Perforce 2012.1 P4SCC User's Guide

July 2012

Table of Contents

Preface About This Manual

This guide describes the configuration and operation of P4SCC, the Perforce SCC Plug-in for a variety of Microsoft integrated development environments (IDEs). For installation instructions, refer to the release notes for the Perforce SCC Plug-in.

This manual assumes some familiarity with Perforce. For basic information on Perforce, consult *Introducing Perforce*.

Perforce offers other plug-ins as well, including P4VS, the Perforce Plugin for Visual Studio, which provides a deep integration with Visual Studio 2008 and up, as well as plug-ins for the Eclipse Java IDE (P4Eclipse), Windows Explorer (P4EXP), and graphics editors (P4GT). For details about these plug-ins, refer to the Perforce web site.

All of our documentation is available from our web site at `http://www.perforce.com`.

Please Give Us Feedback

We are interested in receiving opinions on it from our users. In particular, we'd like to hear from users who have never used Perforce before. Does this guide teach the topic well? Please let us know what you think; we can be reached at `manual@perforce.com`.

Chapter 1 Basic Concepts

About IDEs and plug-ins

Perforce plug-ins enable you to perform basic Perforce versioning tasks from within integrated development environments (IDEs). The Perforce SCC Plug-in is installed when you install Perforce on Windows, and is based on the Microsoft Source Code Control (SCC) API and has been tested with Microsoft Visual C++, Visual Basic, and Visual Studio .NET. For details about supported versions of each IDE, refer to the release notes for the plug-ins..

Note As of June 2012, the preferred Perforce plug-in for Microsoft Visual Studio is P4VS, The Perforce Plugin for Visual Studio. For more information, see the *P4VS User's Guide.*

Perforce also offers plug-ins for other development tools, such as Eclipse. See our Web site for details.

Note that the terminology for versioning tasks varies depending on which development environment you are using. The following table compares some common terms.

IDE with versioning plug-in	Other commonly used terms	Corresponding Perforce command
Add to source control/Perforce	Add	`p4 add`
Check out	Edit	`p4 edit`
Check in	Submit	`p4 submit`
Show differences	Diff	`p4 diff`
Get latest version	Sync, Refresh	`p4 sync`
Show history	Filelog	`p4 filelog`
Undo checkout	Revert	`p4 revert`
Remove from source control	Delete	`p4 delete`

About Perforce

Perforce is an enterprise version management system that is based on a client/server architecture. The main repository (the *depot*) resides on a central server while the files you work on reside in a workspace on your local machine. You can place some or all of the files in your workspace under source control. When you perform versioning tasks, the files remain in your workspace, and Perforce reads or writes them as required. For example, when you submit a change, Perforce reads the edited files in your workspace and updates the information in the database accordingly. When you issue a **Get latest version** or **refresh** command, Perforce transfers files from the depot to your workspace.

The most current revision of the file in the depot is called the *head revision*. Perforce allows you to check out the head revision or any previous revision of a file. To enforce the IDEs' check-in and check-out procedures, Perforce controls the read-write permissions of files. When files are checked out for edit, their permissions are set to read-write. When files are not checked out, Perforce sets them to read-only.

Perforce submits changed files in groups called *changelists*. Perforce keeps track of a project's revision history as a sequence of changelists. This approach allows you to reconstruct a project in your workspace as it appeared at any point in its history. Perforce makes changes *atomically*, meaning that when you submit changes to a group of files, either all of the changed files are accepted simultaneously or none of them are. If conflicts result from multiple users working on the same files, these conflicts must be resolved before Perforce will accept the changes.

Perforce offers a command-line client (P4), a cross-platform GUI (P4V) and a Web-based interface (P4Web). For detailed information about Perforce, refer to the user documentation available on the web at:

```
http://www.perforce.com/documentation/perforce_technical_documentation
```

Most IDEs are project-based: they manage a group of files according to the project to which the files belong. However, Perforce manages files with no provisions for specific IDEs' project structure. You must determine which files you need to place into your Perforce depot, depending on the conventions of your IDE and your group development practices.

Tracking changes

When files are added to source control, deleted from source control, or checked out for edit, Perforce adds them to a changelist. The changelist contains the file names, revision numbers, and operations to be performed. Any edits you make to checked out files are kept in your local client workspace until you send the changelist to the depot with a check in or submit command.

The Perforce server tracks changelists by numbering them sequentially. Changelist numbers are displayed in a results window after a change has been submitted.

Handling conflicts

The ability to detect and resolve conflicts is important in team development, when multiple developers are working on the same files. For example, suppose two programmers copy the same file from the depot into their workspaces and each programmer edits the file differently. When the first programmer submits his version of the file to the depot, the file becomes the head revision. When the second programmer tries to submit her changes to the depot, Perforce determines that her changes are based on a previous revision and does not allow the file to be checked in. If the second file were accepted without question, the first programmer's changes would be overwritten.

When Perforce detects a conflict, it requires you to choose the changes to be checked in. When resolving file conflicts, you can use a merge utility to display the differences between two text files, to help you determine how to resolve the conflict. For more details, see the *Perforce Command Reference*.

File types

Perforce automatically detects whether files placed under source control are text or binary files and stores them accordingly on the server machine. By default, text files are stored in reverse delta format, and binary files are stored in their entirety. The following table lists recommended Perforce file types and attributes for common file types. For details about Perforce file types, refer to *Introducing Perforce.*

File Type	Perforce file type	Description
`.asp`	`text`	Active server page file
`.avi`	`binary+F`	Video for Windows file
`.bmp`	`binary`	Windows bitmap file
`.btr`	`binary`	Btrieve database file
`.cnf`	`text`	Conference link file
`.css`	`text`	Cascading style sheet file
`.doc`	`binary`	Microsoft Word document
`.dot`	`binary`	Microsoft Word template
`.exp`	`binary+w`	Export file (Microsoft Visual C++)
`.gif`	`binary+F`	GIF graphic file
`.gz`	`binary+F`	Gzip compressed file
`.htm`	`text`	HTML file
`.html`	`text`	HTML file
`.ico`	`binary`	Icon file
`.inc`	`text`	Active Server include file
`.ini`	`text+w`	Initial application settings file
`.jpg`	`binary`	JPEG graphic file

File Type	Perforce file type	Description
`.js`	`text`	JavaScript language source code file
`.lib`	`binary+w`	Library file (several programming languages)
`.log`	`text+w`	Log file
`.mpg`	`binary+F`	MPEG video file
`.pdf`	`binary`	Adobe PDF file
`.pdm`	`text+w`	Sybase Power Designer file
`.ppt`	`binary`	Microsoft Powerpoint file
`.xls`	`binary+w`	Microsoft Excel file

Note The Perforce `apple` file type stores Macintosh files in the depot as a single file containing both the data and resource forks. Pre-2000.1 versions of Perforce stored Macintosh file forks as separate files in the depot. If your depots contain Macintosh files stored in this manner, upgrade the existing files to use the apple format. If you do not convert existing files after you upgrade, Perforce continues to store them using its two-file approach.

