

FINALBUILDER | **Server**

FinalBuilder Server

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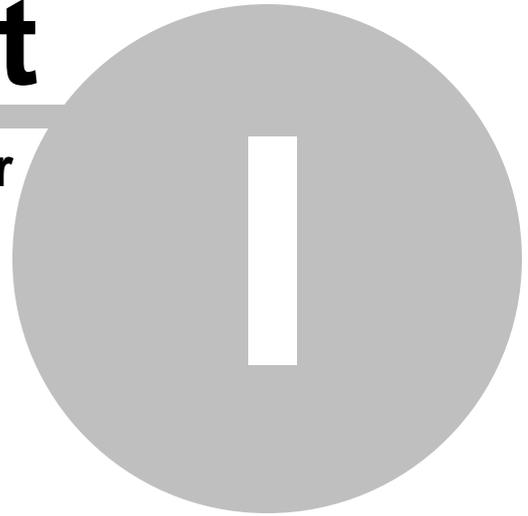
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Part

FinalBuilder Server



1 FinalBuilder Server

1.1 FinalBuilder Server Overview

FinalBuilder Server 7

The screenshot displays the FinalBuilder Server 7 web interface. The top navigation bar includes the logo, the text 'FINALBUILDER Server', and a user status 'Not Logged On' with a 'Log On' link. Below the navigation bar, the main content area is titled 'Projects' and contains two project cards. Each card is divided into three columns: 'Last Build Results', 'Project Statistics', and 'Project Details'. The first card is for 'FinalBuilder 7 [Idle]' and the second is for 'FinalBuilder 7 Server [Idle]'. Both cards show a 'Success' status for the last build, with duration, start/finish times, and the trigger used. The 'Project Statistics' column includes total builds, successful/failed counts, and a success ratio bar chart. The 'Project Details' column lists the project file path, active triggers, conditions, suspension status, and queue status.

Project Name	Status	Duration	Started at	Finished at	Started by	Total Builds	Successful	Failed	Success Ratio	Last run	Project File	Triggers	Conditions	Suspended	Queue Status
FinalBuilder 7 [Idle]	Success	7 mins, 21 secs	15/07/2010 10:42:06 AM	15/07/2010 10:49:27 AM	[Trigger] Continuous Integration	55	40	15	72%	3 mins, 44 secs	S:\BuildBootstrap.fbp7	1 active	No conditions	No	Not in Queue
FinalBuilder 7 Server [Idle]	Success	3 mins, 40 secs	15/07/2010 10:35:18 AM	15/07/2010 10:38:58 AM	[Trigger] Continuous Integration	18	14	4	77%	14 mins, 13 secs	S:\ServerBuildBootstrap.fbp7	1 active	No conditions	No	Not in Queue

What is FinalBuilder Server?

FinalBuilder Server centralizes build projects through a web interface, allowing software developers and members of development teams to easily monitor and control all of their builds.

FinalBuilder Server combines with FinalBuilder 7 Professional to allow users to manage multiple build projects through an easy to use interface. Its functionality centralizes build control by allowing authorized users to start, stop and schedule any build, while allowing anyone with a web browser to view build logs and statistics.

1.2 Installation

There are three components which can be installed during the FinalBuilder Server installation.

Build Server

This will install the Build Service, Logging Service and the web based interface to FinalBuilder Server. These components are responsible for controlling the logging and the building of your FinalBuilder build scripts, as well as providing the graphical interface to FinalBuilder Server.

Management Server

This will install the Management Service which will be used by one or more build servers to authenticate and authorize users, provide a central storage location for user profiles and to manage the licenses of each build server.

Help Files

This will install the help files for FinalBuilder Server.

1.2.1 Requirements

Operating Systems Supported

- Windows 2000 SP3+
- Windows 2003 Server
- Windows 2008 Server (Excluding Windows Server 2008 Core)
- Windows Vista (Business, Enterprise and Ultimate only)
- Windows XP Professional SP1+
- Windows XP Professional x64 Edition

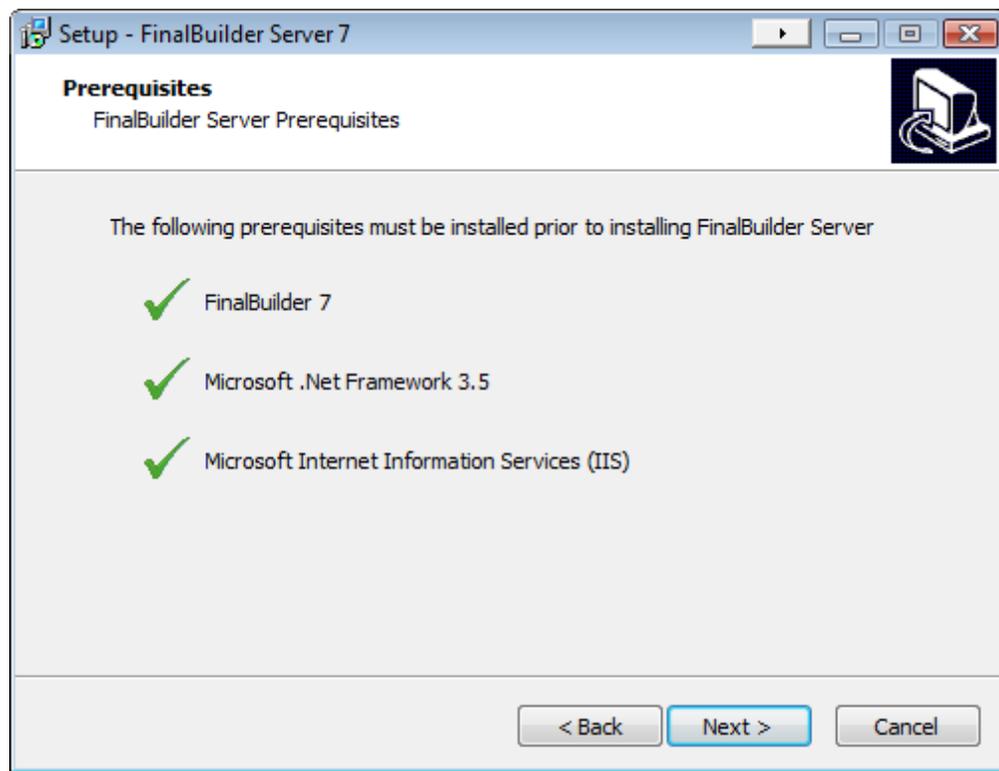
Additional Software Requirements

- FinalBuilder 7 Professional. [*]
- Microsoft Internet Information Services 5.0 or greater. [*]
- Microsoft .Net Framework 3.5

[*] - These components are only required when you are installing the FinalBuilder Server Build Server.

1.2.2 Installing FinalBuilder Server

The FinalBuilder Server installer has been simplified by separating the installation of the program files and the configuration of the web interface. For more information on the post-installation configuration see Post Installation Configuration. When you are upgrading from a previous version of FinalBuilder Server and you are using a remote management server, you must upgrade the management server as well.

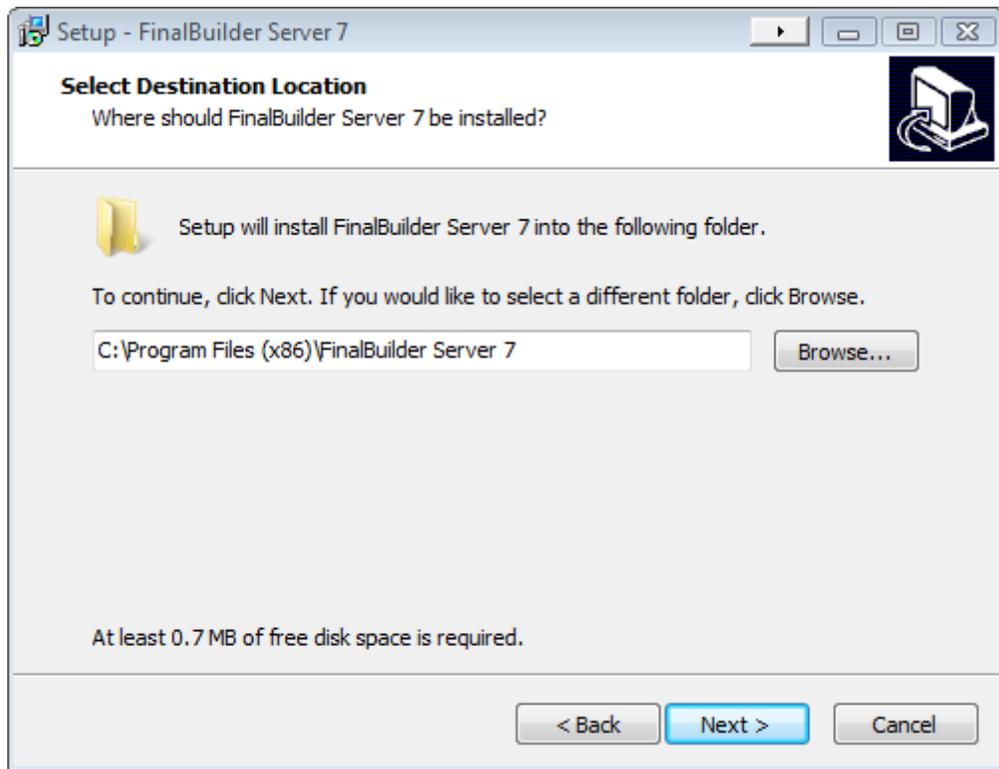


Prerequisites

FinalBuilder Server requires that all the applications that it depends on are installed before installation can commence.

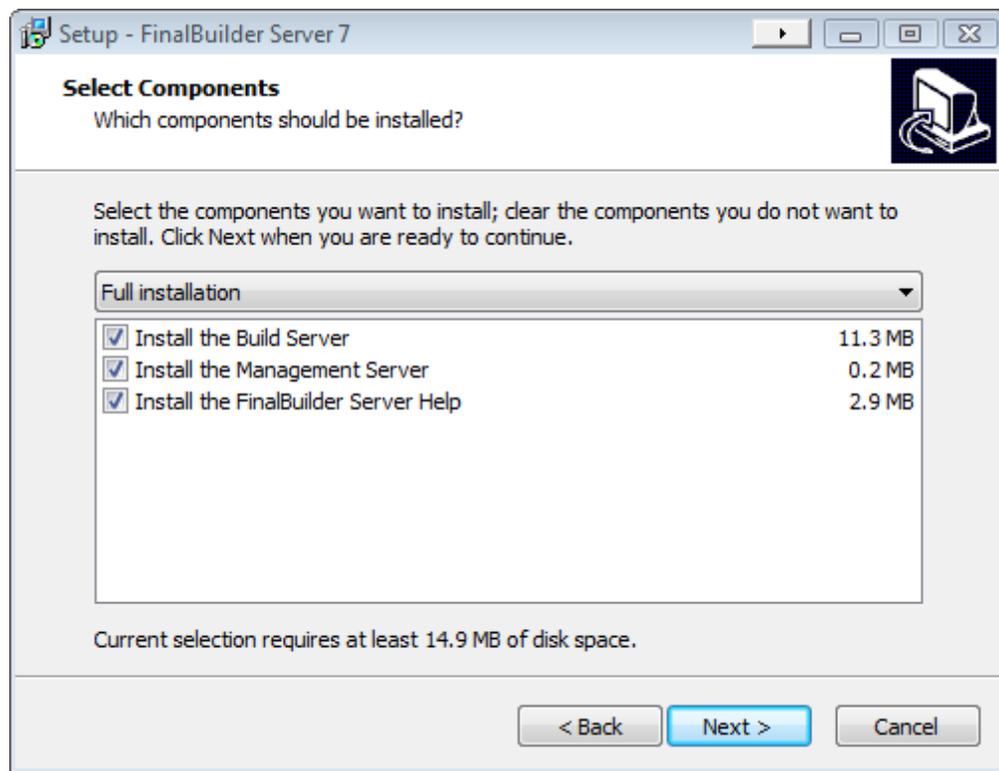
The prerequisites are:

- FinalBuilder 7 - Download from <http://www.finalbuilder.com/>
- Microsoft .Net Framework 3.5 - Download from <http://www.microsoft.com/>
- Microsoft Internet Information Services (IIS) - Must be installed as part of the operating system.



Destination Location

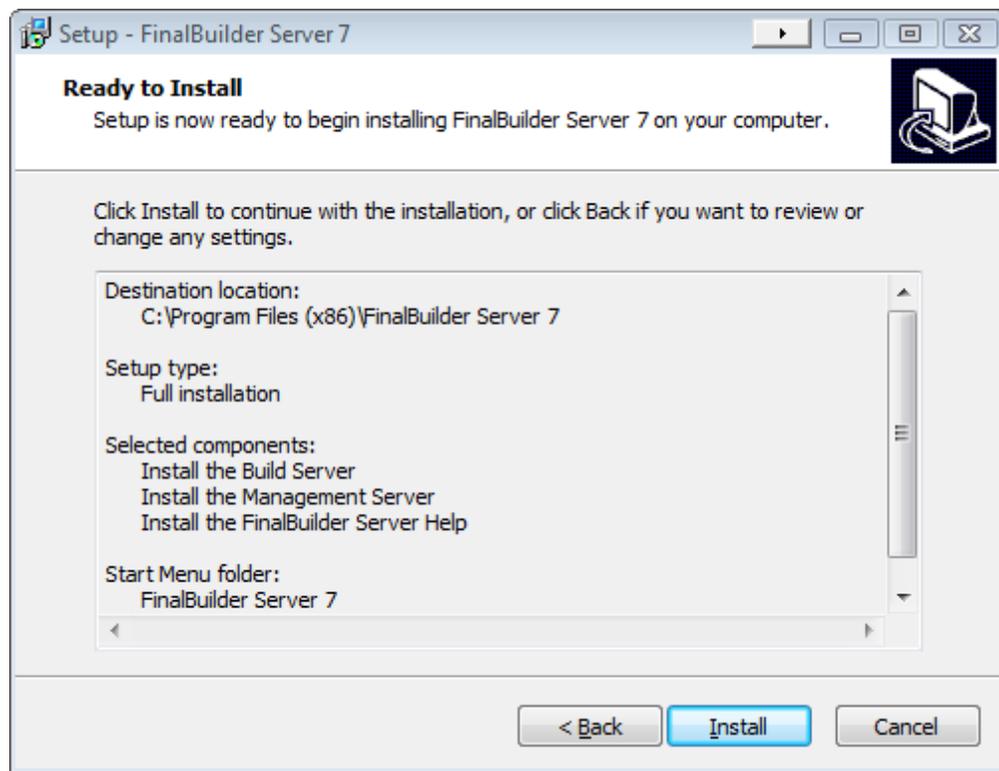
You may choose the location where you wish the FinalBuilder Server program files to be located. It's recommended that you do not install over the top of a previous major version (i.e. Do not use the same directory as FinalBuilder Server 5 for FinalBuilder Server 6).



Components

FinalBuilder Server allows you to choose which components are installed on the current computer. The components are:

- Build Server - The FinalBuilder Server build server is the central service for managing projects, and controlling your builds. This component also installs the web interface and configuration utility.
- Management Server - The management server controls licensing, user roles and permissions and profiles for all build servers that are connected to it. You do not need to install the management server if you will be using an existing management server located on a different machine.
- Help - Installs the help document that you are currently reading in HTML Help format.

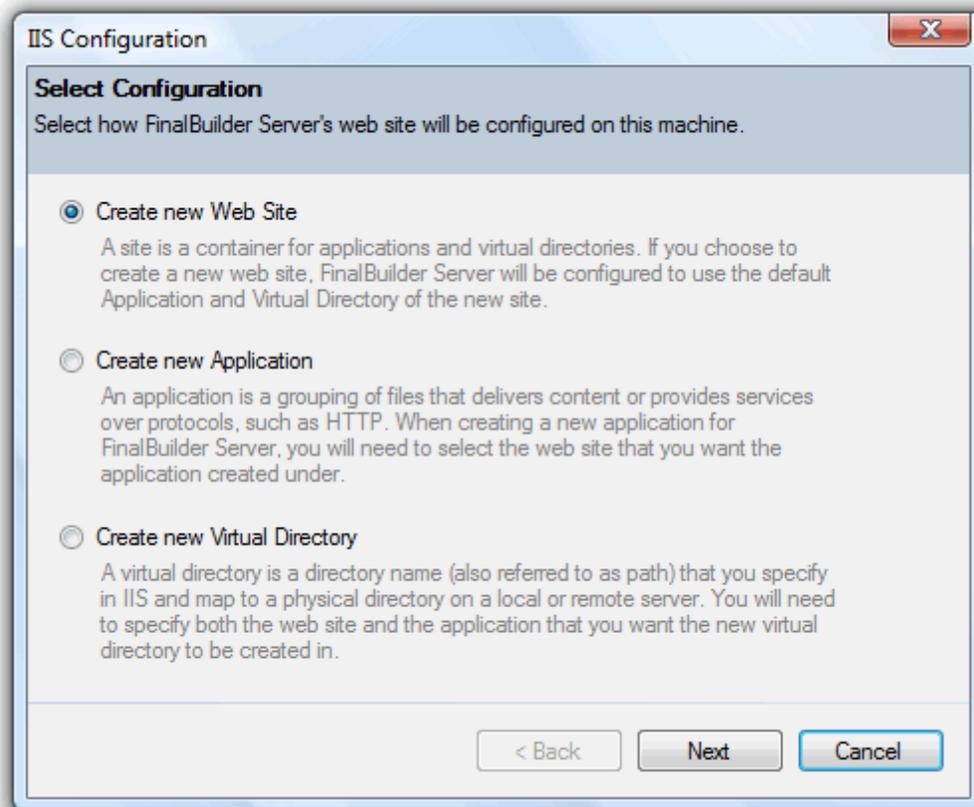


Ready to Install

Clicking 'Install' will copy the files to the specified destination folder and when finished will launch the configuration utility.

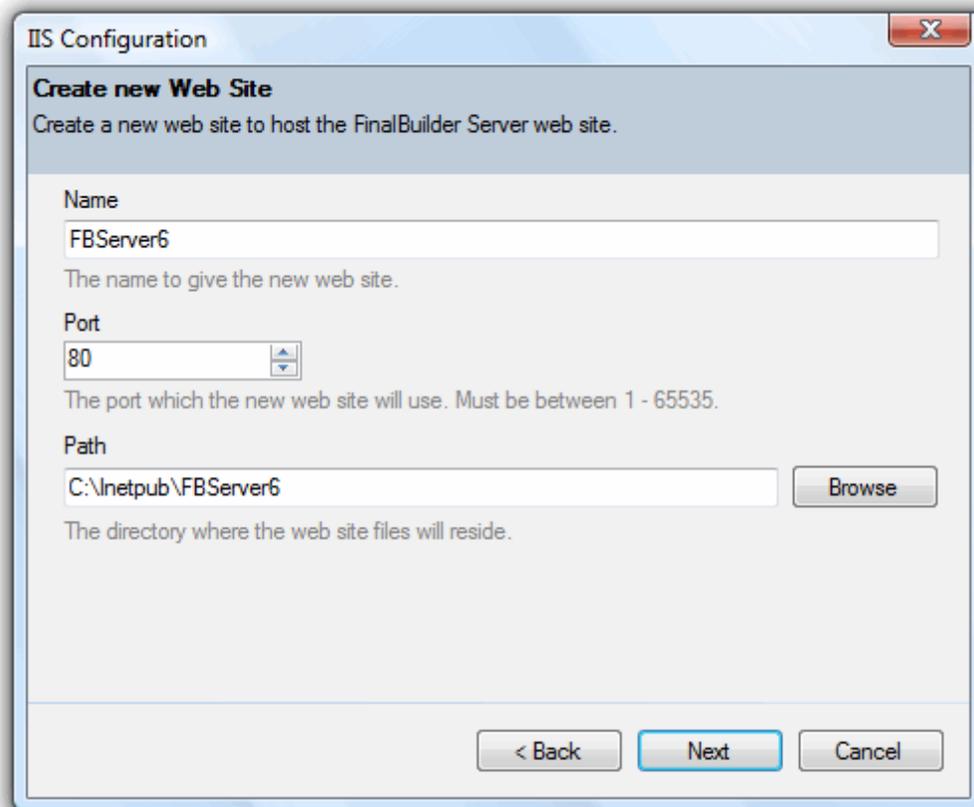
1.2.3 Post Installation Configuration

The FinalBuilder Server configuration utility will configure Internet Information Services (IIS) on the current machine to host the web interface. The configuration wizard may appear different depending on which version of Windows you are installing FinalBuilder Server on to (for example, the version of IIS that ships with Windows XP Professional does not include support for multiple web sites).



Select Configuration

The configuration that you can choose select depends on which version of Windows you are installing FinalBuilder Server on to and how you would like IIS to be configured. If you are running Windows XP Professional or Windows 2000 Professional then you will not have any other option then to create a new virtual directory (limitation imposed by the operation system).

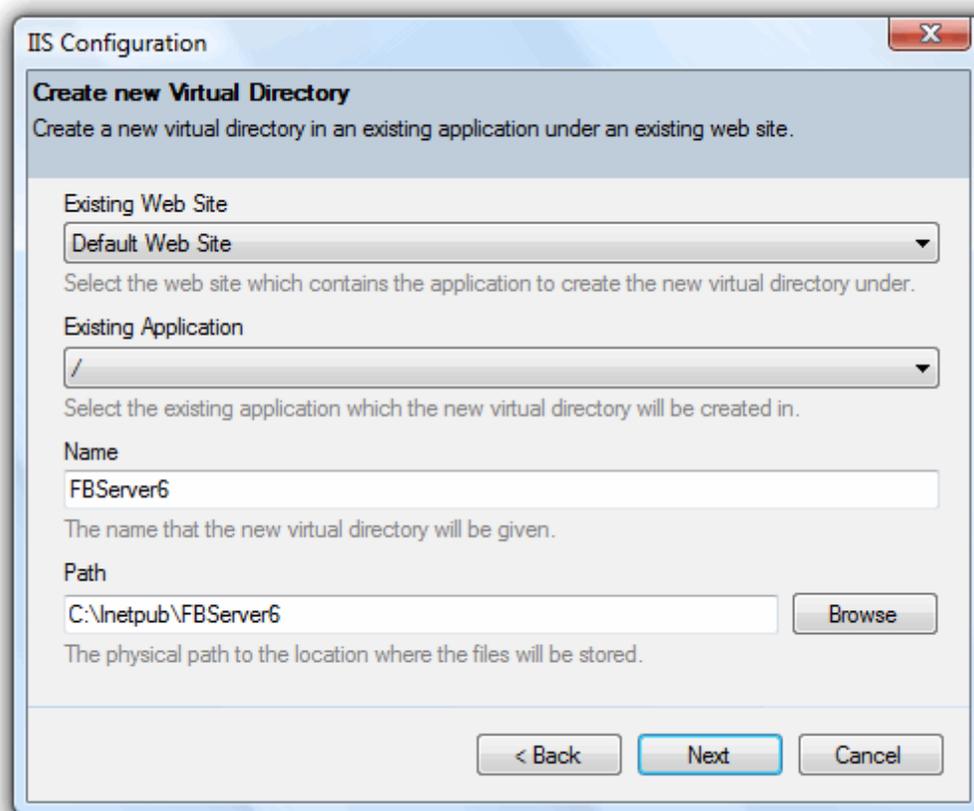


Create a new Web Site

Name - This is the friendly name for the web site.

Port - The port which the FinalBuilder Server web interface will run on. Depending on the configuration of the machine you may need to use a port other than 80 as it may already be in use.

Path - This is the location of the directory where the web site files will be extracted too. You will need to make sure that the IIS Worker Process has the necessary privileges on the directory.

