HelixALM

Installation Guide

Version 2017.1

PERFORCE

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Contents

Installing Helix ALM

Perform the following steps to install Helix ALM based on your role.

User

Use the client-only installer to install the Helix ALM Client, SoloBug, and integration components.

> **Note:** If you only use Helix ALM Web, you do not need to install anything. Contact your Helix ALM administrator if you need the URL or your username and password.

1. Before installing, review the Client System Requirements.
2. Download the client-only installer for your operating system.
3. Run the installer and select installation options. Only install the server admin utility if you administer Helix ALM projects for your team.
4. After installation is complete, start Helix ALM, add a server connection, and log in.

Administrator

If you are an administrator responsible for configuring Helix ALM for your team, perform a complete installation, which includes the Helix ALM Server, Helix ALM License Server, and client applications. If you are upgrading Helix ALM, see Upgrading Helix ALM, page 3.

> **Note:** If you are an administrator of a Helix ALM installation hosted by Perforce in the cloud, use the client-only installer to install Helix ALM and the server admin utility.

1. Before installing, review the Client System Requirements and Server System Requirements.
2. Download the complete installer for your operating system.
3. Determine which components to install.
4. Run the installer and select installation options.
5. After installation, start and configure the license server, and then start and configure the Helix ALM Server.

Depending on how your organization uses Helix ALM, you may also need to perform the following tasks:

- Configure web servers for web clients
- Move existing projects

Upgrading Helix ALM

Perform the following tasks to upgrade Helix ALM. If you need help, contact Perforce Support.

> **Tip:** You may want to install the new Helix ALM version in a test environment before upgrading your production environment to evaluate new features, estimate downtime required to upgrade, and make sure no issues occur during the upgrade. See Installing Upgrades in a Test Environment.

Preparing for the upgrade

1. Review the release notes for information about new features, enhancements, bug fixes, and important upgrade information.

2. Check the system requirements to make sure computers you are installing Helix ALM components on have the required space, memory, and other resources to run efficiently.

    - Client system requirements
    - License server system requirements
    - Supported web browsers
    - Server system requirements
    - RDBMS support

3. If you are upgrading from TestTrack 2011.1 or earlier, review additional steps required to prepare databases for upgrading.

4. If you currently use TestTrack 2013 or earlier and the web client, review important information about upgrading to the Helix ALM Web application.

5. Download the installer for the current Helix ALM version.

Performing the upgrade

The time is takes to upgrade depends on the components you are installing and your data.

> **Note:** If you are upgrading both Helix ALM and Surround SCM, upgrade the product with the most recent release date last to guarantee you install the latest version of the Helix ALM License Server.

1. Stop the Helix ALM License Server and Helix ALM Server.

2. Back up your license server database and Helix ALM databases and projects.

3. Run the Helix ALM installer. You may be prompted to overwrite existing files, such as SOAP or HTML files. Always overwrite these files to ensure that Helix ALM works correctly after the upgrade.

4. Start the license server and Helix ALM Server applications. The server databases are automatically upgraded when the servers start.

5. Upgrade projects if needed. Helix ALM can automatically upgrade projects when the server starts or you can manually upgrade them. See Upgrading projects, page 4.

After upgrading

You may need to perform the following tasks after upgrading.

- If you upgraded the 32-bit Helix ALM Server to the 64-bit server application on Windows, you may need to move the TTServDb directory from the 32-bit application directory to the 64-bit directory after upgrading.

By default, the 32-bit application directory is in C:\Program Files (x86)\Perforce\Helix ALM and the 64-bit directory is stored in C:\Program Files\Perforce\Helix ALM.

- If users cannot log in after upgrading, make sure a license is assigned to the user and that maintenance for the license is not expired. See Users Cannot Log In After Upgrading.

Upgrading projects

After upgrading, Helix ALM can automatically upgrade projects when the server starts or you can manually upgrade them.

> **Note:** You must manually upgrade projects if you use the Linux command line (Perl) installer.

Automatic upgrades

When the Helix ALM Server starts, you are prompted to automatically upgrade projects. Helix ALM native projects are upgraded individually. Other projects in the same database, including inactive projects, are all upgraded at the same time. After projects are upgraded, they are automatically loaded and available to users. Errors are logged if upgrades fail.

Keep the following in mind:

- Projects are upgraded in the order they are displayed in the Projects list in the Helix ALM Server Admin Utility. If you have a large number of projects, you can reorder them before upgrading to make sure the most frequently used projects are upgraded first. To reorder projects, in the server admin utility, choose View > Projects. Select a project and click Top, Move Up, Move Down, or Bottom to move it.

- Existing Helix ALM users with usernames and valid, non-expired licenses are automatically migrated as global users to the Helix ALM License Server. Users without usernames are converted as local users.

Manual upgrades

You may want to manually upgrade projects using the Helix ALM Server Admin Utility if:

- You have a large number of projects and do not want to upgrade all of them at once.

- You are going to upgrade legacy Helix ALM 2011.1 or earlier native projects or convert them to a different RDBMS format. These older project versions are not supported in Helix ALM. You must upgrade them to TestTrack 2015.1 first. See Preparing to upgrade from TestTrack 2011.1 and earlier, page 4.

- You want to manually resolve user conflicts. If you use Helix ALM and Surround SCM, and users are set up differently, there may be conflicts caused by data differences on the servers. Manually upgrading projects gives you more control over conflict resolution. For example, users were configured using full names (e.g., Deborah) in Surround SCM and using nicknames (e.g., Debbie) in Helix ALM. When you manually upgrade, you can select the name to use.

Preparing to upgrade from TestTrack 2011.1 and earlier

You cannot use or upgrade older database versions in Helix ALM 2017.1 and later or TestTrack 2016 - 2016.1. To upgrade the TestTrack Server 2011.1 or earlier, you must upgrade databases to TestTrack 2015.1 first. Contact Perforce Support for help with these upgrades.

> **Note:** TestTrack was renamed Helix ALM starting with the 2017.1 release.

Review the following steps required for this part of the upgrade process. The steps you follow depend on the database type.

If you use:	And you want to:	Perform these steps to upgrade databases
Native databases	Continue using native databases	1. Review information about upgrading native databases to SQLite format. 2. Install 32-bit TestTrack 2015.1. 3. Start the Seapine License Server and TestTrack Server. The TestTrack Server database is automatically upgraded when the server starts. 4. Use the TestTrack Server Admin Utility to upgrade legacy native projects to SQLite. Make sure to upgrade all projects you may want to use later, including archived or inactive projects, so they can be upgraded for use in Helix ALM. 5. If you use external custom reports, configure them to use a SQLite ODBC driver.
	Convert databases to a different RDBMS	1. Create an empty RDBMS server database. 2. Install 32-bit TestTrack 2015.1. 3. Start the Seapine License Server and TestTrack Server. The TestTrack Server database is automatically upgraded when the server starts. 4. Use the TestTrack Server Admin Utility to convert the server database and legacy native projects to RDBMS. Make sure to upgrade all projects you may want to use later, including archived or inactive projects, so they can be upgraded for use in Helix ALM.
RDBMS databases (Oracle, PostgreSQL, or SQL Server)	Continue using the same RDBMS	1. Install TestTrack 2015.1 (32-bit or 64-bit). 2. Start the Seapine License Server and TestTrack Server. The TestTrack Server database is automatically upgraded when the server starts. 3. Use the TestTrack Server Admin Utility to upgrade legacy RDBMS projects (version 11.0tt or earlier). Make sure to upgrade all projects you may want to use later, including archived or inactive projects, so they can be upgraded for use in Helix ALM.
	Convert databases to native SQLite or a different RDBMS	1. Create an empty RDBMS server database. Not required for SQLite. 2. Install TestTrack 2015.1 (32-bit or 64-bit). 3. Start the Seapine License Server and TestTrack Server. The TestTrack Server database is automatically upgraded when the server starts. 4. Use the TestTrack Server Admin Utility to convert the server database and legacy RDBMS projects (version 11.0tt or earlier) to Helix ALM Native or another RDBMS format. Make sure to upgrade all projects you may want to use later, including archived or inactive projects, so they can be upgraded for use in Helix ALM.

About automatic client upgrade installers

Helix ALM includes client installer packages that are used for automatic client upgrades. These packages are installed with the Helix ALM Server to make cross-platform client deployment easier after server upgrades. When users try to connect to the server with an older client version, they are notified to upgrade the client to the newer version.

The Windows, Mac, and Linux automatic client upgrade installer packages are installed in the installers folders in the default Helix ALM directory.

Note: You can enable and disable automatic client upgrades in the Helix ALM Server Admin Utility. See the Server Admin Utility help for information.

Before You Install

Before installing Helix ALM, review the installation types to determine the options to select during the installation. See Installation types, page 11.

> **Note:** If you are installing on a 64-bit operating system, determine if you need to install 32-bit or 64-bit components. See About 64-bit Helix ALM components, page 8.

Users

Keep the following in mind before installing the Helix ALM Client and other components.

- Review the Client System Requirements to make sure the computer you are installing on has the required space, memory, and other resources to run efficiently.

- If Microsoft Outlook is installed on your computer, close Outlook before installing the integration add-in.

