

Administering Licenses for Rational Software

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the e-development company™

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PATENT

U.S. Patent Nos. 5,193,180 and 5,335,344 and 5,535,329 and 5,835,701. Additional patents pending.

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Preface

Administering Licenses for Rational Software provides you with the technical information you need to install and configure license keys, install and configure the FLEXlm license server software, and troubleshoot problems related to licensing Rational Software products.

Rational Suite delivers a comprehensive set of integrated tools that embody software engineering best practices and span the entire software development life cycle. Rational Suite's unparalleled level of integration improves communication both within teams and across team boundaries, reducing development time and improving software quality.

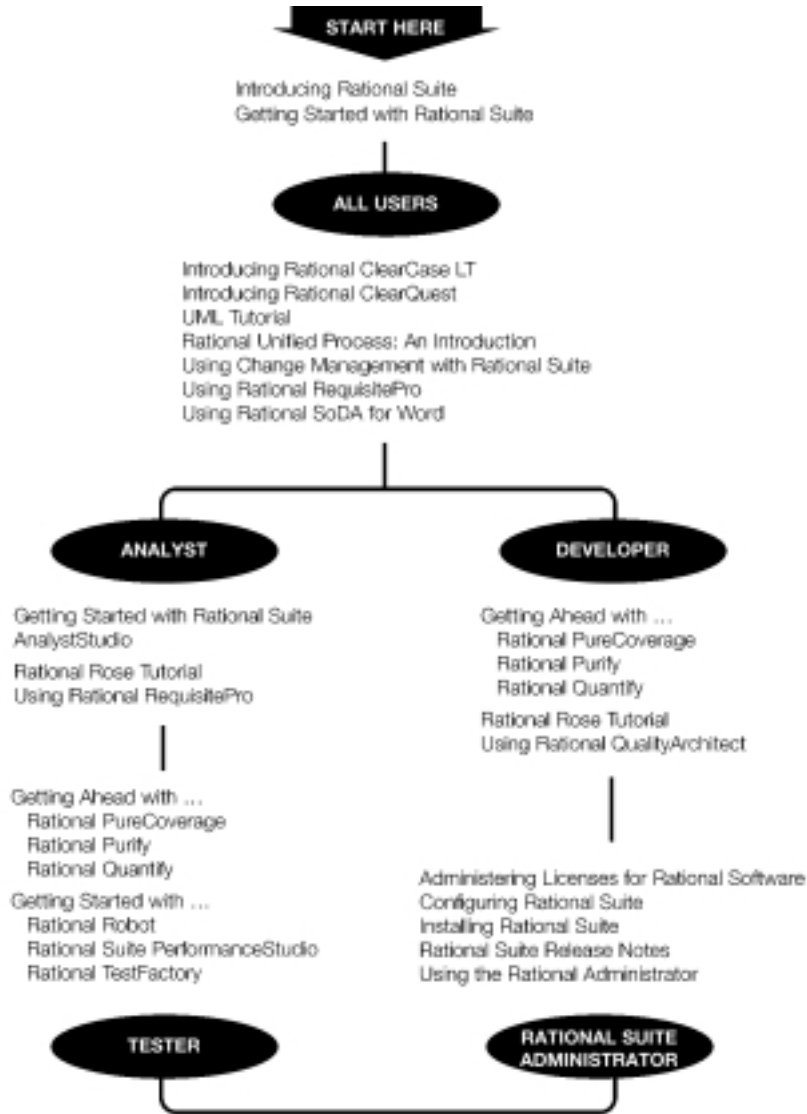
Audience

This guide is intended for system administrators. This book assumes knowledge of Microsoft Windows and its conventions and a familiarity with client-server environments.

Other Resources

- Online Help is available for Rational Suite.
From a Suite tool, select an option from the **Help** menu.
- All manuals are available online, either in HTML or PDF format. The online manuals are on the Rational Solutions for Windows Online Documentation CD.
- To send feedback about documentation for Rational products, please send e-mail to techpubs@rational.com.
- For more information about Rational Software technical publications, see: <http://www.rational.com/documentation>.
- For more information on training opportunities, see the Rational University Web site: <http://www.rational.com/university>.

Rational Suite Documentation Roadmap



Contacting Rational Technical Support

If you have questions about installing, using, or maintaining this product, contact Rational Technical 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) 20-4545-201 Netherlands	support@europe.rational.com
Asia Pacific	+61-2-9419-0111 Australia	+61-2-9419-0123 Australia	support@apac.rational.com

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

- Your name, telephone number, and company name
- Your computer's make and model
- Your operating system and version number
- Product release number and serial number
- Your case ID number (if you are following up on a previously-reported problem)

Contacting Rational Licensing Technical Support

If you have questions about acquiring license keys for your Rational Software products, contact Rational Licensing 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
Asia Pacific (Korea)	+82-2-556-9420	+82-2-556-9426	license@apac.rational.com

Your Location	Telephone	Facsimile	E-mail
Asia Pacific (Mainland China, Hong Kong, and Taiwan)	+61-2-9419-0111	+61-2-9419-0123	license@china.rational.com
Europe Middle East Africa	+31 20 4546 200	+31 20 4546 202	license@europe.rational.com
North American (East Coast) South America	800-433-5444 (toll free)	781-676-2460	license@rational.com
North America (West Coast) Central America	800-433-5444 (toll free)	408-863-4001	license@rational.com

This manual provides comprehensive information about licensing for Rational products. The information in this document pertains to products licensed using Rational Common Licensing for Windows unless otherwise noted.

