button in Eclipse plugin (Case 61432)
- fixed --- Changelists displayed in wrong order by automatic refresh (case 61411)
- fixed --- Show "Loading" indicator while loading large reviews
- fixed --- Messaging and documentation describing incompatibility with MKS on 64-bit Windows JRE (cases 60680, 60968, 61326, 61333)
- fixed --- Debug Logging is not capturable on the Initialize DB screen (Case 61352)
- fixed --- Changing phase of authors that upload files after review has been started (Cases 60947, 60720)
- fixed --- Reduce server load of refreshing Review Summary page
- fixed --- The review summary shows the materials in one order but the diff viewer considers the materials in a different order. (case 61465)
- fixed --- Minimally sized GUI screen does not show Existing Reviews field (Case 61018)
- fixed --- addgitdiffs fails with Unexpected Exception (NPE) when not used in a git repository (Case 61424)
- fixed --- Log "long query" warnings on prepared statements
- fixed --- New Server Fails to get License w/o feedback (Case 61023)
- fixed --- Eclipse plugin allows you to begin review without setting a mandatory custom field (Case 56850)
- fixed --- Support Surround one-line changelist history records (case 61311)
- fixed --- Ignore StarTeam 'no revision of file' errors (case 61212)
- fixed --- File Extension issue on Print to Review attached files (Case 61316)

- fixed --- Another minor display issue with Custom Field (Case 60946)
- fixed --- Command 'admin review finish' displays previous phase name (Case 61327)
- fixed --- Mandatory subscriptions allowing changing of roles and sending multiple notifications on attempts to remove mandatory users (case 60176)
- fixed --- do not clobber 'External URL' on startup (Case 61435)
- fixed --- Improper cache headers require manual refresh (Case 61435)
- fixed --- Support Surround one-line changelist history records (case 61311)
- fixed --- Display shorter timestamps in chat, with detail on hover
- fixed --- Suppress extra defect expando header outline (Case 61412)
- fixed --- Use configured git-exe path (case 61385)
- fixed --- Rework counter showing incorrect values (case 60943)
- fixed --- NPE when adding empty changeset to review with RTC (Case 61255)
- fixed --- Removing duplicate versions from the timeline (case 60337)

7.0.7022 — 7.0 Initial release! January 31, 2012

* FIRST RELEASE OF v7.0! *

Major features:

- A fully revised and streamlined user interface
- Hierarchal custom fields
- Support for Perforce shelvesets
- Support for Git changelists
- Support for ClearCase plugin using CodeCollaborator Eclipse plugin
- Option to provide users with option to reject a review
- Ability to log debug information from Eclipse plugin

- added --- automatically list local (not in upstream) git commits in GUI
- added --- gitaddbranch to automatically add diff of what is in a branch that is not upstream as one squashed diff
- added --- review security option to allow participants and group members (inclusive) access to reviews
- added --- added Defect log to the review summary page
- added ---remember Participants section "Group by" settings
- fixed --- now correctly parse SVN server certification error messaging (case 60790)
- fixed --- support ClearCase Zulu format date strings (case 60137)
- fixed --- now correctly parse svn server certification error messaging (case 60790)
- fixed --- eclipse plugin chooses wrong default previous version (Case 60409)
- fixed --- validate content on client before caching. (Case 60157)
- fixed --- creator can now begin reviews via eclipse or command line even if they are not an author (case 59171)
- fixed --- download Diff does not properly handle (ignore) binary files (Case 59631)
- fixed --- ignore CVS banner in stderr (Cases 59676, 60698)
- fixed --- blank screen when logging in for some users (case 60602)
- fixed --- error with Subversive/JavaHL when no access to repo root (Case 60265)
- fixed --- check version before executing shelveset commands (case 60569)
- fixed --- reworked file now shows correct status (Case 60025)
- fixed --- added functionality to delay review loading after executing changes page (Case 58880)
- fixed --- TFS en_CA date now parses correctly (Case 60231)
- fixed --- limit width of "Fun Facts" box (Case 59959)
- fixed --- Get content of non-local resources in Eclipse even if out of sync (Case 60129)
- fixed --- Eclipse plugin update now correctly supports all versions (Case 57778)
- fixed --- null pointer exception in Eclipse client (Case 58849)

- fixed --- different OS's can now add the same file to a review without causing problems due to different line endings (Case 59412)
- fixed --- "Suppress Notification" checkbox stays checked (Case 59164)
- fixed --- OOBE when changelist is empty (Case 61404, Case 61382)
- fixed --- Retain external URL on startup (Case 61453)
- fixed --- Eliminate manual refresh of cached headers (Case 61435)

9.2.4 Version 6

6.5.6510 — July 25, 2012

- added --- Support for additional file extensions for Gosu and xml file types (Case 64942)
- fixed --- Chat History and Review Materials sections display correctly (Case 64534)
- fixed --- Obfuscated dumps can now be imported (Case 63339)
- fixed --- Fix web mode parameter -s for Synergy (Case 63794)
- fixed --- Line number linkification corrected (Case 57351)
- fixed --- Support CVS 1.12.9 date format (case 64129)
- fixed --- Added files in Surround committed changelists are no longer blank (case 64149)
- fixed --- Syntax highlighting failure no longer means php file will not display in Code Collaborator (Case 63930)
- fixed --- Eliminated Subclipse NPE on file with Subversion missing status (case 63812)
- fixed --- TFS implementation correctly parsing Canada locale date (case 63288)
- fixed --- List reports correctly displayed (case 63480)
- fixed --- TEE shelvesets now supported (Case 60306)
- fixed --- 'Page 1 does not exist in this document' message opening Print To Review .pdf (case 61316)
- fixed --- Update CCRC .jar filename in manual (case 63047)
- fixed --- http proxies do not like /contentupload (case 61786)
- fixed --- Performance improvements for diffcache misses. (Case 62893)

- fixed --- CollabExternalDiff viewer works if the version/changelist ID contained invalid filename characters (case 62184)
- fixed --- Browse command works in batch when called with global option no-browser.

6.5.6508 — March 26, 2012

- fixed --- Fixed class cast exception while checking for empty default changelist(62079)
- fixed --- Ignoring trailing strings after perforce year.release-number string in order to retrieve support for shelvesets correctly (Case 61812)
- fixed --- Added specific client to fstat and resolved commands when executing from a different client (case 61752)
- fixed --- Reports page SQL and CSV links not working in IE browsers due to IE URL character limits (case 61805)
- fixed --- Changed check for unchanged files so it only checks if the client has any open files, to avoid error when there is none. Changed submitted version fstat check to include the version number. Added unit tests (Case 61949)
- fixed --- edits do not work on change-content-trigger. Also added test case (Case 61958)
- fixed --- Support Surround dates with '.' separators (case 62034)
- fixed --- renames no longer cause TimeBuilder to error. (Case 62317, 62359)

6.5.6507 — February 17, 2012

- fixed --- SVN 1.7 support when user does not have access to repo root (61682)
- fixed --- Commit from TFS reviews in a single changeset (Case 61723)
- fixed --- Messaging and documentation describing incompatibility with MKS on 64-bit Windows JRE (cases 60680, 60968, 61326, 61333)
- fixed --- Changing phase of authors that upload files after review has been started (Cases 60947, 60720)
- fixed --- Minimally sized GUI screen does not show Existing Reviews field (Case 61018)
- fixed --- New Server Fails to get License w/o feedback (Case 61023)
- fixed --- Another minor display issue with Custom Field (Case 60946)
- fixed --- Support Surround one-line changelist history records (case 61311)
- fixed --- Ignore StarTeam 'no revision of file' errors (case 61212)

- fixed --- rework counter showing incorrect values (case 60943)
- fixed --- NPE when adding empty changeset to review with RTC (Case 61255)
- fixed --- test case for TimelineGenerator fixed (case 60337)
- fixed --- Removing duplicate versions from the timeline (case 60337)
- fixed --- Mandatory subscriptions allowing changing of roles and sending multiple notifications on attempts to remove mandatory users (case 60176)
- fixed --- Erroneous Concurrency Exception during DB init. (Case 60682)
- fixed --- Now correctly parse svn server certification error messaging (case 60790)
- fixed --- Problem disabling admin account
- fixed --- Support ClearCase Zulu format date strings (case 60137)
- fixed --- Can no longer change the role of a user who is in a review due to mandatory subscription
- fixed --- Error parsing regional (Canada) date(Case 60137), Review # 6095.
- fixed --- Eclipse plugin chooses wrong default previous version. (Case 60409)
- fixed --- PeerReview client installer copies CCRC .jar files to wrong location
- fixed --- Validate content on client before caching. (Case 60157)
- fixed --- Svn URL's are now properly encoded if there are special characters within a filename

6.5.6505 — December 21, 2011

- added --- SVN 1.7 support (Case 59698)
- added --- Updated Eclipse support
- fixed --- Ignore CVS banner in stderr (Case 59676, 60698)
- fixed --- Blank screen when logging in for some users (Case 60602)
- fixed --- Error with Subversion/JavaHL when no access to repo root (Case 60265)
- fixed --- Updated documentation for null return in IP4Conn (Case 60569)
- fixed --- Check version before executing shelveset commands (Case 60569)
- fixed --- Reworked files no longer show status as reverted (Case 60025)

- fixed --- Properly support old style p4 renames (Case 60294)
- fixed --- Add to Review P4V integration no longer populates add to existing review (Case 58880)
- fixed --- Conversations added to Review Summary now update correctly
- fixed --- TFS en_CA data parses correctly (Case 60231)
- fixed --- Get content of non-local resources in Eclipse even when out of sync (Case 60129)
- fixed --- More logging exceptions are without stacktraces (Case 60041)
- fixed --- Eclipse plug-in versions now appear correctly (Case 57778)
- fixed --- Ignore warnings about EOL-style from Git (Case 60112)
- fixed --- Eclipse client no longer produces NPE when trying to load comments (Case 58849)
- fixed --- Suppress Notification checkbox stays checked (Case 59164)

6.5.6503 — October 25, 2011

- added --- Users can now ignored 'accepted' comments in comment count (Case 59072)
- fixed --- Adding the same file from different operating systems no longer breaks a review (Case 59412)
- fixed --- Support adding files from ClearCase view-private directories (Case 58637, 59735)
- fixed --- Corrected a parsing error in pending tasks (Case 57096)
- fixed --- Rework counter showing incorrect values (Case 59553)
- fixed --- VSS reviews will no longer hang (Case 59048)
- fixed --- Line parser out-of-bounds exception corrected.
- fixed --- P4 diffs correctly identifies before/after paths (Case 59166)
- fixed --- Support ISO formatted TFS dates (Case 59242)
- fixed --- Authors can no longer be disabled for reviews (Case 58629)
- fixed --- Browse now takes the user to the review materials page instead of new review page if a review exists (Case 58501)
- fixed --- Bad URL's no longer break the review material page (Case 57559)
- fixed --- Correctly respect symlinks in web UI for SCM configuration (Case 59277)

- fixed --- Will now select the correct ClearCase version when addversions has no previous (Case 58988)
- fixed --- Corrected PRC manual favicon (Case 58624)
- fixed --- admin batch version-spec now handles filenames with spaces (Case 58988)
- fixed --- Corrected issue with max number of reviewers (Case 58709)
- fixed --- Action items and search results now respect permissions (58315)
- fixed --- Updated GUI screenshots for Synergy (Case 51728)
- fixed --- Grammar error in server installer authentication page (Case55791)
- fixed --- Time spent reviewing is now correct when doing code reviews (Case 54486, Case 56510)
- fixed --- Open commit reminders from a deleted review will no longer send the user to a blank home screen (Case 59137)
- fixed --- Corrected poking behavior for completed reviews.
- fixed --- Version content already set bug

6.5.6502 – September 9, 2011

- added --- PeerReview Complete will now import database exports from CodeCollaborator as long as minor version/build numbers match.
- added --- Updated manual to include alternate SSL option (Case 58976)
- added --- Syntax parsing for Gosu
- added --- Configuration options for synergy web-mode.
- fixed --- Search results, even by review ID, will not display reviews that the user does not have permission to access (uservoice request)
- fixed --- Updated manual screenshot for Synergy (Case 51728)
- fixed --- Surround committed changelist paths do not start with '/' (Case 56730)
- fixed --- Grammar error in server installer authentication page (Case 55791)
- fixed --- Time spent reviewing is now correct. (Case 54486, Case 56510)
- fixed --- Home page will no longer be blank when a review with an open commit reminder is deleted (Case 59137)

- fixed --- Date in version history for 6.5.6501 now correctly shows as 2011.
- fixed --- Better sorting of case-only changes in Ensure Content Reviewed Trigger (Case 58645)
- fixed --- Correctly handle Surround en_GB dates and fixes for history command parsing (Case 58882)
- fixed --- "Unlimited" number of reviewers is now limited to 100,000. (Case 58709)
- fixed --- Zooming in on a very large PDF that strains memory limits will now produce a friendly error message. (Case 57205)
- fixed --- Button text should now be consistent across reports. (Case 58794)
- fixed --- Accurev uploads should no longer complain about an A:\ drive. (Case 58982)
- fixed --- Updated System Status forms to remain within allotted space (Case 57616)
- fixed --- Print To Review 'File does not exist' error. (Case 58931)
- fixed --- No longer prevented from marking comments read/accepted when two comments collide on the same line of a diff. (Case 57504)
- fixed --- Users are no longer blocked from editing a review after it is due. (Case 53495)
- fixed --- Report Access Security no longer fails with Oracle. (Case 58794)
- fixed --- Fixed a file upload issue with TFS that had files showing up as if they had no content. (58738)
- fixed --- PRC server installer links to the correct online manuals. (Case 57677)
- fixed --- Rework/rebase counter on review overview page. (Case 57203)
- fixed --- Custom defect names should now show up everywhere that the defect label is used. (Case 58524, Case 57569)
- fixed --- Next button should now work when looking for defects. (Case 58542)
- fixed --- Added diagnostic to eliminate dangling user references. (Case 58213)
- fixed --- VHDL syntax highlighting.

6.5.6501 — August 22, 2011

- added --- ClearCase Remote Client (CCRC) Support 456.
- fixed --- File upload issue resulting in empty files.

- fixed --- NPE adding TFS files that have empty comments to review (Cases 58196, 58397, 58411)

6.5.6500 – July 22, 2011

* FIRST RELEASE OF v6.5! *

Major features:

- Report Access Security 152 features
- Improved file upload support

- added --- New vmoptions to adjust when review auto-update is disabled.
- added --- Users can now add changelists to a review if the regex matches the review (Case 57989)
- added --- Support for Eclipse alternate file systems
- added --- New Report Access Security
- added --- Support for batching XMLRPC requests
- fixed --- Eclipse plugin now correctly referenced in PRC server (case 58623)
- fixed --- Fixed a problem where going to a nonexistent review would create a NPE. (Case 57456)
- fixed --- Converted a help link which opened an XML file to raw text to compensate for browser incompatibility (Case 58547)
- fixed --- Improved error messages if group synchronization fails to parse correctly
- fixed --- Corrected a link on the Admin panel that was opening the wrong help section (Case 57780)
- fixed --- Corrected some online manual links that resulted in 404 errors (Case 57677)
- fixed --- Running 'addgitdiffs' on a bare repo will no longer create a NPE (Case 58240)
- fixed --- Corrected issue with Subclipse and SVN 'mergeinfo' support (Case 57555)
- fixed --- Updated change type in already existing versions for TFS (Case 57371)

- fixed --- Changed diff uploads to use streams
- fixed --- Updated fun facts to be more generic (Case 57972)
- fixed --- Several corrections to the owner's manual
- fixed --- Corrected missing space in 'ccollab addversions' documentation (Case 57964)
- fixed --- Removed request for 'mergeinfo unsupported' error with Subversive (Case 57555)
- fixed --- Corrected '%1 is not a valid Win32 application' error when installing Print To Review (Case 58006)

6.1.6104 — May 25, 2011

- added --- support Subversive 0.7.9.20110207-1700
- fixed --- More logging during server startup
- fixed --- Server triggers replacements failed for custom fields with whitespace (Case 57516)
- fixed --- All Defects report filtered by group did not show defects (Case 57033)
- fixed --- License expiration date is now always displayed in UTC with clear timezone indication (Case 57473)
- fixed --- TFS changeset deletes not showing as deleted (Case 51361, 57371)
- fixed --- Error processing filenames containing ampersands on windows (Case 57437)
- fixed --- Remove spurious extra logging in Eclipse plugin
- fixed --- Poor write performance when content-cache is located on a network share
- fixed --- Parsing of StartTeam diff filenames with embedded spaces (Case 57197)
- fixed --- Error reviewing subversion revision 1
- fixed --- Parse Surround history output with multiple continuation lines (Case 57288)

6.1.6103 — April 15, 2011

- added --- Installers for 64-bit JVMs on Windows
- fixed --- Print To Review not deleting image files on cancel (Case 54914)
- fixed --- "Download Diffs" fails for large reviews. (Case 56889)

- fixed --- "Download Diff" link now checks SCM permissions. (Case 57110)
- fixed --- "Open in external diff viewer" link now checks SCM permissions. (Case 57110)
- fixed --- Ticket verification should be case-insensitive (Case 57058, 57075)
- fixed --- Eclipse plugin Defect links truncated
- fixed --- Eclipse plugin should post chat asynchronously
- fixed --- Remove ccollab-cvs trigger from installer (Case 56876)
- fixed --- Support SourceGear Vault Professional Edition (Case 56205, 56737, 56863)
- fixed --- Fix Surround 'Archive error: -9014'
- fixed --- "Suppress Notification" checkbox does not stay checked. (Case 56929)
- fixed --- Chat pane does not load for binary files (Case 56749)
- fixed --- Support path-based access control for Apache-based Subversion servers (Case 56657)
- fixed --- Support blank option values on the command-line
- fixed --- attachments via web UI fail (Case 56783)
- fixed --- TFS commit issue (Case 56528)
- fixed --- TFS shelvesets author check should be case-insensitive (case 56436)
- fixed --- NPE when file has no base version (Case 56553)
- fixed --- NPE on alternate git status text (Case 56443)

6.1.6102 — March 9, 2011

- fixed --- Server fix for broken `ccollab admin wget` and Eclipse plugin w/ MySQL or Oracle. (Case 56315)
- fixed --- Add product name to password prompt dialog
- fixed --- Fix AppSetting not found error configuring Studio Addin for debug
- fixed --- Overwrite stale ticket in GUI client and Eclipse (Case 56426)
- fixed --- Error committing Subversion file with spaces (Case 56534)

- fixed --- Older (4.0) clients depleted database connection pool. (Case 56568)
- fixed --- Invalid regular expression in ExtJS (Case 55848)
- fixed --- RTC integration missing icon
- fixed --- NPE refreshing Review Summary Page (Case 56462)
- added --- Support MKS Source Configuration Path project types (Case 56327)

6.1.6101 – February 22, 2011

* FIRST RELEASE OF v6.1! *

Major features:

- Tasktop Certified Mylyn Integration
- Ticket-based logins
- Support Subversive Eclipse Subversion plugin

6.0.6018 – February 18, 2011

- fixed --- do not limit reviews to N changelists (Case 56011)
- fixed --- Eclipse Review Editor errors "Graphic is disposed" (Case 56393)
- fixed --- Attachments should be archived with other clients.

6.0.6017 – February 11, 2011

- fixed --- satisfy TaskTop requirement that the error icon used in the collaborators section of the review editor should be the one commonly used in eclipse
- fixed --- satisfy TaskTop requirement that required custom fields be decorated with a warning instead of an error icon.
- fixed --- LDAP auth with DOMAIN/username broken (Case 55481)
- fixed --- Browser hangs loading native document conversations (.doc file) (Case 56253)

- fixed --- typo in documentation for 'ccollab logout'
- fixed --- TFS deleted files showing as initial (Case 55981)
- fixed --- Case 56253
- fixed --- Explicitly support "M/d/yy h:mm:ss a" when parsing Surround changelists, instead of expecting this to be the default system date format (Case 56079)
- fixed --- AddFiles should not attempt to add a base version (Case 56157)
- fixed --- do not require Eclipse CVS plugin (Case 56175)
- fixed --- Supply Subversion username and password when adding arbitrary diffs
- fixed --- Allow users to further configure dynamic reports before running them. (Case 54888)
- fixed --- Dynamic reports will show more useful URL's in the URL bar if possible.
- fixed --- Apply and OK buttons disabled in the GUI client (Case 56120)
- fixed --- NullPointerException adding pending changelist with Eclipse plugin (Cases 55998, 56080)
- fixed --- remove extra prompt for password on ccollab login
- fixed --- Rename products in manual.
- fixed --- do not require access to Subversion repository root (Case 53783)
- fixed --- do not require access to Subversion repository root (Case 53783)
- added --- Support Vault Professional and 5.1.1 release (Case 56205)
- added --- diagnostic to add users to ALL_USER group if they are not already in it (Cases 56090, 56101). this is an empty commit because the original commit
- added --- documentation for $review.defectlog variable (Case 56196)

6.0.6016 — January 19, 2011

- added - Respect Subversive Plugin "Do not select externals" preference
- added - Subversion 'svn-recurse-externals' 568 option to recurse in to svn:externals directories
- added - Subversion svn-auto-add 568 global option to treat unversioned files as "added"
- added - Better command-line messages for ccollab admin group member add

- added - review_activity_summary 600 columns: active_reviewer_hours, passive_reviewer_hours (Case 55374)
- added - Print To Review 64-bit driver (Cases 55373, 54985, 52098)
- added - Extra logging around search
- added - Support for Team Foundation Server 2010 (Case 54907 and others)
- added - Radio buttons for Clearcase "Add versions" GUI file selection usability (Case 50471)
- added - Support Subversive Eclipse Subversion plugin
- added - Diagnostic to clean up duplicate values in metadatavalue* tables (Case 55633)
- added - Prompt from eclipse client and standalone GUI when bad auth credentials prevent succesful server responses.
- fixed - Handle TFS Russian date formats (Case 55797)
- fixed - Bad warning message when uploading unversioned file using 'ccollab addfiles'
- fixed - Suppress messages going to Subclipse console
- fixed - Error committing Subversion files in added directories
- fixed - Prevent duplicate Group members (Case 55623)
- fixed - Delete duplicate Group members in Fix Database Data 137 diagnostic
- fixed - Eclipse resource decoration 382 and defect markers 382 fail to update
- fixed - Eclipse "Add to Review" menu item in Synchronize View missing for CVS and Subversion
- fixed - Exception when running "List Reports" in Oracle (Case 55721)
- fixed - GUI Client Git "Add changes" does not canonicalize filesystem path (Case 54598)
- fixed - NPE in "Add changes" when adding from subdirectory of Git repo (Case 55676)
- fixed - Handle missing Perforce 'haveRev' better (Case 55458)
- fixed - Reviewer can incorrectly finish until file activity (Case 55456)
- fixed - Reworked files showing 'Initial' status (Case 55557)
- fixed - NPE in installer during ROOT.xml generation (Case 55578)
- fixed - Better error message when LDAP authenticated user has not logged in to the web UI (Case 55538)

- fixed - RTC server plugin fails to create review when files paths cannot be constructed (Case 55547)
- fixed - Error saving Review custom fields in Eclipse plugin
- fixed - Performance - Only search "user" comments, not system comments
- fixed - Skip change set links that are missing a workspace hint in RTC Server Plugin
- fixed - Translate ClearCase LATEST to actual version
- fixed - Try harder to not run out of memory when running Perforce commands (Case 46879)
- fixed - Tray Notifier always thinks there are new Action Items
- fixed - Can not add pending Perforce changelist from Eclipse Plugin (Case 55064)
- fixed - Improve initial load speed of diff page (Case 55306)
- fixed - Command-line process execution fails with msysgit (Case 55322)
- fixed - Collapse paths in tree when selecting locally modified files in "Add versions" UI (Case 50471)
- fixed - Stop storing password supplied at command line prompt in config file
- fixed --- ClassCastException in "Fix Duplicate Users Differing By Case" Diagnostic. (Case 55910)

6.0.6013 — November 17, 2010

- added --- Support KB, MB and GB suffixes for smartbear.ccollab.upload.truncate.size (Case 54922)
- added --- Eclipse plugin support for reviewing URL's
- added --- Show "pins" in Eclipse Compare Editor for images and documents
- added --- Support for document review in Eclipse plugin
- added --- The assignment_state database view describes actioncodes in the assignment table. (Case 55049)
- added --- Find changes on ClearCase branch for Add Versions (Case 50471)
- added --- Edit participant custom fields in Eclipse plugin Review Editor
- added --- New "ccollab admin review edit --participant-custom-field" option

- added --- Clearcase: UI for add versions from branch (Case 50471)
- added --- Ability to "Poke" a Review participant in the Eclipse Plugin
- added --- Eclipse Plugin Review Editor show participant state using icons and font
- added --- Support Vault 5.0.4/Fortress 2.0.4 (Case 54773)
- added --- Double-click an entry in the Eclipse plugin Review Editor defect log to open the associated file
- added --- Show extended information in Eclipse plugin Review Editor defect log tooltip
- added --- "File" and "Location" columns in Eclipse Review Editor defect log section
- added --- Specify custom label for conversations in Eclipse Plugin
- fixed --- Throttle error messages about old/unsupported clients. (Case 55194)
- fixed --- Next/prev buttons in diff viewer failed after changing version comparison. (Case 55166, 54870)
- fixed --- NPE when converting null dates to strings (Case 55179)
- fixed --- Initial setup page changed user logins instead of adding new users. (Case 54771)
- fixed --- Support non-English locales with Subclipse integration (Case 55185)
- fixed --- Allow single-word user names (Case 54528)
- fixed --- Version change without content change shows 'Uploaded File' instead of change metrics (Case 55130)
- fixed --- Wrong version uploaded for ClearCase activities with unordered changes (Case 54648)
- fixed --- Change server.xml defaults to improve server behavior under load
- fixed --- Upgrade Tomcat to 6.0.29
- fixed --- NPE updating defect markers in Eclipse plugin (Case 55064)
- fixed --- User selections should include user logins for disambiguation
- fixed --- Links in dynamic reports were broken on first page load. (Case 54934)
- fixed --- Respect custom field phase visibility in Eclipse Plugin
- fixed --- Review overview fails to load - NPE with empty label location on Oracle backend (Case 54839)