Administrators

Keep the following in mind before installing and configuring Helix ALM server applications.

- If you use Surround SCM, the Helix ALM License Server and admin utility may already be installed on your network. Check with the Surround SCM administrator.

- Review the Client System Requirements and the Server System Requirements to make sure the computers you are installing on have the required space, memory, and other resources to run efficiently.

- Determine which database type to store data in. You can use native SQLite databases or a different RDBMS format. See About Helix ALM databases, page 7.

About Helix ALM databases

Helix ALM data is stored in Relational Database Management Systems (RDBMS). By default, Helix ALM uses SQLite as the native backend database, which does not require any additional configuration before or after installation. Oracle, PostgreSQL, and SQL Server are also supported, but a qualified database administrator (DBA) must manually install and configure these databases.

The following data is stored in databases. Each component must be stored in a separate database. For example, server data and projects cannot be stored in the same database.

- Helix ALM Server—Each server has a server database, which stores configuration information.

- Helix ALM projects—Project databases contain all project information, including items (e.g., issues, requirements, test cases), local customers and users, filters, test configurations, security groups, and reports. If you use native database format, each project is automatically stored in its own database. If you use another RDBMS, you can store multiple projects in the same database or distribute projects between different RDBMS databases.

- Helix ALM License Server—Each license server has a database, which stores all license server data. See the License Server help for information.

When installing the Helix ALM Server, a SQLite server database file (ttserv.db) is created in the TTServerDb directory in the Helix ALM application directory. After installation, you can use this server database as is or use the server admin utility to convert it to a different RDBMS type, such as SQL Server. You can also store new projects in other RDBMS databases or convert existing native project databases to a different RDBMS type. You must create empty databases and add RDBMS connections before storing data in them. See Setting Up RDBMS Databases, page 39.

> **Tip:** For information about the differences between native and other RDBMS database formats, see Choosing a Helix ALM Database Format .

About 64-bit Helix ALM components

32-bit and 64-bit versions of the Helix ALM Client and Server are available. The 64-bit server lets the server computer access more RAM, which increases the size and number of projects it can store. The 64-bit client lets users integrate with 64-bit third-party applications and use Helix ALM on 64-bit Linux systems without needing to install additional libraries.

Keep the following in mind:

- The 32-bit clients can communicate with the 64-bit server and vice versa.

- All installers include the 32-bit and 64-bit components. If you run an installer on a 64-bit system, you can select to install the 32-bit or 64-bit components. See Components installed on 64-bit systems, page 8.

- If you work with source control files from Helix ALM, you may need to install the 32-bit or 64-bit client depending on the version of the source control tool you use. See Setting Helix ALM configuration options, page 14.

Components installed on 64-bit systems

If you are installing Helix ALM on a 64-bit operating system, you can choose to install 32-bit or 64-bit components. The following information describes the available versions and what is installed based on the computer configuration.

Windows

Component	Installed as:
Defect Scribe	32-bit executable on 32-bit systems 32-bit and 64-bit executables on 64-bit systems
Microsoft Outlook Add-in	32-bit executable if 32-bit Microsoft Outlook is installed on system 64-bit executable if 64-bit Microsoft Outlook is installed on system
QA Wizard Pro Add-in	32-bit executable only
Helix ALM License Server	32-bit or 64-bit executable depending on selected installation option

Component	Installed as:
Helix ALM License Server Admin Utility	32-bit or 64-bit executable depending on selected installation option
Helix ALM License Server Web Admin Utility	32-bit or 64-bit executable depending on selected installation option
SoloBug	32-bit executable only
Helix ALM Client	32-bit or 64-bit executable depending on selected installation option
Helix ALM External Source Control Provider CGI	32-bit executable only
Helix ALM Integration Library	32-bit executable on 32-bit systems 32-bit and 64-bit executables on 64-bit systems
Helix ALM Published Data Server CGI	32-bit executable only
Helix ALM Registry Utility	32-bit or 64-bit executable depending on selected installation option
Helix ALM Server	32-bit or 64-bit executable depending on selected installation option
Helix ALM Server Admin Utility	32-bit or 64-bit executable depending on selected installation option
Helix ALM SOAP CGI	32-bit executable only
Helix ALM URL Redirector	32-bit executable only
Helix ALM Web CGI	32-bit executable only
Helix ALM Web Server Admin CGI	32-bit executable only
Visual Studio Add-in	32-bit executable only

Linux

Component	Installed as:
Helix ALM License Server	32-bit or 64-bit executable depending on selected installation option
Helix ALM License Server Admin Utility	32-bit or 64-bit executable depending on selected installation option

Component	Installed as:
Helix ALM License Server Web Admin Utility	32-bit or 64-bit executable depending on selected installation option
SoloBug	32-bit executable only
Helix ALM Client	32-bit or 64-bit executable depending on selected installation option
Helix ALM External Source Control Provider CGI	32-bit executable only
Helix ALM Integration Library	32-bit executable on 32-bit systems 32-bit and 64-bit executables on 64-bit systems
Helix ALM Published Data Server CGI	32-bit executable only
Helix ALM Registry Utility	32-bit or 64-bit executable depending on selected installation option
Helix ALM Server	32-bit or 64-bit executable depending on selected installation option
Helix ALM Server Admin Utility	32-bit or 64-bit executable depending on selected installation option
Helix ALM SOAP CGI	32-bit executable only
Helix ALM URL Redirector	32-bit executable only
Helix ALM Web CGI	32-bit executable only
Helix ALM Web Server Admin CGI	32-bit executable only

Mac

Component	Installed as:
SoloBug	32-bit executable only
Helix ALM Client	Fat binary that includes 32-bit and 64-bit executables
Helix ALM Integration Library	Fat binary that includes 32-bit and 64-bit executables
Helix ALM Server Admin Utility	Fat binary that includes 32-bit and 64-bit executables

Installers

Installers are available on the Upgrades page.

When you install Helix ALM, all issue, requirements, and test case management features are installed. User access to each area is controlled by licenses. For example, if a user does not have a valid issue management license, they cannot work with issues. Each Helix ALM license also includes a license for the SOAP-based SDK.

> **Note:** All installers includes 32-bit and 64-bit components. See About 64-bit Helix ALM components, page 8.

Platform	Installation type	Name
Windows	Client and server	ttwininstall.exe
	Client only	ttwinclientinstall.exe
Mac	Client only	ttmacclientinstall.dmg.gz
Linux	Client and server (Java installer)	ttlinuxjavainstall.tar.gz
	Client and server (Perl command line installer)	ttlinuxinstall.tar.gz
	Client only	ttlinuxclientinstall.tar.gz

> **Note:** Java 1.5 or later is required to use the Linux Java installer. Use the Perl command line installer if you do not have Java 1.5 or later.

Installation types

You can choose one of the following installation sets or specific components to install.

Install set	Installs	Notes
Typical Install	Helix ALM Server, Helix ALM Client, Helix ALM Server Admin Utility, SoloBug, Helix ALM Web, Helix ALM Web Server Admin Utility, SoloSubmit, Helix ALM Source Control Provider CGI, Helix ALM Published Data Server (CGI), Helix ALM License Server, Helix ALM License Server Admin Utility, Helix ALM License Server Web Admin Utility, and sample projects	A web server must be installed on the computer before installation. See Configuring Helix ALM Web, page 31.
Helix ALM Client	Helix ALM Client and SoloBug	Most users only need to install the client.
Helix ALM Server	Helix ALM Server, Helix ALM Client, Helix ALM Server Admin Utility, SoloBug, Helix ALM License Server, Helix ALM License Server Admin Utility, and sample projects	The server application is generally installed on a networked computer.

Install set	Installs	Notes
Helix ALM Web components	Helix ALM Web, Helix ALM Web Server Admin Utility, Helix ALM Source Control Provider CGI, Helix ALM Published Data Server (CGI), Helix ALM SOAP CGI, and SoloSubmit	A web server must be installed on the computer before installation. See Configuring Helix ALM Web, page 31.
Helix ALM License Server	Helix ALM License Server, Helix ALM License Server Admin Utility, and Helix ALM License Server Web Admin Utility	A web server must be installed on the computer before installation if you are also installing the web admin utility. See Configuring Helix ALM Web, page 31.
Custom	Components you select	

Running the Installer

After downloading the installer, run it on the computer to install Helix ALM components on.

> **Note:** To install 64-bit applications, you must run the installer on a 64-bit system.

Windows

Double-click the installation file.

> **Tip:** You can run a Windows client-only installation in silent mode from the command prompt using the `-i silent` option. The network administrator can deploy a silent install to multiple computers without user intervention. The Helix ALM Client and SoloBug are installed in the default location using the default options. See Windows Silent Installation for information.

Linux

> **Note:** Specific system libraries are required to run Helix ALM and Helix ALM License Server applications on different Linux distributions. You must install these libraries before using the applications to make sure they work correctly. See Checking for Missing System Libraries on Linux for information.

Java installer

1. Double-click the installer archive or enter `tar -zxvf <InstallerFilename>.tar.gz` in Terminal to extract the installer.
2. Run the extracted .bin file as root to start the installer.