This manual includes the following topics:

- Brief descriptions of Rational licensing tools: Rational AccountLink, License Key Certificate, “Getting Started with Rational Software”, License Key Administrator, Rational Software Setup program.
- Definitions for license types and license key types.
- Instructions for installing and configuring a floating license server and floating license keys.
- Requirements for acquiring and installing permanent license keys.
- Instructions for installing node-locked license keys.
- Information about other supported FLEXlm features and configurations.
- Descriptions of and solutions for license installation problems and errors.
- Descriptions of Rational Common Licensing components and mechanics.
- References to additional sources of help.

This chapter provides an overview of Rational licensing tools that you use to acquire permanent license keys, a brief description of the Rational License Key Administrator, and a quick start guide that helps you navigate through this manual.

Rational Licensing Tools

Using Rational AccountLink to Request Permanent License Keys

AccountLink (<http://www.rational.com/accountlink>) is a Web tool that you can use to manage your *permanent* (or Term License Agreement) license keys. AccountLink offers three license transactions:

- Get License Key(s)
- Return License Key(s)
- Request a Copy of a License File

When you register your Rational products to a specific system with AccountLink, Rational e-mails a license file to the contact e-mail address that you designate in AccountLink's License Contact page. If AccountLink is unavailable, call Rational Licensing Support. See *Contacting Rational Licensing Technical Support* on page xi for phone numbers.

Note: AccountLink does not support temporary license transactions.

Using Your Rational License Key Certificate

To get your *permanent* or *TLA* license keys, you need to supply information from your Rational License Key Certificate. This certificate is enclosed in a large green envelope in your shipment. The information, especially the Rational Account Number, on this certificate verifies your company has purchased licenses to run Rational products.

Using “Getting Started with Rational Software”

To help you understand more about these license transactions, the “Getting Started with Rational Software” pages provide quick start instructions and examples for obtaining and installing Rational license keys. You find “Getting Started with Rational Software” at www.rational.com. Click **Support > Support Services > Getting Started**.

Using the Rational License Key Administrator

The Rational License Key Administrator (LKAD) is installed with your Rational software and with your FLEXlm license server software. This Rational program provides an interface to Rational Common Licensing features. You can use the LKAD to enter or import license keys and change your license configuration.

- To access the LKAD on a client system, click **Start > Programs > Rational *product name* > Rational License Key Administrator**.
- To access the LKAD on a license server system, click **Start > Programs > GLOBEtrouter FLEXlm License Server > Rational License Key Administrator**.

The online Help explains how to use the LKAD to review and modify your license configuration. The LKAD Help also provides information about configuring the FLEXlm License Server software. To access the Help, click **Help** in the License Key Administrator's main menu or open `<Install Path>\Rational\Common\licadmin.hlp`.

Administrator Privileges for the LKAD

The Rational License Key Administrator (LKAD) is installed with every Rational product and with the FLEXlm License Server software. What you can do in the LKAD depends on the administrator privileges that you have. Grayed out menu options in the LKAD Wizard, menu bar, or button bar indicate limited privileges. To find out which specific privileges are missing, see the LKAD online Help. Then request the missing privileges from your system administrator.

Using the Rational Software Setup Program

The Rational Software Setup program not only installs Rational software but can also help you with some important licensing tasks, such as installing the FLEXlm License Server software, importing a Rational license file, and specifying the FLEXlm License Server. The *Installing Rational Suite* manual provides recommendations for when to set up your licensing and explains when these tasks can be done during the installation procedure.

Rational Common Licensing Roadmap

To help you install and configure Rational licenses, Table 1 directs you to Web resources and specific chapters in this manual.

Table 1 Rational Common Licensing Roadmap

To	See
Acquire permanent (floating or node-locked) license keys	Getting Started with Rational Software at http://www.rational.com/support/gettingstarted/index.jsp and AccountLink at http://www.rational.com/accountlink Or <i>Before You Install</i> on page 5 and <i>Getting Permanent License Keys</i> on page 11 in this manual.
Install floating and floating named-user license keys	Getting Started with Rational Software at http://www.rational.com/support/gettingstarted/index.jsp and AccountLink at http://www.rational.com/accountlink Or <i>Before You Install</i> on page 5 and <i>Installing Floating and Named-User Licenses</i> on page 13 in this manual

Table 1 Rational Common Licensing Roadmap

To	See
Install node-locked license keys	Getting Started with Rational Software at http://www.rational.com/support/gettingstarted/index.jsp and AccountLink at http://www.rational.com/accountlink Or <i>Before You Install</i> on page 5 and <i>Installing Node-Locked Licenses</i> on page 25 in this manual
Install a temporary (floating or node-locked) key for evaluating a Rational product	Getting Started with Rational Software at http://www.rational.com/support/gettingstarted/index.jsp For floating licenses, see <i>Before You Install</i> on page 5 and <i>Installing Floating and Named-User Licenses</i> on page 13 in this manual. For node-locked licenses, see <i>Before You Install</i> on page 5 and <i>Installing Node-Locked Licenses</i> on page 25 in this manual.
Configure redundant license servers	<i>Installing Floating and Named-User Licenses</i> on page 13
Change the order in which Rational products, such as RequisiteWeb and ClearQuest Web, use licenses	<i>Licensing Multiple Suites and Point-Products</i> on page 32
Use other supported FLEXlm features and configurations, for example, returning or moving license keys	<i>Using Other License Configurations</i> on page 29
Understand license installation problems and error messages	<i>Troubleshooting Licenses</i> on page 35
Understand the mechanics of Rational Licensing	<i>Understanding Rational Licensing Components</i> on page 43

This chapter describes Rational Common Licensing for Windows products, basic Common Licensing terms, and supported license configurations. This information will help you prepare the licensing configuration at your site as well as help you understand Rational Common Licensing.

