

# Rational® Software

## License Management Guide

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WINDOWS



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# Preface

The *Rational Software License Management Guide* provides comprehensive information about Rational Common Licensing for Rational's Windows products. 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 Rational Software 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.

## Audience

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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 as well as knowledge of UNIX operating systems, and experience with client-server environments.

## Other Resources

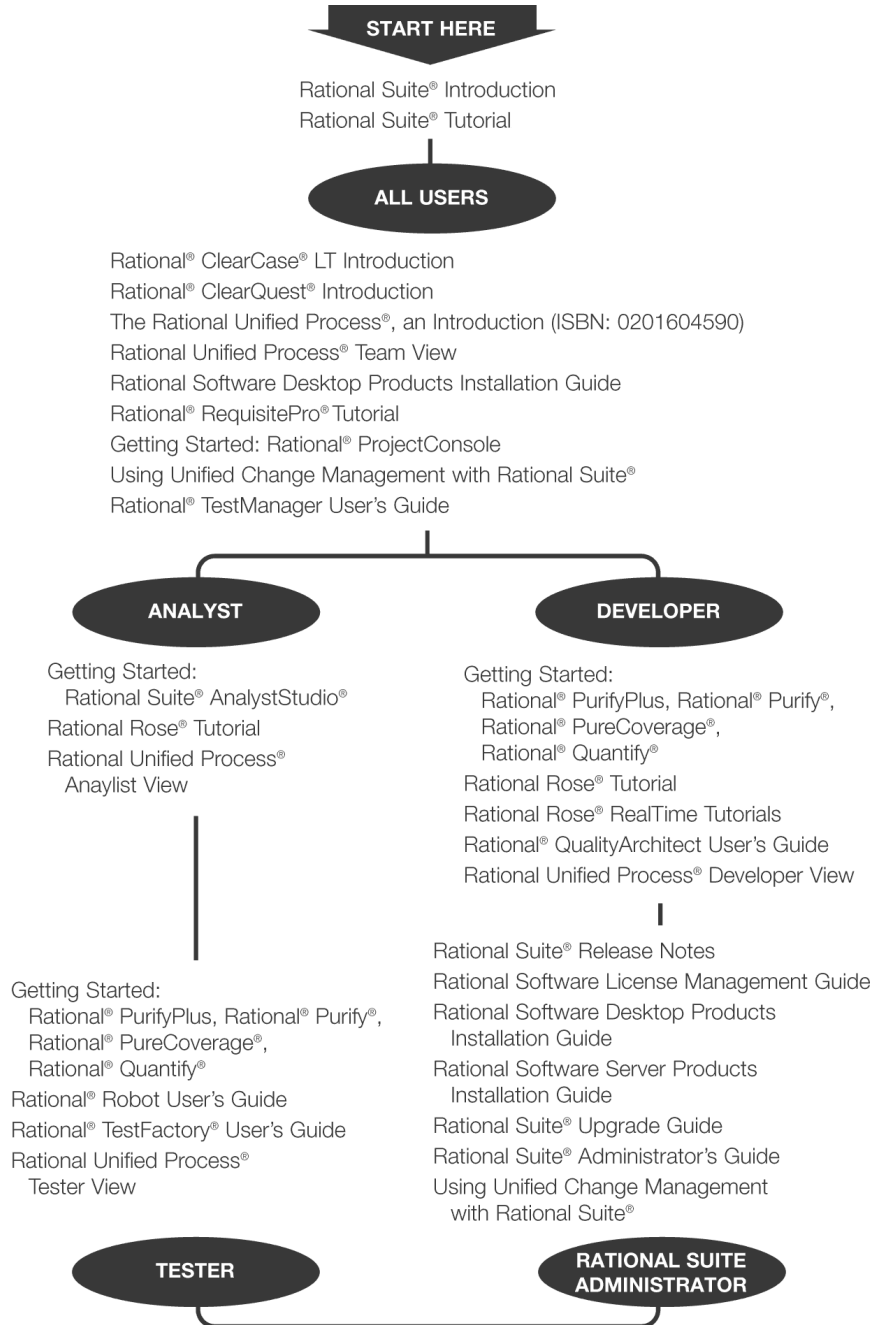
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- All manuals are available online, either in HTML or PDF format. The online manuals are on the *Rational Solutions for Windows Online Documentation* CD-ROM.
- To send feedback about documentation for Rational products, please send e-mail to: [techpubs@rational.com](mailto:techpubs@rational.com).

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- For articles, discussion forums, and Web-based training courses on developing software with Rational Suite products, join the Rational Developer Network by selecting **Start > Programs > Rational Suite > Logon to the Rational Developer Network**.

# Rational Documentation Roadmap

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## Rational Customer Support

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

- Your name, company name, 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 service request number (if you are following up on a previously reported problem)

### Contacting Rational Customer Support

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

Your Location	Telephone	Facsimile	E-mail
North America	(800) 433-5444 (toll free) (408) 863-4000 Cupertino, CA	(781) 676-2460 Lexington, MA	support@rational.com
Europe, Middle East, Africa	+31 (0) 20-4546-200 Netherlands	+31 (0) 20-4546-201 Netherlands	support@europe.rational.com
Asia Pacific	+61-2-9419-0111 Australia	+61-2-9419-0123 Australia	support@apac.rational.com

### Contacting Rational Licensing Customer Support

If you have questions about acquiring license keys for your Rational Software products, contact Rational Licensing Customer Support as follows:

Your Location	Telephone	Facsimile	E-mail
Asia Pacific	+61-2-9419-0111	+61-2-9419-0123	license@apac.rational.com
Asia Pacific (Japan)	+61-2-9419-0111	+61-2-9419-0123	license@japan.rational.com



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North American (East Coast) and South America	800-433-5444 (toll free, USA only) +1 (408) 863 4000	781-676-2460	license@rational.com
North America (West Coast) and Central America	800-433-5444 (toll free, USA only) +1 (408) 863 4000	408-863-4001	license@rational.com



**Desktop**



# Before Installing License Keys

# 1

This chapter introduces you to the basic tasks to get your Rational products licensed. Table 1 and Table 2 describe common desktop licensing tasks and direct you to the correct section and page for instructions.

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

**Table 1 Getting Started with Rational Common Licensing**

To	Scenario	Task
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 ( <a href="http://www.rational.com/accountlink">www.rational.com/accountlink</a> ), Rational's web-based license key management tool. <i>See <a href="#">Requesting License Keys</a> on page 55 for more information about AccountLink.</i>
Get your evaluation license key.	You want to evaluate a Rational product.	Your Rational sales representative sends you an evaluation license key.
	You have registered at the Try-It Center on <a href="http://rational.com">rational.com</a> to evaluate a Rational product.	The Try-It Center on <a href="http://rational.com">rational.com</a> sends you an evaluation license key.
Install node-locked license keys on your desktop	You must install the node-locked license key on your computer.	Use the License Key Administrator (LKAD) Wizard to install your license keys. The LKAD Wizard launches at the end of installation or you can open the LKAD from the <b>Start</b> Menu under the <b>Rational Software</b> folder. <i>See <a href="#">Installing Node-Locked License Keys</a> on page 25 for more information.</i>

**Table 1 Getting Started with Rational Common Licensing (continued)**

To	Scenario	Task
Configure your client desktop to request licenses from the Rational license server.	Your administrator either did not specify the license server in the site definitions file that you used to install the product or did not give you the license server name before you installed the product from the CD-ROM.	Use the License Key Administrator (LKAD) Wizard to install your license keys. The LKAD Wizard launches at the end of installation or you can open the LKAD from the <b>Start</b> Menu under the <b>Rational Software</b> folder. See <i>Configuring Desktops to Use Floating License Keys</i> on page 29.

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

**Table 2 Additional Desktop Tasks**

To	See
Change the order in which Rational products use licenses.	<i>Changing License Usage Order</i> on page 35.
Move or return license keys.	<i>Returning or Moving Keys for Desktop Users</i> on page 37.
Use license floating keys for home or travel.	<i>Using Floating License Keys for Home Use or Travel</i> on page 33.
Configure UNIX Clients.	See the Rational product installation guide or <i>Rational Suite Installation Guide for UNIX</i> . To configure a UNIX license server for Windows clients, see <i>Configuring a Rational UNIX License Server</i> on page 81.

## **Opening the Rational License Key Administrator (LKAD)**

---

The Rational License Key Administrator (LKAD) is installed with your Rational software and with your Rational license server software. This Rational application provides an interface to Rational Common Licensing features. 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 and the LKAD Wizard.

- To access the LKAD and the LKAD Wizard on a desktop or server, click **Start > Programs > Rational Software > Rational License Key Administrator**.
- To access the LKAD and the LKAD Wizard on the Rational license server, click **Start > Programs > Rational Software > 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 dialog box, or open  
 <Install Path>\Rational\Common\licadmin.hlp.

## 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 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 will 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.





# Installing Node-Locked License Keys

# 2

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. They allow for portability, especially for customers who have isolated computers or laptops. For more information about license types and license key types, see *License Types* on page 46.

- If you are a desktop user and need to use floating or named-user floating license keys, see *Configuring Desktops to Use Floating License Keys* on page 29.
- If you are the license administrator and need to install the floating or named-user license keys on a Rational license server, see *Configuring a Rational Windows License Server* on page 61 or *Configuring a Rational UNIX License Server* on page 81.