Configuring IDEs with plug-ins

Regardless of the IDE you use, you must define a client view, add files to the Perforce depot, and configure your source control settings and preferences. The following sections provide details about these tasks.

Configuring Perforce preferences for Visual Studio IDEs

To configure Perforce preferences, display the settings control panel by choosing the corresponding menu entry:

- Visual Studio .NET: **Tools > Options > Source Control >SCC Provider** and click **Advanced...**
- Visual Basic 6.0: **Tools > Perforce > Options** and click **Advanced...**
- Visual C++ 6.0: **Tools > Options**, scroll right and click the **Source Control** tab and click **Advanced...**

The following sections describe the Perforce settings you can configure on each tab.

General tab

Option	Description
Date format	Specifies whether dates are displayed using the operating system format or the Perforce format.
Log options:	
Log All	Logs all commands sent to the Perforce server. To log only user-initiated commands, disable this option.
Enable logging to file	Specifies the name, location and maximum size of the log file.
Enable diff2 on file-to-file drag and drop	Enables you to diff files in the depot using drag and drop. To prevent inadvertently launching a diff (if you never use drag-and-drop diffing), disable this feature.
Warn before reverting files	Displays a dialog enabling you to change your mind before reverting files. When you revert an open file, any changes you made are discarded.

Connection tab

Option	Description
When binding a project to source control	Specifies how you want to configure the Perforce server and workspace associated with the solution. • **Show the Perforce connection dialog:** enables you to specify the settings manually. • **Bind to the workspace that matches your Perforce environment settings**: uses the settings in effect when you add the project ("global" settings). If you are adding a solution that contains a large number of projects, choose **Bind to the workspace that matches your Perforce environment settings** and configure the `P4PORT` and `P4CLIENT` settings to specify the server and workspace. If you choose **Show the Perforce connection dialog**, you must manually enter settings for each project in the solution.
When connecting to a server	
Show Remember Password dialog	For 2003.2 server and below: if enabled, the plug-in displays a "Remember Password" dialog when prompting you for your password. If disabled, the plug-in prompts you every time the Perforce server requires your password.
Show Login Expiration dialog	For 2004.2 server and above: Enables/disables display of login-related dialogs. Perforce servers that are running in a high security mode can set a session time limit. After the session expires, you are prompted to log in when you attempt another Perforce operation.

Option	Description
Unicode servers	
Set encoding for all connections	Specifies encoding used on client machine when connecting to a Perforce Server that is running in Unicode mode. DO NOT SET unless you know for sure that your server is running in Unicode mode.

Diff tab

Option	Description
Default diff application	Enables you to select the application that is used to diff your files. Optionally enables you to configure different applications for specific file types.

Merge tab

Option	Description
Default merge application	Enables you to select the application that is used to perform three-way merges when you resolve files.

Version tab

This tab displays version information about the Perforce SCC Plug-in.

Font tab

This tab enables you to configure the font used by Perforce merge and Time-lapse View utilities.

Defining the client workspace and view

To set up the Perforce environment, you define a *client workspace* (a directory on the client machine that contains the project files) and a *client workspace view* (a mapping of the depot to your client computer). The files in your IDE projects must reside under the client workspace root (the highest-level directory of your client workspace).

Your files can be put under source control only if they are located in the client workspace. Your Perforce workspace root must match the Visual Studio binding root directory, rather than any other subdirectory of this binding root which may in turn contain other Visual Studio projects. You can specify a directory that already contains files, or an empty directory for a project you intend to create. You can also populate your client workspace with files from the depot which are currently under version control.

To create a client workspace and view, you must use the Perforce Command-Line Interface (`p4`) program. Note that P4SCC does not observe settings in Perforce config files. For details about client workspaces and views, refer to *Introducing Perforce*.

Add a project to source control

To add a project to source control, you specify the Perforce settings required to connect to the server where you want to store the project. You must specify the following settings:

- Server host and port

This setting specifies the name of the host on which the server is running and the port on which the server is listening, using the following format:

IDE and Perforce host location	Required Settings	Examples

Same machine	Only port number is required	`1666`
		`1818`

Different machines	Host name (or IP address) and port are required	`myhost:1818`
		`mydomain.com:2550`
		`10.0.0.5:1666`

- User name: your Perforce user name.
- Password: (optional) your Perforce user password.
- Client workspace: the name of the client specification describing the workspace where you work on local copies of project files.

Adding files to the depot

After you specify the settings for the server where you want to store project files, you can add the files. The exact commands required to add files to the depot depend on the IDE in which you are working. Typically you perform two steps:

1. Add the files to a Perforce changelist by issuing a command such as **Add to Source Control**.
2. Submit the changelist by issuing a command such as **Check In** or **Submit**.

Files are added when the **Check In** or **Submit** is completed.

Basic versioning tasks

The plug-ins enable you to perform the following basic versioning from within your IDE:

Task	Description	Perforce activity
Add files to the depot	After you add files to your project, you add them to the depot.	Files are opened for add in a pending changelist.
Retrieve files	Get a copy of a file from the depot.	Files are synced to your computer.
Check files out	Get the latest version from the depot for editing.	Files are opened for edit in a pending changelist.
Check files in	Put your edited files in the depot as the most recent revisions.	A pending changelist is submitted.
Diff files	Compare a file with a previous revision to see what's changed.	The Perforce diff utility is launched to display differences between two versions of a file.
Revert files	Discard changes you've made to your local copy of a depot file.	The head revision is synced to your client workspace and removed from its pending changelist.
Delete files	Remove a file from a project and from the depot.	Files are opened for delete in a pending changelist.

