



License Management Guide



License Management Guide

Before using this information, be sure to read the general information under “Notices,” on page 89.

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About this book

The IBM[®] Rational[®] License Management Guide provides comprehensive information about Rational Common Licensing (powered by FLEXlm software) for IBM Rational products for Windows[®], Linux[®], and UNIX[®] systems. It provides you with the technical information you need to:

- Request and install floating, named-user floating, and node-locked license keys.
- Install and configure the Rational license server software on Windows and UNIX servers.
- Troubleshoot problems related to licensing IBM Rational products.

This manual is divided into two sections: desktop tasks and administrator tasks.

- If you are licensing Rational products on a desktop or using floating licenses from a Rational license server, use the desktop licensing section.
- If you are the license administrator or a user who manages the license keys, use the license administrator section to request permanent license keys, set up the license server (if your company has purchased floating licenses), and use advanced features.

Who should read this book

This guide is intended for desktop users and system administrators. This book assumes:

- Desktop users have knowledge of Microsoft[®] Windows and its conventions.
- Administrators have knowledge of Microsoft Windows and its conventions and also knowledge of UNIX operating systems, and experience with client/server environments.

Typographical conventions

This manual uses the following typographical conventions:

- *ccase-home-dir* represents the directory into which Rational ClearCase, Rational ClearCase LT, or Rational ClearCase MultiSite has been installed. By default, this directory is /opt/rational/clearcase on the UNIX system and C:\Program Files\Rational\ClearCase on Windows.
- *cquest-home-dir* represents the directory into which Rational ClearQuest has been installed. By default, this directory is /opt/rational/clearquest on the UNIX system and C:\Program Files\Rational\ClearQuest on Windows.
- **Bold** is used for names the user can enter; for example, command names and branch names.
- A sans-serif font is used for file names, directory names, and file extensions.
- **A serif bold font** is used for GUI elements; for example, menu names and names of check boxes.
- *Italic* is used for variables, document titles, glossary terms, and emphasis.
- A monospaced font is used for examples. Where user input needs to be distinguished from program output, **bold** is used for user input.
- Nonprinting characters appear as follows: <EOF>, <NL>.
- Key names and key combinations are capitalized and appear as follows: Shift, Ctrl+G.

- [] Brackets enclose optional items in format and syntax descriptions.
- { } Braces enclose a list from which you must choose an item in format and syntax descriptions.
- | A vertical bar separates items in a list of choices.
- ... In a syntax description, an ellipsis indicates you can repeat the preceding item or line one or more times. Otherwise, it can indicate omitted information.

Note: In certain contexts, you can use “...” within a pathname as a wildcard, similar to “*” or “?”. For more information, see the **wildcards_ccase** reference page.

- If a command or option name has a short form, a “slash” (/) character indicates the shortest legal abbreviation. For example:

lsc/heckout

Related information

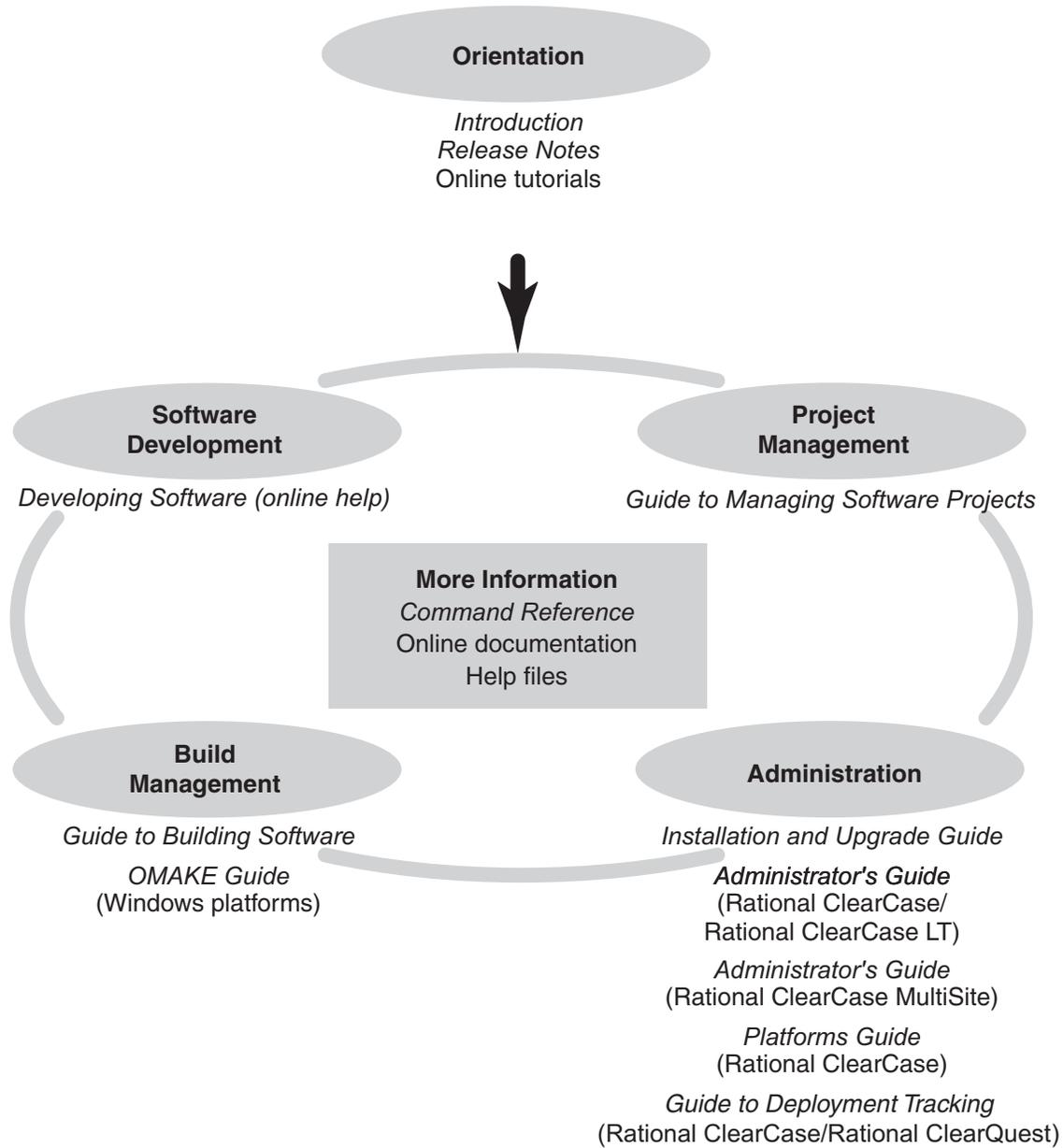


Figure 1. ClearCase documentation roadmap

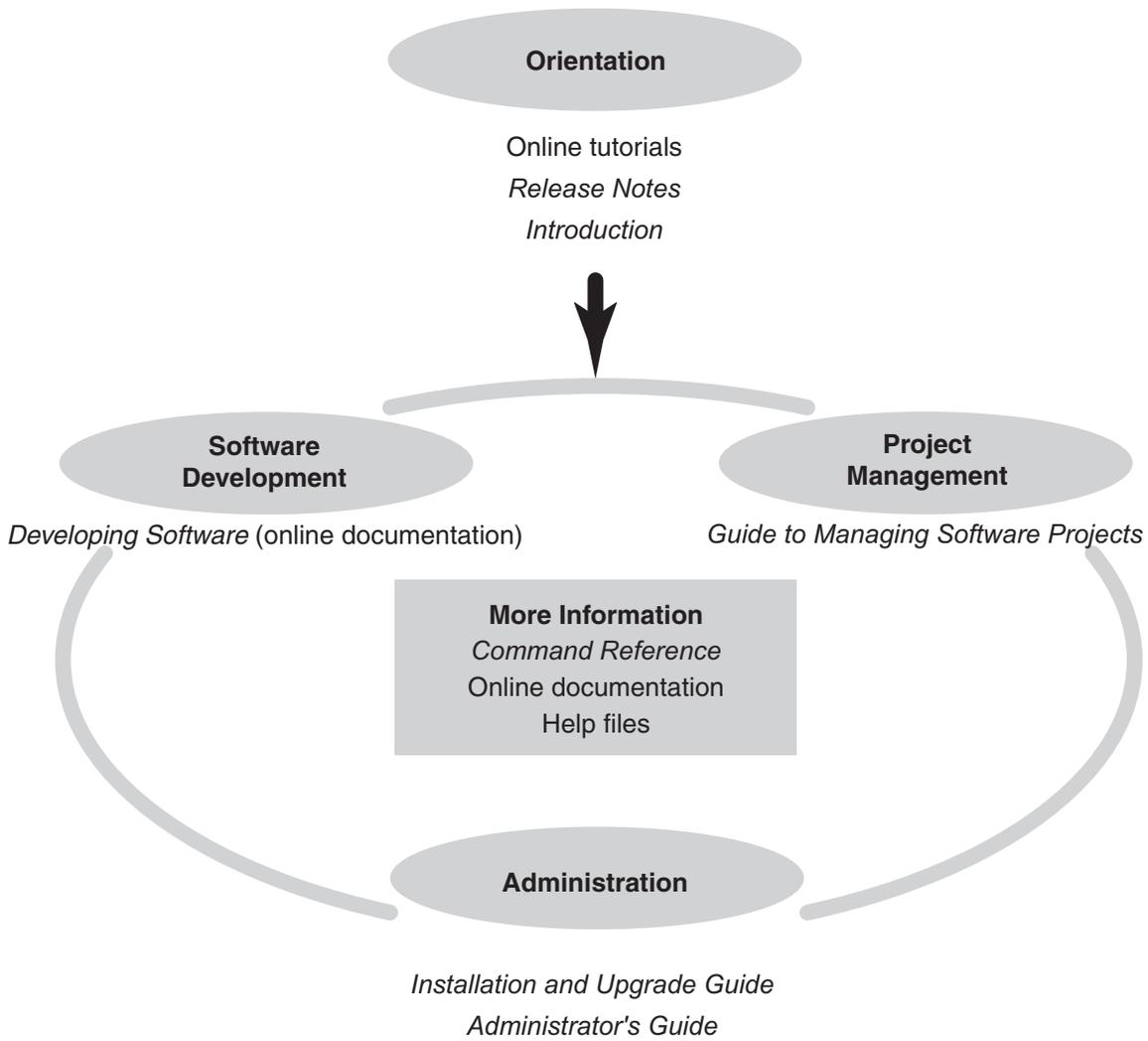


Figure 2. ClearCase LT documentation roadmap

Contacting IBM Customer Support for Rational software products

If you have questions about installing, using, or maintaining this product, contact IBM Customer Support as follows:

The IBM software support Internet site provides you with self-help resources and electronic problem submission. The IBM Software Support Home page for Rational products can be found at <http://www.ibm.com/software/rational/support/>.

Voice Support is available to all current contract holders by dialing a telephone number in your country (where available). For specific country phone numbers, go to <http://www.ibm.com/planetwide/>.

Note: When you contact IBM Customer Support, please be prepared to supply the following information:

- Your name, company name, ICN number, telephone number, and e-mail address
- Your operating system, version number, and any service packs or patches you have applied
- Product name and release number
- Your PMR number (if you are following up on a previously reported problem)

Downloading the IBM Support Assistant

The IBM Support Assistant (ISA) is a locally installed serviceability workbench that makes it both easier and simpler to resolve software product problems. ISA is a free, stand-alone application that you download from IBM and install on any number of machines. It runs on AIX, (RedHat Enterprise Linux AS), HP-UX, Solaris, and Windows platforms.

ISA includes these features:

- Federated search
- Data collection
- Problem submission
- Education roadmaps

For more information about ISA, including instructions for downloading and installing ISA and product plug-ins, go to the ISA Software Support page.

IBM Support Assistant: <http://www.ibm.com/software/support/isa/>

Summary of changes

This edition includes the following changes:

- Chapter 1:
 - In “Understanding license usage order,” information about the license usage order has been updated.
 - In Table 6, a table of listing the default license usage order has been added.
- Chapter 6:
 - In “Using ClearCase® and ClearCase MultiSite® license keys,” information about new Rational Common Licensing support for Rational ClearCase and Rational ClearCase MultiSite has been added.
- Chapter 7:
 - In “Accessing AccountLink,” instructions for accessing AccountLink have been updated.
- Chapter 8:
 - In “License monitoring,” information about Macrovision (formerly Globetrotter) has been updated, including how to access their Web site.
- Chapter 9:
 - In “Installing the server software and floating licensing keys” and “Installing the server software and keys on redundant UNIX servers,” the FTP site has been updated.
- Chapter 12:
 - In “Technical notes,” the instructions for accessing IBM technical notes has been updated.
- Appendix: The Trademarks section of Notices page has been updated.

Part 1. Client

Chapter 1. Before installing license keys

This chapter introduces you to the basic tasks to get your IBM Rational products licensed. Table 1 and Table 2 describe common desktop licensing tasks and direct you to the correct section and page for instructions. If you are upgrading your environment, see “Upgrading license keys” on page 5.

Table 1 directs you to procedures for entering, importing, and requesting licenses for your IBM products.

Table 1. Getting started with IBM Rational Common Licensing

Task	Scenario	Procedure
Get your permanent (or Term License Agreement) license key. Term License Agreement means the license key has an expiration date built into it.	You have purchased a node-locked, floating, or named-user floating licenses.	Use your License Key Certificate to request permanent license keys from AccountLink, the Rational Web-based license key management tool. See Chapter 7, “Requesting license keys,” on page 35 for more information about AccountLink.
Get your evaluation license key.	You want to evaluate an IBM Rational product.	Your IBM sales representative sends you or your license administrator an evaluation license key. You either install a node-locked key on your desktop or point your desktop client to a Rational license server that your license administrator has set up for you.
Install node-locked license keys on your desktop.	You received a node-locked license key.	Use the License Key Administrator (LKAD) wizard to install your node-locked license keys. The LKAD wizard launches at the end of product installation. If it does not launch, open the LKAD from the Start menu under the Rational folder. See Chapter 2, “Installing node-locked license keys,” on page 7 for more information.
Configure your client desktop to request floating licenses from the license server.	Your license administrator has set up an IBM Rational license server to serve floating license keys to desktop clients.	Get the name of the license server from your administrator. Then use the License Key Administrator (LKAD) wizard to specify the license server. The LKAD wizard launches at the end of the product installation. If it does not, open the LKAD from the Start menu under the Rational folder. See Chapter 1, “Before installing license keys,” on page 3.

Table 2 provides page numbers for advanced user tasks that you may have to perform; for example, you may have to change desktops or you want your client desktop to request a point product license before a Suite license.

Table 2. Additional desktop tasks

Task	Procedure
Change the order in which IBM Rational products use licenses.	Chapter 4, "Changing license usage order," on page 17.
Move or return license keys.	Chapter 5, "Returning or moving keys for desktop users," on page 21.
Use license keys for home or travel.	"Using license keys for home use or travel" on page 5.
Configure UNIX clients.	See the IBM Rational product or UNIX installation guide.
To configure a UNIX license server for Windows clients.	Chapter 9, "Configuring a UNIX license server," on page 55.

Opening the License Key Administrator (LKAD)

The IBM Rational License Key Administrator (LKAD) is installed with your IBM Rational product and with your license server software. This application provides an interface to IBM Rational Common Licensing (powered by FLEXlm software). Use the LKAD or the LKAD wizard to enter or import license keys and change your license configuration.

Note: You must have administrative privileges on the computer before you can enter or import license key information in the LKAD.

- To access the LKAD and the LKAD wizard on a desktop or server, click **Start > Programs > IBM Rational > Rational License Key Administrator**.
- To access the LKAD and the LKAD wizard on the license server, click **Start > Programs > IBM Rational > Rational License Server > Rational License Key Administrator**.

To access the Help, click **Help** in the License Key Administrator's main menu, click **Help** in the LKAD wizard, or open `<Install Path>\IBM Rational\doc\help\licadmin\index.htm`.

Administrator Privileges for the LKAD

You must have certain administrative privileges to complete tasks in the License Key Administrator (LKAD). If you cannot perform a task in the LKAD, it might mean that you are missing local administrative privileges on that computer. Grayed out menu options in the LKAD wizard, menu bar, or button bar indicate limited privileges.

1. To see which privileges are missing, select **Help > About Rational License Key Administrator**. You may see one or more of the following statements.

Statement	Explanation
Cannot write to HKEY_LOCAL_MACHINE in the Windows Registry.	You cannot specify a license server.
Cannot Start and Stop a Windows Service.	You cannot start the license server.
Cannot create a file.	You cannot import a license key file on to your computer.
Cannot modify a file.	You cannot enter a temporary license key in your computer.

2. Request the missing Windows administrator privileges from your system administrator.

Upgrading license keys

If you are upgrading from an earlier version of an IBM Rational Suite[®] or point-product, for example version 2003.06.00, re-use your current Rational Suite and point-product keys.

You must order new license keys in AccountLink under the following conditions:

- If you have purchased a different edition of Rational Suite from the one that you are currently using, return the license file and request a new license file that includes the new Rational Suite key.
 - See Chapter 5, “Returning or moving keys for desktop users,” on page 21 or Chapter 10, “Returning or moving keys for administrators,” on page 69 for returning the existing key.
 - See Chapter 7, “Requesting license keys,” on page 35 for requesting permanent or TLA license keys.
- If you are adding a new product to your system, return the license file and request a new license file that includes the new product license key.
 - See Chapter 5, “Returning or moving keys for desktop users,” on page 21 or Chapter 10, “Returning or moving keys for administrators,” on page 69 for returning the existing key.
 - See Chapter 7, “Requesting license keys,” on page 35 for requesting permanent or TLA license keys.
- If you have upgraded to a different variant of IBM Rational Rose[®], remove the existing variant and install the new variant and license key.

Using license keys for home use or travel

If your product uses floating keys, with disconnected mode you can use IBM Rational software at home for a 3-day period. You must activate disconnected use within a 3 day period of acquiring a floating license key and disconnecting from the network at work. After you activate disconnected use, you can use the software for 3 days from the day and time that you activate the disconnected use.