Note: To find more definitions of Rational Common Licensing terms, see the *Licensing Glossary* on page 61.

The Rational Common Licensing Model

Rational Software uses FLEXlm, a software-based license management tool from GLOBEtrouter, Inc. FLEXlm provides users with a powerful and flexible mechanism for managing licensing.

GLOBEtrouter's FLEXlm license management software offers software vendors a wide variety of features and options. This allows vendors such as Rational Software to selectively build a customized licensing model by implementing the FLEXlm features that best meets their business needs.

What are Node-Locked and Floating Licenses?

Rational supports both node-locked and floating licenses. Node-locked licenses are restricted to an individual system. Floating licenses can be shared by multiple users and multiple systems, with one person using a license at a time.

When users install Rational products on their systems, the Rational Software Setup program automatically installs the FLEXlm licensing software (FLEXlm *License Server* software is not installed automatically). The licensing software lets these systems use either node-locked or floating licenses. (Table 2 explains node-locked and floating licenses in depth.)

Note: Users need floating license keys from a Web Server to run Rational ClearQuest Web and Rational RequisiteWeb on Web clients.

License Types

Table 2 defines the basic types of licenses supported by Rational.

Table 2 License Types

License Type	Description	Notes
Node-locked	<ul style="list-style-type: none"> ▪ A node-locked license is configured for a specific system. It allows a user to run a Rational product only on that specified system. ▪ With FLEXlm, vendors can deliver two types of node-locked license keys: <i>uncounted</i> and <i>counted</i>. Rational supports uncounted node-locked licenses for Windows products only. Rational refers to uncounted node-locked license keys for Windows products as <i>node-locked license keys</i>. ▪ Because these license keys do not use a FLEXlm license server, the user may run multiple sessions of a Rational product concurrently using a single key. ▪ To move a node-locked license to another system, you must “remove” the license key from the old system and request a new license key for the new system. For a more detailed explanation, see <i>Moving License Keys</i> on page 33 and <i>Removing License Keys</i> on page 34. 	<p>Rational also issues node-locked licenses for Rational products that run on UNIX platforms. You can request Windows or UNIX node-locked license keys through AccountLink at http://www.rational.com/accountlink.</p> <p>Node-locked Rational products on UNIX (that use Rational Common Licensing) are licensed with counted node-locked license keys.</p> <ul style="list-style-type: none"> ▪ Unlike uncounted node-locked licenses, you manage counted node-locked licenses with a FLEXlm license server. ▪ Unlike floating license keys, uncounted node-locked keys can only be used on the system for which they are licensed. <p>Clients connect to the license server and acquire a counted node-locked license specific to their machine. This process is the same as the one used to acquire floating license keys.</p> <p>Essentially, a counted node-locked license key is a floating license key that can only be used on a specific host.</p>

Table 2 License Types

License Type	Description	Notes
Floating	<ul style="list-style-type: none"> ▪ A system administrator installs the FLEXlm License Server software on one or three systems. The administrator then installs the floating licenses on the license server system. ▪ The floating licenses are shared among all users of Rational products. ▪ To move a floating license to another license server, you must “remove” the license key from the old license server and request a new license key for the new license server. For a more detailed explanation, see <i>Moving License Keys</i> on page 33 and <i>Removing License Keys</i> on page 34. 	<p>Rational also supports Named-User floating licenses for Rational Purify, Quantify, and PureCoverage. This configuration assigns licenses to specific users. That is, only specific users can request floating license keys from the license server. For more information, see <i>Configuring the Server for Named-User Floating Licenses</i> on page 21.</p>

What are Permanent and Temporary License Keys?

When you register Rational products to specific systems (license server or client) in AccountLink, Rational generates license keys and e-mails these permanent license keys in a license file to you. The permanent keys let you use the Rational products for an indefinite period of time. However, Rational assigns an expiration date to the license keys if your company has negotiated a Term License Agreement (TLA). Technically TLA keys are not permanent, but Rational groups TLA licenses in the permanent license category.

To use Rational products for an evaluation period or if you expect a delay in receiving your permanent keys, you can install the temporary license key provided in your Rational License Key Certificate. Because Rational has not generated the temporary key for a specific system, you can use it on any system until the specified expiration date.

So what does this have to do with floating and node-locked licenses? Permanent and temporary license keys can be floating or node-locked. Regardless of *license key type* (permanent or temporary), the installation and set up of floating and node-locked license keys remains the same. You still install floating licenses on a license server and node-locked licenses on a client. The only difference is that a temporary key is *not* generated for a specific system while a permanent key is registered to a specific system.

Table 3 defines the types of license keys used by Rational licensing.