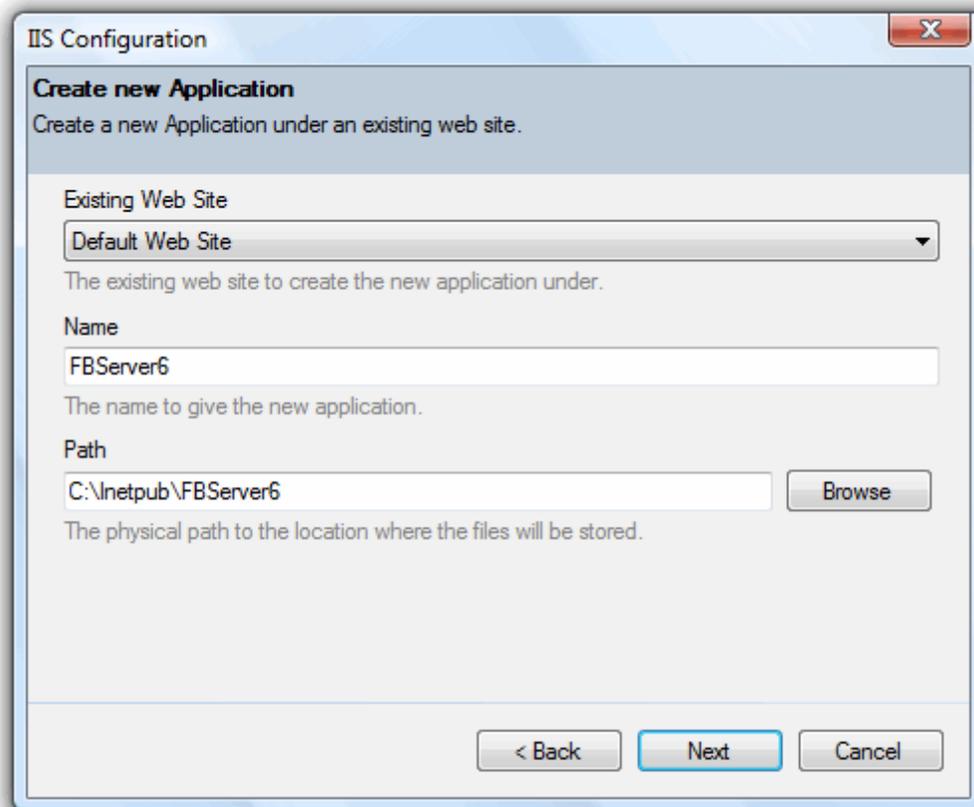


Create a new Virtual Directory

Name - This is the name of the virtual directory, the name specified here will be used to access the web interface (I.E. `http://localhost/[Virtual Directory Name]/Default.aspx`).

Existing Application (IIS 7 Only) - The application which the virtual directory will be created under.

Path - This is the location of the directory where the web site files will be extracted too. You will need to make sure that the IIS Worker Process has the necessary privileges on the directory.



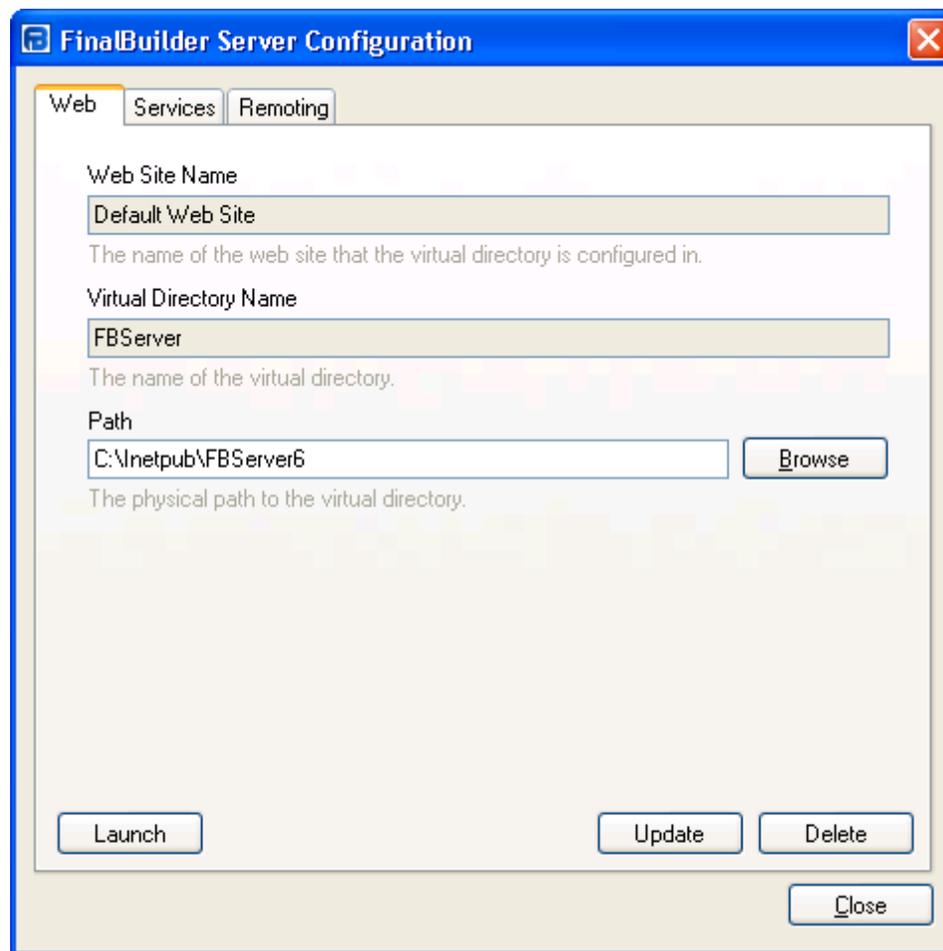
Create a new Application (Internet Information Server 7 only)

Name - The name of the new application.

Path - This is the location of the directory where the web site files will be extracted too. You will need to make sure that the IIS Worker Process has the necessary privileges on the directory.

1.2.4 Configuration and Maintenance

To reconfigure the website, perform maintenance tasks on the FinalBuilder Server services, and change management server location, use the FinalBuilder Server Configuration application accessed via Start | Program Files | FinalBuilder Server 7.

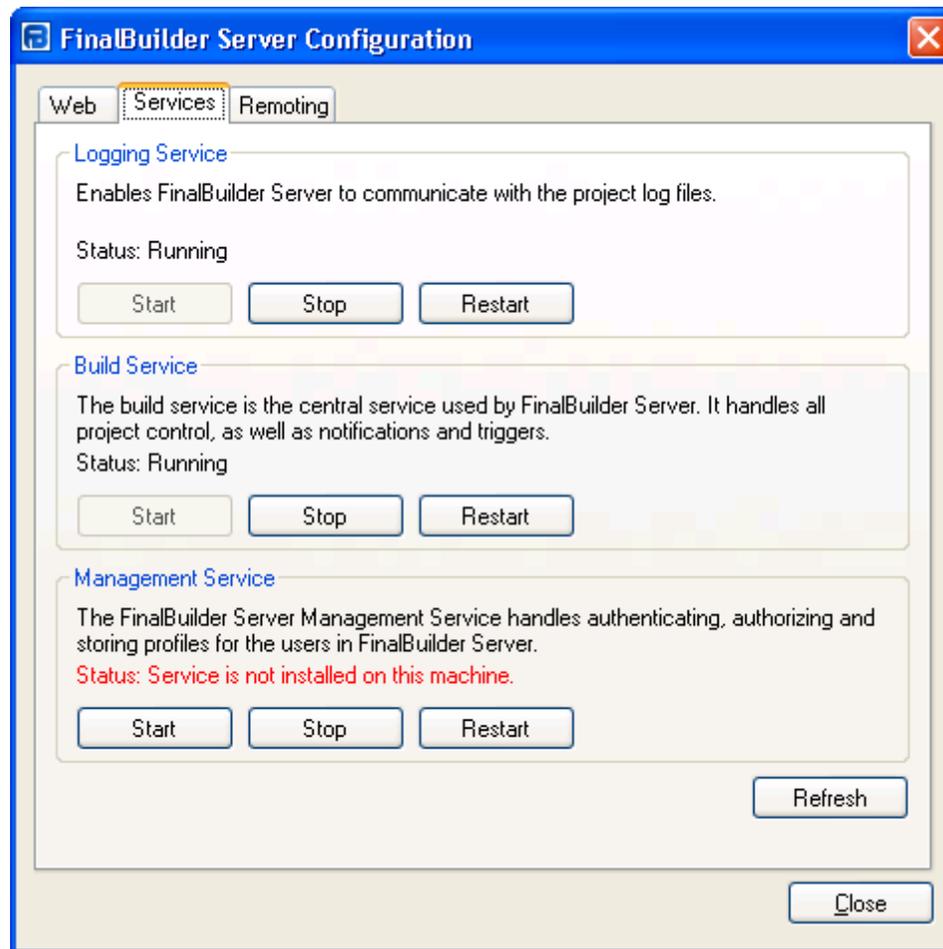


Web Site Name - read only, displays the Web Site Name as configured in IIS

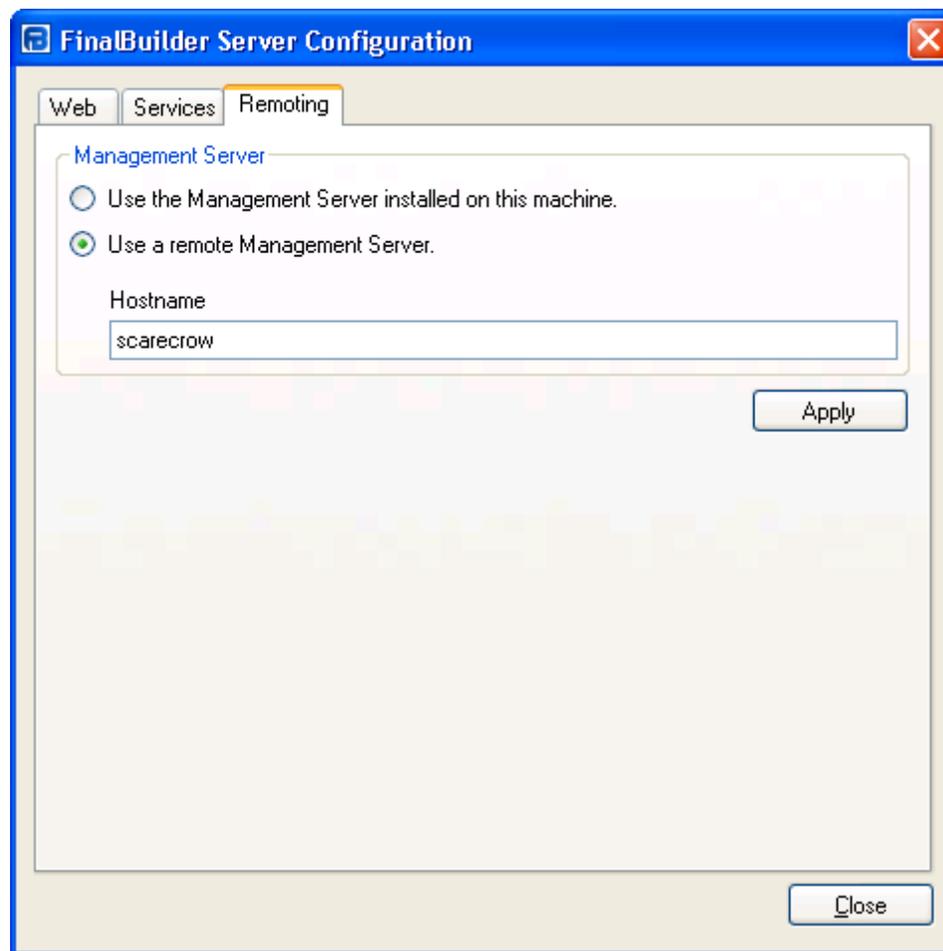
Virtual Directory Name - read only, displays the Virtual Directory as configured in IIS

Path - the physical path to the virtual directory. This property may be changed if required, and then use the Update button to apply the changes.

Launch Button - will start your default browser with your FinalBuilder Server website.



Use the Services tab to view the status of the Logging, Build and Management services, and also stop, start and restart the services if required. Note that if you are using a Management Service on a different machine, then the Management Service section on this machine should be stopped (or not installed).

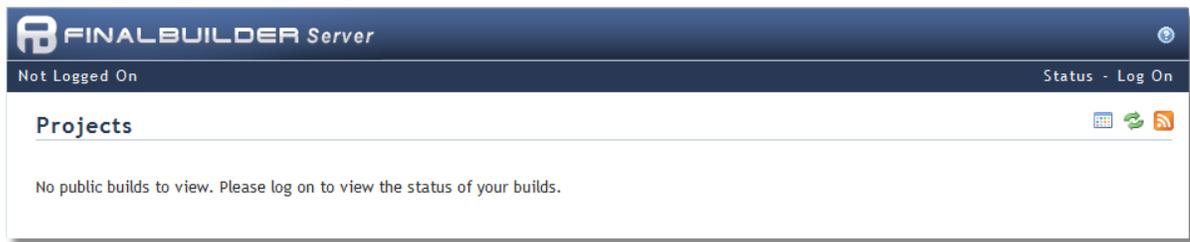


The Remoting tab displays the location of the Management Service and allows you to change the Management Service location. Make sure you Apply the changes before closing the dialog.

1.3 Getting Started

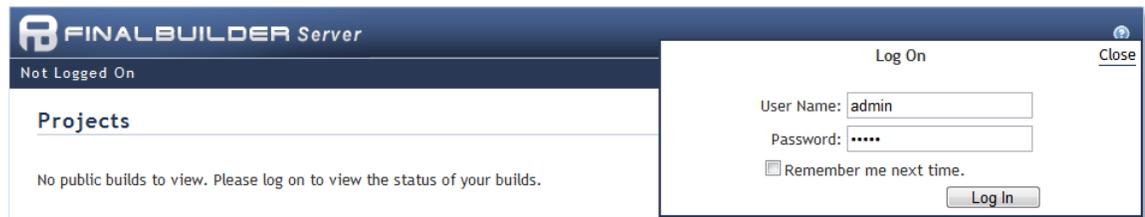
Once FinalBuilder Server has been installed and the post-installation configuration has been completed, you may navigate to the FinalBuilder Server's web interface to begin setting up your projects.

If you are unsure of the address of the web interface, launch the FinalBuilder Server Configuration utility and click the 'Launch' button on the Web tab page. This will launch the FinalBuilder Server web interface in your default browser.



1.3.1 Logging In

After the installation of FinalBuilder Server has been completed you will need to login to the web interface.

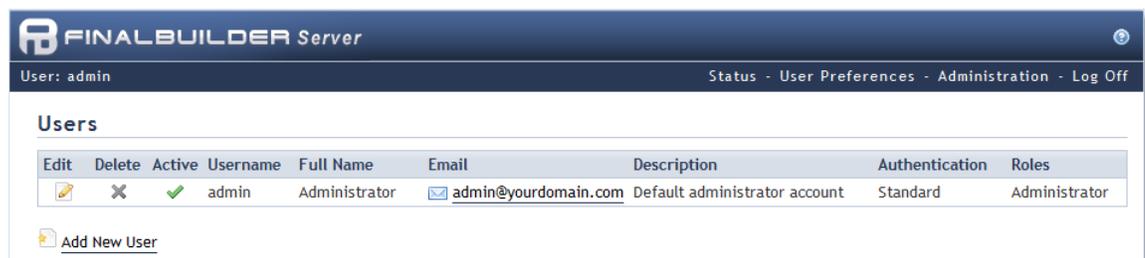


Logging in

1. Click the 'Log On' link positioned at the top-right of the page.
2. If this is the first time the management service has been used with any build servers, the default user will be active. The default username is 'admin' and the default user's password is 'admin'.
3. Once you have logged in successfully you will notice that the 'Administration' menu item is now available, and you can add new projects to the build server. It is recommended that before you begin configuring your build projects, you should create a new user and remove or de-active the default administrator user account.

1.3.2 Creating New Users

Once you have logged into the build server for the first time, it is recommend that you create a new user account and remove or de-active the default administrator user account.



Creating new users

1. To create a new user you will need to be logged on to the build sever.
2. Click the 'Administration' link from the top menu bar.
3. From the 'Administration' page, scroll down to the 'Management Server

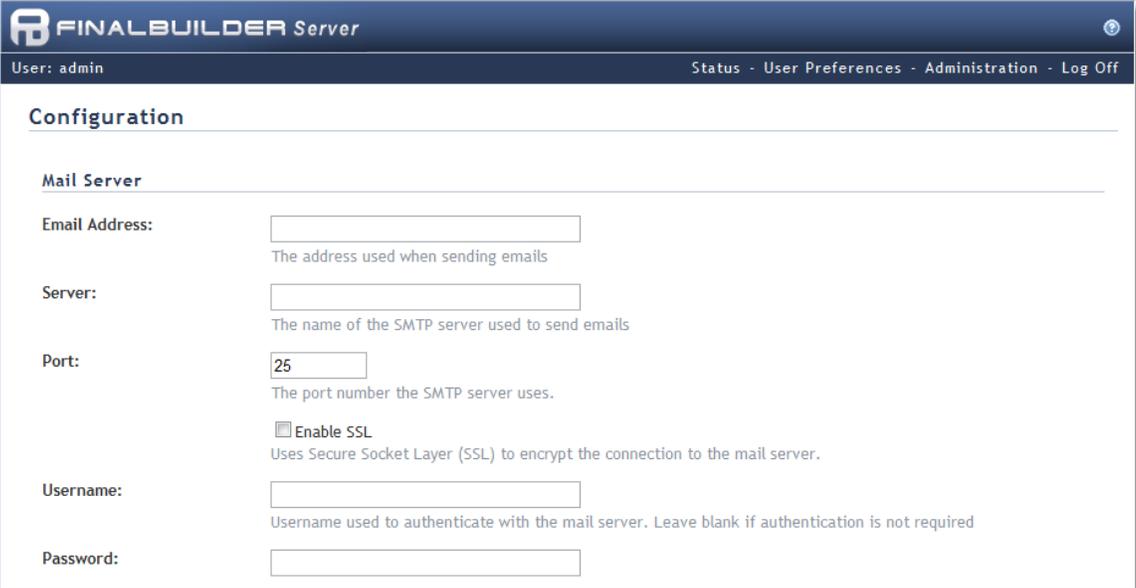
- Administration' section and click the 'Manage Users' link.
4. From the 'Users' page, click on the 'Add New User' link.
 5. Choose the type of **authentication** that will be used to authenticate the new user.
 6. Specify the **username** that the new user will use to log into the build server.
 7. Specify the user's **name, email, and password**.
 8. Optionally specify a **description** that will be associated with this user account as well as a **phone number** that the user can be contacted on.
 9. If you require the new user to be assigned additional roles then click on the 'Assign A New Role To User' link.
 10. Once you have finished entering the new user's information, click the 'Save' button to add the user.

See also:

[Adding a new Standard User](#) | [Adding a new Active Directory User](#)

1.3.3 Configuring the Build Server

Before adding your FinalBuilder projects to the build server you should configure the global options.



The screenshot shows the 'Configuration' page in the FinalBuilder Server web interface. The page title is 'FINALBUILDER Server' and the user is logged in as 'admin'. The navigation menu includes 'Status', 'User Preferences', 'Administration', and 'Log Off'. The 'Configuration' section is expanded to show 'Mail Server' settings. The fields are: 'Email Address' (with a description: 'The address used when sending emails'), 'Server' (with a description: 'The name of the SMTP server used to send emails'), 'Port' (set to 25, with a description: 'The port number the SMTP server uses.'), 'Enable SSL' (checked, with a description: 'Uses Secure Socket Layer (SSL) to encrypt the connection to the mail server.'), 'Username' (with a description: 'Username used to authenticate with the mail server. Leave blank if authentication is not required'), and 'Password'.

Configuring the Mail Server

1. Specify the **email address** that will be used as the sender for all emails sent from FinalBuilder Server.
2. Specify the **address** to your mail server (I.E. 'mail.yourdomain.com').
3. If your mail server requires you to authenticate you will need to specify it in the **username** and **password** fields.

Configuring the Web Site Appearance

If you wish to add a **message** to the status page of FinalBuilder Server, you can specify one here. You may use HTML if you require advanced formatting of the message. A message can be useful to identify the build server if you are using more than one, or as a general notification to users.

FinalBuilder Server also allows you to add a **logo** to the heading bar of each page (next to the help button). You must first copy an image to the logo folder located in the images folder of the FinalBuilder Server web site. It's recommended that the logo be a maximum of 28 pixels high (the width is not so important as there is a lot of horizontal space).

Configuring Global Project Settings

When a project is run under FinalBuilder Server, it is required that it is run under a normal Windows user account (rather than the user which the service is running under). You may use a domain user account by specifying `<domain>\<user>`.

You can choose to specify the user in the global settings which will remove the need to enter it each time a project is configured on the server. If you do decide to globally define a user to impersonate, keep in mind that any user which has permissions to add project files to the server could then run any application as that user. For security reasons it is recommended that the impersonated user does not have administrative privileges on the machine.

You can also select the maximum number of concurrent builds that can be running at any one time by specifying a value in the '**Concurrent Build Limit**' field.

See also:

[Configuring a Mail Server](#) | [Configuring Web Site Appearance](#) | [Configuring Global Project Settings](#)

1.3.4 Uploading a FinalBuilder Project

Now that the build server has been configured you can proceed to add a FinalBuilder project file to the server.

The screenshot shows the 'Manage Project Files' section of the FinalBuilder Server web interface. At the top, there is a header with the FinalBuilder logo and 'Server' text. Below the header, the user is identified as 'admin' and navigation links for 'Status', 'User Preferences', 'Administration', and 'Log Off' are visible. The main content area is titled 'Manage Project Files' and contains a message: 'No project files exist - upload a new file by browsing for your project file and then click Upload.' Below this, there is a section titled 'Add New Project File' with two radio button options: 'Upload a Project File to the server' (which is selected) and 'Specify the path to the Project File on the server'. Under the first option, there is a 'Choose File' button (disabled) and an 'Upload' button. A 'Note' section follows, containing three bullet points: 'Uploading a project file with the same name as an existing project file will overwrite the project file.', 'To retrieve a project file from the server, use the download button.', and 'Uploaded project files will be placed in 'C:\ProgramData\VSoft\FBServer7\ProjectFiles''. At the bottom of the form is an 'OK' button.

1. From the FinalBuilder Server Status page click on the 'Manage Project Files' link, located towards the bottom of the content.

2. You can choose to either upload the project file to the build server or you can specify a path to a project which already exists on the build machine.

- If you choose to upload the project file, select the path to the file on your local machine by clicking the 'Browse' button and then clicking 'Upload' to upload it to the build machine. The uploaded files are stored in a sub-directory of the FinalBuilder Server data file folder. Note: When a project file is uploaded to the build server, changes made to the original project file are not reflected in the uploaded project file. It is also important that you design your build process so that all file paths will work on both the development machine and the build server. It's useful to use variables for this, and FinalBuilder Server allows you to set the variables when you configure the project, or interactively when the build is started.
- If you would prefer to provide a path to a FinalBuilder project file which is already located on the build machine, click on the 'Specify the path to the Project File on the server' radio button. You can now either browse to the file location, or type it into the 'Selected Path' text field. Once you have chosen the file to use click 'Add File'. Be aware that when you are browsing for the project file, you may not be able to access the entire file system, and in the case where the project file is located in such a location, you will need to specify the path in the 'Selected Path' field. Note: The project file is not copied, so any changes made to the file will be automatically used the next time the build is started.

1.3.5 Adding a New Project

Once the FinalBuilder project file has been uploaded to the build server you can add a new FinalBuilder Server project which uses that project file.

FINALBUILDER Server

User: admin Status - User Preferences - Administration - Log Off

Add Project

Project Name:
Project Name must be unique

Description:
The description of the project

Group: * New Group
Select or create the group that this project will belong to. When a group no longer contains any projects it is automatically removed.

Project File: Manage
Choose an existing project file or click Manage to upload a new one

Maximum Logs:
This is the maximum number of detailed build logs to store (set to 0 for no maximum)
This setting does not effect the build statistics or the build history

1. From the FinalBuilder Server Status page click on the 'Add New Project' link located towards the bottom of the content.
2. Choose a **project name** which will be used to identify the project throughout the server.
3. Optionally give the project a **description**, the description can be anything (i.e. explains what the project builds, or it might contain the maintainer of the project).
4. If you have not already done so, you will need to upload a FinalBuilder **project file** to the server and then select it from the drop down list.
5. Select whether you want the project to be made **public**. When a project is public, all users including anonymous users can view the project, but only logged in users may interact with the project. A private project is only visible to users who are logged in and have access to it.
6. Depending on whether or not you have a global impersonation user you may need to provide the windows username and password who will be used to execute the build.
7. Clicking 'Add' will add the project to the server and you will be redirected back to the status page after clicking 'Save'.