For example, you acquire a floating key for IBM Rational ClearCase LT at 4 p.m. on Friday and disconnect from the network and go home. Because you plan to work at home during the next week, you must activate disconnected use within the 3-day period of acquiring the key and disconnecting from the network. If you launch ClearCase LT by 3:30 p.m. on Monday, you can use Rational ClearCase LT until 3:30 p.m. on Thursday. If you do not launch Rational ClearCase LT before 4 p.m. on Monday, you will lose disconnected use of Rational ClearCase LT.

Disconnected use of floating licenses on a UNIX license server is not supported.

There are two other options for home use or travel:

- Depending on whether it is available for your product, you can use node-locked keys instead.
- Rational ClearCase LT provides snapshot views. Snapshot views of your work do not require network connectivity; therefore, a license key is not necessary.

Changing the disconnect time-out to delay disconnected use

If you have a slow network at work, your software automatically goes into disconnected use mode if it does not receive a response from the license server within 5 seconds. You then see a window that states that you are in disconnected use mode after the 5 seconds.

Starting with release 2001A, you can change the time-out period before your IBM application goes into disconnected use mode. The default setting is 5 seconds. To change the setting:

1. Create a DWORD key: HKEY_LOCAL_MACHINE\SOFTWARE\IBM Rational\Licensing\1.0\DisconnectTimeout
2. Modify the value (decimal) to be more than 5 seconds.

Chapter 2. Installing node-locked license keys

This chapter describes how to install permanent, term license agreement, and temporary node-locked license keys on desktops. A node-locked license key is created for a specific desktop and does not require a license server. Node-locked license keys allow for portability, especially for customers who have isolated computers or laptops.

- If you are a client desktop user and need to use floating or named-user floating license keys, see Chapter 3, “Configuring clients to use floating keys,” on page 11.
- If you are the license administrator and need to install the floating or named-user license keys on an Rational license server, see Chapter 8, “Configuring a Windows license server,” on page 39 or Chapter 9, “Configuring a UNIX license server,” on page 55.

Opening the License Key Administrator (LKAD)

The IBM Rational License Key Administrator (LKAD) is installed with your IBM Rational product and with your license server software. This application provides an interface to IBM Rational Common Licensing (powered by FLEXlm software). Use the LKAD or the LKAD wizard to enter or import license keys and change your license configuration.

Note: You must have administrative privileges on the computer before you can enter or import license key information in the LKAD.

- To access the LKAD and the LKAD wizard on a desktop or server, click **Start > Programs > IBM Rational > Rational License Key Administrator**.
- To access the LKAD and the LKAD wizard on the license server, click **Start > Programs > IBM Rational > Rational License Server > Rational License Key Administrator**.

To access the Help, click **Help** in the License Key Administrator’s main menu, click **Help** in the LKAD wizard, or open `<Install Path>\IBM Rational\doc\help\licadmin\index.htm`.

Reviewing your license information in the LKAD

By default, you should see complete information about your license keys in the main window of the License Key Administrator. If you do not see this information in the window, use the **View > Show** menu to display information about your licenses.

The following table defines each of the options in the **View > Show** menu.

Table 3. Show licenses

License	Shows
Invalid and expired licenses	All expired node-locked, floating, and served licenses on the system that you are using.
Floating licenses	All floating licenses on the system that you are using.

Table 3. Show licenses (continued)

License	Shows
Node locked licenses	All node-locked licenses on the desktop that you are using.
Served licenses	All floating licenses that IBM software on your system could request from the license server.

Installing permanent or Term License Agreement (TLA) keys

Request permanent node-locked license keys from AccountLink. AccountLink sends you a permanent license file. This file contains license keys for the desktop that you specified in AccountLink.

Importing permanent node-locked keys

Use the License Key Administrator (LKAD) to import the license key file on your desktop after you install the product.

Note: You must have local administrative privileges for the computer to import the license key into the LKAD.

To import a license key file in the LKAD:

1. Select **License Keys > Import License Key(s)**.
2. In the **Import License Key(s)** window, find the *.upd or *.txt file (license key file) and select it.
3. Click **Open**. The default location for the license key file is <Install Path>\IBM Rational\Common.
4. Click **Import** in the **Confirm Import** window.

Other methods

- If your e-mail program supports launching programs from file attachments, double-click the .upd or .txt attachment in the e-mail notification that you received from AccountLink. Select **Open it** in the **Opening Mail Attachment** window. Click **Import** in the **Confirm Import** window.
- Save the file attachment to any folder and double-click the license file.
- Use the LKAD wizard.

Entering temporary or evaluation license keys

You can find the license key information for temporary or evaluation licenses in the following sources.

- Your IBM sales representative gives you an evaluation license key.
- The temporary license key is in your License Key Certificate.

Entering temporary node-locked license keys

Temporary node-locked license keys can be entered in the LKAD. Launch the LKAD after installing the product.

Note: You must have local administrative privileges for the computer to import the license key into the LKAD.

To enter license information in the LKAD:

1. Click **License Keys** > **Enter a License** in the License Key Administrator.
2. Select the type of license.
3. In the next window, enter the following information:
 - Product
 - Expiration Date
 - License Key
 - Quantity (if you are installing a floating license key)
4. Click **Finish**. The License Key Administrator adds this information to the license key *.dat file in <Install Path>\IBM Rational\Common.

Chapter 3. Configuring clients to use floating keys

IBM Rational products on a Windows client desktop can check out floating and named-user floating license keys from a Windows or UNIX license server. This chapter explains how to specify a license server in your client desktop's License Key Administrator (LKAD).

In the following four situations, you do not have to open the LKAD and specify the license server:

- Your system administrator has set up a silent installation. The silent installation may include a post-installation command that specifies the license server. For more information about the silent installation command syntax, see the installation guide for your IBM Rational product.
- Your administrator may give you a text file to run from a command window. See "Running the License Key Administrator command line" on page 14.
- Your administrator may have included the license server name in a site defaults file in a network release area. When you install the product from the release area, you do not have to specify the license server in your client desktop LKAD. For more information about installing IBM Rational products from a release area, see the installation guide for your IBM Rational product.
- Your computer is also the Rational license server.

If you have a node-locked license, see Chapter 2, "Installing node-locked license keys," on page 7.

Use Table 4 to guide you through this chapter.

Table 4. Floating license tasks on clients

Task	Procedure
Open the License Key Administrator (LKAD).	"Opening the License Key Administrator (LKAD)" on page 12.
Configure the client desktop to use a single or multiple license servers.	"Configuring clients to use Rational license servers" on page 12.
Configure the client desktop to use redundant license servers.	"Configuring clients to use Rational license servers" on page 12.
Assign a port value in a firewall situation.	"Configuring clients to use Rational license servers" on page 12.
Change the license server search order.	"Configuring clients to use Rational license servers" on page 12.
Remove a license server from the search order.	"Removing a license server from the server search order" on page 14.
Use the License Key Administrator command line.	"Running the License Key Administrator command line" on page 14.
Use floating license keys when you work at home or travel.	"Using license keys for home use or travel" on page 14.

Opening the License Key Administrator (LKAD)

The IBM Rational License Key Administrator (LKAD) is installed with your IBM Rational product and with your license server software. This application provides an interface to IBM Rational Common Licensing (powered by FLEXlm software). Use the LKAD or the LKAD wizard to enter or import license keys and change your license configuration.

Note: You must have administrative privileges on the computer before you can enter or import license key information in the LKAD.

- To access the LKAD and the LKAD wizard on a desktop or server, click **Start > Programs > IBM Rational > Rational License Key Administrator**.
- To access the LKAD and the LKAD wizard on the license server, click **Start > Programs > IBM Rational > Rational License Server > Rational License Key Administrator**.

To access the Help, click **Help** in the License Key Administrator's main menu, click **Help** in the LKAD wizard, or open `<Install Path>\IBM Rational\doc\help\licadmin\index.htm`.

Reviewing your license information in the LKAD

By default, you should see complete information about your license keys in the main window of the License Key Administrator. If you do not see this information in the window, use the **View > Show** menu to display information about your licenses.

The following table defines each of the options in the **View > Show** menu.

Table 5. Show licenses

License	Shows
Invalid and expired licenses	All expired node-locked, floating, and served licenses on the system that you are using.
Floating licenses	All floating licenses on the system that you are using.
Node locked licenses	All node-locked licenses on the desktop that you are using.
Served licenses	All floating licenses that IBM software on your system could request from the license server.

Configuring clients to use Rational license servers

Enter the license server's host name in the License Key Administrator (LKAD) of your client. Your license administrator should tell you whether the license server has been started before you specify the license server.

Configuring clients to use single or multiple license servers

Use the following procedure to specify one or multiple license servers on your client. Do not use the following procedure to enter redundant servers.

To enter the license server hostnames on a desktop:

1. Select **Settings > Client/Server Configuration**.

2. Click **Add Server**.
3. **Single** should be the default value next to **Server Type**. Enter the host name of the license server in the **Values** column next to **Server Name** by clicking **New-Server**. Press Enter after entering the host name.

Additional Servers

If your system administrator has given you the host names of additional license servers, click the **Add Server** button and enter the host name for each server. Click **OK** after you have entered all servers.

Your desktop applications request licenses from servers in the order that you enter the servers in the LKAD. If you want to change this order, see “Changing the server search order” on page 13.

Configuring clients to use redundant license servers

Redundant servers are a system of three servers that work as a team to manage a single pool of floating license keys. If one of the servers goes down, the other two license servers automatically continue managing the license pool.

To enter the redundant license servers on a desktop:

1. Select **Settings > Client/Server Configuration**.
2. Click **Add Server**.
3. Click **Single** next to **Server Type**; then click **Redundant** in the pop-up menu.
4. Enter the Primary, Secondary, and Tertiary license server hostnames in the order in which the license administrator requested them in AccountLink. Press Tab to move to the next line.
5. Click **OK**.

Entering a port value to support a firewall

Assigning a value to the port in your License Key Administrator is necessary in firewall situations. Do not assign a value to this port unless your administrator instructs you to do so. To learn more about Rational licensing and firewalls, see “Using floating licenses with a firewall” on page 51. The following procedure assumes the license administrator has given you the Rational vendor port value.

To enter a port value on a desktop:

1. Select **Settings > Client/Server Configuration**.
2. Enter the value in the **Port** field.
3. Click **OK**.

Changing the server search order

You can change the order in which Rational applications on your client desktop access license servers. The license server list is displayed in the **Client/Server** window. The task of changing the server search order does not affect the order in which IBM Rational products request *licenses* from a server. If you have a combination of node-locked, floating, suite, and point-product license keys in your environment, see Chapter 4, “Changing license usage order,” on page 17.

If you would like to change the server search order, select the license server in the list and click the **Up** or **Down** button to change its position. Click **OK** to complete the change.

Removing a license server from the server search order

If your system administrator tells you that one of the Rational license servers has to go offline, you can remove it from the server search order without deleting the information from the LKAD.

To remove a server from the server search order:

1. Select **Settings > Client/Server Configuration**.
2. Find the license server in the **Search Order** list and clear the check box next to it.
3. Click **OK**.

When the license server goes back online, you can select the check box next to it.

Removing the license server from your client desktop

If you know that the license server will not be used in the future, remove the server from the **Client/Server Configuration** window by selecting the server name and then clicking **Remove Server**.

Running the License Key Administrator command line

To automate licensing, your administrator may have you run the License Key Administrator from the command window.

To specify a single, multiple, or redundant license server from the command line:

1. Move the text file that your administrator gives you to any directory.
2. Open a command window and navigate to that directory.
3. Enter the following command:

```
licadmin -filename.txt
```

where *filename.txt* is the text file that contains the license parameter commands.

The results of running this command are written to the status file *filename.txt_STATUS*. The status file is created in the directory where you ran the `licadmin` command.

Using license keys for home use or travel

If your product uses floating keys, with disconnected mode you can use IBM Rational software at home for a 3-day period. You must activate disconnected use within a 3 day period of acquiring a floating license key and disconnecting from the network at work. After you activate disconnected use, you can use the software for 3 days from the day and time that you activate the disconnected use.

For example, you acquire a floating key for IBM Rational ClearCase LT at 4 p.m. on Friday and disconnect from the network and go home. Because you plan to work at home during the next week, you must activate disconnected use within the 3-day period of acquiring the key and disconnecting from the network. If you launch ClearCase LT by 3:30 p.m. on Monday, you can use Rational ClearCase LT until 3:30 p.m. on Thursday. If you do not launch Rational ClearCase LT before 4 p.m. on Monday, you will lose disconnected use of Rational ClearCase LT.

Disconnected use of floating licenses on a UNIX license server is not supported.

There are two other options for home use or travel:

- Depending on whether it is available for your product, you can use node-locked keys instead.
- Rational ClearCase LT provides snapshot views. Snapshot views of your work do not require network connectivity; therefore, a license key is not necessary.

Changing the disconnect time-out to delay disconnected use

If you have a slow network at work, your software automatically goes into disconnected use mode if it does not receive a response from the license server within 5 seconds. You then see a window that states that you are in disconnected use mode after the 5 seconds.

Starting with release 2001A, you can change the time-out period before your IBM application goes into disconnected use mode. The default setting is 5 seconds. To change the setting:

1. Create a DWORD key: HKEY_LOCAL_MACHINE\SOFTWARE\IBM Rational\Licensing\1.0\DisconnectTimeout
2. Modify the value (decimal) to be more than 5 seconds.

Chapter 4. Changing license usage order

IBM Rational products request *licenses* in a specific order. If you have a combination of node-locked, floating, suite, and point-product license keys in your environment, you need to understand this license usage order and how you can change it. To understand the explanation in the following sections, you must know the definitions of the license types. For more information, see “Defining license types” on page 28 and “Using point-product keys and suite keys” on page 29.

Understanding license usage order

An IBM Rational product that uses IBM Rational Common Licensing (powered by FLEXlm software) requests licenses in this order, by default:

1. Node-locked before a floating license. An IBM Rational product requests a node-locked license before a floating license regardless of whether it is a Suite or point-product license.
2. Point-product license before a Suite license. For example, IBM Rational Purify[®] is sold as part of a Rational Suite and as a stand-alone product. Among a group of node-locked and floating licenses, Purify will first request a Purify license, and then request various Rational Suite licenses in a specific order.
3. Suite license of the last Rational Suite installed.

The license key usage order has changed for version 7.0 of IBM Rational products. In releases before 7.0, when a Suite product was being installed, the Rational License Key Administrator (LKAD) application would first try to find a license key corresponding to the Suite. If the Suite key was not available, LKAD would then look for a key corresponding to the product that was running.

You can use the License Usage Mapper in LKAD to change the release 7.0 license usage order or have the application not search for any or all Suite keys.

The following table describes the default license usage order for each IBM Rational product that uses Rational Common Licensing (powered by FLEXlm software).

Table 6. Default license usage order

IBM Rational product	Default search order (from first to last)
ClearCase	ClearCase
ClearCase LT	ClearCase LT, Rational Suite Enterprise, Rational Suite Team Unifying Platform [™] , Rational Suite DevelopmentStudio, Rational Suite TestStudio [®] , Rational Suite AnalystStudio [®] , Rational Suite DevelopmentStudio RealTime
ClearQuest [®]	ClearQuest, Rational Suite Enterprise, Rational Suite Team Unifying Platform, Rational Suite DevelopmentStudio, Rational Suite TestStudio, Rational Suite AnalystStudio, Rational Suite DevelopmentStudio RealTime

Table 6. Default license usage order (continued)

IBM Rational product	Default search order (from first to last)
ProjectConsole™	ProjectConsole, Rational Suite Enterprise, Rational Suite Team Unifying Platform, Rational Suite DevelopmentStudio, Rational Suite TestStudio, Rational Suite AnalystStudio, Rational Suite DevelopmentStudio RealTime
PurifyPlus™	PurifyPlus, Rational Suite Enterprise, Rational Suite DevelopmentStudio, Rational Suite DevelopmentStudio RealTime
Quantify®	Quantify, Rational Suite Enterprise, Rational Suite DevelopmentStudio, Rational Suite DevelopmentStudio RealTime
PureCoverage®	PureCoverage, Rational Suite Enterprise, Rational Suite DevelopmentStudio, Rational Suite DevelopmentStudio RealTime
RequisitePro®	RequisitePro, Rational Suite Enterprise, Rational Suite Team Unifying Platform, Rational Suite DevelopmentStudio, Rational Suite TestStudio, Rational Suite AnalystStudio, Rational Suite DevelopmentStudio RealTime
Robot	Robot, Rational Suite Enterprise, Rational TestStudio
Rose Enterprise	Rose Enterprise, Rational Suite Enterprise, Rational Suite DevelopmentStudio
Rose DataModeler	Rose DataModeler, Rational Suite AnalystStudio
Rose Modeler	Rose Modeler
Rose C++	Rose C++
Rose Professional J	Rose Professional J
Rose VB	Rose VB
Rose RealTime	Rose RealTime
SoDA®	SoDA for Word, Rational Suite Enterprise, Rational Suite Team Unifying Platform, Rational Suite DevelopmentStudio, Rational Suite TestStudio, Rational Suite AnalystStudio, Rational Suite DevelopmentStudio RealTime
Test RealTime	Test RealTime
TestManager	TestManager, Rational Suite Enterprise, Rational Suite Team Unifying Platform, Rational Suite DevelopmentStudio, Rational Suite TestStudio, Rational Suite AnalystStudio, Rational Suite DevelopmentStudio RealTime
RUP®	Not applicable
XDE™	Not applicable

You may want to customize the license usage order in some cases. For example, you may want to have a product search for a specific Suite key first. If you would like to change how your product uses point-product and Suite licenses, see “Changing license usage on your computer” on page 19.

RequisiteWeb and ClearQuest Web

RequisiteWeb and IBM Rational ClearQuest Web require floating licenses. Like other IBM Rational products that use Rational Common Licensing, they request the point-product license before the suite license.

Rational Rose

Rational Rose uses a license key for the variant of Rational Rose that you install, or a Rational Suite key that includes that Rational Rose variant. A Rational Rose variant cannot run with the license key of a different Rational Rose variant. If the Rational Rose variant installed on your desktop is not included in the suite license on the Rational license server, you cannot include the Rational Suite license in the license usage order for that product.