- fixed --- Client installer removes other P4V custom tools (Case 54448)
- fixed --- Improve 'Invalid ClearCase version' message (Case 54975)
- fixed --- Visual Studio Addin unloads when solution is closed (Case 52634)
- fixed --- Visual Studio Addin should display error message if nothing to do (Case 54661)
- fixed --- Eclipse plugin mangles multi-line text custom fields (Case 54867)
- fixed --- Wrong base version for Vault rolled back versions (Case 53902)
- fixed --- Eclipse Plugin Review Editor NPE with CodeReviewer (Case 54790)
- fixed --- Prevent MKS host name truncation (Case 53470, 54780)
- fixed --- Prepopulate Print To Review document name (Case 54123)
- fixed --- Defect Custom field order not respected (Case 54717)
- fixed --- P4V integration does not prepopulate review title (Case 54449)
- fixed --- New comment text box in Eclipse plugin does not expand correctly as you type
- fixed --- Error uploading reverted CVS file in Eclipse plugin (Case 54587)
- fixed --- Be more lenient for administrator full names in support of non-Latin-1 character sets (Case 51433)
- fixed --- Error using relative paths with 'ccollabgui addchanges' (Case 54459)

6.0.6012 — October 1, 2010

- added --- Documentation for content-cache format prop file
- added --- Compare against any local file in Eclipse plugin
- added --- Select line in Eclipse plugin Compare Editor when conversation focused in Conversations View
- added --- Compare against any local file in Eclipse plugin
- added --- "Refresh" button to Eclipse Review Editor
- added --- Display links for URL's and emails in Eclipse Plugin Conversations View
- added --- Links in Eclipse Plugin Conversations View
- added --- Links in Eclipse Plugin custom fields and defect text

- added --- Linkify-as-you-type in Eclipse Plugin
- added --- Display Review ID in "Add To Review" wizard confirmation page (Case 54371)
- added --- Log IP address of old clients (Case 54392)
- added --- New reporting views. (Case 54438)
- added --- Option to suppress notifications by type/template
- added --- Interim 'ccollab logout' command that clears password (Case 54065)
- fixed --- HTML markup displayed in Eclipse plugin 'Moving On' section
- fixed --- Multi-selected files not uploading from addin
- fixed --- Defect links and comment box sometimes disabled improperly in Eclipse plugin
- fixed --- do not mark review editor dirty just because custom field values are not yet assigned
- fixed --- NullPointerException committing from tray notifier
- fixed --- Eclipse Review Editor "Moving On" section missing controls after pressing "Begin Review"
- fixed --- Make Conversation ruler background color match file in Eclipse Compare Editor
- fixed --- Missing checked graphic in diff viewer
- fixed --- Eclipse plugin Compare Editor "Too Many Differences" error"
- fixed --- Erroneous Concurrency Exception on upgrade (Case 54087)
- fixed --- Can no longer create multiple custom fields that differ only by case (Case 54087)
- fixed --- Corrected features-not-supported-in-CodeReviewer list
- fixed --- Email notifier log message says "seconds" instead of "milliseconds"
- fixed --- Display image for file type in Eclipse Compare Editor
- fixed --- Prefs page fails to render tabs in IE7
- fixed --- In Notification Template admin screen, sort the templates by display name.
- fixed --- Make 'browser' global option case-insensitive (Case 50407)
- fixed --- Keep Eclipse Plugin Action Items View and Editors in sync
- fixed --- Use custom label for "Defect" in Eclipse Plugin

- fixed --- Eclipse plugin "Could not get defect attribute from defect marker" error (Case 54349)
- fixed --- Sort next file/previous file the same as the review overview screen, collating case (case 54132)
- fixed --- p4 \r\r\n line endings confuse ensure-content-reviewed trigger (Case 54213)
- fixed --- Better error messages for Eclipse Plugin (Case 54350)
- fixed --- do not overwrite file content when restoring from backup (Case 54401)
- fixed --- Installer should automatically replace old P4V custom tool definitions (Case 54450)
- fixed --- Updated manual to document all views. Corrected view name to: defects_by_path (Case 54437)
- fixed --- Dynamic Defect Report filter by Review Completion Date (Case 54226)
- fixed --- Error upgrading server if no diffs cached (Case 54381)

6.0.6011 — September 8, 2010

* FIRST GA RELEASE OF v6.0!

Note: 6.0 Beta clients (6.0.6001 - 6.0.6009) are not compatible with the GA 6.0.6011 server (5.0 clients *are* compatible with 6.0.6011 server). If you were using a 6.0 beta client please upgrade your client to the GA version 6.0.6011.

- added --- do not allow saving password via ccollab set (use ccollab login instead)
- fixed --- Group Admins 174 may delete groups they admin (Case 52208)
- fixed --- Last Comment shows if redacted 302 (Case 53732)
- fixed --- Error entering new Comments on "local file 382" version in Eclipse plugin (Case 53820)
- fixed --- Create distinct changelists for unmanaged files uploaded via ccollab addfiles (Case 52713)
- fixed --- Append indicator page to end of truncated Print To Review documents
- fixed --- do not allow new conversations when comparing against changed local file 382 in Eclipse plugin

- fixed - Eclipse plugin Defect Markers 382 and Label Decorations 382 do not clear when Review deleted
- fixed - Print to Review displays "No Title" error (Case 53929)
- fixed --- NPE on Review Detail Report 321 (Case 53682)
- fixed --- User Reports 323 specify "System Admin" instead of ambiguous "Admin" (Case 53084)
- fixed --- Removed unused 'issue' table (Case 52652)
- fixed --- ccollab addchanges --diffbranch option should not return CHECKEDOUT versions (Case 53680)

6.0.6009 — August 8, 2010

- added --- New file content store format for better FS performance.
- added --- Print To Review and Studio Addin launch 'Add To Review' GUI wizard
- added --- Enable log level management through JMX
- added --- External diff launcher preset for BeyondCompare on Linux
- added --- Supported browsers now include Chrome
- added --- Display graphical UI for P4V integration
- added --- P4V integration upload multiple changelists at once
- added --- Show user login to disambiguate user names on Group admin page (Case 53589)
- added --- Click on a line in the Eclipse compare viewer and start typing to add comment
- fixed --- Added troubleshooting info to the manual for p4v/p4win plugin (Case 53579)
- fixed --- Added keyboard shortcuts for GUI client to manual (Case 53578)
- fixed --- Eclipse client new chat box does not size correctly with trailing line feed on Windows (Case 52804)
- fixed --- Review completion from the command line ignores unset required participant custom fields. (Case 51714)
- fixed --- Role Configurations cannot be created (Case 53418)
- fixed --- Double-click entry in Eclipse diff's structure view and the window shifts to the right (Case 51590)

- fixed --- SCM Configurations show bogus local path
- fixed --- Install P4 Plugins checkbox should be checked by default if Perforce installed.
- fixed --- Support redacted comment update in eclipse plug-in
- fixed --- Documentation on how to change the file cache location (Case 47974)
- fixed --- Restrict Uploads to Review cannot be changed on review edit (Case 52417)
- fixed --- Show redacted comments as redacted on review overview
- fixed --- Add documentation for configurable server log settings (Case 50107)
- fixed --- Comments sort in wrong order in document review. (Case 53540)
- fixed --- "Fix Defects" phase now uses custom label for Defects.
- fixed --- Eclipse client allows you to "wait" when you are already waiting (Case 51559)
- fixed --- Group member edit list of members is too narrow in IE (Case 50184)
- fixed --- ccollab admin review wait is --until argument is now optional; defaults to Any
- fixed --- Include disabled and reporting-only Groups in Review report filter
- fixed --- Organize Groups on Admin->Groups page (Case 53586)
- fixed --- Change the accepted version icon in the pulldown to differ by more than just color
- fixed --- Display "not yet supported" message for "Live URL" files in Eclipse Plugin
- fixed --- "Concurrency Exception" after system upgrade. (Case 53621)
- fixed --- Select current location when clicked in right side of Eclipse compare viewer
- fixed --- Update top-level Git page in manual (case 53395)
- fixed --- Focus correct conversation control when new conversation started in Eclipse client

6.0.6008 – August 6, 2010

- fixed --- Eclipse update site URL in 6.0 zipped update site pointing to 5.0
- fixed --- Addin under VS 2010 (cases 51282, 52100, and 53275)
- fixed --- Eclipse plugin "Recent Participants" have the wrong Role

- fixed --- Make clearcase addversions wizard upload multiple versions at a time
- fixed --- Restrict Access to Review has inconsistent wording (Case 52444)
- fixed --- Removed broken "Revert" buttons from Group Admin page
- fixed --- PHP not syntax highlighted when opening <?php is not closed (Case 50039)
- fixed --- In document review, clicking on a different page's comment does not select that comment (Case 52470)
- fixed --- Display an error on review edit when not all required assignments are present (Case 52008)
- fixed --- Diff viewer keyboard shortcuts help does not work in Chrome (Case 51820)
- fixed --- Eclipse client custom field error decoration clipped in Review Editor
- fixed --- Eclipse Review Editor appears dirty if string custom field is empty
- fixed --- Group selection does not appear in review editor if no group is assigned (case 52872)
- fixed --- ClearQuest activity review titles should default to headline (case 49180)
- fixed --- Use first commit hash as Git repo identifier
- fixed --- Allow non-ascii characters in username/password field (Cases 51434 and 52406)
- fixed --- Sort files alphabetically in GUI client "Add Changes" wizard (Case 53067)
- fixed --- Typos in documentation of "ccollab admin batch" command (Case 52711)
- fixed --- Redacted comments should not be counted or displayed in reports (Case 52256)
- fixed --- Alphabetize users and groups on Group edit page (Case 53067)
- fixed --- Redacting a comment on zoomed image resizes image (Case 52277)
- fixed --- Spurious P4V addons message at end of install process (Case 48043)
- fixed --- Move restrict process options to access restrictions section (Case 49848)
- fixed --- Error uploading Subversion revisions with directory changes in Eclipse Plugin
- fixed --- Performance - Case insensitive string indexes in Oracle (Case 52392)
- fixed --- Content Archive queries do not scale well
- fixed --- Enforce administrator dump restriction at dump time, not just display time

- fixed --- Surround changelist date AM/PM concerns (case 52522)
- fixed --- Default Value for Participant Custom Field broken (Case 52082)
- fixed --- Changed description of "Allowed to Modify Review" to better reflect true behavior (Case 51954)
- fixed --- When Eclipse plugin refresh job fails with network error, stop all refresh jobs
- fixed --- Order files alphebetically in ClearCase version spec page
- fixed --- Prevent multiple instances of server (multiple ROOT.xml files) from running at the same time
- added --- Button to Eclipse Review Editor to open Review in browser
- added --- Implement defect "Track Externally" button in Eclipse plugin
- added --- User Detail Report now contains a link to get a CSV file containing the User Activity data
- added --- Compare reviewed version with local file in Eclipse client
- added --- 'ccollab admin review defect mark-not-external'
- added --- Option to ignore integration history when caculating previous versions in perforce (Case 51845, 45704)
- added --- Always show line numbers by default in Eclipse plugin line-based Compare Editor
- added --- Print To Review support for 300 DPI color (case 52050)
- added --- Check for concurrent DB access
- added --- Change autofill UI in clearcase addversions wizard
- added --- Instructions in manual on how to create database and user in mysql using command line
- added --- Better error handling for server connection errors in Eclipse plugin
- added --- Submit comments / create defects with in Eclipse plugin

6.0.6006 – July 9, 2010

- added --- Command-line commands address existing Conversations by first Comment ID

- added --- Command-line commands 'ccollab admin review conversation mark-read' and 'ccollab admin review conversation accept
- fixed --- make template editable from eclipse review editor
- fixed --- Defect markers on wrong lines in Eclipse Client
- fixed --- parse diffs files have a Unicode byte order mark (Case 52660)
- fixed --- Enforce administrator dump restriction at dump time, not just display time.
- fixed --- New branched TFS files missing from shelveset review (case 48530)
- fixed --- Better detection of content type in Eclipse compare editor
- fixed --- Better file type icons in Eclipse client Review Editor
- fixed --- Fewer database queries to load diffs on cache miss (Case 52392)

6.0.6005 – June 29, 2010

- fixed --- Typing in Eclipse Plug-in chat and defect text boxes is slow
- fixed --- Eclipse Plug-in Review Editor 375 icon inconsistent
- fixed --- File URL's break Review overview (Case 51666)
- fixed --- GUI Client missing larger logo sizes
- fixed --- Diff Viewer Prev/Next buttons do not work (Case 52157)
- fixed --- If redacted comment 302 is most recent comment you cannot make the same comment (Case 52224)
- fixed --- Hidden markers 289 shown again when zoom 289 changes
- fixed --- Missing page notification fails to clear after zoom 289
- fixed --- Chat column 299 too narrow in IE8 (Case 52280)
- fixed --- Strange text in confirmation message box when deleting Defect (Case 51460)
- fixed --- User detail report 323 missing one Group (Case 52110)
- fixed --- Javascript error loading Groups admin screen
- fixed --- Participant names are listed in phases where no custom fields are visible (Case 52042)

- fixed --- Eclipse Plug-in Review Editor 375 shows extraneous "treenode" icon on files
- fixed --- Eclipse Plug-in initialize custom fields 190 with default values
- fixed --- Wrong default value for selection custom field
- fixed --- Print to Review installer should update system path variable (Case 52390)
- fixed --- Eclipse Plug-in remove "edit" state for Defects
- fixed --- Unable to parse remote origin url from config file (Case 52589)
- added --- Documentation for Git integration 439 in the GUI Client
- added --- Documentation for redact comment 302 feature
- added --- Command-Line Client command "ccollab admin review set-participants"
- added --- Documentation for Mercurial 510 integration
- added --- Drag and drop participants 376 to change roles in the Eclipse Plug-in Review Editor 375
- added --- Right-click to edit participants 376 in the Eclipse Plug-in Review Editor 375
- added --- Display participant custom fields 196 in Review detail report 321
- added --- Eclipse Plug-in UI to add participants
- added --- Eclipse Plug-in Review Editor 375 can drag from users list to participant list to add participants
- added --- Drop-down menus to select which version to diff in Eclipse Plug-in Compare Editor 381
- added --- Print to Review documentation with troubleshooting info on Windows 7 and Vista (Case 52398)
- added --- UI field assist for custom field 190 errors in Eclipse Plug-in
- added --- Database views 600 for participant custom fields 196 (Case 52324)
- added - Eclipse Plug-in Conversations view 379 can be filtered to show only defects or comments, removed "Defects" and "Comments" views
- added --- Eclipse Plug-in allow multiple instances of Conversations view 379
- added --- File status (added/modified/deleted) icon decorations in Eclipse Plug-in Review Editor 378
- added --- Show Eclipse icon for file type in Eclipse Plug-in Review Editor 378

Fixes from 5.0 build 5033 773:

- fixed --- P4 integration 537 ignores unmodified 'move/add' files when configured to 'revertUnchanged' (Case 52319)
- fixed --- Command-Line Client "ccollab addchanges" link in Subversion command line documentation (Case 52413)
- added --- Support adding MKS change packages from other authors (Case 52317)
- added --- Performance improvements for custom field queries
- added --- Option to specify how frequently server checks for stalled reviews (performance) (Case 52392)

Fixes from 5.0 build 5032 774:

- fixed --- TFS 517 Date parsing error in New Zealand (Case 51476)
- fixed --- Improve performance - remove some wasteful queries

Fixes from 5.0 build 5031 774:

- fixed --- Not finding CMVC track and find binaries on Solaris (Case 51930)
- fixed --- Error adding TFS 517 Shelveset to Review (Case 51386)
- fixed --- Performance issues with SQL Server 58 activity queries (Case 52086)
- fixed --- Not all defect activity pulls defect activity trigger 208 (Case 51898)
- fixed --- Dynamic reports now properly display MSSQL 58 /HSQL 54 dates (Case 49695)
- fixed --- do not include Group User members 175 in configuration-only dump
- added --- More debug logging for "add diffs 352" commands

6.0.6001 (beta) — June 2, 2010

* FIRST RELEASE OF v6.0 BETA! *

Major new features include:

- Support for reviewing Microsoft Office documents
- An Add-In for Visual Studio 402 - add files to a review from the Solution Explorer
- Significant enhancements to the integrations with ClearCase 454, Rational Team Concert, Git 436, and Mercurial 510
- Ability to redact comments 302

9.2.5 Version 5

5.0.5041 — February 18, 2011

- fixed --- Update Vault 5.0 references to 5.1 (Case 56205)
- fixed --- TFS 517 deletes showing up as initial (Case 55981)
- fixed --- NullPointerException adding pending changelist 387 with Eclipse plugin (Cases 55998, 56080)
- fixed --- Backport TFS 517 Russian date fix to 5.0 (case 55797)

5.0.5040 — January 11, 2011

- fixed --- Update Vault 5.0 references to 5.1 (Case 56205)
- fixed --- TFS 517 deletes showing up as initial (Case 55981)
- fixed --- NullPointerException adding pending changelist 387 with Eclipse plugin (Cases 55998, 56080)
- fixed --- Backport TFS 517 Russian date fix to 5.0 (case 55797)
- fixed --- Prevent duplicate Group members (Case 55623)
- fixed --- Reviewer can incorrectly finish until file activity (Case 55456)
- fixed --- Translate ClearCase LATEST to actual version
- fixed --- Support deleted TFS files
- fixed --- Error uploading reverted CVS file in Eclipse plugin (Case 54587)
- fixed --- Version change without content change shows 'Uploaded File' instead of change metrics (case 55130)

- fixed --- Wrong version uploaded for ClearCase activities with unordered changes (case 54648)
- fixed --- Improve 'Invalid ClearCase version' message (case 54975)
- fixed --- Wrong base version for Vault rolled back versions (case 53902)
- fixed --- Support Vault 5.0.4/Fortress 2.0.4 (Case 54773)
- fixed --- Prevent MKS host name truncation (cases 53470,54780)
- fixed --- Updated manual to document all views. Corrected view name to: defects_by_path (Case 54437)
- fixed --- "sort next file/previous file the same as the review overview screen, collating case" (Case 54132)
- fixed --- Prefs page fails to render tabs in IE7

5.0.5039 — September 17, 2010

- fixed --- defect triggers do not fill in substitution for ${actor.*} (case 53618)
- fixed --- '--diffbranch' option should not return CHECKEDOUT versions (Case 53680)

5.0.5037 — August 25, 2010

- added --- Configurable AccuRev history algorithm
- added --- VHDL syntax highlight (Case 53648)
- fixed --- Fix type coercion error in oracle compatibility (Case 52573)
- fixed --- Repair corrupted MetadataValueInteger fieldIds (case 52573)
- fixed --- Do not load inactive custom fields (Case 52573)
- fixed --- Chat Pane in FireFox 3.x too wide in Linux (Case 53580)
- fixed --- Update jPDFImages - PDF rendering never completes - 100% CPU load (Case 53486)
- fixed --- "Download Diff" generates invalid diffs. (Case 53479)

5.0.5036 — August 10, 2010

- fixed --- removed broken "Revert" buttons from the Group Admin page

- added --- Allow user to provide Subversion a HTTPS client certificate password at runtime (Case 53263)
- fixed --- Validate that a changelist can be detached (Case 53375)
- added --- Diagnostic to find and fix reviews that have illegally detached changelists (Case 53375)

5.0.5035 — July 29, 2010

- fixed --- Enforce administrator dump restriction at dump time, not just display time
- fixed --- Error uploading Subversion revision with directory changes in Eclipse Plugin
- fixed --- Performance - case insensitive string indexes in Oracle (Case 52392)
- fixed --- Content archive queries did not scale well
- fixed --- Auto-detect charecter encoding of user-provided diffs instead of using system default
- fixed --- do not flood output.log with regular log messages
- fixed --- Typos in documentation of "ccollab admin batch" command (Case 52711)
- fixed --- Allow non-ascii characters in username/password field (Case 51434, 52406)
- fixed --- ClearQuest activity review titles should default to headline (Case 49180)
- added --- Option to ignore integration history when calculating previous versions in Perforce (Case 51845, 45704)

5.0.5034 — July 9, 2010

- fixed --- Parse diff files that start with Unicode Byte Order Mark(Case 52660)
- fixed --- Reduce number of queries required to load diffs (Case 52392)
- fixed --- New branched TFS files missing from shelveset review (Case 48530)
- added --- Server plug-in 493 for Rational Team Concert, Beta

5.0.5033 — March 23, 2010

Upgrade to ExtJS 3.1. This fixes many UI issues including:

- fixed --- Diff Viewer resize issues in Internet Explorer (Case 52189)

- fixed --- Collaborator defect form entry display issue (Case 52096)
- fixed --- Participants list boxes when creating/editing review are cut off in ie6 (Case 52032)
- fixed --- Missing scrollbars on initial diff view load (Case 38247)
- fixed --- Image diffs in IE 6 do not work (Case 46236)

- added --- Support adding MKS change packages from other authors (case 52317)
- added --- Option to specify how frequently server checks for stalled reviews (performance) (Case 52392)
- fixed --- P4 integration ignores unmodified 'move/add' files when configured to arevertUnchanged' (Case 52319)
- fixed --- Updated backup/migration docco to cover how to point collab to a new database (Case 52411)
- fixed --- Performance - Improve custom field queries
- fixed --- Must provide value for sandbox (case 49641)
- fixed --- Fix 'Value requires 2 integer parts' exception (case 51225)
- fixed --- Support uploads of change packages from other authors (case 52317)

5.0.5032 – June 14, 2010

- fixed --- do not include group user members in configuration-only dump
- fixed --- Performance - Remove some wasteful queries.
- fixed --- ClassCastException in Oracle data loading code.
- fixed --- TFS Date parsing error in New Zealand (Case 51476)

5.0.5031—2010/06/10

- added --- More debug logging for "add diffs" commands (Case 52124)
- fixed --- Wrap long error messages (Case 51915)
- fixed --- Not finding CMVC track and find binaries on Solaris (Case 51930)
- fixed --- Error adding TFS 517 shelveset to review (Case 51386)

- fixed --- Performance fixes for SQL Server activity queries (Case 52086)
- fixed --- Not all defect activity runs defect activity trigger (Case 51898)
- fixed --- Dynamic reports now properly display MSSQL/HSQL dates (Case 49695)

5.0.5030 — May 22, 2010

- added --- Support for 'addactivity all' (Case 50444)
- added --- Better documentation for addversions command.
- added --- option to specify local database path in Rational Synergy (Case 51587)
- added --- Forward compatibility; improve error messaging when connecting to a 6.0 server.
- fixed --- Addactivity hangs reading activity (Case 51276)
- fixed --- ClearCase performance improvements (Case 50942)
- fixed --- Incorrect timezone offset for submitted Perforce changes (Case 50679)
- fixed --- Create new User Account subtext (Case 51328)
- fixed --- Handle deleted files in ClearCase activities (Case 51275)
- fixed --- Reports CSV output should not consume a license (Case 51457)
- fixed --- Auto-refresh clears unsubmitted comments in the text area (Case 51369)
- fixed --- Reviews created with addversions include files from other reviews (Case 50682)
- fixed --- Notification emails not being sent. (Case 51204)
- fixed --- Command line client missing edit file list prompt message.
- fixed --- NPE when content unavailable; blank screen loading user home page.

5.0.5029 — April 20, 2010

- fixed --- Add per-file lines metrics to review-xml (Case 51010)
- fixed --- Some PDFs do not show up in reviews (Case 50826)
- fixed --- Performance improvement - fewer queries to load action items.
- fixed --- Performance improvement - fewer queries to perform comment promotion; render review overview

- fixed --- Performance improvement - reduce computation when rendering review overview
- fixed --- Performance improvement - reduce computation required to map from SQL result sets to datamodel objects.