## Opening the License Key Administrator (LKAD)

---

There are two methods for opening the LKAD and LKAD Wizard:

- After the product installation is complete, launch the LKAD Wizard and the LKAD. The LKAD main window and the LKAD Wizard dialog box appear.
- Click **Start > Programs > Rational Software > Rational License Key Administrator**. The LKAD main window and the LKAD Wizard dialog box appear.

## 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.

Table 3 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

**Table 3 Show Licenses (continued)**

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

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

To import a license key file in the LKAD:

- 1 Select **License Keys > Import License Key(s)** on the menu bar.
- 2 In the **Import License Key(s)** dialog box, find the \*.upd or \*.txt file (license key file) and highlight it.
- 3 Click **Open**. The default location for the license key file is *<Install Path>\Rational\common*.
- 4 Click the **Import** button in the **Confirm Import** dialog box.

### 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 you received from Rational Software. Select **Open it** in the **Opening Mail Attachment** dialog box. Click the **Import** button in the **Confirm Import** dialog box.
- 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 Rational sales representative gives you an *evaluation* license key.
- The Try-It Center on rational.com sends 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 or the LKAD Wizard. Launch the LKAD Wizard or the LKAD after installing the product.

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

To enter license information in the LKAD:

- 1** Select **License Keys > Enter a License** in the menu bar of the License Key Administrator.
- 2** Select the type of license.
- 3** In the next dialog box, 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>\Rational\common.



# Configuring Desktops to Use Floating License Keys

# 3

Rational products on a Windows 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 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 install command syntax, see the *Installation Guide* for Rational Desktop Products.
- Your administrator may give you a text file to run from a command window. See *Running the LKAD Command Line on Windows (Optional)* on page 72.
- Your administrator may have included the license server name in a site definitions 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 desktop LKAD. For more information about installing Rational products from a release area, see the *Installation Guide* for Rational Desktop Products.
- Your computer is also the Rational license server.

If you have a node-locked license, see *Installing Node-Locked License Keys* on page 25.

Use Table 4 to guide you through this chapter.

**Table 4 Floating License Tasks on Clients**

To	See
Open the License Key Administrator (LKAD).	<i>Opening the License Key Administrator (LKAD)</i> on page 30
Configure the client desktop to use a single or multiple license servers.	<i>Configuring Desktops to Use Single or Multiple License Servers</i> on page 31.
Configure the client desktop to use redundant license servers.	<i>Configuring Desktops to Use Redundant License Servers</i> on page 31.
Assign a port value in a firewall situation.	<i>Entering a Port Value to Support a Firewall</i> on page 32.

**Table 4 Floating License Tasks on Clients (continued)**

To	See
Change the license server search order.	<i>Changing the Server Search Order</i> on page 32.
Remove a license server from the search order.	<ul style="list-style-type: none"> <li>▪ <i>Removing a License Server from the Server Search Order</i> on page 32.</li> <li>▪ <i>Removing the License Server from Your Desktop</i> on page 33</li> </ul>
Use the License Key Administrator command line.	<i>Running the License Key Administrator Command Line</i> on page 33.
Use floating license keys when you work at home or travel.	<i>Using Floating License Keys for Home Use or Travel</i> on page 33.

## Opening the License Key Administrator (LKAD)

---

You can launch the LKAD after product installation or from the **Start** menu.

- After the product installation is complete, launch the LKAD Wizard and the LKAD. The LKAD main window and the LKAD Wizard dialog box appear.
- Click **Start > Programs > Rational Software > Rational License Key Administrator**. The LKAD main window and the LKAD Wizard dialog box appear.

## 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.

Table 5 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

**Table 5 Show Licenses (continued)**

License	Shows
Served Licenses	All floating licenses that Rational software on your system could request from the license server

## Configuring Desktops to Use Rational License Servers

---

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

### Configuring Desktops to Use Single or Multiple License Servers

The following procedure lets you specify one or multiple license servers on your desktop. Do not use the following procedure to enter redundant servers.

To enter the license server hostname(s) 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 hostname of the license server in the **Values** column next to **Server Name** by clicking **New-Server**. Press the **Enter** key 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.

- 4 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 32.

### Configuring Desktops 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 Click **Settings > Client/Server Configuration**.
- 2 Click **Add Server**.
- 3 Click **Single** next to **Server Type**. A scroll-down menu should appear. Select **Redundant** in the menu.
- 4 Enter the Primary, Secondary, and Tertiary license server hostnames *in the order* in which the license administrator requested them in AccountLink. Press the tab key 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 learn more about Rational licensing and firewalls, see *Using Floating Licenses with a Firewall* on page 78. The following procedure assumes the license administrator has given you the Rational Vendor port value.

To enter a port value on a desktop:

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

## Changing the Server Search Order

Rational applications on your desktop request license keys from the license servers in a specific order. This license server list is displayed in the **Client/Server** dialog box.

If you would like to change this 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 Click **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 Desktop

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

## Running the License Key Administrator Command Line

---

To automate Rational licensing, your administrator may have you run the Rational 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 -f 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*, where *filename.txt* is the name of the license parameter file you created. The status file is created in the directory where you executed the `licadmin` command.

## Using Floating License Keys for Home Use or Travel

---

The disconnected use mode lets you use Rational software at home within a 3 day period of acquiring a floating license key and disconnecting from the network at work. 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.
- 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 Rational license server within 5 seconds. You then see a dialog box that states you are in disconnected use mode after the 5 seconds.

Starting with release 2001A, you can change the time-out period before your Rational 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\Rational Software\Licensing\1.0\DisconnectTimeout
- 2 Modify the value (decimal) to be larger than 5 seconds.

# Changing License Usage Order

# 4

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 *License Types* on page 46 and *Using Point Product Keys and Suite Keys* on page 48.

## Understanding License Usage Order

---

A Rational product requests licenses in this order, by default:

- 1 Node-locked before a floating license. A Rational product requests a node-locked license before a floating license regardless of whether it is a Suite or point-product license.
- 2 Suite license before a point-product license. For example, 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 request the Rational Suite license before it requests a Rational Purify license.
- 3 Suite license of the last Rational Suite installed.

If you would like to change how your Rational product uses point-product and Suite licenses, see *Changing License Usage on Your Computer* on page 36.

### Rational RequisiteWeb and ClearQuest Web

Rational RequisiteWeb and ClearQuest Web require floating licenses. Unlike other Rational products, they request the point-product license before the suite license.

### Rational Rose

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

## Cross-Platform Rational Rose Keys

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

## 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 Rational license server computer is also a client, the License Usage Mapper changes the license usage order for specific user ids on the client or Web server. (See *Defining the "User" in Rational Common Licensing* on page 45 and *Changing Your License Usage Order* on page 36 for more information.) You cannot use the License Usage Mapper on the Rational 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 the **Restore to Defaults** button in the **License Usage Mapping** dialog box.

To change the license usage order on your desktop:

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

# Returning or Moving Keys for Desktop Users

# 5

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.

## Removing (Returning) Permanent Node-Locked License Keys

---

Use the return transaction in AccountLink to update the count of registered products in your Rational 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 26.

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

## Moving Permanent Node-Locked License Keys

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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. See *Removing (Returning) Permanent Node-Locked License Keys* on page 37.
- 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 26.
- 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 *Rational Desktop Products Installation Guide* 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 26.

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

**Administrator**





# Before Requesting License Keys

# 6

This chapter describes Rational Common Licensing and supported configurations. This information will help you plan the licensing configuration for your environment.

## Getting Started with Rational Common Licensing

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

**Table 7 Getting Started with Rational Common Licensing**

To	See
Understand Rational Common Licensing terms.	<ul style="list-style-type: none"><li>▪ <i>Rational Common Licensing</i> on page 45.</li><li>▪ <i>Using Point Product Keys and Suite Keys</i> on page 48.</li></ul>
Find out which licensing configurations Rational supports.	<i>Rational Licensing Configurations</i> on page 52.
Upgrade license keys.	<i>Upgrading License Keys</i> on page 51.

**Table 7 Getting Started with Rational Common Licensing (continued)**

To	See
<p>Get the permanent license key for the product.</p>	<ul style="list-style-type: none"> <li>▪ If you have purchased node-locked, floating, or named-user floating licenses, use your License Key Certificate to request permanent license keys from AccountLink (<a href="http://www.rational.com/accountlink">www.rational.com/accountlink</a>), Rational's Web-based license key management tool. See <i>Requesting License Keys</i> on page 55 for more information.</li> <li>▪ 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. <ul style="list-style-type: none"> <li>▪ Users can enter node-locked keys into the Rational License Key Administrator (LKAD) on their desktops. See <i>Entering Temporary or Evaluation License Keys</i> on page 27.</li> <li>▪ You can enter the temporary key from the License Key Certificate on a Rational license server. Users can configure desktops to use the license server. See <i>Configuring Desktops to Use Floating License Keys</i> on page 29.</li> </ul> </li> </ul>
<p>Get an evaluation license key for the product.</p>	<p>Your Rational sales representative or the Try-It Center on <a href="http://rational.com">rational.com</a> sends you an evaluation license key.</p>
<p>Install node-locked license keys on your desktop</p>	<p><i>Installing Node-Locked License Keys</i> on page 25.</p>
<p>Install the floating and named-user floating keys on the Rational Windows license server.</p>	<p><i>Configuring a Rational Windows License Server</i> on page 61.</p>
<p>Install the floating keys on the Rational UNIX license server.</p>	<p><i>Configuring a Rational UNIX License Server</i> on page 81.</p>

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

**Table 8 Optional or Additional Tasks**

To	See
Configure Rational redundant license servers on Windows servers.	<i>Setting Up Redundant Windows License Servers (Optional)</i> on page 77.
Configure Rational redundant license servers on UNIX servers.	<i>Setting Up Redundant UNIX Servers (Optional)</i> on page 88.
Remove the Rational license server software from a Windows server.	<i>Removing the Rational Windows License Server Software</i> on page 80.
Remove the Rational license server software from a UNIX server.	<i>Removing the Rational UNIX License Server Software</i> on page 98.
Use floating license keys for working at home or traveling.	<i>Using Floating License Keys for Home Use or Travel</i> on page 52.
Combine license files from multiple vendors.	Rational and GLOBEtrouter recommend keeping the license keys in separate files.
Understand license installation problems and error messages.	<ul style="list-style-type: none"> <li>▪ <i>Administrator Privileges for the LKAD</i> on page 23.</li> <li>▪ <i>Troubleshooting Licenses</i> on page 113.</li> </ul>
Understand the mechanics of Rational Licensing.	<i>Understanding Rational Licensing Components</i> on page 103.