Note that deleting files is a two-part operation: when you delete a file from the project, the file is physically deleted from the file system and opened for delete in a pending changelist. However, the file remains in the depot until you submit the changelist.

When to go outside the IDE

To perform administrative tasks, you need to use the `p4` command line client. For details about performing these tasks, see the *Perforce Adminstrator's Guide*.

Tasks that require you to work outside the IDE include:

- *Modifying a client view or user password*: you can create a client specification or user through the **Connection** dialog when adding a project to source control, but to modify it subsequently, you must use another Perforce client program (such as the `p4` command line, or P4V).
- *Creating branches and labels*: these and other administrative tasks must be done using the `p4` command. Refer to *Introducing Perforce* for basics.

If use Perforce to version files from outside the IDE, be sure to refresh the IDE display afterwards, to ensure that file status is updated and displayed correctly.

Chapter 2 Microsoft Visual C++

This chapter describes how to perform Perforce source code control tasks in the Visual C++ 6.0 environment. It assumes the Perforce SCC Plug-in is installed and that your client machine can communicate with the Perforce server.

When you configure Visual C++ with the Perforce SCC Plug-in, the settings are specific to the project you are working on, so no overall Perforce configuration is required. The Perforce SCC Plug-in retains project settings from session to session and it is not necessary to re-enter them. For details about configuring settings, see “Configuring IDEs with plug-ins” on page 10.

Visual C++ has a **Source Code Control** toolbar: to enable it, right-click the toolbar and check **Source Code Control** on the pop-up menu. To specify source control options, choose Tools> Options... and

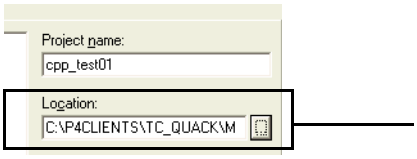
Basic versioning tasks

This section tells you how to perform the following tasks:

- “Adding a project to the depot” on page 17
- “Checking files out” on page 20
- “Retrieving files from the depot” on page 19
- “Checking files in” on page 20
- “Resolving file conflicts” on page 21
- “Diffing files” on page 22
- “Reverting files” on page 22

Adding a project to the depot

When you create a project you intend to manage with Perforce, specify a location that resides within the root folder of the Perforce workspace you intend to use as illustrated in the following figure.


Project name: cpp_test01
Location: C:\P4CLIENTS\TC_QUACK\M

Must be in workspace root folder

After you save your project, perform the following steps:

1. Right-click the project and choose **Add to Source Control**... The **Open Connection** dialog is displayed.
2. On the **Open Connection** dialog, specify Perforce settings as follows:
   - *Server*: the name of the host computer running the Perforce server in which you want to store the project.
   - *Port*: the port number on which the specified Perforce Server accepts commands.
   - *User*: the Perforce user name you want associated with the version management operations you perform on the project. To choose from a list of users defined for the specified server, click **Browse**.
   - *Password*: the user's password, if any.
   - *Workspace*: the workspace you want associated with the version management operations you perform on the project. You must save the project in a folder under the workspace root. To choose from a list of workspaces defined for the specified server, click **Browse**.
3. Click **OK** to save settings and dismiss the dialog. The **Add to Source Control** dialog is displayed, listing the files to be added.
4. Click **OK** to dismiss the dialog.
5. Right-click the project and choose **Check In...** The **Check in Files** dialog is displayed.
6. Click to dismiss the dialog. The **Submit Changelist** dialog is displayed.
7. Check the files you want to add, enter a description and click **Submit**. The files are checked into the depot.

When you open a project that you have placed under Perforce control, Visual C++ attempts to connect to the Perforce server that you configured. If Visual C++ can not connect to Perforce, it asks you whether it should try to connect in future sessions. Choose **Yes**. If you choose **No**, Visual C++ assumes the project is no longer under version control, requiring you to add it again. If you try to add the project again, Perforce returns an error indicating that the project is already under source control, and you must retrieve the project from the depot.

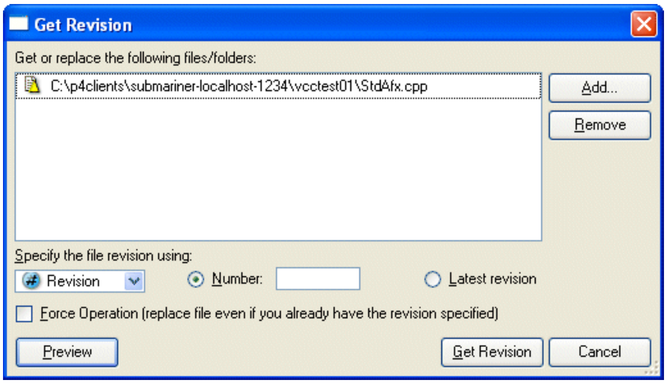
Retrieving files from the depot

To get the most recent file revisions from the depot:

1. In the File View pane, select the files you want to retrieve.
2. Choose **Project >Source Control >Get Latest Version...** The **Get Latest Version** dialog is displayed.
3. Check the files you want to retrieve and click **OK**.

To retrieve revisions prior to the head (latest) revision, choose **Project>Source Control>Show History** or perform the following steps:

1. In the File View pane, select the files you want to retrieve.
2. Choose **Project >Source Control > Get Latest Version...** The **Get Latest Version** dialog is displayed.
3. Click **Advanced...** Dismiss the "Advanced sync dialog..." prompt by clicking **OK**, then click **OK** on the **Get Latest Version** dialog. The **Get Revision** dialog is displayed as shown in the following figure.


Get Revision
Get or replace the following files/folders:
Add...
Remove
Specify the file revision using:
Preview
Get Revision
Cancel

C:\p4clients\submariner-localhost-1234\vcctest01\StdAfx.cpp

Revision ▾ (● Number:) (○ Latest revision)

☐ Force Operation (replace file even if you already have the revision specified)

4. Specify the revision you want to retrieve, using a Perforce changelist number, label, version number, or date. For details about specifying revisions, refer to the *Perforce Command Reference*.