Note: you can have multiple projects defined which use the same physical project file. Each project can be configured with different variables, different triggers, etc.

1.3.6 Controlling a Project

After you have added the new project to the server you can return to the Status page to start the project.

The screenshot shows the 'Projects' section of the FinalBuilder Server interface. At the top, there is a navigation bar with the user name 'admin' and links for 'Status', 'User Preferences', 'Administration', and 'Log Off'. Below this, the 'Projects' section is titled, and there are buttons for 'Add New Project' and 'Manage Project Files'. A specific project, 'Test Project', is selected, and its details are shown in three columns:

Last Build Results	Project Statistics	Project Details
Status: Never run	Total Builds: 0	Project File: Test.fbz7
Duration:	Successful: 0	Triggers: No triggers
Started at:	Failed: 0	Conditions: No conditions
Finished at:	Success ratio:	Suspended: No - Suspend
Started by:	Last run:	Queue Status: Not in Queue

- When a build is started by clicking on the '**Start Running**' button you will be prompted to either start the build normally by placing it on the build queue or by bypassing the build queue and starting it immediately. See Understanding the Build Queue for more information on the build queue.
- When a build is currently running you may can stop it by clicking '**Stop Running**'. If the build has become unresponsive you can force the build to terminate by clicking the same button again, doing so may leave your build logs in an unpredictable state as FinalBuilder cannot cleanly stop the build when it is terminated.

1.3.7 View the Build Logs

FinalBuilder Server allows you to view and search the build logs from any previous that have not already been removed.

The screenshot shows the 'Build Log' section of the FinalBuilder Server interface. At the top, there is a navigation bar with the user name 'ben' and links for 'Status', 'User Preferences', 'Administration', and 'Log Off'. Below this, the 'Build Log' section is titled, and there are buttons for 'View Log', 'View History', 'View Build Metrics', and 'Edit Project'. The 'Build Results' and 'Project Details' are displayed:

Build Results	Project Details
Status: Success	Project File: S:\ServerBuildBootstrap.fbp7
Duration: 3 mins, 40 secs	Triggers: 1 active
Started at: 15/07/2010 10:35:18 AM	Conditions: No conditions
Finished at: 15/07/2010 10:38:58 AM	Suspended: No - Suspend
Started by: [Trigger] Continuous Integration	Queue Status: Not in Queue

Below the build results, there is a table showing the log entries for the 'ServerBuildBootstrap.fbp7' project. The table has columns for Start Time, End Time, Elapsed Time, and Result.

Task	Start Time	End Time	Elapsed Time	Result
ServerBuildBootstrap.fbp7				
Main	10:35:18 AM	10:38:58 AM	00:03:40:402	✓
-- Bootstrap a FinalBuilder Build	10:35:18 AM	10:35:18 AM	00:00:00:015	✓
Log Variable Values [All Variables]	10:35:18 AM	10:35:18 AM	00:00:00:079	✓
SurroundSCM Get - FinalBuilder Server	10:35:18 AM	10:35:20 AM	00:00:01:828	✓
Include Project - [I:\FinalBuilder Server\Build\Finalbuilder Server.fbp7]	10:35:20 AM	10:38:58 AM	00:03:38:480	✓

Show Full Log - if you have filtered the log, then the log will be reloaded at the root node.

Show all Errors - only show actions that have a status of Error. This is the most useful function to quickly diagnose why a build failed.

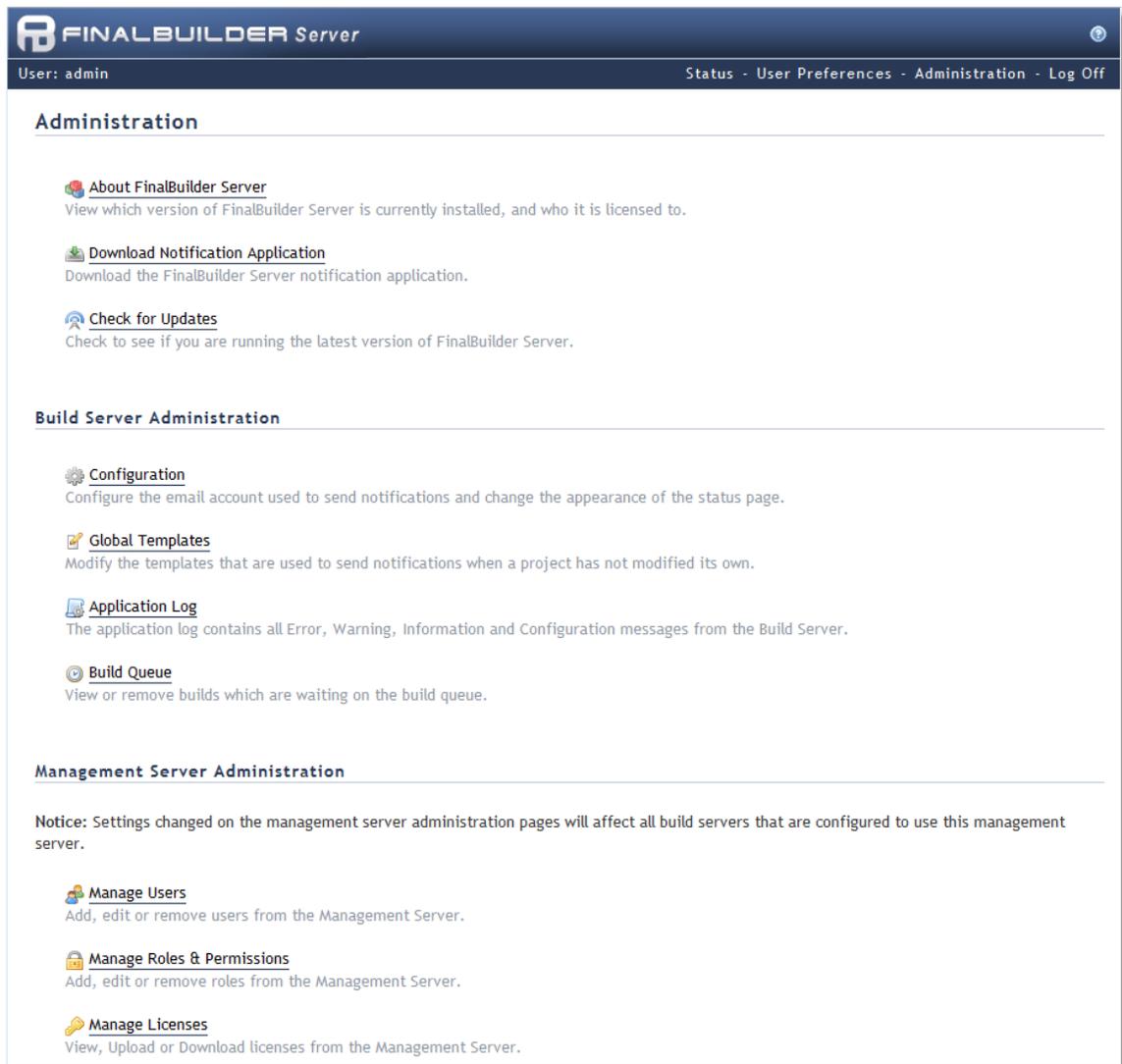
Show all Ignored Errors - if your project includes actions that have "Ignore Failure" turned on, then this filter will allow you to filter by those actions that failed.

Show all Running - not shown on the above screenshot, but if the project is currently running this extra filter will allow you to filter the log by actions that are currently running.

Find - to search for any text in the build log (action description and action log output), enter the text in the text entry field and then click the Find button (looks like a funnel).

1.4 Administration

The administration page gives you access to configuring both the current build server, as well as the user and security options for all builds servers connected to the same management service.

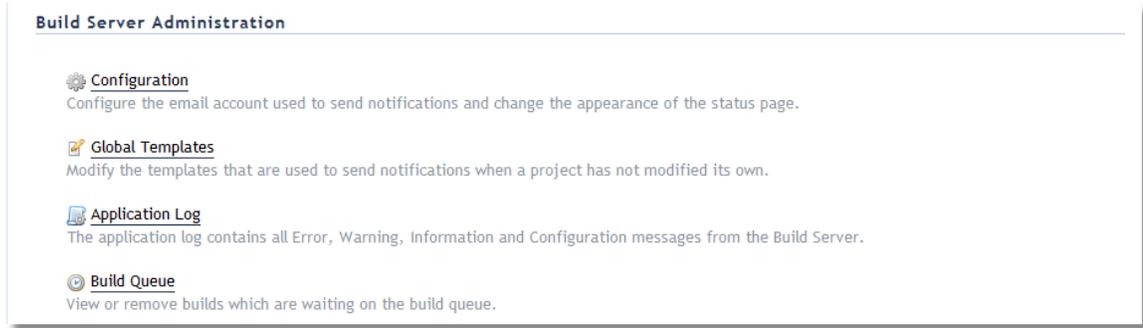


Check for Updates

It is recommended that you check for updates frequently to ensure you are running the latest official builds of FinalBuilder Server. This feature reads an XML file from the VSoft Technologies web server and does not transfer any personal information. An internet connection is required on the build server for this to work.

1.4.1 Build Server Configuration

Each FinalBuilder Server build server has a number of settings that apply to only the current build server. Some of these settings include SMTP (for notifications), appearance, global templates and global project settings.



1.4.1.1 Configuring a Mail Server

FinalBuilder Server requires that an outgoing mail server is configured so that build notifications can be sent.

Configuration

Mail Server

Email Address:
The address used when sending emails

Server:
The name of the SMTP server used to send emails

Port:
The port number the SMTP server uses.

Enable SSL
Uses Secure Socket Layer (SSL) to encrypt the connection to the mail server.

Username:
Username used to authenticate with the mail server. Leave blank if authentication is not required

Password:

Email Address

This is the email address that FinalBuilder Server uses to send notifications to users. You can specify just an email address or you may wish to include a name as well e.g. 'Build Machine <build@finalbuilder.com>'.

Server

The address of the SMTP server to use to send notifications from FinalBuilder Server.

Username and Password

If the SMTP server requires authentication, then you can provide the credentials here. Talk to your system administrator if you are unsure how to configure the SMTP server settings.

1.4.1.2 Web Site Appearance

FinalBuilder Server allows you to append custom HTML to the top of the status page as well as include a custom logo in the title bar.

Web Site Appearance

Message:
The message displayed on the Status page. (HTML is allowed)

Logo:
The logo image will be displayed on all pages on the bar next to the help button. Image height should be no greater than 28px.
The image must be located in the Logos directory in the web site's images directory.

Default View:
The view that anonymous users will use by default.

Message

This is the text that will be displayed at the top of the status page. A message can be useful to identify the build server if you are using more than one, or as a general notification to users.

Logo

An image that is displayed at the top of every page next to the help button. You must place the image in the 'Images/Logos' directory, located in the FinalBuilder Server web site installation folder (e.g. C:\InetPub\FBServer6\Images\Logos). It's recommended that the logo be a maximum of 28 pixels high (the width is not so important as there is a lot of horizontal space).

Default View

The default view that users will see. Detailed shows details about each build. List shows a summary.

1.4.1.3 Global Project Settings

Global project settings allow you to configure a default user account which the builds will run under as well as the maximum number of concurrent builds.

Global Project Settings

Security: Hide Build Log and History from anonymous users.

Impersonation Username:
This is the default windows user account which is used to run the project under.

Impersonation Password: Click to Set Password

Concurrent Build Limit:
The maximum number of concurrent builds that can be run on this build server (0 for no maximum).

Impersonation Username

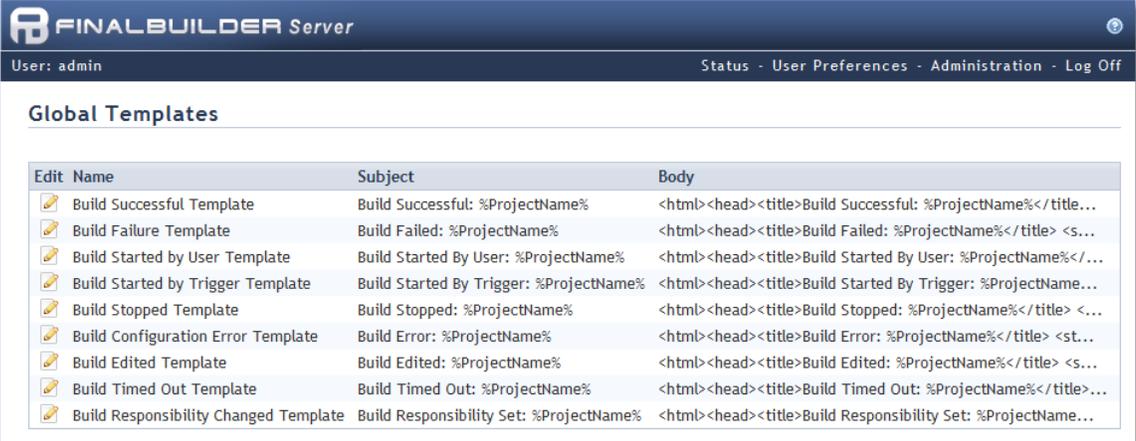
The username of the Windows user account that all projects by default will run under. You can specify a domain user as either 'domain\user' or 'user@domain'. You can override this setting on a project by project basis on the Edit Project page.

Concurrent Builds

This is the maximum number of builds that will be allowed to run simultaneously on the current build server. If the maximum number of builds has already been reached then the pending builds will continue to wait on the builds queue. Be aware that if a user decides to bypass the build queue when starting a project this option has no effect.

1.4.1.4 Global Templates

FinalBuilder Server allows you to customize the templates that are used when sending build notifications. When you have not changed the default template for a project, FinalBuilder Server will fall back to using the global templates.



Edit	Name	Subject	Body
	Build Successful Template	Build Successful: %ProjectName%	<html><head><title>Build Successful: %ProjectName%</title>...
	Build Failure Template	Build Failed: %ProjectName%	<html><head><title>Build Failed: %ProjectName%</title> <s...
	Build Started by User Template	Build Started By User: %ProjectName%	<html><head><title>Build Started By User: %ProjectName%</...>
	Build Started by Trigger Template	Build Started By Trigger: %ProjectName%	<html><head><title>Build Started By Trigger: %ProjectName%...
	Build Stopped Template	Build Stopped: %ProjectName%	<html><head><title>Build Stopped: %ProjectName%</title> <...>
	Build Configuration Error Template	Build Error: %ProjectName%	<html><head><title>Build Error: %ProjectName%</title> <st...
	Build Edited Template	Build Edited: %ProjectName%	<html><head><title>Build Edited: %ProjectName%</title> <s...
	Build Timed Out Template	Build Timed Out: %ProjectName%	<html><head><title>Build Timed Out: %ProjectName%</title>...
	Build Responsibility Changed Template	Build Responsibility Set: %ProjectName%	<html><head><title>Build Responsibility Set: %ProjectName%...

Editing a template allows you to change the subject and message. Both the subject and message can contain any of the built in variables that are listed in the Built-In Variables list. Each template can have a different set of variables available.

FINALBUILDER Server
User: admin Status · User Preferences · Administration · Log Off

Edit Template

Template: Build Successful Template

Subject:
The subject of the email

Message:

```
<html><head><title>Build Successful: %ProjectName%</title>
<style>body { font-family: Arial, Tahoma, Verdana; background-color: #333333;
}</style></head>
<body><div style="margin: 10px; padding: 5px; font-size: 24px; font-weight: bold;
color: white;">FinalBuilder <span style="color: #BB0000;">Server</span></div><div
style="background-color: White; margin: 10px; padding: 20px;">
Hi %RecipientName%,<br />
<br />
The project '%ProjectName%' that was started by '%StartedBy%' has <span style="color:
Green; font-weight: bold;">successfully</span> completed.
<br />
<br />
Started at: %StartTime%<br />
Finished at: %EndTime%<br />
<br />
Total Time: <b>%ElapsedTime%</b>
<br />
<hr /><div style="text-align: center; font-style: italic; font-size: 12px;">Email sent
by FinalBuilder Server %ServerVersion%</div>
</div></body></html>
```


The message body of the email

Built-In Variables

Expression	Description
%ProjectName%	The name of the project
%ProjectDescription%	The description of the project
%ProjectFilename%	The path to the FinalBuilder project file
%StartTime%	The time the current build was started
%EndTime%	The time the current build finished
%ElapsedTime%	The total time taken to complete the build
%StartedBy%	The name of the user or trigger that started the build
%ServerVersion%	The version of the FinalBuilder Server currently installed
%RecipientName%	The name of the person who the notification is being sent to
%RecipientLogonId%	The logon ID of the person who the notification is being sent to
%RecipientEmail%	The email address of the person who the notification is being sent to

Subject - the subject of the email that will be sent to subscribers of the notification

Message - enter either an html formatted or plain text message. If the <html> tag is detected, then the mail will be sent formatted as html.

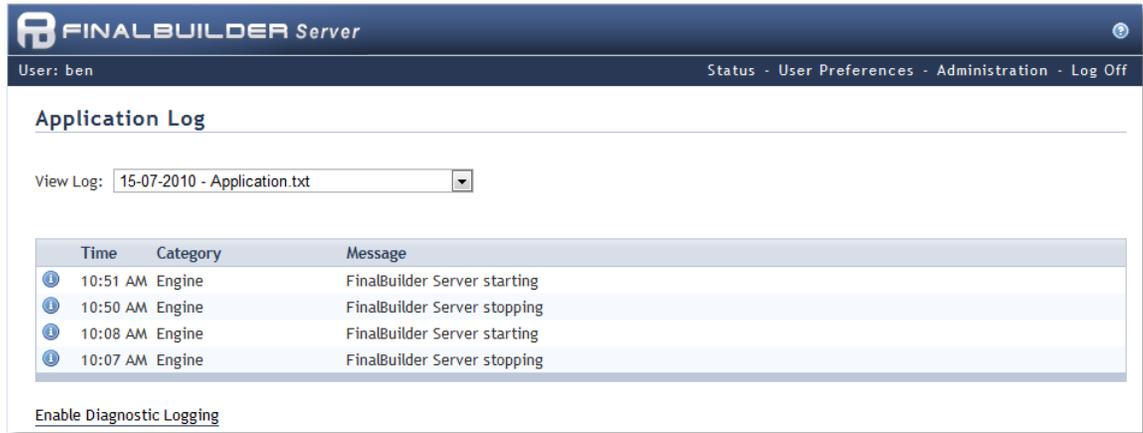
Built-In Variables - a list of the available variables that can be used in both the subject and message. Please note that the variables available vary with each template, for example the **Build Failure Template** defines a %FailureReason% variable.

Reset - the reset button will revert to the default template.

1.4.1.5 Application Log

The application log contains a record of any errors and warnings, as well as other important information that might be useful for tracking down the cause of a problem with the build server. Application logs are persisted to disk and can be found at C:

\ProgramData\VSoft\FBServer7\Logging\Application



View Log

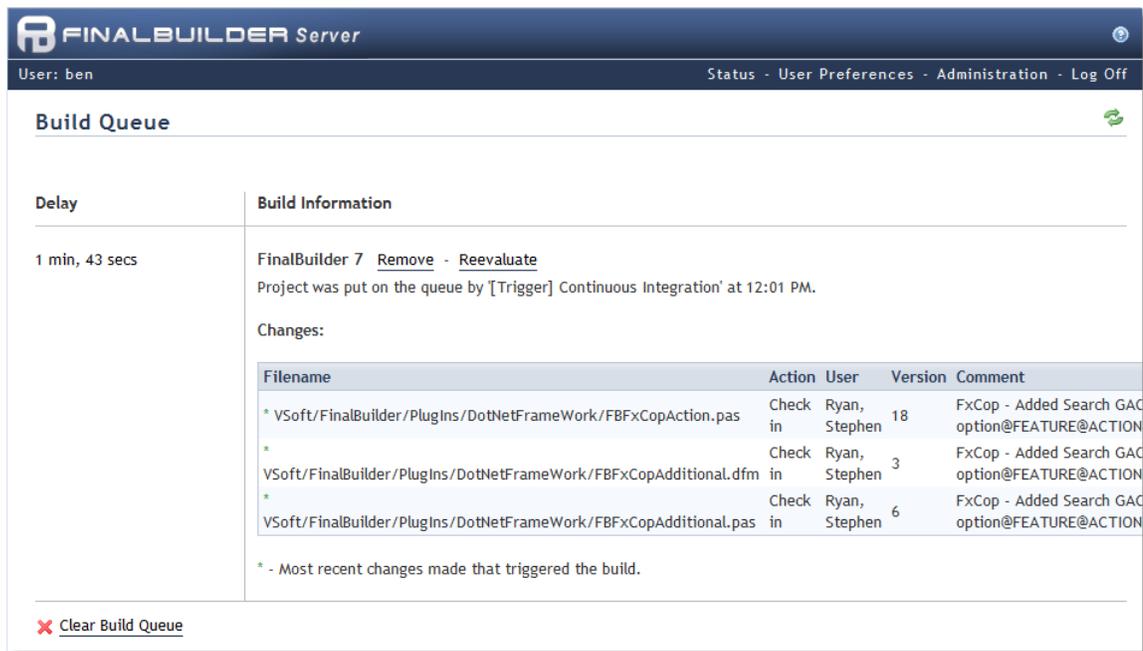
Choose which log file to view. One log file is created per day.

Enable Diagnostic Logging

Vastly increases the level of logging. Enable this option to help with troubleshooting.

1.4.1.6 Build Queue

FinalBuilder Server runs an internal build queue that is used to control when builds are started. The build queue page allows you to visualize the current state of the queue, as well as removing and re-evaluating build queue items. More in-depth information can be found in the topic Understanding the Build Queue.



Delay

Each build reports how long it will be delayed until FinalBuilder Server attempts to start the build again. Once the delay has reached zero minutes and zero seconds, FinalBuilder Server will re-evaluate all the build conditions currently active on the project and check to see whether the maximum number of concurrent builds has not been reached.

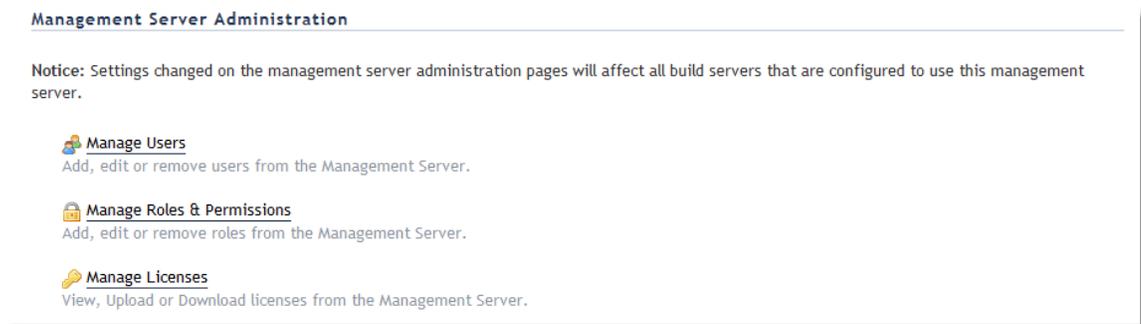
Reevaluating a Build

When a build is on the build queue and the delay has not reached zero, you may decide to force FinalBuilder Server to reevaluate the build queue item, this has the same affect as the delay reaching zero (conditions are evaluated, and the build will start if all conditions have been met).

To completely and immediately remove this build from the queue, use the **Remove** link.