Table 3 License Key Types

License Key Type	Description	Notes
Permanent	<ul style="list-style-type: none"> ▪ A license issued to a customer for running Rational products. Permanent licenses are keyed to a specific Rational product and specific system. ▪ Permanent license keys can be node-locked or floating. The user installs a node-locked permanent key on a system on which the user runs Rational software. Floating permanent keys are installed on a FLEXlm license server system. 	<p>Rational issues permanent node-locked or floating keys upon request. Use AccountLink at www.rational.com/accountlink to acquire your license keys.</p>
Temporary	<ul style="list-style-type: none"> ▪ A time-limited license issued to a customer for running Rational products. Temporary licenses are not keyed to a specific system. ▪ Temporary license keys can be node-locked or floating. The user installs a node-locked temporary key on a system on which the user runs Rational software. Floating temporary keys are installed on a FLEXlm license server system. 	<p>The expiration date for a temporary key is noted on the License Key Certificate included with the Rational product shipment.</p>
TLA (Term License Agreement)	<ul style="list-style-type: none"> ▪ Variation of a Permanent Key. TLAs are issued to allow users access to Rational software for a negotiated period of time. 	<p>TLAs are issued by the Rational Sales Team. To obtain TLAs for your organization, contact your local Rational Sales Team.</p>

What are Emergency and Evaluation License Keys?

Emergency and evaluation license keys are temporary license keys. They can be floating or node-locked. They are short-term licenses that are not generated for a specific system. For more information about temporary license keys, see *What are Permanent and Temporary License Keys?* on page 7.

Supported License Configurations

This section describes FLEXlm and network 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.

FLEXlm Licensing Configurations

The following table lists license configurations that Rational does support as well as configurations Rational plans to support.

Table 4 FLEXlm Licensing Configurations

Configuration	Platform	Supported?
Node-locked license key in a file	Windows	This configuration is fully supported by Rational with Rational Common Licensing 1.0 and beyond.
Node-locked license key in a file	UNIX	This configuration is fully supported by Rational with Rational Common Licensing 1.0 and beyond.
FLEXlm server and Rational Windows products installed on a single system	Windows	This configuration is fully supported by Rational with Rational Common Licensing 1.5.
FLEXlm server and Rational UNIX products installed on a single system	UNIX	This configuration is fully supported by Rational with Rational Common Licensing 1.0 and beyond.
Floating licenses with redundant license servers	Windows servers; UNIX clients	This configuration is not yet officially supported by Rational.
Floating licenses with redundant servers	UNIX servers; UNIX clients	Redundant servers are supported on UNIX platforms by Rational Common Licensing.
Floating licenses for Windows products.	UNIX server	This configuration is supported with Rational Common Licensing 1.5.

Next Steps

With your understanding of Rational Common Licensing and your License Key Certificate in hand, you are ready to get your permanent license keys. If you do not have an internet connection, see *Getting Permanent License Keys* on page 11. If you already have your license keys, see *Installing Floating and Named-User Licenses* on page 13 or *Installing Node-Locked Licenses* on page 25.

Although this chapter gives customers, who do not have access to the internet, instructions for obtaining license keys by fax, Rational recommends that you use Rational AccountLink (www.rational.com/accountlink) to request permanent license keys. This chapter also describes how Rational licensing services sends you permanent license keys.

If you have already acquired your permanent keys, look at the table in *Next Steps* on page 12.

Requesting Permanent License Keys

This section summarizes the steps for getting a node-locked or floating permanent license key when you do not have an internet connection or 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 that you purchased and open the `license_request_form.htm` in the Rational common directory (`<Rational_directory>\common\license_request_form.htm`) with any browser or open the file in the Rational installation CD (`<cd_drive>\common\license_request_form.htm`). The French and German versions of this fax form are in the same locations:

- `<Rational_directory>\common\license_request_form_french.htm`
- `<cd_drive>\common\license_request_form_french.htm`
- `<Rational_directory>\common\license_request_form_german.htm`
- `<cd_drive>\common\license_request_form_german.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 Technical Support* on page xi for fax and phone numbers.

Note: Call Rational Licensing Support if you cannot use Rational AccountLink or the fax form to order your permanent license keys. See *Contacting Rational Licensing Technical Support* on page xi for phone numbers.

Receiving Permanent License Keys

If you request a new license using AccountLink, Rational will send you a license key file via e-mail. 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 via e-mail. You can copy the permanent license file from the e-mail enabled system and install it on the system that is not e-mail enabled.

If you cannot provide an e-mail address, contact Rational Licensing Support. See *Contacting Rational Licensing Technical Support* on page xi for the phone numbers.

Next Steps

The following table directs you to the chapters you can consult to install your license keys.

To	See
Install floating and floating named-user license keys	<i>Before You Install</i> on page 5 and <i>Installing Floating and Named-User Licenses</i> on page 13 in this manual
Install node-locked license keys	<i>Before You Install</i> on page 5 and <i>Installing Node-Locked Licenses</i> on page 25 in this manual
Install a temporary (floating or node-locked) key for evaluating a Rational product Note: If you expect delays in receiving your permanent license key, install the temporary key listed in your Rational License Key Certificate. When you receive your permanent license key, you do not have to remove the temporary key.	For floating licenses, see <i>Before You Install</i> on page 5 and <i>Installing Floating and Named-User Licenses</i> on page 13 in this manual. For node-locked licenses, see <i>Before You Install</i> on page 5 and <i>Installing Node-Locked Licenses</i> on page 25 in this manual.