## Using Your Rational License Key Certificate

---

Rational Common Licensing requires that you use your Rational License Key Certificate to request permanent license keys for your 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 Rational sales representative. The information, especially the Rational Account Number, on this certificate verifies that your company has purchased licenses to run Rational products.

- To get your permanent or Term License Agreement (TLA) node-locked or floating license keys, supply information from your Rational License Key Certificate to AccountLink ([www.rational.com/accountlink](http://www.rational.com/accountlink)).
- If you have purchased a 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 a Rational product, you do not use a License Key Certificate. A Rational sales representative provides an evaluation license key or you receive a 30 day evaluation key after you register on the Try-It Center at rational.com.
- If you are unable to access AccountLink to request permanent license keys or there is a delay in receiving your permanent keys, enter the temporary license key from your License Key Certificate into the Rational License Key Administrator (LKAD).

## Opening the Rational License Key Administrator (LKAD)

---

The Rational License Key Administrator (LKAD) is installed with your Rational software and with your Rational license server software. This Rational application provides an interface to Rational Common Licensing features. 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 and the LKAD Wizard.

- To access the LKAD and the LKAD Wizard on a desktop or server, click **Start > Programs > Rational Software > Rational License Key Administrator**.
- To access the LKAD and the LKAD Wizard on the Rational license server, click **Start > Programs > Rational Software > 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 dialog box, or open `<Install Path>\Rational\Common\licadmin.hlp`.

## Using the LKAD after Product Installation

The Setup Wizard lets you launch the 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.

## **Rational Common Licensing**

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Rational Software uses a software-based license management tool called FLEXlm from GLOBEtrouter, Inc. This software allows vendors, such as Rational Software, to build a customized licensing model by implementing the FLEXlm features that best meet their business needs.

### **Defining the “User” in Rational Common Licensing**

Rational Common Licensing 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.

## License Types

The following table explains types of licenses.

**Table 9 Product License Types**

License Type	Rational Products	Description
Floating	All Rational products included in Rational Common Licensing, except XDE products.	<ul style="list-style-type: none"> <li data-bbox="789 369 1218 574">▪ A license administrator installs Rational license server software on single, multiple, or redundant servers. The administrator then installs the floating licenses on the license server. These floating licenses are created for the specific license server.</li> <li data-bbox="789 586 1218 791">▪ Desktop users obtain licenses from the license server when they run a copy of Rational software. One license is granted per client per product, except performance testing products. Performance testing products can check out multiple licenses.</li> <li data-bbox="789 803 1218 1067">▪ Floating licenses allow anyone on your network to use Rational products as long as 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 Rational products concurrently.</li> <li data-bbox="789 1079 1218 1194">▪ A floating license can be a permanent license, a term license agreement (TLA), or it can be an evaluation license.</li> </ul> <p data-bbox="789 1206 1218 1350"><b>Note:</b> ClearQuest Web or RequisiteWeb servers request floating licenses from the Rational license server to run Rational ClearQuest Web and Rational RequisiteWeb on Web clients.</p>

**Table 9 Product License Types (continued)**

License Type	Rational Products	Description
Named-User Floating	<ul style="list-style-type: none"> <li>▪ PureCoverage</li> <li>▪ Purify</li> <li>▪ Quantify</li> </ul>	<ul style="list-style-type: none"> <li>▪ 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.</li> <li>▪ A named-user floating license requires a license administrator to create a list of authorized users.</li> <li>▪ A named-user license can be a permanent license, a term license agreement (TLA), or it can be an evaluation license.</li> </ul>
Node-locked	All Rational products included in Rational Common Licensing, except XDE products.	<ul style="list-style-type: none"> <li>▪ A node-locked license is created for a specific desktop. It allows a user to run a Rational product only on that specified desktop.</li> <li>▪ The user may run multiple sessions of a Rational product concurrently on the specified computer using a single license key.</li> <li>▪ Because node-locked licenses are uncounted licenses, no license server is needed to manage them.</li> <li>▪ A node-locked license can be a permanent license, a term license agreement (TLA), or it can be an evaluation license.</li> </ul>

## License Key Types

Floating or node-locked licenses can be permanent and temporary keys.

The following table defines the license *key types* used in Rational licensing.

**Table 10 License Key Types**

License Key Type	Description
Permanent	<ul style="list-style-type: none"> <li>▪ A license issued to a customer to run Rational products for an indefinite period of time.</li> </ul>
	<ul style="list-style-type: none"> <li>▪ To order your permanent floating or node-locked license keys, use AccountLink at <a href="http://www.rational.com/accountlink">www.rational.com/accountlink</a>.</li> </ul>
Temporary (evaluation or emergency)	<ul style="list-style-type: none"> <li>▪ A time-limited license issued to a customer for running Rational products. You can use it on any computer until the specified expiration date.</li> <li>▪ Temporary keys are not generated for a specific computer.</li> <li>▪ Temporary license keys can be floating or node-locked.</li> <li>▪ Temporary keys are generated only for single or multiple license servers. They are not generated for redundant servers.</li> </ul>
	<ul style="list-style-type: none"> <li>▪ To evaluate a Rational product, either ask your sales representative for an evaluation key or register for the evaluation on the Try-It Center at <a href="http://rational.com">rational.com</a> and receive an evaluation key from the web site.</li> </ul>
TLA (Term License Agreement)	<ul style="list-style-type: none"> <li>▪ TLAs allow users access to Rational software for a negotiated period of time. The expiration date is built into the license key.</li> <li>▪ TLA license keys can be floating or node-locked</li> <li>▪ The processes of requesting and installing floating or node-locked TLA license keys are the same as requesting and installing permanent licenses.</li> </ul>
	<ul style="list-style-type: none"> <li>▪ To order your floating or node-locked TLA license keys, use AccountLink at <a href="http://www.rational.com/accountlink">www.rational.com/accountlink</a>.</li> </ul>

## Using Point Product Keys and Suite Keys

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This section explains situations in which products use multiple license keys and 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

Rational 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 native ClearQuest client and ClearQuest Web on the same desktop simultaneously with a single floating license key as long as the user's Windows login ID is the same as the user's ClearQuest login ID. The same logic applies to Rational RequisitePro client and RequisiteWeb. See *Defining the "User" in Rational Common Licensing* on page 45 for more information.

## Using Suite License Keys

A Rational license key indicates whether it is a Rational Suite license, such as Rational Suite Enterprise. A 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. The Rational Suite checks out a *single* floating or node-locked license key. 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 *Changing License Usage Order* on page 35 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 Rational Rose Variant**

Variant	Runs with this Variant License Key:
Rose Enterprise Edition	<ul style="list-style-type: none"><li>▪ Rose Enterprise</li><li>▪ Rational Suite Enterprise</li><li>▪ Rational Suite DevelopmentStudio for Windows</li></ul>

**Table 11 License Keys for Rational Rose Variant**

<b>Variant</b>	<b>Runs with this Variant License Key:</b>
Rose Modeler Edition	<ul style="list-style-type: none"><li>▪ Rose Modeler</li></ul>
Rose Professional Data Modeler	<ul style="list-style-type: none"><li>▪ Rose Data Modeler</li><li>▪ Rational Suite AnalystStudio</li></ul>
Rose for UNIX	<ul style="list-style-type: none"><li>▪ Rose for UNIX</li><li>▪ Rational Suite DevelopmentStudio for UNIX</li><li>▪ Rose Enterprise for UNIX</li></ul>

## 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 *Rational Rose* on page 35 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 ClearQuest Multisite License Keys

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

You can calculate the number of 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 ClearQuest MultiSite licenses as ClearQuest licenses. If not all developers will access replicated databases, you can purchase fewer 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 numbers of licenses:

Site	Number of ClearQuest Licenses	Number of ClearQuest MultiSite Licenses
A	20	15
B	5	5

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

## Upgrading License Keys

---

If you are upgrading from an earlier version of a Rational Suite or point-product, for example 2002.05.00, re-use your current Rational Suite and point-product keys.