- To preview the results of the operation without actually retrieving files, click **Preview**.
- To retrieve a file from the depot if you've deleted your local copy manually, check **Force Sync**. By default, Perforce assumes you still have your copy and doesn't retrieve it again.

5. Click **Get Revision**.

Note If you retrieve a file that you already have checked out, for example, to obtain changes checked in by another user, Perforce will require you to resolve the file, to enable you to merge your changes with changes made by other users and to ensure that you don't inadvertently overwrite other changes.

Checking files out

Before you check a file out, be sure you have retrieved the latest revision of the file. (If you check out a file for which the depot contains later revisions, you will be required to resolve it when you check it in.)

To check out a file for edit, right-click the file and choose **Check out** *filename*.

Checking files in

After editing the open files, you can save them to your local directory and check the files into the depot. To save the files on your local directory, choose **File>Save**. Note that saving does not update the depot.

To make your changes available to others working on the project, you must check your edited files into the depot. If the changes are accepted, your files become the most recent (or *head*) revisions in the depot. If any of the changes conflict with changes previously submitted by another user, the check-in fails and the differences must be resolved using Perforce. To minimize the complexity of merges, check in small sets of changes frequently.

To check in a file:

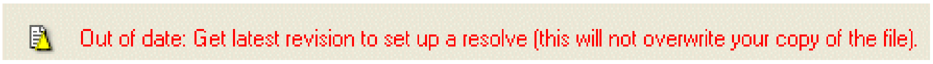
1. Right-click the file and choose **Check in...**

   The **Check in file(s)** dialog is displayed.
2. Click **OK**. The **Submit Changelist** form is displayed.
3. Enter description and click **Submit**.

To view all your pending changelists, click the **Manage Changelists** button on the **Submit Changelist** form. P4SCC displays a dialog listing your pending changelists. In this dialog, you can move files among changelists by dragging and dropping them.

Resolving file conflicts

If you encounter conflicts when checking in files, (for example, from multiple users working on the same files,) you must resolve the conflicts before you can submit the files. For example, if you and another user have changed the same file and the other user checked in changes before you, when you attempt to check in your changes, Perforce notifies you that resolution is required by displaying the following message in the **Submit Changelist** dialog:


Out of date: Get latest revision to set up a resolve (this will not overwrite your copy of the file).

To resolve file conflicts:

1. Right-click the file that has conflicts and choose **Get Latest Revision**.

   The file is now scheduled for resolve, indicated by the message "Resolve this file before submitting." (Your workspace version is not overwritten.)

2. Right-click the file and choose **Resolve Files...** The resolve dialog is displayed, describing the extent of the file differences and listing the following options:

   - *Accept Merge*: merge both files and accept the result, including both the changes you made and the changes made by other users.
   - *Accept Yours*: check your changes in, overwriting the most recently checked-in version.
   - *Accept Theirs*: discard your changes and preserve the other user's changes.
   - *Run Merge Tool*: launch the merge utility so you can view the differences between your version and the most recently checked-in version. Using the merge utility, you can select individual passages or enter new changes to create the final version that you check in.
   - Other choices: you can view either file (**Open File...**), diff your file with the conflicting file, display the file's revision history either textually or graphically.

   After you choose how the files are resolved, the **Submit Changelist** dialog is redisplayed.

3. Enter a description of your changes and click **Submit**. Your changes are checked in.

Diffing files

To diff a file you are editing with the head revision in the depot, right-click the file and choose **Project > Source Control > Show Differences.**

To diff two revisions of a file, perform the following steps:

1. Select the file and choose **Project > Source Control > Show History...** The **History** dialog is displayed.
2. Click and drag one of the revisions you want to diff, and drop it on the other revision.

The diff utility is launched, displaying file differences.

Reverting files

To discard any changes you have made to a file after checking it out, right-click the file and choose **Undo Check-out**. The head revision from the depot is copied to your client workspace, overwriting any changes you have made. Using Perforce, you can verify that the file is removed from the pending default changelist.

Working with Visual C++ files

Visual C++ displays a file status icon next to each file in the project window. In addition, the Source Control menu is context-sensitive: if you highlight a file, the menu selections are enabled or disabled depending on file status. You can use the icon or **Source Control** menu appearance to identify file status.

File status	Icon appearance	Source Control menu appearance
Files are not under Perforce source code control	Original VC++ icon	**Add to Source Control** option is enabled
Files have been added to a changelist but not submitted to Perforce.	Icon is gray with red check mark	**Check in** and **Undo Check out** options are enabled
Files have been successfully submitted to Perforce.	Icon is gray	**Check out** option is enabled

Which files do I put in the depot?

Put the following files in your Perforce depot:

- `.dsp` files
- `.rc` files
- `.cpp` files
- `.h` files

Do not put IDE-generated files (such as `.ncb`, `.clw` and `.opt` files) in your Perforce depot. If you put the `.ncb` file under Perforce control, it is marked read-only when it's not checked out. If the `.ncb` file is read-only, class view information in VC++ is disabled.

If you intend to put the workspace file (`.dsw`) under Perforce control and multiple developers work on the same project, use relative paths to specify file locations to ensure that the entries in the workspace file work correctly on different client computers.

Location of project files

The FileView window displays source file names and their location on your local directory, but is only an approximate representation. Although the display simplifies project development in Visual C++, it differs from the actual file structure as follows:

- FileView groups files by type, such as Source files and Header files, whereas the local directory does not.
- FileView does not display the exact file names for the workspace file and the project file.

For some source control tasks, you need to specify the names and locations of these files. To view this information, right-click on the file and choose **Properties**. The **Source File Properties** dialog is displayed. The **General** properties option displays the complete file name and path.

Chapter 3 Microsoft Visual Basic

This chapter describes how to perform Perforce source code control tasks in the Visual Basic 6.0 environment. It assumes the Perforce SCC Plug-in is installed and that your client machine can communicate with the Perforce server. For details about configuring settings, see “Configuring IDEs with plug-ins” on page 10.

The **Perforce** submenu lists the version management operations you can perform. Note that the **Tools>Perforce>Create Project from Perforce...** option is not supported.

If the **Add-Ins > Add-In Manager...** menu item does not contain **Source Code Control** in the list box, you do not have the VB Source Code Add-In. For help getting it from Microsoft, contact `support@perforce.com`.