Cross-platform Rational Rose keys

Rational Rose Enterprise can run with a license key for Rational Rose on a UNIX system. You must change the license usage on your desktop for Rational Rose Enterprise to run with the license key for Rational Rose on a UNIX system.

Changing license usage on your computer

To change the order in which a product on your computer requests suite and point-product licenses, use the License Key Administrator’s License Usage Mapper.

Servers and license usage order

Use the License Usage Mapper on the clients to change the license usage order. To change the order for Web clients, use the License Usage Mapper on the Web servers.

If the license server computer is also a client, the license server’s License Usage Mapper changes only the license usage order for specific user IDs on the client. (See “Changing your license usage order” on page 19 for more information.) You cannot use the License Usage Mapper on the license server to change the order for all clients and user IDs.

Changing your license usage order

You can reverse the changes that you have made to the previous settings by clicking **Restore to Defaults** in the License Usage Mapping window.

To change the license usage order on your desktop:

1. Select **Settings > License Usage Mapper** in the License Key Administrator menu.
2. In the License Usage Mapping window, make sure that the correct product is selected in **Installed Products**. In **License Usage Order**, the check boxes that are selected indicate which licenses the license server can check out for the selected product.
3. Change the order of licenses in **License Usage Order** by using the **Up** and **Down** buttons. Ensure the check boxes next to these licenses are selected.

4. Click **OK**.

Note: The license usage order that you set on your computer is tied to your user ID. If different users log in to your computer with their own user IDs, the license usage order that you may have changed resets to the default order. The new users can set the license usage order for their user IDs. Their settings do not affect your settings.

Chapter 5. Returning or moving keys for desktop users

If you have to upgrade your license keys or move them to another computer, your license administrator has to perform a floating or node-locked license key return transaction in AccountLink. Floating and node-locked keys are tied to a computer's host ID. Rational products licensed with these keys will not work until your license administrator registers the products to the new computer.

Returning or removing permanent node-locked keys

Use the return transaction in AccountLink to update the count of registered products in your account (license pool) before you or your license administrator requests new license keys.

To return a license key:

1. Your license administrator performs the return transaction in AccountLink.
2. When you receive the update file from AccountLink, import the file on your old desktop. Importing the update file completes the return transaction. For more information, see "Installing permanent or Term License Agreement (TLA) keys" on page 8.

Note: Your license administrator can return and import new floating license keys on the Rational license server.

Moving permanent node-locked keys

Moving a node-locked license key from one desktop to another requires a return transaction and a new license key transaction in AccountLink. To help prevent you from confusing the license key update file for the old desktop with the license key file for the new desktop, ask your license administrator to order license keys for the new desktop after you receive the update license key file for the old desktop.

To move a license key from one desktop to another:

1. Your license administrator performs the return transaction in AccountLink.
2. After you receive the update file from AccountLink, import the file on your desktop. Importing the update file completes the return transaction. For more information, see "Installing permanent or Term License Agreement (TLA) keys" on page 8.
3. Tell the license administrator to order a new license key file in AccountLink for the new desktop.
4. Remove the Rational software from the old desktop. See the installation guide for your IBM Rational product for the removal procedures.
5. Install the Rational software on the new desktop.
6. Import the license key file on the new desktop. For more information, see "Installing permanent or Term License Agreement (TLA) keys" on page 8.

Note: Your license administrator can return and import new floating license keys on the Rational license server.

Part 2. Administrator

Chapter 6. Before requesting license keys

This chapter describes IBM Rational Common Licensing (powered by FLEXlm software) and supported configurations. Rational uses a software-based license management tool called FLEXlm from Macrovision Corporation. This software allows vendors, such as Rational, to build a customized licensing model.

This information will help you plan the licensing configuration for your environment.

Getting started with IBM Rational Common Licensing

Table 7 and Table 8 help you find procedures for administrator licensing tasks.

Table 7. Getting started with IBM Rational Common Licensing

Task	Procedure
Upgrade license keys.	"Upgrading license keys" on page 31.
Get the permanent license key for the product.	If you have purchased node-locked, floating, or named-user floating licenses, use your License Key Certificate to request permanent license keys from AccountLink, the Rational Web-based license key management tool. See Chapter 7, "Requesting license keys," on page 35 for more information. If there is a delay in receiving your permanent node-locked or floating license keys, use the temporary license key on the License Key Certificate. See "Using your License Key Certificate" on page 26.
Get an evaluation license key for the product.	Your IBM sales representative sends you an evaluation license key.
Install node-locked license keys on your desktop.	Chapter 2, "Installing node-locked license keys," on page 7.
Install the floating and named-user floating keys on the Rational license server for Windows.	Chapter 8, "Configuring a Windows license server," on page 39.
Install the floating keys on the Rational license server for UNIX.	Chapter 9, "Configuring a UNIX license server," on page 55.

Table 8 references additional tasks and information that may suit the needs of your users.

Table 8. Optional or additional tasks

Task	Procedure
Configure redundant license servers on Windows servers.	"Setting up redundant Windows license servers (optional)" on page 50.
Configure redundant license servers on UNIX servers.	"Setting up redundant UNIX servers (optional)" on page 60.
Remove the Rational license server software from a Windows server.	"Removing the Windows license server software" on page 53.

Table 8. Optional or additional tasks (continued)

Task	Procedure
Remove the Rational license server software from a UNIX server.	"Removing the UNIX license server software" on page 67.
Use floating license keys for working at home or traveling.	"Using license keys for home use or travel" on page 5.
Combine license files from multiple vendors.	Do not combine license key files from multiple vendors; instead, keep the license keys in separate files.
Understand license installation problems and error messages.	<ul style="list-style-type: none"> • "Administrator Privileges for the LKAD" on page 4. • Chapter 12, "Troubleshooting licenses," on page 77.
Understand the mechanics of IBM Rational Common Licensing.	Chapter 11, "Understanding IBM Rational Common Licensing components," on page 71.

Using your License Key Certificate

IBM Rational Common Licensing, powered by FLEXlm software, requires that you use your License Key Certificate to request permanent license keys for your IBM Rational products. You will find the certificate enclosed in a large green envelope in your product shipment, or you will receive a certificate from your sales representative. The information, especially the account number, on this certificate verifies that your company has purchased licenses to operate IBM Rational products.

- To get your permanent or Term License Agreement (TLA) node-locked or floating license keys, supply information from your License Key Certificate to AccountLink. See Chapter 7, "Requesting license keys," on page 35 for more information about AccountLink.
- If you have purchased an IBM Rational XDE product, the single-string desktop key on the License Key Certificate is your permanent license. Do not order a permanent license key from AccountLink.
- To evaluate an IBM Rational product, get a temporary key from a sales representative.
- If you are unable to access AccountLink or there is a delay in receiving your permanent keys, enter the temporary license key from your License Key Certificate into the License Key Administrator (LKAD).

Opening the License Key Administrator (LKAD)

The IBM Rational License Key Administrator (LKAD) is installed with your IBM Rational product and with your license server software. This application provides an interface to IBM Rational Common Licensing (powered by FLEXlm software). Use the LKAD or the LKAD wizard to enter or import license keys and change your license configuration.

Note: You must have administrative privileges on the computer before you can enter or import license key information in the LKAD.

- To access the LKAD and the LKAD wizard on a desktop or server, click **Start > Programs > IBM Rational > Rational License Key Administrator**.

- To access the LKAD and the LKAD wizard on the license server, click **Start > Programs > IBM Rational > Rational License Server > Rational License Key Administrator**.

To access the Help, click **Help** in the License Key Administrator's main menu, click **Help** in the LKAD wizard, or open `<Install Path>\IBM Rational\doc\help\licadmin\index.htm`.

Using the LKAD after product installation

With the Setup wizard you can launch the Rational License Key Administrator (LKAD) and LKAD wizard after the product installation finishes.

On a desktop, use the LKAD to:

- Import a node-locked license file.
- Enter a temporary node-locked license key.
- Specify a license server to request floating licenses.
- Go to AccountLink to request permanent license keys.

On a license server, use the LKAD to:

- Import a floating or named-user floating license key.
- Enter a temporary floating license key.
- Go to AccountLink to request permanent license keys.

Defining the “user” in IBM Rational Common Licensing

IBM Rational Common Licensing (powered by FLEXlm software) checks out licenses on behalf of a “user.” The “user” is defined as follows:

- On Windows, the “user” is the Windows operating system log on ID.
- On UNIX, a “user” is the account name of the person running the UNIX shell.
- On Web products, the “user” is the product logon ID.

Defining license types

Table 9 explains types of licenses.

Table 9. License types

License type	Products	Description
Floating	All products included in Rational Common Licensing.	<ul style="list-style-type: none">• A license administrator installs the Rational license server software on single, multiple, or redundant servers. The administrator then installs the floating licenses on the license servers. These floating licenses are created for the specific license server.• Client desktop users obtain licenses from the license server when they run a copy of the software. One license is granted per client per product, except performance testing products. Performance testing products can check out multiple licenses.• Floating licenses allow anyone on your network to use IBM Rational products while a license is available. Thus, the number of licenses that you purchase and register in AccountLink determines the maximum number of users who can use IBM Rational products concurrently.
Named-User Floating	<ul style="list-style-type: none">• Rational PureCoverage• Rational Purify• Rational Quantify	<ul style="list-style-type: none">• Similar to a floating license, except the license administrator assigns licenses to specific users. That is, only specific users can request floating license keys from the license server.• A named-user floating license requires a license administrator to create a list of authorized users.
Node-locked	All products included in Rational Common Licensing.	<ul style="list-style-type: none">• A node-locked license is created for a specific desktop. It allows a user to run an IBM Rational product only on that specified desktop.• The user may run multiple sessions of a product concurrently on the specified computer using a single license key.• Because node-locked licenses are uncounted licenses, no license server is needed to manage them.

Defining license key types

Floating, named-user floating, or node-locked licenses can be permanent and temporary keys.

The following table defines the license key types used in IBM Rational Common Licensing (powered by FLEXlm software).

Table 10. License key types

License key type	Description
Permanent	A license issued to a customer to run products for an indefinite period of time. To order your permanent floating, named-user floating, or node-locked license keys, use AccountLink. See Chapter 7, "Requesting license keys," on page 35 for more information about AccountLink.
Temporary (evaluation or emergency)	<ul style="list-style-type: none"> • A time-limited license issued to a customer for running IBM Rational products. You can use it on any computer until the specified expiration date. • Temporary license keys can be floating or node-locked. • Temporary keys are generated only for single or multiple license servers. They are not generated for redundant servers. • To evaluate a product, ask your sales representative for an evaluation key.
TLA (Term License Agreement)	<ul style="list-style-type: none"> • TLAs allow users access to IBM Rational software for a negotiated period of time. The expiration date is built into the license key. • TLA license keys can be floating or node-locked. • The processes of requesting and installing TLA license keys are the same as requesting and installing permanent licenses. • To order your TLA floating, named-user floating, or node-locked license keys, use AccountLink. See Chapter 7, "Requesting license keys," on page 35 for more information about AccountLink.

Using point-product keys and suite keys

This section explains situations in which products use multiple license keys and cases in which multiple products use one license key.

Using multiple license keys

A desktop user can check out multiple floating or node-locked license keys.

Using ClearCase LT

ClearCase LT can use either a ClearCase LT floating license or a Rational Suite (node-locked or floating) license. There is no ClearCase LT node-locked license.

Using ClearQuest Web and RequisiteWeb

A single user may run the IBM Rational ClearQuest native client and Web client on the same desktop simultaneously with a single floating license key while the user's Windows login ID is the same as the user's ClearQuest login ID. The same logic applies to IBM Rational RequisitePro native client and Web client. See "Defining the "user" in IBM Rational Common Licensing" on page 27.

Using suite license keys

A license key indicates whether it is a Rational Suite license, such as Rational Suite Enterprise. An Rational license file can contain multiple suite and individual product license keys.

A Rational Suite license key lets you run all of the products contained within a Rational Suite at the same time on a single computer. Any add-on product, such as Rational XDE, uses its own license key instead of the Rational Suite license key.

Using a different suite license from the suite edition installed

You can install a Rational Suite on a desktop and specify that products within the Suite check out a different type of Rational Suite license. For example, you can install Rational Suite Enterprise on the desktop and have the products within the Rational Suite check out a Rational Suite AnalystStudio license from the license server.

To select a different license for a product, use the License Key Administrator on the client desktop. See Chapter 4, “Changing license usage order,” on page 17 for more information.

Using license keys for the Rose variant installed

Rational Rose uses a license key for the variant of Rose that you install, or a Rational Suite key that includes that Rose variant.

Table 11. License keys for Rose variant

Variant	Variant license key:
Rational Rose Enterprise Edition	<ul style="list-style-type: none">• Rose Enterprise• Rational Suite Enterprise• Rational Suite DevelopmentStudio for Windows
Rational Rose Modeler Edition	Rose Modeler
Rational Rose Professional Data Modeler	<ul style="list-style-type: none">• Rose Data Modeler• Rational Suite AnalystStudio
Rational Rose for UNIX	<ul style="list-style-type: none">• Rose for UNIX• Rational Suite DevelopmentStudio for UNIX• Rose Enterprise for UNIX

Using license keys on different platforms

Rational Rose can run with license keys specified for different platforms. To do this, change the license usage order on your computer. See Chapter 4, “Changing license usage order,” on page 17 for more information.

- Rational Rose for UNIX runs with a Rational Rose Enterprise for Windows key.
- Rational Rose Enterprise for Windows runs with a Rational Rose for UNIX key.

Using ClearCase and ClearCase MultiSite license keys

IBM Rational ClearCase version 7.0 extends support for IBM Rational Common Licensing to Rational ClearCase and IBM Rational ClearCase MultiSite.

With this release you can use either ClearCase licensing (formerly known as Atria licensing) or Rational Common Licensing (powered by FLEXlm software). In

previous releases, Rational Common Licensing was supported only for use with Rational ClearCase LT. If you want to use Rational Common Licensing, select this option in the Site Preparation Tool or dynamically switch license modes after installation.

Review the information and procedures in this guide to understand the license management tools, license key types, and how to set up your license server configuration and import license keys. For more information about installing and configuring Rational ClearCase, see the *IBM Rational ClearCase, ClearCase MultiSite, and ClearCase LT Installation and Upgrade Guide*.

ClearCase MultiSite license keys

Rational ClearCase MultiSite requires both a ClearCase license key and a ClearCase MultiSite license key. This licensing model is similar to IBM Rational ClearQuest MultiSite, as explained in “Using ClearQuest MultiSite license keys” on page 31.

Using ClearQuest MultiSite license keys

Rational ClearQuest MultiSite requires both a ClearQuest license and a ClearQuest MultiSite license. Any access to a replicated database requires both a ClearQuest license key and a ClearQuest MultiSite license key.

You can calculate the number of Rational ClearQuest MultiSite licenses your site needs by determining how many developers will access replicated databases. If all of your developers will access replicated databases, you need the same number of Rational ClearQuest MultiSite licenses as Rational ClearQuest licenses. If not all developers will access replicated databases, you can purchase fewer Rational ClearQuest MultiSite licenses.

For example, a company has two sites, with 20 developers at site A and 5 developers at site B. The company has three databases at site A; two of them will be replicated to site B and one will not be replicated. Five of the developers at site A will access only the unreplicated database, and the remaining 15 will work in all databases. All of the developers at site B will access replicated databases. Therefore, the company needs to purchase the following number of licenses:

Site	Number of Rational ClearQuest licenses	Number of Rational ClearQuest MultiSite licenses
A	20	15
B	5	5

Note: This example assumes that you purchase a Rational ClearQuest license for each user. If you have fewer Rational ClearQuest licenses than users, purchase a proportionate number of Rational ClearQuest MultiSite licenses. For example, if site B purchased three Rational ClearQuest licenses, they would also purchase three Rational ClearQuest MultiSite licenses.

Upgrading license keys

If you are upgrading from an earlier version of an IBM Rational Suite or point-product, for example version 2003.06.00, re-use your current Rational Suite and point-product keys.

You must order new license keys in AccountLink under the following conditions:

- If you have purchased a different edition of Rational Suite from the one that you are currently using, return the license file and request a new license file that includes the new Rational Suite key.
 - See Chapter 5, “Returning or moving keys for desktop users,” on page 21 or Chapter 10, “Returning or moving keys for administrators,” on page 69 for returning the existing key.
 - See Chapter 7, “Requesting license keys,” on page 35 for requesting permanent or TLA license keys.
- If you are adding a new product to your system, return the license file and request a new license file that includes the new product license key.
 - See Chapter 5, “Returning or moving keys for desktop users,” on page 21 or Chapter 10, “Returning or moving keys for administrators,” on page 69 for returning the existing key.
 - See Chapter 7, “Requesting license keys,” on page 35 for requesting permanent or TLA license keys.
- If you have upgraded to a different variant of IBM Rational Rose, remove the existing variant and install the new variant and license key.

Using license keys for home use or travel

If your product uses floating keys, with disconnected mode you can use IBM Rational software at home for a 3-day period. You must activate disconnected use within a 3 day period of acquiring a floating license key and disconnecting from the network at work. After you activate disconnected use, you can use the software for 3 days from the day and time that you activate the disconnected use.

For example, you acquire a floating key for IBM Rational ClearCase LT at 4 p.m. on Friday and disconnect from the network and go home. Because you plan to work at home during the next week, you must activate disconnected use within the 3-day period of acquiring the key and disconnecting from the network. If you launch ClearCase LT by 3:30 p.m. on Monday, you can use Rational ClearCase LT until 3:30 p.m. on Thursday. If you do not launch Rational ClearCase LT before 4 p.m. on Monday, you will lose disconnected use of Rational ClearCase LT.

Disconnected use of floating licenses on a UNIX license server is not supported.

There are two other options for home use or travel:

- Depending on whether it is available for your product, you can use node-locked keys instead.
- Rational ClearCase LT provides snapshot views. Snapshot views of your work do not require network connectivity; therefore, a license key is not necessary.