The following describe conditions under which you must order new license keys in AccountLink:

- If you have purchased a different edition of Rational Suite from the one you are currently using, return the license file and request a new license file that includes the new Rational Suite key.
  - See *Returning or Moving Keys for Desktop Users* on page 37 or *Returning or Moving Keys for Administrators* on page 101 for returning the existing key.
  - See *Requesting License Keys* on page 55 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 *Returning or Moving Keys for Desktop Users* on page 37 or *Returning or Moving Keys for Administrators* on page 101 for returning the existing key.
  - See *Requesting License Keys* on page 55 for requesting permanent or TLA license keys.
- If you have upgraded to a different variant of Rose, remove the existing variant and install the new variant and license key.

## Using Floating License Keys for Home Use or Travel

---

The disconnected use mode lets you use Rational software at home within a 3 day period of acquiring a floating license key and disconnecting from the network at work. 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.
- 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 Rational license server within 5 seconds. You then see a dialog box that states you are in disconnected use mode after the 5 seconds.

Starting with release 2001A, you can change the time-out period before your Rational 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\Rational Software\Licensing\1.0\DisconnectTimeout
- 2 Modify the value (decimal) to be larger than 5 seconds.

## Rational Licensing Configurations

---

This section describes licensing configurations supported by Rational Software. 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 Rational Licensing Configurations**

<b>Configuration</b>	<b>Supported Platforms</b>
Node-locked license key	Windows/UNIX
Rational license server and Rational Windows products installed on a single computer.	Windows
Rational license server and Rational 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	UNIX server serving licenses to UNIX clients



Permanent (or *Term License Agreement*) floating and node-locked license keys are managed through the Web tool AccountLink (<https://www.rational.com/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.

## 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 and UNIX products. For more information about license types, see *License Types* on page 46.

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

AccountLink's interface offers three license transactions:

- 1 **Get License Key(s)** – Request your permanent license key. To order a permanent key, you need your Rational License Key Certificate, the host name and host ID, or ethernet address of the license server or desktop.

You can register:

- Rational Windows or UNIX products that will be served from a Rational license server.
- Single, multiple, or redundant Rational 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.

To find out more about the host name and host ID, see *Finding the HOST ID* on page 56. To order permanent license keys for a redundant server environment, specify the redundant servers' host IDs in the following order:

- a Primary license server
- b Secondary license server
- c Tertiary or back up license server

The clients communicate with the redundant servers in that order.

- 2 **Return License Key(s)** – *Return* the existing license key to your Rational 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 *Returning or Moving Keys for Administrators* on page 101.
- 3 **Request a Copy of a License File** – 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.

## Finding the HOST ID

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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 Rational Common Licensing, 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 appears as: `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=nnnnnnnnnnnnnn`. Do not confuse the format `HOSTID=nnnnnnnnnnnnnn` with the disk serial number format `DISK_SERIAL_NUM=nnnnnnnnnn` that is referred to in Rational Software documentation, online Help, and AccountLink as the host ID.

Rational does not allow for multiple values of HOST ID to be defined within a single key.



## 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 Rational License Key Administrator's menu bar.

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

## What if the Host ID on My 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 Rational products if the host ID changes.

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

- 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 Rational products and release 2001 (or later) of the Rational 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 to keep the disk serial number of the boot drive constant.

## Finding the Host ID on a UNIX Server

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

- If the Rational 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)

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

- 1 Find your License Key Certificate in your Rational product shipment.

Print the license request form. To print the form, either install the Rational product and open the license request form in the Rational common directory or find the license request form in the Rational Solutions for Windows installation CD-ROM. The Chinese, French, German, and Japanese versions of this fax form are in the same location.

- <Rational\_directory>\common\License Fax Form - English.htm
- <cd\_drive>\common\License Fax Form - English.htm
- <Rational\_directory>\common\License Fax Form - Chinese.htm
- <cd\_drive>\common\License Fax Form - Chinese.htm
- <Rational\_directory>\common\License Fax Form - French.htm
- <cd\_drive>\common\License Fax Form - French.htm
- <Rational\_directory>\common\License Fax Form - German.htm
- <cd\_drive>\common\License Fax Form - German.htm
- <Rational\_directory>\common\License Fax Form - Japanese.htm
- <cd\_drive>\common\License Fax Form - Japanese.htm

- 2 Use the License Key Certificate to fill out the form. Make sure that the contact, Rational account number, product, licensing, and host information are correct. Any errors will cause delays in receiving your license keys.
- 3 Fax the request to Rational. See *Contacting Rational Licensing Customer Support* on page xvi for phone and fax numbers.

Call Rational Licensing Support if you cannot use Rational AccountLink or the fax form to order your permanent license keys.

## Receiving Permanent License Keys

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After you order your keys in AccountLink, Rational generates a license file that contains the license key(s). 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 Rational Licensing Support. See *Contacting Rational Licensing Customer Support* on page xvi.

After you receive the license key file:

- Import the floating or named-user license key file on the license server. For more information about importing a license key file on a license server, see *Configuring a Rational Windows License Server* on page 61 or *Configuring a Rational UNIX License Server* on page 81.
- Import the node-locked license key file on the desktop. See *Installing Node-Locked License Keys* on page 25.



# Configuring a Rational Windows License Server

# 8

Floating and named-user licenses let you manage and maintain licenses on single, multiple, or redundant license servers.

This chapter describes how to set up and run Rational Windows license servers. The information in this chapter is intended for system administrators or users who manage licenses. If you are using desktop licenses, see *Installing Node-Locked License Keys* on page 25.

Some of the tasks in Table 13 are not recommended for the casual or novice user. Attempt them only if you are familiar with the Windows operating system and Rational Common Licensing.

# Setting Up Floating Licenses for Windows Servers

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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

To	Procedures
Set up floating licenses	<ol style="list-style-type: none"><li>1 Understand the Rational Common Licensing model. See <i>Before Requesting License Keys</i> on page 41.</li><li>2 Request and receive permanent license keys. See <i>Requesting License Keys</i> on page 55.</li><li>3 Make sure your license server and clients can work with the network configuration that you have set up. See <i>Working with a Supported Network Configuration</i> on page 64.</li><li>4 Install the Rational license server software on the server. See <i>Installing the Rational License Server on a Windows Server</i> on page 65.</li><li>5 Install the evaluation/temporary or permanent license keys on the license server. See <i>Opening the Rational License Key Administrator (LKAD)</i> on page 67, <i>Entering Temporary Floating License Keys</i> on page 68, or <i>Importing Floating License Keys</i> on page 68.</li><li>6 Start the license server software. See <i>Starting the Rational Windows License Server</i> on page 71.</li><li>7 Tell desktop users to specify the Rational license server in their desktops.</li></ol>

**Table 13 Guide to Setting Up Floating Licenses for Windows Servers**

To	Procedures
Set up named-user floating licenses (only applies to Rational Purify, Quantify, and PureCoverage)	<ol style="list-style-type: none"> <li>1 Understand the Rational Common Licensing model. See <i>Before Requesting License Keys</i> on page 41.</li> <li>2 Request and receive permanent license keys. See <i>Requesting License Keys</i> on page 55.</li> <li>3 Make sure your license server and clients can work with the network configuration that you have set up. See <i>Working with a Supported Network Configuration</i> on page 64.</li> <li>4 Install the Rational license server software on the server. See <i>Installing the Rational License Server on a Windows Server</i> on page 65.</li> <li>5 Install the named-user floating license keys on the license server. See <i>Opening the Rational License Key Administrator (LKAD)</i> on page 67 and <i>Importing Named-User License Keys</i> on page 69. If the keys are temporary, enter the license key information in the LKAD Wizard. You do not have to edit the rational.opt file (skip Step 6).</li> <li>6 Edit the rational.opt file with the names of specific users. See <i>Using Floating Keys on a Windows License Server</i> on page 68.</li> <li>7 Start the license server software. See <i>Starting the Rational Windows License Server</i> on page 71.</li> <li>8 Tell desktop users to specify the Rational license servers in their desktops.</li> </ol>
Specifying the Rational License Server on a Web Servers	See <i>Specifying the License Server on Windows Web Servers</i> on page 75.
Using floating licenses with a firewall	See <i>Using Floating Licenses with a Firewall</i> on page 78.
Changing the lmgrd port	See <i>Changing the lmgrd Port</i> on page 80.
Configure redundant license servers	See <i>Setting Up Redundant Windows License Servers (Optional)</i> on page 77.
Use License Key Administrator commands for configuring license servers on desktops	See <i>Running the LKAD Command Line on Windows (Optional)</i> on page 72.

**Table 13 Guide to Setting Up Floating Licenses for Windows Servers**

To	Procedures
Change the order in which Rational products use licenses.	You cannot use the Rational 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 user_id. See <i>Changing License Usage Order</i> on page 35.
Modify the time-out period.	See <i>Modifying the Floating License Time-Out Period</i> on page 76.
Monitoring Rational license server activity.	See <i>License Monitoring (Optional)</i> on page 78
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.	Rational and GLOBEtrouter recommend running a separate <code>lmgrd</code> instance for each vendor daemon and keeping license keys in separate files.
Diagnose problems with the Rational license server.	See the following sections: <ul style="list-style-type: none"><li>▪ <i>Checking the Windows License Server</i> on page 121</li><li>▪ <i>Checking the Windows Network Connection</i> on page 122.</li></ul>
Remove the license server software.	See <i>Removing the License Server Software</i> on page 80.