5.0.5028 — April 13, 2010

- added --- Technology Preview of IBM Rational Team Concert support
- fixed --- Limit syntax highlighted file size to prevent CPU spike when processing large files (Case 51015)
- fixed --- 'not a ClearCase object' error on Linux (case 50938)
- fixed --- Synergy passwords in clear text of debugging logs (Case 50925)
- fixed --- Fix NPE in logging (case 50799)

v5.0.5027 — March 26, 2010

- added --- 'ccollab admin review defect delete'
- added --- 'ccollab admin review defect mark-fixed' and 'ccollab admin review defect mark-opened' commands
- added --- "ccollab admin review edit" "--deadline" option to change Review deadline (Case 50739)
- fixed --- Bad data on 'ccollab admin review-xml' in some cases using Sun JRE 6. (Case 50372)
- fixed --- Setting multi-valued fields from 'ccollab admin review defect edit'
- fixed --- Cannot Accept or comment after a file has been deleted (Case 50466)
- fixed --- Manual did not reflect changes to review deadline implementation (Case 47876)
- fixed --- Bad error message when command-line scm autodetect fails
- fixed --- complex histories cause poor performance adding files with Synergy (Case 50594)
- fixed --- error creating new custom field with same name as deleted custom field (Case 50457)
- fixed --- Improved performance of 'ccollab addchangelist' with multiple changelists
- fixed --- strip xml1.0 unfriendly chars from arguments list of xmlrpc calls
- fixed --- addactivity diffintegration option diffs wrong integration stream version (case 49870)

- fixed --- Set default review deadline when creating reviews from command-line (Case 50739)
- fixed --- better debug logging for "ccollab admin wget"
- fixed --- 'ccollab admin wget' fails with servers not at root of host (Case 50101)
- fixed --- NPE in logging when log message is null (Case 50799)

v5.0.5026 — March 3, 2010

- added --- Command-line support for creating Defects and Comments at page coordinates
- added --- Documentation for configurable cache settings. (Case 50104)
- added --- Support Perforce Eclipse plugin 396 v2009.2.234487
- added --- Allow setting of a review's 'display changelists as' setting from the commandline (Case 50327)
- fixed --- Toolbar titles misaligned (Cases 48690, 48846, 49976)
- fixed --- Preserve state of Accept and Mark Read buttons after canceled defect edit. (Case 49512)
- fixed --- HTML encoding interacting with auto linking. (Cases 49794, 50010)
- fixed --- StarTeam add-diffs not capturing path info (Case 49875)
- fixed --- Cannot cancel, externalize, or edit Defect on Review overview (Case 47734)
- fixed --- NullPointerException in DocumentPageServlet when engine is not available (Case 50134)
- fixed --- Updated manual with current MySQL installation instructions 55 using the supported tools (Case 50002)
- fixed --- Updated docs with information on integrated authentication with SQL Server 58 (Case 49853)
- fixed --- NPE when version server path empty (Case 49944)
- fixed --- Race condition between content archiver and review creation (Case 30131)
- fixed --- Invalid cached differences result in no diffs being displayed (Case 30131)
- fixed --- Paths in reports are double encoded
- fixed --- Poor error behavior when "p4 set" and "p4 info" have no output (Case 50331)

- fixed --- Wrong ClearCase 454 branch predecessor for zero versions (Case 49102)
- fixed --- MKS 525 change packages should always be pending (Case 48754)
- fixed --- Updated manual to clarify overdue deadline status messages

v5.0.5025 – February 10, 2010

- fixed --- Background services not started if database was unavailable at startup
- fixed --- Bad error message when no assigned tasks are found (Case 49423)
- fixed --- Can not add yourself as a participant to an existing review (Case 49419)
- fixed --- Default review title not set for addactivity 474 (Case 49180)
- added --- Getting started links on the last page of the client installer 330
- added --- 'ccollab admin wget' command
- fixed --- Real paths for Rational Synergy 476
- fixed -- The "Link" link in dynamic reports 319 now works again. (Case 49199)
- fixed --- MKS 525 files incorrectly marked as new (case 48775)
- fixed --- Canonicalize MKS 525 host names (case 49466)
- added --- Keyboard shortcuts in the GUI client 338
- fixed --- Verify connection to server when setting up Subversion 573 (Case 49773)
- fixed --- Updated installation documentation 58 for SQL Server 2008, Java 6, and JDBC drivers (Case 49238)
- fixed --- Users duplicated in drop-downs when using Groups (Case 49594)
- added --- Update browser launcher to support GNOME open, KDE open, and XDG open (Case 49677)
- fixed --- Participant filter name in dynamic reports is once again "participantLogin". (Case 49584)
- added --- 'ccollab commit --dismiss-only' option

Fixes from 4.0 build 864 796:

- fixed --- List report 323 results improperly cached (Case 49572)

- fixed --- LDAP lockout can occur if Collaborator is used infrequently. (Case 49526)
- fixed --- "Too many open files" error in Content-Cache Diagnostic (Case 49687)

v5.0.5024 – January 14, 2010

- added --- External Diff Launcher variable "after.version.localFilePath" to enable launching editor (http://uservoice.com/a/7wS9r)
- added --- JMX Interface to Diagnostics
- added --- addversions support for Rational Synergy (Case 48922)
- added --- edit defects on the command line (Case 49142)
- fixed --- filtering a report based on users now works properly with multiple participants in each role
- fixed --- NPE getting content from deleted file using ccollab adddiffs with before and after directories
- fixed --- Visual Studio Addin does not size correctly (Case 48914)
- fixed --- Visual Studio Addin should show wait cursor while busy (case 48914)
- fixed --- option to start Synergy session with -rc (Case 48922)
- fixed --- Perforce local changelists not showing reverted files as reverted (Case 48321)
- fixed --- unrepresentable characters break RPC interface (Case 46761)
- fixed --- Sort action items consistently
- fixed --- VSS diff anomalies (case 47484)
- fixed --- Review too large for refresh algorithm is wrong
- fixed --- use Eclipse proxy settings UI, if available (Case 41725)
- fixed --- broken error message on custom fun facts.
- fixed --- Copy-paste not working in web diff viewer, selection is always cleared(Case 49193)
- fixed --- NPE when completing add changes wizard on review selection screen
- fixed --- email notifications stop being delivered (Case 45913)
- fixed --- NPE in Starteam diff support (Case 49263)

- fixed --- Clearcase '--diffbranch pre' option picks wrong predecessor (Cases 49102, 48802)

v5.0.5023 – December 11, 2009

- added --- Better debug logging for add*diffs commands (Case 48205)
- added --- "ccollab addfiles" option --relative-to (Case 46457)
- added --- StarTeam '--stcmd-exe' option (Case 48622)
- added --- Diagnostics section to the manual (Case 48571)
- added --- High Availability Best Practices section to manual
- added --- Content store cleanup diagnostic
- fixed --- Display external diff launcher errors on MacOs
- fixed --- Custom fields values reset when non-participant adds self to a review (Case 48338)
- fixed --- Support p4 2009.1 move/add and move/delete actions (Case 48312)
- fixed --- Default external diff viewer does not launch on Mac OS (Case 48356)
- fixed --- Review dump not available from searching by review ID
- fixed --- Do not install AJP connector by default. (Case 48372)
- fixed --- Automatic session creation for Rational Synergy (Case 48065)
- fixed --- 'specify p4 command Charset' needs to be a boolean drop down in the web UI (Case 48071)
- fixed --- .smartbear directory too accessible (Case 48001)
- fixed --- Handle Synergy objects not associated with tasks (Case 48623)
- fixed --- Subsequent MKS sessions fail to connect (case 48642)
- fixed --- Action Items refresh should cache login for 20 minutes
- fixed --- Require non-blank label for "Group" (Case 47463)
- fixed --- Require non-blank external URL (Case 47351)
- fixed --- Require non-blank Group title (Case 47487)
- fixed --- Require non-blank Group title (Case 47487)

- fixed --- Ignore unmerged branches in history (Case 48623)
- fixed --- Error in creating Automatic Link removes creation data (Case 47616)
- fixed --- Notifications need not refer to existing reviews for Database Integrity Check to pass (Case 48688, 48727)
- fixed --- Determine perforce client is unknown when 'p4 info' output gives no client root (case 48525)
- fixed --- NullPointerException in shutdown if datamodel could not be initialized.
- fixed --- Security fix for XSS vulnerability (Case 48559)
- fixed --- Install4j not installing non-GUI symlinks(Case 48731)
- fixed --- Added a workaround for SWT/GTK bug (Case 48377)
- fixed --- Unparseable surround date format (case 48762)
- fixed --- Empty files being written to content cache (Case 48834)
- fixed --- Respond better to coming online before the database after reboots

v5.0.5022 – November 12, 2009

- added — Accessibility improvements for diff view and review overview.
- added — Technology Preview of Rational Synergy support
- fixed — Error message on client when error uploading content to server (Case 48135)
- fixed — Log error message in server when content-cache is full (Case 48135)
- fixed — Older Perforce servers do not include "SubmitOptions" in client spec (Case 48100)
- fixed — Fix for MKS keyword expansion (Case 47784, 47251)
- fixed — Workaround for 'tf history' bug in Visual Studio 9.0 (Case 47438)
- fixed — Spaces in custom field names broke variable substitution (Case #48105)
- fixed — Log exceptions closing files in content store
- fixed — Make preferences directory as necessary to save "last" review and defect (Case 48194)
- fixed — Old p4 clients ignore -ztag with the where command (Case 48154)

- fixed — Auto-refresh disabled popup is to obtrusive. (Case 48177)
- fixed — Continue if missing MKS revision encountered in change package
- fixed — Rename "Subversion Server GUID" to "Subversion Repository UUID" in UI and Docs

v5.0.5021 – October 28, 2009

- added — log author prep time while in planning phase (Case 47593)
- fixed — Check for compatible product version before trying to restore from a dump file (Case 47869)
- fixed — Upgrade to JavaMail for defect causing email notifications to stop (Case 45913)
- fixed — Report filters display incomprehensible error messages (Case 47768)
- fixed — server should install license file with the EULA (Case 47946)
- fixed — Handle Perforce SubmitOptions: revertunchanged (Case 47488)
- fixed — Remove "Restore Defaults" button from Server Connection preferences page (Case 47950)
- fixed — Error adding a Subversion revision with Eclipse plugin
- fixed — Typo in the mandatory subscriptions error message (Case 47469)
- fixed — do not specify "-Q utf8" when the customer specifies "p4commandcharset none" (Case 47032)
- fixed — Unrecognized TFS date format for zh_TW locale (case 47813)
- fixed — Spurious P4V addons message at end of the install process on when Perforce is not installed
- fixed — Updated jdpdfimages binaries to fix null pointer when uploading PDF and subsequent PDF rendering problem (case 47879)

v5.0.5020 – October 15, 2009

- added — log author prep time while in planning phase (Case 47593)
- added — Added information about how groups are stored in the database for custom reporting
- added — Support for MKS renames (Case 47037)

- fixed — next/prev file in diff viewer algorithm wrong (Case 47406)
- fixed — review custom field visibility by phase not editable (Case 47283)
- fixed — Diff download format broken when change occurs at end of file.
- fixed — Diff download fails when insertions at end of file. (Case 47748)
- fixed — improve explanation of managing Groups manually vs with sync
- fixed — LDAP access broken when server returns absolute names (Case 47391)
- fixed — Verify Database Schema diagnostic shows bogus errors on Oracle (Case 47732)
- fixed — LicenseDecodingException experienced when system attempts to retrieve stored license (Case 47690)
- fixed — do not let user install server on Linux if port is in use
- fixed — Auto-refresh of review overview screen locks the browser UI thread (Case 47740)
- fixed — External Diff Launcher fails for certain files on Windows (Case 47649)
- fixed — Edit defect causes tab to be inaccessible to screen reader
- fixed — Error deleting symlink in perforce (Case 47327)
- fixed — Make Add SCM Configuration resize more nicely (Case 47290)

v5.0.5019 – October 1, 2009

- added — DateTime control in Subversion update changes by date GUI dialog
- added — Database schema diagnostic
- added — Support commit info on changelist current versions
- fixed — Layout of error popup on Eclipse 3.5 and GUI client
- fixed — GUI Client and Tray Notifier will not launch on 64-bit MacOS (Cases 47336, 46337, 47149)
- fixed — Poor behavior in notifications with anonymous defects (Case 47405)
- fixed — Duplicated output on adddiffs (Case 47409)
- fixed — Missing arg in versionCreate: support commit info for current versions in changelists (cases 44540, 45620)

- fixed — Performance fixes. Reduce total database load when displaying reviews
- fixed — sitting on the review overview page can result in consuming a license (case 46356)

v5.0.5018 — September 17, 2009

- added — Tray Notifier on MacOS (Case 38167)
- added — GUI client and Tray Notifier support for Solaris on X86 (Case 46627)
- added — GUI client support for MacOS 64 bit (Case 46337, Case 47149)
- added — Add a general comment when a changelist is removed from a review (Case 46562)
- added — Make cache performance information available in System screen (Case 47315)
- fixed — 'ccollab admin group create' errors with "Group GUID '...' must exist before you can edit it." (Case 47166)
- fixed — 'ccollab admin group' commands error with "Group GUID '...' must exist before you can edit it." (Case 47166)
- fixed — Added documentation for Review Deadline to the Creating a review section and edited the Creating a review section (Case 47184)
- fixed — The link inside of the GIT integration had a typo that was making it appear malformed (Case 47191)
- fixed — Need to fix the AccuRev casing in the standalone GUI (Case 47247)
- fixed — Surround missing from scm config list for CLI
- fixed — Typo on the triggers page in the command for passing a review title (Case 47241)
- fixed — Better explanation of "Active Users" chart (Case 47316)
- fixed — Client does not open browser on MacOS (Case 47051)
- fixed — Improve performance of Fun Fact total review time query.
- fixed — Minimum required Surround client is 2009.1.0
- fixed — Better description of review deadline meaning (case 47239)
- fixed — GUI client does not close properly on MacOS X (Case 46061)
- fixed — Tray Notifier not resizable on Linux (Case 36320)
- fixed — Diff cache misses almost always (Case 47315)

v5.0.5017 — September 1, 2009

- added — Support Perforce eclipse plugin 396 2009.1.209672 (Case 47023)
- added — Accessibility improvements to chat Comment and Defect tabs 299
- added — Allow expansion of changelist title 257 to the full list of included changelists (Case 46928)
- fixed — Subscription 236 authors not displayed when subscriptions are not editable (Case 46423)
- fixed — Diff viewer 271 screen blank for some files - ArrayOutOfBoundsException on server (Cases 46500, 46737)
- fixed — Review report idle times negative on HSQL (Case 46159)
- fixed — Binary files opened from chat links 219 do the wrong thing (Case 46808)
- fixed — Remove incorrect references to "side-by-side" from diff viewer preferences 273
- fixed — Truncate length of large changelist comments before uploading
- fixed — Users are not sorted in participants selection dropdowns 245 (Case 46594)
- fixed — Review Detail Report 321 includes redundant comments (Case 46183)
- fixed — "null" showing up in version selection (Case 46876)
- fixed — SVN executable "svn" is reset when the GUI client 338 restarts
- fixed — Subversion Eclipse 399 plugin support recognize status "Incomplete" (Case 46930)
- fixed — Prevent Tomcat from filling up the output.log file
- fixed — More consistent layout for binary files (non-PDF)
- fixed — Modified Vault files not found (Case 46754)
- fixed — Modified MKS 525 files in pending change packages compare to wrong predecessor (Case 46511)
- fixed — Miscellaneous Surround fixes (Cases 46348, 45669)
- fixed — Some modified Vault files not being found (Case 46754)

v5.0.5016 — August 13, 2009

- fixed — Handle errors in Subversion 568 working copy (Cases 46307, 35884)

v5.0.5015 — August 11, 2009

- added — Links for further information in the installer 63
- added — Vault 5.0 and Fortress 2.0 support (Case 46586)
- added — Support configurable image file types 162 (Case 46632)
- added — Perforce changelist renumbering 538 script to manual (Case 41154)
- fixed — Use configured label for Group 150 in participants error message
- fixed — Scrub invalid dropdown values during upgrade
- fixed — Subversion integration 568 should be case-insensitive on Windows (Case 46561)
- fixed — Installer 63 crash due to malformed xml (Case 35977)
- fixed — do not count sysadmin on license screen with LDAP 102 (Case 45222)
- fixed — Ignore CVS 426 'no longer in the repository' errors (case 46519)
- fixed — Handle empty Subversion 568 comments (Case 46603)
- fixed — Deleted PDF 287 in changelist causing upload failure (Case 46574)
- fixed — Upgrade fails if no diffs cached in database
- fixed — Better XPath 639 output, including line feed between multiple results (Case 43498)
- fixed — Incorrect timezone application in customizable reports 319 on MySQL (Case 45687)
- fixed — Reviews by Changelist and Unreviewed Changes reports 323 broken if filtered on Changelist ID (Case 46534)
- fixed — Use configured SCM options in "Add Diffs" button on GUI Client (Case 45436)
- fixed — Log more info when sending email fails (Case 46728)
- fixed — Surround fixes for added files, parsing 'sscm ls' output, and embedded lines in comments (Cases 46480, 45669)
- fixed — Inactive users whose logins are duplicates of active users could block database upgrade (Case 46745)

v5.0.5014 — July 31, 2009

- added — Documentation of "--scm none" option (Case 46456)
- added — Button to restore default notification templates and add missing ones
- added — Button to restore defaults on External Diff preference page (Case 46512)
- fixed — Comments on line 0 cause exceptions (Case 46332, 46379)
- fixed — Expose last activity time in review-xml. This is the review completion time for complete reviews (Case 46467)
- fixed — Participants warning appears when group security is not enabled (Case 46157)
- fixed — Old clients added System Adminstrator to review when adding a changelist whose author did not match a Collaborator user (Case 46187) (server-side fix)
- fixed — Surround SCM committed changelists support and misc fixes (Cases 45669, 45823, 45771)
- fixed — Better logging for login errors (Case 46463)
- fixed — More lenient check for loopback address in p4port
- fixed — do not autodetect SCM system when printing command-line help usage (Case 46353)
- fixed — do not create new review for add*diffs commands if no modified files found in diff
- fixed — Cleaner error message for add*diffs command when no diffs found (Case 46135)
- fixed — Display errors returned from 'ccollab addp4diffs' command (Case 46096)
- fixed — Handle odd userId cases correctly (Case 46523)

v5.0.5013 – July 28, 2009

- added — "Test Connection" button for server-side version control server entry
- added — Create server-side version control server entries automatically from client uploads
- fixed — Error logging status of Subversion connection on server (Case 46249)
- fixed — update-changelist scm trigger finds changelists from a different server

v5.0.5012 – July 24, 2009

- added — Ability to disable "attach changelist" in browser per server-side version control configuration

- added — Support Objective-C syntax highlighting in .m/.mm files (case 46057)
- fixed — Multiple concurrent database upgrade attempts when the Upgrade button is pressed repeatedly
- fixed — potential temp value collision in upgrade could cause all of one dropdown value to be assigned to an other.
- fixed — Error with "ccollab adddiffs new <before dir> <after dir>" with deleted directory (Case 46239)
- fixed — do not query for database version all the time. (Case 46241)
- fixed — "adddiffs" does not roll up with "addchanges" when no SCM system (Case 45964)
- fixed — If using 'p4-protects-script' do not require connection to Perforce Server
- fixed — Support MKS variants in change package files (case 46212)
- fixed — handle anonymous commits in Subversion (Case 46393)
- fixed — User prefs review subscription form field title "Review Creator" is misleading (Case 46310)

v5.0.5011 – July 20, 2009

- added — supply P4PORT to 'p4 -s protects' script
- fixed — Upgrades of SSL Connectors
- fixed — require P4PORT to be an external server name, not "localhost"
- fixed — Improve behavior of activity update queries.
- fixed — Change diff caching mechanism to take load off database.
- fixed — put on schema blinders for oracle indices, triggers, and sequences

v5.0.5010 – July 16, 2009

- added — Option to update ClearCase snapshot views (Case 45296)
- added — Button to accept self-signed Subversion server certificates (Case 46133)
- added — Server-side version control templates
- fixed — working of diff download tooltip on Review overview screen (Case 45985)

- fixed — tray notifier tooltip does not refresh (Case 46038)
- fixed — improve line wrapping algorithm (Case 45959)
- fixed — search for filenames fails to return results. (Case 46067)
- fixed — Command line client throws exception if user cancels (Ctrl-C) when prompted for password.
- fixed — scm triggers use server-side version control mapping to find correct server (Case 45841)
- fixed — scm triggers print extra output (Case 45963)
- fixed — groups created in Collaborator enforced after switching to CodeReviewer license (Case 46040)
- fixed — recent Participants link does not work for users not in the group (Case 46055)
- fixed — Improve file headings; especially for diffs.
- fixed — Updatechangelist trigger should not touch changelists descriptions that do not involve the trigger
- fixed — Update perforcetrigger usage message to indicate that it is deprecated.
- fixed — do not munge whitespace in p4 specfiles when we modify them (Case 46088)
- fixed — Error in Eclipse plugin "fix configuration" action item (Case 46164)
- fixed — SQL Server date format not specified. (Case 44329)
- fixed — new trigger algorithm backwards-compatible with old clients when there is only one Perforce server
- fixed — Improve performance of some queries under Oracle

v5.0.5009 – July 7, 2009

- updated — jPDFImages library to version 2.13.
- updated — Tomcat to version 6.0.20
- added — Perforce 'Server Address' for version control identification/matching.
- fixed — support for http.nonProxyHost (proxy exceptions) (Case 45855)
- fixed — Check that database supports views before attempting to create views. (Case 45616)

- fixed — Interpretation of some svn output is broken (Case 45775)
- fixed — Wrong Vault predecessor for modified files in VSS mode (Case 45839)
- fixed — Enforce CodeReviewer database restrictions (Case 41184)
- fixed — Enforce CodeReviewer LDAP restrictions
- fixed — Cannot open .zip file from file download (Case 45903)
- fixed — Remove administration screen for configuring Legacy GUI Client versions; it is not supported in 5.0.
- fixed — Support Perforce multi-file diff format in ccollab adddiffs (Case 45420)
- fixed — Suppress 'p4 info': Client unknown warning (Case 45963)
- fixed — Idle users being counted as logged in (Case 46015)
- fixed — Support Perforce client specs with exclusionary mapping rules (Case 45986)

v5.0.5008 – June 29, 2009

- added — Reminder for administrators to migrate from the trial database
- added — Link defects in the defect reports
- added — Syntax highlighting for Ruby
- added — Configure P4V/P4Win integrations in the installer
- fixed — Support for SVN checkouts at drive roots
- fixed — Cannot find Accurev workspace (Case 45645)
- fixed — Periodically checkpoint HSQLDB
- fixed — "Update From Smart Bear" sends the user-provided company key
- fixed — NPE in comment promotion
- fixed — External diff does not work with too many files (Case 45667)
- fixed — Improve UI for removing a disabled user from a review (Case 45755)
- fixed — Error uploading TFS shelvesets with new files (case 45709)
- fixed — Handle MKS change packages in submitted state (case 45631)

- fixed — No scroll bars in chat window for binary files (Case 45519)
- fixed — AccuRev NPE in ccollab addstream (Case 45764)
- fixed — Better error message for Perforce authentication problem (Case 45778)
- fixed — Incorrect activity start dates (Case 45759)
- fixed — Selecting a marker should scroll it into view (Case 45265)
- fixed — Upgrade 500 to 501 bug on MySQL
- fixed — Upgrade speed fix
- fixed — License check causing spurious log messages.
- fixed — Once disabled, role cannot be reenabled (NPE) (Case 45845)
- fixed — NPE in "Moving On" section (Case 45696)

v5.0.5007 – June 15, 2009

* FIRST GA RELEASE OF v5.0! *

- added — Reporting of slow queries in the server log to help diagnose slow operations
- fixed — Slow browser response on some reviews (Case 44872)
- fixed — NPE and divide by zero in client commit (Cases 45480, 45497)
- fixed — NPE in comment promotion
- fixed — Updated HSQLDB to 1.8.0.10 to fix possible data corruption issues with embedded database.
- fixed — Changelists from different SCMs must be kept separate everywhere. (Case 45234)
- fixed — Files not showing up in reviews; TFS versions from early beta clients causing issues (Case 45504)
- fixed — Changelist rollup should be based on SCM config, where available (Case 45338)
- fixed — group not assigned when review created by client (Case 45511)
- fixed — j_security_check login bug (Case 42864, Case 45102, probably more)

- fixed — Long version names (from ClearCase) cause display issues in diff viewer (Case 45261)
- fixed — Misleading error message on ccollab admin trigger create-review (Case 45540)
- fixed — Verify for P4 2009.1: "p4 info" now reports the server address (Case 45635)
- fixed — create-review trigger does not set "last" review variable (Case 45437)
- fixed — Database dump fails when review contains URL versions (Case 45575)
- fixed — NPE when trying to archive files.

v5.0.5005 (beta) — June 4, 2009

- (fixes from release 4.0.860 796)
- (fixes from release 4.0.859 796)
- updated — Manual updated with various new features.
- added — Filters for users on the user administration screens
- added — New variable substitutions: defect.isexternal, defect.externalname, review.group.title, and review.group.guid.
- added — Side by side document review/compare menu working (Case 44443)
- added — MKS change package and addversions support (Cases 43812, 44416, 44540)
- added — User preference for tab width (Case 40604)
- fixed — Company contact information not correct in license files.
- fixed — Improved page load times for review overview page.
- fixed — Improved performance of database query builder (Case 45029)
- fixed — NPE when changing general settings in reviewer.
- fixed — Review list report displays bogus warning when number of rows exactly equals capped number (Case 44525)
- fixed — URL's with embedded credentials not properly linked (Case 44958)
- fixed — create-review trigger argument --review-id-regex <value> should be optional (Case 45091)
- fixed — Compare list/diff viewer headings need more accurate information when using diffs (Case 44672)

- fixed — Next file order does not match compressed tree or tree views (Case 45098)
- fixed — Misleading label for new chat area when reviewing documents or images.
- fixed — Cannot jump back to current conversation when on a different page of a document (Case 44229)
- fixed — NPE in GUI client (Case 44914)
- fixed — Line numbers lost for comments on unchanged deleted files (Case 44819)
- fixed — NPE when reverting an unsupported file (Case 45092)
- fixed — Separate multiple changelist description text for readability (Case 44677)
- fixed — Error messages not cleared in attach changelist/url/file dialogs (Case 44726)
- fixed — Firefox sometimes incorrectly guesses RSS encoding (Case 45129)
- fixed — addgitdiffs command now gets more information from git diffs
- fixed — Unable to remove last item from a multiselect custom field (Case 44379)
- fixed — Added command to support Perforce changelist renumbering (Case 44978)
- fixed — Restrict access to fix defect global option does not allow defect creator to fix (Case 45202)
- fixed — Chat box opens for wrong line of code (Case 45149)
- fixed — Support ClearCase 7.1 and int'l date formats (Cases 44914, 45122)
- fixed — Added user state tooltip in the participants section of review overview (Case 43258)
- fixed — addchangelist with Perforce not uploading correct base content (Case 44577)
- fixed — Add configuration for server logging.
- fixed — Workaround for pool users not available.
- fixed — Home page tab counters not updated when content changes (Case 45238)
- fixed — Changed default poke notification text (Case 45258)
- fixed — Corrected timezone for date displays in tables such as the User/Admin screen
- fixed — String replacements fail with $ (Case 45353)
- fixed — Support multi-line environment variables (Case 43002)