Changing the disconnect time-out to delay disconnected use

If you have a slow network at work, your software automatically goes into disconnected use mode if it does not receive a response from the license server within 5 seconds. You then see a window that states that you are in disconnected use mode after the 5 seconds.

Starting with release 2001A, you can change the time-out period before your IBM application goes into disconnected use mode. The default setting is 5 seconds. To change the setting:

1. Create a DWORD key: HKEY_LOCAL_MACHINE\SOFTWARE\IBM Rational\Licensing\1.0\DisconnectTimeout

2. Modify the value (decimal) to be more than 5 seconds.

IBM Rational licensing configurations

This section describes supported licensing configurations. The term supported refers to a licensing configuration that Rational has tested and guarantees will work under normal operating conditions. This applies to configurations that the software was designed to handle. This also applies to configurations for which the software was not specifically designed, but with which it will work with some manual intervention.

Table 12 lists supported licensing configurations.

Table 12. IBM Rational licensing configurations

Configuration	Supported platforms
Node-locked license key	Windows/UNIX
Rational license server and Windows products installed on a single computer.	Windows
Rational license server and UNIX products installed on a single computer.	UNIX
Floating or named-user floating licenses for Windows products.	UNIX server serving licenses to Windows clients
Permanent floating licenses with redundant license servers.	Windows server serving licenses to UNIX clients
Permanent floating licenses with redundant license servers.	Windows server serving licenses to Windows clients
Permanent floating licenses with redundant license servers.	UNIX server serving licenses to UNIX clients

Chapter 7. Requesting license keys

Permanent (or Term License Agreement) floating and node-locked license keys are managed through the Web tool AccountLink. You, as the license administrator, can request permanent license keys in AccountLink.

The information in this chapter is intended for system administrators or users who manage licenses. It provides information about requesting and receiving permanent floating and node-locked license keys from AccountLink.

Note: At the time of publication, AccountLink is the online license fulfillment tool for IBM Rational software customers. In the future, AccountLink will be replaced by the Rational License Key Center, an online system that offers additional features and an easier license key fulfillment experience.

You will access the new system, when it is available, using the same location on the Web that is currently used for AccountLink:
<http://www.ibm.com/software/rational/support/licensing/>. This page will provide all of the information and instructions you need to manage license keys using the Rational License Key Center.

Accessing AccountLink

AccountLink is the online licensing tool to get or return your Rational license keys.

To access AccountLink:

1. Go to the Rational support Licensing Web page at <http://www.ibm.com/software/rational/support/licensing/>.
2. Click the **IBM Rational Licensing and Download Center** link and logon using a current IBM ID and password. If you do not have an IBM ID, click **Register** to create a new one.
3. At the page for IBM Rational Download and Licensing Center, click **Request and Manage License Keys > AccountLink**.

Using AccountLink to request permanent license keys

In AccountLink, you can order and return permanent node-locked, floating, and named-user floating license keys for Windows, Linux, and UNIX products. For more information about license types, see "Defining license types" on page 28.

Note: AccountLink does not support temporary license key transactions (contact your sales representative.)

The AccountLink interface offers three license transactions:

Transaction	Description
Get license keys	<p>Request your permanent license key. To order a permanent key, you need your License Key Certificate, the host name and host ID, or ethernet address of the license server or desktop.</p> <p>You can register:</p> <ul style="list-style-type: none">• IBM Rational products on Windows or UNIX that will be served from a license server.• Single, multiple, or redundant license servers on Windows or UNIX computers.• Remote Windows or UNIX computers; you do not need to sit at the computer you are requesting license keys for. <p>To find out more about the host name and host ID, see “Finding the host ID” on page 36. To order permanent license keys for a redundant server environment, specify the redundant servers’ host ids in the following order:</p> <ul style="list-style-type: none">• Primary license server• Secondary license server• Tertiary or back up license server <p>The clients communicate with the redundant servers in that order.</p>
Return license keys	<p>Return the existing license key to your account and then request a license key for the new desktop or server. This adjusts the count of registered products in your account and enables you to receive a license key for the new computer. To learn more about returning license keys, see Chapter 10, “Returning or moving keys for administrators,” on page 69.</p>
Request a copy of a license file	<p>Get a copy of a license key file for any desktop or server that has license keys already registered to it. You need this transaction when your hard disk is reformatted, you need to restore the software on your computer, or your license keys become corrupt. This transaction does not require that you return or add license keys.</p>

Finding the host ID

The term host ID is a generic term that is used to specify the computer’s disk serial number or ethernet address (network ID).

With IBM Rational Common Licensing (powered by FLEXlm software), the default host ID value on Windows computers is the disk serial number of the user’s boot drive. In this case the host ID field is: `DISK_SERIAL_NUM=nnnnnnnn`. Example: `DISK_SERIAL_NUM=12345678`.

The default host ID value on UNIX computers is the ethernet address of the system written in the format `HOSTID=nnnnnnnnnnnnnnnn`. Do not confuse the format `HOSTID=nnnnnnnnnnnnnnnn` with the disk serial number format `DISK_SERIAL_NUM=nnnnnnnnnn` that is referred to in Rational documentation, online Help, and AccountLink as the host ID.

A single key cannot contain multiple values for a host ID.

Finding the host ID on a Windows computer

To get the hostname, host ID, or ethernet address of a Windows computer, select **License Keys > Host Data** in the License Key Administrator menu.

Note: If IBM Rational software is not installed on the license server or client, AccountLink provides a tool to help you find this information.

What to do if the host ID on your computer changes frequently

Registering the host ID of the boot drive may not be possible if you have dual boot systems, frequently reformat your disks, or ghost your disk images. These processes change the host ID of the boot drive. Because the products and license keys are registered to a specific host ID, you cannot use your IBM Rational products if the host ID changes.

To avoid this situation, use one of the following methods:

- Use floating licenses served by a license server with a constant host ID.
- Use the address of the ethernet card in the computer as a host ID instead.

Note: You do not need to add this setting if you have installed release 2001 (or later) of IBM Rational products and release 2001 (or later) of the license server.

On Windows computers, the License Key Administrator (LKAD) can be forced to use the ethernet address instead of the disk serial number. This will allow the LKAD to import the license key file correctly. Add the registry setting **"UseNIC=TRUE"** to HKEY_LOCAL_MACHINE\SOFTWARE\Rational Software\Licensing\1.0.

- Make sure that when images are created to refresh the computer that you keep the disk serial number of the boot drive constant.

Finding the host ID on a UNIX server

Use one of the following methods to find the host ID:

- If the license server software is installed, use the **lmhostid** command to find the ethernet address of the server.
- On Sun computers, the command **lmhostid** at the prompt returns the value of the Sun host ID.
- Download the host ID script from AccountLink.

Requesting license keys (without an internet connection)

This section summarizes the steps for getting a permanent license key when you do not have an internet connection or when AccountLink is unavailable.

1. Print the license request form. To print the form, either install the IBM Rational product and open the license request form in the Rational common directory. The Chinese, French, German, and Japanese versions of this fax form are in the same location.
 - `<Rational_directory>\common\License Fax Form - English.htm`
 - `<Rational_directory>\common\License Fax Form - Chinese.htm`
 - `<Rational_directory>\common\License Fax Form - French.htm`
 - `<Rational_directory>\common\License Fax Form - German.htm`
 - `<Rational_directory>\common\License Fax Form - Japanese.htm`

2. Use the License Key Certificate to fill out the form. Make sure that the contact, account number, product, licensing, and host information are correct. Any errors will cause delays in receiving your license keys.
3. Fax the request to IBM.

Call IBM support for Rational products if you cannot use AccountLink or the fax form to order your permanent license keys.

Receiving permanent license keys

After you order your keys in AccountLink, a Rational license file is generated. The file is sent through e-mail to the contact e-mail address that you designate in AccountLink's License Contact page.

If you request a permanent license key by fax and you have specified an e-mail address in your contact information, you will receive a license key file through e-mail. You can copy the permanent license file from the e-mail enabled computer and install it on the computer that is not e-mail enabled.

If you cannot provide an e-mail address, contact IBM support for Rational products.

After you receive the license key file:

- Import the floating or named-user floating license key file on the license server. For more information about importing a license key file on a license server, see Chapter 8, "Configuring a Windows license server," on page 39 or Chapter 9, "Configuring a UNIX license server," on page 55.
- Import the node-locked license key file on the desktop. See Chapter 2, "Installing node-locked license keys," on page 7.

Chapter 8. Configuring a Windows license server

Using floating and named-user licenses you can manage and maintain licenses on single, multiple, or redundant license servers.

This chapter describes how to set up and run Rational license servers for Windows. The information in this chapter is intended for system administrators or users who manage licenses. If you are using desktop licenses, see Chapter 2, “Installing node-locked license keys,” on page 7.

Some of the tasks in Table 13 require knowledge of the Windows operating system and IBM Rational Common Licensing (powered by FLEXlm software).

Setting up floating licenses for Windows servers

The steps required to set up floating and named-user floating licenses are described in Table 13.

Table 13. Guide to setting up floating licenses for Windows servers

Task	Procedure
Set up floating licenses	<ul style="list-style-type: none">• Understand the IBM Rational Common Licensing model. See Chapter 6, “Before requesting license keys,” on page 25.• Request and receive permanent license keys. See Chapter 7, “Requesting license keys,” on page 35. If you are evaluating the product, use the temporary license keys.• Make sure that your license server and clients can work with the network configuration that you have set up. See “Working with a supported network configuration” on page 41.• Install the license server software on the server. See “Installing the server software on a Windows server” on page 41.• Install the evaluation or permanent license keys on the license server. See “Opening the License Key Administrator (LKAD)” on page 43 and “Using floating keys on a Windows license server” on page 44.• Start the license server software. See “Starting the Windows license server” on page 46.• Tell client desktop users to specify the license server in their desktops.

Table 13. Guide to setting up floating licenses for Windows servers (continued)

Task	Procedure
Set up named-user floating licenses (only applies to Purify, Quantify, and PureCoverage).	<ul style="list-style-type: none"> • Understand the IBM Rational Common Licensing model. See Chapter 6, “Before requesting license keys,” on page 25. • Request and receive permanent license keys. See Chapter 7, “Requesting license keys,” on page 35. If you are evaluating the product, use the temporary license keys. • Make sure that your license server and clients can work with the network configuration that you have set up. See “Working with a supported network configuration” on page 41. • Install the license server software on the server. See “Installing the server software on a Windows server” on page 41. • Install the named-user floating license keys on the license server. See “Opening the License Key Administrator (LKAD)” on page 43 and “Using named-user keys on a Windows license server” on page 45. If the keys are temporary, enter the license key information in the LKAD wizard (You do not have to edit the <code>rational.opt</code> file.). • Edit the <code>rational.opt</code> file with the names of specific users. See “Using named-user keys on a Windows license server” on page 45. • Start the license server software. See “Starting the Windows license server” on page 46. • Tell client desktop users to specify the license servers in their desktops.
Specify the Rational license server on a Web server.	See “Specifying the license server on Windows Web servers” on page 49.
Use floating licenses with a firewall.	See “Using floating licenses with a firewall” on page 51.
Change the <code>lmgrd</code> port.	See “Changing the <code>lmgrd</code> port” on page 52.
Configure redundant license servers.	See “Setting up redundant Windows license servers (optional)” on page 50.
Use License Key Administrator commands for configuring license servers on client desktops.	See “Running the LKAD command line on Windows (optional)” on page 47.
Change the order in which IBM Rational products use licenses.	You cannot use the license server to change the license usage order for all clients. Each user will have to go into the License Usage Mapper in the client LKAD to change it. The order is tied to the <code>user_ID</code> . See Chapter 4, “Changing license usage order,” on page 17.
Modify the time-out period.	See “Modifying the floating license time-out period” on page 50.
Monitoring license server activity.	See “License monitoring (optional)” on page 51.

Table 13. Guide to setting up floating licenses for Windows servers (continued)

Task	Procedure
Upgrading the license server software.	You can upgrade the license server software to the most current version, but do not run different versions of license server software on the same computer.
Running multiple license servers on the same server.	Run a separate lmgd instance for each vendor daemon and keep license keys in separate files.
Diagnose problems with the Rational license server.	See the following sections: <ul style="list-style-type: none">• “Checking the Windows license server” on page 82.• “Checking the Windows network connection” on page 83.
Remove the license server software.	See “Removing the Windows license server software” on page 53.

Working with a supported network configuration

This section provides important information about network configurations.

Dial-up support

You can use floating licenses with a dial-up network connection that supports a constant TCP/IP connection to the Rational license server. All clients must have a constant TCP/IP connection to the license server.

If the dial-up connection is lost while a client has checked out a floating license, the server will automatically reclaim the floating license. When the connection is lost, the client cannot periodically “talk” to the license server to refresh its license. Because the client cannot refresh its license, the Rational product runs for a limited period of time. This time period is product dependent.

WAN support

Rational floating licenses can be used over a wide area network if this is in compliance with the geographical allowance of the License Agreement.

If you choose to run licenses over a WAN, be aware of how your systems resolve host names. Always use the fully qualified domain names in the SERVER line and on the clients. This technique tends to reduce the number of issues with hostname resolution.

Novell support

Rational floating licenses can be used in a Novell 5.0 environment that is configured with TCP/IP or IPX. The Rational licensing implementation does not support using Novell Netware 5.0 or later directly with floating licenses.

Node-locked licenses with Novell 5.0 are supported.

Installing the server software on a Windows server

This section describes how to use the Setup wizard to install the Rational server software that enables you to flexibly install and manage license keys. You do not need to have a license key to operate the Rational license server software.

Before you install the license server on a Windows server

The requirements for installing the Rational license server software on a Windows server is minimal:

- The license server runs on Windows operating systems (NT 4.0 or higher), except Windows 9x and XP Home computers.
- The Windows server must have a C:\ drive.
- You must have Windows administrator privileges on the local computer.
- The default TCP/IP port number is 27000.
- There is no minimum processor, memory, or disk space.

Note: Make sure that you have a current backup of your Registry and system directories before running the Rational installation program.

Default installation path

The Setup wizard uses C:\Program Files\IBM Rational as the default installation path. If your C:\ drive lacks sufficient free disk space, either specify another drive or make space available on the default drive. A C:\ drive must exist on the license server regardless of where you install the Rational license server software.

Using the Rational Setup wizard

This section describes how to install the license server. If you would like to install the license server from a release area or set up a silent installation, see the instructions in the installation guide for your IBM Rational product. The Setup wizard guides you through the software installation. Click **Next** to launch the installation, and to advance through the following screens.

The installation wizard does not display an error summary. To verify that an installation was successful or to understand why it failed, look in the log of installation activities. The install.log file is in your TEMP directory (for example, TEMP=C:\DOCUME~1\\LOCALS~1\Temp or C:\temp\install.log). The location of the directory depends on the system environment variable set on the computer.

Note: Interrupting an installation that is in progress may leave your computer in an indeterminate state. If you try to close the Setup wizard window while the installation is in progress, you are asked to confirm that you want to exit from the incomplete installation.

To install the license server from a CD image:

1. Log in as a user with administrator rights on the local computer on which you want to install the product.
2. Insert the product installation CD into the computer's CD drive.
The Setup wizard starts automatically.
If autorun is disabled on your computer, click **Start > Run** and enter *cd_drive: \Setup.exe* where drive is the letter of the CD drive.
3. The **Product Selection** page lists all products available for installation. Select the **Rational License Server**.
4. The **Deployment Method** page displays the **Enterprise Deployment** and **Desktop Install from CD Image** options. Select the **Desktop Install from CD Image** option.

5. Choose to accept or not to accept the Rational software license agreement in the **License Agreement** page. To view the Open Source license agreement, select the check box **View Open Source Agreement**.
 - If you accept the license agreement, the installation wizard continues.
 - If you do not accept the license agreement, exit the Setup wizard by clicking **Cancel** and then **Finish**. When you exit from the wizard, the Setup wizard makes no visible changes to your computer.
6. The **Destination Folder** page specifies the directory where you want to install the license server software. Click **Change** to modify the location.

Note: The installation wizard requires that all IBM Rational products be installed in the same directory.

7. Click **Install** on the **Ready to Install the Program** dialog to begin the installation.
8. A **Restart Windows** page opens if the Setup wizard needs to restart your computer. If files required for the installation are in use during the Setup program and if the program needs to install shared components on your computer, the Setup wizard may need to restart your computer.

Select **Restart** or **Don't Restart**. If you select **Don't Restart**, the wizard reminds you that the installation cannot complete until Windows restarts.

After Windows restarts, log on as the same user. If you do not, the installation does not complete correctly. The second part of the installation process starts automatically after you log on.

9. When the **Setup wizard Completed** window opens, we recommend that you select the **Show me the readme file** option to review the current information related to features and known issues. In addition, you can select **Take me to IBM developerWorks®**. Click **Finish** to complete the installation.

Note: Install the floating license keys on the license server before you start the license server. See "Using floating keys on a Windows license server" on page 44.

Opening the License Key Administrator (LKAD)

The IBM Rational License Key Administrator (LKAD) is installed with your IBM Rational product and with your license server software. This application provides an interface to IBM Rational Common Licensing (powered by FLEXlm software). Use the LKAD or the LKAD wizard to enter or import license keys and change your license configuration.

Note: You must have administrative privileges on the computer before you can enter or import license key information in the LKAD.

- To access the LKAD and the LKAD wizard on a desktop or server, click **Start > Programs > IBM Rational > Rational License Key Administrator**.
- To access the LKAD and the LKAD wizard on the license server, click **Start > Programs > IBM Rational > Rational License Server > Rational License Key Administrator**.

To access the Help, click **Help** in the License Key Administrator's main menu, click **Help** in the LKAD wizard, or open `<Install Path>\IBM Rational\doc\help\licadmin\index.htm`.

Using floating keys on a Windows license server

This section describes how to import or enter floating license keys on the Rational license server.

Importing floating license keys

Import the license key file on the license server by using the License Key Administrator (LKAD).

Note: You must have local administrative privileges for the server before you can import the license key into the LKAD.