## Working with a Supported Network Configuration

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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 hostnames. Rational recommends, but does not require, that you 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 and/or IPX. Rational's 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 Rational License Server on a Windows Server

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This section describes how to use the Rational Setup Wizard to install the Rational License server software that enables you to flexibly install and manage license keys. You do not have 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 on a Windows server is minimal:

- The Rational 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 recommended 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 Rational Setup Wizard uses C:\Program Files\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 Rational license server from the CD-ROM. If you would like to install the Rational license server from a release area or set up a silent installation, see the instructions in the *Rational Server Products Installation Guide*. The Rational 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 Rational install.log file is located in your TEMP directory (e.g. TEMP=C:\DOCUME~1\<username>\LOCALS~1\Temp or c:\temp\install.log). The location of the directory depends on the system environment variable set on the machine.

**Note:** Interrupting an installation that is in progress may leave your computer in an indeterminate state. If you try to close the Rational 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-ROM 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 *Rational Solutions for Windows Disc 1* into the computer's CD-ROM drive. The Rational 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-ROM 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 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 appears if the Rational Setup Wizard needs to restart your computer. If files required for the installation are in use during the Rational 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 Rational Setup Wizard Completed dialog appears, we recommend that select the **Show me the readme file** option to review the current information related to features and known issues. In addition, you can select the **Take me to the Rational Developer Network** option. Click **Finish** to complete the installation.  
  
**Note:** Install the floating license keys on the license server before you start the license server. See *Importing Floating License Keys* on page 68.

## Opening the Rational License Key Administrator (LKAD)

---

The Rational License Key Administrator (LKAD) is installed with your Rational software and with your Rational license server software. This Rational application provides an interface to Rational Common Licensing features. 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 and the LKAD Wizard.

- To access the LKAD and the LKAD Wizard on a desktop or server, click **Start > Programs > Rational Software > Rational License Key Administrator**.
- To access the LKAD and the LKAD Wizard on the Rational license server, click **Start > Programs > Rational Software > 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 dialog box, or open `<Install Path>\Rational\Common\licadmin.hlp`.

## Using Floating Keys on a Windows License Server

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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 Rational 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)** on the menu bar.
- 2 In the **Import License Key(s)** dialog box, find the \*.upd or \*.txt file (license key file) and highlight it.
- 3 Click **Open**. The default location for the license key file is `<Install Path>\Rational\common`.
- 4 Click the **Import** button in the **Confirm Import** dialog box.

#### 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 you received from Rational Software. Select **Open it** in the **Opening Mail Attachment** dialog box. Click the **Import** button in the **Confirm Import** dialog box.
- 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 Select **License Keys > Enter a License** in the menu bar of the License Key Administrator.
- 2 Select the type of license.
- 3 In the next dialog box, 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>\Rational\common.

## Using Named-User Keys on a Windows License Server

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Named-user license keys behave like floating license keys, except 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, Quantify, or PureCoverage on multiple desktops.

### Importing Named-User License Keys

Import the license key file on the license server by using the Rational 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 Select **License Keys > Import License Key(s)** on the menu bar.
- 2 In the **Import License Key(s)** dialog box, find the \*.upd or \*.txt file (license key file) and highlight it.
- 3 Click **Open**. The default location for the license key file is <Install Path>\Rational\common.
- 4 Click the **Import** button in the **Confirm Import** dialog box.
- 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** dialog box appears. If you choose to edit the file:

- a The options file automatically appears 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 Rational license server after you have edited the file. See *Starting the Rational Windows License Server* on page 71 for the **Stop** and **Start** buttons.

## 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 Select **License Keys > Enter a License** in the menu bar of the License Key Administrator.
- 2 Select the type of license.
- 3 In the next dialog box, 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>\Rational\common.
- 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** dialog box appears. If you choose to edit the file:
  - a The options file automatically appears 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 Rational license server after you have edited the file. See *Starting the Rational Windows License Server* on page 71 for the **Stop** and **Start** buttons.

## Starting the Rational Windows License Server

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

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

### Starting the License Server on Windows XP

- 1 Click **Start** and select **Settings > Control Panel > Administrative Tools > Services > FLEXIm 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 > FLEXIm 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 Select the **FLEXIm License Manager** in the **Services** dialog box and click the **Start** button.

### Switching to Manual Startup

The Rational license server software is automatically set as a Windows NT service. The default Startup type is automatic, which means 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 > Settings > Control Panel > Administrative Tools > Services > FLEXIm License Manager**.
- 2 Right-click **FLEXIm License Manager**, and then click **Properties**.
- 3 On the **General** tab, in the **Startup type** scroll-down box, select **Manual**.

## Switching Startup Type on Windows 2000

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

## Switching Startup Type on Windows NT

- 1 Click **Start > Settings > Control Panel > Services > FLEXIm License Manager**.
- 2 In the dialog box, select **manual** under **Startup type**.

## Running the LKAD Command Line on Windows (Optional)

To automate license configuration on desktops, you can create a text file and batch file that specifies *single, multiple, and redundant* Rational license servers on users' 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 response.ini 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 response.ini file, see *Specifying the Post-Installation Command and Batch File* on page 72. For more information about silent installations, see the *Rational Server Products Installation Guide*.
- If users are not performing silent installations, you can 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 73.

## Specifying the Post-Installation Command and Batch File

After you record a response.ini file, append the following commands to the file.

- 1 Use a text editor such as Notepad to edit the response.ini file. Append a line similar to the following example to the end of the file. The label [PostInstallCmd] is required:  

```
[PostInstallCmd]  
Command=post-installation-commands.bat
```
- 2 Save the response.ini file to a unique name (to ensure that it is not overwritten by subsequent autocaptures). For example, save the response file with a name such as C:\responses\enterprise-windows-post.ini.



- 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 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 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* for the LKAD 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 Rational 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@Server1`  
where *Server1* is the name of the Rational 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 semi-colon is also required.

To add an additional server, enter `@Server2`, where *Server2* is the name of the additional Rational 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 77.
- The keyword `PortAtHost` is case sensitive.
- Use *commas* in the series of *redundant* server names. The trailing semi-colon is also required.
- You can specify redundant servers and multiple servers in one file. Use commas between redundant servers and semi-colons 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 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 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 Rational license server.

Use the following procedures to specify the license server hostname(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 dialog box appear
  - 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 dialog box appear.
- 2 Select **Settings > Client/Server Configuration**.
- 3 Click **Add Server**.
- 4 **Single** should be the default value next to **Server Type**. Enter the hostname of the license server in the **Values** column next to **Server Name** by clicking **New-Server**. After entering the hostname, press the Enter key.

### Additional Servers

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

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

- 5 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 32.

## 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**. A scroll-down menu should appear. Select **Redundant** in the menu.
- 4 Enter the Primary, Secondary, and Tertiary license server hostnames *in the order* in which the license administrator requested them in AccountLink. Press the tab key 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 Rational 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 executes a command in the application. If the linger time expires before the user executes another command, the user's license is returned to the pool of available floating licenses, and the user has to acquire another license to execute any more commands. This linger interval is set and cannot be changed.

### Rational ClearCase LT and Floating License Linger Time

Unlike other Rational products, ClearCase LT licenses operate with a linger time of 30 minutes. The first time a user executes 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 executes a ClearCase LT command that takes a license. If ClearCase LT checks out a suite license, the suite license does not operate with a 30 minute linger time.

### Modifying the Floating License Time-Out Period

To change the time-out period, create a text file called `rational.opt` in the `<rational flexlm dir>\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).

## Setting Up Redundant Windows License Servers (Optional)

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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.

**Warning:** It is a common misperception that separating redundant servers across multiple sites (for example, one in US, 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.

To configure redundant license servers:

- 1 Install license server software on three computers. See *Working with a Supported Network Configuration* on page 64 and *Installing the Rational License Server on a Windows Server* on page 65.

**Note:** Rational strongly recommends using 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 68 for more information.
- 3 Start the license servers. The sequence is unimportant, but you should start the servers soon after one another. See *Starting the Rational Windows License Server* on page 71 for instructions.
- 4 Give 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)

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You may need to monitor and report on license usage. GLOBEtrotter 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 GLOBEtrotter: <http://www.globetrotter.com/samreport.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** button in the **Server Status** dialog box.

## Using Floating Licenses with a Firewall

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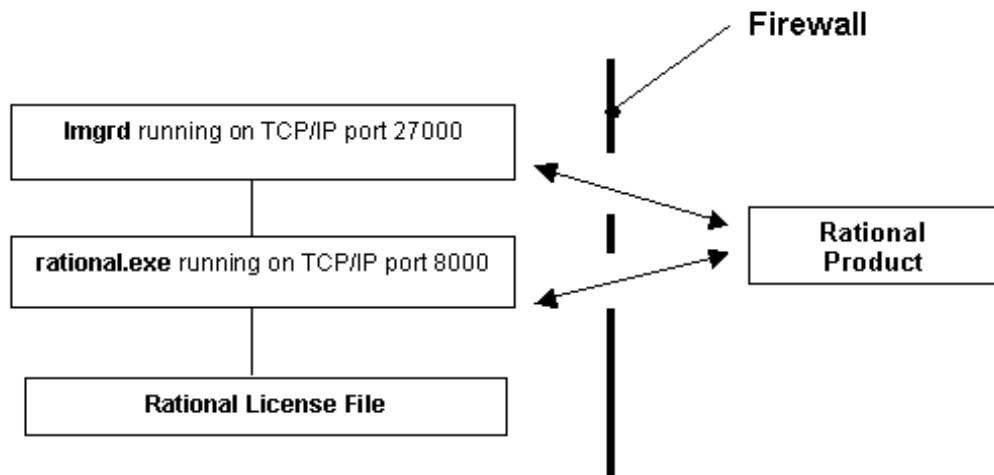
Rational's licensing implementation supports a firewall. To configure licensing with a firewall, give the `lmgrd` daemon (license manager) and the vendor daemon (Rational vendor or `rational.exe`) TCP/IP port numbers. The TCP/IP port is used for client/server communication for floating licenses.