Installing Floating and Named-User Licenses

4

Floating licenses, including named-user floating licenses, let you manage and maintain licenses on a single license server or redundant license servers.

This chapter describes how to set up and run Rational's floating license services:

- Making sure your floating licenses can work with the network configuration you have set up.
- Installing FLEXlm License Server software.
- Installing permanent, Term License Agreement (TLA), and evaluation or temporary license keys on the license server.
- Starting the FLEXlm License Server software.
- Configuring the license server for named-user floating licenses.
- Configuring client systems to use a floating license.
- Setting up redundant servers.
- Removing the FLEXlm License Server software.

Note: The information in this chapter is intended for system administrators or users who manage licenses. If you are using node-locked licenses, see *Installing Node-Locked Licenses* on page 25 for information about installing node-locked licenses on a client system.

Setting Up Floating and Named-User Floating Licenses

The steps required to set up floating (temporary or permanent) licenses are described in the following table.

Table 5 Guide to Setting Up Floating Licenses

To	Procedures
Set up floating licenses	<ol style="list-style-type: none"> 1 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 15. 2 Install the FLEXlm license server software on the license server system. See <i>Working with a Supported Network Configuration</i> on page 15. 3 Install the evaluation or permanent floating license keys on the license server system. See <i>Installing Floating License Files</i> on page 18. 4 Start the license server software. See <i>Starting the License Server</i> on page 20. 5 Configure the client to use license keys from the server. See <i>Configuring the Client System to Use a Floating License</i> on page 22.
Set up named-user floating licenses (only applies to Rational Purify, Quantify, and PureCoverage)	<ol style="list-style-type: none"> 1 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 15. 2 Install the FLEXlm license server software on the license server system. See <i>Working with a Supported Network Configuration</i> on page 15. 3 Install the evaluation or permanent floating license keys on the license server system. See <i>Installing Floating License Files</i> on page 18. 4 Start the license server software. See <i>Starting the License Server</i> on page 20. 5 Create a FLEXlm options file on the license server. See <i>Configuring the Server for Named-User Floating Licenses</i> on page 21 6 Configure the client to use license keys from the server. See <i>Configuring the Client System to Use a Floating License</i> on page 22.

Table 5 Guide to Setting Up Floating Licenses

To	Procedures
Configure redundant license servers	See <i>Setting Up FLEXlm Redundant Servers</i> on page 22
Reviewing license file information	See <i>Reviewing Your License Information</i> on page 19.
Remove the license server software	See <i>Removing the FLEXlm License Server Software</i> on page 24.

Working with a Supported Network Configuration

This section provides important information about network configurations.

Dial-up Support

You can use floating licenses with a dial-up network connection that supports a constant TCP/IP connection to the FLEXlm license server. Any client 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 will run 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’s FLEXlm implementation does not support Novell Netware 5.0 or later directly with floating licenses. Rational floating licenses can be used in a Novell 5.0 environment that is configured with TCP/IP and/or IPX.

Node-locked licenses with Novell 5.0 are supported.

Installing the FLEXlm License Server Software

To install floating licenses, you must install and configure the FLEXlm License Server. This section describes how to use the Rational Software Setup program to install the FLEXlm License Server, a software-based license server that allows you to flexibly install and manage license keys.

Before You Install the License Server Software

The following sections provide requirements for installing the license server.

Installation Requirements

The following table lists the system and software requirements for installing the FLEXlm License Server software.

Table 6 FLEXlm License Server Requirements

Item	Requirement
Operating System	Microsoft Windows NT 4.0, SP2 or greater. Microsoft Windows 2000.
Processor	133 MHz or greater.
Memory	64 MB.
Disk space	1.8 MB.
Privileges	Windows NT administrator privileges on the local system.

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

Default Installation Path

The Rational Software Setup program uses C:\Program Files\Rational as the default installation path. If your C:\ drive lacks sufficient free disk space, you may either specify another drive or make space available on the default drive.

Warning: Interrupting an installation that is in progress may leave your system in an indeterminate state. If you try to close the Rational Software Setup window while the installation is in progress, the Setup program asks you to confirm that you want to exit from the incomplete installation.

Using the Rational Software Setup Procedure

This section describes a Typical installation of the FLEXlm License Server software.

- 1 Insert the Rational Solutions for Windows CD into your system's CD drive.

The Rational Software Setup program starts automatically.

If autorun is disabled on your system, click **Start > Run** and enter *drive*: \Setup.exe where *drive* is the letter of the CD drive.

- 2 The **Rational Software Setup** dialog box provides general information about the software installation.
- 3 On the **Select Installation Option** dialog box, choose **Install License Server**.
- 4 Choose to accept or not accept the Rational Software license agreement in the **License Agreement** dialog box.
 - If you accept the license agreement, the Setup wizard continues.
 - If you do not accept the license agreement, you cannot continue with the Setup program. Exit the Setup program by clicking **Finish** or **Cancel**. When you exit from the Setup program, the Setup program makes no changes to the system.
- 5 The **Setup Configuration** dialog box displays the setup options for the software. The only choice available for the FLEXlm License Server is **Typical**.
- 6 The **Upgrade Compatibility** dialog box appears if you have additional, older, Rational products installed on the system. Because Rational tools share files and components, this installation can cause the older Rational products to stop working. You will see no visual clue to indicate that the older products may be compromised.