To import a license key file in the LKAD:

1. Select **License Keys > Import License Key(s)**.
2. In the **Import License Key(s)** window, find the *.upd or *.txt file (license key file) and select it.
3. Click **Open**. The default location for the license key file is <Install Path>\IBM Rational\Common.
4. Click **Import** in the **Confirm Import** window.

Other methods

- If your e-mail program supports launching programs from file attachments, double-click the .upd or .txt attachment in the e-mail notification that you received from AccountLink. Select **Open it** in the **Opening Mail Attachment** window. Click **Import** in the **Confirm Import** window.
- Save the file attachment to any folder and double-click the license file.
- Use the LKAD wizard.

Entering temporary floating license keys

You may enter a temporary or evaluation license key on the license server if you are evaluating the product or AccountLink is unavailable.

Note: You must have local administrative privileges for the server before you can enter the license key into the LKAD.

To enter license information in the LKAD:

1. Click **License Keys > Enter a License** in the License Key Administrator.
2. Select the type of license.
3. In the next window, enter the following information:
 - Product
 - Expiration Date
 - License Key
 - Quantity (if you are installing a floating license key)
4. Click **Finish**. The License Key Administrator adds this information to the license key *.dat file in <Install Path>\IBM Rational\Common.

Using named-user keys on a Windows license server

Named-user license keys perform as floating license keys, except that during the import process, the License Key Administrator (LKAD) gives you the opportunity to specify a user for each license key. You assign a user to a key by editing the `rational.opt` file. The options file locks the floating license key to the user; allowing the user to run Rational Purify, IBM Rational Quantify, or IBM Rational PureCoverage on multiple desktops.

Importing named-user license keys

Import the license key file on the license server by using the License Key Administrator (LKAD).

Note: You must have local administrative privileges for the server before you can import the license key into the LKAD.

To import a license key file:

1. Click **License Keys > Import License Key(s)**.
2. In the Import License Key(s) window, find the `*.upd` or `*.txt` file (license key file) and select it.
3. Click **Open**. The default location for the license key file is `<Install Path>\IBM Rational\common`.
4. Click **Import** in the Confirm Import window.
5. Edit the options file (`rational.opt`). The LKAD provides an options file in which you can assign named-user license keys. As soon as you import the license key file, the **Edit Options File** window opens. If you choose to edit the file:
 - a. The options file automatically opens in a text editor. Follow the instructions in the file for the correct syntax in assigning user ids to license keys.
 - b. After you edit the file, save it, and then close the file.

Note: You can edit the options file while the license server is running, but stop and start the license server after you have edited the file.

Entering temporary named-user license keys

You may enter a temporary or evaluation license key on the license server if you are evaluating the product or AccountLink is unavailable.

Note: You must have local administrative privileges for the server before you can enter the license key into the LKAD.

To enter license information in the LKAD:

1. Click **License Keys > Enter a License** in the License Key Administrator.
2. Select the type of license.
3. In the next window, enter the following information:
 - Product
 - Expiration Date
 - License Key
 - Quantity (if you are installing a floating license key)
4. Click **Finish**. The License Key Administrator adds this information to the license key `*.dat` file in `<Install Path>\IBM Rational\Common`.

Starting the Windows license server

Start the Rational license server after you have imported or entered the license keys. The license server will not start until license keys are installed. Use the correct procedure based on the version of the Windows operating system on your license server.

Note: Although the control panel applet may still be on your server from an earlier release of the license server software, starting with version 2001, the Rational license server does not use the FLEXlm control panel applet.

Starting the license server on Windows XP

1. Click **Start** and select **Settings > Control Panel > Administrative Tools > Services > FLEXlm License Manager**.
2. Click **Start the service**.

Starting the license server on Windows 2000

1. Click **Start** and select **Settings > Control Panel > Administrative Tools > Services > FLEXlm License Manager**.
2. In the **General** tab, click the **Start** button under **Service Status**.

Starting the license server on Windows NT

1. Click **Start** and select **Settings > Control Panel > Services**.
2. Click the **FLEXlm License Manager** in the **Services** window and click **Start**.

Switching to manual startup

The license server software is automatically set as a Windows NT[®] service. The default Startup type is automatic, which means that the license server starts automatically each time you start the computer. If you prefer to manually start the license server, switch the startup type.

Switching startup type on Windows XP

1. Click **Start** and select **Settings > Control Panel > Administrative Tools > Services > FLEXlm License Manager**.
2. Right-click **FLEXlm License Manager**, and then click **Properties**.
3. In the **Startup type** window, on the **General** tab, select **Manual**.

Switching startup type on Windows 2000

1. Click **Start** and select **Settings > Control Panel > Administrative Tools > Services > FLEXlm License Manager**.
2. In the **General** tab, select **manual** under **Startup type**.

Switching startup type on Windows NT

1. Click **Start** and select **Settings > Control Panel > Services > FLEXlm License Manager**.
2. In the window, select **manual** under **Startup type**.

Running the LKAD command line on Windows (optional)

To automate license configuration on client desktops, create a text file and batch file that specifies single, multiple, and redundant license servers on client desktops. Users enter commands in Windows to run the batch file and text file.

Note: These commands do not support node-locked license keys.

- If users are performing silent installations, add a post-installation section to the site defaults file. The post-installation section launches batch file commands after the installation finishes. The batch file directs the LKAD to use the server information in the text file. To add a post-installation command to the site defaults file, see “Specifying the post-Installation command and batch file” on page 47. For more information about silent installations, see the installation guide for your IBM Rational product.
- If users are not performing silent installations, have them use the command line to direct the LKAD to use information in the text file. To set up the text file and run the LKAD from the command line, see “Creating the text file that specifies license servers” on page 47.

Specifying the post-Installation command and batch file

After you set up a site defaults file, append the following commands to the file.

1. Use a text editor such as Notepad to edit the site defaults file. Append a line similar to the following example. The label [PostInstallCmd] is required:

```
[PostInstallCmd]
Command=post-installation-commands.bat
```

2. Save the site defaults file.
3. Use the same text editor to create the post-installation-commands.bat file. This batch file directs the LKAD to use the license server information in the text file (server-info.txt). This batch file might contain the following commands:

```
licadmin -fserver-info.txt
net send administrator "Installation Complete"
```

In this example, the client desktop’s License Key Administrator, licadmin, starts and uses the information in server-info.txt to specify the name of the license server that the client desktop will use. The batch file then sends a message to the administrator, indicating that the installation is complete.

4. See “Creating the text file that specifies license servers” on page 47 for the commands to insert in the text file server-info.txt.

Creating the text file that specifies license servers

The following section provides instructions for setting up the text file that specifies single, multiple, or redundant license servers. These instructions also provide the commands for running the LKAD from a command window if users are not running silent installations.

Specifying single or multiple license servers

To specify the name of single or multiple license servers in a client desktop’s License Key Administrator:

1. Create a file in a text editor, such as Notepad, that contains the following line:

```
PortAtHost:27000@Server1
```

where Server1 is the name of the license server.

When you type this line:

- The keyword **PortAtHost** is case sensitive.
- The number 27000 is the default port number.
- Use semicolons in the series of server names. The trailing semicolon is required.

To add an additional server, enter `@Server2`, where `Server2` is the name of the additional license server.

```
PortAtHost:27000@Server1;@Server2;
```

2. Save the file, for example, `server-info.txt`.
3. In a command window (if the user is not running a silent installation), enter the following command:

```
licadmin -fserver-info.txt
```

Your computer will be configured to use floating license keys from `Server1` and `Server2`.

The results of running this command are written to the status file `server-info.txt_STATUS`, where `server-info.txt` is the name of the license parameter file you created. The status file is created in the directory where you placed the `server-info.txt` file.

Specifying redundant license servers

To specify the names of redundant license servers in a desktop's License Key Administrator:

1. Create a file in a text editor, such as Notepad, that contains the following line:

```
PortAtHost:27000@Redundant1,27000@Redundant2,27000@Redundant3;
```

where `Redundant1` is the name of the primary Rational license server, `Redundant2` is the name of the secondary license server, and `Redundant3` is the name of the tertiary license server. The number 27000 is the default port number.

When you type this line:

- The license servers must be specified in the order of Primary, Secondary, and Tertiary (Backup) server. For more information about redundant server order, see "Setting up redundant Windows license servers (optional)" on page 50.
- The keyword **PortAtHost** is case sensitive.
- Use commas in the series of redundant server names. The trailing semicolon is also required.
- You can specify redundant servers and multiple servers in one file. Use commas between redundant servers and semicolons between servers.

```
PortAtHost:27000@Redundant1,27000@Redundant2,27000@Redundant3;  
27001@Server1;@Server2;
```

Or

```
PortAtHost:27001@Server1;27000@Redundant1,27000@Redundant2,  
27000@Redundant3;@Server2;
```

2. Save the file, for example, `server-info.txt`.
3. In a command window (if the user is not running a silent installation), enter the following command:

```
licadmin -fserver-info.txt
```

The results of running this command are written to the status file `server-info.txt_STATUS`, where `server-info.txt` is the name of the license parameter file that you created. The status file is created in the directory where you placed the `server-info.txt` file.

Specifying the license server on Windows Web servers

In the case of RequisiteWeb and Rational ClearQuest Web, the Web server is the client of the license server. For example, when a user opens RequisiteWeb on a client, the RequisiteWeb Requirements server, on behalf of the user, requests the floating license from the license server.

Use the following procedures to specify the license server host name(s):

1. Open the License Key Administrator (LKAD):
 - After the product installation is complete, launch the LKAD wizard and the LKAD. The License Key Administrator main window and the License Key Administrator wizard open.
 - If you decided not to launch the LKAD wizard and LKAD immediately after product installation, click **Start > Programs > Rational <product name> > Rational License Key Administrator**. The License Key Administrator main window and the License Key Administrator wizard open.
2. Select **Settings > Client/Server Configuration**.
3. Click **Add Server**.
4. **Single** should be the default value next to **Server Type**. Enter the host name of the license server in the **Values** column next to **Server Name** by clicking **New-Server**. After entering the host name, press Enter.

Additional Servers

If you have additional license servers, click **Add Server** and enter the host name for each server.

Note: Do not use **Add Server** for a redundant server environment.

1. Click **OK** after you have entered all servers.

Your Web server requests licenses from servers in the order that you enter the servers in the LKAD. If you want to change this order, see “Changing the server search order” on page 13.

Configuring Web servers to use redundant Windows servers

Redundant servers are a system of three servers that work as a team to manage a single pool of floating license keys. If one of the servers goes down, the other two license servers automatically continue managing the license pool.

To enter the redundant license servers on the Web server:

1. Click **Settings > Client/Server Configuration**.
2. Click **Add Server**.
3. Click **Single** next to **Server Type**. Select **Redundant** in the menu.
4. Enter the Primary, Secondary, and Tertiary license server host names in the order in which the license administrator requested them in AccountLink. Press Tab to move to the next line.
5. Click **OK**.

Difference between time-out period and linger time

The time-out period is the set period of product non-use after which the license server will reclaim a license. The license server will reclaim a floating license when the product has not been used for a default period of 120 minutes. If you use the product again after the server has reclaimed its license, the product will check out the license again from the server.

The linger time is an interval that is reset to the beginning each time a user runs a command in the application. If the linger time expires before the user runs another command, the user's license is returned to the pool of available floating licenses, and the user has to acquire another license to run any more commands. This linger interval is set and cannot be changed.

ClearCase LT and floating license linger time

Unlike other IBM Rational products, ClearCase LT licenses operate with a linger time of 30 minutes. The first time a user runs a ClearCase LT command that takes a license, the license is allocated to that user for 30 minutes. This 30 minute "linger" interval is re-started every time the user runs a ClearCase LT command that takes a license. You cannot adjust this linger time.

If Rational ClearCase LT checks out a suite license, the suite license does not operate with a 30 minute linger time. It operates with a time-out period instead.

Modifying the floating license time-out period

To change the time-out period, create a text file called `rational.opt` in the `<rational>\common` directory. Enter one of the following two commands in the text file:

1. `TIMEOUT feature seconds` directs the license server to reclaim the feature (the product as it is listed in your license key file) after the number of seconds that you enter into the file.
2. `TIMEOUTALL seconds` directs the license server to reclaim all products after the number of seconds that you enter into the file.

The value for each of these options must be greater than 7200 seconds (or 120 minutes).

Note: ClearCase LT licenses do not have time-out periods. They operate with linger times.

Setting up redundant Windows license servers (optional)

Rational license servers can be set up to run in a fault-tolerant configuration known as redundant servers. Redundant servers are a system of three servers that work as a team to manage a single pool of floating license keys. If one of the servers goes down, the other two license servers automatically continue managing the license pool. If any two license servers no longer work, the third license server will no longer serve licenses. Two servers must operate to serve licenses to clients.

Example

You have purchased 25 floating licenses of Enterprise Suite and wish to set up a redundant server configuration on three Windows computers. You request permanent keys for the redundant servers using AccountLink. You install the Rational license server software on each of the three redundant server partners;

servers A, B, and C. When you receive the license file of 25 permanent floating keys, you install the license file on each server.

The three servers work as a team to manage all 25 floating licenses in unison. When you have 20 license keys checked out to your users and server A crashes, servers B and C continue to manage the 25 licenses.

Important: It is a common misperception that separating redundant servers across multiple sites (for example, one in the U.S., one in Europe, and one in Asia) provides maximum fault tolerance. This is not the case. Redundant servers should always be at the same site and on the same subnet.

To configure redundant license servers:

1. Install license server software on three computers. See “Working with a supported network configuration” on page 41 and “Installing the server software on a Windows server” on page 41.

Note: Use a redundant environment of either all Windows servers or all UNIX servers.

2. Import a license file that you receive from Rational on each license server. See “Using floating keys on a Windows license server” on page 44 for more information.
3. Start the license servers. The sequence is not important, but you should start the servers soon after one another. See “Starting the Windows license server” on page 46 for instructions.
4. Give client desktop users the Primary, Secondary, and Tertiary (Backup) license server host names in the order in which you requested them in AccountLink. They need to enter the host names in their LKADs.

License monitoring (optional)

You may need to monitor and report license usage. Macrovision offers a solution for license usage reporting called SAMreport. SAMreport is designed specifically for reporting on license server activity. SAMreport offers a full set of administrative tools that generates reports, graphs, high-water marks, and even sets alarms to notify individuals when a server has gone down or the license pool is nearly exhausted. SAMreport works with any vendor’s FLEXlm server. It is available only through Macrovision: http://www.globes.com/support/samsolutions_index.htm.

If you do not need extensive license usage reporting, use the lmttools GUI to find out who used which license and when the user did so. If the license server is installed, click **Start > Programs > Rational FLEXlm License Server > License Tools**. License Tools starts the lmttools GUI.

1. Select **Configuration** using **Services** in the **Mode** menu.
2. Click the **Server Status** tab and the **Perform Status Enquiry** in the **Server Status** window.

Using floating licenses with a firewall

The Rational licensing implementation supports a firewall. To configure licensing with a firewall, give the lmgrd daemon (license manager) and the vendor daemon (Rational vendor or rational.exe) TCP/IP port numbers. The TCP/IP port is used for client/server communication for floating licenses.

In a non-firewall situation, the lmgrd daemon starts on TCP/IP port 27000 when you start the server. (You will have to change this number if another application is using this port number.) The lmgrd daemon assigns a random TCP/IP port number to the vendor daemon.

In a firewall situation, the client cannot communicate with the daemons on the license server because the ports on which they are running are blocked. To enable license requests to pass through the firewall, assign numbers to the vendor and lmgrd ports. The vendor daemon and lmgrd daemon must start on a specific port number each time a client makes a license request and checks out a floating license from the server. The specified ports or connections remain open until the client returns the license to the server.

Note: The vendor daemon and the lmgrd daemon cannot be set to the same port number.

In a sample firewall situation, a Rational product can communicate with the lmgrd daemon and rational.exe (vendor daemon) on the license server through a firewall if the numbers 27000 and 8000 have been assigned to the ports.

When you specify the port information, the License Key Administrator stores the port information in the registry.

Use the following procedures to change the lmgrd and vendor ports in single, multiple server, or redundant server environments. They assume that you have already started the license servers and entered the host names of the license servers in the License Key Administrator of each client.

Assigning port numbers in the license server

To enable clients to communicate with the license server, enter values in the lmgrd port and the rational vendor port.

To enter port numbers on a license server or redundant license servers:

1. Select **Settings > Server Ports** in the License Key Administrator.
2. In the **Server Ports** window, enter values in the lmgrd port and the rational vendor port, but do not set them to the same value.
3. Click **OK**.
4. If the server is a redundant server, enter the same port value on each of the redundant servers by repeating Steps 1-3. If there are multiple license servers, enter the same port value on each license server by repeating Steps 1-3.
5. Give users the rational vendor port value to enter into the License Key Administrators of their client desktops.

Changing the lmgrd port

When another application is using the TCP/IP port 27000 that is used by lmgrd (license manager daemon), change the lmgrd port. You do not need to enter a value in the rational vendor because it runs on a random TCP/IP port.

Use the following procedures to change the lmgrd port in single, multiple, or redundant server environments. They assume that you have already started the license servers and entered the hostnames of the license servers in the License Key Administrator of each desktop.

To change the lmgrd port value on a license server or redundant server:

1. Select **Settings > Server Ports** in the License Key Administrator.
2. In the **Server Ports** window, enter a value in the lmgrd port.
3. Click **OK**.
4. If the server is a redundant server, enter the same lmgrd port value on each of the other license servers by repeating Steps 1-3.

Removing the Windows license server software

This section describes how to remove the Rational license server software from the server.

Before you remove the license server software

1. Make sure that no one is using the license server or any associated files. You cannot remove files that are in use.
2. Return the license keys to your account through AccountLink. For more information about moving or returning licenses, see Chapter 10, “Returning or moving keys for administrators,” on page 69.
3. To remove the software from a Windows computer, you must have Windows administrator privileges on the local computer.

Removing the license server software

Use the Windows **Add/Remove Programs** control panel to select and remove the license server software. The Rational installation program removes the files from your computer. It does not remove directories that contain files that you created while you were using the software. It also does not remove the license key files from the server.