Configuring Visual Basic with Perforce

Before you can put Visual Projects under Perforce control, verify that source code control is enabled, as follows:

1. In Visual Basic, choose **Add-Ins>Add-In Manager...** The **Add-In Manager** dialog is displayed.
2. If **Source Code Control** is not listed, close Visual Basic, edit your `vbaddin.ini` file (located by default in the %windir% folder), add the following entry under `[Add-Ins32]`

   ```
   vbscc=3
   ```
3. Save the file.

Basic versioning tasks

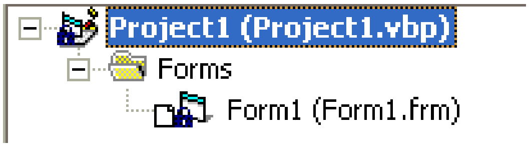
This section tells you how to perform the following tasks.

- “Adding a project to the depot” on page 26
- “Checking files out” on page 27
- “Retrieving files from the depot” on page 27
- “Checking files in” on page 28
- “Resolving file conflicts” on page 28
- “Diffing files” on page 29
- “Reverting files” on page 29

Adding a project to the depot

1. Choose **Tools>Perforce>Add Project to Perforce**.
2. Click **Yes**. If you enabled the **Show the Perforce Connections** option on the **Preferences > Connection** tab, the **Open Connection** dialog is displayed.
3. On the **Open Connection** dialog, specify Perforce settings as follows:
   - *Server*: the name of the host computer running the Perforce server in which you want to store the project.
   - *Port*: the port number on which the specified Perforce Server accepts commands.
   - *User*: the Perforce user name you want associated with the version management operations you perform on the project. To choose from a list of users defined for the specified server, click **Browse**.
   - *Password*: the user's password, if any.
   - *Workspace*: the Perforce workspace you want associated with the version management operations you perform on the project. To choose from a list of workspaces defined for the specified server, click **Browse**.
4. Click **OK** to save settings and dismiss the dialog. The Add Files to Perforce dialog is displayed, listing the files to be added.
5. Click **OK** to dismiss the dialog.
6. Right-click the project and choose **Check In...**. The Check in Files to Perforce dialog is displayed, listing files to be checked in.
7. Click **OK**. The **Submit Changelist** dialog is displayed.
8. Check the files you want to add, enter a comment and choose **Submit**. The files are added to the depot.

Checked-in files are displayed with a lock icon, as shown in the following figure.



Checking files out

To check out a file for edit, right-click the project file in the Project window and choose **Check Out** from the pop-up menu.

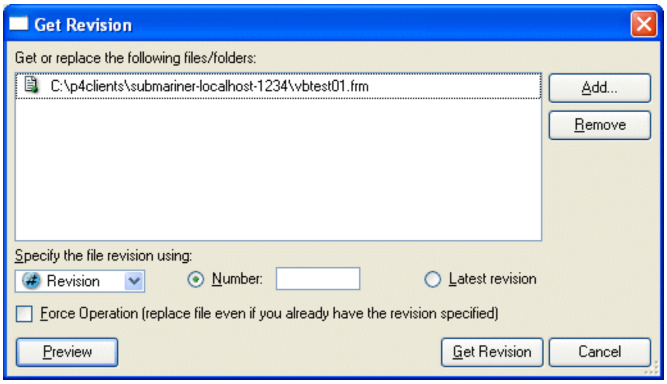
Checked out files are displayed with a red check mark, indicating that the files are writable.

Retrieving files from the depot

To get the most recent revision of a file from the depot, right-click the file and choose **Get Latest Version**.

To retrieve revisions prior to the head (latest) revision, you can sync from the **Revision History** dialog or perform the following steps:

1. Choose **Tools > Perforce >Get Latest Version...** The **Get Latest Version** dialog is displayed.
2. Check the files you want to retrieve and click **Advanced...** Dismiss the "Advanced sync dialog..." prompt by clicking **OK**, then click **OK** on the **Get Latest Version** dialog. The **Sync** dialog is displayed as shown in the following figure.



Get or replace the following files/folders:

C:\p4clients\submariner-localhost-1234\vbtest01.frm

Specify the file revision using:

Revision [✓ Number:] Latest revision

Force Operation (replace file even if you already have the revision specified)

3. Specify the revision you want to retrieve, using a Perforce changelist number, label, version number, or date. For details about specifying revisions, refer to the *Perforce Command Reference*.

- To preview the results of the operation with actually retrieving files, click **Preview**.
- To retrieve a file from the depot if you've deleted your local copy manually, check **Force Sync**. By default, Perforce assumes you still have your copy and doesn't retrieve it again.

4. Click **Sync**..

Note If you retrieve a file that you already have checked out, for example, to obtain changes checked in by another user, Perforce will require you to resolve the file, to enable you to merge your changes with changes made by other users and to ensure that you don't inadvertently overwrite other changes.

Checking files in

After editing checked-out files, you must check them into the depot. Your edited files become the head revision in the depot. (If any of your changes conflict with changes previously submitted by another user, the check-in fails and the differences must be resolved using Perforce.)

To check in files, perform the following steps:

1. Right-click and choose **Check in...** from the pop-up menu.

   The **Check In Files to Perforce** dialog is displayed, listing the selected files.

2. Check the files you want to checked in and click **OK**.

   The **Submit Changelist** form is displayed.

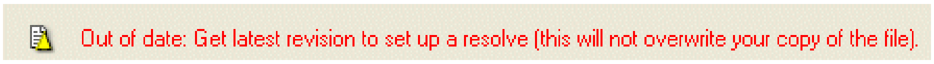
3. Enter your comments and click **OK**.

Your files are checked in. Checked-in files are displayed with lock icons.

To view all your pending changelists, click the **Manage Changelists** button on the **Submit Changelist** form. P4SCC displays a dialog listing your pending changelists. In this dialog, you can move files among changelists by dragging and dropping them.

Resolving file conflicts

If you encounter conflicts when checking in files, (for example, from multiple users working on the same files,) you must resolve the conflicts before you can submit the files. For example, if you and another user have changed the same file and the other user checked in changes before you, when you attempt to check in your changes, Perforce notifies you that resolution is required by displaying the following message in the **Pending Changelist** dialog:


Out of date: Get latest revision to set up a resolve (this will not overwrite your copy of the file).