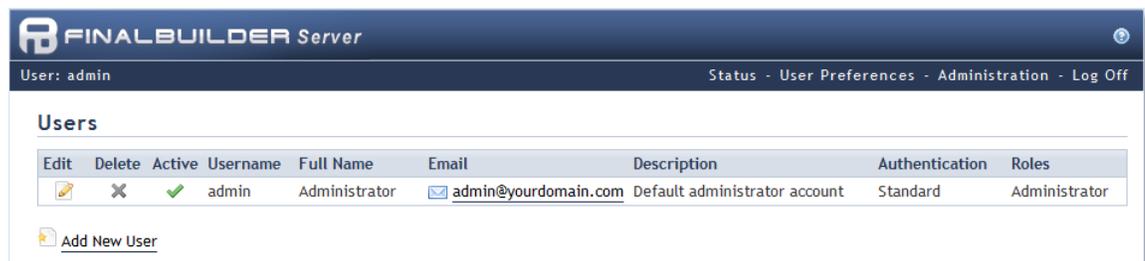
1.4.2 Management Server Configuration

The **Management Server Administration** settings are specific to the management server that the current build server is connected to. When you have multiple build servers connected to a single management service, all builds servers will be affected by any settings that are changed.



1.4.2.1 Managing Users

FinalBuilder Server has support for authenticating users against Active Directory or using its built-in authentication system.



Notes:

- You can only have active the same number of users as you have licenses for.
- Users and user licenses are shared between all build servers that are connected to the same management service. You do not need additional licenses for the same

user on each build server (as long as all build servers are connected to the one management server).

- The email, phone and description is shown when you hover over a users name when it is displayed on the FinalBuilder Server web interface.
- You may mix and match authentication schemes - you can have some users use Active Directory authentication and some users use the built-in authentication system.
- The current usage of user licenses is shown as the bottom note.

1.4.2.1.1 Adding a new Standard User

When adding new standard users you must provide a password which will be used to authenticate the user when they attempt to login.

FINALBUILDER Server
User: admin Status - User Preferences - Administration - Log Off

Add User

Authentication: The authentication method used to authenticate the user

Username:

Name: The full name of the user

Email Address: Automatic emails will be sent to this address

Description: A description of the user account.

Phone Number:

Is Active:

Password:

Confirm password:

Roles:

Edit	Delete	Role	Servers
		Standard	(All Servers)

[Assign A New Role To User](#)

Authentication

To add a new user using the built-in authentication scheme, choose Standard. To add a user using Active Directory as the authentication scheme, see Adding a new Active Directory User.

Username

The username will be used by the user when they attempt to login.

Name

The full name of user which will be used by the server when sending notifications and listing the user on relevant pages.

Email Address

The user's email address which will be used when sending notifications, as well as being displayed on the Manage Users page.

Description

The description can be used to display a note about the user on the Manage Users page.

Phone Number

A phone number that can be used to contact the user. This information is also only shown on the Manage Users page.

Is Active

When a user is not active they cannot login, or receive notifications. You can still configure the user to receive notifications, they just will not be sent until they are made active. It is advisable to deactivate users and add new users instead of renaming users as this will effect the build history. Only Active users will use up licenses.

Password

The password used to authenticate the user when they attempt to login.

Roles

Lists the roles that the user has on the specified servers. For more information on editing Roles, see Managing Roles & Permissions.

1.4.2.1.2 Adding a new Active Directory User

When adding a new Active Directory user, FinalBuilder Server will attempt to retrieve the Name, Email, Description and Phone Number from Active Directory.

FINALBUILDER Server
User: admin Status · User Preferences · Administration · Log Off

Add User

Authentication: The authentication method used to authenticate the user

Domain: The domain used to authenticate the user

Username:

Name: The full name of the user

Email Address: Automatic emails will be sent to this address

Description: A description of the user account.

Phone Number:

Is Active:

Roles:

Edit	Delete	Role	Servers
		Standard	(All Servers)

[Assign A New Role To User](#)

Authentication

To add a new user using Active Directory as the authentication scheme, choose Active Directory. To add a user using the built-in authentication scheme, see Adding a new Standard User.

Domain

This is the F.Q.D.N. of the server which will be used to authenticate the user. This field is automatically populated by FinalBuilder Server.

Username

This is the Active Directory username of the user account to use. This field is automatically populated by FinalBuilder Server. When the user logs in they need to use their Active Directory password in the password field.

Description

The description can be used to display a note about the user on the Manage Users page.

Phone Number

A phone number that can be used to contact the user. This information is also only shown on the Manage Users page.

Is Active

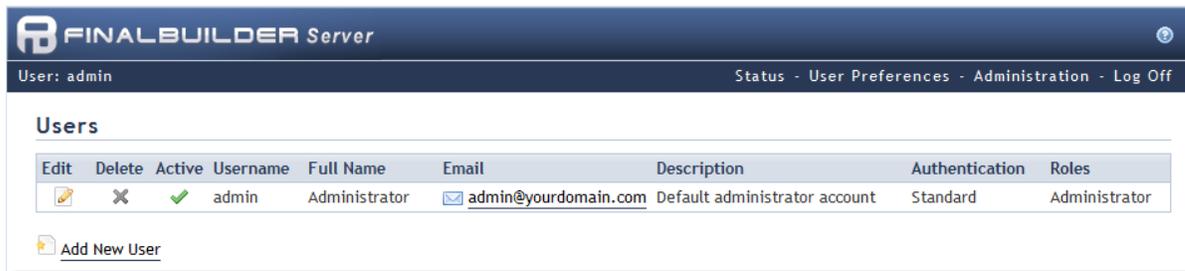
When a user is not active they cannot login, or receive notifications. You can still configure the user to receive notifications, they just will not be sent until they are made active. Only Active users will use up licenses.

Roles

Lists the roles that the user has on the specified servers. For more information on editing Roles, see Managing Roles & Permissions.

1.4.2.1.3 Editing Existing Users

You can change a users account information by clicking the edit icon for the relevant user on the manage users page.

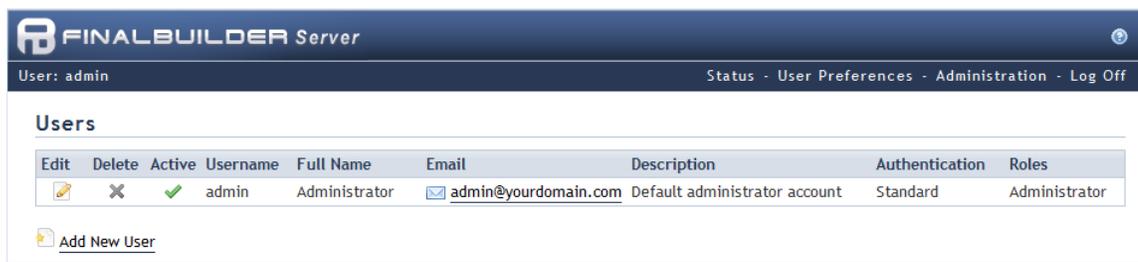


Note:

- You can change the authentication method used when you edit the user.
- When using the standard authentication method you can reset the user's password by click Set Password.

1.4.2.1.4 Deleting Existing Users

If you no longer require a user to be configured in the server then they can be removed from server by clicking on the delete icon for the relevant user. If its possible that this user will be added again in the future, consider marking the user as inactive as this will preserve the record of the user in the Build History. Only Active users will use up licenses.



Note:

- At least one user must exist with full administrator rights on the current build server.
- You can not delete the user that you are currently logged in as.

1.4.2.2 Managing Roles & Permissions

FinalBuilder Server allows you to restrict a users access or functionality to certain areas by the means of roles and permissions.



The **Administrator** role is read-only. It cannot be renamed, modified or deleted. There must be one user assigned to the Administrator role at all times.

The **Standard** role is added by default during installation, but it may be deleted, renamed or modified.

A user should be assigned at least one role and may have multiple roles. If a user doesn't have any role assigned, they won't have permission to perform the vast majority of functions.

If a role is marked as "Default", then it will be added automatically to any new users defined (it can be easily removed if not required though).

The permissions that roles grant are **additive** - that is, if a user has more than one role assigned, then they have permission to perform any action that is allowed by either or both of the roles. You cannot "ungrant" or "disallow" a permission from a role, you'll need to create an alternative role that doesn't grant that permission and make sure that the other roles the user is assigned also don't grant that permission.

1.4.2.2.1 Permissions Overview

User access to parts of FinalBuilder Server can be restricted by the use of permissions. Each user is assigned one or more roles which define the permissions that the user will have. Below is a list of all permissions, grouped by subject.

Interact with Projects

- Starting projects
- Stopping projects
- Setting a user to be responsible for a failed project
- Taking responsibility for a failed project
- Clearing the entire build queue
- Removing single items from the build queue
- Suspending projects
- Resuming suspended projects

Manage Projects & Project Files

- Creating new projects
- Removing existing projects
- Modifying existing projects

- Uploading new project files to the build server
- Downloading existing project files from the build server
- Removing existing project files from the build server
- Configure the project level access for users on a project

Manage Variables

- Define which variables are to set when a project starts
- Remove a variable from being set when a project starts
- Modify previously defined variables.

Manage Notifications

- Set which users are to be notified and change what users are to be notified on
- Remove users from being notified
- Change which users are to be notified or change what users are to be notified on
- Change the notification templates that are sent to users

Manage Project Triggers and Conditions

- Create new project triggers
- Remove existing project triggers
- Modify existing project triggers
- Create new build conditions
- Remove existing conditions applied to a project
- Modify existing conditions

Manage Users

- Create new users on the management server
- Delete users from the management server
- Modify existing users on the management server

Manage Roles

- Create new roles that can assigned to users
- Delete existing roles
- Modify existing roles, including the permissions which are allowed with the role
- Assign roles to users

Manage Licenses

- View the licenses that have been uploaded to the management server
- Remove previously uploaded licenses from the management server
- Download licenses from management server
- Remove a build server from being licensed on the management server

Manage Configuration

- Configure the Smtplib server that the build server will use to send notifications
- Change the appearance of the build server's status page, including the custom message text and the custom logo
- Change the default project settings that all projects can use, such as the default impersonation username and password and the maximum number of concurrent builds
- Alter the global notification templates, which are used when a project has not yet customized its own templates
- Viewing or clearing the application log

1.4.2.2.2 Adding a new Role

When creating new security roles you need to consider which permissions to allow for users who have this role. When a user has more than one role, each role will be queried when the user attempts to access a secured page, and the user will only be allowed access if at least one of the roles has the required permission enabled.

The screenshot shows the 'Add Role' configuration page in the FinalBuilder Server interface. The page header includes the FinalBuilder Server logo and navigation links: 'User: admin', 'Status', 'User Preferences', 'Administration', and 'Log Off'. The main content area is titled 'Add Role' and contains the following fields:

- Name:** A text input field with a placeholder. Below it, a note states: 'The role name must be unique'.
- Description:** A large text area for entering a description.
- Default:** A checkbox labeled 'Default' with the text 'Default roles will automatically be added to new users.' below it.
- Permissions:** A table with columns for 'Permissions', 'Allow', and 'Disallow'. The 'Allow' and 'Disallow' columns contain radio buttons.

Permissions	Allow	Disallow
Interact with Projects	<input type="radio"/>	<input checked="" type="radio"/>
Start Projects	<input type="radio"/>	<input checked="" type="radio"/>
Stop Projects	<input type="radio"/>	<input checked="" type="radio"/>
Set User Responsible For Failed Project	<input type="radio"/>	<input checked="" type="radio"/>
Take Responsibility For Failed Project	<input type="radio"/>	<input checked="" type="radio"/>
Clear Build Queue	<input type="radio"/>	<input checked="" type="radio"/>
Remove Build Queue Items	<input type="radio"/>	<input checked="" type="radio"/>
Suspend Projects	<input type="radio"/>	<input checked="" type="radio"/>
Resume Suspended Projects	<input type="radio"/>	<input checked="" type="radio"/>

Name

The name of the role, which must be unique to all other roles defined on the management server.

Description

A brief note which can be used to describe who the role should apply to or what access a user will have when they have this role.

Default

When a role is set to be a default role, it will automatically be selected when you create

new users. Setting this value does not have any affect on existing users.

Permissions

These are the permissions that the user will be granted if they have the role is applied to them. You can toggle all radio buttons in a group by clicking on the 'Allow' or 'Disallow' headings. Please note that permissions are additive, so that if a user has multiple roles then they will be allowed to perform any action that is allowed in any of the roles.

1.4.2.2.3 Assigning Roles to Users

You can assign roles to a user when they are created or by editing an existing user. When assigning role to a user you must decide whether you want the user to have this role on all build servers connected to the current management server, or just on the selected build servers.



The screenshot shows the 'Add New Role For User' dialog box in the FinalBuilder Server web interface. The interface has a dark blue header with the 'FINALBUILDER Server' logo and the text 'User: admin' on the left, and 'Status - User Preferences - Administration - Log Off' on the right. The dialog box is titled 'Add New Role For User' and contains the following elements:

- Role:** A dropdown menu with the text '(Choose A Role)'.
- Apply To Servers:** Two radio button options:
 - User has this role on all build servers
 - User has this role on these build servers:
 - lancer (Current Build Server)
 - Other Build Servers (one per line):** A text input field.
- Instructions:** A note below the text input field: 'To apply this role to build servers which are not currently registered, type the name of the server above.'
- Buttons:** 'Save' and 'Cancel' buttons at the bottom.

Role

Select the role which you wish to assign to the current user. You can only select roles which have not already been assigned to this user.

Apply to Servers

Choose whether this role should be assigned to this user on all builds servers or just on the ones selected. The build servers which have already been connected to the current management server will be listed, if the server is not listed then you can type the host name of machine which is hosting the build service.

1.4.2.3 Managing Licenses

FinalBuilder Server will allow a single user (including the the default admin user) to log in until one or more valid user licenses have been uploaded to the management server.



Uploading a License

You can upload a license file to the management server by browsing to the file and clicking upload. This will add all the licenses contained in the license file to the management server.

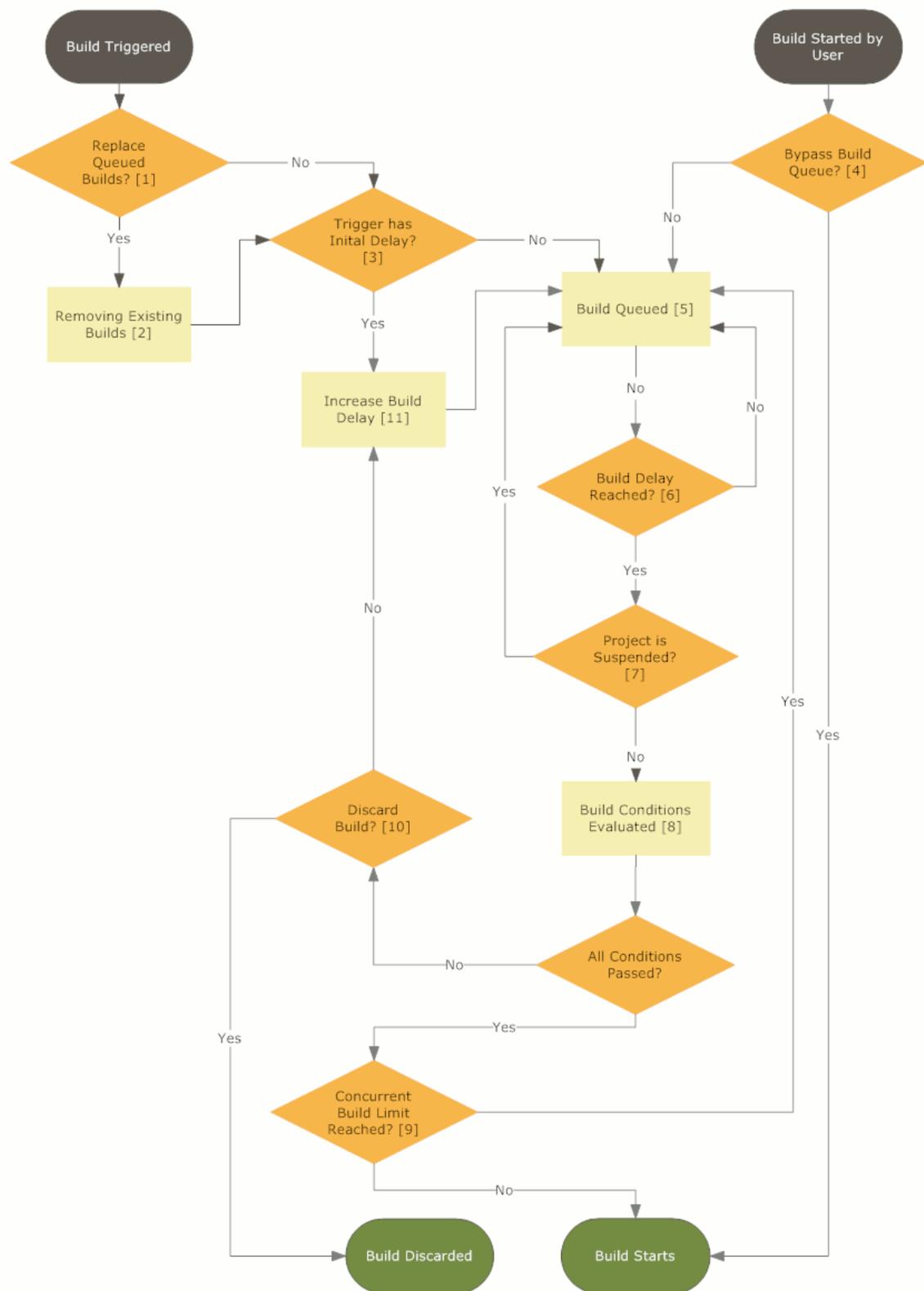
To view the current usage of user licences, you can view this information on the Users page.

1.5 Advanced Topics

1.5.1 Understanding the Build Queue

FinalBuilder Server runs an internal build queue to control when a build starts running, when a build should be re-queued and when a build should not be started at all.

The following flowchart illustrates the logic used to determine this process:



1. Replace Queued Builds

When configuring a trigger, you can decide whether you want to replace any existing builds of the same project that are currently on the build queue. This feature allows you to make sure that a trigger does not queue multiple builds up for the same project.

2. Remove Existing Builds

All builds that are for the same project as the one being started are removed from the build queue.

3. Trigger has Initial Delay

When configuring a source control trigger, you can specify a 'Quiet Period' that will force the build to start with an initial delay. This has the benefit of allowing you to check-in multiple files within in the specific time span without triggering a build for each check-in. If the build is already on the queue and the trigger triggers the build again, the delay will be reset to the value of the initial delay.

4. Bypass Build Queue

Occasionally a user will need to start a build instantly, without requiring that all conditions are met and without checking to make sure the maximum number of concurrent builds are running. When this happens the entire build queuing process is avoided and the build is started immediately (as long as its not already running). The user is prompted for this option whenever a build is started manually.

5. Build Queued

At this stage, the build is placed on the queue and will continue to wait there until the build delay has been reached.

6. Build Delay Reached

Each build on the queue has a value to indicate how long it should wait on the build queue before FinalBuilder Server attempts to start it. When the delay has been reached, the project is checked to see if it currently suspended then the build conditions are evaluated.

7. Project is Suspended

Users may decide that a project should not be started regardless of any builds conditions, this may be because they are working on the FinalBuilder project file or they are working on the machine hosting the build server. While a project is suspended it will continue to wait on the build queue until the suspension is removed or expires.

8. Build Conditions Evaluated

Each project can define a set of conditions which are tested each time the build queue attempts to start the project. Each of the conditions defined specifies whether the build should be discarded or whether it should be re-queued and how long it should be re-queued for. The build queue will test all conditions currently active on the project and for each condition that has not been met, will choose the condition that has the most impact on the build. Conditions that force the build to be discarded are considered to have the most impact on the build, and the rest are sorted by the length of the time the build delay will be increased.

9. Concurrent Build Limit Reached

A build server can specify the maximum number of concurrent builds that can be running at any one time on the configuration page. The maximum number of concurrent builds is not checked until after the conditions have been evaluated so that builds may still be discarded from the queue, which can help to free up the build server in the future.

10. Discard Builds

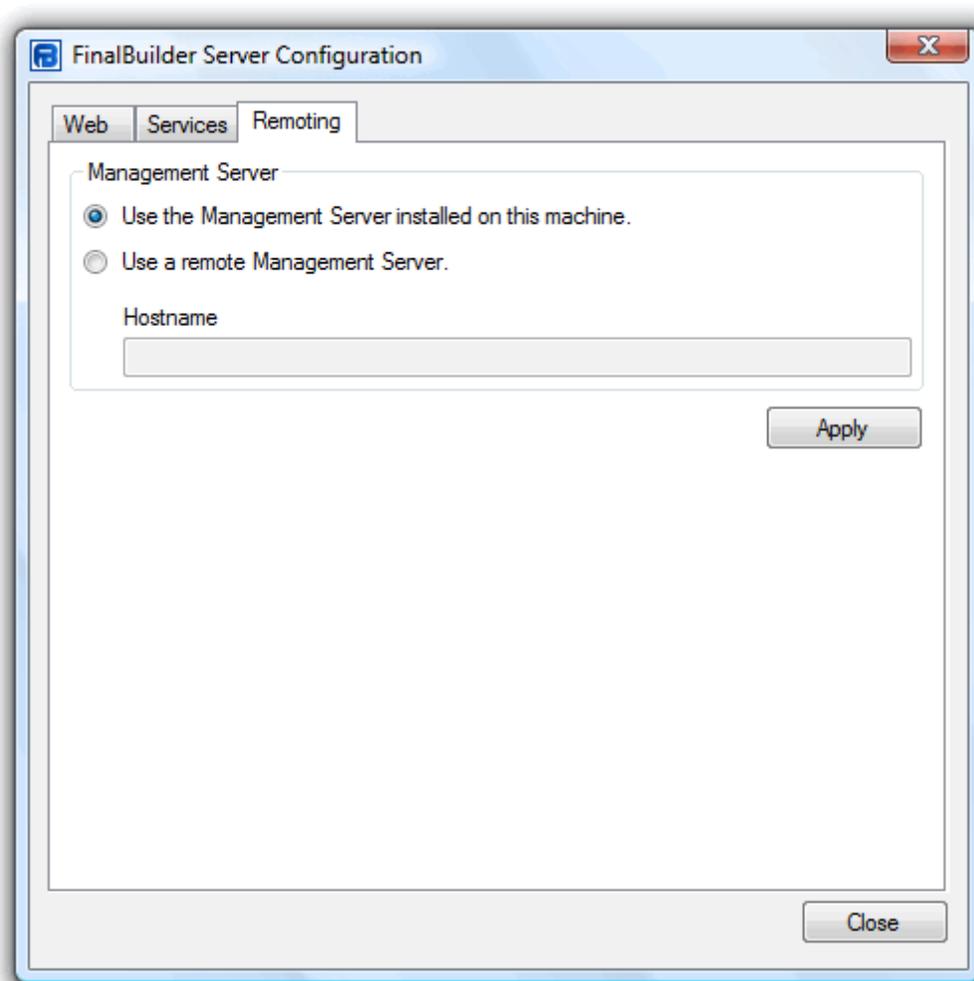
When a build condition is configured to discard the build and the condition is not met, the build will be removed from the queue.

11. Increase Build Delay

When a build condition is configured to queue a build when the condition is not met it will be re-queued onto the build queue and the delay adjusted according to what has been set on the condition.

1.5.2 Configuring Multiple Build Servers

When you have more than a single build machine you may wish to use a central management server to manage the users, security, licensing and user profiles between all the build servers.



Notes

- The machine which hosts the management service will need to be online and must

be able to accept incoming connections from the machine which hosts the build service for the build server to be operable.

- When multiple build servers share a single management service, only a single user license is required for each user across all builds servers.

1.5.3 Web Service API

FinalBuilder Server exposes a web service which can be used to programmatically control builds.

The URL to the web service is *[build_machine]/Services/FinalBuilderServer.asmx*, where *[build_machine]* is the URL to machine hosting FinalBuilder Server, including the virtual directory if applicable.

There are currently 8 operations which are supported:

Authenticate

Authenticates the specified username and password and returns an authentication token (GUID String) which can be passed into other web service operations.

Parameters:

Username - *string*

Password - *string*

Returns:

Authentication Token - *string*

Create User

Creates a new standard user on the build machine with the specified parameters.