Perl command line installer

1. In Terminal, enter `tar -zxvf <InstallerFilename>.tar.gz` to extract the installer.
2. Enter `cd tt-<version>` to change to the Helix ALM application directory. For example, if you are installing Helix ALM 2017.1.1, enter `cd tt-2017.1.1`.
3. Enter `./install.pl` as root to run the install script.

Mac

1. Double-click the installation file to extract the installer and then double-click **ttmacclientinstall.dmg** to mount the image on the desktop.
2. Double-click the Helix ALM disk image and then double-click the **Install Helix ALM** icon.

During installation

You must select settings for the components you choose to install. Depending on the installation type, you may be prompted to select options for the following components:

- Helix ALM applications
- Third-party integrations

- Helix ALM CGIs
- Helix ALM SOAP Server
- Short date format (Linux only)
- Helix ALM License Server

Setting Helix ALM configuration options

> **Note:** If installing Helix ALM on a 64-bit system, you can choose to install 32-bit or 64-bit versions of the selected applications. See About 64-bit Helix ALM components, page 8. If you integrate with a source control application, you may need to make sure the correct version of Helix ALM (32- or 64-bit) is installed for the integration to work. See the Integrations knowledgebase for integration requirements.

You must select a Helix ALM application directory. The Linux installers also require you to select a directory for creating the Startup.log file, which contains errors that are logged when the Helix ALM Server starts. You can use the default directory or select a different directory.

Additional configuration options include setting the server port number and choosing a server execution mode (Windows only).

Default installation directories

Installer	Files	Default directory
Windows	32-bit applications (all files)	C:\Program Files (x86)\Perforce\Helix ALM
	64-bit applications (all files)	C:\Program Files\Perforce\Helix ALM
Mac	Client executable programs, lexicons, and other supporting files	/Applications/HelixALM
Linux	Client executable programs, server database, stylesheets, lexicons, and other supporting files	/var/lib/HelixALM
	Startup.log file	/var/log
	Other executable programs, shell scripts, and Helix ALM Server daemon	/usr/bin

Server execution mode (Windows)

You can choose to run the Helix ALM Server as a service to automatically start the server when the computer starts. You must configure the service to log in as the Local System Account.

If you run the server as an application, you must manually start the server application.

Server port

The Helix ALM Server communicates with clients on this port. Use the default port number or enter another number.

Platform	Default port
Windows	99
Linux	1566

Selecting integration options

Options are available to integrate Helix ALM with Microsoft Visual Studio, Microsoft Outlook, and Defect Scribe.

Visual Studio

If Microsoft Visual Studio is installed on your computer, select **Install Visual Studio Integration** to add the Helix ALM menu and toolbar to Visual Studio to access items and actions. See Visual Studio Integration for information.

Outlook

If Microsoft Outlook is installed on your computer, select **Install Helix ALM Outlook Add-in** to add issues, requirements, or test cases from emails or add emails to existing items. See Microsoft Outlook Integration for information.

> **Note:** Close Outlook before installing Helix ALM.

Defect Scribe (Windows only)

Defect Scribe can help you capture information when manually testing applications and seamlessly create new issues or test cases from the test results. If Defect Scribe is not installed on your computer, select **Install Defect Scribe** to automatically run the installer after Helix ALM installation is complete. See the Defect Scribe help for information.

Setting CGI configuration options

If you are installing the Helix ALM CGIs, you must select a location to install the CGI scripts and HTML files and set the Helix ALM Server address and port number. When web client users log in, or an external source control provider attaches files to items in a project, the web server calls the appropriate CGI, which communicates with the Helix ALM Server.

> **Note:** We strongly recommend configuring HTTPS for the CGIs on the web server. Login credentials sent from web clients to the CGIs are not encrypted, even if encryption is enabled on the server. See your web server documentation for information about configuring and using HTTPS.

Web server types

Microsoft IIS and Apache web servers are supported. See Supported Web Servers for supported versions.

Default HTML file installation directories

Select the directory to install the HTML files used by Helix ALM web clients.

> **Note:** If you are upgrading, you may be prompted to overwrite existing HTML files during installation. You should always overwrite these files to ensure that Helix ALM works correctly after the upgrade is complete.

Web server	Platform	Default HTML files directory
IIS	Windows	C:\inetpub\wwwroot
Apache	Windows	C:\Program Files\Apache Software Foundation\Apache <version>\htdocs
	Linux	/var/www/html

Helix ALM Server address and port

Enter a static IP address or domain name and port number of the Helix ALM Server computer. The Helix ALM CGIs use this information to communicate with the server. You are only prompted to enter this information the first time you install Helix ALM.

Platform	Default server port
Windows	99
Linux	1566

> **Note:** If CGIs are installed on Linux distributions with SELinux security policies, you must enable network requests from CGI executables before you can use Helix ALM web clients. See CGIs on Linux Cannot Connect to the Helix ALM License Server and Helix ALM Server for information.

Default CGI installation directories

Select the directory to install the CGI scripts. The web server must have access to this directory.

Web server	Platform	Default logical CGI directory name	Default CGI scripts directory
IIS	Windows	scripts	C:\inetpub\scripts
Apache	Windows	cgi-bin	C:\Program Files\Apache Software Foundation\Apache <version>\cgi-bin
	Linux	cgi-bin	/var/www/cgi-bin

Note: If you are installing the Helix ALM License Server Web Admin Utility, you must set a location to install the CGI scripts and HTML files. See Setting Helix ALM License Server configuration options, page 17.

Setting SOAP server configuration options

Enter the IP address or domain name of the computer that is hosting the SOAP CGI and the port number. The default port is 80.

Note: See the SDK help for information about using the SOAP-based SDK.

Setting the short date format on Linux

On Linux, you can set the short date format used for reports, email notifications, and the startup log file, and any other date string created by the Helix ALM Server.

Valid date formats include: %m/%d/%y, %d/%m/%y, %b/%d/%y, or %d/%b/%y. You can substitute %b with %B or %y with %Y in these formats. The year parameter must be last in the date format.

Valid delimiters include a period, dash, forward slash, backward slash, comma, or a space.

Character	Description	Example
%b	Abbreviated month name	Mar
%B	Full month name	March
%d	Day of the month, 01-31	22
%m	Month of the year, 01-12	03
%y	Two-digit year	99
%Y	Four-digit year	1999

Setting Helix ALM License Server configuration options

You must select a Helix ALM License Server application directory. The Linux installers also require you to select a directory for creating the LSStartup.log file, which contains errors that are logged when the server starts. You can use the default directory for these options or select a different directory.

Additional configuration options include setting the server port number, choosing a server execution mode (Windows only), and setting the web server admin utility CGI and HTML file locations.

Default installation directories

Platform	Files installed	Default directory
Windows	All files	C:\Program Files\Perforce\License Server

Platform	Files installed	Default directory
Linux	Application	/var/lib/splicsvr
	LSStartup/log file	/var/log
	Other executable Unix programs, shell scripts, and the license server daemon	/usr/bin

Web server admin utility CGI and HTML file installation directories

If you are installing the license server web admin utility, you must set a location to install the CGI scripts and HTML files.

Microsoft IIS and Apache web servers are supported. See Supported Web Servers for supported versions.

Web server	Platform	Default CGI directory	Default HTML files directory
IIS	Windows	C:\inetpub\scripts	C:\inetpub\wwwroot
Apache	Windows	C:\Program Files\Apache Software Foundation\Apache <version>\cgi-bin	C:\Program Files\Apache Software Foundation\Apache <version>\htdocs
	Linux	/var/www/cgi-bin	/var/www/html

Note: If CGIs are installed on Linux distributions with SELinux security policies, you must enable network requests from CGI executables before you can use Helix ALM web clients. See CGIs on Linux Cannot Connect to the Helix ALM License Server and Helix ALM Server for information.

Server execution mode (Windows only)

You can choose to run the license server as a service to automatically start the server when the computer starts. If you run the server as an application, you must manually start it.

Server port

Helix ALM clients and the license server web admin utility CGIs communicate with the license server on this port. Use the default port number (5100) or enter another number.

Starting Helix ALM

The Helix ALM License Server and Helix ALM Server must be running before you start Helix ALM. Contact your administrator for help if the servers are not running. See Starting the Helix ALM License Server, page 21 and Starting the Helix ALM Server, page 29.

Helix ALM Client

Before you log in, make sure you have the Helix ALM Server and login information from your Helix ALM administrator.

1. **Windows**—Choose **Programs > Perforce > Helix ALM > Helix ALM Client** on the Start menu.

   Mac—Double-click the **Helix ALM Client** icon in the Applications/HelixALM folder.

   Linux—Enter `/usr/bin/ttclient`

2. When the application starts, select the **Server** to connect to. If you need to set up a server connection, see the Helix ALM help for information about adding server connections.

3. Enter your **Username** and **Password**.

   If available, you can select **Use single sign-on** to log in with your network credentials or **Use external authentication** to log in with your authentication system credentials. Ask your administrator for help.

4. Click **Connect**.

5. Select a **Project** and areas to log in to.

6. Click **OK**.

   You are logged in and ready to start using Helix ALM. See the Helix ALM help for more information.