To resolve file conflicts:

1. In the **Submit Changelist** dialog, Right-click the file that has conflicts and choose **Get Latest Revision**.

   The file is now scheduled for resolve, indicated by the message "Resolve this file before submitting."

2. Right-click the file and choose **Resolve Files...** The resolve dialog is displayed, describing the extent of the file differences and listing the following options:

   - *Accept Merge*: merge both files and accept the result, including both the changes you made and the changes made by other users.
   - *Accept Yours*: check your changes in, overwriting the most recently checked-in version.
   - *Accept Theirs*: discard your changes and preserve the other user's changes.
   - *Run Merge Tool*: launch the merge utility so you can view the differences between your version and the most recently checked-in version. Using the merge utility, you can select individual passages or enter new changes to create the final version that you check in.
   - Other choices: you can view either file (**Open File...**), diff your file with the conflicting file, display the file's revision history either textually or graphically.

   After you choose how the files are resolved, the **Submit Changelist** dialog is redisplayed.

3. Enter a description of your changes and click **Submit**. Your changes are checked in.

Diffing files

To diff a file you are editing with the head revision in the depot, right-click the file and choose **Tools > Perforce > Show Differences...**.

To diff two revisions of a file, perform the following steps:

1. Select the file and choose **Tools > Perforce > Show History...** The **History** dialog is displayed.
2. Click and drag one of the revisions you want to diff, and drop it on the other revision.

The diff utility is launched, displaying file differences.

Reverting files

To discard changes you've made to a checked-out file and reload the head revision from the depot, right-click the file and choose **Undo Check Out.**

Working with Visual Basic files

Which files do I put in the depot?

In general, add the project file (such as `.vbp` files) but not the workspace file (`.vbw` files), especially if multiple developers are working on the same project. For example, if a developer has a workspace file checked out for edit and another developer adds a file to the project, the change is not reflected in the workspace file. Exclude the following Visual Basic file types from Perforce control; Visual Basic caches and recreates them as required.

- `.dca`: active designer cache
- `.oca`: control typelib cache
- `.vbg`: group file

You can exclude them using Perforce protections or client views to prevent them from being inadvertently added to the depot.

Location of project files

The Project window displays source file names and their location on your local directory, but is only an approximate representation. Although the display simplifies project development in Visual Basic, it differs from the actual file structure in the following ways:

- The Project window groups source files by file type, such as Forms and Designers, but the local directory does not.
- The Project window does not display the workspace file (`.vbw` file) and some other files.

For some source control tasks, you need to identify the actual names and locations of these files. For detailed information about Visual Basic project files, see:

```
http://msdn.microsoft.com/en-us/library/Aa241721
```

Recommended Perforce file types

Following are recommended Perforce file types for Visual Basic files. For details about Perforce file types and attributes, refer to *Introducing Perforce.*

File type	Perforce file type	Description
`.bas`	`text`	Basic file
`.cls`	`text`	class file
`.ctl`	`text`	control file
`.ctx`	`binary`	control binary file
`.dsr`	`text+w`	designer file
`.dsx`	`binary`	active designer binary file
`.frm`	`text`	form file
`.frx`	`binary`	form binary file
`.vbg`	`text+w`	group project
`.vbp`	`text`	project
`.vbw`	`text+w`	workspace

Checking out the project file

In Visual Basic 6.0 it is necessary to check out the project file (`.vbp` file) for edit to save *any* changes, including changes that affect only `.frm` files. If you do not want to submit an unchanged project file, right- click the project and choose **Undo checkout**. If multiple developers are working on the same project, keep the project file writable by setting its Perforce file type to `+w` when you add it to the depot.

Chapter 4 Microsoft Visual Studio

This chapter describes how to perform Perforce source code control tasks in the Visual Studio environment using P4SCC. .

Note As of June 2012, the preferred Perforce plug-in for Microsoft Visual Studio is P4VS, The Perforce Plugin for Visual Studio. For more information, see the *P4VS User's Guide.*

This chapter assumes that the Perforce SCC Plug-in is installed and that your client machine can communicate with the Perforce server. For details about configuring settings, see "Configuring IDEs with plug-ins" on page 10.

This screen illustrations in this chapter show Visual C++, but the same dialogs are displayed regardless of which Visual Studio IDE you use. The wording of menu options varies slightly among various version of Visual Studio, but the sequence of operations and dialogs in the tasks is the same.

Note The version control dialogs displayed for check in, check out, and undo checkout include comment fields, but these comment fields are not stored by the Perforce SCC Plug-in. To avoid displaying the check in dialog, choose **Check-in Now**.

Configuring Visual Studio with Perforce

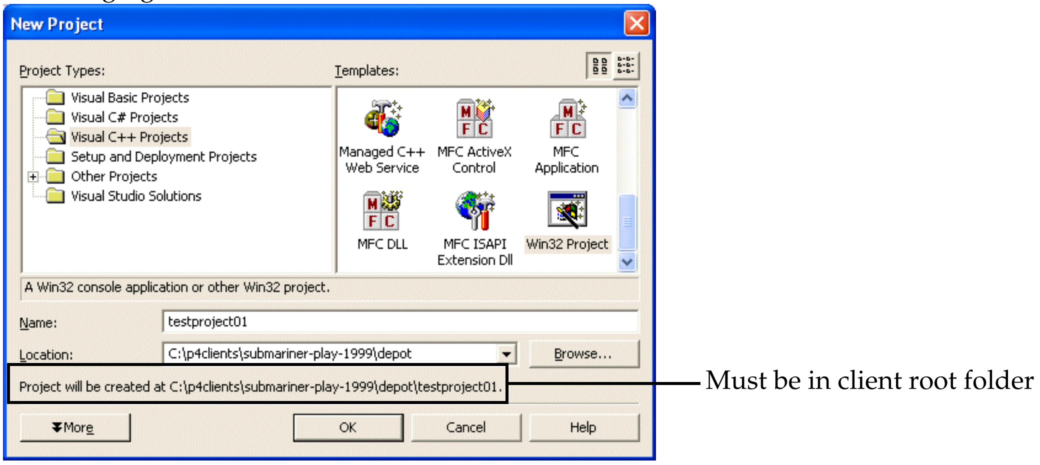
Before you can associate any Project or Solution with Perforce, you must configure Visual Studio to use the Perforce plug-in.