Parameters:

Authentication Token - *string*

Username - *string*

Password - *string*

Name - *string*

Email - *string*

Roles - *array of string*

Get Project Names

Gets the names of all projects on the server which the authenticated user has access to.

Parameters:

Authentication Token - *string*

Returns:

Project Names - *array of string*

Get Project Status

Gets the current status of the specified project.

Parameters:

Authentication Token - *string*
Project Name - *string*

Returns:

Project Status - *ProjectStatus* [*NeverRun, Running, Failure, Success, ConfigurationError, Stopping, Terminating, Terminated, Suspended*]

Get Project Trigger Log

Gets the trigger log of the specified project.

Parameters:

Authentication Token - *string*
Project Name - *string*

Returns:

Trigger Log - array of *string*

Start Project

Adds the specified project to the build queue.

Parameters:

Authentication Token - *string*
Project Name - *string*

Start Project With Variables

Adds the project to the build queue with the variable values specified. Variables to be specified in format '*VariableName=VariableValue*'

Parameters:

Authentication Token - *string*
Project Name - *string*
Variables - array of *String*

Stop Project

Stops the specified project if it is currently running.

Parameters:

Authentication Token - *string*
Project Name - *string*

User Exists

Checks whether the specified user exists.

Parameters:

Username - *string*

Returns:

Result - *boolean*

1.5.3.1 C# Example

Generating the Proxy Class

Included as part of the .Net Framework tools is the Web Services Description Language Tool (Wsdll.exe). Using Wsdll.exe, you can create a C# proxy class which can be used to communicate with the FinalBuilder Server web services.

Usage:

```
wsdll.exe /n:[namespace] /o:[output_file] [build_machine]/Services/FinalBuilderServer.asmx?wsdl
```

Substituting the following:

[namespace] - The namespace that the generated source file should have.
[output_file] - The location where you want the source file to be generated.
[build_machine] - The URL to machine hosting FinalBuilder Server, including the virtual directory if applicable.

For example:

```
wsdll.exe /n:"VSoft" /o:"C:\Proxy.cs" http://MyBuildVM/Services/FinalBuilderServer.asmx?wsdl
```

Using the Generated Proxy Class

You will need to add the proxy class to your C# project and include a reference to 'System.Web.Services'.

```
using System;
using VSoft;

namespace WebService.Sample
{
    public class Program
    {
        public static void Main(string[] args)
        {
            // Instantiate the FinalBuilder Server Proxy Class.
            FinalBuilderServer server = new FinalBuilderServer();

            // Authenticate the user.
            string authToken = server.Authenticate("paul", "my_password");

            // Get the list of all projects configured on this build server.
            string[] projectNames = server.GetProjectNames(authToken);

            foreach (string projectName in projectNames)
            {
                // Get the status of the project
                ProjectStatus status = server.GetProjectStatus(authToken, projectName);
                Console.WriteLine("Project '{0}' state is currently '{1}'.", projectName, status);

                // Get the trigger log of the project
                string[] log = server.GetProjectTriggerLog(authToken, projectName);
                Console.WriteLine("Project '{0}' Trigger Log:", projectName);
            }
        }
    }
}
```

```
        foreach (string line in log)
        {
            Console.WriteLine(line);
        }
    }

    Console.ReadLine();
}
}
```

1.5.3.2 VB.NET Example

Generating the Proxy Class

Included as part of the .Net Framework tools is the Web Services Description Language Tool (Wsdll.exe). Using Wsdll.exe, you can create a VB.NET proxy class which can be used to communicate with the FinalBuilder Server web services.

Usage:

```
wsdll.exe /n:[namespace] /o:[output_file] /l:VB [build_machine]/Services/
FinalBuilderServer.asmx?wsdl
```

Substituting the following:

[namespace] - The namespace that the generated source file should have.
[output_file] - The location where you want the source file to be generated.
[build_machine] - The URL to machine hosting FinalBuilder Server, including the virtual directory if applicable.

For example:

```
wsdll.exe /n:"VSoft" /o:"C:\Proxy.vb" /l:VB http://MyBuildVM/Services/
FinalBuilderServer.asmx?wsdl
```

Using the Generated Proxy Class

You will need to add the proxy class to your VB.NET project and include a reference to 'System.Web.Services'.

```
Imports System
Imports WebService.Sample.VBNet.VSoft
```

```
Namespace WebService.Sample
    Public Class Program
        Public Shared Sub Main(ByVal args As String())
            ' Instantiate the FinalBuilder Server Proxy Class.
            Dim server As New FinalBuilderServer

            ' Authenticate the user.
            Dim authToken As String = server.Authenticate("paul", "my_password")

            ' Get the list of all projects configured on this build server.
            Dim projectNames As String() = server.GetProjectNames(authToken)

            For Each projectName As String In projectNames
                ' Get the status of the project
            End For
        End Sub
    End Class
End Namespace
```

```
Dim status As ProjectStatus = server.GetProjectStatus(authToken, projectName)
Console.WriteLine("Project '{0}' state is currently '{1}'.", projectName, status)

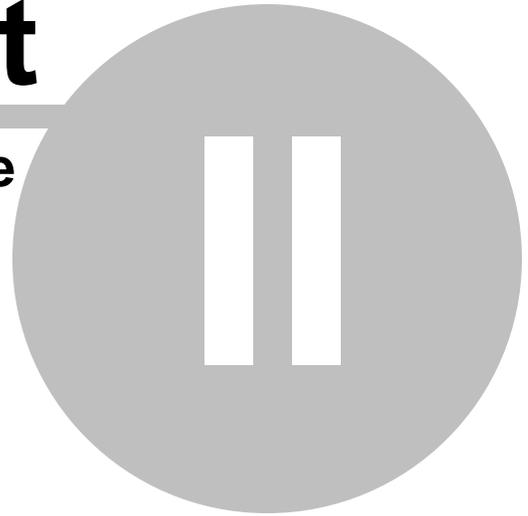
' Get the trigger log of the project
Dim log As String() = server.GetProjectTriggerLog(authToken, projectName)
Console.WriteLine("Project '{0}' Trigger Log:", projectName)

For Each line As String In log
    Console.WriteLine(line)
Next

Console.ReadLine()
End Sub
End Class
End Namespace
```

Part

Triggers Reference



2 Triggers Reference

What are Triggers?

Triggers can be used to start a project based upon an event. For example, the Time Trigger will start a project when the current time passes the specified time.

How to add a Trigger to a Project?

A trigger can be added to a project navigating to the 'Edit Project' page. The 'Edit Project' page is accessible by clicking 'Edit' on the project, on the 'Server Overview' page.

Triggers & Conditions						
Triggers:						
		Type	Active	Name	Last Triggered	Description
		Subversion Trigger		Continuous Integration	4/02/2008 1:47:35 PM	Monitor "svn://localhost/NUnit"
 Add Trigger						
Conditions:						
 Add Condition						

Clicking on the 'Add Trigger' link will navigate to the 'Add Trigger' page where the new trigger can be configured.

Select the Type of the new trigger by using the "Trigger Type" combo box.

When the Trigger Type changes, the bottom part of the Add Trigger page will reload and show the options for the new trigger type. Please note that once a trigger is defined (saved), then you can't change the trigger type.

2.1 Trigger Types

FinalBuilder Server supports a variety of ways to trigger a build.

The screenshot shows the 'Add Trigger' configuration page in the FinalBuilder Server interface. The page has a dark blue header with the 'FINALBUILDER Server' logo and navigation links: 'User: admin', 'Test Project', 'Status - User Preferences - Administration - Log Off', 'View Log - View History - View Build Metrics - Edit Project'. The main content area is white and contains the following fields:

- Trigger Name:** A text input field with a placeholder. Below it, the text reads: 'The name you want to call this trigger'.
- Description:** A large text area. Below it, the text reads: 'The description of the trigger. Leave blank to see an automatically generated description.'
- Trigger Type:** A dropdown menu currently set to 'Time Trigger'. Below it, the text reads: 'Choose the type of trigger. You cannot change the type of an existing trigger.'
- Active:** A checked checkbox. Below it, the text reads: 'Is the trigger active.'
- Reset Trigger:** An unchecked checkbox labeled 'Reset last triggered time'. Below it, the text reads: 'Last Triggered: Never'.
- Queuing Behaviour:** A dropdown menu currently set to 'Append'. Below it, the text reads: 'Determines how pending builds are handled by the build queue for this trigger.' This is followed by three lines of explanatory text: 'Append: New builds started by this trigger will be added to the queue without removing any pending builds.', 'Replace: Any pending builds started by this trigger are removed from the queue before the new build is added.', and 'Replace All: All pending builds that belong to this project will be removed from the queue before adding the new build.'
- Comparison Time Offset:** A text input field containing '0' followed by the label 'minutes'. Below it, the text reads: 'The number of minutes used to offset the comparison time used by the triggers.'
- Set Project Variables:** A button with a plus sign icon. Below it, the text reads: 'Add the new trigger before choosing project variables to set'.

Version Control Triggers

Triggers that interface with a version control system to trigger builds when a source control item is checked in. These triggers are typically used to setup FinalBuilder Server to perform continuous integration.

File-Based Triggers

Triggers that watch or interact with a file on the local file system and trigger a build based on some pre-determined conditions.

Time Triggers

Time triggers allow you to schedule a build at certain dates or times.

Run Process

The Run Process trigger allows you to run a process and then trigger a build based on the result of the process.

[Time Trigger](#) | [File Trigger](#) | [Run Process Trigger](#) | [Version Control Triggers](#)

2.1.1 Time Trigger

The **Time Trigger** can be configured to trigger a build Daily, Weekly, Monthly, Once Off or at Intervals.

Daily

Time Trigger Settings

Frequency: Daily Weekly Monthly Once Off At Intervals

How often to trigger the build.

Trigger Time: 00:00

Daily Schedule: Every Day Weekdays Every X Days

Every Day - The project will be triggered everyday.

Weekdays - The project will be triggered only on week days (Monday - Friday).

Every X Days - The project will be triggered every X days.

Weekly

Time Trigger Settings

Frequency: Daily Weekly Monthly Once Off At Intervals

How often to trigger the build.

Trigger Time: 00:00

Run every: weeks

Run on these days:

- Sunday
- Monday
- Tuesday
- Wednesday
- Thursday
- Friday
- Saturday

The project will be triggered every X weeks, on the selected days.

Monthly

Time Trigger Settings

Frequency: Daily Weekly Monthly Once Off At Intervals

How often to trigger the build.

Trigger Time: 00:00

Run on day: 1 of the month.

Run on the: First Sunday of the month

The trigger can be configured so that the project will run either on a set day of the month, or on a set position in the month (for example, 'Second Sunday of the month').

Once Off

Time Trigger Settings

Frequency: Daily Weekly Monthly Once Off At Intervals

How often to trigger the build.

Trigger Time: 00 : 00

Trigger Date:

February 2008						
Mo	Tu	We	Th	Fr	Sa	Su
28	29	30	31	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	1	2
3	4	5	6	7	8	9

The trigger can be configured so that it will only run once, on the specified date.

At Intervals

Time Trigger Settings

Frequency: Daily Weekly Monthly Once Off At Intervals

How often to trigger the build.

Run Every: Minutes

Except when: When the time is between: -

When the day is:

Monday

Tuesday

Wednesday

Thursday

Friday

Saturday

Sunday

The trigger can be configured to run every X minutes, hours, days or weeks. The trigger can also be configured not run between certain times and on certain days.

2.1.2 File Trigger

The **File Trigger** allows you to start a build when a file or directory is Changed, Created, Deleted or Renamed.

Monitor: File Spec

The file spec of the file(s) to monitor. For example: 'C:*.log'

Directory

The path to the directory to monitor.

Monitor Sub-Directories

Trigger When:

Changed

Created

Deleted

Renamed

Monitor File Spec

Configures the File Trigger to monitor the specified file(s) and trigger when they have changed.

Monitor Directory

Configures the File Trigger to monitor a directory (and optionally its subdirectories) and start a build when a change occurs.

Trigger When Changed

Triggers a build when changes are made to the size, system attributes, last write time, last access time or security permissions of a file or directory.

Trigger When Created

Triggers a build when a file or directory is created.

Trigger When Deleted

Triggers a build when a file or directory is deleted.

Trigger When Renamed

Triggers a build when a file or directory is renamed.

2.1.3 Run Process Trigger

The Run Process Trigger allows you to launch any Windows process and trigger a build based on what happens.

Triggering can be based on any of three things:

- Process output
- The process exit code
- Files modified while the process is running

Example

The example given below uses GNU WGet (for Windows) to monitor a remote URL and trigger the build if the file changes.

The URL we will monitor is the trial download of FinalBuilder. Any time it changes, we want to trigger a build.

Process To Run	
Process Name:	<input type="text" value="C:\Tools\unix\wget.exe"/> <small>The full path to the executable on the server.</small>
Working Directory:	<input type="text" value="C:\Temp"/> <small>Leave blank to use a default working directory.</small>
Arguments:	<input type="text" value="-N http://www.finalbuilder.com/Downloads/FinalBuilder/Trial/"/> <small>Command line arguments.</small>
Verbose Logging	<input type="checkbox"/> Log details to the Project Trigger Log

Process Name

The name of the process to run. This time we didn't actually need to put the full path here, because 'wget.exe' is on the system PATH of the server computer.

Working Directory

The directory to run the process in. In this case, this will be the directory that the remote URL is download to.

Arguments

The command line argument, '-N', tells WGet not to download the file unless it is newer than the version on disk.

Verbose Logging

Specifies that the Project Trigger Log will be filled with all the output from the executable each time it runs, as well as some extra information on trigger matching. This option produces a lot of log output, but it can be useful when setting up the trigger.

Trigger On Process Output	
	<input checked="" type="checkbox"/> Trigger on process output
Process Output:	<input type="text" value="Server file no newer then local file"/> <small>The trigger will search the command output for this string.</small>
	<input type="radio"/> Trigger if the string is found <input checked="" type="radio"/> Trigger if the string is not found
	<input type="checkbox"/> Match as Regular Expression

Process Output

Searches the output of the program that is executed and matches the text specified. You can choose whether to trigger the build when the text is found or when the text is not found. In the example, we search the output of WGet to find the text 'Server file no newer then local file' and trigger the build if the string is not found.

Trigger On Process Exit Code	
	<input checked="" type="checkbox"/> Trigger on exit code
Exit Code(s):	<input type="text"/> <small>Specify exit codes as</small>
	<ul style="list-style-type: none">• Individual numbers• Ranges of numbers (ie 0-8)• Open ended ranges (ie 0-)• Lists of numbers (ie 1,2,3)

Exit Code

Compares the exit code returned by the process run against the specified value(s). In this example, we do not require that the exit code be tested.

Tip: Process exit codes can be quite unpredictable. It's recommended that you use one of the other trigger methods when possible.



It is not necessary to have 'Trigger On Files Changes' *as well as* 'Trigger on Process Output'. They're both enabled just for the sake of the example.

Monitor File Path

FinalBuilder Server will monitor the downloaded file and trigger whenever it changes. Alternatively, you could specify the entire C:\Temp directory in order to trigger whenever any file in the directory changes.

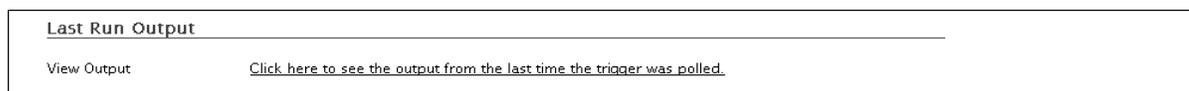
Note: The trigger can't actually tell whether the files change because of the process running, or for some other reason. It's best if you use a 'sandbox' directory where you can control what processes make changes.

Feedback

There are two main ways to get feedback from the Run Process Trigger.

The first is to use the 'Verbose Logging' option and look at the process output in the Project Trigger Log.

The second is to go to the Edit Trigger page after the trigger has run, and click on the link to Show Last Output:



Once clicked, the section expands to look like this:

Last Run Output

```
--11:19:26--
http://www.finalbuilder.com/Downloads/FinalBuilder/Trial/FinalBuilderSEvalSetup.exe
=> 'FinalBuilderSEvalSetup.exe'
Resolving www.finalbuilder.com... 206.123.112.58
Connecting to www.finalbuilder.com[206.123.112.58]:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 35,294,688 (34M) [application/octet-stream]
Server file no newer than local file 'FinalBuilderSEvalSetup.exe' -- not retrieving.

Process terminated with exit code: 0
```

This is the output from the last time the trigger was polled. [Click here to hide](#)

Note: This output does not refresh until you reload the entire page in your browser.

If the process has been running for more than one minute, you will be given the option to Terminate it. See the Trigger Errors topic for details.

2.1.4 Script Based Triggers

Script Based Triggers allow you to use a Python or PowerShell script to determine if a build will be triggered.

Scripting Options

Scripting Language

Iron Python Install Directory
The directory where IronPython is installed. Required if you want to use non-core modules.

Script
The script to be executed. To cause a build to be triggered, call `Context.SetTriggered()` or `$context.SetTriggered()`

Language

The language you wish to use for the script. Currently Python and PowerShell are supported.

Iron Python Install Directory

Optional: the directory where Iron Python is installed. Specifying this location allows you to import any of the modules shipped with IronPython.

Script

The script to execute. In order for a build to be triggered, either `Context.SetTriggered()` or `$context.SetTriggered()` must be called. See below.

The Context object

An object is made available to both languages that allows you to interact with the build server. In Python, it is exposed as a module called Context, which you do **not** need to import. In PowerShell, it is exposed as a variable called \$context.

Context methods

- SetTriggered(): This is the most important method of the Context object. Calling this method means that the build will be queued
- AddTriggerOutputMessage(message): The string parameter passed to this method is logged in the build queue. Use this to provide information about the circumstances triggered the build
- AddFileModificationItem(name, action, user, comment, type, version): Adds information about a file that was involved in the build triggering. This is logged and also passed to FinalBuilder, for use in the Trigger Files Iterator action
- ExecuteProgram(filename, workingDirectory, arguments): This method runs an executable *under the context of user set to run the build*. It returns an ExecutionResult object
- ComparisonDateTime: a DateTime property used to indicate when the trigger was last triggered, or when the last build started (which ever is more recent). It is useful when, for example, you are checking against a version control system and only want to find changes since the last build.

Context.py stub

A stub IronPython module has been provided to allow you to test scripts without needing to run them on the build server. This can be found in the <FinalBuilder Server Install Dir>\Examples.

Example.py

A simple IronPython script demonstrating how to use the Context module. This can be found in the <FinalBuilder Server Install Dir>\Examples.

2.1.4.1 Python Example

This is an example IronPython script that can be tested outside of FinalBuilder Server using the Context.py stub (see Script Based Triggers).

```
import Context

#copy from here

from System import DateTime

def TriggerTest():
    app = 'cmd.exe'
    wd = r'C:\Windows\System32'

    if Context.ComparisonDateTime < DateTime.Now.AddMinutes(-30):
        result = Context.ExecuteProgram(app, wd, '/c "echo hi"')
        if result.ExitCode == 0:
            Context.SetTriggered()
            Context.AddTriggerOutputMessage('%s successful, build will be
triggered' % app)
        else:
```

```
        print 'Build will not be triggered'
        print '%s failed with return code %d: %s ' % (app, result.
ExitCode, result.Stderr)
    else:
        print 'Build has been run in the last 30 minutes - not running'

TriggerTest()

#copy to here

print Context.Output()
```

Things to note:

- Only the code between the copy from/copy to comments would be copied to the Trigger script
- You can import modules, such as time. To do this you will need to specify the install directory of Iron Python
- you can use `sys.path.append()` to add any other directories from which you would like to import modules
- 'print' statements from the last run will appear under the Script area of the trigger

2.1.4.2 PowerShell Example

Triggering a build with PowerShell is as simple as:

```
$context.SetTriggered()
$context.AddTriggerOutputMessage("Triggered by PowerShell!")
```

To test your script before adding it to the trigger, you can load the Trigger and TriggerExecutionContext objects from FinalBuilderServer.Build.dll:

```
[reflection.assembly]::LoadFile("FinalBuilder Server Install Dir>\FinalBuilderServer.Build.dll")
$trigger = new-object VSoftTechnologies.FinalBuilderServer.Triggers.ScriptBasedTrigger
$context = new-object VSoftTechnologies.FinalBuilderServer.Triggers.TriggerExecutionContext($t
```

2.1.5 Version Control Triggers

Version control triggers allow a project to be started whenever a check-in is performed on a source control repository (otherwise known as continuous integration).

FINALBUILDER Server

User: admin Status - User Preferences - Administration - Log Off
 Test Project View Log - View History - View Build Metrics - Edit Project

Add Trigger

Trigger Name:
 The name you want to call this trigger

Description:
 The description of the trigger. Leave blank to see an automatically generated description.

Trigger Type:
 Choose the type of trigger. You cannot change the type of an existing trigger.

Active:
 Is the trigger active.

Reset Trigger: Reset last triggered time
 Last Triggered: Never

Queuing Behaviour:
 Determines how pending builds are handled by the build queue for this trigger.
 Append: New builds started by this trigger will be added to the queue without removing any pending builds.
 Replace: Any pending builds started by this trigger are removed from the queue before the new build is added.
 Replace All: All pending builds that belong to this project will be removed from the queue before adding the new build.

Comparison Time Offset: minutes
 The number of minutes used to offset the comparison time used by the triggers.

Set Project Variables: Add the new trigger before choosing project variables to set

Queuing Behaviour

Changes how the build queue handles multiple pending builds of the same project on the build queue.

Quiet Period

The quiet period is the number of minutes a build will wait on the build queue before it starts.

Tips

Using version control triggers to trigger builds when files are checked into source control can cause the build server to have a project continuously running, as each time a file is checked into source control, the build is added to the build queue. FinalBuilder Server allows you to prevent this by setting the Queuing Behaviour to Replace or Replace All and setting a 'Quiet Period'.

2.1.5.1 Accurev Trigger

The Accurev Trigger allows you to monitor a Accurev Depot for changes, and trigger builds whenever new changes are checked in.

General information on creating triggers can be found under the Triggers Reference topic.

Depot to Monitor

Depot:

Specify Depot

The name of the depot to monitor.

Optionally, the name of the stream to monitor.

Use Depot associated with Workspace

The path to the workspace on the host machine.

You can choose to have the Accurev trigger monitor a specific depot and optionally a stream in that depot, or you can configure the trigger to monitor the depot associated with a local workspace.

Additional Tasks

Update Update workspace on trigger

Sync Time Synchronise time between client and server.

The Accurev trigger allows you to automatically update the local workspace when the build is triggered, you can only use this option when you have specified to use the depot associated with a depot.

You can also force the client and server times to be kept in sync by enabling 'Synchronise time between client and server', when this option is enabled the Accurev trigger will execute the 'synctime' Accurev command before checking for changes.

Accurev Server Options

Accurev Path

Path to the Accurev executable (accurev.exe).

Authentication

Use Accurev Login (Requires Accurev 4.5 or above)

Username used to login to the Accurev server.

Password used to authenticate the user.

Use Traditional Authentication Method

The Accurev trigger will attempt to locate the accurev.exe executable by looking through the windows registry. If the path is not found, you will need to provide the path to the accurev.exe executable.

Depending on which version of Accurev that you are using, you can either choose to explicitly login prior to checking for updates by using the 'Use Accurev Login', otherwise the Accurev trigger will use the credentials associated with the user who the FinalBuilder Server project is set to run under.

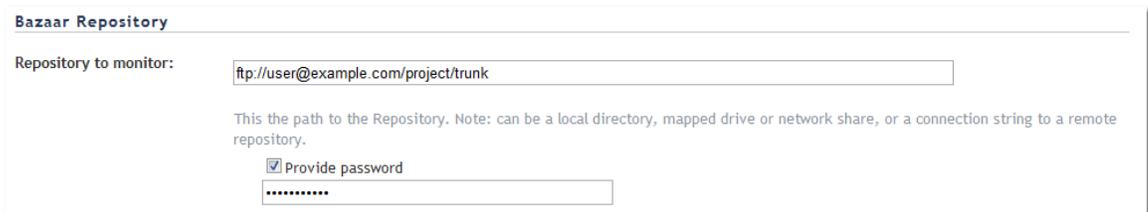
2.1.5.2 Bazaar Trigger

The Bazaar Trigger allows you to monitor a Bazaar Repository for changes. A build is triggered when a commit occurs on the repository being monitored or when changes are pushed and updated into the repository being monitored. The monitored repository may be either a local repository or a remote repository. Using the Update on Trigger option, a local branch or checkout of a remote repository can be updated when the trigger is triggered.