Chapter 9. Configuring a UNIX license server

With floating and named-user floating keys you can manage and maintain licenses on single, multiple, or redundant Rational license servers on Linux and UNIX systems.

This chapter describes how to set up and run UNIX license servers. The information in this chapter is intended for system administrators or users who manage licenses. If you want to use a Windows license server, see Chapter 8, “Configuring a Windows license server,” on page 39.

Some of the tasks in this chapter are not recommended for the casual or novice user. Attempt them only if you have experience with the UNIX operating system and IBM Rational Common Licensing (powered by FLEXlm software). You can apply the UNIX commands to all UNIX operating systems unless the text indicates the command is for a specific UNIX operating system.

Windows clients using a UNIX license server

See the relevant Rational point-product for UNIX installation manual for information about configuring a UNIX license server.

If you do not have access to an Rational installation manual, use the procedures in this chapter to set up a UNIX license server. This chapter does not provide instructions for configuring UNIX clients to access the UNIX license server.

Setting up floating and named-user keys on a UNIX server

The general steps required to set up floating or named-user floating licenses on a UNIX license server are described in Table 14. The table provides a checklist of tasks and references to more detailed instructions.

Table 14. Guide to setting up floating licenses on a UNIX server

Task	Procedure
Set up floating licenses.	<ul style="list-style-type: none"> • Understand IBM Rational Common Licensing. See Chapter 6, "Before requesting license keys," on page 25. • Access AccountLink to order permanent license keys for the products on your Windows clients. See Chapter 7, "Requesting license keys," on page 35 for more information about AccountLink. • Make sure that your license server and clients are connected. See "Before you install the license server" on page 57. • Install the license server software and license keys on the UNIX license server. See "Installing the license server and license on a UNIX server" on page 57. • Tell users to specify the Rational license server in their Windows client desktops. See Chapter 3, "Configuring clients to use floating keys," on page 11.
Set up named-user floating licenses (only applies to Purify, Quantify, and PureCoverage).	<ul style="list-style-type: none"> • Understand the IBM Rational Common Licensing. See Chapter 6, "Before requesting license keys," on page 25. • Access AccountLink to order permanent license keys for the products on your Windows clients. See Chapter 7, "Requesting license keys," on page 35 for more information about AccountLink. • Make sure your license server and clients are connected. See "Before you install the license server" on page 57. • Install the Rational license server software and license keys on the UNIX server. See "Installing the server and named-user keys on a UNIX server" on page 60. • The License_Setup script asks you for user ids to assign to the license keys. • Tell users to specify the license servers in their Windows client desktops. See Chapter 3, "Configuring clients to use floating keys," on page 11.
Configure redundant license servers.	See "Setting up redundant UNIX servers (optional)" on page 60.
Change the order in which IBM Rational products use licenses.	The license server does not set license usage order. Use the client desktop to change the order. See Chapter 4, "Changing license usage order," on page 17.

Table 14. Guide to setting up floating licenses on a UNIX server (continued)

Task	Procedure
Using license keys for home use or travel.	Disconnected use from UNIX license servers is not supported. See "Using license keys for home use or travel" on page 32 for other options.
Modify the time-out period.	See "Modifying the floating license time-out period" on page 67.
Monitoring license server activity.	See "License monitoring (optional)" on page 67.
Upgrading the license server software.	You can upgrade the Rational license server software to the most current version, but do not run different versions of Rational license server software on the same computer.
Running multiple license servers on the same computer.	Run a separate lmgrd instance for each vendor daemon and keep license keys in separate files. Most vendors have an expected location for the license file. If your company has license files from multiple vendors, you can keep the data in separate files and set the LM_LICENSE_FILE environment variable to reference these multiple files.
Remove the license server software.	See "Removing the UNIX license server software" on page 67.

Installing the license server and license on a UNIX server

Installing the license server software on a UNIX computer includes installing or entering the license keys. You should have your license key file when you install the IBM Rational license server. Go to AccountLink to order your permanent license keys or find the temporary key code on your License Key Certificate. See Chapter 7, "Requesting license keys," on page 35 for more information about AccountLink.

Before you install the license server

To set up the license server on a UNIX computer, you need the Rational license_setup script and licensing executables from the Rational FTP site: <ftp://ftp.software.ibm.com/software/rational/tools/flexlm>.

The requirements are minimal:

- The license server can be installed on all the UNIX platforms that Rational supports. Rational does not support SunOs 4.x and IRIX 5.x.
- The default TCP/IP port number is 27000 to 27009. Use port number 1501 through 26999 for redundant servers.
- There is no minimum processor, memory, or disk space.
- The license server software must be installed locally (NFS is not supported). The server runs a FLEXlm lmgrd process and a rational daemon process to manage licenses. For more information about these processes, see Chapter 11, "Understanding IBM Rational Common Licensing components," on page 71.
- To check the connection between the server and clients, use the following UNIX commands: **ping**, **arp**, **rsh**, **rlogin**, or **telnet**.
- AccountLink sends the license file to an e-mail account when you request a license. It has the filename format similar to `license_for_server.upd`. You need to have either the license file (`filename.upd`) stored in a known location, such as

the \$HOME directory, on the license server or you need a printout of the contents of the license file available during the license server installation.

Installing the server software and floating license keys

Perform the following steps to install the license server and floating license key file on a Linux or UNIX computer.

1. Download the Rational license_setup script and licensing executables from the ftp site at: `ftp://ftp.software.ibm.com/software/rational/tools/flexlm`. Everything that you need is in `License_Setup.<OS>.tar.z` (For Linux, it is `License_Setup.Linux.tar.gz`).

Occasionally, downloading the file causes the periods in the filename to be replaced with underscores. If this happens, rename the file by replacing the underscores with periods.

2. Copy the files to the \$FLEXROOT directory on the server. The term \$FLEXROOT is used to represent the location from which you plan to run license_setup.

Use the **license_setup** command to set up license options and run the license check sequence.

3. Unpack the files as shown in the following example.

Example using the HP-UX tar file:

```
cd $FLEXROOT
uncompress -c License_Setup.HP-UX.tar.Z | tar -xf -
```

The directory `License_Setup.HP-UX` is created at `FLEXROOT` after you uncompress the tar file.

Important: Be sure to copy the appropriate tar file for the platform on which you are installing.

4. Run the license_setup script in the directory created by the **uncompress/tar** command. The directory will not have the suffix: `.tar.*`

```
cd License_Setup.HP-UX
./license_setup
```

The script starts by providing instructions for using license_setup.

The script prompts you for a Rational directory, such as `rational_dir/config` directory.

5. Choose to accept or not accept the Rational license agreement.
 - If you accept the license agreement, the script continues.
 - If you do not accept the license agreement, you cannot continue with the script. Exit the program. The script exits and makes no changes to the server.
6. Choose your license option from the **Licensing Options** Menu. Options are summarized in the following table.

Option	Description
1	Choose this option if you have a permanent license key or a Term License Agreement (TLA). This option upgrades the license server software (FLEXnet 10.x).

Note: The license_setup script prompts you to provide the location of the license file or gives you the option to enter the license key information manually. If you do not have a license file containing your license keys, see Chapter 7, "Requesting license keys," on page 35.

If you are using a permanent license, go to Step 8 on page 59.

- 2 Choose this option if you do not have a permanent license yet and you want to install the product immediately, or if you want to install the product for evaluation purposes.

Note: You need to have your temporary licensing information (from a sales representative or from <http://www.ibm.com/software/rational>) available as license_setup prompts you for a license key.

If you are using a temporary license, go to Step 7 on page 59.

7. Enter the temporary license key information:

- License key
- License type
- Expiration date

When you have finished, go to Step 10 on page 59.

8. Provide your license file information by doing one of the following:

- Import the information from the license file automatically by giving the path to the .upd file.
- Enter none to provide the license key information manually. You will need a printout of the content of the .upd file. Follow the prompts to enter the information.

Note: Do not enter the information manually because the data is case-sensitive and very literal.

9. Define the location for the <server-name>.dat file that will be created from the information supplied by the license_for_server.upd file. By default, license_setup creates the <server-name>.dat file and stores it in the *rational_dir/config* directory.

Choose either the default path (option 1, *rational_dir/config* directory) that license_setup has selected or choose option 2 to specify an alternate path.

10. Proceed with the **License Check** menu.

Perform options 1-3 sequentially and continue to the next menu. If you are setting up a permanent node-locked license, perform option 1 only. Note that these options are the default settings provided by license_setup.

Restarting the UNIX license server when it reboots

After the license file is in place and the license daemons are running, the license server needs to be set up to automatically restart when it reboots. The license_setup script cannot do this automatically for you unless you ran the script as root (root permissions). If you are not running the script as root, the script directs you to become root and copy a file. The script directs you to the correct location based on the operating system that you are using for placing the start-up files.

The following sections provide the start script commands for the Solaris and HP-UX operating systems.

Sun Solaris

```
$ su  
  
# cp rational_dir/config/start_lmgrd_on_server-name \  
  
/etc/rc2.d/S98Rational
```

HP-UX

```
% su  
  
# cp rational_dir/config/start_lmgrd_on_server-name \  
  
/sbin/init.d/S98Rational  
  
# ln -s /sbin/init.d/S98Rational/sbin/rc2.d/S98Rational
```

Installing the server and named-user keys on a UNIX server

Named-user license keys behave like floating license keys except that you are able to specify a user for each license key. You assign a user to a key by creating a `rational.opt` file. The options file locks the floating license key to the user; so that the user can run Rational Purify, Quantify, or PureCoverage on multiple systems.

Follow the procedures explained in “Installing the server software and floating license keys” on page 58. The only difference that you will see is the script will prompt you for user names and create the `rational.opt` file for you.

Setting up redundant UNIX servers (optional)

Redundant servers are a system of three servers that work as a team to manage a single pool of floating license keys. If one of the servers goes down, the other two license servers automatically continue managing the license pool. This type of redundant configuration requires that a minimum of two license servers running at all times. If two servers go down, licenses will be unavailable until one of the servers is restarted.

Example

You have purchased 25 floating licenses of Enterprise Suite and want to set up a redundant server configuration on three UNIX computers. You request permanent keys for the redundant servers using AccountLink. You install the Rational license server software on each of the three redundant server partners; servers A, B, and C. When you receive the license file of 25 permanent floating keys, you install the license file on each server.

The three servers work as a team to manage all 25 floating licenses in unison. When you have 20 license keys checked out to your users and server A crashes, servers B and C continue to manage the 25 licenses.

Important: It is a common misperception that separating redundant servers across multiple sites (for example, one in the U.S., one in Europe, one in Asia) provides maximum fault tolerance. This is not the case. Redundant servers should always be at the same site and on the same subnet.

It is a good practice to have a homogeneous redundant server setup is (that is, all servers are running the same operating system); however, heterogeneous environments are supported. For example, you could have two license servers running Solaris and one running HP-UX.

Before you install the license server on redundant UNIX servers

To set up the license server software on redundant UNIX servers, you need the licensing executables from the Rational FTP site and a license key file for redundant UNIX servers from AccountLink. Then configure a start script and start each server.

The `license_setup` script cannot import license key files for redundant servers, and it cannot start redundant servers. Instead, you must manually install the license file and server software on each computer.

Here are the requirements for setting up redundant servers:

- If you have already set up a license server and want to use that server in the redundant server configuration, remove the Rational license server software from the computer. See “Removing the UNIX license server software” on page 67.
 1. Return the license keys to AccountLink (“Moving or removing license keys on a UNIX server” on page 67).
 2. Follow the instructions in this section for installing the license server and license keys in a redundant server configuration.
- Request the license key file for redundant UNIX servers. Go to AccountLink and request a license for redundant servers. AccountLink will ask you for the primary, secondary and backup servers. Be sure to specify the redundant servers in the correct order:
 - Host ID is the primary server
 - Host Name 2 is the secondary server
 - Host Name 3 is the backup server

If you have problems receiving or working with the redundant server license file, see “Contacting IBM Customer Support for Rational software products” on page xv. Technical support will create a new license file for you.

Note: If you do not have an internet connection, see “Requesting license keys (without an internet connection)” on page 37.

- The license server can be installed on all of the UNIX platforms that Rational supports. Rational does not support SunOs 4.x and IRIX 5.x.
- There is no minimum processor, memory, or disk space.
- AccountLink sends the license file to an e-mail account when you request a license. It has the file name format similar to `license_for_server.upd`.
- The default TCP/IP port number is 27000 to 27009. Specify port number 1501 through 26999 for redundant UNIX servers.
- To check the connection between the servers and clients, use the following UNIX commands: **ping**, **arp**, **rsh**, **rlogin**, or **telnet**.
- The servers should be on the same subnet.
- The license server software must be installed locally (NFS is not supported). Each server runs a FLEXlm `lmgrd` process and a rational daemon process to manage licenses. For more information about these processes, see Chapter 11, “Understanding IBM Rational Common Licensing components,” on page 71.

- You must manually install the license server software on the servers.

Installing the server software and keys on redundant UNIX servers

Because the `license_setup` script cannot import a redundant license key file, install the license server software and license key file manually on each of the three servers.

1. Place a copy of the license file that you receive from AccountLink on each of the three license servers and ensure that the order of the SERVER lines is the same in each file.
 - a. You can verify the order of the SERVER lines by opening the license file and checking for three server lines.
 - If you do not have a three-server license file, return your license file to AccountLink (Return transaction) and request a new license file for redundant UNIX servers. If you have problems receiving, returning, or working with the redundant server license file, see “Contacting IBM Customer Support for Rational software products” on page xv. Technical support will make the correct changes to your account and create a new license key file for you.
 - If the SERVER lines are not in the correct order, you can edit the file to change the order, change the server name (not the host ID), and change the port number. You cannot add or delete server lines.
 - b. The license file (`license_for_primary.upd`) needs to be copied to the `$FLEXROOT` directory. You need to maintain this file on all three servers. Copy and rename the file to `rational.dat` as shown in the following example:


```
cp license_for_primary.upd $FLEXROOT/rational.dat
```
 - c. Assign a TCP/IP port to each server. You must assign a TCP/IP port number to each server by modifying the port assignment in each SERVER line.

Important: Redundant servers cannot communicate with each other if you use the default port numbers: 27000 to 27009. Use a port number between 1501 and 26999. Ensure that the port number you use is not in conflict with any other TCP/IP services. Note that the same port number can be used for each server, or the port numbers can be unique.

Check that the port is not already in use. (Port 1706 is used in the following sample commands.)

Check the `etc/services` file

```
grep "[ ]1706/" /etc/services
```

Check the NIS services by using the `ypcat` services command.

```
ypcat services | grep "[ ]1706/"
```

Note: There is a tab and a space character between the [].

Edit the license file to use the new port numbers.

```
cd $FLEXROOT
```

```
vi rational.dat
```

Your license file should look similar to the following example.

```
SERVER primary 8001d410 1706
SERVER secondary 8001d625 1706
```

SERVER backup 8001d873 1706

2. Download the licensing executables from the ftp site at:
`ftp://ftp.software.ibm.com/software/rational/tools/flexlm`. Do not download `License_Setup.<os>.tar.z`. Download `flexlm.7.0f.<os>.tar.z`. Occasionally, downloading the file causes the periods in the filename to be replaced with underscores. If this happens, rename the file by replacing the underscores with periods.
3. Copy the FLEXlm files to the \$FLEXROOT directory on all three servers. The term \$FLEXROOT is used herein to represent the location from which you plan to run the license server software.

4. Unpack the files as shown in the following example.

Example using the HP-UX tar file:

```
cd $FLEXROOT
```

```
uncompress -c flexlm.7.0f.hp.tar.Z | tar -xvf -
```

The directory `flexlm.7.0f/hppa_hpux` is created at FLEXROOT after you uncompress the tar file.

Note: Be sure to copy the appropriate tar file for the platform on which you are installing.

Configuring and starting the redundant UNIX license servers

Do the following to start the redundant servers:

- Configure the start script for each server. This is best done by copying a template file from the Rational FTP site and modifying it. The FTP address is provided in the following section.
- Start each license server manually by using the `start_lmgrd` script.

Configuring the start script

Working from the \$FLEXROOT directory, create a start script for each server.

1. Obtain a template start script at the Rational site:
`ftp://ftp.software.ibm.com/software/rational/tools/flexlm/start_lmgrd`
2. Copy the template file to the \$FLEXROOT directory on all three license servers.
3. Set the following four variables in the `start_lmgrd` script.

Solaris Example:

```
FLEXROOT=/usr/rational/flexlm.7.0f  
LICENSE_DIR=$FLEXROOT/sun4_solaris2  
LICENSE_DAT=$FLEXROOT/rational.dat  
LICENSE_USER=joe
```

HP-UX Example:

```
FLEXROOT=/usr/rational/flexlm.7.0f  
LICENSE_DIR=$FLEXROOT/hppa_hpux  
LICENSE_DAT=$FLEXROOT/rational.dat  
LICENSE_USER=joe
```

The preceding examples show the license server being installed in the same location, using the same license file name, and the same user. This helps simplify the setup and makes it easier to maintain.

Starting redundant UNIX license servers

The servers must be started in the correct order: primary, secondary, and backup.

1. At the FLEXROOT directory (`/usr/rational/flexlm.7.0f`) where you copied the template start script (`start_lmgrd`), enter the following command:

```
./start_lmgrd
```

2. Repeat Step 1 for the secondary and backup servers.
3. Check the status of each server:

```
./start_lmgrd lmstat -a
```

You should see the three servers listed as running and a list of the license keys being served.

To stop the license servers:

Stop each license server by entering the following command:

```
./start_lmgrd stop
```

To verify the license file:

Check the Rational INCREMENT lines by running the `exinstal` command:

```
./start_lmgrd ex
```

This command generates a report on all of the increment lines and identifies if they are properly encrypted.

Problems starting the redundant UNIX license servers

If the license server will not start, check the corresponding `lmgrd` log file (specified by `LICENSE_LOG` in `start_lmgrd`).

1. Error message: `ulimit: bad ulimit`

If you see this message when you run `start_lmgrd`, remove the **`ulimit`** command from the script.