> **Note:** If you cannot log in because the required public key is not found, you may need to import a server settings XML file provided by your administrator. The public key is used for stronger security when communicating with the server. See Configuring a Helix ALM Server connection, page 30. If you do not have the file or continue to experience login problems, contact your administrator for help.

Helix ALM Web

To use Helix ALM Web, you need the Helix ALM URL and your username and password.

1. Start a web browser and enter the URL.

   The URL uses the server name or IP address of the web server hosting Helix ALM and the path to the login page. For example, http://www.yourserver.com/ttweb.

2. Enter your **Username** and **Password**.

   If available, you can select **Use single sign-on** to log in with your network credentials or **Use external authentication** to log in with your authentication system credentials. Ask your administrator for help.

3. Click **Log In**.

4. Select a **Project** and areas to log in to.

5. Click **Connect**.

   You are logged in and ready to start using Helix ALM. See the Helix ALM Web help for more information.

Configuring the Helix ALM License Server

The Helix ALM License Server must be running and configured before users can access Helix ALM.

1. Make sure the Helix ALM License Server is running.

2. Start the Helix ALM License Server Admin Utility and configure a license server connection.

   Note: To use the Helix ALM License Server Web Admin Utility, you must install and configure the license server web components. See Configuring web servers for the Helix ALM License Server Web Admin Utility, page 23.

3. Add licenses and users to the license server.

Starting the Helix ALM License Server

An administrative user must make sure the Helix ALM License Server is running before the Helix ALM Server is started.

Tip: If Helix ALM cannot connect to the license server, an administrative user needs to troubleshoot. See Helix ALM Cannot Connect to the License Server for information.

Windows

If the license server is installed as a service, it starts automatically. If the license server is installed as an application, you must start it manually. Choose **All Programs > Perforce > Helix ALM License Server > Helix ALM License Server** from the Start menu.

Note: If the server is installed as a service but not running or you need to restart it, see the Windows documentation for information about starting a service.

Linux

Enter `/usr/bin/spls start`.

If you need to restart the server, enter `/usr/bin/spls stop` and then restart the server.

Starting Helix ALM License Server Admin Utility

Use the Helix ALM License Server Admin Utility to manage Helix ALM product licenses and global users and customers.

Windows

Choose **All Programs > Perforce > Helix ALM License Server > Helix ALM License Server Admin** on the Start menu.

Linux

Enter `/usr/bin/lsadmin`.

Web

In a web browser, enter the server admin utility URL. The URL uses the static or IP address of the web server hosting the admin utility and the path to the admin utility files. For example, http://www.yourserver.com/lsweb/admin.

Configuring a Helix ALM License Server connection

The Helix ALM Server connects to the Helix ALM License Server to authenticate license and user information.

If you installed the Helix ALM Server and the Helix ALM License Server on the same computer and chose to use the default port numbers (5100 for license server and 99 on Windows or 1566 on Linux for the Helix ALM Server), the Helix ALM Server automatically connects to the license server when it starts.

> **Tip:** If the license server is installed on a different computer or port, or is not found, you can log in using the local admin password to verify the connection information. See Troubleshooting, page 45 for information.

1. Start the Helix ALM License Server and the Helix ALM License Server Admin Utility.

2. Click **Setup** on the Helix ALM License Server Login dialog box.

3. Click **Add** on the Setup Server Connections dialog box.

4. Enter a **Server Name**, **Server Address**, and **Port**. The default port is 5100.

5. Click **OK** to add the server connection.

6. Click **Close** in the Setup Server Connections dialog box to return to the Helix ALM License Server Login dialog box.

7. Log in as the default administrative user and click **Connect**. The username is **Administrator** and there is no password.

   By default, the Administrator user has full admin security permissions and uses a floating license. We strongly recommend setting a password for this user to prevent unauthorized user access.

Adding licenses to the Helix ALM License Server

Users must have a license to access Helix ALM. Helix ALM product licenses are managed in the Helix ALM License Server. When you purchase a license, you need to add it to the license server before assigning it to users.

> **Note:** If you need to purchase Helix ALM or other product licenses, contact Perforce Sales.

1. Start the Helix ALM License Server Admin Utility.

2. Click **Licenses**.

   The Helix ALM Licenses dialog box opens.

3. Click **Add**.

   The Add License dialog box opens.

4. Enter the serial number or click **Browse** to select a license file.

License files have a .lic extension. If you manually enter a license, the Serial Number field is case sensitive. Licenses can be entered with or without dashes.

5. Click **OK** to add the license.

   You can assign the license to users to provide access to Helix ALM. See Adding users to the Helix ALM License Server, page 23.

Adding users to the Helix ALM License Server

Add users to the license server to provide access to Helix ALM. Users added to the license server are global users and can be shared across Helix ALM products.

> **Tip:** You can also add global users and local users who only need Helix ALM access directly in Helix ALM. See the Helix ALM help for information.

1. Start the Helix ALM License Server Admin Utility.

2. Click **Global Users**.

   The Global Users dialog box opens.

3. Click **Add** and then select **Add User**.

   The Add User dialog box opens.

4. Enter the user's contact information, username and password, security permissions, and licenses. See the Helix ALM License Server help for information.

5. Click **Add** to add the user to the Global Users list.

6. Close the Helix ALM License Server Admin Utility.

   You are prompted to change the communications and Administrator passwords. We strongly recommend changing these passwords to prevent unauthorized user access.

   After global users are added to the license server, you can retrieve them in Helix ALM and then add them to security groups. See the Helix ALM help for information.

Configuring web servers for the Helix ALM License Server Web Admin Utility

The Helix ALM License Server Web Admin Utility requires a set of HTML files and CGI scripts, which are hosted and configured on a web server. See Helix ALM License Server Supported Web Servers for a list of supported web servers. The utility components can be installed during Helix ALM installation.

After installation, you need to configure the web server before administrative users can use the utility. See the following information to configure your web server.

- Apache
- IIS 7 and later
- IIS 6

Security notes

- Login credentials sent from the Helix ALM License Server Web Admin Utility to the CGI are not encrypted, even if encryption is enabled on the server. We strongly recommend configuring HTTPS to encrypt

communication from the browser to the CGI on the web server. See your web server documentation for information about configuring and using HTTPS.

- Clickjacking can occur when hackers use transparent frames or iframes to embed content in web pages to trick users into click buttons or hyperlinks on a different web page in another domain or application. To protect your data and prevent clickjacking in Helix ALM Web and the license server web admin utility, configure the web server that hosts them to include X-Frame-Options and Content-Security-Policy HTTP response headers. See Preventing Clickjacking Attempts in Helix ALM Web Clients for information.

Configuring Apache for the Helix ALM License Server Web Admin Utility

After you install the Helix ALM License Server Web Admin Utility files, you need to create a CGI directory alias on the Apache web server before administrative users can log in.

1. Open the httpd.conf file in the Apache application directory.

2. Search the file for `ScriptAlias /cgi-bin` on a line that does not start with a pound symbol (#).

   If the directory does not exist, add the following line to the file to point to the location where CGIs are installed:

   ```
   ScriptAlias /cgi-bin/ "<Apache application directory path>/cgi-bin/"
   ```

Windows example

The Apache application directory location varies based on Apache and Windows versions. Replace <Apache application directory path> with the exact directories in the cgi-bin path. Following are examples of the default paths. Apache accepts forward or back slashes in Windows paths.

Windows version	32-bit Apache path	64-bit Apache path
64-bit	C:\Program Files (x86)\Apache	C:\Program Files\Apache
32-bit	C:\Program Files\Apache	--

Example:

```
ScriptAlias /cgi-bin/ "C:\Program Files\Apache Group\Apache\cgi-bin\"
```

Linux example

```
ScriptAlias /cgi-bin/ "/var/www/cgi-bin/"
```

Configuring Microsoft IIS 7 and later for the Helix ALM License Server Web Admin Utility

After you install the Helix ALM License Server Web Admin Utility files, you need to configure the web server before administrative users can log in.

See License Server Supported Web Servers for information about supported Microsoft Internet Information Server (IIS) versions. Refer to the IIS documentation for information about enabling CGI execution and authentication.

> **Note:** If you use IIS 6, see Configuring Microsoft IIS 6 for the Helix ALM License Server Web Admin Utility, page 26.

Enabling support for CGI executables

Windows Vista, 7, 8, 8.1, and 10

1. Choose **Start > Control Panel > Programs and Features**.

2. Click **Turn Windows features on or off** in the Tasks pane.

3. Expand the **Internet Information Services**, **World Wide Web Services**, and **Application Development Features** nodes.

4. Select **CGI**.

5. Click **OK** to save the changes.

Windows Server 2008

1. Choose **Start > Control Panel > Programs and Features**.

2. Click **Turn Windows features on or off** in the Tasks pane.

3. Click **Roles** in the left pane.

4. Click **Add Role Services** in the right pane.

5. Expand the **Web Server** and **Application Development Features** nodes.

6. Select **CGI**.

7. Click **OK** to save the changes.

Windows Server 2012

1. Choose **Start > Control Panel > Programs and Features**.

2. Click **Turn Windows features on or off** in the Tasks pane.

3. Select **Role-based or feature-based installation** on the Installation Type page and click **Next**.

4. Select the server you want to use and click **Next**.

5. Expand the **Web Server (IIS)**, **Web Server**, and **Application Development Features** nodes.

6. Select **CGI** and click **Next**.

7. Click **Next** to skip the Features information. You do not need to change any of these values.

8. Click **Install** to save the changes.

Creating a CGI directory alias

> **Note:** If you are configuring IIS for the Helix ALM License Server Web Admin Utility and Helix ALM Web, and the CGIs for both applications are in the same directory (e.g., C:\inetpub\scripts), you only need to create one CGI directory alias.