- fixed — User subscription should not (appear to) be pre-populated with the first entry (Case 45317)
- fixed — NPE in content cache diagnostic (Case 45376)
- fixed — multi-select two panel filter does not display correctly on IE (Case 44352)
- fixed — respect notification limit in RSS on embedded database (Case 45129)
- fixed — Text from previous review can appear on new review screen (Case 45324)
- fixed — AccuRev getting incorrect previous version (Case 45257)
- removed — Old-style defect reports -- use new defect reports instead. (Case 45215)

v5.0.5004 (beta) — May 14, 2009

- added — Support addversions for Perforce SCM
- (fixes from release 4.0.858 796)
- fixed — Cannot save General Settings in 5.0 (Case 44759)
- fixed — Update documentation for HTTPS configuration
- fixed — duplicate "Adding file" messages with "ccollab addchanges"
- fixed — Remove extraneous "Checking if file exists" messages printed to console with "ccollab"
- fixed — Defects can be added more than once (Case 42403)
- fixed — TFS autodetect causes error when TFS is installed and a file is unmanaged
- fixed — Upgrades fail against SQL Server 2000 (Case 44527, 44730)
- fixed — Next unread comment and next defect buttons do not always work (Cases 41695, 44339)
- fixed — FileMetrics for documents should include page count, but not line counts.
- fixed — Document extension matching (.pdf) is case sensitive (Case 44732)
- fixed — Document review should be unavailable in CodeReviewer
- fixed — Turkish locale issue with capital i (Case 44763)
- fixed — Large changed regions in over under have strange scrolling behavior on line click (Case 46432)

- fixed — Can create defect without supplying required custom fields (Case 40500)
- fixed — Status in review materials is wrong for added files (Case 44839)
- fixed — Command line SCM tokens were case sensitive (Case 44618)
- fixed — Bad VSS login argument on ss.exe command line (Case 44745)
- fixed — Line number validation fails in binary file and URL review (Case 44441)
- fixed — Support for non-ascii filenames in Subversion (Case 43430)
- fixed — Java syntax highlighting rules do not include byte and short
- fixed — Change MIME type of external diffs to be vendor specific (application/vnd.smartbear.cc-diff)
- fixed — URL and document review pane include unnecessary line difference pane (Case 44348)
- fixed — Post-commit review show rework when there was no rework
- fixed — Update documentation on trigger command line syntax (Case 43226)
- fixed — Email addresses not being properly converted to links
- fixed — Bogus error messages in admin screens when inputs are unsaved (Case 40999)
- fixed — Surround password showing up in cleartext (Case 43226, 44954)
- fixed — Custom report filters for meta-data drop-downs need to show disabled items (Case 44504)
- fixed — Diff viewer keyboard shortcuts dialog fails in IE (Case 44338)
- fixed — ArrayIndexOutOfBoundsException when creating svn client config (Case 44961)

v5.0.5003 (beta) — April 20, 2009

- added — refactor review-xml to handle line number/location (Case 44613)
- (fixes from release 4.0.857 796)
- fixed — Make the timezone drop-down items findable and readable.
- fixed — reverting on group edit page displays "updated" message (Case 44353)
- fixed — Transparency slider and image toggle not disabled when only one image and preference for newer content on right (Case 44475)

- fixed — Post-commit reviews show files as reworked, even when they are not. (Case 44493)
- fixed — Stack overflow when uploading large files. (Case 44497)
- fixed — Local file status is displayed incorrectly with Subversion (Case 44448)
- fixed — Server fails to shut down running on Windows with Java 5 (Case 44633)
- fixed — Tutorial mode preference is ignored in some places (Case 43229)
- fixed — Improve memory footprint and performance of PDF rendering (Case 44519)
- fixed — Uploading URL message is hidden because the dialog is not tall enough. (Case 44661)
- fixed — Fix addversions command
- fixed — Reordering of custom fields can fail (Case 44692)
- fixed — review-xml includes duplicate conversations (Case 44702)
- fixed — Stack overflow in Eclipse plugin with svn:externals (Case 42824)
- removed — Attach URL feature not supported in CodeReviewer (Case 44555)
- removed — Perforce ACL feature not supported in CodeReviewer (Case 44542)
- removed — Groups feature not supported in CodeReviewer. (Case 44553)
- removed — System wide message feature not supported in CodeReviewer. (Case 44557)

v5.0.5002 (beta) – April 6, 2009

* FIRST RELEASE OF v5.0 BETA! *

9.2.6 Version 4

v4.0.864 – February 4, 2010

- fixed --- List report 323 results improperly cached (Case 49572)
- fixed --- LDAP lockout can occur if Collaborator is used infrequently. (Case 49526)
- fixed --- "Too many open files" error in Content-Cache Diagnostic (Case 49687)

v4.0.863 — September 1, 2009

- added — Support Perforce Eclipse plugin 396 2009.1.209672 (cmdline wrapper only)
- fixed — Subversion Eclipse plugin 399 support recognize status "Incomplete" (Case 46930)
- fixed — Some modified Vault files not being found (Case 46754)

v4.0.862 — August 19, 2009

- added — Support MKS variants in change package files (case 46212)
- added — SQL Server JDBC 2.0 driver documentation
- fixed — Update documentation for new name of Vault 4.1.x client .jar download
- fixed — Handle empty SVN comments
- fixed — Multiple button upgrade bug wherein multiple users click the "Upgrade Database" button and
- multiple upgrades are attempted simultaneously
- fixed — Error in Eclipse plugin "fix configuration" action item (case 46164)
- fixed — .vmoptions file extension

v4.0.861 — July 8, 2009

- fixed — Handle MKS change packages in submitted state (case 45631)
- fixed — p4 -Q does not work before *client* version 2005.2
- fixed — Support multi-line environment variables (Case 43002)
- fixed — Crash in ccollab addchangelist new (Case 45684)
- fixed — Support for svn checkouts at drive roots (Case 45707, Case 45614, Case 45717)
- fixed — Error uploading TFS shelvesets with new files (case 45709)
- fixed — Better error message for Perforce authentication problem (Case 45778)
- fixed — Wrong Vault predecessor for modified files in VSS mode (Case 45839)
- fixed — SVN output interpretation fix (Case 45775)

v4.0.860 – June 3, 2009

- fixed — NPE in ClearCase 454 hashcode (Case 44189)
- fixed — Error parsing Team Foundation 517 fr-CA date format (Case 45373)
- fixed — TFS 517 usernames with leading backslash (Case 45373)

v4.0.859 – June 1, 2009

- added — Better support for higher Perforce 537 security levels (Case 44899)
- added — Support ClearCase 454 7.1 dates (Case 44914)
- added — Support for wildcards in ccollab addfiles (Case 45201)
- fixed — Remove benign log warnings about not able to contact license server (Case 45003)
- fixed — Multiple Vault configurations not working (Case 44642)
- fixed — Custom field views 600 skipped deleted items (Case 44504)
- fixed — Multiple Authors allowed even when Maximum # of Authors 204 is 1 (Case 45107)
- fixed — Clicking 'next' does not do anything for Submitted Perforce Changelists 398 on Eclipse 3.4
- fixed — Modified files not found if username case differs from Vault (Case 44642)
- fixed — Handle Perforce plugin 396 authentication when password not saved (Case 44899)

v4.0.858 – May 6, 2009

- added — Support for subversion 1.6
- added — UI to generate new Node ID (Case 44480)
- fixed — In some cases, reordering of custom fields can fail (Case 44692)
- fixed — Stack overflow in eclipse plugin with svn:externals (Case 42824)
- fixed — TFS autodetect causes error when TFS is installed and a file is completely unmanaged
- fixed — Locale sensitive bug in embedded database initialization (Case 44763)
- fixed — Bad VSS login argument on ss.exe command line (Case 44745)

- fixed — Custom report filters for meta-data drop-downs need to show disabled items (Case 44504)
- fixed — Exception when using subversion at a drive root (Case 44961)

v4.0.857 – April 15, 2009

- added — Support for Perforce eclipse plugin 396 2008.2.195317 (Case 43854)
- fixed — Incorrectly reporting "num-defects" as "num-comments"
- fixed — MKS 525 trunk version limit error (Case 44275)
- fixed — MKS 525 history limited to 200 versions (Case 44275)
- fixed — MKS 525 password appears in debug log (Case 44322)
- fixed — Improper error handling when database fails to initialize (Case 44462)
- fixed — Eclipse plugin support for ClearCase 389 (Case 44561)
- fixed — Only list shelvesets 517 for configured user
- fixed — Broken manual link (Case 44506)

v4.0.856 – March 30, 2009

- added — Ability to upload diffs from a file by name
- fixed — Update documentation on Tomcat auto-deploy for ROOT.xml changes (Case 43973)
- fixed — Updated 'ccollab admin batch' help text
- fixed — Fixed lack of support for multi-lined strings in PHP
- fixed — Exported reports should use UTF-8 character set so as to not garble any characters (Case 41853)
- fixed — Cannot parse certain CVS diffs (Case 44090)
- fixed — Fix broken admin custom fields icon
- fixed — Missing files in MKS changelist (Case 43812)
- fixed — NPE on uncontrolled CVS file (Case 43962)
- fixed — ClearCase host name incorrect (Case 44007)

- fixed — Cannot create roles or templates (Cases 44172, 44255)
- fixed — Engine.NotificationCreate() method should be public (Case 44276)

v4.0.855 — March 5, 2009

- added — updates to Examples.java
- fixed — Linux client connection problems to MKS Integrity Server (Documentation update) (Case 42389)
- fixed — Split Role setting 'Can change defects' into 'Can change own defects' and 'Can change other user's defects' (Case 43765)
- fixed — Extra space at end of url causes problems in Eclipse plugin (Case 43798)
- fixed — Downloading files from a review with duplicate file names causes a corrupted ZIP file (Case 43796)
- fixed — SourceGear Fortress support in Vault (Cases 42962, 43783)
- fixed — NPE in AccuRev due to "file does not exist" (Case 43841)
- fixed — Long changelist description with Unicode characters and Oracle back-end fails to upload (Case 43535)
- fixed — Run each task in a separate thread (Case 43790)
- fixed — ClearCase 'Operation requires a view' exception with supporting documents in review (Cases 43898, 43920)

v4.0.854 — February 23, 2009

- fixed — Perforce ccollabupdatechangelist trigger slow for many thousand files (Case 43688)
- fixed — Search results can return reviews that user cannot access (Case 43722)
- fixed — Unable to parse file extension in ClearCase extended paths, prevents syntax highlighting (Case 43746)

v4.0.853 — February 11, 2009

- fixed — Encode server logs in UTF-8
- fixed — File permission error writing MKS log file under Linux (Case 43241)
- fixed — Javascript bug in classic diff view

- fixed — Bug id markup and HTML encoding conflict (Case 43479)
- fixed — Problem parsing incomplete CVS diffs (Case 42803)
- fixed — Support unmanaged files in MKS directories (Case 43333)
- fixed — Support unmanaged files in TFS directories (Case 43375)
- fixed — Improve chat performance with large numbers of conversations
- fixed — Exception on renamed TFS files when uploading rework (Case 43509)
- fixed — Cannot access view column names in Oracle (Case 43514)

v4.0.852 — January 16, 2009

- fixed — Encode server logs in UTF-8.
- fixed — Do not create duplicate users that vary only base case (effects Oracle and embedded database users) (Case 42741, 42420)
- fixed — Do not add authors to a review if their user account is inactive (Case 43056)
- fixed — If Subversion username is specified, always specify a password (Case 43180)
- fixed — If an XML file includes a charset marker for an unsupported character set, try to recover using autodetection (Case 43182)
- fixed — Add more context to CVS diffs (Case 42803)
- fixed — Oracle limited to 127 switches in a CASE statement
- fixed — Update Vault documentation
- fixed — Handle no-longer-scheduled-to-be-added and -deleted directories in Subversion (Case 43204)
- fixed — Perforce '-Q' option only supported after 2005.2.
- fixed — New file in ClearCase activities appear as modified (Cases 39166, 43227)

v4.0.851 — December 16, 2008

- fixed — Login should accept 64 characters to match the username database field. (Case 42836)

v4.0.850 — December 12, 2008

- fixed — Perforce changelists with high Unicode characters in filenames or changelist descriptions get text corruption. (Case 41819)
- fixed — Add p4charset global option for interacting with Unicode Perforce servers.
- fixed — Build with Vault 4.1.4 API (Case 42625)
- fixed — Launch browser in daemon thread (Case 42826)

v4.0.849 — December 3, 2008

- fixed — Peak usage by day still broken (Case 42748)
- fixed — Support TFS versions with deletion ids (Case 42331)
- fixed — ScmRevertedLocalCheckout cast error (Case 42450)
- fixed — StarTeam uploads file with multiple files in different subdirectories (Case 42523)
- fixed — Argument replacement bug (Case 42525)
- fixed — Multiple-file external diff on IE 6; cache headers cause file not found (Case 42601)
- fixed — Error when loading transaction from AccuRev without workspace (Case 42604)
- fixed — Unified diffs from Mercurial break diff parser (Case 42500)
- fixed — Allow changing case of login name (Case 42675)
- fixed — P4Win integration pause on error (Case 42677)
- fixed — No way to resolve text when review content is decoded in wrong character set (Case 41819, 42536, 42743)
- fixed — Support Perforce sandboxes on UNC paths (Case 42726)
- fixed — Phone numbers not displayed in tooltips (Case 42707)

v4.0.847 — November 13, 2008

- added — Associate .inl files with C++ syntax highlighting (Case 42188)
- added — Documentation of Active Directory configuration with security groups.
- fixed — Show/hide previously uploaded changelists toggle does not remember state (Case 41246)
- fixed — Better handling of corrupted paswords in config files (Case 42283)

- fixed — Make client commit action get all most recent versions instead of active changelists.
- fixed — Do not display SCM passwords in debug log
- fixed — Duplicate user accounts with leading/trailing spaces (Case 42420)
- fixed — MKS IllegalArgumentException (Case 42252)
- fixed — Add changelist id to review-xml (Case 42520)

v4.0.846 — October 28, 2008

- added — Support for Visual SourceSafe diffs (Case 41339)
- fixed — Database connections dying "randomly" causing intermittent web site failure and stopping the activity-update thread
- fixed — ClearCase server paths are canonicalized
- fixed — Wrong ClearCase predecessor after version list edit (Case 41561)

v4.0.845 — October 13, 2008

- fixed — restrict ccollab admin review-xml according to access rules (Case 42080)
- fixed — consistent behavior for ignored and/or unmanaged files in addchanges and addfiles
- fixed — Make RPM installer cleanup of old files optional (Case 41786)
- fixed — Addfiles fails on ucontrolled files in CVS directory (Case 41590)
- fixed — Disabled users should not receive notifications (Case 41607)
- fixed — Use correct system admin login name in "license exceeded" error message
- fixed — "Total Person Time" not the same on review summary and review detail (Case 41118)
- fixed — Open home pages will not count towards licensing (Case 41804)
- fixed — Count chat refreshes against licensing only if the user is active.
- fixed — Prepend External Diff path disambiguation instead of appending so file extension is not changed.
- fixed — Config-only dump skipped review templates' custom review and defect field associations (Case 41826)
- fixed — Add Office 2007 file extensions to default binary formats.

- fixed — Error running ccollab set collab command with no argument. (Case 42028)
- fixed — Fix NullPointerException adding uncontrolled files (Case 41988)

v4.0.843 — September 23, 2008

- added — Support for Vault proxy settings (Case 40815)
- added — Scripting 638 section to manual
- added — Mirror Defects to external issue-tracker 640 scripting tutorial to manual
- added — Add checklist to new Review scripting tutorial to manual
- added — Sync Perforce Users 645 scripting tutorial to manual
- added — Time to run report to report information display
- added — Jump next/prev should not wrap without confirming. (Cases 41431, 41594)
- added — Upload comment option for Starteam (and other) add*diffs commands (Case 41745)
- added — MKS changes for subsandboxes
- fixed — NPE in getRecentlyUsedServers with Team Foundation 2008 (Case 41618)
- fixed — Single-click flicker when double-clicking tray notifier
- fixed — Text variable typo
- fixed — Missing TFS files when server and local paths differ in case (Case 41468)
- fixed — Gap in usage graphs (Case 41396)
- fixed — Chat on line 1000000 should be disallowed if possible and promoted back into reasonable range. (Case 41399)
- fixed — Oracle "table or view does not exist" bug (Case 41184)
- fixed — Detection of SourceForge ClearCase Eclipse plugin (Case 41646)
- fixed — External Diff launcher error for Perforce Pending Changelists (Case 41515)
- fixed — Compare drop-down needs clarification (Case 41644)
- fixed — Vault takes too long to find modified files (Case 41558)

v4.0.842 — August 29, 2008

- added — ccollab commit prompt for upload comment (Case 41055)
- added — support for GUI Client on Solaris (Case 41144)
- added — allow setting multiple-line custom field values on the command line by getting the field's value from a file. (Case 41176)
- added — 'ccollab admin batch'
- added — Support alternate Team Foundation user names
- added — "Open GUI" menu item to tray notifier (Case 41359)
- added — "Support" email links to GUI Client and Tray Notifier (Case 41343)
- added — "--xpath" and "--xsl" options to 'ccollab admin review-xml'
- fixed — Support alternate Team Foundation user name (Cases 41164, 41196)
- fixed — Fix unified diffs for Lua (Case 41195)
- fixed — role configuration admin screen where drop-down boxes were too wide for the form, causing the page to be extremely wide
- fixed — Clearcase error with Unix paths (Case 41100)
- fixed — make next/prev buttons only stop on differences in current comparison (Case 41001)
- fixed — ability to set custom field drop-down items from command-line (Case 39720)
- fixed — ccollabgui client not installed properly by Linux RPM (Case 41115)
- fixed — multi-file external diff (Case 41172)
- fixed — Unicode names get abbreviated incorrectly (Case 41150, 41300)
- fixed — Admin users should be allowed to add changelists to any review (Case 41330)
- fixed — ClearCase eclipse plugin integration cannot find view (Case 41302)
- fixed — User comboboxes fail with internationalized names.(Case 41205)

v4.0.841 — August 20, 2008

- added — Command to set custom field dropdowns from the command line (Case 39720)
- added — Support for GUI client on Solaris (Case 41144)

- fixed — Change contact email address for licensing issues to the appropriate Smart Bear email address. (Case 41037)
- fixed — Role configuration admin screen select boxes too wide.
- fixed — Buttons on Linux displayed even though no SCM selected. (Case 41050)
- fixed — Clear Case error with Unix paths. (Case 41100).
- fixed — Server can fail to start if installation path includes a space on Unix.
- fixed — After changing revisions, Next and Prev buttons stop on differences from prior revision (Case 41001)
- fixed — GUI client not installed correctly by Linux RPM (Case 41115)

v4.0.840 — August 5, 2008

- added — Faster Vault integration
- added — More support for MKS integration
- added — Eclipse v3.4 support for automatic upgrade site (Case 40495)
- added — Auto-detect tf.exe location for TFS 2008 (Case 40852)
- fixed — Enterprise organization field width too small (Case 40263)
- fixed — Inconsistent letter casing when uploading mixed-case paths from Windows (Case 40170)
- fixed — Notification emails encoded in system default character set can be garbled (Case 40693)
- fixed — Added more keywords to TCL syntax coloring (Case 40620)
- fixed — Vault was prompting for each file instead of for all files together (Case 40619)
- fixed — Proper handling for file renaming in TFS integration (Cases 39946, 40018)
- fixed — Erroneous error for "tf properties" (Case 40613)
- fixed — Support for AccuRev integration on OpenJDK (Case 40699)
- fixed — Sundry ClearCase integration issues (Cases 41026, 40198, 40132, 40437, 40619, 39766)
- fixed — ClearCase "unable to access" error when loading from root of Windows dynamic view (Case 41026)

- fixed — Filling output.log with error messages when a session is created and invalidated after response bytes begin (Case 41043)

v4.0.839 – July 14, 2008

- added — Support for Subclipse 1.4 (Case 40457)
- added — ccollab browse --review option accepts "last" and "ask"
- fixed — ccollab adddiffs should put source info in changelist comment (Case 40550)
- fixed — do not error if there are zero review custom fields (Case 40566)
- fixed — Clarify options for ccollab login (Case 40240)
- fixed — do not print Subversion password in GUI client (Case 40649)

v4.0.838 – July 7, 2008

- added — Defect permission configuration setting: do not allow edit/delete defects even if the user was the creator.
- fixed — Upgrade from 2.1.x fail with SQL Server 2005

v4.0.837 – July 2, 2008

- added — Support for Subversion 1.5
- added — Subcommand 'admin review copy-participants'
- fixed — Added indexes for better query performance (Case 40290)
- fixed — User cannot delete a defect they created (Case 40399)

v4.0.836 – June 24, 2008

- added — File commit support for TFS and ClearCase
- fixed — Better error messages in Perforce triggers
- fixed — Report errors in p4 print
- fixed — Incorrect metrics for "loc changed" in detail report
- fixed — Sort user list based on activity (Case 39030)

- fixed — Some metrics not working when using internal database (Case 40006)
- fixed — When large numbers of users in system, new review screen fails to load (Case 40339)
- fixed — Upgrades from early 4.0 versions fail (Case 40332)

v4.0.835 – June 17, 2008

- added — Add Subversion diffs UI in GUI client 573
- added — Add CVS diffs UI in GUI client 428
- added — Add Perforce diffs UI in GUI client 541
- added — Add StarTeam diffs UI in GUI client
- added — Add AccuRev diffs UI in GUI client 416
- added — Role permission 201 to allow userto modify, but not delete, defects (Case 39630)
- added — Vault 4.1 support
- added — Syntax highlighting for TCL
- added — JMX monitoring 124 of licensing and users
- added — Peak usage chart 225 of license usage with accurate data
- added — Browse... button to GUI client 338 SCM dialog
- added — Track number of rejected logins due to licensing issues (Cases 39775, 39767)
- added — Integrated support for checking in reviewed materials
- fixed — improved performance of adding ClearCase versions with addversions and addactivity (Case 38732)
- fixed — improved performance of review overview screen (Case 39662)
- fixed — browser integration on OS X (CAse 39690)
- fixed — partial fix for external diff config manifest issues (Case 39752)
- fixed — autodetect tf.exe location (Case 39732)
- fixed — attach materials page missing image (Case 39526)
- fixed — Names with apostrophes and hyphens are not properly abbreviated (Case 39750)

- fixed — Optimize/fix adding versions by name (Case 39281)
- fixed — Do not change the case of mixed-case names when abbreviating
- fixed — No vertical scrollbar in classic view in IE7 (Case 39830)
- fixed — Include external diff button for binary files (Case 39754)
- fixed — User list should not be case sensitive (Case 39869)
- fixed — Performance improvement; less frequent access to assignments table (Case 39590)
- fixed — ccollab addchanges fails on Subversion unmodified file after branch (Case 39880)
- fixed — Bad data causes dump to not restore properly (Case 39623)
- fixed — Team Foundation script output appearing in version content (Case 39887)
- fixed — Links in external defects doubly encoded (Case 39921)
- fixed — Make "private" review field available in reports (Case 39900)
- fixed — Improve performance of default review reports
- fixed — Files missing from diff (Case 40002)
- fixed — Diff view does not reload entire page when options change
- fixed — Diff view preference for wrap lines not honored in single version view (Case 39885)
- fixed — Cannot cancel "Track Externally" by choosing "Edit Defect" instead (Case 39073)
- fixed — Review-only dumps corrupted (Cases 39975, 40060)
- fixed — Do not log passwords in cleartext on Windows (Case 40010)
- fixed — Firefox 3 popup calendar sized incorrectly (Case 39723)
- fixed — Delay review creation so users do not create spurious reviews (Case 40031)
- fixed — Tomcat logging should be enabled by default at INFO level.
- fixed — Handle "No Data Given" error parsing spurious TFS properties (Case 39946)
- fixed — Exception in Perforce trigger when changelist description is empty (Case 40085)
- fixed — GUI client should explain that it does not support default Perforce changelist (Case 39948)
- fixed — Filenames with characters outside default character set get garbled (Case 40124)

- fixed — 'ccollab addchanges' on deleted filenames (Case 39483)
- fixed — Error parsing Team Foundation dates with DBCS chars (Case 40145)
- fixed — Performance imrpovement when loading review phases (Case 39860)

v4.0.834 – May 21, 2008

- added — Custom report field 319 for number of open defects (Case 39234)
- added — Added 'force-new-browser 358' option to force new browser window
- added — More validation of Browser and Server URL values in GUI Client
- added — Added 'cvs-exe' global option in case CVS executable is not in PATH
- added — Performance improvements to the diff viewer
- added — Added 'accurev-exe' global option in case AccuRev executable is not in PATH
- added — Added 'svn-exe' global option in case Subversion executable is not in PATH
- added — Eclipse plugin Subclipse integration 399 prompt to automatically switch to SVNKit if necessary
- added — Ability to disable reporting 152 in the Web UI (Case 39550)
- added — Better defect usage description
- fixed — Exception in Database Diagnostic (Case 39323)
- fixed — AccuRev NPE on added file (Case 39195)
- fixed — Prevent users from deleting/canceling reviews (Case 38989)
- fixed — Consistent ordering of changelists by SCM in review materials (Case 39159)
- fixed — Eclipse plugin 387 should prompt to save modified files before uploading them (Case 34752)
- fixed — Scm systems not being mapped correctly when uploading changelists
- fixed — Subversion moves (add with history) should show the metrics from the diff (Case 39512)
- fixed — Error when changing default value (Case 38091)
- fixed — Deleted files not included in external diff package (Case 39529)