Perform the following steps:

1. From within Visual Studio, choose **Tools>Options**.
2. Select **Source Control>Plug-in Selection**.
3. In the **Current source control plug-in** drop list, select **Perforce SCM**.

After you have configured Visual Studio to work with the Perforce SCC Plug-in, project settings are specific to the project you are working on. Visual Studio retains project settings from session to session and it is not necessary to re-enter them.

When you create a project you intend to manage with Perforce, specify a location that resides within the root folder of the workspace you intend to use as illustrated in the following figure.



A Win32 console application or other Win32 project.

Name: testproject01

Location: C:\p4clients\submariner-play-1999\depot

Project will be created at C:\p4clients\submariner-play-1999\depot\testproject01.

Must be in client root folder

Basic versioning tasks

This section tells you how to perform the following tasks.

- "Adding a project to the depot" on page 35.
- "Adding files" on page 36
- "Checking files out" on page 36
- "Retrieving files from the depot" on page 37
- "Checking files in" on page 38
- "Resolving file conflicts" on page 39
- "Diffing files" on page 40
- "Reverting files" on page 40
- "Miscellaneous tasks" on page 40

Also note that the **Exclude from source control** option is intended for files that, by nature, do not belong under source code control (such as build outputs).

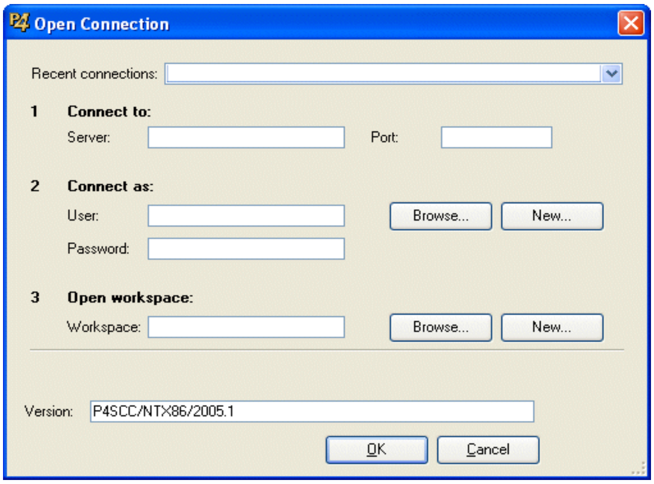
Adding a project to the depot

Make sure your Visual Studio projects reside within your Perforce client workspace.

If you are adding a solution that contains a large number of projects, you can avoid specifying settings manually for every project by choosing the **Options > Connection** tab setting **Bind to the workspace that matches your Perforce environment settings** and setting `P4CLIENT` and `P4PORT` to the desired server and workspace.

To add a Visual Studio project to your depot, perform the following steps:

1. In the Solution Explorer, right-click the project and choose **Add Solution to Source Control**. If you enabled the **Show the Perforce Connections** option on the **Preferences > Connection** tab, the **Open Connection** dialog is displayed, as shown in the following figure.



Version: P4SCC/NTX86/2005.1

2. On the **Open Connection** dialog, enter the required settings as follows:

- *Server*: the name of the host computer running the Perforce server in which you want to store the project.
- *Port*: the port number on which the specified Perforce Server accepts commands.
- *User*: the Perforce user name you want associated with the version management operations you perform on the project. To choose from a list of users defined for the specified server, click **Browse**.
- *Password*: the user's password, if any.
- *Workspace*: the Perforce workspace associated with the version management operations you perform on the project. You must save the project in a folder under

the workspace root. To choose from a list of workspaces defined for the specified server, click **Browse**...

3. Click **OK** to dismiss the dialog.
4. In the Solution Explorer, right-click the solution and choose **Check In...**

   (If the Visual Studio **Check In** dialog is displayed, dismiss it.) The Perforce **Submit Changelist** dialog, listing files, is displayed.
5. Enter a description in the description field and click **Submit**. Your files are added to the depot. (Using Perforce, you can verify that the default changelist has been submitted and the files are now in the depot.)

Checked-in files are displayed with a lock icon. If you attempt to edit a file that is not checked out, a check-out dialog is displayed.

Adding files

When you add a file to a project, you must also add it to source control as follows:

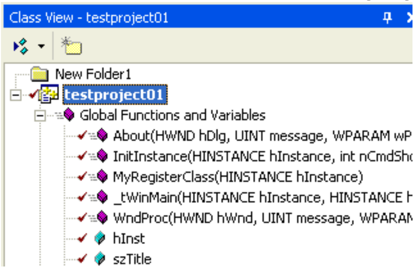
1. To open a file for add, choose **Add New | Existing Item**.
2. To submit a file, select the file and choose **Check In Now**.

To list the files that are opened for add, choose **Show Pending Checkins**.

Checking files out

To check out files:

1. In the Solution Explorer pane, right-click the desired file (or the project, if you want to check out all its files) and choose **Check Out For Edit...** The **Check Out** dialog is displayed.
2. Click **Check Out**. In the Solution Explorer pane, files are displayed with a check mark, as shown in the following figure.

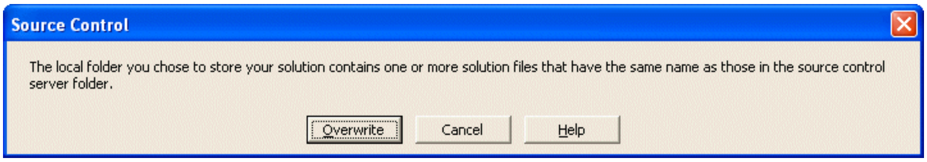

Class View - testproject01
New Folder1
testproject01
Global Functions and Variables
About(HWND hDlg, UINT message, WPARAM wP
InitInstance(HINSTANCE hInstance, int nCmdSh
MyRegisterClass(HINSTANCE hInstance)
_tWinMain(HINSTANCE hInstance, HINSTANCE h
WndProc(HWND hWnd, UINT message, WPARAM
hInst
szTitle

The checked-out files are listed in the **Pending Checkins** pane.