For each of the additional, older products listed, we strongly recommend that you do one of the following:

- **Upgrade it:** Complete this installation, and then restart the Setup program to upgrade the listed products. Upgrading each product updates all necessary files, registry entries, startup menu items, and shared components on your system. See the product-specific upgrade section in *Installing Rational Suite* for requirements.
 - **Remove it:** Complete this installation, and then see *Installing Rational Suite* for the removal procedure.
- 7 The **Confirmation** dialog box displays the product features that will be installed.
 - 8 The **Error Summary** dialog box displays errors from the first part of the Setup program. If the installation is successful, you do not see this dialog box.

The Rational Software Setup program writes a log of installation activities. The log file is located in `<Install Path>\Rational\RSSetup\RSsetup.log`.

Possible Reboot Required

If files required for the installation are in use during the Rational Software Setup program, and if the program needs to install shared components on your system, the Setup program may need to reboot your system. After rebooting, do the following:

- 1 Log on as the same administrator to complete the installation procedure. If you do not log on as the same administrator, the installation does not complete correctly.

The installation process completes on your system.

- 2 Click **Finish**.

Note: After you install the FLEXlm License Server software, install the license keys on the license server before you start the license server.

Installing Floating License Files

This section describes how to install permanent or evaluation license keys on the license server system.

Installing Permanent or Term License Agreement (TLA) License Keys

When you have requested your license keys using Rational AccountLink or the fax form described in *Requesting Permanent License Keys* on page 11, Rational sends you a permanent floating license file.

To open the License Key Administrator (LKAD) and install the permanent license file on the license server:

- 1 From the Windows **Start** menu, click **Programs > GLOBEtrouter FLEXlm License Server > Rational License Key Administrator**. The License Key Administrator main window and the License Key Administrator Wizard dialog box appear.
- 2 Install the permanent license file from the LKAD main menu or the LKAD Wizard. Look under **Working with Floating Licenses** in the Rational License Key Administrator online Help. Click the **Installing a Permanent or TLA Floating License Keys** topic.

Entering Temporary or Evaluation License Keys

You may enter a temporary or evaluation license key on the FLEXlm License Server to let client systems request a floating license key from the Server.

The temporary or evaluation license key information, including the expiration date, is on your License Key Certificate. The License Key Certificate is enclosed in a large green envelope in your Rational Software product shipment.

To open the License Key Administrator (LKAD) and enter the evaluation license key on the license server:

- 1 From the Windows **Start** menu, click **Programs > GLOBEtrouter FLEXlm License Server > Rational License Key Administrator**. The License Key Administrator main window and the License Key Administrator Wizard dialog box appear.
- 2 Enter the temporary key from the LKAD main menu or the LKAD Wizard. See **Installing a Temporary Floating License Key** under **Working with Floating Licenses** in the License Key Administrator online Help for any questions you have about entering a temporary or evaluation license key.

Reviewing Your License Information

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

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

Table 7 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 system that you are using
Served Licenses	All floating licenses that Rational software on your system could request from the license server

Starting the License Server

The License Server software requires no configuration. Start the FLEXlm License Server after you have installed the floating license keys.

Note: The FLEXlm License Server will not start until floating license keys are installed.

Starting the License Server on Windows 2000

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

Starting the License Server on Windows NT

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

Note: Although the control panel applet may still appear on your system from an earlier release of FLEXlm server software, FLEXlm 7.0 does not use the control panel applet.

Switching to Manual Startup

The FLEXlm 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 system.

Switching Startup Type on Windows 2000

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

Switching Startup Type on Windows NT

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

Configuring the Server for Named-User Floating Licenses

Named-user floating licenses behave like floating licenses except you lock the floating license key to a user or users, allowing user(s) to run Rational software on multiple systems.

Setting up the FLEXlm Options File on the License Server

You add an entry for each user that will use a floating license in a text file on the FLEXlm license server. The number of entries in the text file can not be greater than the number of floating licenses purchased.

- 1 Create a text file, called `rational.opt`, in the `<rational flexlm dir>\common` directory.
- 2 Specify the `userid` for each user that will use the software. To specify the `userid`s, you use the `INCLUDE` option in the FLEXlm options file.

The syntax of the `INCLUDE` option is as follows:

```
INCLUDE feature_name USER userid
```

Where:

Item in Options File	Explanation
<code>feature_name</code>	PurifyNT, VisualQuantify, or VisualPureCoverage
<code>userid</code>	is the username of the user eligible to use the software

Examples:

```
INCLUDE PurifyNT USER jsmith
```

```
INCLUDE VisualQuantify USER jsmith
```

```
INCLUDE VisualPureCoverage USER jsmith
```

Note: If you do not use the correct syntax, this feature will not work.

- 3 You can not have more `INCLUDE` lines than you have licenses.
- 4 Restart the FLEXlm server. See *Starting the License Server* on page 20 for instructions.

Note: You can edit the options file when the FLEXlm license server is running, but you have to restart the license server when you have completed the edit.

Configuring the Client System to Use a Floating License

You can enter the host name of the license server in either the Rational Software Setup program or the Rational License Key Administrator (LKAD) on the client system. Client FLEXlm software files, such as the LKAD, are installed when the Rational Software Setup program installs Rational products on your system.