General information on creating triggers can be found under the Triggers Reference topic.

When adding a Mercurial trigger you are required to supply the following details:

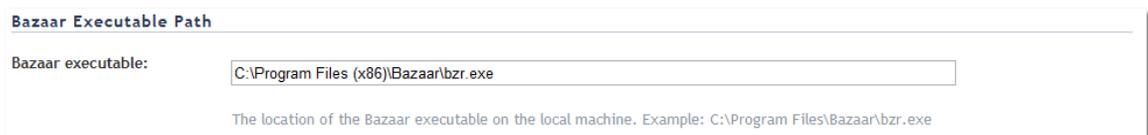
Repository to monitor - This is the location of the Bazaar repository that you want to monitor for changes. This can be a local repository (local directory, mapped drive or network share) or a remote repository (using a URL as specified in this reference).



The screenshot shows a configuration form titled "Bazaar Repository". It contains a text input field for "Repository to monitor:" with the value "ftp://user@example.com/project/trunk". Below this is a note: "This the path to the Repository. Note: can be a local directory, mapped drive or network share, or a connection string to a remote repository." There is a checked checkbox labeled "Provide password" and a corresponding password input field with masked characters "*****".

- **Provide Password** - If using a remote connection string, use this option to provide a password, as opposed to having it stored as plain text as part of the string.

Bazaar executable - This is the location of the Bazaar executable file on the local machine.



The screenshot shows a configuration form titled "Bazaar Executable Path". It contains a text input field for "Bazaar executable:" with the value "C:\Program Files (x86)\Bazaar\bzr.exe". Below this is a note: "The location of the Bazaar executable on the local machine. Example: C:\Program Files\Bazaar\bzr.exe".

Bazaar Trigger Options

Bazaar Trigger Options

Update on Trigger Update on Trigger
Ensure the working directory of the local repository matches the current changeset by performing a pull when the build is triggered.

Local Repository to Update

The local repository to update from the monitored repository.

- **Update on Trigger** - Perform an update on a local repository when the build is triggered to ensure that the working directory is up to date. If checked, the trigger will perform a "pull" action going from the monitored repository to the specified local repository.

Exclude Files From Monitoring

See Excluding Files From Source Control Monitoring

2.1.5.3 CVS Trigger

The CVS Trigger allows you to monitor a CVS source control repository for changes, and trigger builds whenever new changes are checked in. The CVS Trigger is designed to be used with the CVSNT version of CVS, although it should work with other CVS command line clients.

General information on creating triggers can be found under the Triggers Reference topic.

The CVS trigger supports the following options:

CVS Module By Root

Select by CVS Root and Module:

CVSRoot:

Module:
Specify a full CVSROOT path and a module name.

Branch:
Branch name is optional.

CVS Module By Working Folder

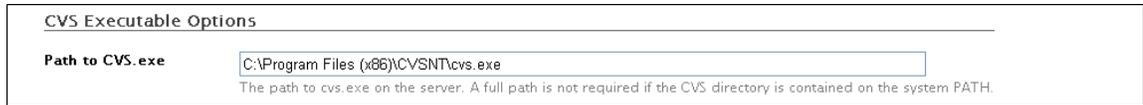
Select by working folder:

Working Folder:
Specify the path to a CVS working folder which is already set up on the server.
Note that if "select by working folder" is enabled, CVSRoot/Module/Branch will be ignored.

You can choose to select the CVS Module to monitor, *either* by the CVSRoot and Module path, or via the Working Folder. Only one option needs to be filled in.

To select via CVS Root, specify the CVSRoot (including the protocol) and the module name, and optionally a branch. If the connection requires a login, then it must be specified in the CVSRoot string. Alternatively, log in to CVS via the CVSNT client and then map a local working folder, and then use the CVS Module by Working Folder option.

To select via working folder, map a working folder on the server and then enter the full path to the folder. If this option is selected, the CVSRoot/Module/Branch settings are ignored.



CVS Executable Options

Path to CVS.exe

The path to cvs.exe on the server. A full path is not required if the CVS directory is contained on the system PATH.

Path to the CVS.exe executable. This path should be automatically detected if CVSNT is installed.

Exclude Files From Monitoring

See Excluding Files From Source Control Monitoring.

2.1.5.4 Excluding Files from Source Control Monitoring

All of the version control trigger types include an option to exclude files from triggering the build.

This option can be useful when there are files which are changed in source control as part of the build process (eg. version information), or when there are files in the source control repository which should not trigger the build process (eg. internal documentation files.)

The Exclusion options are available at the bottom of the Add Trigger/Edit Trigger page for each Version Control trigger type:



Exclude Files From Monitoring

Exclude Files

Version.ini

Specify file or path names, placing each file or path on a separate line.
Use * to match any part of a file or directory name, ** to match any part of a path name.

[Show Examples](#)

Verbose Logging Verbose logging of file matches
Log entries can be viewed in the Project Trigger Log, on the project Build History page.

In the above example, the trigger is set to exclude the 'Version.ini' file. Adding 'Build/Installer/' as an extra line would also exclude all files in the Build/Installer repository from triggering builds.

Click the 'Show Examples' link on the page to see a quick list of example patterns.

Special Characters

The following special characters can be used to match files:

Character	Meaning
*	Matches any part of a file name, but not path delimiters / or \.
**	Matches anything, including path delimiters.
?	Matches any single character, apart from path delimiters / or \.
/ and \	Path delimiters, are considered identical and can be used interchangeably.
;	Separates multiple Exclude Files patterns.

Tips

- Exclude Files entries are matched on either the file name, or the full path name.
- Use ** at the beginning or end of the path name to match any parent or subdirectory combinations.
- The files which are matched are returned as source control repository paths, with the particular format being determined by the source control server.
- Path delimiters / and \ are considered identical (ie forward slashes will match back slashes, and vice versa.)

Verbose Logging

Enable this option in order to make it easier to debug and monitor File Exclude matches.

When this option is enabled, the Project Trigger Log will record the names of any modified files, and whether or not any were excluded from triggering the build.

2.1.5.5 Git Trigger

The Git Trigger type allows you to monitor a Git source control repository and automatically start builds when changes are committed.

General information on creating triggers can be found under the Triggers Reference topic.

The Git Trigger Type contains the following options:

Repository to Monitor	
Repository location:	<input type="text"/>
<small>The path of the repository to monitor. This must be on a local or mapped drive.</small>	

Git only allows actions to be performed on a local repository, so you must specify a repository that is in a local or mapped network drive.

Git Configuration

Git install location:
The directory path where Git is installed, eg C:\Program Files\Git\

Long version number:
By default the abbreviated commit hash is shown. Tick to show the full commit hash.

Update from remote repository:
Update the monitored repository from a remote repository before checking for changes.

Remote repository:
Full connection string for the remote repository.

Remote branch:
The remote branch to 'pull' from.

The Git executable location is the directory where Git is installed. Note, this is the directory that **contains** the bin directory, not the bin directory itself.

The Git trigger uses the commit hash as the version number. By default, the abbreviated commit hash is used. The Long version number option allows you to instead use the full commit hash.

Monitoring a remote repository

Git does not allow the 'log' command to be run on remote repositories, so they cannot be monitored directly. The easiest solution is to map a network drive to the server that contains the repository. If that is not possible you can create a local clone of the remote repository on the server where FinalBuilder Server resides.

The Git trigger can update this local clone from a remote repository before checking for changes, ensuring the trigger is working on the most recent version of the repository.

To do this, tick the "Update from remote repository" checkbox, specify the remote repository location and the branch to pull from. The repository location can be any valid Git URL, for example:

- i:\data\git\TestProj
- git@github.com:<username>/TestProj.git
- git://github.com/<username>/TestProj.git
- http://github.com/<username>/TestProj.git

All that is required is that the user FinalBuilder Server is running as has read access to the repository.

Using SSH

If you have a private Git repository you can authenticate via SSH. To set this up:

- log into the FinalBuilder Server host server as the user that FinalBuilder Server runs as
- Use ssh-keygen to create an SSH key pair **without** a password. The keys will be created in %USERPROFILE%/.ssh/
- Add the generated public key to the remote Git server
- Test that you can pull from the remote repository via the git command line tools

NB Because FinalBuilder Server is non-interactive, you **cannot** password protect the private key.

Exclude Files From Monitoring

See Excluding Files From Source Control Monitoring.

2.1.5.6 Mercurial Trigger

The Mercurial Trigger allows you to monitor a Mercurial Repository for changes. A build is triggered when a commit occurs on the repository being monitored or when changes are pushed and updated into the repository being monitored. By making use of the Remote Repository Monitoring options you can specify a remote repository to monitor, if a change is detected, the local repository will be updated to match before checking the local repository for changes.

General information on creating triggers can be found under the Triggers Reference topic.

When adding a Mercurial trigger you are required to supply the following details:

Repository to monitor - This is the location of the Mercurial repository that you want to monitor for changes. This must be a local repository (local directory, mapped drive or network share).

Mercurial Repository

Repository to monitor:

The Mercurial repository to monitor. Note: must be local directory, mapped drive or network share.

Mercurial executable - This is the location of the Mercurial executable file on the local machine.

Mercurial Executable Path

Mercurial executable:

The location of the Mercurial executable on the local machine. Example: 'C:\Program Files\Mercurial\hg.exe'

Mercurial Trigger Options

Mercurial Trigger Options

Update on Trigger **Update on Trigger**
Ensure the working directory of the local repository matches the current changeset by performing an update when the build is triggered.

Remote Repository Monitoring **Update local repository from remote repository before checking for changes**
Pull from a remote repository to local repository before checking for changes.

Remote Repository Connection String

Example: ssh://example.com/user/repository or https://user@example.com/user/repository Note: Using ssh will require ssh keys to be configured through Putty/Pageant.

Provide HTTPS password

Use this option when using HTTPS protocol to access a remote repository that requires authentication.
Note: The password field will appear blank when editing an existing trigger. To keep the existing password leave the field blank, otherwise provide a value to overwrite the existing password. When creating a new trigger a password value must be provided if using this option.

Remote Branch to Monitor

The name of the remote branch to monitor and update from.

Use Force Option
This option will force the update to occur even if the remote repository and local repository are unrelated.

Update on Trigger

- **Update on Trigger** - This perform an update on the local repository when the build is triggered to ensure that the working directory is up to date.

Remote Repository Monitoring

- **Update local repository from remote repository before checking for changes** - Enabling this option, will enable the fields below so that you can specify the details of the repository you wish to monitor.
- **Remote Repository Connection String** - Provide the connection string of the remote repository that you want to monitor. This can be in any of the following formats:
 - `http://example.com/user/repository` - this is read only and requires no authentication.
 - `https://user@example.com/user/repository` - will generally require authentication either via *Provide HTTPS password* option (see below) or by configuring the `[auth]` section in the Mercurial.ini file to store the password for URL being used.
 - `ssh://example.com/user/repository` - using SSH will require public/private key authentication, this will need to be configured using Putty/Pageant and also require the `ssh` node to be configured under the `[ui]` section of the Mercurial.ini file.

[Click here](#) for more information about configuring the Mercurial.ini file.

- **Provide HTTPS password** - This option enables you to specify the HTTPS password to be used with a HTTPS connection string. If you specify a HTTPS connection string that requires authentication without providing a password the trigger will throw an error. An alternative to using this option is to configure the `[auth]` section of the Mercurial.ini file which will allow you to use a HTTPS connection string without being prompted for a password. *Note: As a security measure, the password field will be blank when editing an existing trigger that already has a password defined. In this case leaving the option enabled and the field blank will retain the existing password, entering a new value will override the existing password. Enabling the option and leaving the field blank when creating a new trigger will result in a validation exception.*
- **Remote Branch to Monitor** - Provide the name of a specific branch to monitor and pull changes from. Changes occurring on other branches will be ignored.
- **Use Force Option** - By default the Mercurial will not allow to pull changes from a source repository that is unrelated to the destination repository. Enabling the Force option overrides this behaviour allowing changes to be pulled from an unrelated source.

Exclude Files From Monitoring

See Excluding Files From Source Control Monitoring

2.1.5.7 Perforce Trigger

The Perforce Trigger allows you to monitor a Perforce source control repository for changes, and trigger builds whenever new changes are checked in.

General information on creating triggers can be found under the Triggers Reference topic.

The Perforce trigger supports the following options:

File Pattern To Monitor	
Pattern	<input type="text"/>
<small>Specify one or more Perforce file patterns. Typical patterns look like "//depot/Path/...". Place each pattern on its own line. Not specifying a pattern will monitor the entire server.</small>	

This is the Perforce file pattern(s) to monitor. Leave this field blank to monitor the entire Perforce server.

Perforce Options	
Server	<input type="text"/> <small>Optional. Specify the server and port as <i>server:port</i>. (Equivalent of setting the P4PORT environment variable.)</small>
Sync Latest	<input type="checkbox"/> Automatically Sync Latest when triggering <small>The Sync will use the same patterns which are used for monitoring.</small>
Client Name	<input type="text"/> <small>Optional. Specify a client name to use. (Equivalent of setting the P4CLIENT environment variable.)</small>

Specify a Perforce "Server" name to override the default Perforce server name.

Enable "Sync Latest" if you would like to get the latest source to a working directory before building. The working directory to use will be determined based on the client.

Specify a "Client Name" to override the default Perforce client name.

Optionally, specify credentials for the Perforce server.

Perforce Executable p4.exe	
Path to p4.exe	<input type="text" value="C:\Program Files (x86)\Perforce\p4.exe"/> <small>The path to p4.exe on the server.</small>

Specify the path to the p4.exe executable on the server. This path should be autodetected if Perforce is installed on the server.

Exclude Files From Monitoring

See Excluding Files From Source Control Monitoring.

2.1.5.8 Plastic SCM Trigger

The Plastic SCM Trigger allows you to monitor a workspace for changes. A build is triggered when a file is checked in to the repository that the monitored workspace is pointing to.

General information on creating triggers can be found under the Triggers Reference topic.

When adding a Plastic SCM Trigger the following details are required:

Plastic SCM Workspace

Workspace to monitor - Provide the location of Plastic SCM workspace to monitor. This workspace will need to be configured to point to a repository server where changes are being made in order to trigger a build.

Plastic SCM Client Executable

Path to client executable - Specify the location of the Plastic SCM Client Executable (cm.exe) on the local machine.

Plastic SCM Trigger Options

Branch Monitoring Options

- **Monitor all branches** - Monitor all the branches under the workspace for changes.
- **Monitor specific branch** - Only changes that occur within the specified branch will trigger a build.

Update Workspace

- **Update** - Update the local workspace from the repository if changes have been detected.
- **Force** - By default the update command will only update items that have been modified. The forced operation will create a new revision of all items regardless of whether a change has occurred or not.

Exclude Files From Monitoring

See Excluding Files From Source Control Monitoring

2.1.5.9 Subversion Trigger

The Subversion Trigger type allows you to monitor a Subversion source control repository and automatically start builds when changes are checked in.

General information on creating triggers can be found under the Triggers Reference topic.

The Subversion Trigger Type contains the following options:

Subversion Repository

Repository Path: Select by SVN URI:

The path to the repository. Typically takes the form `svn://servername/path/to/trunk`

Select by Working Folder:

The path to the working folder for the repository.

You can choose to select a repository either from it's Subversion URI path, or based on the current working directory for the repository.

You must specify at least one of these two items.

Get Latest Automatically

Get Latest: Get Latest Automatically
Enable this option to automatically get latest when triggering. You will need to have specified a working folder in the above section.

Enable this checkbox if you want to check out a current copy of the source to the specified working directory. Even if you chose "Select by SVN URI", above, then you will still need to put in a working directory if you want to use this option.

Credentials	
Username	<input type="text"/> <small>Leave blank to use default username for repository.</small>
Password	<input checked="" type="checkbox"/> Update password: <input type="text"/>

Credentials for the Subversion repository. Check "Update Password" to save the contents of the Password field.

Subversion Executable Path	
svn.exe Path	<input type="text" value="svn.exe"/> <small>Path to svn.exe. (A full path is not necessary if svn.exe is located in a directory which is part of the global PATH environment variable.)</small>

Specify the path to svn.exe. This path cannot be autodetected, so you will need to know the path to the subversion installation on your computer.

If svn.exe is located in the system path (ie you can type "svn" at a command prompt to run svn.exe) then you can just enter "svn.exe" as the path.

Exclude Files From Monitoring

See Excluding Files From Source Control Monitoring.

2.1.5.10 Surround SCM Trigger

The Surround SCM Trigger type allows you to monitor a Seapine Surround SCM source control repository and automatically start builds when changes are checked in.

General information on creating triggers can be found under the Triggers Reference topic.

The Surround SCM Trigger type supports the following options:

Repository To Monitor	
Repository:	<input checked="" type="radio"/> Select by Repository Path: <input type="text"/> <small>The path to the repository. Usually takes the form /Repository/Subrepository</small> <input type="text"/> <small>Leave branch blank for mainline, or to infer a branch from the working directory.</small>
	<input type="radio"/> Select by Working Directory: <input type="text"/> <small>The full path to the Surround working directory on the server (use a file path, not a repository name.)</small>

You can choose to select the repository to monitor either based either on the repository path and branch name, or based on the path to a working directory of that repository on the server.

You must provide at least one of these two sets of values.

Monitoring Options

Recurse Recurse child repositories
Check this box if you want to monitor subrepositories.

Get When Triggering Get Latest when triggering
Check this box to "Get Latest" when triggering. Locally modified or writeable files will not be replaced.
If this option is enabled, you will need to specify a working directory

Select "Recurse" in order to monitor all repositories and directories under the target. If this box is not checked, only the top-level repository will be monitored.

Select "Get Latest when triggering" in order to get a copy of the latest source to the working directory when the trigger runs. You will need to have specified a working directory (see above) for this to work.

Surround Server Options

Username
Leave blank to use default username & password.

Password Update Password

Server Address Port:
Leave server name blank to use the default Surround server and port.

The "Server Options" let you override the defaults for the installed version of Surround. Optionally specify a username, password, and server name.

To save the password, the "Update password" checkbox must be selected.

Surround SCM Installation

Install Directory
Path to the Surround SCM installation.

The path to the Surround SCM installation directory. This path should be automatically filled in if Surround is installed.

Exclude Files From Monitoring

See [Excluding Files From Source Control Monitoring](#).

2.1.5.11 Vault Trigger

The Vault Trigger allows you to monitor a Sourcegear Vault source control repository for changes, and trigger builds whenever new changes are checked in. The Vault Trigger requires Sourcegear Vault 4, or newer.

General information on creating triggers can be found under the [Triggers Reference](#) topic.

The Vault trigger supports the following options:

Vault Repository & Path	
Repository	<input type="text"/> The name of the repository to access.
Path	<input type="text" value="\$"/> Specify a Vault repository path. Typical paths look like \$/Folder/Folder.

Specify the name of a Vault Repository on the server (ie "Default Repository"), and a Vault repository path to monitor.

The Repository name is required, unless it has already been saved outside of FBServer by using the "Vault Rememberlogin" command.

The Path is required.

Server	
Vault Server	<input type="text"/> Vault server to connect to.
Username	<input type="text"/>
Password	<input checked="" type="checkbox"/> Update password: <input type="text"/>

Specify the name of a Vault server to connect to, and a username and password for the connection.

The Server, Username & Password are required, unless they have already been saved outside of FBServer by using the "Vault Rememberlogin" command.

The password will not be saved unless the "Update password" checkbox is checked.

Options	
Recursive	<input checked="" type="checkbox"/> Recursively monitor subdirectories
Use SSL	<input type="checkbox"/> Connect using SSL
Get Latest	<input type="checkbox"/> Get Latest when triggering <small>To use this option, a working directory for the repository & path must be defined in Vault.</small>

Select "Recursively monitor subdirectories" to monitor all directories under the target repository path.

Select "Connect using SSL" to connect to the Vault server using SSL.

Select "Get Latest when triggering" to get the latest copy of the source to the working directory defined in the Vault Client on the server.

Vault Path	
Vault.exe Path	<input type="text" value="C:\Program Files (x86)\SourceGear\Vault Client\value.exe"/>

Specify the full path to vault.exe on the server. This path should be automatically

detected if Vault is installed on the server.

Exclude Files From Monitoring

See Excluding Files From Source Control Monitoring.

2.1.5.12 Visual SourceSafe Trigger

The Visual SourceSafe Trigger allows you to monitor a Microsoft Visual SourceSafe repository and trigger builds when changes are checked in. FinalBuilder Server supports SourceSafe version 6.0 and SourceSafe 2005.

General information on creating triggers can be found under the Triggers Reference topic.

The Visual SourceSafe Trigger supports the following options:

SourceSafe Project To Monitor

Project Select by project:
Specify a VSS project path. Typical paths look like \$/Project/Repository/Path.

Working Folder Select by working folder:
Specify the path to the VSS working folder on the server.

The project to monitor can be selected in one of two ways. Selecting by project works by specifying a VSS project path.

Alternatively, specify a Working Folder which has already been defined in VSS on the server.

SourceSafe Options

Recursive Recursively monitor child projects

Get Latest Automatically Get Latest when triggering

Select "Recursive" to monitor all child projects/directories under the target project.

Select "Get Latest" to automatically get the latest copy of the source to the working folder when triggering.

Credentials

Username

Password Update password:

Specify credentials for the SourceSafe project. These parameters are required.

Changes made in the Password field will not be saved unless "Update password" is checked.

SourceSafe Executable Options	
Path to SS.exe	<input type="text" value="C:\Program Files (x86)\Microsoft Visual Studio\VSS\win32\ss.exe"/> The path to ss.exe on the server.
Override SourceSafe Database	<input type="text"/> Specify a directory path to override the default Srcsafe.ini location (aka SourceSafe Database.) This is the equivalent of setting the SSDIR environment variable.

Specify the path to the ss.exe executable on the server. This path should be automatically detected if SourceSafe is installed.

"Override SourceSafe Database" allows you to use a non-standard Srcsafe.ini file for the SourceSafe Database. Specify the directory in which the file is stored. This is the equivalent of setting the SSDIR environment variable.

Exclude Files From Monitoring

See Excluding Files From Source Control Monitoring.

Note: With VSS and Exclude Files monitoring, full repository paths are only returned when a file is checked in. For adds and deletes, only the file name is provided. This is a limitation of VSS.

2.1.5.13 Visual Studio Team System Trigger

The Visual Studio Team System Trigger allows you to monitor a Visual Studio 2005 Team Foundation Server source control repository for changes, and trigger builds whenever new changes are checked in.

General information on creating triggers can be found under the Triggers Reference topic.

The Team System Trigger supports the following options:

Source Location To Monitor	
Team Foundation Server	<input type="text"/> Can be a simple server name (ie "teamserver"), or a fully qualified URL (ie "http://teamserver.local:8080/")
Location Path	<input type="text"/> Typical source locations look like \$/ProjectName/DirectoryName

Specify the Team Foundation Server to monitor, and the project path to monitor. You can obtain the Location Path by looking at the status bar in Visual Studio Source Explorer.

Both of these parameters are required.



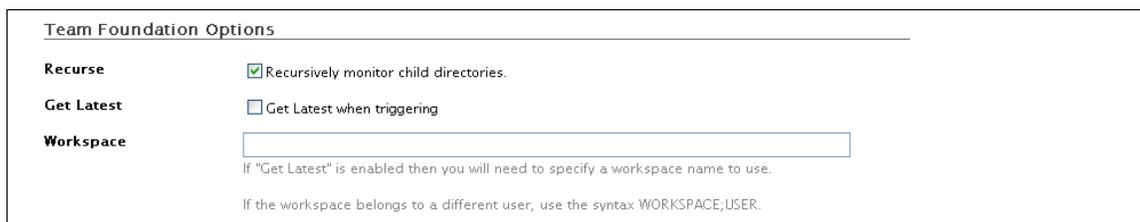
Credentials

Username

Password Update password:

Specify the username and password for the Team Foundation connection. These parameters are required.