1. Open IIS Manager.

2. In the Connections pane, expand the server computer and **Sites** nodes.

3. Right-click **Default Web Site** and choose **Add Virtual Directory**.

    The Add Virtual Directory dialog box opens.

4. Enter 'scripts' as the **Alias**.

5. Enter the path to the lscgi.exe as the **Physical Path**. This is the path entered during the admin utility installation. The default path is C:\inetpub\scripts.

6. Click **OK** to save the changes.

Enabling the .exe CGI extension

1. Select the scripts virtual directory in the Connections pane.

2. Double-click **Handler Mappings**.

3. Click **Add Module Mapping** in the Actions pane.

    The Add Module Mapping dialog box opens.

4. Enter 'lscgi.exe' as the **Request path**.

5. Select CgiModule as the **Module**.

6. Enter 'lscgi' as the **Name**.

7. Click **OK** to save the changes.

8. Select the server computer in the Connections pane.

9. Double-click **ISAPI and CGI Restrictions**.

10. Click **Add** in the Actions pane.

    The Add ISAPI or CGI Restriction dialog box opens.

11. Enter the path to the lscgi.exe program as the **ISAPI** or **CGI path**. This is the path entered for the lscgi.exe program during the admin utility installation. The default path is C:\inetpub\scripts\lscgi.exe.

12. Enter 'lscgi' as the **Description**.

13. Select **Allow extension path to execute**.

14. Click **OK** to save the changes.

Configuring Microsoft IIS 6 for the Helix ALM License Server Web Admin Utility

After you install the Helix ALM License Server Web Admin Utility files, you need to configure the web server before administrative users can log in.

See License Server Supported Web Servers for information about supported Microsoft Internet Information Server (IIS) versions. Refer to the IIS documentation for information about enabling CGI execution and authentication.

> **Note:** If you use IIS 7 or later, see Configuring Microsoft IIS 7 and later for the Helix ALM License Server Web Admin Utility, page 24.

Creating a CGI directory alias

Note: If you are configuring IIS for the Helix ALM License Server Web Admin Utility and Helix ALM Web, and the CGIs for both applications are in the same directory (e.g., C:\inetpub\scripts), you only need to create one CGI directory alias.

1. Open IIS Manager.

2. Expand the server computer and **Web Sites** nodes.

3. Right-click **Default Web Site** and choose **New > Virtual Directory**.

   The Virtual Directory Creation Wizard opens.

4. Follow the on-screen instructions. Enter the following information when prompted:

   - Enter 'scripts' as the **Alias**.

   - Set the **Directory** to the path that was entered during the admin utility installation for the lscgi.exe program. The default path is C:\inetpub\scripts.

   - Select the following **Access Permissions**: Read, Run scripts, Execute.

5. Click **Finish** to save the changes.

Enabling the .exe CGI extension

1. In IIS Manager, expand the server computer and select **Web Service Extensions**.

2. Click **Add a new Web service extension** in the Web Service Extensions pane.

3. Enter 'LSAdmin' as the **Extension name**.

4. Click **Add**.

5. Enter the path to the lscgi.exe program and click **OK**. The default location is C:\inetpub\scripts\lscgi.exe.

6. Select **Set extension status to Allowed**.

7. Click **OK**.

8. Click **OK** to save the changes.

Configuring New Helix ALM Installations

Before users can access Helix ALM, the administrator needs to perform the following tasks.

1. Make sure the Helix ALM Server is running.

2. If you installed Helix ALM web components, configure the web server.

3. Start the Helix ALM Server Admin Utility and configure a server connection.

   Note: During installation, an administrative user with full admin security permissions is created. To log in as this user, enter **Administrator** as the username and leave the Password field empty. If you want to create a different admin user, you can delete this user. If you do not want to delete this user, add a password to prevent unauthorized users from logging in to the admin account.

4. Create a project and configure server options.

5. After creating a project, perform the following tasks so users can work in it.

   - Start the Helix ALM Client

   - Retrieve users from the Helix ALM License Server

   - Set up security groups

   - Configure project options

Starting the Helix ALM Server

An administrative user must make sure the Helix ALM Server is running before users can access Helix ALM.

> **Tip:** If users cannot connect to the Helix ALM Server when it is running, an administrative user needs to make sure the server computer is online and the Helix ALM License Server is also running. Users should make sure the IP address and port number are correct in the server connection information.

Windows

If the Helix ALM Server is installed as a service, it starts automatically. If the server is installed as an application, you must start it manually. Choose **All Programs > Perforce > Helix ALM > Helix ALM Server** from the Start menu.

> **Note:** If the server is installed as a service but not running or you need to restart it, see the Windows documentation for information about starting a service.

Linux

Enter `/usr/bin/ttstudio start`.

If you need to restart the server, enter `/usr/bin/ttstudio stop` and then restart the server.

Starting the Helix ALM Server Admin Utility

The Helix ALM Server Admin Utility is used to manage projects, the server log, server users, the mail queue, and server options.

- **Windows**—Choose **Programs > Perforce > Helix ALM > Helix ALM Server Admin** on the Start menu.

- **Mac**—Double-click the **Helix ALM Server Admin Utility** icon in the Applications/HelixALM folder.

- **Linux**—Enter `/usr/bin/ttadmin`

- **Web**—In a web browser, enter the server admin utility URL. The URL uses the static or IP address of the web server to connect to and the path to the admin utility login page. For example, http://www.yourserver.com/ttweb/ttadmin/adminlogin.htm. If the login dialog box does not open automatically, click **Go To Login** on the Welcome page.

> **Note:** If RSA key exchange is enabled, you may be prompted to verify the authenticity of the key fingerprint, which is used to prevent hacking. Verify that you are logging in to the correct server. If you are unsure if the fingerprint is correct, log in locally to server admin utility on the server computer and verify that the key displayed in the Security server options matches the key displayed when you logged in from the other computer. If the fingerprint is correct, click **Yes** to log in. If a different fingerprint is displayed, a hack may be in progress.

Configuring a Helix ALM Server connection

You need to configure a Helix ALM Server connection and create at least one project before users can log in to Helix ALM.

1. Start the Helix ALM Server and Helix ALM Server Admin Utility.

2. Click **Setup** on the login dialog box if the Setup Server Connections dialog box does not open automatically.

3. Click **Add** to add a server connection.

4. Enter a **Server Name**, **Server Address**, and **Port Number**.

   > **Note:** If RSA key exchange is enabled for the server, click **Import** to import the server settings instead of manually entering the information. Select the XML file and click **Open**. The Server address, Port, and Public key fingerprint fields are automatically populated. The public key is required to connect to the server. See the Server Admin Utility help for information.

5. Click **OK** to add the server connection.

6. Click **Close** in the Setup Server Connections dialog box to return to the login dialog box.

7. Log in as the default administrative user and click **Connect**. The username is **Administrator** and there is no password.

8. Click **Projects** and create at least one project. See the Server Admin Utility help for information.

9. Close the server admin utility when you finish adding projects.

> **Note:** Before users can access a project, you must retrieve the users from the license server to the project and add them to at least one security group using the Helix ALM Client. See the Helix ALM help for information about retrieving users and adding them to security groups.

Configuring Helix ALM Web

Helix ALM Web is a web-based client for accessing Helix ALM project data. The Helix ALM Web Server Admin Utility is a web-based client for managing server configurations. You can use these clients in a supported browser from any computer.

The web clients use a set of HTML files and CGI scripts, which are hosted and configured on a web server.

Administrator

The web components are installed during server or custom installations. After installation, you need to configure the web server before users can log in using the web clients. See Supported Web Servers for a list of supported web servers.

See the following information to configure your web server.

- Apache
- IIS 7 and later
- IIS 6

Security notes

- Login credentials sent from web clients to the CGIs are not encrypted, even if encryption is enabled on the server. We strongly recommend configuring HTTPS to encrypt communication from the browser to the CGIs on the web server. See your web server documentation for information about configuring and using HTTPS.
- Clickjacking can occur when hackers use transparent frames or iframes to embed content in web pages to trick users into click buttons or hyperlinks on a different web page in another domain or application. To protect your data and prevent clickjacking in Helix ALM Web and the license server web admin utility, configure the web server that hosts them to include X-Frame-Options and Content-Security-Policy HTTP response headers. See Preventing Clickjacking Attempts in Helix ALM Web Clients for information.

User

To use Helix ALM Web, you only need to enter the URL in a web browser. See Starting Helix ALM, page 19.

You may also need to install the Helix ALM URL Redirector to access ttstudio hyperlinks. See Installing the Helix ALM URL Redirector, page 36.