2. If there are any other problems, check that the start scripts reference the correct license file (`LICENSE_DAT`), the license directory (`LICENSE_DIR`), and the license log file (`LICENSE_LOG`). Mail the start scripts, the license files, and the log files to technical support. For more information about contacting Rational licensing support see "Contacting IBM Customer Support for Rational software products" on page xv.

Restarting the redundant UNIX servers when they reboot

All three license servers should be set up to be restarted at boot time. To set this up, copy the start script to the appropriate system directory.

Note: For security reasons, do not run `lmgrd` as root. Run `lmgrd` as a user by setting the `LICENSE_USER` variable. The user ID that you specify must exist on the system that runs the start script. In the following example, the user is set to "joe".

```
FLEXROOT=/usr/rational/flexlm.7.0f
LICENSE_DIR=$FLEXROOT/hppa_hpux
LICENSE_DAT=$FLEXROOT/rational.dat
LICENSE_USER=joe
```

In previous releases, Rational used the filename `S1mRational.sh` in the system start directories. If there is an `S1mRational.sh` file under any of the `/etc/` or `/sbin`

directories, remove and replace it with S98Rational. The following sections provide the start script commands for each operating system.

Note: You must be root to perform these steps.

Sun Solaris

```
cd /usr/rational/flexlm
```

```
cp start_lmgrd /etc/rc2.d/S98Rational
```

If you need to remove a reference to the S1mRational.sh file, use the following command:

```
/bin/rm -f /etc/rc2.d/S1mRational.sh
```

HP-UX

```
cd /usr/rational/flexlm
```

```
cp start_lmgrd /sbin/init.d/S98Rational
```

```
ln -s /sbin/init.d/S98Rational /sbin/rc2.d/S98Rational
```

If you need to remove a reference to the S1mRational.sh file, use the following command:

```
/bin/rm -f /sbin/*./S1mRational.sh
```

SGI IRIX

```
cd /usr/rational/flexlm
```

```
cp start_lmgrd /etc/init.d/S98Rational
```

```
ln -s /etc/init.d/S98Rational /etc/rc2.d/S98Rational
```

If you need to remove a reference to the S1mRational.sh file, use the following command:

```
/bin/rm -f /etc/*./S1mRational.sh
```

IBM AIX®

Edit `/etc/inittab` and add a line to run the start script using `/bin/sh`:

```
lmgr:234:once:/bin/sh/usr/rational/flexlm/start_lmgrd
```

Linux

```
cd /usr/rational/flexlm
```

```
cp start_lmgrd /etc/rc.d/init.d/S98Rational
```

```
ln -s /etc/rc.d/init.d/S98Rational /etc/rc.d/rc3.d/S98Rational
```

```
ln -s /etc/rc.d/init.d/S98Rational /etc/rc.d/rc4.d/S98Rational
```

```
ln -s /etc/rc.d/init.d/S98Rational /etc/rc.d/rc5.d/S98Rational
```

License manager commands

IBM Rational Common Licensing uses the License Manager, version 10.x, from Macrovision Corporation. The License Manager includes the following components:

- A vendor daemon named `rational` that dispenses Rational licenses. The `rational` daemon is used for all Rational licensed products. If you have other products from other vendors that also use FLEXlm software, they will include their own vendor daemons.
- A license daemon named `lmgrd`. The `lmgrd` daemon does not process requests on its own, but forwards requests to the appropriate vendor daemon.
- A license file that you maintain. The license file specifies your license servers, vendor daemons, and product licenses.

Note: Use a single combined license file for all Rational products.

To verify that your license manager is operational, you can enter these commands on your UNIX license server to see if its daemons are running:

```
% ps axw | grep -v grep | egrep "lmgrd | rational"
```

or

```
% ps -e | grep -v grep | egrep "lmgrd | rational"
```

The output should include lines similar to the following (your path names may vary):

```
538 ?? S 0:03.50 /rational/base/cots/flexlm.7.0f/platform/lmgrd
```

```
-c /rational/config/servername.dat
```

```
-l /rational/config/servername.log
```

```
539 ?? I 0:00.90 rational -T brazil 6.0 3 -c ...
```

The following table summarizes the system-administration commands that the license manager provides.

Command	Description
lmdiag	Enables you to diagnose problems when you cannot checkout a license.
lmdown	Shuts down license and vendor daemons.
lmhostid	Reports license manager host ID of workstation.
lmremove	Returns specific licenses to license pool on license server (for example, after a system crashes).
lmreread	Rereads license file, starts new vendor daemons.
lmstat	Reports status on daemons and feature usage.
exinstal	Reports on licenses in license file that you specify on the command line.

Additional licensing commands

In addition to using the commands in the previous list, you can also use the `license_check` command to run the FLEXlm `lmstat` command for counted licenses and the `exinstal` command for any license file (not `port@host`). The `lmstat` command queries the license server for a list of licenses that are in the license pool. The `exinstal` command checks the license file format and license codes to see if everything is consistent.

Moving or removing license keys on a UNIX server

Use the instructions in Chapter 10, “Returning or moving keys for administrators,” on page 69 to return or move license keys on the UNIX server. To remove the license server from a UNIX server, see “Removing the UNIX license server software” on page 67.

Modifying the floating license time-out period

See the “Modifying the floating license time-out period” on page 67 for information about the time-out period and how to change it.

License monitoring (optional)

You may need to monitor and report license usage. Macrovision offers a solution for license usage reporting called SAMreport. SAMreport is designed specifically for reporting on license server activity. SAMreport offers a full set of administrative tools that generates reports, graphs, high-water marks, and even sets alarms to notify individuals when a server has gone down or the license pool is nearly exhausted. SAMreport works with any vendor’s FLEXlm server. It is available only through Macrovision. Detailed information on SAMreport can be found at: http://www.globes.com/support/samsolutions_index.htm.

Removing the UNIX license server software

This section describes how to remove the license server software from the computer.

Before you remove the license server software

Return the license keys to your Rational account through AccountLink, the online license management tool. For more information about moving or returning licenses, see “Moving or removing license keys on a UNIX server” on page 67.

Removing the license server software

To remove the license server from the UNIX server.

1. Go to `$FLEXROOT` or `/usr/rational/flexlm.7.0f`
2. Shut down the server with one of the following commands:

```
lmdown -c <license_file>
```

Example:

```
lmdown -c rational.dat
```

or

```
lmdown -c <port@host>
```

Example:

```
lmdown -c 27000@hershey
```

or

```
ps -e | grep lmgrd #
```

To find the pid of lmgrd:

```
kill <pid> #
```

Where <pid> is the process ID of lmgrd

Note: If you use **kill -9 <pid>#**, the server might leave a `lockrational` file in either `/tmp` or `/usr/tmp`. You need to remove this file.

1. To remove the license server software, go to the `<rational_dir>` directory at `$FLEXROOT` and delete the IBM Rational FLEXlm directory installed under `base/cots`:

```
cd <rational-dir> or /usr/rational/flexlm.7.0
```

```
rm -fr base/cots/flexlm.7.0f
```

To remove just the Solaris software:

```
rm -fr base/cots/flexlm.7.0f/sun4_solaris2
```

To remove just the HP-UX software:

```
rm -fr base/cots/flexlm.7.0f/hppa_hpux
```

Chapter 10. Returning or moving keys for administrators

If you need to upgrade your license keys, replace an old license server, or move the license keys to another computer, you must perform a floating or node-locked license key return transaction in AccountLink. Because permanent node-locked and floating license keys are tied to a computer's host ID, IBM Rational products will not work on another computer until you register the products to the new computer.

Returning or removing permanent license keys

Use AccountLink to return node-locked, floating, named-user floating, and redundant server license keys to your Rational account. When you return a license key, you do not physically give the license key back to Rational. Instead, you use the Return transaction in AccountLink. The AccountLink transaction updates records to indicate that you are no longer using an IBM Rational product on that computer. This adjusts the count of registered products in your account.

After AccountLink makes the adjustments to your account, AccountLink sends you a license key file that contains updated license key information even if you have returned all the license keys for that computer. To comply with your License Agreement, import this updated license file (whether the file is empty or not) on the computer.

Note: If you have problems returning or requesting a new redundant server license file, Technical support will make the correct changes to your account and create a new license file for you.

To return a license key:

1. Perform the return transaction in AccountLink.
2. When you receive the update file from AccountLink, import the file on the old desktop or license server.
3. Remove the IBM Rational software or license server software from the old desktop or license server. See the installation guide for your IBM Rational product for the removal procedures.

Moving permanent license keys

If you want to move IBM Rational software to another desktop or server, return the existing license keys from the old desktop or server to your account. Then request license keys for the new desktop or server.

Note: If you have problems returning or requesting a new redundant server license file, see "Contacting IBM Customer Support for Rational software products" on page xv. Technical support will make the correct changes to your account and create a new license file for you.

To move license keys from one computer to another:

1. Use AccountLink to return the license keys to your Rational account. See "Returning or removing permanent license keys" on page 69.

Note: To help prevent you from confusing the license key update file for the old computer with the license key file for the new computer, you may want to complete the return transaction before you order license keys for the new computer.

2. Request new license keys for the new computer in AccountLink.
3. Remove the Rational software or license server software from the old computer. See the installation guide for your IBM Rational product for the removal procedures.
4. Install the Rational software or license server software on the new computer.
5. Import the new license key file on the new computer.
6. If you moved the license keys to a new license server, give client desktop users the host name of the new license server.

Chapter 11. Understanding IBM Rational Common Licensing components

This chapter describes how Rational has implemented FLEXlm features and options in IBM Rational Common Licensing.

Locating the licensing components

All IBM Rational files and license key files are installed in *<Install Path>\Rational\Common* unless otherwise noted.

Understanding the license server process

Licenses are managed by a license manager that runs on a license server. The license manager monitors license access, simultaneous usage, idle time, and so on. When you start any IBM Rational product, you are initially unlicensed. If a license for that product is available, the license manager gives you a license. You retain the license while you are using the product. When you exit the application, your license is returned to the license manager and is made available for another user. If a license is unavailable, you are unable to use the product until a license is returned by another user.

The following sections provide detailed information about the Rational license server and license file, including descriptions of the license daemons running on the server.

License components

The Rational license configuration includes these major components, which are described in the following sections:

- License key file
- License manager daemon (lmgrd)
- Vendor daemon

License key file

License key definitions are stored in a text file called the license key file. The license key file is created based on the data that you provided in AccountLink. The license file can contain license key data for several products and is created for a specific host. The License Key Administrator installs the license key file.

The license key definition contains information about the server nodes and vendor daemons, and at least one line of data (called FEATURE or INCREMENT lines) for each licensed product. Each FEATURE line contains a license key based on the data in that line, the host ids specified in the SERVER lines, and other vendor-specific data.

When users start an IBM Rational product, the environment variable `LM_LICENSE_FILE` is automatically defined for them. License manager uses this variable to locate the license file.

License file names

Table 15 describes the types of license key files.

Table 15. License key files

File Name	Description	Notes
rational_temp.dat	Contains all node-locked temporary license keys.	Obtain a permanent license key to continue to use your IBM Rational product past the temporary key expiration date.
rational_perm.dat	Contains all node-locked permanent license keys.	Go to AccountLink to request permanent keys.
rational_server_temp.dat	Contains all temporary floating license keys on a license server.	Obtain a permanent license key to continue to use your IBM Rational product.
rational_server_perm.dat	Contains all permanent floating license keys on a license server.	Go to AccountLink to request new permanent license keys.

The floating license server line

This section explains the line used to set up a license server in the license key file.

A typical SERVER line is similar to the following example:

```
SERVER          curly  DISK_SERIAL_NUM=12345678
```

Item in SERVER Line

	Description
SERVER	Tells the server that the license file will be used for floating or counted node-locked licenses. This is needed in a floating license file along with a VENDOR or DAEMON line.
curly	The host name of the license server. Allows the license server's hostname or IP address to populate the hostname field in the SERVER line. Both values are allowed. The hostname value is not encrypted into floating license keys.
12345678	The host ID of the license server. The default value is the disk serial number (DISK_SERIAL_NUM) of the user's boot drive. The host ID value is encrypted into floating license keys.
curley	The hostname of the license server.

Entering the license server name on the client

When you enter the name of the license server in the License Key Administrator (LKAD) of the client, the LKAD writes the hostname of the license server to an empty license file in the <rational>\common directory on the client.

License manager daemon (lmgrd)

Two daemons (or processes) are used to manage floating licenses:

- lmgrd, the license manager daemon
- vendor daemon

The lmgrd daemon and the vendor daemon work together to manage the license keys. The lmgrd handles the initial contact with the client application programs, passing the connection on to the appropriate vendor daemon. It also starts and restarts vendor daemons.

By default, the lmgrd on Windows is a Windows NT service.

The lmgrd daemon starts on TCP/IP port 27000 (default) when you start the server. The lmgrd daemon will assign a random vendor TCP/IP port number (unless you set up a firewall) to the vendor daemon and start the vendor daemon on that port.

Vendor daemon

The vendor daemon is a program (rational.exe) developed by Rational implementing FLEXlm. The vendor daemon keeps track of how many licenses are checked out and who has them.

The path to the rational.exe vendor daemon is specified using the DAEMON line in the license key file. The path to the options file is also specified on the DAEMON line after the path to the vendor daemon.

A typical DAEMON line for Windows is displayed as:

```
DAEMON rational D:\Rational\common\rational.exe
```

Where:

Item in DAEMON Line	Description
DAEMON	The license daemon name and path are specified in this line.
rational	The name of the license server daemon. Both floating and node-locked licenses have this value defined in the DAEMON string.
<install path>\Rational\common\rational.exe	The path to the Rational license server executable.

License keys are granted by running processes. Only one process, or vendor daemon, is run to manage keys for all licensed IBM Rational products on the network.

If the vendor daemon terminates for any reason, all users lose their licenses (They do not see a warning that the vendor daemon has terminated). However, this does not mean the applications suddenly stop running. Users can continue working, save their work, and exit safely, because the lmgrd (license manager) automatically restarts the vendor daemon.

The application program communicates with the vendor daemon, usually through TCP/IP network communications. The application program and the daemon processes (the license server) can run on separate nodes on your network, across any size wide-area network.

The format of the traffic between the client and the vendor daemon is system-independent, allowing for heterogeneous networks. This means the license server and the computer running an application can use different hardware platforms or even different operating systems (for example, Windows NT as a server and Windows 98 as a client).

License server process

When you run a counted licensed application, such as a Rational Suite product that uses a floating license, the following occurs:

1. The license module in the client application finds the license key file on the license server, which lists the host name of the license server and the port number of the license manager daemon (lmgrd.exe).
2. The client establishes a connection with the license manager daemon (lmgrd.exe) and specifies the vendor daemon (rational.exe).
3. The lmgrd.exe determines which computer and port correspond to rational.exe and returns that information to the client.
4. The client establishes a connection with rational.exe and sends its license request.
5. The vendor daemon (rational.exe) checks in its memory to see if any licenses are available and sends a grant or denial back to the client.
6. The license module in the application grants or denies use of the feature, as appropriate.

The options file for floating licenses

Rational provides the least restrictive licensing environment possible. By default, the server does not restrict access to any client requesting a license key. This configuration works best for most customers.

If you want a more controlled floating license environment, you can use the options file to reserve or deny licenses for certain users, hosts, displays, groups, or IP addresses. You can also limit the number of licenses each user or group can access.

Setting up the options file

To create an options file:

1. Using a text editor create a text file, `rational.opt`, in the `<rational>\common` directory.
2. Enter the following commands in the file. See "Example 1" on page 75 and "Example 2" on page 75 for the correct syntax.

Options File Commands	Description
RESERVE	Tells the server to reserve a license
1	The number of licenses to reserve
ClearQuest	The name of the license to reserve
USER	Tells the licensing software to reserve a license for a specific user ID
greg	The userid for which the license will be reserved

Note: For the server to recognize the file or any changes made to it, restart the license server. You will have to stop and then start the license server. The `lmreread` diagnostic tool will not work.

Example 1

You have 10 floating licenses of ClearQuest. You want to ensure that users Greg and Peter always have a license of ClearQuest available for their use. Set up the options file as follows:

```
RESERVE          1  ClearQuest      USER    greg
RESERVE          1  ClearQuest      USER    peter
```

Example 2

You have 10 floating licenses of ClearQuest. You want to ensure that user Bob does not have access to a ClearQuest license. Set up the options file as follows:

```
EXCLUDE          ClearQuest      USER    bob
```

Diagnostic tools

lmtools

The `lmtools` application is designed to help diagnose licensing problems. It is available on Windows only. This application is installed with all products in the `<rational>\common` directory. If the license server is installed, you can use the License Tools Start menu to access the `lmtools` GUI.

lmutil

By default, the `lmutil` program is installed in the `<rational>\common` directory. The command `lmutil` is fully supported and has a number of useful options. More information can be found in the FLEXlm End Users Guide, Chapter 7, at http://www.macrovision.com/pdfs/flexlm_licensing_end_user_guide.pdf.

lmreread

The `lmutil lmreread` command is a supported option that forces the server to source the license file without having to shut down the server. This allows systems administrators to make changes to the license file without stopping and restarting the server.

Note: The `lmutil lmreread` command does not detect changes to the options file. For more information about the options file, see “Setting up the options file” on page 74.

Windows registry information

This section describes the Windows Registry settings for IBM Rational Common Licensing (powered by FLEXlm software).

Important: Use extreme caution when editing the Windows Registry. Incorrect edits can render your computer unusable.

Windows Registry entries are located in:

```
HKEY_LOCAL_MACHINE\SOFTWARE\IBM Rational\Licensing\1.0
```

The *<Install Path>* in Table 16 refers to the path specified during installation. The default value is C:\Program Files\IBM Rational.

Table 16. Licensing registry entries

Key and description	Default value
UseLicense Server Is this computer using a license server to obtain its license keys?	FALSE
LicenseTemp Path of temporary license key file	<i><Install Path></i> \common\rational_temp.dat
LicensePerm Path of permanent license key file	<i><Install Path></i> \common\rational_perm.dat
ClientInstalled Does this computer have client software installed?	TRUE
ServerInstalled Is this computer a license server?	FALSE

Chapter 12. Troubleshooting licenses

This chapter provides possible solutions based on commonly asked questions and error messages.