- fixed — Handle error getting modified files in Add to Review wizard (Case 36685)
- fixed — Perforce (P4V) integration 557 does not report errors (Case 39532)
- fixed — Perforce (P4V) integration 557 does not work when Workspace not specified (Case 39532)
- fixed — Last line of code removed from review if blank (Case 38957)
- fixed — "AccuRev not in working directory" message comes out as "unexpected error"
- fixed — Update user last activity much less frequently (Case 39590)
- fixed — Deadline status should not display when deadlines disabled

v4.0.833 – April 28, 2008

- added — GUI client remembers last four (4) server URL's 344 (Case 38271)
- added — Support for locale-specific TFS dates.
- added — Flag to disallow non-author uploads 153 (Administrator Setting) (Case 38619)
- added — Added "browse" subcommand to clients
- fixed — Subscriptions should not be applied for users whose accounts are disabled (Case 39270)
- fixed — Fix addchangelist help for TFS shelvesets
- fixed — Include summary metrics for all versions in the review detail report. (Case 39228)
- fixed — Add indicator to the "Compare" menu to indicate what is being shown (Case 39219)
- fixed — External diff launcher arguments should be quoted
- fixed — Diff viewer should have a minimum on the number of skipped lines (Case 38119)
- fixed — Add a meaningful error message for unsupported TFS files
- fixed — Fix some bad error messages in client. (Case 39426)
- fixed — Give a better approximation of disk usage in archiving (Case 39333)
- fixed — Diffs not showing with addsvndiffs
- fixed — ccollab --debug option tells user where log is being saved
- fixed — Subclipse integration does not support anonymous repositories (Case 39203)

- fixed — Database dumps are incomplete when dumping a single review (Case 39420)

v4.0.832 — April 10, 2008

- added — Support for AccuRev Eclipse plugin
- fixed — Solaris does not understand test -e (Case 39079)
- fixed — Diff uploads appear to pick incorrect version (Case 38974)
- fixed — Defect description on review overview omits anything that looks like a tag (Case 38708)
- fixed — Notification emails stop working after server restart (Case 39102, 39066, 39173)
- fixed — Case error in custom field documentation (Case 39197)
- fixed — Performance improvement generating diffs (Case 39079)

v4.0.831 — April 7, 2008

- added — User creation trigger 208 (Case 38762)
- added — Allow users to set skip unchanged 266 option in diff viewer (Case 39051)
- added — Option to disallow non-author uploads 153 (Case 38619)
- added — ccollab set prompts if no option value specified (Case 36979)
- added — ccollab set displays value for all options if no option specified (Case 36724)
- added — Support GIT diff variant with ccollab adddiffs (Case 39048)
- added — External diff preset 406 for Beyond Compare (Case 38988, 37588)
- added — Collaborator GUI Client support for Linux x86_64
- added — Syntax 275 highlighting for SQL (Case 38300)
- added — Tooltip showing when reworked files 257 were last updated
- fixed — Correctly set windowing system parameter in Linux RPM client installer
- fixed — Collaborator GUI Client should persist size and location (Case 38906)
- fixed — Improve progress messages for ccollab addchanges (Case 36423)
- fixed — IE "remember me" cookies (Case 38947)

- fixed — syntax highlight "sbyte" as a keyword in C#
- fixed — Update P4V Tools import file for P4V 2007.3 (Case 38994)
- fixed — Syntax highlighting for PHP (Case 36489)
- fixed — When there are too many users, review creation page is slow (Case 38688)
- fixed — Better support for nested Subversion working copies (Case 38979)
- fixed — Only administrators can run ccollab admin syncusers 556
- fixed — Update SQL Server drivers; drop support for SQL Server 7.0
- fixed — ccollab adddiffs fails if files have different names (Case 37940)
- fixed — Minor performance improvements in diff emitting code
- fixed — do not display time in review deadline (Case 38948)
- fixed — Bad links in server upgrade section
- fixed — ccollab addfiles does not pick up SCM configuration (Case 36538)
- fixed — Review not displaying files (Case 39093)

v4.0.829 – March 26, 2008

- added — Support for GIT-style diffs in ccollab adddiffs
- added — Detect XML "encoding" header attribute and use to parse XML files with correct encoding (Case 38933)
- added — Indicate the number of reworks a file has gone through in the "Status" column of the review summary page 257 instead of just saying "Reworked". (Case 38875)
- fixed — Error trying to upload or view files not in UTF-8 or certain binary files (Cases 38925, 38913, 38933, 38941)
- fixed — "Log user off" link should be present only if the account is logged in according to floating-seat rules (for example, auto-log-off after 1 hour), not by whether the user has logged off manually.
- fixed — "New comment" form should be disabled when no line is currently selected
- fixed — ClearCase Windows version paths garbled in viewer drop-down

v4.0.828 – March 25, 2008

- added — Separate licensing button "update from smart bear" 87 to reduce confusion
- added — System property to specify the cache sizes for line parse and syntax coloring cache
- added — JMX beans for cache sizes; framework for other JMX beans
- added — More review information in notification emails (Case 38618)
- added — Include server configuration files in debugging dump 142
- added — Debug and migration dumps 142 use form to select options instead of list of links
- added — Option to include server logs in system data dumps 142
- added — Incorporate review dumps 143 into the new data dump form
- added — Team Foundation Server 517 support (beta)
- added — Add "log this user off" 167 to administrative user list (Case 38845)
- fixed — improved performance of caches for syntax and diff highlighting.
- fixed — ccollab addchanges should not create review when no files are selected (Case 36649)
- fixed — Error on some JVMs running addcvsdiffs 434 (Case 38723)
- fixed — Getting blank screen when trying to input new license code (Case 38830)
- fixed — Binary characters blocking chat from working (Case 38825)
- fixed — User Login Prompt field and others should highlight hyperlinks automatically (Case 38841)
- fixed — "Log off" from one browser should log out of all browsers
- fixed — Password reset does not reset password for admin user (Case 38825)
- fixed — Improve performance of scm output processing (Case 38864)
- fixed — Force clear of Collaborator 2.1 cookies

v4.0.825 – March 18, 2008

- added — Fun facts 163 help
- added — Client 'admin review finish' command
- added — Users can select browser 358 to launch (Case 36294)

- fixed — Button text in planning phase of Review Overview page (Case 36946)
- fixed — Restore links to metrics definitions topic in manual
- fixed — Refreshing action items from clients counts you as logged in (Case 38546)
- fixed — Roles without participants should not be empty in table (Case 37001)
- fixed — Confusing instructions in the defect log box (Case 37002)
- fixed — AutoDetectingReader not working properly (Case 38239)
- fixed — Initialize database button style (Cased 37080)
- fixed — Rework cookie handling to comply more completely with Tomcat's specifications
- fixed — Add more information on Perforce trigger errors (Case 38624)
- fixed — Defects showing up with comment icons in the diff view gutter. (Case 38502, Case 38651)
- fixed — Client 'addsvndiffs' command fails with Cygwin svn. (Case 38285, Case 37943)
- fixed — Client installer reports server is too old when the server is unavailable. (Case 38682)
- fixed — Client prints stack trace when adddiffs finds no diffs (Case 38547)
- fixed — Update Tomcat jar to fix LDAP authentication issues (Case 38795)

v4.0.824 — March 6, 2008

- added — User configurable Fun Facts 163 (Case 37885)
- added — Ability to get more than 10 search results 308 (Case 38454)
- fixed — Action items need to update immediately when the tray notifier is clicked.
- fixed — Trying to auto-detect AccuRev and throwing exception instead of just skipping it. (Case 38197)
- fixed — Defects by User metrics differ from defects list report (partial fix). (Case 38443)
- fixed — Reports throw exception when filtered on invalid date (Case 38500)
- fixed — Use a different browser launching utility.
- fixed — Auto-login cookies are not cleared in IE after an upgrade from 821 (or earlier) to 823 (Case 38592)

- fixed — Various text updates for UI consistency (Case 37060)
- fixed — GUI clients should not log passwords in plain text.

v4.0.823 — March 3, 2008

- added — Select suggested new review title 383 (Case 37152)
- added — Cache action items 241 refresh connection for 20 mins
- added — Ability to capture debug log 347 in GUI Client
- added — Upgrade Tomcat to 5.5.26
- fixed — Handling of system-administrator in LDAP configuration
- fixed — File upload description is not unicode clean (Case 36875)
- fixed — Clients ignoring proxy settings
- fixed — Change default action items refresh interval to 5 minutes
- fixed — Widget is disposed in tray notifier (Case 38262)
- fixed — Double quotes in chat turn in to quadruple quotes (Case 38408)
- fixed — Large text field does not resize automatically on "edit review" screen (Case 38405)
- fixed — Strike-through on defect text should not include "tracked external as" portion (Case 38208)
- fixed — Recognize CVS for individual files (Case 38417)
- fixed — Inserts or deletions at the end of file prevent classic view from loading (Case 37984)
- fixed — Custom fields editor shows wrong inputs when validation fails (Case 38214)
- fixed — Metrics discrepancies (Case 38443)
- fixed — Embedded database search results are case-sensitive (Case 38473)
- fixed — Defect report label is "Severity" when it should be "Type" (Case 38486)
- fixed — Reinstate user preference for disabling syntax highlighting
- fixed — Safari & Opera render <wbr> tag incorrectly (Case 38488)
- fixed — GUI Client and Tray Notifier should write to different log files (Case 38378)

- fixed — Keyword highlighting within intra-line diffs

v4.0.821 — February 21, 2008

- added — When word-breaking long continuous words, try to break on camelCase boundaries if possible (Case 38289)
- added — SCM server information now in the <artifacts> section of "ccollab admin review-xml" (Case 38261)
- fixed — Links in chat are corrupted, both hyperlinks and bug-links (Case 38319, 38337, 38330)
- fixed — Debug review dump cannot be unzipped (Case 38036)
- fixed — Custom report fails to run when "Idle Time" column is selected under SQL Server (Case 38240)
- fixed — Script error on review overview when review is in the completed phase
- fixed — Erroneous error "version content already sent" when using diff-shim application with Subversion under Windows (Case 38225)
- fixed — Tray notifier displays erroneous error (Case 36402, 37744, 36237)
- fixed — Erroneous "<wbr>" text displayed inside URL's (Case 38195, 38215)
- fixed — Make label for "Local path" more clear in the cross-platform GUI client (Case 38066)
- fixed — Fixed incorrect comment label of "DEDT" on upgraded databases (Case 38336)
- fixed — Custom review filter is partially ignored when looking at printable format (Case 38269)
- fixed — Incorrect Subversion check-in comment parsing (Case 38285)
- fixed — Hide and encrypt password configurations in the cross-platform GUI client (Case 37830)
- fixed — Large files were sometimes not showing up in the diff viewer (Case 38235)

v4.0.820 — February 12, 2008

- added — Support for sym-links 570 in Subversion (Case 38038 and Case 38039)
- added — Reports and views 321 now count "number of comments" as the number of comments made by users in the context of chatting, not including system messages like "created defect" or "file uploaded". (Case 37645)

- fixed — Bug upgrading older databases to build 819 (Case 38189)

v4.0.819 – February 7, 2008

- added — Log off link 230 on the menu bar. (Case 37923)
- added — Update button 87 on licensing screen to force update of license codes from SmartBear servers.
- added — Support for Perforce Eclipse Plugin (P4WSAD) version 2007.3.601 (Case 37916)
- added — Installer option to preserve existing database settings. 74
- added — New icons for various operations
- added — Chat icons in diff window 271 gutter show unread conversations 301 with unread conversation icon.
- fixed — Oracle strings now support more than 1023 characters
- fixed — Vault integration case sensitivity.
- fixed — After completing a review to move it to rework, a refresh moves the review back to inspecting (Case 37927)
- fixed — Review cancel action should take user back to home page. (Case 37938)
- fixed — Adding files by diff does not handle rework status correctly (Case 37902)
- fixed — Support version name /main/0 as a valid predecessor
- fixed — Reduce chat load times.
- fixed — Template selection alignment is inconsistent (Case 38004)
- fixed — Support Subversion in languages other than English (Case 37537)
- fixed — Use "last changed revision" as Subversion local version
- fixed — AccuRev failing on Linux with capital letter in path (Case 37932)
- fixed — Asynchronously load file content for better browser performance.
- fixed — Trailing context lines has one too few lines. (Case 38020)
- fixed — Do not send multiple copies of emails to the administrator (Case 37954)
- fixed — Long text on review overview makes some information flow offscreen.(Case 37129)

- fixed — Links for dumping system data are confusing (Case 37922)
- fixed — AccuRev cannot auto-detect from path (Case 38052)
- fixed — When rolled up and changelist comments repeat, save space by indicating the number of repetitions
- fixed — Misaligned diffs (Case 38026)
- fixed — Restore ability to change the login prompt
- dropped — Eclipse plugin no longer supports Eclipse 3.0 (Eclipse 3.1 or better is required)

v4.0.818 – January 24, 2008

- added — Added usage statistics 225 sub-page to the Admin section
- added — Added documentation 338 for the GUI Client
- added — Added documentation 404 for the Tray Notifier
- added — Added documentation for ccollab login command
- added — Downloadable Eclipse plugin as zipped-up eclipse update site (Case 36063)
- fixed — Log version number in GUI Client log
- fixed — Moving the attach file dialog on the review edit screen causes the dialog to disappear. (Case 37658)
- fixed — Restore ability to edit title after review completion (Case 34178)
- fixed — Database unavailable at server startup makes Collaborator require a restart. (Case 37848)
- fixed — Add*Diffs 352 commands use of GUID's for changelist id is confusing to users (Case 37640)
- fixed — IE 7 does not like RSS feeds with DTD's in them (Case 37890)
- fixed — Overdue notice showing up on complete reviews on the action items lists (Case 37587)
- fixed — Invalid Subclipse info for svn servers with no path (hostname only) (Case 37665)

v4.0.817 – January 18, 2008

- fixed — Incorrect diffs from Subversion (Case 37133)

- fixed — Print product version number in Eclipse log (Case 37648)
- fixed — Script errors in classic view
- fixed — User short names are duplicated if names are too similar (Case 37704)
- fixed — Client installer no longer kills running client taskbar app (Case 37314)
- fixed — Predecessor version not found if file has many version; ClearCase only (Case 37666)
- fixed — Cannot configure multiple Perforce servers (Case 37736)
- fixed — ContentViewer must havea content provider when input is set (Case 37755)
- fixed — ASCII control characters in files cause "More Lines" operation to hang (Case 37718)
- fixed — GUI client needs to allow SCM specification and local path
- fixed — addactivity subcommand should show local synced version numbers (Case 37364)
- fixed — IE 6 fails to download custom reports
- fixed — Added ccollab logiin subcommand (Cases 36731, 36729, 36730)
- fixed — Comments misaligned at the point of a code insertion (Case 37747)
- fixed — Mandatory subscriptions not uniformly enforced on the server
- fixed — Clear Case fixes for named local versions
- fixed — CVS uploads from GUI client do not work (Case 37800)
- fixed — Make action item url's work in non-root contexts
- fixed — User account creation fails from administration screens (Case 37823)
- fixed — Grace seats are not handled properly

v4.0.814 – January 8, 2008

- added — Added commands "ccollab admin review participant assign", "ccollab admin review participant remove", and "ccollab admin review comment create"
- added — Added command "ccollab admin review defect create"
- added — Global option for SMARTBEAR_PROCESS_USER_WAIT
- added — Support clients working in ClearCase view directory (Case 37082)

- added — --creator option to "ccollab admin review create"
- added — add "ccollab admin review defect mark-external" and support defect id "last"
- added — trigger talkback 208 to set review access restriction (Case 36783)
- fixed — New user registration on login page fails (Case 37448)
- fixed — AccuRev integration predecessor algorithm should be "previous occupant" (Case 36970)
- fixed — Make skip unchanged preference work with new diff viewer (Case 36422, Case 37397)
- fixed — Intraline diff highlight expands to include entire SGML tags, making it hard to understand what actually changed. (Case 35430)
- fixed — 'ccollab set username' has poor error messaging (Case 37225)
- fixed — ' ccollab info' messaging has bad formatting (Case 37226)
- fixed — adddiffs with no third argument causes NPE (Case 37303)
- fixed — Default Perforce p4port to 1666 if not specified anywhere at all
- fixed — auto-detect ClearCase in view root directory
- fixed — Custom reports creates links too long for IE (Case 37551)
- fixed — Diff viewer title should lead with file name (but not full path), so it will show up nicely in the task bar. (Case 37547)
- fixed — Underscores occluded when intraline diffs wrap (Case 37436)
- fixed — Error in toolbar application when launching application twice (Case 37550)
- fixed — Empty Boolean type options cause NullPointerException (Case 37508)
- fixed — Diff viewer should scroll new selections somewhere toward the middle of the page. (Case 36634)
- fixed — Completed reviews should not use current date to determine if review is "overdue". (Case 37587)
- fixed — NullPointerException in CvsClientConfiguration. (Case 37574)
- fixed — read config files and ccollabgui scm config settings on a best-effort basis

v4.0.812 – December 21, 2007

- added — Added commands "ccollab admin review create", "ccollab admin review edit", " ccollab admin review delete"
- added — Ability for Administrators to change access rules 151 on reviews in progress (Case 37190)
- added — Friendlier stalled review notifications 237 (Case 37391)
- fixed — Vestigial new review remains after client error (Cases 37393, 23390)
- fixed — ccollab addchanges 422 for AccuRev uploading files in lowercase
- fixed — Full line differences not highlighted (Case 37413)
- fixed — Track externally fails for defects in overall section of files (Case 37319)
- fixed — Side by side view has issues displaying deleted files correctly (Case 37412)
- fixed — Error installing server with Oracle or SQL Server databases

v4.0.811 – December 14, 2007

- added — Email notifications 237 contain a footer indicating that the email was automatically generated.
- fixed — Improved performance of diff viewer for large files, especially with Unix or Macintosh line endings.
- fixed — Command line client erroneously reports ccollab addchanges works with CMVC.
- fixed — Emails going out from the system administrator rather than the default address (Case 37177)
- fixed — Perforce integration ignoring p4client or p4user if only one is set
- fixed — Better help for the command line client
- fixed — Triggers should not be required to respond with a well-formed document if they are not talking back (Case 37307)
- fixed — AccuRev integration throws NullPointerException in ccollab addstream.
- fixed — AccuRev integration displays wrong error message when not authenticated.
- fixed — Subscription fixes and access restrictions (Case 36793)
- fixed — Email notification option to disable for administrators; restoring migration files restores with notifications disabled. (Case 37285)

- fixed — Highlighted text does not honor user preference fonts (Case 37369)
- fixed — After changing the review deadline, the "Apply" button reverts the deadline to the default (Case 37382)

v4.0.810 – December 7, 2007

- fixed — StarTeam differences support in ccollab addstdiffs command (Case 37034)
- fixed — ClearCase ccollab addactivity 474 should give empty predecessor for files new to activity (Case 37142)
- fixed — Support for ClearCase \0 versions (Case 36675)
- fixed — Error when getting SQL or CSV from custom reports in Internet Explorer (Case 37185)
- fixed — Mark external (defect) fail on review overview page (Case 37274)
- fixed — Tray notifier throws NullPointerException when double clicked upon startup (Case 36879)
- fixed — Perforce integration not including changelist number in review title
- fixed — Perforce integration not copying changelist description into overview field.
- fixed — NullPointerException in addp4diffs 551.
- fixed — Additional logging in the email notification processor.

v4.0.809 – December 4, 2007

- added — ClearCase performance changes (Case 36819).
- added — Chat pane 272 is masked when loading
- added — Add "review completion date" to review_activity_summary 600 view (Case 37196)
- fixed — External diff launcher fails because of Windows absolute file names (Case 37175)
- fixed — Improved remember me cookie system; works with container managed role-based security.
- fixed — Custom fields copied from previous reviews gets wrong previous reviews (Case 37183)
- fixed — Installer fails to migrate from 2.1 if application is running at a non-root context path.
- fixed — Fix addversions argument parsing.

- fixed — Defect tracking integration not showing up for custom fields (Case 37147)
- fixed — AccuRev integration addstream 425 was picking incorrect previous versions in some cases (Case 36970)
- fixed — New diff viewer ignores user font preference (Case 37159)
- removed — Undocumented report command; would not work with improved security model.

v4.0.808 – November 28, 2007

- added — Added SCM configuration options to cross platform GUI.
- fixed — ClassCastException in addstdiffs command (Case 37034)
- fixed — Manual pages were not loading properly in Eclipse
- fixed — Attach changelist fails in IE6 (Case 36932)
- fixed — Clean up font sizes in cross platform GUI for GTK systems.
- fixed — Removed spurious logging when database is known to be invalid.
- fixed — Floating license timeout is now one hour instead of four.
- fixed — Installer fails to remove old jars when updating the Eclipse client (Case 37009)
- fixed — Under certain circumstances, servers running with the embedded database could not be upgraded to 806 or 807 builds.
- fixed — Improve performance of the chat portion of the diff viewer (Case 37127)

v4.0.807 – November 19, 2007

- added — Do not allow reviews to move to inspection phase without materials 250
- added — (AccuRev only) Added support for ccollab addardiffs 425 for uploading arbitrary AccuRev differences with full context.
- fixed — Super-search box did not handle characters outside the Latin-1 range
- fixed — Action item "Response to Comments" not posted when new changelist contains only updated files (Case 36847)
- fixed — "Compare" menu in diff viewer lists all uploads as "1st" (Case 36931)
- fixed — ccollab addsvndiffs now includes full diff context instead of just 3 lines surrounding each change

- fixed — ccollab addsvndiffs now supports binary files correctly regardless of local line ending settings
- fixed — Inconsistent table cell alignment on review overview page (Case 36945)
- fixed — Custom fields cannot be reordered (one-off special database export error case)

v4.0.806 – November 15, 2007

- added — Defect state icons in the diff viewer 271
- added — Client commands for administering author subscriptions
- added — Client commands for administering file-based subscriptions
- added — Home Page menu option in the tray icon context menu 405 (Case 36856)
- added — Web user interface accepts and displays Unicode input (Case 36697)
- added — Add submitted changelists support to cross-platform GUI 338
- fixed — Diff viewer should start with the first diff if user clicks on file name on review overview page (Case 36637)
- fixed — Participant list expansion does not happen on first apply (Case 36632)
- fixed — The ccollab addstream command requires being in a local workspace directory (Case 36350)
- fixed — Unable to edit defects in the Overall section (Case 36806)
- fixed — Editing defects does not set custom field drop-downs in Firefox (Case 36807)
- fixed — Under certain scenarios, comments needed to be marked read in all versions of a file before closing a review (Cases 36845, 36572)
- fixed — Printable report double-html-encoded text (Case 36877, 35540)
- fixed — Custom report "Recently Completed Reviews" did not properly filter against "completed" status
- fixed — Review title not set by default when uploading changelists with descriptive text (Case 36437)
- fixed — NullPointerException in tray notifier
- fixed — Enterprise organization field is too small (Case 36904)
- fixed — File subscriptions not working for Perforce paths (Case 36870)

- fixed — Anonymous Subversion has log entries with no author
- fixed — Archiving fails with blank screen. (Case 36973)
- fixed — Improved performance of archive queries.
- fixed — Trivial Reviews report should not contain canceled reviews (Case 36873)
- fixed — File subscription input fields too short; expanded to 255 characters (Case 36939)
- fixed — Explain to the user why the recent participants list is empty (Case 36941)
- fixed — Password overrides and ccollab set collab had confusing behavior.

v4.0.805 — November 5, 2007

- added — AccuRev 415 only: New ccollab addstream 425 command uploads differences pending promotion given an AccuRev stream name (Case 36530)
- added — User RSS feeds 238 are now identified by a guid rather than by user name.
- added — Review completion date in review overview 252 (Case 36679)
- added — Eclipse review wizard 383 suggests a new review title.
- fixed — Eclipse synchronize view actions missing icons
- fixed — Text   appearing in file overview display (Case 36704)
- fixed — Eclipse "add to new review" and "add to existing review" should be consolidated.
- fixed — Variables not being substituted in stalled review emails (Case 36703)
- fixed — No password (unset) causes issues in Eclipse plugin and system try notifier (Case 36689)
- fixed — ccollab set collab "" does not overwrite server-url properly (Case 36725)
- fixed — Some database dump files could not be reloaded because of improperly encoded special characters (Case 36773)
- fixed — Installer does not properly add strictAuthOnly attribute to realm definition.
- fixed — 4.0 clients fail to authenticate when server is LDAP authenticated. (Case 36739)
- fixed — Do not specify password argument to P4 commands unless specifically configured to do so.
- fixed — Support spaces in subversion committed file names.