Changes to the password will not be saved unless the "Update password" checkbox is checked.



Team Foundation Options

Recurse Recursively monitor child directories.

Get Latest Get Latest when triggering

Workspace

If "Get Latest" is enabled then you will need to specify a workspace name to use.

If the workspace belongs to a different user, use the syntax WORKSPACE;USER.

Enable "Recursively monitor child directories" to monitor project directories underneath the target path.

Enable "Get Latest" when triggering to get the latest version of the source to the working directory of a specified Workspace. You will need to specify the name of a Workspace.

You do not need to specify a Workspace name if you are not using "Get Latest."

Note that if you want to create a temporary Workspace for the build, get the source to the new Workspace, and then remove the workspace, then you can do so from inside the FinalBuilder project, by using the Team Foundation Create/Delete Workspace actions and the Team Foundation Get action.

Exclude Files From Monitoring

See Excluding Files From Source Control Monitoring.

2.2 Project Trigger Log

Each Build Project contains a Project Trigger Log which provides a history of trigger activity. Log entries are added when builds are triggered, or when triggers encounter errors.

To view the Project Trigger Log, navigate to the Build History page for the project, and then click on the Project Trigger Log tab.

Example Project Trigger Log

Project History		Project Log	
Date	Source	Message	
8/02/2008 9:59:06 AM	Trigger "Continuous Integration"	Found 1 modified files which were all excluded from the trigger. Not triggering. VSoft\FinalBuilder Server\Build\Version.ini (Excluded)	
8/02/2008 9:58:51 AM	Trigger "Continuous Integration"	Found 1 modified files which were all excluded from the trigger. Not triggering. VSoft\FinalBuilder Server\Build\Installer\FBServer6.iss (Excluded)	
8/02/2008 9:58:06 AM	Build Queue	Project has been triggered by '[Trigger] Continuous Integration'.	
8/02/2008 9:53:06 AM	Trigger "Continuous Integration"	Found 1 modified files which were all excluded from the trigger. Not triggering. VSoft\FinalBuilder Server\Build\Version.ini (Excluded)	
8/02/2008 9:52:51 AM	Trigger "Continuous Integration"	Found 1 modified files which were all excluded from the trigger. Not triggering. VSoft\FinalBuilder Server\Build\Installer\FBServer6.iss (Excluded)	
8/02/2008 9:50:49 AM	Build Queue	Project has been manually started by 'Paul Samways'.	
8/02/2008 9:50:46 AM	Trigger "Continuous Integration"	Found 1 modified files. VSoft\FinalBuilder Server\Build\Finalbuilder Server.fbz6	
8/02/2008 9:40:23 AM	Trigger "Continuous Integration"	Found 1 modified files which were all excluded from the trigger. Not triggering. VSoft\FinalBuilder Server\Build\Version.ini (Excluded)	
8/02/2008 9:39:05 AM	Trigger "Continuous Integration"	Found 1 modified files which were all excluded from the trigger. Not triggering. VSoft\FinalBuilder Server\Build\Installer\FBServer6.iss (Excluded)	
8/02/2008 9:36:37 AM	Build Queue	Project has been triggered by '[Trigger] Continuous Integration'.	
8/02/2008 9:36:29 AM	Trigger "Continuous Integration"	Found 1 modified files. VSoft\FinalBuilder Server\Build\Finalbuilder Server.fbz6	
8/02/2008 9:30:35 AM	Trigger "Continuous Integration"	Found 1 modified files which were all excluded from the trigger. Not triggering. VSoft\FinalBuilder Server\Build\Version.ini (Excluded)	
8/02/2008 9:29:16 AM	Trigger "Continuous Integration"	Found 1 modified files which were all excluded from the trigger. Not triggering. VSoft\FinalBuilder Server\Build\Installer\FBServer6.iss (Excluded)	
8/02/2008 9:24:27 AM	Build Queue	Project has been triggered by '[Trigger] Continuous Integration'.	
8/02/2008 9:14:25 AM	Trigger "Continuous Integration"	Found 1 modified files. VSoft\FinalBuilder Server\FB Server Beta List.txt	
8/02/2008 1:08:28 AM	Trigger 'Continuous Integration'	Surround failed with exit code 1 A connection to the Surround SCM server could not be established. Please verify that the Surround SCM server at address Scarecrow and port 4900 is running.	

This message has repeated 253 times since 8/02/2008 12:01 AM.

Project logs are persisted to disk and can be found in C:\ProgramData\VSoft\FBServer7\Logging\Projects

2.3 Trigger Errors

Sometimes, Triggers can fail due to error conditions.

When this happens, three things happen:

1. The error details are logged in the Project Trigger Log for the project.
2. The error details are shown on the Edit Trigger page for the action.
3. The build status and Project Edit pages are updated to notify the user that an error occurred in the trigger.

If you see that a trigger has encountered errors, edit the Trigger to see the full error message, then take action to correct the problem.

If the trigger needs to be taken offline, uncheck the "Active" box on the Trigger edit page and click Save.

If a trigger has an error, it will keep running. If the error goes away, the error details will disappear from the Edit Trigger and Build Status pages, but the error remains in the Project Trigger Log.

Hung Triggers

If a trigger runs a child process and the process runs for more than one minute, FinalBuilder Server will give you the option to terminate it.

When you load the Edit Trigger page for a long-running trigger, you will see an option like this:

Trigger Type:	<input type="text" value="Run Process Trigger"/> <small>Choose the type of trigger. You cannot change the type of an existing trigger.</small>
Hung Trigger?	This trigger has been running for over 2 minutes. It may have hung. Would you like to terminate it? <input type="button" value="Terminate Trigger"/>

Click the "Terminate Trigger" button to terminate the trigger process if you think it may have hung.

The terminated trigger will be automatically de-activated (you will need to activate it again to continue.)

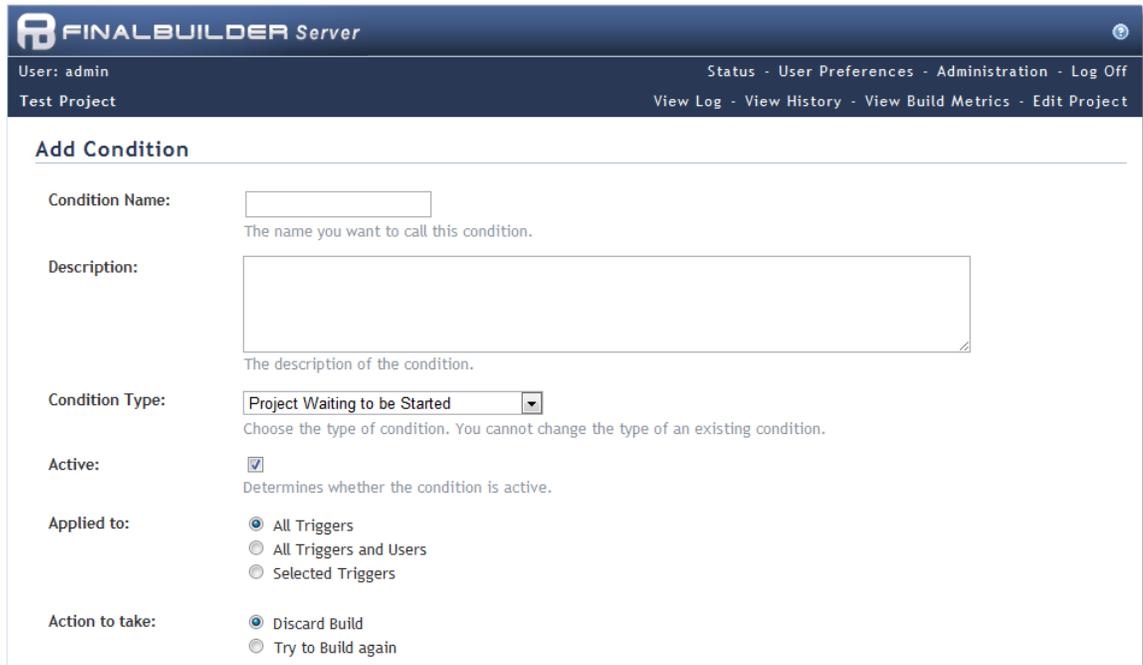
Part

Trigger Condition Reference



3 Trigger Condition Reference

Trigger conditions are used to determine whether a trigger should start the build as soon as the project is triggered or whether it should then have to pass a set of "conditions" before starting.



The screenshot shows the 'Add Condition' form in the FINALBUILDER Server interface. The form is titled 'Add Condition' and is located within a project named 'Test Project'. The user is logged in as 'admin'. The form contains the following fields and options:

- Condition Name:** A text input field with a placeholder. Below it, the text reads: "The name you want to call this condition."
- Description:** A large text area for entering a description. Below it, the text reads: "The description of the condition."
- Condition Type:** A dropdown menu currently set to "Project Waiting to be Started". Below it, the text reads: "Choose the type of condition. You cannot change the type of an existing condition."
- Active:** A checked checkbox. Below it, the text reads: "Determines whether the condition is active."
- Applied to:** Three radio button options: "All Triggers" (selected), "All Triggers and Users", and "Selected Triggers".
- Action to take:** Two radio button options: "Discard Build" (selected) and "Try to Build again".

Condition Name

The name you wish to call this condition.

Description

The description you want to give this condition. Can be used to make it clear why you have this condition set.

Condition Type

The type of condition to add to the project. Once you have added the condition, you cannot change this value.

Active

Determines whether this condition is currently active.

Applied To

A trigger condition can be applied to all triggers, meaning that when any trigger tries to start a build this condition will be evaluated. They can be applied to all triggers and users, which means that whenever a build is started this condition will be evaluated (with the exception of a user by-passing the build queue when starting the build). You can also choose to only evaluate this condition when the build was started by a specific trigger.

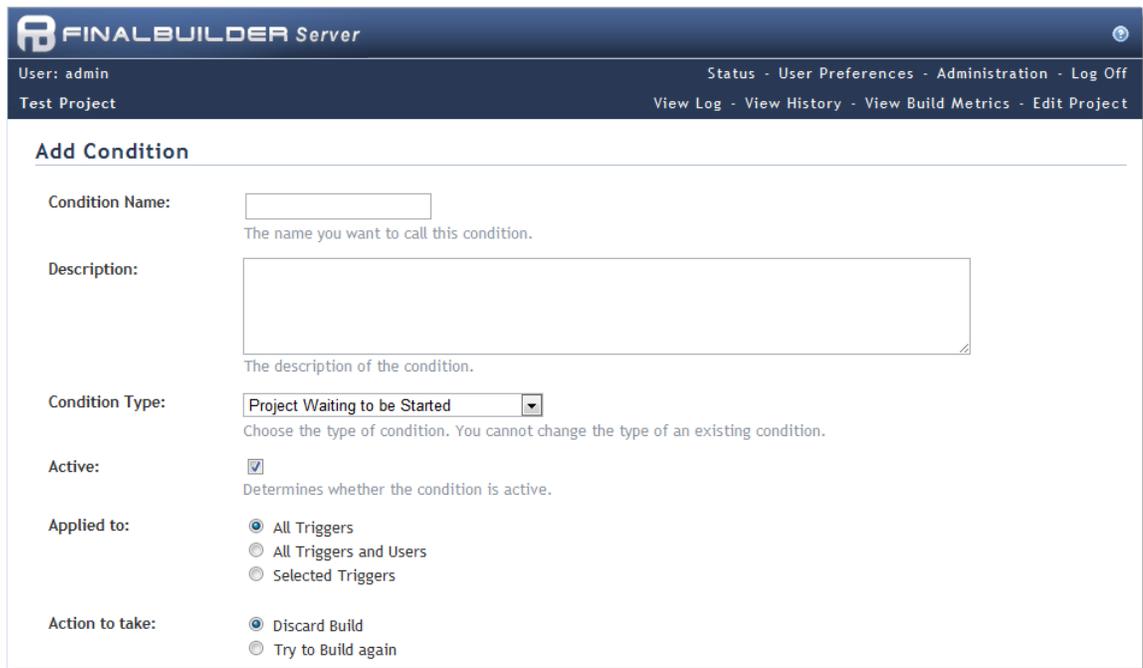
If Condition not met

This is the action the build server will take when a build is triggered and at least one of

the conditions was not met. Discarding the build will cause the build server to forget that the build was ever triggered, where as setting the server to try again will cause the build to be started at a later time. When the build is set to start at a later time, the trigger conditions are re-evaluated before the build is started.

3.1 Project Waiting to be Started

The 'Project Waiting to be Started' trigger condition will prevent a build from starting if it has previously been triggered, but has not yet started because one of its trigger conditions has not been met.



The screenshot shows the 'Add Condition' form in the FinalBuilder Server web interface. The form is titled 'Add Condition' and is located under the 'Test Project' section. The form fields are as follows:

- Condition Name:** A text input field with a placeholder box. Below it is the text: 'The name you want to call this condition.'
- Description:** A large text area for entering a description. Below it is the text: 'The description of the condition.'
- Condition Type:** A dropdown menu currently set to 'Project Waiting to be Started'. Below it is the text: 'Choose the type of condition. You cannot change the type of an existing condition.'
- Active:** A checked checkbox. Below it is the text: 'Determines whether the condition is active.'
- Applied to:** Three radio button options: 'All Triggers' (selected), 'All Triggers and Users', and 'Selected Triggers'.
- Action to take:** Two radio button options: 'Discard Build' (selected) and 'Try to Build again'.

Tips

This condition would typically be used to prevent multiple builds of the same project from being on the build queue at the same time.

3.2 If Project is Running

The 'If Project is Running' condition can be applied to a project when you require that a project does not run at the same time as either any project, or just the selected project.

The screenshot shows the 'Add Condition' form in the FINALBUILDER Server interface. The form is titled 'Add Condition' and is located within a window titled 'Test Project'. The user is logged in as 'admin'. The form contains the following fields and options:

- Condition Name:** A text input field with a placeholder. Below it, the text reads: 'The name you want to call this condition.'
- Description:** A large text area for input. Below it, the text reads: 'The description of the condition.'
- Condition Type:** A dropdown menu currently showing 'If Project is Running'. Below it, the text reads: 'Choose the type of condition. You cannot change the type of an existing condition.'
- Active:** A checked checkbox. Below it, the text reads: 'Determines whether the condition is active.'
- Applied to:** Three radio button options: 'All Triggers' (selected), 'All Triggers and Users', and 'Selected Triggers'.
- Do not build when:** Two radio button options: 'Any Project is Running' (selected) and 'Selected Projects are Running'.
- Action to take:** Two radio button options: 'Discard Build' (selected) and 'Try to Build again'.

Tips

When you require that a project does not run at the same time as another project you will need to ensure that this condition is applied to both projects.

3.3 If Time Between

The 'If Time Between' trigger condition can be used to prevent a build from being started when the time is between a specified time.

The screenshot shows the 'Add Condition' form in the FinalBuilder Server interface. The form is titled 'Add Condition' and is located within a window titled 'FINALBUILDER Server'. The window header includes the user 'admin' and navigation links for 'Status', 'User Preferences', 'Administration', and 'Log Off'. Below the header, there are links for 'Test Project', 'View Log', 'View History', 'View Build Metrics', and 'Edit Project'. The form fields are as follows:

- Condition Name:** A text input field with a placeholder box. Below it is the text: "The name you want to call this condition."
- Description:** A large text area with a placeholder box. Below it is the text: "The description of the condition."
- Condition Type:** A dropdown menu currently set to "If Time Between". Below it is the text: "Choose the type of condition. You cannot change the type of an existing condition."
- Active:** A checked checkbox. Below it is the text: "Determines whether the condition is active."
- Applied to:** Three radio buttons: "All Triggers" (selected), "All Triggers and Users", and "Selected Triggers".
- Time Between:** Two dropdown menus, both set to "00:00", with the word "and" between them.
- Dynamic Delay:** An unchecked checkbox. Below it is the text: "Automatically update the queue delay to be the length of time to wait before the build can start (only valid when the build is set to be re-queued)."
- Action to take:** Two radio buttons: "Discard Build" (selected) and "Try to Build again".

Time Between

The times between which a build should not be started.

3.4 Time Since Last Run

The 'Time Since Last Run' trigger condition prevents a build from starting when a specified length of time has not past since the project was either last run or last triggered by a specific trigger.

The screenshot shows the 'Add Condition' form in the FINALBUILDER Server interface. The form is titled 'Add Condition' and is located in the 'Test Project' section. The interface includes a header with the 'FINALBUILDER Server' logo and navigation links for 'User: admin', 'Status', 'User Preferences', 'Administration', and 'Log Off'. Below the header, there are links for 'View Log', 'View History', 'View Build Metrics', and 'Edit Project'.

The form fields are as follows:

- Condition Name:** A text input field with a placeholder. Below it, the text reads: "The name you want to call this condition."
- Description:** A large text area for entering a description. Below it, the text reads: "The description of the condition."
- Condition Type:** A dropdown menu currently set to "Time Since Last Run". Below it, the text reads: "Choose the type of condition. You cannot change the type of an existing condition."
- Active:** A checked checkbox. Below it, the text reads: "Determines whether the condition is active."
- Applied to:** Radio buttons for "All Triggers" (selected), "All Triggers and Users", and "Selected Triggers".
- Length of Time:** A text input field followed by a dropdown menu set to "Minutes".
- Elapsed Since:** Radio buttons for "Last Run" (selected) and "Last Triggered".
- Dynamic Delay:** A checkbox. Below it, the text reads: "Automatically update the queue delay to be the length of time to wait before the build can start (only valid when the build is set to be re-queued)."
- Action to take:** Radio buttons for "Discard Build" (selected) and "Try to Build again".

Length of Time

The length of time that should of elapsed since the project was last run or triggered.

Elapsed Since

Determines whether the condition should look at the last time the project was run (manually or by a trigger) or the last time it was triggered by a specific trigger.

3.5 Project's Last Run Result

The 'Project's Last Run Result' trigger condition prevents a build from starting when the specified project's last run result is either a success or failure.

The screenshot shows the 'Add Condition' configuration page in FinalBuilder Server. The page has a dark blue header with the 'FINALBUILDER Server' logo and navigation links: 'User: admin', 'Status - User Preferences - Administration - Log Off', 'Test Project', and 'View Log - View History - View Build Metrics - Edit Project'. The main content area is white and contains the following fields:

- Condition Name:** A text input field with a placeholder. Below it is the text: 'The name you want to call this condition.'
- Description:** A large text area for description. Below it is the text: 'The description of the condition.'
- Condition Type:** A dropdown menu currently showing 'Project's Last Run Result'. Below it is the text: 'Choose the type of condition. You cannot change the type of an existing condition.'
- Active:** A checked checkbox. Below it is the text: 'Determines whether the condition is active.'
- Applied to:** Radio buttons for 'All Triggers' (selected), 'All Triggers and Users', and 'Selected Triggers'.
- Do not start when:** A dropdown menu currently showing 'Test Project's'.
- Last run result was:** Radio buttons for 'Successful' (selected) and 'Failure'.
- Action to take:** Radio buttons for 'Discard Build' (selected) and 'Try to Build again'.

Do not start when

The project who's last run result is checked to determine whether the project should be triggered.

Last run result was

The result that the specified project needs to have for the trigger condition not to be met.

Part

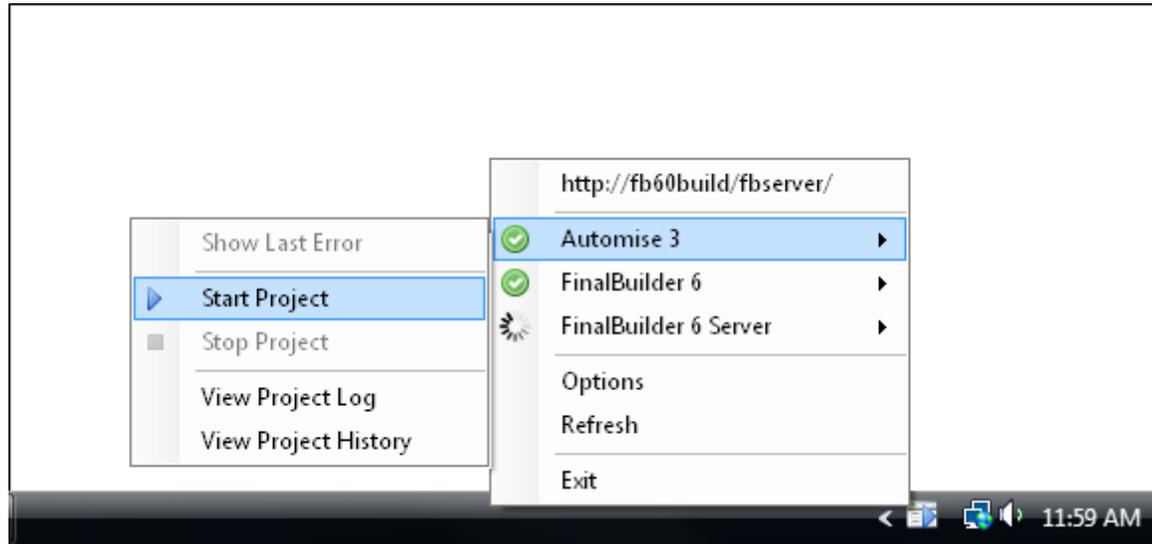
Notification Application



IV

4 Notification Application

The FinalBuilder Server Notification Application is a windows application that runs in the users notification area, allowing monitoring and control of multiple build servers. Users can configure to have the notification application show a visual alert, play a sound or execute a custom plug-in when the build completes.



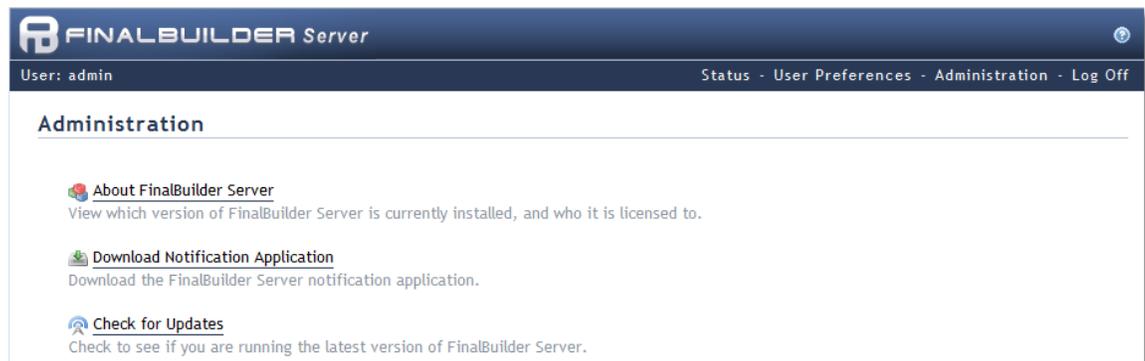
Requirements

- Microsoft Windows
- Microsoft .Net Framework 2.0

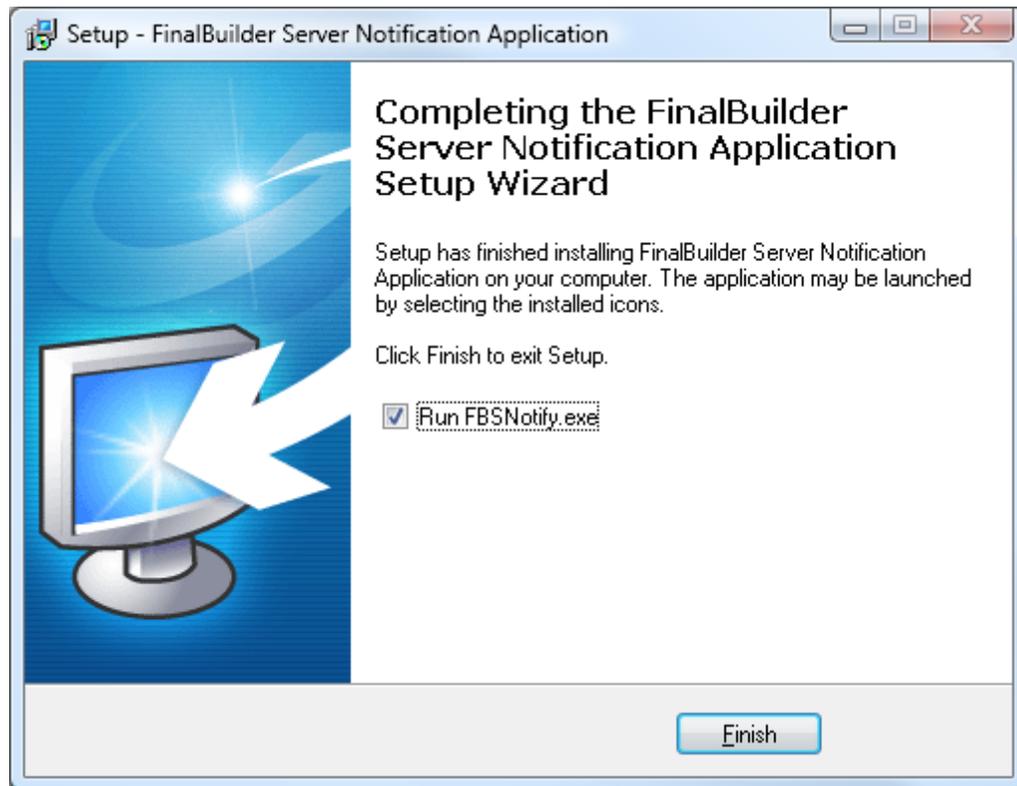
4.1 Installation

The Notification Application's installer is installed as part of the FinalBuilder Server web site.