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.

The following diagram displays a sample firewall situation. The Rational product on the right-hand side can communicate with the `lmgrd` daemon and `rational.exe` (vendor daemon) on the license server through the firewall because the numbers 27000 and 8000 have been assigned to the ports.



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

The following procedures let you change the `lmgrd` and vendor ports in single, multiple server, or redundant server environments. They assume that you have already started the license server(s) and entered the host name(s) of the license server(s) in the License Key Administrator of each client.

## Assigning Port Numbers in the Rational 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 Rational License Key Administrator.
- 2 In the **Server Ports** dialog box, 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 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.

The following procedures let you change the `lmgrd` port in single, multiple, or redundant server environments. They assume that you have already started the license server(s) and entered the hostname(s) of the license server(s) 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 Rational License Key Administrator.
- 2 In the **Server Ports** dialog box, 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 Rational Windows License Server Software

---

This section describes how to remove the 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 Rational Account through AccountLink ([www.rational.com/accountlink](http://www.rational.com/accountlink)). For more information about moving or returning licenses, see *Returning or Moving Keys for Administrators* on page 101.
- 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.



Floating and named-user floating keys let you manage and maintain licenses on single, multiple, or redundant Rational UNIX license servers.

This chapter describes how to set up and run Rational 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 *Configuring a Rational Windows License Server* on page 61.

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 Rational Common Licensing. 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

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If you have purchased DevelopmentStudio for UNIX, see the *Rational Suite Installation Guide (UNIX)* or a Rational UNIX point-product installation manual for information about configuring a Rational UNIX license server. You can also find UNIX installation manuals at [www.rational.com](http://www.rational.com).

- 1 Select **Support > Documentation**.
- 2 Register for a logon id if you have not already done so.
- 3 Select the installation guide for the UNIX version of your product.

If you do not have access to a Rational UNIX 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 Rational 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 as well as references to more detailed instructions.

**Table 14** Guide to Setting Up Floating Licenses on a UNIX Server

To	Procedures
Set up floating licenses	<ol style="list-style-type: none"><li>1 Understand the Rational Common Licensing model. See <i>Before Requesting License Keys</i> on page 41.</li><li>2 Access AccountLink (<a href="http://www.rational.com/accountlink">http://www.rational.com/accountlink</a>) to order permanent license keys for the products on your Windows clients. See <i>Requesting License Keys</i> on page 55 for more information about AccountLink.</li><li>3 Make sure your license server and clients are connected. See <i>Before You Install the Rational License Server</i> on page 84.</li><li>4 Install the Rational license server software and license keys on the UNIX license server. See <i>Installing the Server Software and Floating License Keys</i> on page 85.</li><li>5 Tell client users to specify the Rational license server in their Windows desktops. See <i>Configuring Desktops to Use Floating License Keys</i> on page 29.</li></ol>

**Table 14 Guide to Setting Up Floating Licenses on a UNIX Server (continued)**

To	Procedures
Set up named-user floating licenses (only applies to Rational Purify, Quantify, and PureCoverage)	<ol style="list-style-type: none"> <li>1 Understand the Rational Common Licensing model. See <i>Before Requesting License Keys</i> on page 41.</li> <li>2 Access AccountLink (<a href="http://www.rational.com/accountlink">http://www.rational.com/accountlink</a>) to order permanent license keys for the products on your Windows clients. See <i>Requesting License Keys</i> on page 55 for more information about AccountLink.</li> <li>3 Make sure your license server and clients are connected. See <i>Before You Install the Rational License Server</i> on page 84.</li> <li>4 Install the Rational license server software and license keys on the UNIX server. See <i>Installing the Server Software and Named-User Keys on a UNIX Server</i> on page 87.</li> <li>5 The License_Setup script asks you for user ids to assign to the license keys.</li> <li>6 Tell client users to specify the Rational license servers in their Windows desktops. See <i>Configuring Desktops to Use Floating License Keys</i> on page 29.</li> </ol>
Configure redundant license servers	See <i>Setting Up Redundant UNIX Servers (Optional)</i> on page 88.
Change the order in which Rational products use licenses.	The license server does not set license usage order. Use the desktop to change the order. See <i>Changing License Usage Order</i> on page 35
Using license keys for home use or travel	Disconnected use from UNIX license servers is not supported. See <i>Using Floating License Keys for Home Use or Travel</i> on page 52 for other options.
Modify the time-out period	See <i>Modifying the Floating License Time-Out Period</i> on page 97.
Monitoring Rational license server activity	See <i>License Monitoring (Optional)</i> on page 98.
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.

**Table 14 Guide to Setting Up Floating Licenses on a UNIX Server (continued)**

To	Procedures
Running multiple license servers on the same computer	Rational and GLOBEtrouter recommend running a separate <code>lmgrd</code> instance for each vendor daemon and keeping 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 <code>LM_LICENSE_FILE</code> environment variable to reference these multiple files.
Remove the license server software	See <i>Removing the Rational UNIX License Server Software</i> on page 98.

## Installing the License Server and License File on a UNIX Server

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Installing the license server software on a UNIX computer also involves installing or entering the license keys. You should have your license key file or Rational License Key Certificate ready when you install the Rational license server. Go to AccountLink (<http://www.rational.com/accountlink>) to order your permanent license keys or find the temporary key code on your License Key Certificate.

### Before You Install the Rational License Server

To set up the Rational license server on a UNIX computer, you need the Rational `license_setup` script and licensing executables from Rational's ftp site.

The requirements are minimal:

- The Rational 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 recommended 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 *Understanding Rational Licensing Components* on page 103.
- 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 UNIX computer.

- 1 Download the Rational `license_setup` script and licensing executables from the ftp site at: `ftp://ftp.rational.com/public/tools/flexlm`. Everything 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 Rational files to the `$FLEXROOT` directory on the server. The term `$FLEXROOT` is used herein to represent the location from which you plan to run **license\_setup**.

The **license\_setup** command allows you to set up license options and run the license check sequence.

- 3 Unpack the files as shown in the example below.

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.

**Warning:** 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 Software 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	<p>Choose this option if you have a permanent license key or a Term License Agreement (TLA). This option upgrades the license server software (FLEXlm 7.0f).</p> <p><b>Note:</b> <b>license_setup</b> 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 <i>Requesting License Keys</i> on page 51.</p> <p>If you are using a permanent license, go to Step 8.</p>
2	<p>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.</p> <p><b>Note:</b> You need to have your temporary licensing information (from a sales representative or from Rational.com) available as <b>license_setup</b> prompts you for a license key.</p> <p>If you are using a temporary license, go to Step 7.</p>

7 Enter the temporary license key information:

- License key
- License type
- Expiration date

When you have finished, go to Step 10.

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:** Rational recommends importing the information over entering 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**.

Run through options 1–3 sequentially and forward to the next menu. If you are setting up a permanent node-locked license, run through 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 system.

### 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 Software and Named-User Keys on a UNIX Server

Named-user license keys behave like floating license keys except the license\_setup script offers you the opportunity 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; allowing the user to run Rational Purify, Quantify, or PureCoverage on multiple systems.

Follow the procedures explained in *Installing the Server Software and Floating License Keys* on page 85. 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

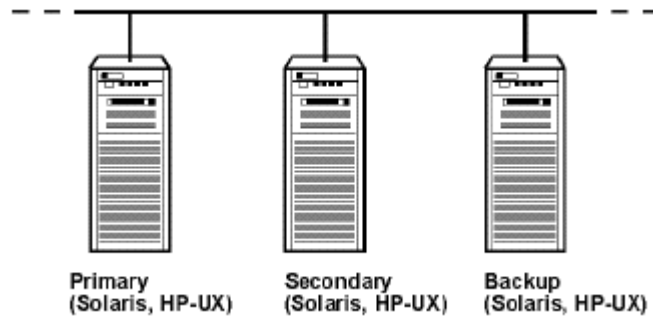
You have purchased 25 floating licenses of Enterprise Suite and wish to set up a redundant server configuration on three UNIX computers. You request permanent keys for the redundant servers using AccountLink. You install the Rational license server software on each of the three redundant server partners;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

**Warning:** It is a common misperception that separating redundant servers across multiple sites (for example, one in US, 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.*



A homogeneous redundant server setup is recommended (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. See the following illustration.



**Note:** Rational strongly recommends using a redundant environment of either *all* Windows servers or *all* UNIX servers.

## Before You Install the License Server on Redundant UNIX Servers

To set up the license server software on redundant UNIX servers, you need the Rational licensing executables from Rational's 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.

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 server. See *Removing the Rational UNIX License Server Software* on page 98 for more information.
  - a Return the license keys to AccountLink (*Moving or Removing License Keys on a UNIX Server* on page 96).
  - b Follow the instructions in this section for installing the Rational license server and license keys in a redundant server configuration.
- Request the license key file for redundant UNIX servers. Go to AccountLink (<http://www.rational.com/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 Rational Licensing Customer Support* on page xvi. 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 58.