If you branch a project using Perforce, the Visual Studio bindings must be corrected to correspond to the project's new location. To correct bindings for a branched solution, you must perform the following steps the first time you check out the branched project.

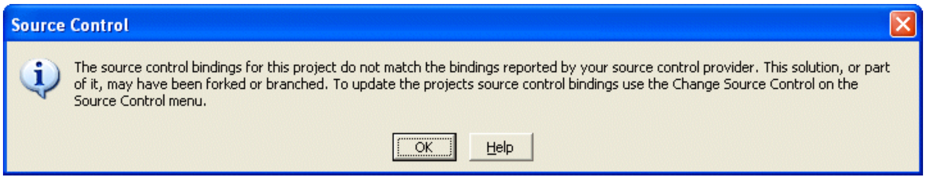
To check out a newly-branched project (first time only):

1. Choose **File> Source Control > Open from Source Control...**. The **Open Connection** dialog is displayed.
2. Specify connection settings for the server that contains the project you want to check out and click **OK**. The **Open Project** dialog is displayed.
3. Browse to the branched project you want to open and double-click its `.sln` file.
4. If the newly-branched files are present in your workspace, Visual Studio displays the following dialog:


Source Control

The local folder you chose to store your solution contains one or more solution files that have the same name as those in the source control server folder.

5. Click **Overwrite**. Visual Studio displays the **Open Solution** dialog.
6. Double-click the `.sln` file. Visual Studio displays the following dialog:


Source Control

The source control bindings for this project do not match the bindings reported by your source control provider. This solution, or part of it, may have been forked or branched. To update the projects source control bindings use the Change Source Control on the Source Control menu.

7. Click **OK**.

The project now contains correct binding information.

Retrieving files from the depot

To get the most recent revision of a file from the depot, right-click the file in the Solution Explorer pane and choose **Get Latest Version**.

To retrieve revisions prior to the head (latest) revision, you can sync from the **Revision History** dialog or perform the following steps:

1. In the Solution Explorer pane, right-click the file and choose **View History**. The **History** dialog is displayed, listing the revisions in the depot.

2. Right-click the desired revision and choose **Get This Revision**.

> **Note** If you retrieve a file that you already have checked out, for example, to obtain changes checked in by another user, Perforce requires you to resolve the file, to ensure that you don't inadvertently overwrite other users' changes.

To sync all files for a project that resides in the depot:

1. Choose **File > Source Control > Open from Source Control...** The **Open Connection** dialog is displayed.
2. Enter the settings that specify the server where the project is stored and the client workspace and user with which you want to check the project files out, and click **OK**. The **Perforce Open Project** dialog is displayed.
3. Browse to the `.sln` file for the project you want to sync and click **OK**. The project files are synced to your workspace.

Checking files in

After editing checked-out files, you must check them into the depot. Your edited files become the head revision in the depot. (If your changes conflict with changes previously submitted by another user, the check-in fails and the differences must be resolved using Perforce.).

To check in files, perform the following steps:

1. In the Solution Explorer pane, right-click the file and choose **Check In Now.** The **Submit Changelist** dialog is displayed.
2. Enter a description of your changes and click **Submit**.

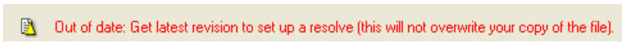
In the Solution Explorer pane, the check marks are replaced by locks, indicating that the submitted files were checked in.

> **Note** To produce meaningful change history, check in related files together. For example, if you changed two different files to fix a bug, check them both in at the same time. The files are submitted in the same changelist.

To view all your pending changelists, click the **Manage Changelists** button on the **Submit Changelist** form. P4SCC displays a dialog listing your pending changelists. In this dialog, you can move files among changelists by dragging and dropping them.

Resolving file conflicts

If you encounter conflicts when checking in files, (for example, from multiple users working on the same files,) you must resolve the conflicts before you can submit the files. Perforce notifies you that resolution is required by displaying the following message in the **Pending Changelist** dialog:


Out of date: Get latest revision to set up a resolve (this will not overwrite your copy of the file).

To resolve file conflicts:

1. Right-click the file that has conflicts and choose **Get Latest Revision**.

   The file is now scheduled for resolve, indicated by the message "Resolve this file before submitting."

2. Right-click the file and choose **Resolve...** The **Resolve** dialog is displayed, describing the extent of the file differences and listing the following options:

   - *Accept Merge*: merge both files and accept the result, including both the changes you made and the changes made by other users.
   - *Accept Yours*: check your changes in, overwriting the most recently checked-in version.
   - *Accept Theirs*: discard your changes and preserve the other user's changes.
   - *Run Merge Tool*: launch the merge utility so you can view the differences between your version and the most recently checked-in version. Using the merge utility, you can select individual passages or enter new changes to create the final version that you check in.
   - Other choices: you can view either file (**Open File...**), diff your file with the conflicting file, display the file's revision history either textually or graphically.

   After you choose how the files are resolved, the **Submit Changelist** dialog is redisplayed.

3. Enter a description of your changes and click **Submit**. Your changes are checked in.

Diffing files

To diff a file you are editing with the head revision in the depot, right-click the file and choose **Compare Versions...**.

To diff two revisions of a file, perform the following steps:

1. In the Solution Explorer pane, right-click the file and choose **File > History**. The **History** dialog is displayed, listing the revisions in the depot.
2. To diff two revisions, drag one revision to the other.

The diff utility is launched, displaying file differences.

Reverting files

To discard changes you've made to a checked-out file and reload the head revision from the depot:

1. In the Solution Explorer pane, right-click the file and choose **Undo Checkout**... The **Undo Checkout** dialog is displayed, listing the files to be reverted.
2. Check the files you want to revert and click **Undo Checkout**.

In the Solution Explorer pane, the reverted files are displayed with a lock icon, indicating that they are no longer checked out. The head revision is copied from the depot to your workspace, overwriting any changes you made to the workspace file.

You can also revert unchanged files from the **Pending Changelist** dialog.

Which files do I put in the depot?

Visual Studio adds all appropriate files when the project is first added to source control, so, in general, don't change the contents of the changelist that is created when you choose **Add to Source Control**.

Miscellaneous tasks

To view the Perforce commands issued by the plug-in, choose **View>Other Windows>Output** and display the **Source Control** pane.

Index