1. Making sure you are logged into the FinalBuilder Server web interface, navigate to the 'Administration' page and click the 'Download Notification Application' link.



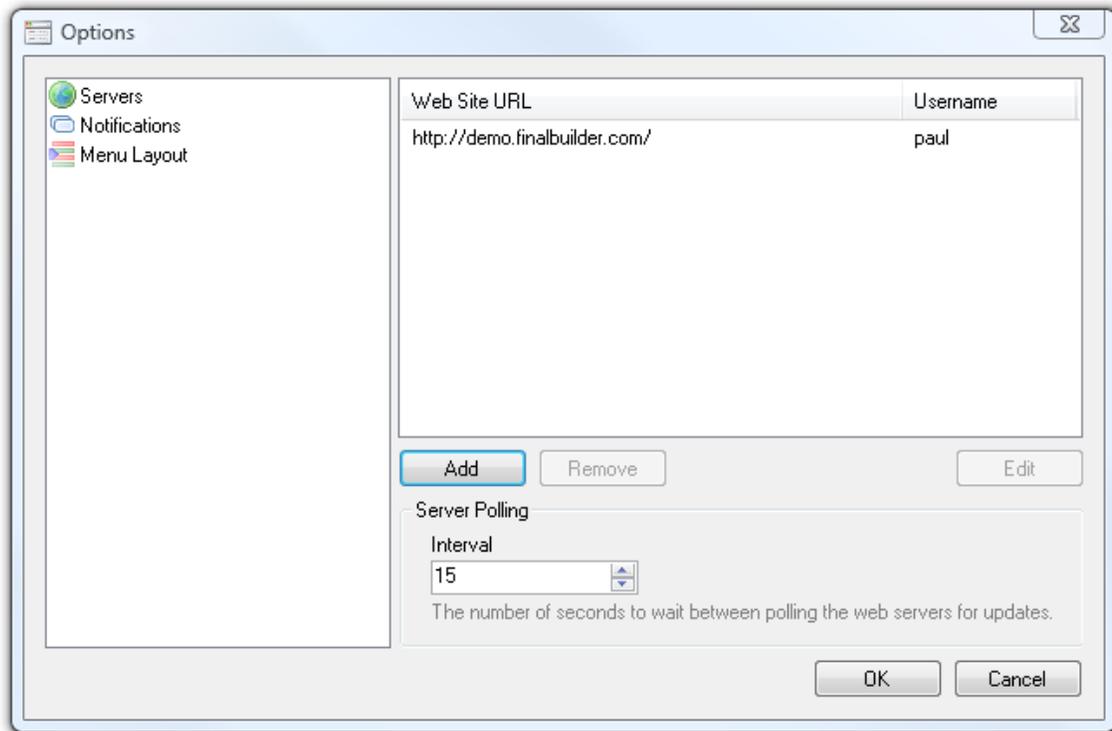
2. When prompted whether to run or download the installer, select run and follow the instructions provided by the installer. Once the installation has completed you will be asked whether you wish to run FBSNotify.exe.



3. The first time the notification application has run you will be presented with the options dialog where you can configure the servers you wish to monitor. See 'Configuration' for more information.

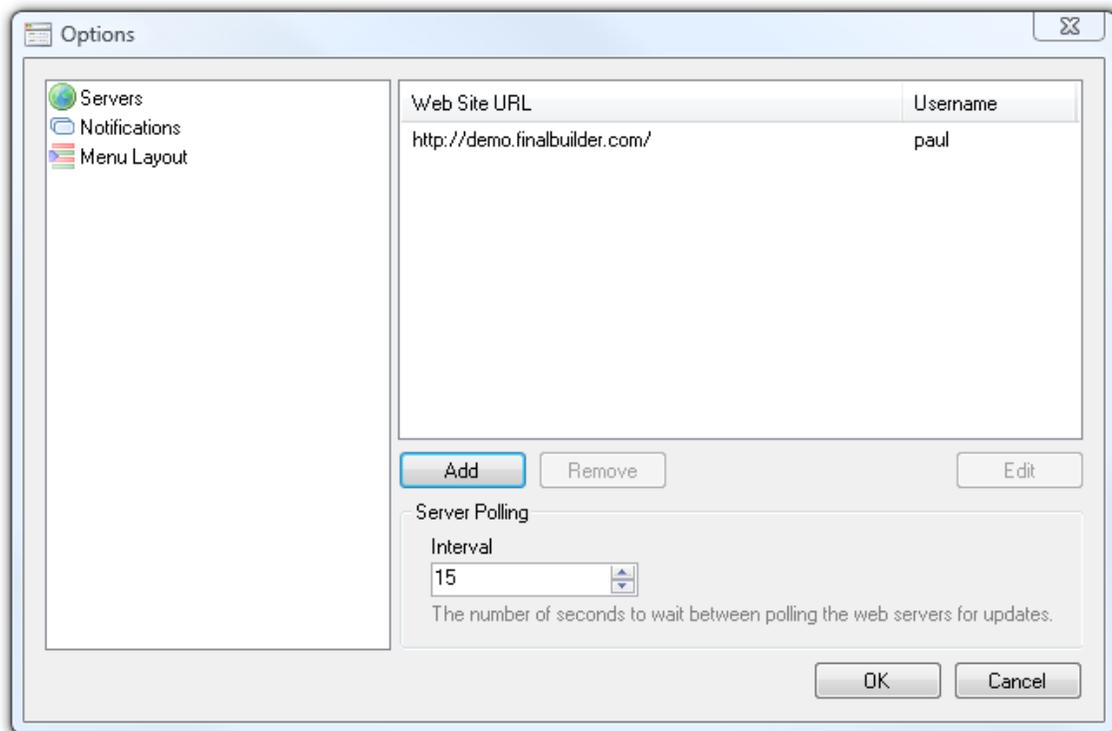
4.2 Configuration

The first time the Notification Application is run, or when no previous configuration can be found, you will be presented with the options dialog. From the options you can configured which servers the notification application is to monitor, how you would like to be notified and how you want the applications context menu to be layered out.



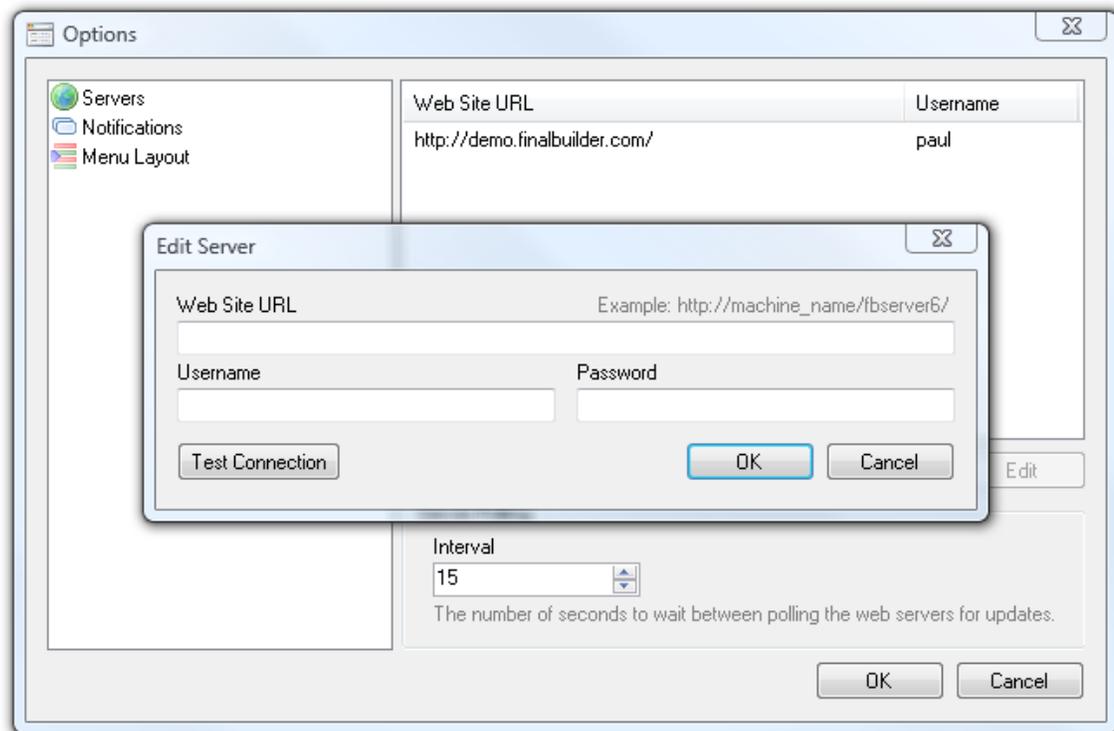
4.2.1 Web Servers

The FinalBuilder Server Notification Application enables you to monitor and control multiple FinalBuilder Server installations.



Adding a new server

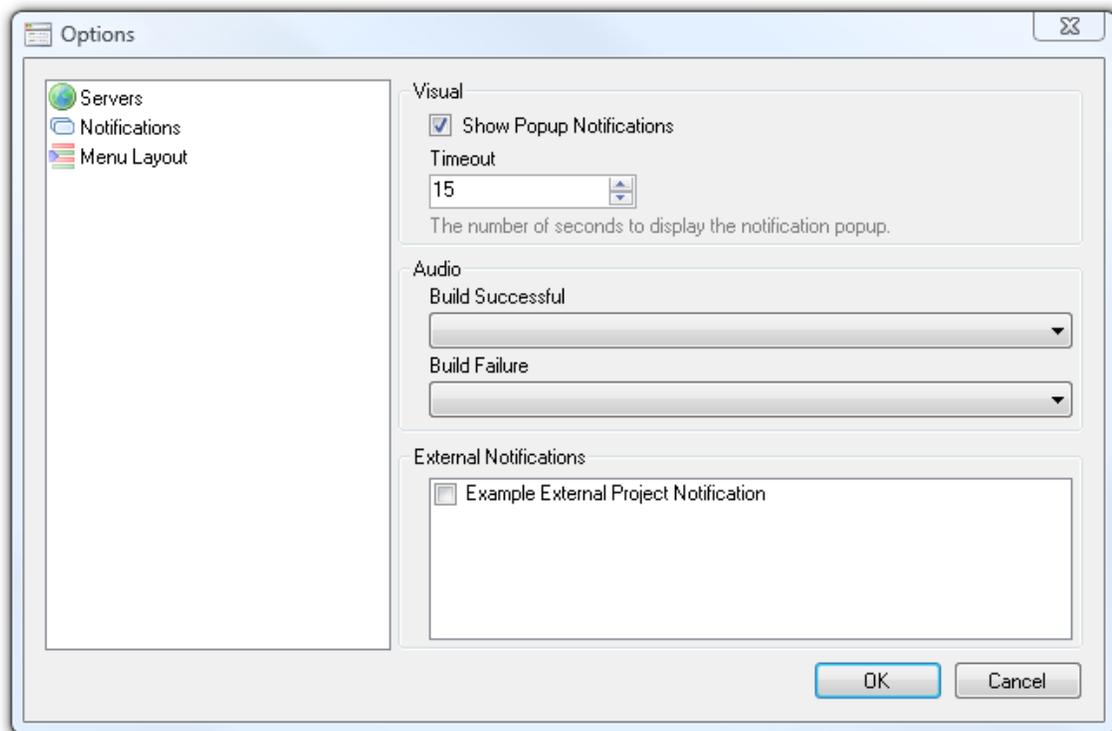
1. On the 'Servers' configuration page click on the 'Add' button to open the add server dialog.



2. Type in the FinalBuilder Server web site address (for example: `http://machine_name/fbserver7/`) and the username and password you use to login to the build server.
3. Press 'Test Connection' to make sure that the entered details are correct and that the web server can be contacted.
4. Once the connection has been tested, close the dialog by clicking 'OK'.

4.2.2 Notifications

You can configure how you would like to be notified of completed builds on the 'Notifications' page of the options dialog.



Visual

Visual notifications are displayed in the lower right corner of the primary screen and let you know which build finished, and whether it completed successfully. You can configure how long you want the notification to be shown by adjusting the 'Timeout' setting.

Audio

Audio notifications are played when a build finishes. The audio files must be wave audio files and can either be one of the files located in Windows\Media folder, or you can browse for a wave file by selecting the browse item.

External Notifications

You can further extend the notifications offered by the notification application by writing your own notification extensions. See 'Extensions' for more information.

4.2.2.1 Extensions

The FinalBuilder Server Notification Application allows you to extend the notifications by allowing you to create your own notification extensions in managed code.

Creating an extension

1. Create a new class that implements `IProjectNotificationExtension` and is optionally decorated with `ExtensionDescriptionAttribute`. These classes can be found in the `FinalBuilderServer.Notification.Extension.dll` assembly located in the notification application's program files directory.
2. Compile the assembly and place it in the 'Extensions' directory located in the Notification Applications program files directory.

3. Restart the Notification Application.
4. On the 'Notifications' tab of the options dialog your new extension will be listed in the external extensions list, enable it by checking the checkbox.

C# Example

```
[ExtensionDescription("Example External Project Notification", "An example notification extension")]
public class ExtensionExample : IProjectNotificationExtension
{
    public void OnProjectSucceeded(string serverURL, string projectName)
    {
        MessageBox.Show(
            string.Format("{0} on {1} has completed successfully.", projectName, serverURL),
            "Example Notification - Project Successful",
            MessageBoxButtons.OK,
            MessageBoxIcon.Information);
    }

    public void OnProjectFailed(string serverURL, string projectName)
    {
        MessageBox.Show(
            string.Format("{0} on {1} has failed to complete successfully.", projectName, serverURL),
            "Example Notification - Project Failure",
            MessageBoxButtons.OK,
            MessageBoxIcon.Information);
    }
}
```

VB Example

```
<ExtensionDescription("Example External Project Notification", "An example notification extension")>
Public Class VBSampleExtension
    Implements IProjectNotificationExtension

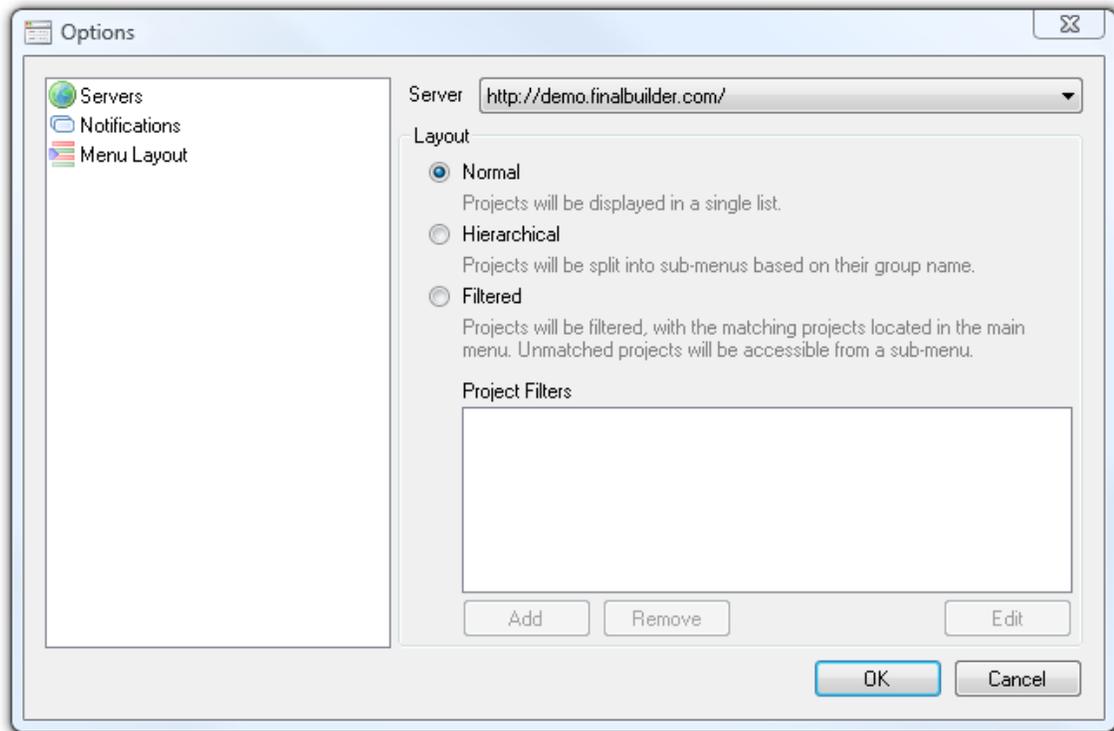
    Public Sub OnProjectSucceeded(ByVal serverURL As String, ByVal projectName As String)
        Implements IProjectNotificationExtension.OnProjectSucceeded
        MessageBox.Show(String.Format("{0} on {1} has completed successfully.", projectName,
serverURL), "Example Notification - Project Successful", MessageBoxButtons.OK, MessageBoxIcon.
Information)
    End Sub

    Public Sub OnProjectFailed(ByVal serverURL As String, ByVal projectName As String) Implements
IProjectNotificationExtension.OnProjectFailed
        MessageBox.Show(String.Format("{0} on {1} has failed to complete successfully.",
projectName, serverURL), "Example Notification - Project Failure", MessageBoxButtons.OK,
MessageBoxIcon.Information)
    End Sub

End Class
```

4.2.3 Menu Layout

Once you have configured the server's you may choose to change how they are displayed in the context menu. There are three layout modes that can be selected, Normal, Hierarchical and Filtered.



Normal

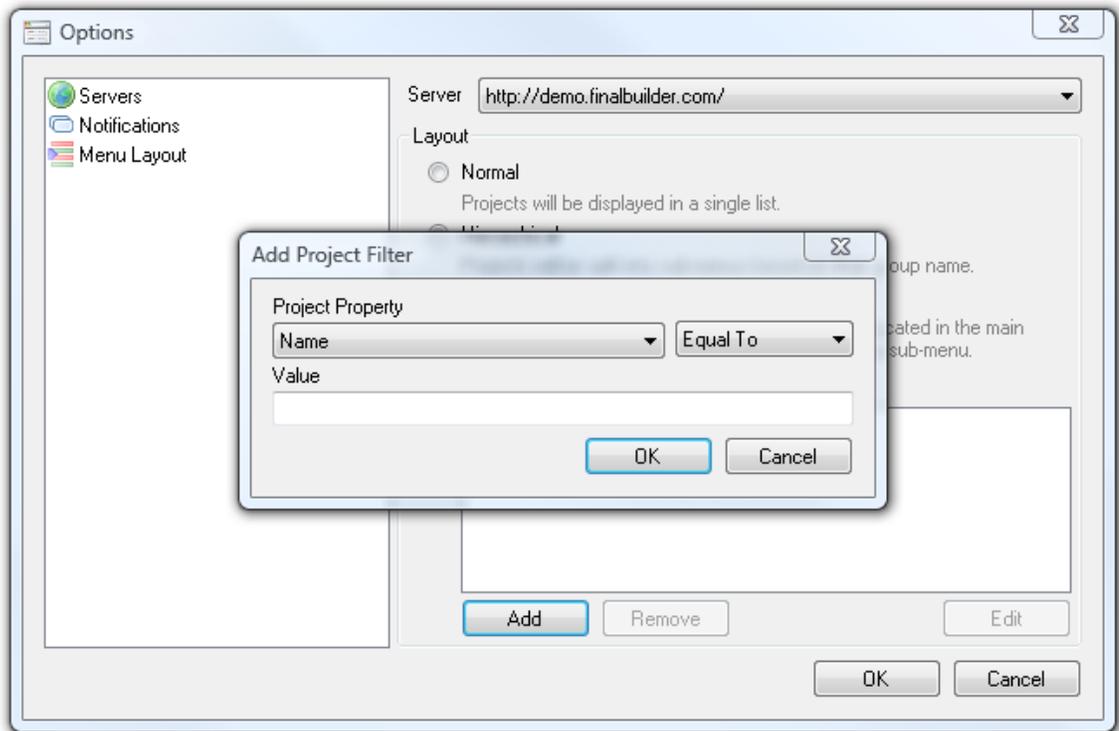
The normal layout mode will place each project in the main context menu with no grouping.

Hierarchical

The hierarchical layout mode creates a new sub-menu for each group (as defined on the 'Project Edit' page) placing each project in their respective groups sub-menu. Project's that do not belong to any groups will be placed in the main context menu under the group sub-menu's.

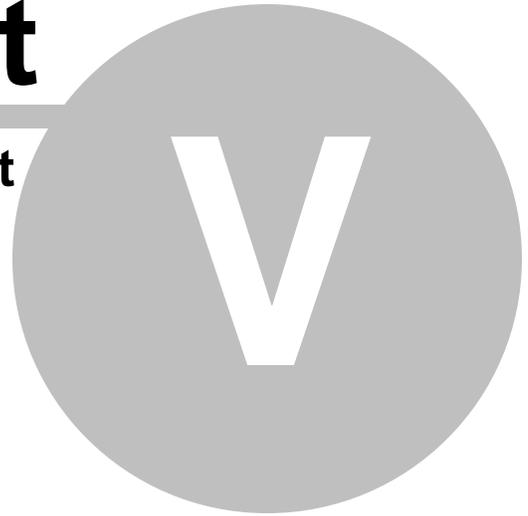
Filtered

The filtered layout mode allows you to specify which projects you want to be displayed in the main context menu, with a single sub-menu which contains a hierarchical list of all the projects.



Part

Product Support



5 Product Support

Forums - <http://www.finalbuilder.com/forums.aspx>

Email - support@finalbuilder.com

5.1 Installation Issues

FinalBuilder Server works fine on the machine it was installed on, but when you try to view the page from remote machines you receive an error.

Make sure that the firewall on the machine FinalBuilder Server was installed on has been configured to allow incoming traffic on the port which IIS is configured.

When opening FinalBuilder Server you receive a 403 Forbidden error, or all you see is HTML markup.

FinalBuilder Server requires that ASP.Net 2.0 is configured and working correctly on the web server.

You have FinalBuilder Server running on Windows XP and you receive a 403.9 [Access Forbidden: Too many users are connected Internet Information Services].

Windows XP by default will only allow up to 10 users to be connected simultaneously to IIS. You can increase this limit to 40 by executing the following script from the command line.

```
"cscript.exe C:\Inetpub\AdminScripts\adsutil.vbs set w3svc/MaxConnections 40"
```

You are able to view the FinalBuilder Server web interface, but are unable to log in using Internet Explorer.

Make sure that the machine which is hosting the FinalBuilder Server web site does not contain an underscore in its name.

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