- To specify the license server using the Rational Software Setup program, select **Install Rational Product** in the **Select Installation Option** dialog box. You will see the **Select License Option** dialog box.
- To open the License Key Administrator, 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.

See **Specifying the License Server** under **Working with Floating Licenses** in the Rational License Key Administrator online Help.

Setting Up FLEXlm Redundant Servers

FLEXlm license servers can be set up to run in a fault-tolerant configuration known as *redundant servers*. Redundant servers are a system of three FLEXlm servers that work as a team to manage a single pool of floating license keys. If one of the server systems goes down, the other two license servers automatically continue managing the license pool.

Example

You have purchased 25 floating licenses of Enterprise Suite and wish to set up a redundant server configuration on three Windows systems. You request permanent keys for the redundant servers using AccountLink. You install FLEXlm on each of the three redundant server partners; systems 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 system A crashes, systems 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.

Get Your License Keys for the Redundant Servers

Go to AccountLink (www.rational.com/accountlink) and request licenses for the redundant servers. (If you do not have an internet connection, see *Requesting Permanent License Keys* on page 11.) In AccountLink, specify the redundant servers in the following order:

- Primary license server
- Secondary license server
- Backup license server

The client machines communicate with the redundant servers in that order so generally the primary license server is the most stable machine.

Set Up Redundant License Servers

- 1 Install FLEXlm license server software on all three license servers. See *Working with a Supported Network Configuration* on page 15 for instructions.
- 2 Import the license file that you receive from Rational licensing services on each license server. See *Installing Floating License Files* on page 18 for more information.
- 3 Start each license server. See *Starting the License Server* on page 20 for instructions.

Configure Clients to Look at the License Servers

In the License Key Administrator of each client system:

- 1 Click **Settings > Service Configuration**.
- 2 Select **Redundant servers** and click the **Set Up Servers** button.
- 3 Enter the Primary, Secondary, and Backup license server hostnames *in the order* in which they were requested in Rational AccountLink.
- 4 Click **OK**.

Removing the FLEXlm License Server Software

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

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 Rational AccountLink (www.rational.com/accountlink), the online license management tool. For more information about moving or returning licenses, see *Moving License Keys* on page 33 and *Removing License Keys* on page 34 or look under **Answering Frequently Asked Questions** in the License Key Administrator online Help.
- 3 To remove the software from a Windows NT system, you must have Windows NT administrator privileges on the local machine.

Removing the License Server Software

Use the Windows **Add/Remove Programs** control panel to select and remove the FLEXlm software. The Rational Software Setup program removes the files from your system. It does not remove directories that contain files that you created while you were using the software.

Note: When you use the above procedure to remove a Rational Suite product, the Rational Software Setup program does **not** remove the FLEXlm license software and license files with it.

Next Steps

If you have not already installed your Rational software on the clients, do so now.

If you are interested in using other license server configurations and license file options, see *Using Other License Configurations* on page 29.

Because a node-locked license is created for a specific system, Rational software can be used only on that system. You do not need to connect the client system to a license server; you simply install license keys on the client. This license type allows for portability, especially for customers who have isolated systems or laptops.

By default, client FLEXlm software files are installed when the Rational Software Setup program installs Rational products on your system. Although these files are known as client FLEXlm files, they provide the tools to install node-locked license keys.

This chapter covers the following topics:

- *Installing Permanent or Term License Agreement (TLA) Keys* on page 25.
- *Installing Temporary or Evaluation License Keys* on page 26.
- *Reviewing Your License Information* on page 26.
- *Next Steps* on page 27.

If you are using floating licenses, see *Installing Floating and Named-User Licenses* on page 13 for information about setting up floating licenses on a license server system.

Installing Permanent or Term License Agreement (TLA) Keys

When you have requested your license keys using Rational AccountLink, Rational sends you a permanent node-locked license file. This file contains license keys for the host that you specified in Rational AccountLink. You can install the permanent license key file on a client system by either using the Rational Software Setup program or using the Rational License Key Administrator (LKAD). The LKAD is automatically installed with the Rational product software.

- To install the permanent license file using Rational Software Setup, select **Install Rational Product** in the **Select Installation Option** dialog box. You will see the **Select License Option** dialog box.
- To open the License Key Administrator, 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.

To install the permanent license file, look under the topic **Working with node-locked licenses** in the License Key Administrator online Help. Click the **Installing permanent or TLA node-locked license keys** topic.

Installing Temporary or Evaluation License Keys

The temporary or evaluation license key information, including the expiration date, is on your License Key Certificate. The License Key Certificate is enclosed in a large green envelope in your Rational Software product shipment.

You can enter the temporary license key information on any client system using the Rational Software Setup program or the Rational License Key Administrator (LKAD). The LKAD is automatically installed with the Rational product software.

- To install the permanent license file using Rational Software Setup, select **Install Rational Product** in the **Select Installation Option** dialog box. Next, you will see the **Select License Option** dialog box.
- To open the License Key Administrator, 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.

To enter the license key in the LKAD, see the topic **Installing a Temporary Node-Locked License Key** under **Working with Node-Locked Licenses** in the License Key Administrator online Help.

Reviewing Your License Information

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, select **View > Show > Node Locked Licenses** or **Floating Licenses** to see information about your licenses.

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

Table 8 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 system that you are using
Served Licenses	All floating licenses that Rational software on your system could request from the license server

Next Steps

If you are interested in using other license server configurations and license file options, see *Using Other License Configurations* on page 29.