v4.0.804 — October 29, 2007

- added — Performance improvements on Review Overview screen
- added — Handle Perforce ticket mode, automatically login for a new ticket if necessary
- added — Use Add to Review Wizard 383 in GUI Client
- fixed — Add view for custom field drop-down values (Case 36607)
- fixed — Bogus scrollbar when window shrinks in non-wrapped side by side diff (Firefox only) (Case 36209)
- fixed — Clicking on skipped lines section puts non-number in the new chat line number (Case 36561)
- fixed — With short filenames in the same directory, icon column is too wide.
- fixed — Binary file type field should be longer than 255 chars (Case 36640)
- fixed — Remove mandatory dependency on Eclipse CVS plug-in (should be an optional dependency)
- fixed — New subscription fails (Case 36656)
- fixed — Improved logging and error messaging when send email fails (Case 36641)
- fixed — Next/Previous highlights the wrong line for deletes (Case 36635)
- fixed — Support spaces in file/path names in Subversion (Case 36360)

v4.0.803 — October 18, 2007

- added — Action items 241 on homepage refresh without a complete page refresh.
- added — Documentation on configuring LDAPS 102
- fixed — Custom reports broken when using embedded database (Case 36470)
- fixed — addactivity command fails when file paths contain spaces (Case 36463)
- fixed — NullPointerException in ccollab addchanges (Case 36507)
- fixed — Metrics by Review report only showing reviews with defects (Case 36481)
- fixed — Eclipse plugin stores passwords in plain text (Case 35694)
- fixed — actionitems command does not list action items (Case 36505)

- fixed — addchanges command should not be available when SCM is Perforce
- fixed — Oracle backend should store integers as Number(10) so external tools will recognize as Number.
- fixed — Possible fix for tray notifier crashing
- fixed — Comment promotion prevents bad comments from being marked read
- fixed — External diff viewer link should not be displayed when showing only one version (Case 36451)
- fixed — Jump to next line sets the line to -1 if no more defects
- fixed — Installer fails to preserve database credentials on upgrade (Case 36540)

v4.0.802 — October 12, 2007

- added — New field in review_activity_summary view, author_rework_hours (Case 35473)
- fixed — Minor UI improvements on review overview page.
- fixed — Optimized syntax coloring for very long lines and large files.
- fixed — Search box now jumps directly to review if the search text matches a review id. (Case 36390)
- fixed — Selection causes text to move around in some parts of diff viewer. (Case 36210)
- fixed — Firefox refreshes the review overview page twice instead of the once required. (Case 35882)
- fixed — Tray notifier should to to "normal" mode if no more urgent action items.
- fixed — Version ordering on review overview screen was incorrect if user preference set to alphabetic.
- fixed — System tray notifier was not shutting down on upgrade.
- fixed — Upgrading a server with existing LDAP configuration results in 403 errors from the server.
- fixed — In diff viewer, selecting text results in a script error (IE only)
- fixed — When license code is invalid, the node id is not displayed, but is required in order to resolve the issue.
- fixed — Minor changes to documentation.

v4.0.801 — October 8, 2007

* FIRST RELEASE OF v4.0 BETA *

- BIG NEW FEATURES
- added — Revamped diff viewer 271 with over-under view 271, much faster loading times, more jump/search features 274, and hide-able chat pane 299
- added — Subscriptions 236 allow users to get on a review with author- or file-based rules
- added — "Recently Completed Reviews" 241 list on home page
- added — Customized Review Report 317
- added — "New Review" 243 page is now a single page rather than a wizard, cutting down drastically on the time it takes to create and start a new review
- added — Open differences in local diff viewer 271
- added — Review deadlines 157
- added — Proactive notification system 237 alerts you to reviews that are stalled
- added — RSS feed 238 for Action Items 229
- added — Command-line structure reorganized and many new options 364 added
- added — Extensive Command-line help
- added — Tray notifier 404 for Windows and Linux
- added — Enterprise organization 169 specification for reviews
- added — Annotate files 256 in overview screen with one-line comments that are visible without opening files
- added — SCM system can usually be detected automatically

- LITTLE NEW FEATURES
- added — "Fun Facts 163" feature on home page
- added — User list drop-down 246 now support substring-based searching for names

- added — Custom reporting view defects_by_file 600
- added — Command-line client now connects to server much more quickly
- added — Addchanges from multiple SCM configurations in one command
- added — All global options can be overridden 350 on the command-line
- added — Special last keyword can be used on the command-line to refer to the review that was last created
- added — Version control system is automatically detected by the command-line client in most cases
- added — Ability to disable all metrics 151 displays (Case 25888)
- added — Ability to edit list of files before they get uploaded for ccollab addactivity 474 and ccollab addtrack (Case 35009, 35383)
- added — Home page action items 241 have more information and are split by incoming, outgoing, and more
- added — Many UI elements can now expand and contract
- added — Date input boxes now use a proper calendar widget
- added — Database diagnostics 225 help you and tech support diagnose problems
- added — Cleaned up user activity statistics 165 on the Admin/User page so it is easier to see how many licenses you really need
- added — User initials algorithm now supports "Last, First" semantics
- added — Button on New Review page lets you pick up custom field settings from the previous review
- added — Added on-wire compression for more web page elements for faster page-load times
- added — Speed improvements for the Review Overview page 250, eliminating 60% of the SQL queries
- added — Speed improvements for the Chat pane 299, making the common no-op case fast
- added — Review columns 257 are hard to differentiate with many reviewers (Case 35450)
- added — Improved defect icons 303 for red-green colorblind users (Case 35023)

- FIXES
- fixed — Syntax highlighting got confused with certain sequences of escape characters in C-style strings
- fixed — Subversion checkout at root of local disk fails to upload files properly (Case 34992, 35056)
- fixed — New files/directories caused Eclipse plug-in to fail to find other modifications (Case 35664)
- fixed — Users could re-open review by continuing to comment; now must explicitly re-open 252 the review with a button.
- fixed — When server is awaiting database upgrade, clients were reporting "incompatible server" instead of "needs database upgrade" as the error message (Case 32710)
- fixed — Incorrect handling of non-UTF-8 characters in communications with the Perforce server (Case 36367)
- fixed — Reporting database view 600 review_activity now includes all participants, not just those with non-zero activity time

9.2.7 Version 2

v2.1.731 — November 29, 2007

- fixed — Fix activity changelist editing of LOCAL versions. (Case 36839)

v2.1.730 — October 30, 2007

- added — Add loc_unversioned field to the review_version_summary containing the line count from files not under version control (Case 36613)
- fixed — Improper handling of Unicode characters in Perforce changelist text. (Case 36737)
- fixed — Subversion integration fails when spaces in file names

v2.1.729 — October 16, 2007

- fixed — Installer can throw NullPointerException when installing server under Java 1.4 (Case 36080, 36093, 36247, 36242, 36243)
- fixed — Metrics by review report only shows reviews with defects (Case 36481)

v2.1.728 — September 14, 2007

- added — Support for editing the list of files being uploaded for ccollab addactivity 474 (Case 35009, 35383)
- fixed — Last activity date was being updated from Windows GUI Client even if the user was not logged in, only when a non-floating license code was installed
- fixed — Perforce trigger was blocking check-in on integrate even with --ignoreintegrate is set, if additional files were added as part of the integration and therefore tagged as "branch" by Perforce (Case 35897)
- fixed — Now impossible to change login or password if LDAP/Active Directory is being used (Case 36052)
- fixed — User permissions on views were being destroyed when views were recreated in Oracle and MySQL

v2.1.727 — August 24, 2007

- added — First release of AccuRev support 415
- added — Customizable text 149 on the login screen instructing the user which account to use (Case 35653)
- added — Recent participant list 246 should go back only 30 days so older users disappear (Case 35685)
- added — ccollab addchangelist now supports multiple changelists on the same command-line
- fixed — URL encoding error externalizing a defect when a quote character appeared in the defect text (Case 35638)
- fixed — Comment promotion error with comments on deleted files in rolled-up view (Case 35698)
- fixed — Some custom reports views were not available under Oracle when custom field titles were longer than 30 characters (Case 35420)
- fixed — User preference for "start with latest" versus "start with base" not being honored with mixture of local and committed changelists (Case 35597)
- fixed — Not properly encoding control characters (below 0x20 ASCII) in database dump XML files
- fixed — Installing server component multiple times switching databases between embedded and SQL Server causes invalid configuration (Case 35488)

v2.1.725 — August 1, 2007

- added — Variable substitutions 129 for review and defect custom fields 190 (Cases 35552, 35556)
- added — Now only administrators can un-cancel a canceled review (Case 35502)
- fixed — Next/Prev buttons broken in the New Review Wizard 243 (regression from build 724) (Case 35491)
- fixed — Default values for defect custom fields not showing up under IE 6 in the side-by-side view chat 299 area (Case 35551)
- fixed — User could download file content from the /data servlet without login credentials (Case 35580)
- fixed — User preference 232 for whether to display "previous" or "base" version by default in side-by-side view was selecting the wrong thing with files not under version control (Case 35476)
- fixed — ccollab addchangelist 583 with Subversion 568 puts the wrong text in the title of the review if the changelist description starts with the letter "r" (Case 35452)
- fixed — ccollab addchanges 468 with ClearCase 454 invoked from different subdirectories can insert "." path components thereby making comments not promote across versions properly (Case 35575)
- fixed — Server installer was not setting the LDAP system administrator property (Case 35477)

v2.1.724 — July 23, 2007

- added — Support for Unicode text files in the diff viewer 271
- added — Multiple conversations for binary files in side-by-side view
- added — Support for Python and Visual Basic syntax coloring in the side-by-side view (Case 35427)
- added — Support for the UltraCompare textual diff file format 354 (Case 35343)
- added — Subversion trigger for creating a review 586 should allow for setting the review title and overview text (Case 35252)
- fixed — Double-clicking the "Accept" button when there is text in the comment box can result in duplication of the comment and "Accept" text in the conversation history (Case 35384)

- fixed — ccollab addcvsdiffs 434 does not use absolute RCS server paths when a file has been added (Case 35345)
- fixed — Review title limited to 128 characters when editing review information after the review has started, whereas the limit is 255 when creating a new review (Case 35399)
- fixed — External bug URL 159 link was not honoring BUGSUBJECT or BUGID special fields (Case 35419)
- fixed — Files now sorted case-insensitive (Case 34511)

v2.1.723 – July 13, 2007

- added — New command-line command ccollab addfiles for uploading files not under version control (Case 35268)
- added — Display the official, permanent link to a review at the top of the Review Summary 250 page (Case 35277)
- added -- Now supports Eclipse v3.3; changes include: Removed hidden popup that was making help content invisible, Removed byte order mark in Eclipse help
- fixed — When role disallows editing/deleting defects, participant cannot even edit/delete his own defects (Case 35272)
- fixed — Able to make a new conversation 299 on line 999999 (Case 35317)
- fixed — Spurious error message when uploading files using v2.1 client 348 against v2.0 server (Case 35263)
- fixed — Create-Review trigger 208 was not being executed when the command-line client created the review (Case 35128)
- fixed — Removed hidden popup in Eclipse v3.3 that was making help content invisible

v2.1.721 – July 5, 2007

- added — ClearCase ccollab addactivity 474 should diff re-bases and integration branch with --diffintegration (Case 34382)
- added — Configurable minimum timeout for AJAX chat refresh rate 149, plus restrict per-user refresh rate so as to not swamp the server or the browser with chat-refresh requests
- fixed — Cannot continue the review due to "unread comments" when in fact all comments are read and the "unread" ones are just rolled up (Case 35163, 35104)

- fixed — Some trigger variables 129 were not being replaced correctly (Case 35128)
- fixed — Client installer 329 does not check for an existing trailing semi-colon when updating the Windows PATH environment variable (Case 34989)
- fixed — Stop logging spurious error messages when the database has no tables (Case 34890)
- fixed — ClearCase version of ccollab addversions not properly handling files with predecessor version main/0 (Case 35144)
- fixed — Cannot get past "database needs updating" screen when MySQL 55 auto-increment settings do not start at 1 (Case 35141)
- fixed — Report data broken when reporting user-time when using the embedded database (Case 35104)
- fixed — Migrating data 91 into Oracle failed when custom field title was blank
- fixed — Migrating file data from review dump put the content in the wrong place when the user overrides the location of the content cache
- fixed — Leaking database connections when "download files" command was used. Connections were reclaimed eventually but wasted resources.
- fixed — Perforce trigger truncated changelist description lines at '#' (Case 35271)

v2.1.719 — June 18, 2007

- fixed — ccollab addchanges 582 fails for Subversion checkout at file system root (Case 35056)
- fixed — Windows command-line invocations not being parsed properly in certain special cases
- fixed — Database cleanup for exceptional case on multi-core servers where a bug in a previous build could cause a comment/defect to not be associated with a visible conversation, thereby making a review impossible to complete (Case 35074)
- fixed — Quoted strings in C-style languages could cause a line of code to be incorrectly colored in the side-by-side view if it contained escaped quotes (Case 35048)

v2.1.717 — June 15, 2007

- added — Option to override the maximum file size for a review. (Case 32313)
- fixed — Perforce trigger 559 broken when files have been truncated due to excessive length. (Case 32313)

- fixed — Reverted files show up as "Reworked". (Case 34592)
- fixed — Files not contained in directories display incorrectly in review overview 257 screen.
- fixed — Remove spurious log messages about uploaded files not having previous version as this is the expected condition.
- fixed — Race condition prevents some pages from loading and causes others to only be partially loaded. (Case 35051)
- fixed — Admin license page 86 displays the wrong number of licenses.

v2.1.714 — June 8, 2007

- fixed — Web page can take forever to load (or new comment takes forever to appear) when emails are being sent out due to the action just submitted (Case 34986)
- fixed — URL validation in input fields should check format but not actually attempt to connect (Case 34997)
- fixed — Perforce trigger 559 was blocking non-Collab-related changes to the changelist spec, specifically in the case of creating a new changelist from scratch (Cases 34436, 34812, 34915)
- fixed — ccollab addchanges 582 fails for Subversion checkout at file system root (Case 34992)
- fixed — Variable substitution 129 system could skip a variable if you strung together many variables in a row (Case 35002)

v2.1.713 — June 6, 2007

- fixed — Drop-down items not displaying current values (Case 34963)

v2.1.712 — June 5, 2007

- added — Drop-down typed custom fields 190 can now be given a default value
- added — ClearCase only: ccollab addactivity 474 now supports diffs against latest version from integration branch (Case 34382)
- fixed — Cannot add yourself 254 to a review if you are not already a participant or an administrator (Case 34834)
- fixed — Custom field description text not being displayed in the "create defect 303" form (Cases 34671, 34861)

- fixed — Binary file identification pattern 162 should not be case-sensitive (Case 34895)

v2.1.711 — May 30, 2007

- added — Subversion server-side hook for automatically creating a review 586 whenever a change gets submitted
- added — Subversion server-side hook for uploading revision data 586 to the server after a change gets submitted
- added — Manual page describing when notifications 237 are sent to users
- added — More documentation and troubleshooting information about Perforce server-side triggers 559
- fixed — Database connection errors or NullPointerException errors in a race condition when sending email notifications
- fixed — Error running ccollab addsvndiffs 584 with Subversion 568 clients prior to v1.4.0.
- fixed — Scrollbar missing in chat 299 window for binary files (Case 34623)
- fixed — Do not display "0 changelists" under "local changes" when all changelists are in fact checked in (Case 34798)
- fixed — Broken links to manual pages on client tools when attaching materials 246 to a review
- fixed — Supplying a blank name for a role configuration causes problems in the administration GUI

v2.1.709 — May 21, 2007

- added — Speed enhancements for the diff viewer 271 web view.
- added — ClearCase ccollab addactivity 474 support for diffs against integration branch (Case 34382)
- added — Subversion server-side hook 586 for ensuring that files are reviewed before they are checked in.
- added — User's Guide chapter for recommended hardware 126 and how to increase server speed 126.
- fixed — CVS variant of ccollab addversions uploaded correct file content but incorrectly marked the versions as "added" in the web GUI (Case 34617)

- fixed — Subversion command-line can get too long under Windows with large numbers of files.
- fixed — SQL error trying to archive files using Oracle, SQL Server, or embedded database back ends.
- fixed — Subversion Eclipse plug-in for Eclipse v3.1 would fail to upload files if uncontrolled files were left in a project and the Subclipse preference "Select unversioned resources on commit" was enabled.

v2.1.708 — May 16, 2007

- added — New Perforce trigger 559 for automatically updating changelist description with information about the associated review.
- added — Support for using wildcards with paths when using ccollab addchanges with SCM system type none under the Windows cmd shell
- added — Support for Subversion's 568 svn:externals feature wherein a repository contains a soft link to another repository.
- added — Speed enhancements for the Review Summary 250 page when viewing very large reviews.
- added — Speed enhancements for common operations in the Subversion integration.
- added — "Obfuscated Dump 142" for both review-specific and whole-system database dumps to allow customers to send SmartBear tech support data dumps without sending any sensitive information.
- fixed — (Eclipse/Subversion plug-in 399) Changes from different resources but in the same repository were showing up in different changelists (Case 34544)
- fixed — The command-line client 348 could get confused when svn switch was used on a local check-out
- fixed — Eclipse Subversion plug-in can pick up the wrong repository configuration (Case 34399)
- fixed — Suppressed spurious (and harmless, but annoying) error messages we were printing to the Subclipse console
- fixed — URL's inside review comments can get mangled if they are very long (Case 34461)

v2.1.707 — May 7, 2007

- added — Optimized subversion integration.
- fixed — Side by side not resizable when wrap lines turned off.
- fixed — Subversion integration did not properly handle added file in added directory.
- fixed — Recent participants list should only include participants from the selected workflow.
- fixed — System administrator account matched incorrectly when LDAP 102 configured.
- fixed — Content archive fails when using embedded database.

v2.1.706 — May 1, 2007

* FIRST NON-BETA RELEASE OF v2.1 *

- added — Documentation for SSL configuration 111.
- added — Author should get email notification when (a) Author is required to finish the review and (b) everyone else is finished, even if those other users are not themselves required to finish the review.
- added — Passwords entered on the command-line now echo asterisks (Java v1.6 only) (Case 34477)
- added — Eclipse Subversion integration 399 can now add files to a review from the Synchronized view (Case 34442)
- added — Tutorial box about how reports 317 are cached and how to update them.
- fixed — ccollab adddiffs failing to recognize a custom diff format (Case 34465)
- fixed — ccollab addactivity 474 adds wrong predecessor when multiple versions in activity are not predecessors of each other (Case 32382)
- fixed — Subversion integration can upload HEAD version instead of HAVE in certain cases (Case 33456)
- fixed — Subversion integration threw exception when an uncontrolled file was added to a review (Case 34427)
- fixed — Subversion integration uploading incorrect file content when multiple parent directories, some not direct parents, are involved in the same changelist (Case 34328)
- fixed — Perforce integration throws exception if changelist state changes (Case 34308)

- fixed — Keyboard shortcuts 274 in the web user interface stopped working when the content view changed
- fixed — Switching roles on two participants in a review did not reset the states of those users, which could result in reviews that cannot be closed and confusing Action Item messages
- fixed — Search box 308 should trim leading and trailing whitespace from text -- handles common case when pasting text from a web browser
- fixed — In brand new installs, if the license server cannot be reached users get a blank page after login.

v2.1.705 — April 24, 2007

- added — Command line client needs to pick up Perforce changelist comments as title for new reviews.
- added — Command line client uses Subversion changelist comment as title for new reviews.
- added — Command line client uses Clear Case activity titles as review title for new reviews.
- fixed — Subversion exception adding an uncontrolled file to a review (Case 34427)
- fixed — Eclipse; Subversion arrows not appearing on select files page. (Case 34451)
- fixed — Reverted files do not show up properly if using different clients; Eclipse and command line.
- fixed — Invoking Windows commands with embedded spaces fails. (Case 34445)
- fixed — Keyboard shortcuts mask well known Windows shortcuts. (Case 34460)
- fixed — Custom fields can get into a state where changing a single custom field changes multiple fields (Case 33700)

v2.1.704 — April 19, 2007

- added — Perforce trigger 559 to check that a review has been created, but not care if that review has been finished.
- added — Reinvite preference expanded to mean "works independently".
- fixed — Perforce GUI integrations 557 fail to find p4 after upgrading to 2.1.
- fixed — When migrating 89 from SQL Server 58 or Oracle 61 to MySQL 55, installer fails to properly configure user authentication. (Case 34353)

- fixed — Time-in-review database view updated to ignore time spent during "rework" phase.
- fixed — Specifying multiple files to addchanges fails for Subversion (Case 34354)
- fixed — Subversion added files showing up as modified (Case 34337)
- fixed — Search results should not return reviews that the current user does not have access to.
- fixed — Case sensitivity problem in Perforce trigger (Case 34288)
- fixed — Side by side version titles not appropriate for checked in changelists (Case 33422)
- fixed — Eclipse plugin subversion integration 399 does not properly set the base revision (Case 34108)
- fixed — Eclipse plugin subversion integration 399 does not handle spaces in filenames correctly (Case 34008)
- fixed — Subversion integration not finding reverted files (Case 34400)
- fixed — Uploading new changes to a review changes the state, but not the phase of the review.
- fixed — Action Item message for authors is misleading if the author is required to complete the review.
- fixed — External defects should be drawn with strike through and italic style (Case 34023)
- fixed — Externalized defect system should link to configured create defect URL (Case 34021)
- fixed — Remove usernames from Subversion URL's (Case 33425)
- fixed — Where possible, derive the author from the Subversion URL (Case 33806)
- fixed — Remove usernames from Subversion server config (Case 33807)
- fixed — Action item text did not always make sense for users whose activity is required to initiate phase change.
- fixed — Authors who marked reviews finished had no action item at all while waiting for other participants.
- fixed — Hide-show previous changelists must be sticky (Case 33888)

v2.1.703 — April 11, 2007

- added — New role-specific option to have participants not re-invited to a review when another user makes a comment

- added — New role-specific option to control whether this role is allowed to change review details 252 while the review is active (Case 34302)
- added — Allowing edit of the review details 252 after the review is complete, but only when you are a participant or admin (Case 31478)
- added — Special warning when a user is viewing a review but is not a participant in that review (Case 34026)
- added — Display the title of the current workflow in the Review Overview 252 section (Case 33972)
- added — Now supporting either ccollab set scm perforce or ccollab set scm p4 to configure 549 ccollab Perforce settings.
- fixed — Long comment text does not wrap in chat viewer. (Case 34289)
- fixed — CMVC integration fails when not all fields are populated
- fixed — Subversion was not properly handling file changes when parent directories were moved or deleted
- fixed — Subversion was not properly handling file changes when the parent path was the result of a directory-move, as with the first check-in on a new branch
- fixed — Some non-ASCII characters not displaying correctly when entered in the AJAX chat component 299 in side-by-side view (Case 34050)
- fixed — HTML characters in the review title cases Review Overview 250 page to display incorrectly (Case 34281)
- fixed — In ClearCase 454, ccollab addactivity 474 picks wrong latest version when not checked out (Case 33771)
- fixed — Email notifying a user that they have been added to a review did not include their role (Case 34165)
- fixed — Reinstalling 329 command-line client sets SCM configuration to Perforce when Perforce is installed, even if the user specifically switched to a different SCM system (Case 33741)
- fixed — Confusing error message (UnknownHostException) printed to the console instead of a useful message (Case 33858)

v2.1.702 — April 3, 2007

- fixed — NullPointerException getting defect custom field causes chat to stop updating (Case 33947)

- fixed — Externalized defects 306 should be drawn with a line through the text (Case 34023)
- fixed — Externalized defects should not hide other menu items (Case 34024)
- fixed — In-chat defect log on Review Summary 256 page does not show custom field 190 values (Case 34019)
- fixed — Deleting a defect from the Review Summary page does not confirm with dialog (Case 34018)
- fixed — Pending Perforce 537 changelist was not considered pending when P4CLIENT not specified
- fixed — Removed tutorial boxes in create review wizard when user preferences demand it
- fixed — CMVC upload failed when a track had no parts

v2.1.700 — April 02, 2007

- added — Eclipse 399 support for Subversion (both pre-commit and post-commit)
- added — Eclipse 389 support for ClearCase (pre-commit)
- added — SSL support 111 on web server and all clients
- added — Oracle 61 back-end database support
- added — Externalized defects 306 feature
- added — Keyboard shortcuts 274 in side-by-side view
- added — CMVC integration (Case 33617)
- added — Special alert when a pop-up blocker prevents one of our web-application windows from opening (Case 33041)
- added — Added filenames to the "Defect List" report 317 (Case 33228)
- added — Full Java example file to the Java Client Library documentation
- added — Support for importing diffs 352 with inconsistent line endings (Case 33427)
- added — Support Perforce branch-add state (Case 26437)
- added — Command-line 348 now prints the review ID when a new one is created (Case 33344)
- added — Option to disable "system dump 91" link for non-administrators
- added — Command-line 358 option --nobrowser

- added — New review wizard now displays the review title on all screens (Case 33750)
- added — Smarter algorithm for filenames with very long paths in side-by-side view (Case 33490)
- fixed — do not include deleted files in the ZIP file 258 of review files.
- fixed — Underscores being clipped in word-wrapped view on certain browsers on certain platforms (Case 33699)
- fixed — Web GUI not allowing more than 128 characters for review title, but 255 characters are actually allowed (Case 33900)
- fixed — Deleted files fail to show deleted content (Case 33468)
- fixed — Perforce integration 537 was not honoring $P4CONFIG or the p4 set -s variables under Windows
- fixed — Notification when removed from review should come from user, not admin (Case 33354)
- fixed — Newly created defect custom fields show up as review custom fields (Case 33966)
- fixed — Proper default mono-space fonts for platforms lacking the "Courier New" font
- fixed — Perforce files opened for integrate should use head version as previous, not the have version (Case 33554)
- fixed — Comment and Defect icons not showing up properly when changelists were rolled up (Case 33621, 33676)
- fixed — Improved search / error-handling for external command-line tools
- fixed — Subversion upload was failing sometimes when a deleted file was in the changelist (Case 33689)
- fixed — SQL Server was not escaping characters correctly in certain LIKE queries
- fixed — p4collab 557 now contains a usage statement if you run it from the command-line
- fixed — Subversion integration 568 can now find svn.bat and other non-standard command-line clients
- fixed — Perforce commit prevention trigger 559 did not honor the "canceled 252" state for reviews.
- fixed — Custom field reporting views 600 can take so long to complete that the query times out (Case 33446)
- fixed — When review is deleted, activity records should be deleted as well (Case 33496)