- The Rational license server can be installed on all the UNIX platforms that Rational supports. Rational does not support SunOs 4.x and IRIX 5.x.
- There is no minimum recommended processor, memory, or disk space.
- 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.
- 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 *Understanding Rational Licensing Components* on page 103.
- You must manually install the FLEXlm license server software on the servers.

## Installing the Server Software and Keys on Redundant UNIX Servers

Because license\_setup script cannot import a redundant license key file, install the Rational 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 Rational*

*Licensing Customer Support* on page xvi. 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 below:

```
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.

**Warning:** 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.

- i Choose three port numbers between 1501 and 26999 to use for each server. Note that the same port number can be used for each server, or the port numbers can be unique.
- ii Check that the port is not already in use. (Port 1706 is used in the sample commands below.)

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 [ ].

- iii Edit the license file to use the new port numbers.

```
cd $FLEXROOT
```

```
vi rational.dat
```

Your license file should look similar to the example below.

```
SERVER primary 8001d410 1706
```

```
SERVER secondary 8001d625 1706
```

```
SERVER backup 8001d873 1706
```

- 2 Download the Rational licensing executables from the ftp site at: <ftp://ftp.rational.com/public/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 FLEXlm.
- 4 Unpack the files as shown in the example below.

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

You must 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 FTP site:  
`ftp://ftp.rational.com/public/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 above 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 will generate a report on all the increment lines and identify 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 support@rational.com. For more information about contacting Rational Licensing Support see *Contacting Rational Licensing Customer Support* on page xvi.

## 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, we recommend that you 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 example below, 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 they should be removed and replaced 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 to do so:

```
/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 to do so:

```
/bin/rm -f /sbin/*.d/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 **SImRational.sh** file, use the following command to do so:

```
/bin/rm -f /etc/*d/SImRational.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

---

Rational Common Licensing uses the License Manager, version 7.0f, from Globetrotter Software, Inc. The License Manager includes the following components:

- A *vendor daemon* named **rational** that dispenses Rational Software licenses. The **rational** daemon is used for all of Rational's licensed products. If you have other products from other vendors that also use FLEXlm, 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:** Rational recommends that you use a single combined license file for all of your 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	Allows 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 above table, 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 AccountLink to return or remove node-locked, floating, named-user floating, and redundant license keys to your Rational account. When you return a license key, you do not physically give the license key back to Rational. Instead, use the Return



transaction in AccountLink. The AccountLink transaction updates Rational's records to indicate that you are no longer using a Rational product on that computer. This adjusts the count of registered products in your account.

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

Use the return transaction in AccountLink to update the count of registered products in your Rational account before you order new license keys.

To return a license key:

- 1 Perform the return transaction in AccountLink.
- 2 Remove the Rational license server software from the old server. To remove the Rational license server from a UNIX server, see *Removing the Rational UNIX License Server Software* on page 98.

If you want to move Rational software to another server, *return* the existing license keys from the old server to your Rational account. Then order license keys for the new server.

To move license keys from one server to another:

- 1 Use AccountLink to return the license keys to your Rational account.
- 2 Request new license keys for the new server in AccountLink.
- 3 Remove the Rational license server software from the old server. To remove the Rational license server from a UNIX server, see *Removing the Rational UNIX License Server Software* on page 98.
- 4 Install the Rational license server software on the new server.
- 5 Import the new license key file on the new server.
- 6 Give users the name of the new license server.

## Modifying the Floating License Time-Out Period

---

The time-out period is set to a default of 120 minutes. This means the Rational license server will reclaim a floating license when the product has not been used for 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. If you want the product to hold the license key for a longer period of time, you can change the time-out period.

To change the time-out period, create a text file called `rational.opt` in the `<rational flexlm dir>` 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.

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

## License Monitoring (Optional)

---

You may need to monitor and report on license usage. GLOBEtrotter 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 GLOBEtrotter. Detailed information on SAMreport can be found at: <http://www.globetrotter.com/samreport.htm>.

## Removing the Rational 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 ([www.rational.com/accountlink](http://www.rational.com/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 96.

### Removing the License Server Software

To remove the Rational 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 will need to remove this file.