About distributed Helix ALM web installations

You can install the Helix ALM Server on the same computer as the web server or another computer as long as they are located in the same network. If you have a large Helix ALM installation, you may want to host multiple servers on multiple computers running against one or more web servers. Regardless of the configuration, when a user accesses the Helix ALM CGIs, the CGIs safely and securely communicate with the server behind your firewall.

Distributed installations provide the following benefits:

- Enhanced security—Hosting the Helix ALM web components on one computer and data on another computer provides more security. A hacker who accesses your web server will not have access to any

data.

- Better performance—Separating the web server and the Helix ALM Server lets you split up the workload, increasing the performance of both server computers. Using multiple Helix ALM Servers on different computers can improve performance even more. In addition, SoloSubmit can be installed on up to 10 additional web servers, which allows customers to access separate SoloSubmit URLs while submitting issues and requests to the same server or project.

- Greater flexibility—Web client users can log in to all Helix ALM Servers hosted by the web server simultaneously. All projects the user has access to are displayed in the Projects list.

Perform the following steps to configure a distributed Helix ALM web installation:

1. Install the Helix ALM Server, Client, and Server Admin Utility on the computer that will host the server application and projects.

2. Install the web and CGI components on the computer that will host the web components.

3. Configure the web server for Helix ALM.

4. To provide access to multiple Helix ALM Servers from a single web server, configure the CGIs to connect to the servers. See the Registry Utility help for information.

Configuring Apache

You must create a CGI directory alias on the Apache web server before users can log in to Helix ALM web clients.

1. Open the httpd.conf file in the Apache application directory.

2. Search the file for `ScriptAlias /cgi-bin` on a line that does not start with a pound symbol (#).

   If the directory does not exist, add the following line to the file to point to the location where CGIs are installed:

   ```
   ScriptAlias /cgi-bin/ "<Apache application directory path>/cgi-bin/"
   ```

Windows example

The Apache application directory location varies based on Apache and Windows versions. Replace <Apache application directory path> with the exact directories in the cgi-bin path. Following are examples of the default paths. Apache accepts forward or back slashes in Windows paths.

Windows version	32-bit Apache path	64-bit Apache path
64-bit	C:\Program Files (x86)\Apache	C:\Program Files\Apache
32-bit	C:\Program Files\Apache	--

Example:

```
ScriptAlias /cgi-bin/ "C:\Program Files\Apache Group\Apache\cgi-bin\"
```

Linux example

```
ScriptAlias /cgi-bin/ "/var/www/cgi-bin/"
```

> **Note:** If you cannot log in to Helix ALM web clients, see Web Clients Return a 404-Page Not Found Error.

Configuring Microsoft IIS 7 and later for Helix ALM Web

After you install the Helix ALM web components, you need to configure the web server before users can log in to web clients.

See Supported Web Servers for information about supported Microsoft Internet Information Server (IIS) versions. Refer the IIS documentation for information about enabling CGI execution and authentication.

Note: If you use IIS 6, see Configuring Microsoft IIS 6 for Helix ALM Web, page 35.

Enabling support for CGI executables

Windows Vista, 7, 8, 8.1, and 10

1. Choose **Start > Control Panel > Programs and Features**.

2. Click **Turn Windows features on or off** in the Tasks pane.

3. Expand the **Internet Information Services**, **World Wide Web Services**, and **Application Development Features** nodes.

4. Select **CGI** and **ISAPI Extensions**.

5. Click **OK** to save the changes.

Windows Server 2008

1. Choose **Start > Control Panel > Programs and Features**.

2. Click **Turn Windows features on or off** in the Tasks pane.

3. Click **Roles** in the left pane.

4. Click **Add Role Services** in the right pane.

5. Expand the **Web Server** and **Application Development Features** nodes.

6. Select **CGI** and **ISAPI Extensions**.

7. Click **OK** to save the changes.

Windows Server 2012

1. Choose **Start > Control Panel > Programs and Features**.

2. Click **Turn Windows features on or off** in the Tasks pane.

3. Select **Role-based or feature-based installation** on the Installation Type page and click **Next**.

4. Select the server to use and click **Next**.

5. Expand the **Web Server (IIS)**, **Web Server**, and **Application Development Features** nodes.

6. Select **CGI** and click **Next**.

7. Click **Next** to skip the Features information. You do not need to change any of these values.

8. Click **Install** to save the changes.

Creating a CGI directory alias

Note: If you are configuring IIS for the Helix ALM License Server Web Admin Utility and Helix ALM Web, and the CGIs for both applications are in the same directory (e.g., C:\inetpub\scripts), you only need to create one CGI directory alias.

1. Open IIS Manager.

2. In the Connections pane, expand the server computer and **Sites** nodes.

3. Right-click **Default Web Site** and choose **Add Virtual Directory**.

   The Add Virtual Directory dialog box opens.

4. Enter 'scripts' as the **Alias**.

5. Enter the path to the ttcgi.exe as the **Physical Path**. This is the path entered during the Helix ALM installation. The default path is C:\inetpub\scripts.

6. Click **OK** to save the changes.

Enabling the .exe CGI extension

1. Select the **scripts** virtual directory in the Connections pane.

2. Double-click **Handler Mappings**.

3. Click **Add Module Mapping** in the Actions pane.

   The Add Module Mapping dialog box opens.

4. Enter 'ttcgi.exe' as the **Request path**.

5. Select CgiModule as the **Module**.

6. Enter 'ttcgi' as the **Name**.

7. Click **OK** to save the changes.

8. Repeat steps 3-7 for other web clients you use.

   - If you use the web server admin utility, add ttadmcgi.exe.

   - If you use SOAP, add ttsoapcgi.exe.

   - If you use an external source control provider, such as Git, add ttextpro.exe.

9. Select the server computer in the Connections pane.

10. Double-click **ISAPI and CGI Restrictions**.

11. Click **Add** in the Actions pane.

    The Add ISAPI or CGI Restriction dialog box opens.

12. Enter the path to the ttcgi.exe program as the **ISAPI** or **CGI path**. This is the path entered for the ttcgi.exe program during the Helix ALM installation. The default path is C:\inetpub\scripts\ttcgi.exe.

13. Enter 'ttcgi' as the **Description**.

14. Select **Allow extension path to execute**.

15. Click **OK** to save the changes..

16. Repeat steps 11-15 for other web clients you use.

- If you use the web server admin utility, add ttadmcgi.exe.

- If you use SOAP, add ttsoapcgi.exe.

- If you use an external source control provider, such as Git, add ttextpro.exe.

Changing the CGI response buffer limit

1. Select the scripts virtual directory in the Connections pane.

2. Double-click **Configuration Editor**.

3. In the **Section** list, expand **system.WebServer** and select **handlers**.

4. Select **(Collection)** and click **Edit Items** in the '(Collection)' Element pane.

   The Collection Editor dialog box opens.

5. Select **ttcgi**.

6. Change the **responseBufferLimit** property value to **0**.

7. If you use SOAP, select the **ttsoapcgi** item and change the **responseBufferLimit** property value to **0**.

8. Close the Collection Editor dialog box to save the changes.

> **Note:** If you cannot log in to Helix ALM web clients, see Web Clients Return a 404-Page Not Found Error.

Configuring Microsoft IIS 6 for Helix ALM Web

After you install the Helix ALM web components, you need to configure the web server before users can log in to web clients.

See Supported Web Servers for information about supported Microsoft Internet Information Server (IIS) versions. Refer the IIS documentation for information about enabling CGI execution and authentication.

> **Note:** If you use IIS 7 or later, see Configuring Microsoft IIS 7 and later for Helix ALM Web, page 33.

Creating a CGI directory alias

> **Note:** If you are configuring IIS for the Helix ALM License Server Web Admin Utility and Helix ALM Web, and the CGIs for both applications are in the same directory (e.g., C:\inetpub\scripts), you only need to create one CGI directory alias.

1. Open IIS Manager.

2. Expand the server computer and **Web Sites** nodes.

3. Right-click **Default Web Site** and choose **New > Virtual Directory**.

   The Virtual Directory Creation Wizard opens.

4. Follow the on-screen instructions. Enter the following information when prompted:

   - Enter 'scripts' as the **Alias**.

   - Set the **Directory** to the path that was entered during the Helix ALM installation for the ttcgi.exe program. The default path is C:\inetpub\scripts.

   - Select the following **Access Permissions**: Read, Run scripts, Execute.

5. Click **Finish** to save the changes.

Enabling the .exe CGI extension

1. In IIS Manager, expand the server computer and **Web Sites** nodes and select **Web Service Extensions**.

2. Click **Add a new Web service extension** in the Web Service Extensions pane.

3. Enter 'Helix ALM' as the **Extension name**.

4. Click **Add**.

5. Enter the path to the ttcgi.exe program and click **OK**. The default location is C:\inetpub\scripts\ttcgi.exe.

6. Select **Set extension status to Allowed**.

7. Click **OK**.

8. Repeat steps 4 through 7 for other web clients you use.

   - If you use the web server admin utility, add ttadmcgi.exe.

   - If you use SOAP, add ttsoapcgi.exe.

   - If you use an external source control provider, such as Git, add ttextpro.exe.