The commonly asked questions are sorted into the following topics:

- “Node-locked licenses” on page 77.
- “License server and floating licenses” on page 77.
- “Requesting a license key” on page 78
- “Moving license keys” on page 78.
- “AccountLink data entry” on page 78.
- “Host ID” on page 78.
- “Upgrades” on page 79.
- “Error messages” on page 80.

A list of Windows and UNIX error messages and possible solutions are in Table 17 and Table 18.

Node-locked licenses

Does a change in the IP address and internet address affect the node-locked license?

Node-locked licenses use the host ID (`disk_serial_num`) or ethernet address of the licensed computer. Therefore, a change in the IP address or a change in Internet address does not affect your license. However, you should notify IBM Licensing Support if the e-mail address of the license contact has changed.

License server and floating licenses

Can ClearQuest on a client in one Windows domain obtain licenses from a license server that is on a different Windows domain?

Yes, it is possible. If the client can see the license server by host name, the request will work. IBM licensing also supports using the fully qualified domain name or using the IP address of the license server instead of the host name.

How do I install licensed software on a second disk? I have a second disk on my computer and I have requested a floating license for <product>.

Provide the correct host name, host ID, and account number for the second disk in AccountLink. Then install the software on the second disk and import the permanent license key that you receive from AccountLink on the second disk.

How do I restart my master license server? I have redundant servers and I cannot restart my master server.

To restart a server in a redundant server configuration, restart all the servers in no particular order. You cannot just restart the server that has gone down.

Requesting a license key

Can we request permanent license keys without entering a temporary key?

Yes, you can use AccountLink to request permanent license keys without first installing your temporary license key. See Chapter 7, "Requesting license keys," on page 35 for more information about AccountLink.

How long does it take to obtain the permanent license key?

AccountLink will send you the license keys through e-mail after you submit your transaction. The speed and reliability of your internet connection will affect when you will receive your permanent keys.

Moving license keys

How long does it take to move a license key to another computer?

The requests for returning and getting a new license key usually take no longer than your initial license request.

How do I move a node-locked license mistakenly installed on a database/repository server to a client? We purchased two node-locked licenses for two client computers. I made a mistake and requested and installed one of the licenses on the database or repository server. I cannot install this license on the second client because it is system-specific.

To move and return license keys, see Chapter 5, "Returning or moving keys for desktop users," on page 21.

AccountLink data entry

What is my Account Number? I just downloaded the upgrade to <product>. I am now unable to run the software. I do not know my Account Number which is a required field in AccountLink.

Use the account number specified on your License Key Certificate. If you cannot find your License Key Certificate, contact IBM support for Rational products with your purchase order or sales order number.

Host ID

What should I do if I need to reformat the hard drive on my computer?

You need to replace your license keys in case the host ID changes on your computer during the reformat.

1. Return your license keys to IBM. Go to AccountLink.
2. Perform the reformat.
3. Order new license keys from IBM through AccountLink.

What should I do if I am upgrading the operating system on my computer?

If you do not need to reformat your hard drive to do the upgrade, your licenses stay on your computer in the Rational/Common directory. After you perform the

upgrade, all of your licenses should still be available. If you need to reformat the disk, see the previous question in this section.

What if my license .dat files get deleted?

Go to AccountLink and get copies of the license files.

The host ID ffffffff is not valid. Why? ffffffff is the value listed in the host ID field in the License Manager.

When you initialized your disk, your disk did not receive a disk_serial_num. Although the software accepted this entry, licensing services regards this value as invalid.

You can reset your host ID by using vendor disk utility tools such as those by Norton. Another option is to use the Ethernet card address instead of the host ID.

I changed my file system from FAT to NTFS, which changed my host ID. Could you please change my key to make it work again? I changed my system disk and the licenses no longer work.

The license keys are generated for a specific host name and host ID. You have to return the license keys to your IBM Rational account and then request license keys for the new host ID. To perform these transactions, go to AccountLink.

Upgrades

We received two upgrade packets but chose not to upgrade immediately because we were in the middle of pre-release testing. The License Key Certificate says, however, that the key expires on <date>.

Contact your IBM Sales Office to obtain temporary license keys that will work until you are ready to upgrade your computer.

Error messages

Table 17 and Table 18 explain licensing error messages for Windows and UNIX, respectively.

Table 17. Licensing error messages (Windows)

Message or Description	Action
<ul style="list-style-type: none"> • Cannot find SERVER hostname in network database • Cannot connect to license SERVER • NO SUCH FEATURE EXISTS • Failed to check out a <product-name> key 	<p>Confirm on the desktop:</p> <ul style="list-style-type: none"> • You have entered the correct name for the license server (in the Client/Server Configuration window of the License Key Administrator). For more information, see "Checking the Windows client configuration" on page 84. • You have entered the correct vendor port number if there is a firewall between the client and the license server. For more information, see "Using floating licenses with a firewall" on page 51. • The network connection between the client and the license server is working. For more information, see "Checking the Windows network connection" on page 83. <p>Confirm on the license server:</p> <ul style="list-style-type: none"> • The license server (lmgrd) and the rational.exe or vendor daemon are running. See "Checking the Windows license server" on page 82. • There are numbers assigned to the lmgrd and vendor ports on the license server (if there is a fire wall between the license server and the client). For more information, see "Using floating licenses with a firewall" on page 51. <p>In all cases, if you do not see any problems with the network connection or the license file, yet applications cannot acquire license keys, stop and start the license server from the License Manager (See "Starting the Windows license server" on page 46). It may also be helpful to reboot the server, particularly if the license manager is running as an NT service. If all else fails, contact IBM support for Rational products.</p>

Table 17. Licensing error messages (Windows) (continued)

Message or Description	Action
<p>License keys are not for this machine.</p> <p>The license was not intended for this server.</p>	<ul style="list-style-type: none"> You are installing the license key on a computer other than the one for which the license key was generated. The <code>license.upd</code> file specifies the computer name and host ID that you entered in the license key request to AccountLink. Import the file on the correct computer. Confirm that the license key file you received contains the correct host ID and hostname of the license server or client. To find this information, use a text editor to view the license key (*.dat) file in <code><Install Path>\IBM Rational\Common\</code>. Compare the Disk Volume Serial Number found in License Tools > System Settings, with what is displayed in the Server line in the license key file. These two numbers should match. Occasionally 0 or a dash will be found in the license file.
<p>The license for this product will expire...</p>	<p>Your temporary or Term License Agreement (TLA) license key is nearing its expiration date. This warning message is displayed every time you start the application until you install a permanent license key or another TLA license key. To continue using the product, contact your IBM sales representative to purchase the product or extend your TLA.</p> <p>You can turn off the warning by clicking Settings > Display Expiration Warnings in the License Key Administrator.</p>

Table 18. Licensing error messages (UNIX)

Message	Explanation/Action
<p>There is a problem with one license key. or</p> <p>There are problems with <N> license keys.</p>	<p>This means that the license keys in the license file do not match and are inconsistent with the text of the license. The licenses consist of several parameters and a 12-digit hexadecimal key that was created using these parameters. The parameters are in ASCII text but they cannot be changed or it will invalidate the license. The parameters used to create the license are the server host ID, license name, vendor daemon name, expiration date, number of users (quantity), <code>VENDOR_STRING</code>, <code>OVERDRAFT</code>, <code>SUPERSEDE</code>, <code>DUP_GROUP</code>, and <code>NOTICE</code>.</p>
<p>You do not have remote access to <license-server-name> from <local-host-name>, so it cannot be set up as a license server.</p>	<p>It may be that the license server is not the same computer on which you are installing. You must have remote shell access (<code>rsh</code> or <code>remsh</code>) to the license server.</p>

Table 18. Licensing error messages (UNIX) (continued)

Message	Explanation/Action
Host <license-server-name> is running Solaris. Host <local-host-name> is running HP-UX. They do not match so <license-server-name> cannot be used as a license server.	It may be that the license server is not the same computer on which you are installing. If so, it must run the same operating system that the product you are installing requires.
Host, <license-server-name> does not have access.	If the license server is not the same computer on which you are installing, it must have access to the Rational directory where IBM Rational products have been installed.
Cannot set <license-server-name's> host ID with this command: rational_dir/base/cots/ flexlm.7.0f/lmhostid	The lmhostid command failed. Check to see if the lmhostid command shown will run on your local host. If so, enter the host ID number in the License Server Host ID Menu (choice number 2).
Cannot access rational_dir/base/cots/ flexlm.7.0f/lmhostid on <license-server-name>.	There was a problem accessing the rational_dir directory or the lmhostid command was not installed from the CD.
Host ID <nnn> not valid. Less than 4 digits.	This means that the host ID number will not work. Check again using the lmhostid to see what the host ID is. It should be at least four or more hexadecimal digits.
Port number <pn> is in use in /etc/services. or Port number <pn> is in use under NIS services.	If you entered a port number and it seems that the number is in use in your /etc/services file or under NIS services, you may have a problem with licensing. IBM Rational products that use FLEXlm use TCP/IP sockets to communicate with a license server using a specific port number. This port number is specified in the license file on the SERVER line. The license server will not be able to open a socket on a port that is already in use. Use the default port number, 27000.

Checking the Windows license server

Use the following procedure to determine whether one or both of the license daemons, lmgrd.exe and rational.exe, is not working.

1. Click **Start > Programs > Rational License Server > License Tools**. This brings up lmtools, a FLEXlm utility that is a GUI version of the command line utility lmutil.
2. In the **Service/License File** tab, select **Configuration** using **License File** and enter the complete path (including drive letter) to the license file on the license server in the text box.
3. Go to the **Server Status** tab. Select **Display Everything** and click **Perform Status Inquiry** button.

- a. If the license server is running, you will see the following lines in the status output window:

```
server_hostname: license server UP (MASTER) v_number  
Vendor daemon status (on server_hostname):  
rational: UP v_number
```

The first line refers to the status of `lmgrd.exe`, the second line to the status of `rational.exe`.

Because the Rational license server software is running, the problem may be the network communication between client and server. See “Checking the Windows network connection” on page 83.

- b. If `lmgrd.exe` is running, but `rational.exe` is not, the following lines are displayed in the status output window:

```
server_hostname: license server UP (MASTER) v_number  
Vendor daemon status (on server_hostname):  
rational: The desired vendor daemon is down.
```

Use the following methods to start the `rational.exe`:

- The daemon `rational` was unexpectedly terminated and `lmgrd` has not yet restarted it. Select the **Stop/Reread** tab in the **License Tools** utility. Expand the **Remote Server** List and select `rational`. Click the **Reread License File** button.
 - The license file does not correctly specify the path to `rational.exe` in the line: `DAEMON rational [complete path to rational.exe, including drive letter]`.
 - The version of `lmgrd.exe` may be incompatible with `rational.exe`. You already have `FLEXlm (lmgrd.exe)` installed on the license server. Confirm that the date and size of the file `install_directory\common\lmgrd.exe` matches the `lmgrd.exe` found in the `\common` directory of the product installation CD.
- c. If both `lmgrd.exe` and `rational.exe` are not running, the resulting status output window will contain the lines:
- ```
lmgrd is not running: Cannot connect to server
FLEXlm error: -15.10.
```

Use the following methods to start the `lmgrd.exe` and the `rational.exe`:

- Review the setup and start instructions for the Rational license server.
- There may be a phantom “`rational`” process running. This occurs when the `lmgrd` process is terminated unexpectedly. Press `Ctrl-Alt-Del` to bring up the Task Manager. On the Processes tab, look for `rational.exe` and/or `lmgrd.exe`. Terminate these processes. Start the license server (see “Starting the Windows license server” on page 46) and check the **Server Status** in **Rational License Server > License Tools**. If the license server is still not running, and it is configured to run as an NT service, restart the computer twice.
- The `FLEXlm License Manager` application may be out of date or corrupted.

---

## Checking the Windows network connection

Use the following procedures to check the network connection between the license server and the client.

1. On the client, bring up an MS-DOS window by clicking **Start > Run** and typing `cmd` in the Open text box.
2. At the command prompt, type: `ping server_hostname`.

If you see an IP address appear, a computer of that host name has responded.

There may be more than one computer on the network with the same host name.

To make sure the IP address that you see in the Window is the server's IP address, check the IP address of the server.

To find the IP address of the license server:

- a. Go to your license server and click **Rational License Server > License Tools**.
- b. Click the **System Settings** tab in the **LMTools** dialog box.
- c. Check the IP address under **Hostid Settings**.

If you cannot ping the license server by hostname, ping it by its IP address. If this is successful, you will have to either correct the name resolution problem on your network or replace the host name with the IP address in the license key file.

To replace the host name in the license key file:

- a. In `install_directory\Rational\common` of the license server, look for the file `rational_server_perm.dat`.
- b. Replace the host name with the IP address in the line that begins with `SERVER:`  
`SERVER server_hostname server_hostid...`  
Do not change the `server_hostid` and the vendor daemon information on this line.
- c. Enter the IP address of the server in the LKAD's **Settings > Client/Server Configuration** dialog box.

---

## Checking the Windows client configuration

Use the following list to check whether the client is correctly configured for IBM Rational Common Licensing (powered by FLEXlm software).

- Check the entry or entries for the license servers in the **Client/Server Configuration** window of the desktop's LKAD. If you are unsure about the format in which the server hostname should be entered, go to your Rational license server and click **Rational License Server > License Tools**. This opens **LMTools**, a FLEXlm utility that is a GUI version of the command line utility `lmutil`.

Click the **System Settings** tab in the **LMTools** window. Check the entry next to **Computer/Hostname** under **Hostid Settings**.

- In the client's Windows registry, look under `HKEY_LOCAL_MACHINE\SOFTWARE\IBM Rational\Licensing\1.0`. The value "Serve List" should have the server host name.

---

## Technical notes

The IBM Web site contains technical notes about additional licensing issues. New technical notes appear on a regular basis. To find the technotes, go to <http://www.ibm.com/software/rational>.

1. Under Rational, select the **Support** tab, and then select **Search**.
2. You can search for licensing topics in the search engine. Search result options include troubleshooting documents, such as technical notes, by default.

---

## Part 3. Appendixes



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## Glossary

### A

**AccountLink.** The IBM Rational Web-based license management tool. Customers can use this tool to request permanent license keys and return license keys to their IBM Rational accounts.

**ANY-HOST.** A license key issued for ANY-HOST will run on any computer and is not tied to the customer's computer ID. Evaluation, temporary, and emergency keys must be configured to run on any computer.

### E

**Evaluation key.** A temporary key that lets a customer use and evaluate IBM Rational software for a fixed period of time. They run on any host and are distributed by the IBM Rational sales team or through [ibm.com](http://ibm.com)<sup>®</sup> for certain products. Evaluation Keys can be node-locked or floating. A node-locked evaluation key is installed directly on the end user's machine and provides access to the software for the time period defined in the key. A floating evaluation key is installed on a license server and can allow multiple users to share the key for the time period defined in the key.

### F

**Floating license.** A license type that links products to a license server. Client computers obtain licenses from the license server when they need to run a copy of IBM Rational software. Multiple clients can share the pool of floating licenses; one license is granted per client per product. Floating licenses on license servers are typically administered by system administrators.

### K

**Key type.** Node-locked and floating licenses can be enforced by different types of license keys. The types of license keys are temporary and permanent. Evaluation and emergency keys are variations of temporary keys. Term-License Agreements (TLAs) are a variation of permanent keys. Each type of key has different business rules and policies.

### L

**License.** A legal right to use a product. Customers receive licenses when they purchase IBM Rational products. However, they need license keys either on a license server or on desktops to actually run the products.

**License key.** A term used to describe software keys that enable licenses on a customer computer. The types of license keys are: permanent, temporary, evaluation, emergency, and Term License Agreement (TLA).

**License key administrator.** A program written by Rational that provides a customer interface to its licensing system. The License Key Administrator is installed whenever an IBM Rational product is installed on a Windows computer. For hosting floating licenses, the License Key Administrator is installed when the IBM Rational license server software is installed on a computer.

**License key certificate.** A piece of paper or an electronic file that contains information a customer needs to begin using Rational software with a license.

**License key code.** An encrypted code used to enforce a license agreement.

**License type.** The valid types of licenses are node-locked licenses and floating licenses. See also *Key Type*.

**LKAD.** Abbreviation for License Key Administrator.

## N

**Named-user floating.** Similar to a floating license type, except that the license administrator assigns licenses to specific users. That is, only specific users can request floating license keys from the license server. This license type is only available to customers who purchase Purify, Quantify, and PureCoverage.

**Node-locked license.** A type of license that links a product to a computer. Typically, one node-locked license is issued for each software copy.

## P

**Permanent key .** A license that lets customers run IBM Rational products indefinitely. Permanent keys can be node-locked or floating. Node-locked permanent keys are installed on a client desktop. Floating permanent keys are installed on a license server.

**Note:** A Term License Agreement, a variation of a permanent key, does have an expiration date. See *Term License Agreement*.

**Permanent key code.** The encrypted code that lets a customer run a particular IBM Rational product using a permanent key.

## T

**Temporary Key.** See also Evaluation Key. A short-term license key that lets a customer run IBM Rational software products. Temporary keys can be node-locked or floating. Node-locked temporary keys are installed directly on the end user's machine and provide access to the software for the time period defined in the key. Floating temporary keys are installed on a license server and run on any host until the specified expiration date.

**Temporary Key Code.** The encrypted code that lets a customer run a particular IBM Rational product using a temporary key.

**Term License Agreements (TLAs).** Variation of a Permanent Key. TLAs are issued to a site to allow employees to use IBM Rational products for a negotiated period of time.

## U

**User.** IBM Rational Common Licensing (powered by FLEXlm software) checks out licenses on behalf of a "user." The "user" is defined as follows:

- On Windows, the "user" is the Windows operating system log on ID.
- On UNIX, a "user" is the account name of the person running the UNIX shell.
- On Web products, the "user" is the product logon ID.

---

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