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

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

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

or

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
```



# Returning or Moving Keys for Administrators

# 10

If you have 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, 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 Rational's records to indicate that you are no longer using a Rational product on that computer. This adjusts the count of registered products in your account.

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

Use the return transaction in AccountLink to update the count of registered products in your Rational account before you request new license keys.

**Note:** If you have problems returning or requesting a new redundant server license file, see *Contacting Rational Licensing Customer Support* on page xvi. 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. For more information, see *Installing Permanent or Term License Agreement (TLA) Keys* on page 26.
- 3 Remove the Rational software or license server software from the old desktop or license server. See the *Rational Server Products Installation Guide* for the removal procedures.

## Moving Permanent License Keys

---

If you want to move Rational software to another desktop or server, *return* the existing license keys from the old desktop or server to your Rational 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 Rational Licensing Customer Support* on page xvi. 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 101.

**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 *Rational Server Products Installation Guide* 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 desktop users the host name of the new license server.

# Understanding Rational Licensing Components

# 11

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

## Locating the Licensing Components

---

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

## Understanding the Rational 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 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 as long as you keep using the product. When you exit the Rational 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*. Rational creates the license key file based on the data that you provided in AccountLink. The license file can contain license key data for several Rational products and is created for a specific host. The Rational License Key Administrator that is installed with every Rational product edits and 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 a 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 16 describes the types of Rational license key files.

**Table 16 License Key Files**

File Name	Description	Notes
rational_temp.dat	Contains all node-locked temporary license keys.	You must obtain a permanent license key to continue to use your Rational Software product past the temporary key expiration date.
rational_perm.dat	Contains all node-locked permanent license keys.	Go to Rational AccountLink to request permanent keys.
rational_server_temp.dat	Contains all temporary floating license keys on a license server.	You must obtain a permanent license key to continue to use your Rational Software product.
rational_server_perm.dat	Contains all permanent floating license keys on a license server.	Go to Rational 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 Rational 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 <b>hostname</b> of the license server. Allows the license server's hostname or IP address to populate the hostname field in the SERVER line. Rational also allows both values. The hostname value is not encrypted into floating license keys.
12345678	The <b>host ID</b> 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.

## 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)

Rational uses two daemons (or processes) 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 developed by Rational implementing FLEXlm. The vendor daemon keeps track of how many licenses are checked out and who has them. Rational's vendor daemon (`rational.exe`) is customized to behave in a specific manner.

Rational specifies the path to the `rational.exe` vendor daemon using the DAEMON line in the license key file. Rational also supports specifying the path to the options file on the DAEMON line after the path to the vendor daemon.

A typical Rational DAEMON line for Windows appears as:

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

Where:

Item in DAEMON Line	Description
DAEMON	Rational's license daemon name and path are specified in this line.
rational	The name of the Rational 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 Rational's license server executable.

Licenses are granted by running processes. There is one process or vendor daemon for Rational which has a licensed product on the network.

If the vendor daemon terminates for any reason, all users lose their licenses (They do not see a warning dialog box 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.

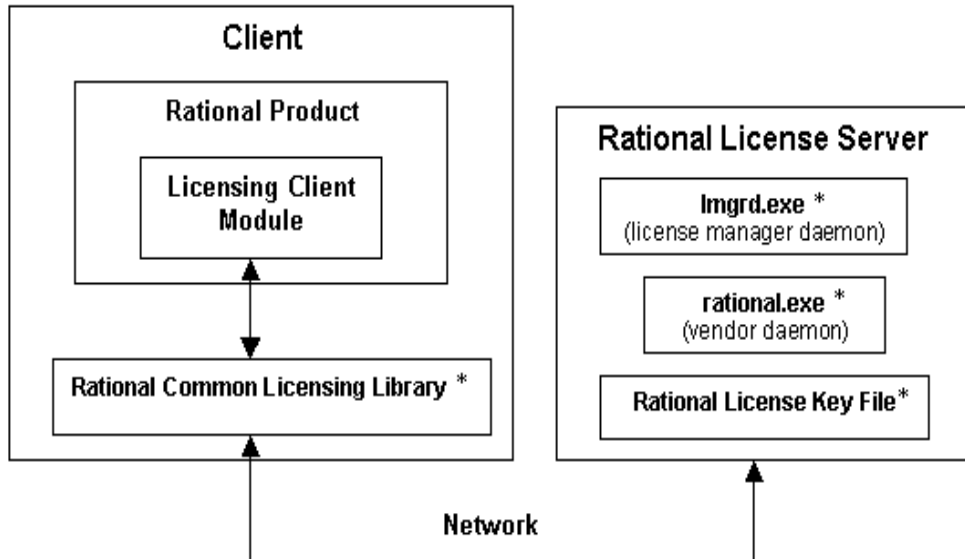
The format of the traffic between the client and the vendor daemon is system-independent, allowing for heterogeneous networks. This means the license server and the computer running an application can use different hardware platforms or even different operating systems (for example, Windows NT as a server 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 hostname 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 following diagram provides an overview of the interaction between the Rational Common Licensing Library on the client and `lmgrd.exe`, `rational.exe`, and the license key file on the Rational license server.



\* Components installed in `<install path>\Rational\common`

## 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 flexlm dir>\common` directory.
- 2 Enter the following commands in the file. See examples 1 and 2 for the correct syntax.

Options File Commands	Description
RESERVE	Tells the server to reserve a license
1	Is the number of licenses to reserve
ClearQuest	Is the name of the license to reserve
USER	Tells the licensing software to reserve a license for a specific user id
greg	Is 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 may have 10 floating licenses of Rational 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 Rational 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. Rational installs this application with all products in the `<rational>\common` directory. If the license server is installed, you can use the License Tools **Start** menu shortcut to the `lmtools` GUI.

### lmutil

By default, Rational installs the `lmutil` program in the `<rational>\common` directory. `lmutil` is fully supported with Rational's implementation and has a number of useful options. More information can be found at <http://www.globetrotter.com/chap7.htm>.

### 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 page 108.

## Windows Registry Information

---

This section describes the Windows Registry settings for Rational Software licensing.

**Warning:** 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\Rational Software\Licensing\1.0

The <Install Path> in Table 17 refers to the path specified during installation. The default value is C:\Program Files\Rational.

**Table 17 Rational 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	<Install Path>\common\rational_temp.dat
LicensePerm Path of permanent license key file	<Install Path>\common\rational_perm.dat
ClientInstalled Does this computer have client software installed?	TRUE
ServerInstalled Is this computer a license server?	FALSE





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 113.
- *License Server and Floating Licenses* on page 113.
- *Requesting a License Key* on page 114.
- *Moving License Keys* on page 114.
- *AccountLink Data Entry* on page 115.
- *Host ID* on page 115.
- *Upgrades* on page 116.

A list of Windows and UNIX error messages and possible solutions are in Table 18 on page 118 and Table 19 on page 120.

## 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 Rational Software license. However, you should notify Rational 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 hostname, the request will work. Rational licensing also supports using the fully qualified domain name or using the IP address of the license server instead of the hostname.

**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 hostname, hostid, and Rational 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 (<http://www.rational.com/accountlink>) to request permanent license keys without first installing your temporary license key.

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

Rational AccountLink (<http://www.rational.com/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/repository server. I cannot install this license on the second client because it is system-specific.**

To move and return license keys, see *Returning or Moving Keys for Administrators* on page 101.

## AccountLink Data Entry

---

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

Use the Rational Account number specified on your License Key Certificate. If you cannot find your License Key Certificate, contact Rational licensing support with your purchase order or sales order number. See *Contacting Rational Licensing Customer Support* on page xvi for phone numbers.

## 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 Rational. Go to AccountLink ([www.rational.com/accountlink](http://www.rational.com/accountlink)).
- 2 Perform the reformat.
- 3 Order new license keys from Rational through AccountLink.

**What should I do if I am upgrading my OS 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 ([www.rational.com/accountlink](http://www.rational.com/accountlink)) and get copies of the license files.

**Why isn't host ID ffffffff valid? 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, Rational's licensing services regards this value as invalid.

You can reset your host ID by using third-party 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 hostname and host ID. You have to return the license keys to your Rational account and then request license keys for the new host ID. To perform these transactions, go to AccountLink (<http://www.rational.com/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 Rational Sales Office to obtain temporary license keys that will work until you are ready to upgrade your computer.

## Error Messages

---

Table 18 and Table 19 explain licensing error messages for Windows and UNIX, respectively.

**Table 18 Licensing Error Messages (Windows)**

Message or Description	Action
<ul style="list-style-type: none"> <li>▪ Cannot find SERVER hostname</li> <li>▪ Cannot find SERVER hostname in network database</li> <li>▪ Cannot connect to SERVER</li> <li>▪ NO SUCH FEATURE EXISTS</li> <li>▪ Failed to check out a &lt;product-name&gt; key</li> </ul>	<p><i>Floating Licenses</i></p> <p>Confirm on the desktop:</p> <ul style="list-style-type: none"> <li>▪ You have entered the correct name for the license server (in the Client/Server Configuration dialog box of the License Key Administrator). For more information, see <i>Checking the Windows Client Configuration</i> on page 123.</li> <li>▪ You have entered the correct Rational vendor port number if there is a fire wall between the client and the license server. For more information, see <i>Using Floating Licenses with a Firewall</i> on page 78.</li> <li>▪ The network connection between the client and the license server is working. For more information, see <i>Checking the Windows Network Connection</i> on page 122.</li> </ul> <p>Confirm on the Rational license server:</p> <ul style="list-style-type: none"> <li>▪ The license server (lmgrd) and the rational.exe or vendor daemon are running. See <i>Checking the Windows License Server</i> on page 121.</li> <li>▪ 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 <i>Using Floating Licenses with a Firewall</i> on page 78.</li> </ul> <p><i>Floating and Node-Locked Licenses</i></p> <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 <i>Starting the Rational Windows License Server</i> on page 71). 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 Rational Technical Support.</p>

**Table 18 Licensing Error Messages (Windows) (continued)**

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

**Table 19 Licensing Error Messages (UNIX)**

Message	Explanation/Action
<p>There is a problem with one license key.</p> <p>or</p> <p>There are problems with &lt;N&gt; 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), <i>VENDOR_STRING</i>, <i>OVERDRAFT</i>, <i>SUPERSEDE</i>, <i>DUP_GROUP</i>, and <i>NOTICE</i>.</p>
<p>You do not have remote access to &lt;license-server-name&gt; from &lt;local-host-name&gt;, 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 (<b>rsh</b> or <b>remsh</b>) to the license server.</p>
<p>Host &lt;license-server-name&gt; is running Solaris.</p> <p>Host &lt;local-host-name&gt; is running HP-UX.</p> <p>They do not match so &lt;license-server-name&gt; cannot be used as a license server.</p>	<p>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.</p>
<p>Host, &lt;license-server-name&gt; does not have access.</p>	<p>If the license server is not the same computer on which you are installing, it must have access to the <i>rational_dir</i> directory where Rational products have been installed.</p>
<p>Cannot set &lt;license-server-name's&gt; host ID with this command:  <i>rational_dir/base/cots/flexlm.7.0f/lmhostid</i></p>	<p>The <b>lmhostid</b> command failed. Check to see if the <b>lmhostid</b> command shown will run on your local host. If so, enter the host id number in the <b>License Server Host ID Menu</b> (choice number 2).</p>
<p>Cannot access  <i>rational_dir/base/cots/flexlm.7.0f/lmhostid</i> on &lt;license-server-name&gt;.</p>	<p>There was a problem accessing the <i>rational_dir</i> directory or the <b>lmhostid</b> command was not installed from the CD-ROM.</p>
<p>Host ID &lt;nnn&gt; not valid. Less than 4 digits.</p>	<p>This means that the host ID number will not work. Check again using the <b>lmhostid</b> to see what the host ID is. It should be at least four or more hexadecimal digits.</p>



**Table 19 Licensing Error Messages (UNIX)**

Message	Explanation/Action
<p>Port number &lt;pn&gt; is in use in /etc/services.</p> <p>or</p> <p>Port number &lt;pn&gt; is in use under NIS services.</p>	<p>If you entered a port number and it appears that the number is in use in your /etc/services file or under NIS services, you may have a problem with licensing.</p> <p>Rational products use FLEXlm which uses 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. Rational recommends that you use the default port number, 27000.</p>

## 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.

Since 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 122.

- b If lmgrd.exe is running, but rational.exe is not, the following lines will appear 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 Rational Solutions for Windows CD-ROM.
- 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 Rational Windows License Server* on page 71) 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

The following procedures lets you 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 Type `ping server_hostname` at the command prompt.

If you see an IP address appear, a computer of that hostname has responded. There may be more than one computer on the network with the same hostname. 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 Rational 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 hostname with the IP address in the license key file.

To replace the hostname 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 hostname 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

The following list lets you check whether the client is correctly configured for Rational Common Licensing.

- Check the entry or entries for the license server(s) in the **Client/Server Configuration** dialog box 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 brings up LMTools, a FLEXlm utility that is a GUI version of the command line utility **lmutil**.

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

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

## Technical Notes

---

The Rational 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.rational.com>.

- 1 Select **Support > Support Overview**.
- 2 Under **Finding Answers**, click **Knowledge Base**.
- 3 You can search for licensing topics in the **Search Solutions** search engine.

# Glossary

## A

**AccountLink.** The Rational Web-based license management tool. Customers can use this tool to request permanent license keys and return license keys to their 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 Rational software for a fixed period of time. Rational Software determines the duration of the Evaluation Key. Evaluation Keys can be node-locked or floating. Evaluation Keys are distributed by the Rational sales team or the Tryit Center on rational.com. They run on any host.

## 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 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 Rational products. However, they need license keys either on a license server or on desktops to actually run the products.

**License Key.** Generic term used in this document to describe 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 Software which provides a customer interface to Rational's Licensing system. The License Key Administrator is installed whenever a Rational software product is installed on a Windows computer. For hosting floating licenses, the License Key Administrator is installed when the 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 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 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 Rational product using a Permanent Key.

## T

**Temporary Key.** A short-term license key that lets a customer run Rational software products. Temporary licenses are not keyed to a specific computer. Temporary Keys can be node-locked or floating. Node-locked Temporary Keys are installed on a desktop. Floating Temporary Keys are installed on a license server. Temporary Keys run on any host until the specified expiration date.

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

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

## U

**User.** Rational Common Licensing 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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