9. Click **OK** to save the changes.

Enabling Active Server pages

1. In IIS Manager, expand **Web Sites** and then click **Web Service Extensions**.

2. In the Web Service Extensions pane, click **Active Server Pages** and then click **Allow**.

3. Restart IIS.

> **Note:** If you cannot log in to Helix ALM web clients, see Web Clients Return a 404-Page Not Found Error.

Installing the Helix ALM URL Redirector

Helix ALM supports ttstudio and http protocols in hyperlinks used to open items, such as issues. The Helix ALM URL Redirector handles routing of ttstudio hyperlinks and determines if they are opened in the desktop or web client. Http hyperlinks are always opened in the web client.

By default, ttstudio hyperlinks are opened in the desktop client. If the client is not found, the link is converted to use the http protocol and opened in the web client.

The redirector is automatically installed during client installations. Web client users must install the redirector to open ttstudio hyperlinks. Download the installer from the Add-ons page.

Moving Helix ALM Projects

After installation, you may want to move existing Helix ALM projects. You can move projects to another computer using a network connection, a ZIP drive, or an FTP connection. Keep the following in mind:

- If you are upgrading Helix ALM, you can upgrade projects in the existing location or in the new location. If you upgrade projects in the existing location, you should wait to move the projects to the new location until you are sure the upgrade is successful.

- The project database file structure is the same on all operating systems. No special conversion is necessary.

- On Linux, files in the /var/lib/HelixALM directory must be owned by root. The ttproj.db file needs read-write permissions to be able to save data. The filename is case sensitive.

Note: The following information only applies to Helix ALM native projects and TestTrack 6.0 and later native projects.

1. Install Helix ALM and the Helix ALM License Server in the new location.

2. In both locations, stop the Helix ALM Server and the Helix ALM License Server.

   It is important to stop the servers in the old location to make sure the projects are not being written to when they are moved.

3. In the old location, make a backup copy of the LicenseServDb directory and all subdirectories in the license server application directory.

4. In the old location, make a backup copy of the TTDbs directory and all subdirectories in the Helix ALM application directory.

5. Copy the LicenseServDb directory and all subdirectories in the old location to the license server application directory in the new location.

6. Copy the TTDbs directory and all subdirectories in the old location to the Helix ALM application directory in the new location.

7. Start the license server in the new location.

8. Start the Helix ALM Server in the new location.

Note: If you have trouble connecting to the projects in the new location, see Moving Databases and Projects.

Setting Up RDBMS Databases

Helix ALM projects and the server database are stored in a Relational Database Management System (RDBMS). SQLite is default, native database format and does not require any setup or configuration before or after installation. See About Helix ALM databases for information about how Helix ALM data is stored.

Helix ALM data can also be stored in other RDBMS types, which allows you to leverage your existing database administration process. Microsoft SQL Server (ODBC), Oracle, and PostgreSQL are supported. See Helix ALM RDBMS Support for information about supported platforms and database versions.

Review the following information for help setting up databases for use with Helix ALM.

- Oracle
- PostgreSQL
- SQL Server

> **Note:** Helix ALM License Server data is stored in a separate database. By default, the license server database is also stored in SQLite, but other RDBMS types are supported. See the Helix ALM License Server help for information about setting up license server databases.

Setting up Oracle databases

Perforce does not provide support for installing, configuring, or maintaining Oracle. A qualified Oracle database administrator should install and configure the database and create the required schemas and tablespaces.

Keep the following in mind:

- Do not add, delete, or modify any fields in the Helix ALM tables.
- Do not directly add, edit, or delete any data in the tables.
- Do not create different primary keys. This will adversely affect application performance.
- Do not create complex triggers on any of the tables. Triggers may cause severe database issues and correcting these issues is not covered by Perforce.
- Create a process to back up database tables on a regular schedule.
- Running Oracle and the Helix ALM Server on the same computer can result in slow performance if not configured correctly. Make sure Oracle is configured correctly to avoid using all the system memory.

Connecting to Oracle

The recommended method for using Oracle is via Oracle Call Interface (OCI). Download and install the required Oracle Instant Client libraries.

Windows installers

- 32-bit
- 64-bit

Linux installers

- 32-bit
- 64-bit

Creating database tables

The Helix ALM Server automatically creates tables when you start the server or convert the server database. The TTServerDB.sql script file, which is located in the Oracle directory in the Helix ALM application directory, is used to create the tables.

Creating Oracle users

You must create an Oracle user for the Helix ALM Server. The user only requires default connection privileges and should not have any Oracle DBA privileges. Use your preferred tablespace management for the users. An easy method is to set up the user to share the USERS tablespace and to enable an unlimited quota.

Database character set

Oracle only converts characters when the Oracle client's character set, specified by NLS_LANG, does not match the character set stored in the database. If the character set is not UTF-8, VARCHAR2 fields may not be able to correctly store data. If this happens, the following misnomer of an error is returned: 'ORA-01461: can bind a LONG value only for insert into a LONG column'. The Oracle database character set should be AL32UTF8 or UTF8.

Sizing, memory, and tuning

Oracle sizing and tuning settings should be consistent with your corporate standards. Review the SQL scripts for schema creation installed with Helix ALM Server to determine the appropriate settings.

Setting up PostgreSQL databases

Perforce does not provide support for installing, configuring, or maintaining PostgreSQL. A qualified PostgreSQL database administrator should install and configure the database.

Keep the following in mind:

- Do not add, delete, or modify any fields in the Helix ALM tables.
- Do not directly add, edit, or delete any data in the tables.
- Do not create different primary keys. This will adversely affect application performance.
- Do not create complex triggers on any of the tables. Triggers may cause severe database issues and correcting these issues is not covered by Perforce.
- Create a process to back up database tables on a regular schedule.
- Running PostgreSQL and the Helix ALM Server on the same computer can result in slow performance if not configured correctly. Make sure PostgreSQL is configured correctly to avoid using all the system memory.

Creating server database tables

The Helix ALM Server automatically creates tables in PostgreSQL when you start the server or convert the server database. The TTServerDB.sql script file, which is located in the PostgreSQL directory in the Helix ALM application directory, is used to create the tables.

Setting up SQL Server databases

Perforce does not provide support for installing, configuring, or maintaining SQL Server. A qualified SQL Server database administrator should install and configure the database.

Keep the following in mind:

- Do not add, delete, or modify any fields in the Helix ALM tables.

- Do not directly add, edit, or delete any data in the tables.

- Do not create different primary keys. This will adversely affect application performance.

- Do not create complex triggers on any of the tables. Triggers may cause severe database issues and correcting these issues is not covered by Perforce.

- Create a process to back up database tables on a regular schedule.

- Running SQL Server and the Helix ALM Server on the same computer can result in slow performance if not configured correctly. Make sure SQL Server is configured correctly to avoid using all the system memory.

> **Note:** You must be a member of the db_ddladmin role and have the CREATE TABLE, CREATE PROCEDURE, and CREATE VIEW permissions to create the Helix ALM tables.

Connecting to SQL Server

The only supported method for using SQL Server is via ODBC. After creating the database to use for the Helix ALM product, add a SQL Server data source name (DSN) on the Helix ALM computer. See Creating DSNs for SQL Server Databases for information.

Creating server database tables

The Helix ALM Server automatically creates tables when you start the server or convert the server database. The TTServerDB.sql script file, which is located in the SQLServer directory in the Helix ALM application directory, is used to create the tables.

Troubleshooting RDBMS connections

The following information can help you troubleshoot common RDBMS issues. Refer to the database vendor documentation for additional help.

> **Note:** If the Helix ALM Server cannot connect to the server database, errors are added to the Startup.log file in the Helix ALM application directory.

Server database cannot be shared

The Helix ALM Server, Helix ALM License Server, and Surround SCM Server and store server configuration

information in a server database. The server databases cannot be located in the same RDBMS database.

Dropped tables or change database configuration

You must stop and restart the Helix ALM Server if you drop server or tables from an RDBMS and need to re-create them. You must also stop and restart the server if you reconfigure the destination database in the ODBC Data Source Administrator.

The Helix ALM Server caches data from the database. If the underlying database is modified, the cached data no longer matches the data in the database. The connection fails if the server identifies that the backend database is different and the following error is logged: 'The server failed to initialize a connection for XYZ. The destination RDBMS database was changed'.

Mismatched UUID affects server database lock

This error occurs when the database is in use by a different Helix ALM Server. You are prompted to reconfigure the database. Do not reconfigure the database if it is used on a different computer. You must manually modify the Helix ALM Server connection information to point to a different database and restart the server. If the database is no longer in use by a different server, reconfigure the database connection information to allow the current Helix ALM Server access to the database.

ODBC connection issues

Try the following if you are experiencing ODBC connection problems.

1. Test the ODBC connection in the ODBC Data Source Administrator.

    If you cannot connect to the RDBMS, click the Test Connection button in the ODBC Data Source Administrator to test the connection.

2. Make sure the DSN is a system DSN.

    The data source you are trying to connect to must be configured as a system DSN in the ODBC Data Source Administrator. The Helix ALM Server Admin Utility only displays system DSNs.