- fixed — When uploading files from Subversion, ignore both _svn and the more common .svn.
- fixed — Cancel AJAX web requests when window closes; was causing browser to run out of connections (only 2 are ever allocated) and then hang (Case 33557)
- fixed — Web GUI URL auto-formatter is too greedy (Case 33636, 33907)
- fixed — Perforce addchanges trigger 559 can fail with no error message (33584)
- fixed — Error parsing ClearCase output when backslashes were used (33224)
- fixed — Viewing XML files sometimes shows SGML character entities instead of proper characters (Case 33280)
- fixed — Could throw NPE when Java's mailcap file is corrupt
- fixed — Could get database error when inserting too much text into a field
- fixed — No notifications when you cancel the review from the review planning phase (Case 33369)
- fixed — When you have exceeded your license 83 the system now allows the existing users to continue using the system and shuts out only the additional users, rather than shutting out everyone all together.

v2.0.621 — April 9, 2007

- fixed — Allow editing of review data in complete phase. (Case 31478)

v2.0.620 — April 2, 2007

- fixed — NullPointerException getting defect custom field causes chat to stop updating (Case 33947)

v2.0.619 — March 26, 2007

- fixed — Web pages refer to external resources (akamai.com, yimg.com) (Case 33192, 33876, 33885)

v2.0.618 — March 13, 2007

- fixed — ccollab addchanges new . 582 fails for Subversion 568 local changes (Case 33784)

v2.0.617 — March 9, 2007

- fixed — Allow install as non root user on Unix systems. (Case 33622)
- fixed — Running ccollab addp4diffs ... 551 hangs on binary files. (Case 33581)
- fixed — Perforce trigger 559 never lets ktext files be checked in. (Case 33696)
- fixed — Running ccollab addchangelist ... 583 fails when there is a deleted file in the Subversion revision (Case 33689)
- fixed — Overall chat was missing unread flags. (Case 33633)

v2.0.612 — March 1, 2007

- fixed — Perforce addchanges 559 trigger fails with no error message (Case 33584)

v2.0.611 — February 28, 2007

- fixed — Running ccollab set scmconfig p4 ... had no effect on Perforce integration.
- fixed — P4V integration 557 invoked Windows executable.
- fixed — Do not include deleted files in download (Case 33537)
- fixed — Null Pointer Exception when uploading file diffs (Case 33553)
- fixed — CVS diff parsing (addcvsdiffs 434) can fail if files have mixed line endings (Case 33427)

v2.0.609 — February 21, 2007

- fixed — Uploading raw diffs 352 of binary files from Subversion could result in line-ending transformations
- fixed — Uploading raw diffs 352 with mixed line endings styles now works even if the diff generator program was not aware of the line-ending problem (Case 29801)
- fixed — Can get "Illegal Operation" exception trying to upload file content when only line-endings have changed (Case 33533, 33306)
- fixed — Subversion integration 568 fails to upload changes, either local or checked-in, when directory operations were involved (Case 33097)

- fixed — Subversion integration 568 fails to upload atomic changelists when one of the files is deleted
- fixed — In ClearCase 454, ccollab addactivity 474 was failing on directories (Case 33511, 33520)
- fixed — Perforce 537 branched adds not being added to the review (Case 26437, 32517)
- fixed — ClearCase 454 parsing of \main\LATEST can fail, and the selection of which version is "latest" was wrong in certain cases
- fixed — The reviewcustom and defectcustom database view 600 definitions were so inefficient that with a complex custom field 190 configuration the database can time out waiting for the query to complete (Case 33446)
- fixed — When a review is deleted, activity records 594 in the database are not deleted as well, leading to orphaned rows. This did not affect the operation of the software but it could be confusing when making custom reports (Case 33496).

v2.0.608 — February 9, 2007

- fixed — Perforce trigger 559 fails to ignore canceled reviews (Case 33402)
- fixed — On Windows, Subversion integration can fail to find svn client

v2.0.606 — January 19, 2007

- added — Many more database views 600 for external reports 594
- added — Review overview 250 screen should not refresh automatically when the user is adding a comment or defect. The auto-refresh can cause the form fields to be erased (Case 25572)
- fixed — Server no longer requires external license server for user login 230
- fixed — Removing 254 unavailable reviewers should close the review (Case 32302)
- fixed — Overall chat 256 needs unread comment flags (Case 31491)
- fixed — Uncontrolled files prevent Review Display 271 from being shown
- fixed — Javascript error on Review Display 271 (Case 32202)
- fixed — User font preferences 232 ignored under certain browsers/platforms (Case 27991)

- fixed — When you submit Subversion change-set by ID with ccollab addchangelist 583, files that were deleted in the changelist are not uploaded at all. This does work when uploading files not yet checked in (Cases 29961, 30500, 33097)

v2.0.602 – January 11, 2007

- added — Full support for ccollab adddiffs 352 and addcvsdiffs/addsvndiffs/addp4diffs
- added — Full support for ccollab addversions for all SCM systems, not just ClearCase
- added — (Eclipse Plug-in) Pre-submit file uploading for Subversion now supported
- added — Option to disable changelist roll-up (Case 31485)
- fixed — Hide/show changelists not working when multiple SCM's in the same review
- fixed — Subversion executable not found causing command-line to fail (Case 32520)
- fixed — Subversion directory-add and directory-delete was causing the command-line client to fail to upload files
- fixed — Subversion protocol on svn://localhost URL's is now supported properly
- fixed — Author chat is automatically marked "read" if he uploads a new file version (Case 32702)
- fixed — Reports failing to execute under Microsoft SQL Server for lack of proper identifier escaping
- fixed — Installer incorrectly configuring context.xml for internal-based user authentication when running against Microsoft SQL Server
- fixed — Diff-caching algorithm was showing correct but inconsistent line-diff metrics depending on the order the files were uploaded
- fixed — Context-sensitive help was not able to jump down to a sub-section of a single page of the manual
- fixed — Horizontal scrollbar in side-by-side view under IE 7 with "no-wrap" enabled was sometimes not long enough to view the entire line (Case 30481)
- fixed — If server starts up before the database, the server will never recover (Case 13626)

v2.0.601 — December 29, 2006

- added — new AJAX-based chat system really works like instant messaging (Case 24895)
- added — Microsoft SQL Server support (with migration path from MySQL)
- added — overall-review comment/defect chat area (Case 13622)
- added — server-side event-based trigger system for running custom scripts (Case 26886)
- added — link to download all review files to the local workstation (Case 24891)
- added — ability to cancel a review rather than deleting completely (Case 24892)
- added — ability to change participants while review is going on (Case 24894)
- added — database view for person-hours per review, user, and role
- added — command-line client options for overriding server URL, username, and password
- added — emails now include user's full name both in "to" and "from" fields (Case 23212)
- added — date/time of comments now displayed as a tool-tip (Case 10644)
- added — support for "local-mode" CVS servers (Case 25020)
- added — links to server/review debugging data from "System" screen
- added — user option for whether default side-by-side diff is "current vs. last upload" or "current vs. base version" (Case 25812)
- added — P4V/P4Win plug-in should list current reviews when attaching changelists to existing reviews (Case 28458)
- added — embedded database installer option for easy test servers (with migration path to MySQL or SQL Server)
- added — installer allows admin to set web server port number
- added — can create users with name and email address from the user administration page
- added — user administration page now shows which users logged in, inactive, disabled, and administrators
- added — deleted file content now viewable in side-by-side
- added — for SCM systems without atomic changelists, consolidate all changelists into a single list view
- added — for SCM systems without atomic changelists, rework uploads include reverted files

- fixed — insertion/deletion markers cause confusion; tooltips added to explain (Case 30393)
- fixed — filename different depending on which browser attached the external file (Case 25329)
- fixed — "accept" markers are now cleared on files that have been newly uploaded (Case 20534)
- fixed — with review in inspection phase, one reviewer is done but others are not, no action item for the first reviewer (Case 25823)
- fixed — recent participant list included inactive users (Case 24141)
- fixed — user initials can be ambiguous (Case 24274)
- fixed — speed optimizations for very large reviews (Case 29003)

9.2.8 Version 1

v1.2.516 – November 2, 2006

- fixed — Perforce trigger option for specifying a profile directory.
- fixed — Improve Perforce integration and trigger verbose logging.
- fixed — Installer removing attributes from realm declaration.

v1.2.515 – October 26, 2006

- fixed — diff widget broken in Firefox 2.0 (Case 27312).
- fixed — not all files are rolled up into single changelist (Case 26821).
- fixed — preferences can fail to load client configuration (Case 27311).

v1.2.512 – October 23, 2006

- fixed — attach uploaded changelists from the web ui (Case 26811).
- fixed — consolidated changelist view does not show all files (Case 26821).
- fixed — content archiving administration screen "hangs" with very large data caches (Case 26228).

v1.2.510 — October 4, 2006

- fixed — Unable to mark conversations "read" when over 2000 comments present in the review (Case 25865).
- fixed — database connection leak.

v1.2.508 — September 15, 2006

- added — options to only allow participants to view reviews/review content. (Case 24501)
- fixed — space used to mark insertion point was confusing. (Case 24246)
- fixed — whitespace inserted/removed at end of line causes rendered code to differ from real code. (Case 24767)
- fixed — syntax highlighting sometimes dropped spaces. (Case 25040)

v1.2.507 — September 11, 2006

- added — automatically separates changed files from separate SCM systems
- added — administrative option to hide/show the option to display multiple changelists as a single "changelist"
- added — hide/show previous changes is sticky.
- fixed — clients were not honoring proxy settings taken from preferences
- fixed — increased maximum length of email message to 64k. (Case 24832)
- fixed — confusion of unique changelist ID's when using more than one Perforce server against a single Collaborator database
- fixed — when displaying changelists in "single" mode, balls up files from different SCM systems instead of making one package for each SCM system

v1.2.506 — August 24, 2006

- fixed — Changing mark reviews as fixed workflow setting had no effect.

v1.2.505 — August 23, 2006

- fixed — Perforce changelists picking up wrong predecessor version (Case 24157).

v1.2.504 — August 22, 2006

- added — Verbose logging for Perforce integration.
- added — Support for Subversion username/password supplied on command-line. (Case 24124)
- fixed — Downloading binary files in Internet Explorer broken. (Case 23671)
- fixed — Client installer failed to authenticate when changing server and user password. (Case 23535)
- fixed — Removed unnecessary AJP connector from server.xml file due to small known memory leak. (Case 23736)

v1.2.503 — August 16, 2006

- fixed — More graceful handling of license server errors using cached license codes.
- fixed — Include documentation of how to configure non-proxied hosts.
- fixed — Increased number of characters allowed in certain meta-data fields.

v1.2.502 — August 8, 2006

- added — URL's, email addresses, and issue ID's are now hyper-linked when displaying custom review/defect fields
- fixed — uploading local changes from CVS or ClearCase could pick up the wrong previous version
- fixed — Diff highlight expansion caused code to be not printed. (Case 23379)

v1.2.501 — August 1, 2006

- fixed — Database error causes trigger to fail.

v1.2.500 — July 28, 2006

- added — Administration screen for archiving old review contents.
- added — Option to add/remove/edit review and defect custom fields.
- added — Reviewers have the option of annotating the review materials before the review begins.
- added — Option to change notification email subject prefix
- added — Quick links on review creation wizard to add the current user to a review
- added — clients pick up default global configuration from $HOME/.smartbear and $CWD/.smartbear, and do not create a .smartbear directory until preferences are actually saved.
- added — Perforce configuration value of "[none]" instructs the command-line utility to ignore the value completely
- added — ability to upload arbitrary diffs from CVS server
- added — line numbers in defect log
- added — selecting diff preferences causes immediate page refresh; do not have to click "Submit"
- added — file names now bold in changelist summary display
- added — option to show multiple changelists as a single unit
- added — user configurable email notification levels
- added — optional "create new user" form on login page
- added — three database views holding custom fields for reviews and defects, and extra user preference data
- fixed — First leading space is not displayed in side-by-side view (Case 10032)
- fixed — Normalize CVS paths from command-line and Windows client uploads (Case 11009)
- fixed — Status icons on review summary should link to the file (Case 10742)
- fixed — Accepted status cleared for newly uploaded versions (Case 10111)
- fixed — Chat notification icons do not update until side-by-side reloads
- fixed — Chat notification icons do not display when displaying single files
- fixed — Version selection and headings scroll off screen in side-by-side (Case 11213)
- fixed — Perforce GUI plug-in allows empty changelists to be uploaded to new reviews

- fixed — Only administrators should be allowed to change user logins (Case 8270)
- fixed — Complete line changes should be displayed as a delete followed by an add (Cases 10913, 10915)
- fixed — Review List report links linked to the wrong location (Case 11832)
- fixed — Word, Excel, and PDF documents show up as garbled text in side-by-side.
- fixed — Metrics by Review report failed to report defects per person-hour on small sample sizes.
- fixed — Metrics by Defect Type report failed to report opened per person-hour on small sample sizes.
- fixed — Next/Prev change buttons are disabled when there are no next/prev diffs.
- fixed — Clicking line of code jumps chat to correct area (Case 13280)
- fixed — Support filenames with adddiffs option (Case 13528, 14949, 16619)
- fixed — Diffs too greedy (Case 14152)
- fixed — No content uploaded for uncontrolled files (Case 14959)
- fixed — Perforce trigger has more explicit error messages when rejecting checkins. (Case 18398)
- fixed — Administrators always need access to review creation wizard. (Case 18399)
- fixed — Exported reports fail to open directly in Internet Explorer. (Case 13524)

v1.1.442 — July 17, 2006

- fixed — Perforce trigger option for ignoring integration changelists (Case 14745).
- fixed — Perforce trigger added --verbose option for verbose logging (Case 16732).
- fixed — Perforce trigger sometimes compares wrong content (ensurecontentreviewed) (Case 16696).
- fixed — Perforce GUI integrations now include --verbose option for verbose logging.
- fixed — Perforce integration runs out of ports when large changelist present.
- added — Support bug system hyperlink in review Title
- fixed — Administrator account password update failed (Case 18606).

v1.1.436 — May 22, 2006

- fixed — XML-RPC encoding broken on z/OS (Case 9367).
- fixed — NPE executing Clearcase cleartool (or any command line client executable) on Linux (Case 12781)

v1.1.435 — May 17, 2006

- fixed — Perforce trigger should not run as submitting user (Case 13161).

v1.1.433 — May 11, 2006

- fixed — Perforce usernames should not be considered case-sensitive.
- fixed — When using LDAP authentication, clients could not log in.
- fixed — Perforce trigger ensure content reviewed incorrectly rejects very large files.
- fixed — P4V/P4Win integration picks up environment variable for P4CLIENT.
- fixed — P4V/P4Win integration does not reject invalid changelists when creating new review.

v1.1.429 — May 1, 2006

- fixed — Improve Perforce trigger error messages.

v1.1.428 — April 26, 2006

- fixed — Perforce trigger ensure content reviewed misses additions/deletions from end of file (Case 11304).

v1.1.427 — April 25, 2006

- fixed — Clear Case command line should only gather files from current view (Case 11799).

v1.1.426 — April 21, 2006

- fixed — System administrator account lost administrator privileges under LDAP authentication (Case 11468).
- fixed — Command-line client not parsing Unix paths -- Clear Case integration (Case 11501).

v1.1.425 — April 20, 2006

- fixed — Restored legacy ReviewList report.

v1.1.424 — April 10, 2006

- fixed — Command line picked up wrong predecessor version when using ClearCase SCM (Cases 9040, 10738).
- fixed — Entering license code fails to update license.
- fixed — Client unable to locate cleartool on Windows.
- fixed — Reports not working on some headless Unix servers.

v1.1.423 — April 5, 2006

- fixed — unattended installations preserve all configuration information.
- fixed — notifications include product name.
- changed — enabled unattended installations.

v1.1.422 — April 4, 2006

- changed — disabled unattended installations until issues can be resolved.

v1.1.421 — April 3, 2006

- fixed — author comments and trivial reviewer activity (for example, accepting) were triggering erroneous emails to the author to come into the review
- fixed — when multiple already-submitted Perforce changelists with common files were added to a single review, the older ones were being hidden in "Previous Uploads" when they should be displayed along with the rest.

- fixed — user passwords no longer stored in the clear
- fixed — deleting defect severities or types causes UI glitches when old defects are displayed (Case 10268)
- fixed — side-by-side font wrong in some places (Case 10607)
- fixed — participants are not notified or re-invited to reviews when the author uploads a new set of changelists
- fixed — side-by-side windows should have the filename in their title
- added — support for stronger Perforce commit-trigger that checks whether the file list and file contents match between changelist and the review to make sure the developer did not change anything between review-time and commit-time.
- added — user option for disabling syntax coloring in side-by-side view for faster content downloads
- added — option to create new review from command line client when running 'addchanges' or 'addchangelist'
- added — ability to diff previous file uploads in side-by-side view even when those uploads belong to different, discontinuous, already-committed changelists
- added — fixed defects are now indicated with a "green bug" to distinguish from still-open defects in the Review Overview screen
- added — in Review Overview screen, defects are now shown in the column of the user that first reported it rather than in a separate column
- added — added audit messages when a defect is marked fixed or open
- added — verbose option for command line clients to create debug logs
- added — more specific error message when attempting to upload an empty Perforce changelist
- added — display entire file path in defect log when the defect is linked to a particular file
- added — defect icon tooltips should include defect ID's for quick-reference
- added — command line clients prompt for password if not specified on command line so password is not in command history
- added — command line 'adddiffs' subcommand for reviewing differences between two locally accessible directories
- added — command line quiet option to suppress opening the text editor to edit file list

- added — cache control headers to allow caching of images, stylesheets, and JavaScript.

v1.0.410 — March 20, 2006

- fixed — cannot close review with multiple reviewers when defects are entered directly into the defect log (Case 10116)
- fixed — proper error message inside P4V on changelists when uploading changelists that are not part of the current workspace
- fixed — Javascript error loading Defect Severities or Defect Types page

v1.0.409 — March 16, 2006

- fixed — `ccollab syncusers` was failing when the Perforce user login differed from the Collaborator login only by case

v1.0.408 — March 14, 2006

- fixed — notifications were no longer prefixed with Collaborator

v1.0.407 — March 14, 2006

- fixed — incompatibility with some versions of MySQL
- fixed — duplicate user logins possible when changing user login
- fixed — email notifications stop being sent after some time

v1.0.406 — March 9, 2006

- fixed — memory leak with GUI client connections
- fixed — installer not setting VM heap size
- fixed — Case 9744 - NullPointerException in P4Win/P4V integration
- fixed — Case 9710 - All action items were showing urgent icon
- added — additioal logging in database code

- added — System Dump includes more VM information

v1.0.402— March 2, 2006

- fixed — logout broken for some versions of Internet Explorer
- fixed — some clients unable to login
- fixed — logging now enabled by default at INFO level

v1.0.400 — February 28, 2006

- added — chat conversations are now marked as "has chatted" and/or "as opened defect" and/or "has accepted" rather than the "undecided" and other confusing concepts
- added — new reporting subsystem with additional filters and export options
- added — added option to show "only uploaded version" even when other diffs are available
- added — better support for binary file uploads
- added — ability to make a user "inactive" (you can never delete users because they are needed for reports and to display old reviews)
- added — Action Items list now more specific about the exact state of the review as it relates to the viewing user
- added — e-mail notifications now more specific about the exact state of the review as it relates to the viewing user
- added — ability to jump from a defect in the review summary defect log directly into that point in the latest source code upload
- added — support for local temporary license code if the network is unavailable for on-line licensing
- added — new customer-accessible Java library to read/write everything in the Collaborator server remotely
- fixed — cannot "Complete Review" when there are unread comments on previously-uploaded changelists that have already been marked read in the currently-uploaded changelists
- fixed — when chat is carried forward from older uploads, chat icons on review summary are not being displayed
- fixed — cvs rlog command reports error with certain versions of the CVS client

- fixed — cannot delete a review when database is in a certain rare state
- fixed — "out of memory" errors for certain operations
- fixed — database connection leak with certain types of authentication
- fixed — correct diff but erroneous intra-line highlighting when unchanged text is symmetrical on either side of change
- fixed — selection highligher highlights wrong line of code when window is narrow

v1.0.361 – February 9, 2006

- added — (Case 8439) support for more types of CVS repository specifications.

v1.0.360 – February 8, 2006

- added — (Case 8941) support for trial license codes which do not contact license server.

v1.0.359 – January 27, 2006

- added — (Case 8486) when licensing server cannot be reached, retry on backup port.

v1.0.358 – January 24, 2006

- added — (Case 8486) support for HTTP proxy authentication when validating license codes.

v1.0.357 – January 20, 2006

- added — (Case 8420) command line client support for uploading Subversion revisions.
- fixed — (Case 8439) in certain cases, command line client was failing to upload CVS changes.

v1.0.356 – January 9, 2006

- fixed — (Case 8319) some client upgrades failing with authentication issues
- fixed — (Case 8344) improved error message when server failed to contact license server.

v1.0.355 — January 3, 2006

- fixed — clients were not properly authenticating when using LDAP

v1.0.354 — December 29, 2005

- added — option to allow system administrator to participate in reviews
- fixed — (Case 7560) unable to upload files after clean install with old database.
- fixed — LDAP role fields were confusing and not required for basic LDAP support.

v1.0.353 — December 21, 2005

- added — progress indicator for when loading file contents in file viewer
- fixed — (Case 7530) server failed to get user initials in some cases

v1.0.352 — December 19, 2005

- fixed — (Case 7501) Stale cookies were causing issues with login/logout.

v1.0.351 — December 12, 2005

- added — (Case 6640) previously-uploaded changelists are now hidden by default to avoid confusion when verifying fixes
- added — (Case 6812) link to leap from defect into associated file/line
- added — (Case 6871) support more than one file open at a time, bringing forward side-by-side window if already open
- added — (Case 6824) automatically hyperlink URL's and e-mails in changelist comments, chat comments, defect text, and review overviews
- added — quick-report of recent changelists and unreviewed changelists when attaching materials to a review
- added — application level log system
- added — support for LDAP authentication

- added — new installer prompts for key system parameters; server configuration split between server.xml and context.xml
- fixed — (Case 7226) code displayed in word-wrapped mode now does not have extraneous whitespace inserting into long tokens
- fixed — (Case 6932) not able to upload any changelist if Perforce default changelist was not empty
- fixed — (Case 6949) downloaded reports were not sending a filename
- fixed — added special error message when uploading a pending Perforce changelist that belongs to the current P4USER but to a different P4CLIENT
- fixed — added java.library.path to the local application scan directory for systems without environment variables
- fixed — uploading additional Perforce changelist did not update the time-of-upload; was taking the time-in-changelist instead
- fixed — uploading older Perforce changelist was sometimes destroying metrics data for previous file versions
- fixed — not able to upload submitted Perforce changelists from the command-line when P4CLIENT environment variable is changed
- fixed — after following a link but not being authenticated, after authentication you go to the home page instead of the linked page

v1.0.349 — October 25, 2005

- added — (Case 6595,6804) side-by-side difference viewer needs "ignore whitespace" and "ignore capitalization" options
- added — support for client-side HTTP proxies
- added — link to download server logs in "System" debugging page
- fixed — (Case 6780) Perforce server-side trigger should ignore changelists consisting of branched paths only for purposes of both review and automatic uploading
- fixed — (Case 6814) error installing client under Windows when user-level PATH variable does not already exist

v1.0.347 — October 14, 2005

- added — "mark all comments read" quick-button in side-by-side view; administrators can disable this feature
- fixed — unable to "mark read" on new chat if already marked read in the same chat session
- fixed — issue regular expression was case-sensitive

v1.0.346 — October 10, 2005

- added — new Action Item when e-mail or full name not currently set for a user
- added — prompt to download local client software from the server
- added — administrative contact information is now required

v1.0.345 — October 3, 2005

- added — (Case 6664) ability to view files/metrics for uploaded changelists in "Attach Materials" section of the New Review Wizard
- added — (Case 6652) Action Items with no "new" comments should be marked as such on the "Action Items" list, and should be low priority
- added — (Case 6666) refresh button for chat window
- fixed — (Case 6635) URL's in e-mails give error when opened under Eudora
- fixed — (Case 6661,6643) JavaScript error with next/previous buttons in side-by-side view
- fixed — entering non-digits in the "jump to review" menubar field results in strange error message
- fixed — file paths with backslashes not word-wrapping on Review Overview screen

9.2.9 Version 0/Alpha

v0.9.344 — September 26, 2005

- added — initial support for ClearCase
- added — initial support for the Windows GUI Client
- fixed — (Case 6621) "add defect" comment field still limited to 255 characters in form on Review Overview page

- fixed — (Case 6475) "edit defect" command should update GUI widgets to indicate "edit" rather than "create"

v0.9.343 — September 21, 2005

- added — command-line support for uploading CVS changes by label
- fixed — (Case 6593) error uploading Perforce files: "unrecognized chunk"
- fixed — (Case 6540) bogus date in user admin screen for users who have never logged in
- fixed — (Case 6475) "edit defect" should have different form text than "create defect".

v0.9.342 — September 15, 2005

- fixed — (Case 6544) script error viewing diffs in certain files, or when file content is not yet fully loaded
- fixed — action items for "waiting for comments" should appear after "respond to comments" because they are lower priority
- fixed — syntax highlighting split by intra-line difference causes incorrect colors in both difference and syntax display

v0.9.341 — September 14, 2005

- added — (Case 6471) external base server URL (used with e-mail notifications) is now configurable by the administrator
- added — (Case 6408) participant-picker needs recently-used list to speed up the assignment process
- fixed — (Case 6508) 255 char limit in overview
- fixed — (Case 6529) error attempting to send email with a certain JVM
- fixed — (Case 6534,6538) typing comment then clicking "Accept" causes comment to be lost
- fixed — (Case 6522) ccollab addchanges cannot handle relative paths

v0.9.339 — September 9, 2005

- added — (Case 6267) workflow revamp: faster to "accept," concepts of "reject" and "defect" have been fused, no more accept/unsure/reject determination for commentary, comments carry forward to code verification step, defects shown in side-by-side next to comments for editing and marking fixed
- added — (Case 6372) large text fields should expand as more text is entered into them
- added — (Case 6406) administrative option to set system-wide tab width for source file display
- fixed — (Case 6406) tabs not being displayed properly in side-by-side view
- fixed — (Case 6355) should not be allowed to add a changelist to a review that is completed or that you are not a participant in or a creator of
- fixed — (Case 6265) comment text should not be limited to 255 characters
- fixed — (Case 6382) client error message not helpful when incorrect server/port is specified, especially when a real service is present
- fixed — (Case 6354) clicking on a specific command-line does not open the file to that line

v0.6.337 — August 24, 2005

- fixed — (Case 6275,6279,6281) database errors accessing user data
- fixed — (Case 5624) error not able to locate content-cache subdirectories on the server

v0.6.336 — August 23, 2005

- added — initial support for CVS integration
- added — (Case 5628) user-preference to set number of lines of context displayed in side-by-side view
- fixed — error accessing reviews when review meta-data is missing from the database
- fixed — (Case 6252) exception adding comments to the comment-list

v0.6.335 — August 19, 2005

- added — (Case 5551) launch browser window after P4Win plug-in attaches changelist
- fixed — (Case 5528) error uploading large file

- fixed — (Case 5615) incorrect LOC-changed metrics for file uploads
- fixed — (Case 5617) extra whitespace in side-by-side view of code when tabs are used in a certain way
- fixed — (Case 5618) file download should supply filename to the browser for better open/save handling on the browser end

v0.6.334 — August 18, 2005

- added — (Case 5553) ability to alter review overview information during any phase of the review (without reverting back to "Planning" mode)
- added — (Case 5612) reviews that just entered the Inspection phase (either because just created or because fixes are being verified) should be displayed as "Waiting for comments" on the author side until a comment is actually made; the author should be notified by e-mail when this comment is made.
- fixed — not properly HTML-escaping certain characters in review titles
- fixed — (Case 5600) not always receiving e-mails as review in a new code review or when fixes have been uploaded
- fixed — (Case 5613) exception when accessing admin screen when upgrading from a certain database version

v0.6.332 — August 17, 2005

- added — (Case 5590) ability to download file versions directly from the side-by-side view
- added — (Case 5576) optional feature to send e-mails from the review creator's e-mail address rather than the system default from address
- added — (Case 5387) gutter icons in side-by-side show which lines have associated chat comments
- fixed — (Case 5528) error uploading large file
- fixed — (Case 5577) uploaded "previous version" is actually the HEAD revision instead of the last-synched revision
- fixed — (Case 5584) erroneous error message while uploading files from a Perforce branch
- fixed — (Case 5386) skip-lines algorithm in side-by-side view should treat chat comments as significant lines, not just changes.

- fixed — (Case 5597,5598) incorrectly-encoded SGML character entities when intra-line diff splits on an encoded character

v0.6.331 — August 14, 2005

- added — user preference for flipping the side-by-side view to older-on-right instead of the default older-on-left
- added — (Case 4388, 5279, 5424) ability to compare follow-up change against other uploaded changes in addition to the original SCM base version
- added — (Case 5335) participant input list in Review Creation Wizard automatically adds additional rows for large number of participants
- added — (Case 5544) better e-mail headers including easily-filterable text and the name and ID of the related review
- added — (Case 5468) drill-down from Review List report to actual review view
- added — (Case 5426) new report: Review List with Perforce Changelists
- added — (Case 5567) option to disable "issued fixed" throughout the application
- fixed — (Case 5550) lines with trailing whitespace are showing up with false-positive differences
- fixed — (Case 5484) errors on changelist-upload when no bug system regular expression is given by the administrator
- fixed — (Case 5515) new defects opened on completed reviews should change the review phase to Phase II: Review
- fixed — (Case 5557) erroneous exception when uploading file data under a special condition

v0.6.330 — August 10, 2005

- added — global configuration options to ease per-user installation
- fixed — PATH variable not being set as environment-expand registry value under Windows
- fixed — (Case 5478,5482) uploading certain Perforce changelists takes exceedingly long time
- fixed — (Case 5481, 5516, ...) erroneous ccollab error requiring review-id and changelist-id when files are in the default changelist
- fixed — (Case 5524) better error messages when configuration files are not accessible

- fixed — (Case 5508, 5525) better error message when `http://` is missing from collaborator server specification

v0.6.327 – August 8, 2005

- added — (Case 5426) ability to jump to review by ID from the menubar
- added — (Case 5471) command-line should pick up Perforce configuration from environment variables
- fixed — (Case 5453, 5454) exception working with changelist from uploaded file
- fixed — (Case 5460) exception viewing certain review detail reports
- fixed — (Case 5476) javascript error auto-refreshing review page under certain IE version
- fixed — (Case 5479) word-wrapping is breaking inside SGML character entities on side-by-side source code view

v0.6.325 – August 7, 2005

- Case 5428 — added — support for PHP-style review logging data for older upgrade paths
- Case xxxx — added — report data can now be retrieved from the command-line in any format, with optional filters
- Case xxxx — fixed — PHP-upgrade path fixes

v0.6.323 – August 5, 2005

- Case 5366 — added — now collecting time-spent-in-review metrics per user, per role, per review, per phase, per defect count/type/severity
- Case xxxx — added — report data can now be exported in XML or CSV format
- Case xxxx — added — report data can now be retrieved from the command-line in any format, with optional filters
- Case 5393 — fixed — administrator should not be allowed to change login name
- Case 5393 — fixed — user preference title has wrong username in title when administrator edits other users' information

v0.6.322 — August 1, 2005

- Case 5381 — added — configurable review participant role behavior to support different workflows
- Case xxxx — added — ability to delete reviews when they are still in planning phase

v0.6.321 — July 29, 2005

- Case 5278 — added — P4Win/P4V integration for creating a new review using a changelist
- Case xxxx — added — client installer now picks up Perforce configuration automatically (can still be overridden from the command-line)
- Case xxxx — added — client installer now prompts for and verifies server connectivity settings (can still be overridden from the command-line)
- Case xxxx — added — new "Licensing" administration page
- Case xxxx — added — administrative settings: minimum allowable build numbers for command-line and windows clients to force users to upgrade

v0.6.320 — July 26, 2005

- Case 5278 — added — P4Win/P4V integration for uploading changelist data and associating it with an existing review
- Case 5342 — fixed — cannot switch participant roles in Review Planning
- Case 5344 — fixed — new review created; next/prev buttons work but links on the wizard pages list on left do not work
- Case 5345 — added — server system parameters on the System debugging link
- Case xxxx — fixed — spurious error when uploading already-committed changelists when the changelist has already been uploaded

v0.6.319 — July 25, 2005

- Case xxxx — fixed — error sending e-mails with older Java mailer
- Case xxxx — fixed — associating changelist with review not properly encoding certain string before inserting into database

- Case xxxx — fixed — error-handling, validation, and help text for bug-tracking integration items
- Case xxxx — added — synchronizing Perforce userlist with Collaborator from the command-line

v0.6.317 – July 25, 2005

- Case 5041 — added — uses value of REMOTE_USER for automatic log-in when password is blank
- Case xxxx — fixed — error accessing new user preference item

v0.6.316 – July 21, 2005

- Case 4614 — fixed — new wizard prompts user better about pre-checkin changes
- Case xxxx — fixed — error where "mark as read" while also changing comment status does not get reflected on review summary page
- Case 5280 — added — user preferences for side-by-side word-wrapping, and font family and size
- Case xxxx — added — many more Web Service API's

v0.6.314 – July 15, 2005

MAJOR UPGRADE! This new alpha release sees the unveiling of the new Collaborator platform. We have switched from our proof-of-concept PHP platform to an industrial-strength Java platform with greatly enhanced scalability, support for multiple databases, and an improved, simplified workflow.

v0.4.215 – June 14, 2005

- Case 4614 — fixed — new wizard prompts user better about pre-checkin changes
- Case 4607 — added — test PHP configuration at install-time
- Case ???? — added — optimizations for database communication cutting page-load time in half

v0.4.213 — June 01, 2005

- Case 4562 — fixed — resizing window causes JavaScript error (IE only)
- Case 4564 — fixed — maximizing window causes JavaScript error (IE only)
- Case 4567 — fixed — scroll position is no longer remembered on screen refresh (IE only)
- Case 4563 — fixed — word-wrap still wraps sometimes (IE only)

v0.4.212 — May 30, 2005

- Case ???? — fixed — all HTML and CSS now validated HTML 4.0.1-Transitional
- Case 4144 — fixed — focus change in accept/reject/undecided combo-box does not move selection rectangle
- Case 4126 — fixed — user's file-diff preferences not persisted (that is, lines of context, ignoring case)
- Case ???? — fixed — line-selection rectangle obscures underscore characters in certain browsers
- Case ???? — fixed — word-wrapping algorithm in file-diff too pessimitic, especially under IE
- Case ???? — fixed — tightened up intra-line difference highlighting
- Case ???? — added — optional new line-comparison frame makes it easier to compare long lines
- Case 4126 — added — option to disable word-wrapping in file-diff file content
- Case 4126 — added — buttons to advance to the next/previous change
- Case 3300 — added — review-create phase is now a "wizard"
- Case 3644 — added — on-line licensing system
- Case 4316 — added — new report on number of comments made per review / per user
- Case ???? — added — ability to review whole files and file-differences uploaded independantly from version control

v0.4.211 — April 21, 2005

- Case 3858 — fixed — sometimes vertical scrollbar not appearing in file-diff view

- Case 3858 — added — side-by-side divider between chat and file content is now move-able so you can easily "hide" comments while reading a file
- Case 3949 — added — ability to jump to a particular review by ID from the menubar

v0.4.210 – April 20, 2005

- Case 3929 — fixed — disallow running the command-line client against the Code Collab demo server (the default configuration)
- Case 3930 — fixed — javascript error when planning a review and the review is not yet ready to proceed to the next stage
- Case 3920 — added — ability to delete changelist associations from reviews
- Case ???? — added — "revert" button on various forms

v0.4.209 – April 19, 2005

- Case 3905 — fixed — pending changelists should not be available for adding from the website
- Case 3677 — added — "Save" buttons on forms remember scroll position for easier data-entry on long pages
- Case 3721 — added — administrative usage monitor available from bottom of admin "User" page
- Case 3838 — added — ability to set minimum build number for the command-line client from the Collab server admin settings page
- Case 3842 — added — issues mentioned in changelists should be associated with the review automatically
- Case ???? — added — reports can now "group by" certain things (see "Assignments" and "Reviews" for examples)

v0.4.208 – April 12, 2005

- Case 3687 — fixed — files in "add" state in Perforce changelist not being picked up by the command-line client
- Case 3563 — added — user administration page: add users manually; view info and usage; admins can set "admin" flag and other user preference informatiion for other users

- Case 3702 — added — customization administration page: change text for defect severities, defect types, and phase titles and prompts
- Case 3694 — added — "Remember Me" should redirect the login page to the user's review home page.
- Case 3697 — added — report enhancements: review-created date on report and summary page; complete user comment table on review summary page
- Case 2623 — added — "Preview Changes" on changelist during Review Planning phase
- Case 3664 — added — margin icon for comments is now a pencil instead of a meaningless arrow
- Case 3681 — added — help documentation on the purpose and behavior of user roles
- Case 3699 — added — phase prompt bullets are hidden when tutorial mode is disabled

v0.4.207 – April 11, 2005

- Case 3617 — fixed — local changes not showing up in side-by-side view
- Case 3606 — added — review phase data to getReports(), so scripts can check for review-completion, not just review-existance
- Case 3614 — added — "Action Items" list on the home page; daily e-mail action items reminder (if any are present)
- Case 3616 — fixed — observers should not prevent a review from proceeding to the next phase
- Case 3645 — added — removed "controller" role
- Case 3618 — added — ability to move from Phase II back to Phase I
- Case 3622 — fixed — prevent moving from "Planning" to "Reviewing" when there are unsaved changes to the Participant List
- Case 3623 — added — support "Remember Me" log-in option to make logging in easier
- Case 3660 — added — adding changelist to the review should automatically add the changelist author to the review in the "Author" role unless that user is already added in a different capacity
- Case 3662 — fixed — commenting on new line of code with "Accept" without additional commentary did not work
- Case 3665 — fixed — inconsistent wording: "neutral" vs "undecided"

- Case 3666 — fixed — review in Phase II should show comments from all participants, not "consensus". Cannot really show "undecided" or "unreviewed," only what comments are made

- Case 3676 — added — usernames always get initials; smarter algorithm for pulling out initials automatically

v0.4.206 — April 8, 2005

- Case 3471 — added — all users imported from Perforce, not just those in recent version history

v0.4.205 — April 8, 2005

- Case 3606 — added — ability to call arbitrary RPC methods from the command-line

- Case ???? — added — help documentation on XML/HTTP/RPC integration points

v0.4.203 — April 5, 2005

- Case 3557 — fixed — author needs notification when review enters "Rework" or "Completed" phase

- Case 3558 — fixed — should not be able to close a review when "new" comments are pending

- Case 3559 — fixed — creating new users from the front page results in accounts that cannot be logged in to

- Case 3560 — fixed — install should check for writable /file-cache directory; instructions should say to check this also

v0.4.202 — March 29, 2005

- Case 3474 — fixed — error message when incorrect file data is shown

- Case 3485 — fixed — add-defect form had incorrect maximum limit on number of lines in the file

- Case 3486 — fixed — Perforce not loading previous file versions (reload version control data using "Clear Version Control Data" link in install.php)

- Case 3470 — added — can now delete existing review from the bottom of the "Review Summary" tab

- Case 3472 — added — passwords in database are now encrypted

v0.4.201 — March 28, 2005

- Case ???? — fixed — not compatible with MySQL v3.23

v0.4.198 — March 24, 2005

- Case 3316 — fixed — ccollab synchscm documentation is confusing
- Case 3396 — fixed — deletions not handled properly in Perforce
- Case 3317 — added — option to disable "create new user" from front page
- Case 3367 — added — debugging support in server and command-line utility
- Case 3369 — added — added support for content-compression for browsers that support it

v0.4.186

First alpha release

9.3 Appendix C: Java VM Options

Files That Store Java Virtual Machine Options

You can find the options for the Java Virtual Machine in the `.vmoptions` files that are located in Collaborator's install directory. The file name corresponds to the name of the appropriate executable file.

For **server** the path will be: `<collab server install dir>/ccollab-server.vmoptions`

For **command-line client** the path will be: `<collab client install dir>/ccollab.vmoptions`

For **GUI client** the path will be: `<collab client install dir>/ccollabgui.vmoptions`

Note: You must restart the Collaborator server or client before these settings take effect.

This topic describes some of the most frequently used options.

File Format

To specify Java system properties that will be available to Collaborator, use this syntax:

```
-Dvariable_name=value
```

Important: the last line in the `.vmoptions` files must be empty, that is, you must enter a new line after the last line with data.

Collaborator Server Properties

Property Name	Purpose and Usage
`com.smartbear.ccollab.binary.converter.threads`	The maximum number of threads allocated to convert binary documents into images for review. This value must be a positive integer. Default is 4.
`com.smartbear.ccollab.license.noperiodicupdate`	If set to a non-blank value, this property prevents the Collaborator server from checking for license updates.
`com.smartbear.ccollab.notification.max.retry.interval`	The number of milliseconds to wait between attempts to connect to the SMTP server.
`com.smartbear.database.longquerythreshold`	The time in milliseconds to allow database queries to run before logging a warning message. This is used to help debug bottlenecks and characterize the behavior of complex queries such as those used by the custom reports system. Default is 333 milliseconds.
`com.smartbear.diff.cache.maxentries.memory`	The number of entries allowed in the diff cache. The size of any given entry can vary significantly, but this tuning parameter provides a rough mechanism for tuning the cache size. Default is 2000.

Property Name	Purpose and Usage
`com.smartbear.lines.cache.size`	The maximum size of the parse lines cache. Values should be a memory size in kilobytes or megabytes indicated by the case-insensitive suffixes "k" and "m" respectively. For example, 20 megabytes could be indicated by "20m" or "20M". Default value is 5 megabytes.
`com.smartbear.web.debug.max.log.entries`	The maximum number of entries in the client log file which is enabled by "CAPTURE DEBUGGING LOG". The default value is 160000 which results in a log file that is approximately 50MB.
`smartbear.appstate.period`	The delay, in milliseconds, between runs of the application state recorder. The state recorder periodically writes information about the state of the application into the database for future trend analysis. Default is 15 minutes.
`smartbear.appstate.startup.delay`	The delay, in milliseconds, before the application state recorder starts. Delaying the application state recorder allows the application initialization process to complete before anything is written to the database. Default is 5 minutes.
`smartbear.chat.request.limit`	The maximum number of chat update requests allowed per minute. This value will be used for active reviews and the clients and servers will automatically scale back the request rate as activity on the review declines.
`flash.enabled`	Specifies whether Web Clients will use Adobe Flash component to upload files. By default, the option is disabled and Web Clients use more secure HTML5 component for uploads. However, the later is not supported by Internet Explorer browsers.
`smartbear.mail.smtp.connectiontimeout`	The timeout, in seconds, for SMTP connections. The value must be a positive integer.
`smartbear.mail.smtp.timeout`	The timeout, in seconds, for SMTP requests. The value must be a positive integer.

Property Name	Purpose and Usage
`smartbear.reports.ignore.accepted.comments`	A boolean setting (values: Y/N) to indicate whether or not accepted comments should be ignored in the reporting of review statistics in the Review Detailed Report.
`smartbear.rpc.session.timeout`	The timeout, in seconds, for XML-RPC sessions. The value must be a positive integer. Default is 30.
`smartbear.trigger.timeout.seconds`	Applies to the triggers on the Admin | Triggers 208 page. Specifies the maximum allowable time for the trigger execution in seconds. If the execution time exceeds this value, Collaborator stops the trigger and logs an exception. 0 means there is no limit set.
`smartbear.userauth.class`	Specifies the authentication adapter used to authenticate users. Do not set this property unless directed by SmartBear technical support.
`com.smartbear.reviewpools.lock.regex`	Prevents review pools from being deleted. If a review pool group name matches the specified regular expression, this group cannot be deleted.
`com.smartbear.reviewpools.lock.allowrolechange`	A boolean setting to allow the roles of the locked review pools to be changed by anyone. This setting has effect only if the `com.smartbear.reviewpools.lock.regex` setting is specified.
`com.smartbear.reviewpools.lock.rolesallowedtomodify`	A comma separated list of system role names that are allowed to modify locked review pools and their roles. Administrators are always allowed to modify the locked review pools and their roles. This setting has effect only if the `com.smartbear.reviewpools.lock.regex` setting is specified.

Command-Line Client Properties

The following properties are specific to the command-line client:

Property Name	Purpose and Usage
`smartbear.ccollab.upload.truncate.size`	The size, in bytes, to truncate uploaded files in the changelist. This threshold prevents clients from inadvertently overloading the server with files too large to process. The minimum threshold value is 4MB.
`smartbear.ccollab.upload.ignore.binary.file`	A boolean setting (values: true/false) to indicate whether or not certain binary files (specified by the Binary File Types 162 setting) are ignored when uploading changelists

Java Memory Settings

There are two aspects that affect the Java Virtual Machine regarding memory management and that may affect application performance. One is the maximum heap size and the other is the configuration of the garbage collector (GC).

- The default maximum heap size that is available for Collaborator client applications depends on the Java Runtime Environment (JRE) version being used: 64 MB, if you have JRE version 5.0 and earlier, or 1GB or one quarter of physical memory (what is the smaller) for later versions unless your computer has only one processor or it has less than 2 GB of RAM (in which case 64 MB is used).

  By default, the maximum heap size for the Collaborator Server is set to 1 GB. You can increase the maximum heap size by using the `-Xmx` switch. For example, to set the maximum heap to 256MB, use the following line:

  ```
  -Xmx2G
  ```

  You can use the letters `G`, `M` and `K` to specify gigabytes, megabytes and kilobytes. You can specify only whole numbers. So, for example, instead of using `-Xmx1.5G`, you have to use `-Xmx1536M`. Note that some Java virtual machines do not support the `-X` option.

  Increasing the maximum heap size can help you if you got the errors like `java.lang.OutOfMemoryError: Java heap space errors` in your logs.

  We would recommend that you increase the maximum heap size to 2 GB or even more, depending on the typical size of documents that your users upload to the server.

- In addition to increasing the heap size, you will also likely need to change the garbage collector's settings, especially if you see the "`java.lang.OutOfMemoryError: GC overhead limit`" error in in your server logs, or experience severe performance degradation.

  To change the garbage collector settings for the Collaborator Server, add the following line to the `ccollab-server.vmoptions` file:

  ```
  -XX:+UseConcMarkSweepGC
  ```

If you are using Java 7 Update 45 or later, use the following line instead:

```
-XX:+UseG1GC
```

We do not recommend applying these settings, if your computer has 2 or fewer processors (cores). If you are running into performance issues when performing reviews, you should consider running the Collaborator Server in a system that has at least 4 processors (cores). Changing these garbage collector settings will improve your server performance, especially of you also use the `-Xmx` option to increase the maximum heap size.

Note that the operating system can report that your java process consumes more memory than the maximum heap size you specified. This happens because other parts of the Java runtime, for example, PermGen, consume memory as well. You can try using the `-XX` parameters to tune these parts. See Oracle HotSpot VM documentation for complete information. Note that quite often the `-X`/`-XX` options are JVM-specific and Oracle can change them without notice. We recommend that you consult documentation of your Java Virtual Machine.

Server Temporary Directory

By default, the server will use the *tomcat/temp* subdirectory under the Collaborator Server installation directory as the temporary directory. To use an alternate location, specify the Java temporary directory variable in `ccollab-server.vmoptions`, for example:

```
-Djava.io.tmpdir=/path/to/temp/directory
```

Similarly (though less likely to be needed), this can be done for the Collaborator clients in the corresponding `.vmoptions` files.

Network Proxy Settings

To configure server proxies, use the `ccollab-server.vmoptions` file. See Network Configuration 81 for information on available settings.

Network Connection Debugging

To debug LDAP or SSL connection problems as well as other network related issues, add the following line to the `ccollab-server.vmoptions` file:

```
-Djavax.net.debug=all
```

After restart, Collaborator will create an additional log file, `output.log`, on the server computer with trace information on the issue.

9.4 Appendix D: Java Compatibility Matrix

The following table describes which versions of Java environment are supported by different versions of Collaborator:

	JRE 1.6	JRE 1.7	JRE 1.8	RTC 4.x install with Java 6	RTC 5.x install with Java 6	RTC 6.x install with Java 6	Eclipse running Java 6	Eclipse running Java 7
Collaborator Server 9.x	No	Yes+	Yes	Yes	Yes	Yes	NA	NA
Collaborator Server 8.5 and Newer	No	Yes+	No	Yes	Yes	No	NA	NA
Collaborator Server 8.4 and Older	Yes+	Yes	No	Yes	Yes	No	NA	NA
Collaborator Server 7.x	Yes+	No	No	Yes	Yes	No	NA	NA
Collaborator Server 6.x	Yes+	No	No	No	No	No	NA	NA
Collaborator Client 9.x	No	Yes+	Yes	NA	NA	NA	NA	NA
Collaborator Client 8.5 and Newer	No	Yes+	No	NA	NA	NA	NA	NA
Collaborator Client 8.4 and Older	Yes+	Yes	No	NA	NA	NA	NA	NA
Collaborator Client 7.x	Yes+	No	No	NA	NA	NA	NA	NA
Collaborator Client 6.x	Yes+	No	No	NA	NA	NA	NA	NA
Collaborator Eclipse plugin 9.x	No	Yes+	Yes	No	No	No	No	Yes
Collaborator Eclipse plugin 8.5 and Newer	No	Yes+	No	No	No	No	No	Yes
Collaborator Eclipse plugin 8.4 and Older	Yes+	Yes	No	Yes	Yes	Yes	Yes	Yes

Collaborator Eclipse plugin 7.x	**Yes+**	**No**	**No**	**Yes**	**Yes**	**No**	**Yes**	**No**
Collaborator Eclipse plugin 6.x	**Yes+**	**No**	**No**	**No**	**No**	**No**	**No**	**No**

Notes

- In table above, the "Yes+" means that the given version of Collaborator was built using the given version of Java environment.
- Since version 9.4.9401, Collaborator Server and Client installers for Windows and Mac OS platforms are distributed along with JRE version 1.7u80. If no existing Java environment is found, or an existing Java does not meet the Collaborator's requirements, Collaborator will use the bundled version of Java.

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