ODBC connection errors

Error	Cause
[Microsoft][ODBC Driver Manager] Data source name not found and no default driver specified QODBC3: Unable to connect	An ODBC data source with the specified DSN was not set up in the ODBC Data Source Administrator. The DSN must be a system DSN.

SQL Server connection errors

Error	Cause
[Microsoft][ODBC SQL Server Driver][SQL Server]Login failed for user '(null)'. Reason: Not associated with a trusted SQL Server connection. QODBC3: Unable to connect	Occurs on Windows. A username is not specified for the RDBMS connection and the ODBC data source was not configured to run 'With Windows NT authentication using the network login ID' in the ODBC Data Source Administrator.

Error	Cause
[Microsoft][ODBC SQL Server Driver][SQL Server]Login failed for user 'xxxx'. QODBC3: Unable to connect	The username or password entered in the RDBMS connection information is not valid.

Oracle connection errors

Error	Cause
ORA-06401: NETCMN: invalid driver designator QOCI: Unable to logon	The Oracle Instant client drivers are not installed. See Setting up Oracle databases, page 39 for information about downloading the installers.
ORA-12705: invalid or unknown NLS parameter value specified QOCI: Unable to logon	The full Oracle client is installed on the same computer with a language setting other than UTF8. To resolve this issue, set the following environment variable: ■ Windows—`NLS_LANG=AMERICAN_AMERICA.WE8MSWIN1252` ■ Linux—`NLS_LANG=American_America.UTF8` You can also remove the following registry entry to help resolve the issue: `HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\NLS_LANG` **Note:** Refer to Oracle Metalink article 179133.1, "The Correct NLS_LANG in a Windows Environment," for information about the correct setting, which varies based on the Windows version.
ORA-12514: TNS:listener does not currently know of service requested in connect descriptor QOCI: Unable to logon	The service name specified in the RDBMS connection information does not exist. Make sure that an Oracle listener was created with the specified service name on the host computer. This error can also occur if a version of the full Oracle client older than 10g is installed. If the full client appears in the PATH environment variable, the older oci.dll may be loaded. To resolve this issue, search for all instances of the oci.dll file. If multiple copies are found, remove the other copies or remove their directory reference from the PATH environment variable.
ORA-12154: TNS:could not resolve the connect identifier specified QOCI: Unable to logon	The computer specified in the RDBMS connection host name cannot be found. Make sure the host name is correct and the host computer is running.
ORA-12541: TNS:no listener QOCI: Unable to logon	The port number specified in the RDBMS connection information is not a valid TNS listener port on the specified host computer. Check the host port number.
ORA-01017: invalid username/password; logon denied QOCI: Unable to logon	The username or password specified in the RDBMS connection information is not valid. Check the username and password.

PostgreSQL connection errors

Error	Cause
Opening the database connection failed because the Helix ALM Server could not connect to the server or translate the host name	The Helix ALM Server cannot connect to the PostgreSQL service. Check the following and then restart the server: ■ The PostgreSQL service is running. ■ The host name and port number are correct. ■ A firewall is not blocking the port. ■ If connecting to a remote PostgreSQL server, the server is configured to accept remote connections.

Troubleshooting

If there is a problem connecting to the Helix ALM Server or Helix ALM License Server, first check the following and try reconnecting:

- Make sure the server computer is running.

- Check the IP address and port number.

- Make sure you are connected to the network, intranet, or Internet.

The Helix ALM License Server and Helix ALM Server are not communicating

If the servers are not communicating, make sure the connections are configured correctly.

1. Start the Helix ALM License Server and the Helix ALM Server.

2. Start the Helix ALM Server Admin Utility and log in.

   Use the local admin password to log in if your username and password are not recognized. Leave the username blank and enter **admin** as the password. This password only provides access to the Helix ALM License Server configuration.

3. Click **Server Options** and select the **License Server** category.

4. Make sure the server address and port number are correct and click **Test Connection**.

5. If the connection is successful, stop and restart the Helix ALM Server for the changes to take effect.

6. If the connection is not successful, check the following:

   - If the Helix ALM Server and the license server are installed on different computers, check your network and firewall configurations to open the necessary ports.

   - Check the communications password on the Helix ALM Server and license server. The same communications password must be set on both servers. To check the password in the Helix ALM Server Admin Utility, click **Server Options**, and then click the **License Server** category. To check the password in the Helix ALM License Server Admin Utility, click **Server Options**, and then click the **Server** category.

Users cannot access a Helix ALM area they have a license for

Users may be able to log in to Helix ALM, but may not be able to access issue, requirements, or test case management functionality. Verify that the project options allow users to log in and check user licenses.

Checking project login options

1. Choose **Tools > Administration > Project Options** and select the **General** category.

2. Select any **Login Options** to allow users to log in to the project.

3. Click **OK** to save the changes.

   Users must restart Helix ALM if any changes were made. If users still cannot access functionality, make sure the correct license is assigned.

Checking user licenses

1. Choose **View > Users**.

2. Select a user and click **Edit**.

3. Click the **License** tab.

4. Verify that user has a license for the area they cannot access. Assign a license if necessary.

5. Click **OK** to save the changes.

    Users must restart Helix ALM if any changes were made.

'Required public key is not found' message when logging in

If RSA key exchange is enabled on the Helix ALM Server for additional security, a public key must be stored in the server connection. If the public key is not found or does not match the key on the server, the user cannot log in.

Helix ALM Client users

Import a server settings XML file provided by the Helix ALM administrator.

> **Note:** The administrator can download the XML file in the server admin utility. See the Server Admin Utility help for information.

1. Click **Setup** in the Helix ALM login dialog.

2. If the server connection is new, click **Add**. If the connection already exists, select it and click **Edit**.

3. Click **Import**, select the XML file and, click **Open**.

    The Server address, Port, and Public key fingerprint fields are automatically populated.

4. Click **OK** to save the changes.

5. Retry the login.

Helix ALM Web users

The Helix ALM administrator must update the CGI settings on the Helix ALM Server. See the Registry Utility help for information.

Users cannot log in to Helix ALM Web

If users cannot log in to Helix ALM Web, make sure they have the security permissions to log in using web clients.

1. Choose **View > Security Groups**.

2. Select the user's security group and click **Edit**.

3. Select **General** in the Command Security category.

4. Verify that the **Allow Login Via Helix ALM Web** command is selected.

5. Click **OK** to save the changes.

6. Retry the login.

Web clients return a '404 - Page Not Found' error

Helix ALM Web and the Helix ALM Web Server Admin Utility need access to the CGI directory and the CGI

executables. This error usually occurs for one of the following reasons:

- The directory and executable do not exist or cannot be accessed

- The directory and executable location has changed

- The .exe extension is prohibited (IIS 6.0 only)

- URLScan is running (IIS only)

See Web Clients Returns a 404-Page Not Found Error for information about resolving the error.

Server is not available in the login dialog box

To access a project, the Helix ALM Client must connect to a Helix ALM Server. Users need to set up a server connection if the server that contains the project is not available in the Server list in the login dialog box.

1. Click **Setup** in the Helix ALM login dialog box.

2. Click **Add** in the Setup Server Connections dialog box.

3. Enter a **Server Name**, **Server Address**, and **Port** number.

   > **Tip:** If the server is installed on the same computer as the Helix ALM Client, enter 'localhost' or '127.0.0.1' for the server address.

4. Click **OK** to add the server connection.

Project is not available in the Projects list

The Projects list in the Helix ALM Project Selection dialog box only contains the projects that users have access to. If users do not have access, the Helix ALM administrator must add them to the project.

1. Log in to the project.

2. Choose **View > Users**.

3. Click **Add** to add a new user or click **Retrieve Global User** to add global users from the Helix ALM License Server.

Appendix A: Microsoft Windows Security Issues

File level security issues

Helix ALM can only restrict security access through the application. This does not replace the need for file and directory security at the operating system level.

Use Windows NT/2000 with NTFS to provide increased security. You can restrict access to the Helix ALM directory through NTFS security settings. You can also restrict access for most users to read-only permission. Users do not need write access because the server application does the actual writing to the project files.

The following example illustrates what could happen if users have full access:

A drive is accessible through the network and there is no file-level security on the drive. Any user can open and look at data/files using a program such as Notepad. Data is stored in both binary format and plain text. Usernames and passwords are encrypted so the user cannot access that information. In addition to viewing the data/files, it is possible for a user to vandalize your system by deleting files or even deleting an entire project.

Note: Windows 2000 with FAT provides some security restrictions. However, Windows NT/2000 with NTFS is recommended if security is a concern.

Directory sharing issues

- The Helix ALM ODBC driver requires projects to be accessible via a shared network drive. You only need to share the Helix ALM directory if you are planning to use the ODBC driver.

- If you grant ODBC access to a project, users can view all Helix ALM data with the exception of encrypted usernames and passwords.

- The need for file-level security is increased if you place the Helix ALM project on a shared network drive.

Note: Windows XP does not provide file-level security because it uses the FAT file system. Windows NT security is only available if you are using the NTFS file system; it is not available with the FAT file system. You can convert to NTFS. Refer to the Microsoft Windows documentation for additional information.

Appendix B: Third-Party Software Licenses

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