Using Other License Configurations

6

This chapter describes additional FLEXlm configurations that Rational Common Licensing supports. The first section provides additional procedures for license server configurations. The second section explains additional license file options. A table in the beginning of each section provides pointers to specific topics.

Many of the tasks in this chapter are not recommended for the casual or novice user. Attempt them only if you are familiar with your operating system (or systems), Rational Common Licensing, and GLOBEtrrotter's FLEXlm.

Other License Server Configurations

The following table provides pointers to information in this chapter about other license server configurations.

Table 9 License Server Configurations

For more information about	See
Monitoring FLEXlm License Server activity	<i>License Monitoring</i> on page 30
Configuring Windows clients to use a UNIX server	<i>Windows Clients Using a UNIX Server</i> on page 30
Running multiple FLEXlm Servers on the same system	Rational and GLOBEtrrotter recommend running a separate <code>lmgrd</code> instance for each vendor daemon and keeping license keys in separate files.
Specifying multiple servers in serial	This configuration is not possible with the current Rational licensing implementation.
Multiple FLEXlm licensing on the same system	Rational and GLOBEtrrotter recommend running a separate license service for each vendor and keeping license keys in separate files.
Using floating licenses with a firewall	<i>Using Floating Licenses with a Firewall</i> on page 30

License Monitoring

You may need to monitor and report on license usage. GLOBEtrotter offers a robust solution for license usage reporting called SAMreport. SAMreport is designed specifically for reporting on FLEXlm 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, not just Rational's. It is available only through GLOBEtrotter. Detailed information on SAMreport can be found at: <http://www.globetrotter.com/samreport.htm>.

Windows Clients Using a UNIX Server

Rational provides license keys that can be served from a UNIX License Server to Windows clients. Although this manual does not support Rational licensing on UNIX systems, it can provide the following guidelines:

- To install the FLEXlm License Server software on a UNIX system, consult a Rational Software UNIX installation manual if your company has bought Rational products for UNIX.
- Use Rational AccountLink and “Getting Started with Rational Software” to request your license keys. Refer to *Rational Licensing Tools* on page 2 for more information about these resources.
- To point the Windows clients to the UNIX License Server, see *Configuring the Client System to Use a Floating License* on page 22.

Using Floating Licenses with a Firewall

Rational's FLEXlm implementation supports a firewall. To configure licensing with a firewall, give the Rational vendor daemon and the `lmgrd` daemon specific TCP/IP port numbers to run on. The TCP/IP port is used for client/server communication for floating licenses.

Typically, port values are not pre-assigned so the system can assign them dynamically to make best use of resources. However, in specialized situations, such as communicating through a firewall, you need to specify the port numbers so that the same ones are always used. In a firewall situation, a license request would be routed to the license manager daemon port (specified in `lmgrd` Port), which passes the request to the application using the Rational vendor daemon port (specified in the Rational Vendor Port).

When you specify the port information, the Rational License Key Administrator stores the port information in the `rational_redirect.dat` file, located by default in `\Program Files\Rational\Common`.

See **Specifying Port Values** under **Working with Floating Licenses** in the Rational License Key Administrator Help for instructions on assigning port values on a single FLEXlm license server, redundant license servers, and client systems.

Note: For an overview of the license manager and vendor daemons, see *Understanding the FLEXlm License Server Process* on page 44.

Other License File Options

The following table provides pointers to information in this chapter about additional license file configurations.

Table 10 License File Configurations and Options

For more information about	See
Combining license files	Rational and GLOBEtrouter recommend keeping the license keys in separate files.
Home use or travel	<ul style="list-style-type: none"> ▪ Rational recommends that you contact a Technical Support Engineer about setting up the disconnected use of floating licenses. See <i>Contacting Rational Licensing Technical Support</i> on page xi for phone numbers. <p>Or</p> <ul style="list-style-type: none"> ▪ <i>Installing Node-Locked Licenses</i> on page 25.
Disconnected use of floating licenses on Windows systems	<i>Contacting Rational Licensing Technical Support</i> on page xi. Rational supports this feature, but recommends that you contact a Technical Support Engineer for instructions.
Understanding the default order of license use--in what order does a product use available licenses on the system?	<i>Licensing Multiple Suites and Point-Products</i> on page 32
Prioritizing licenses on your system	<i>Prioritizing Licenses on Your System (License Usage Mapper)</i> on page 33
Directing Rational Web products to use Suite licenses	<i>Prioritizing Licenses on Your System (License Usage Mapper)</i> on page 33
Upgrading or adding products to your licenses	<i>Upgrading Your Licenses</i> on page 33 and <i>Adding Rational Suites or Point-Products to Your Licenses</i> on page 33
Moving and removing <i>permanent</i> license keys	<i>Moving License Keys</i> on page 33 and <i>Removing License Keys</i> on page 34

Licensing Multiple Suites and Point-Products

Rational license files indicate whether they are Rational Suite licenses or point-product licenses. Often, customers install multiple Rational Suite and Rational point-products on their systems. For example, a customer purchases two types of Rational Suites and installs them on one system. Or a customer purchases a Rational Suite and additional Rational point-products and installs them on one system. A Rational product whether it is installed as part of a Rational Suite or installed individually requests licenses in this order:

- 1 Suite license of the last Rational Suite installed
- 2 Suite license of the Rational Suite installed before the last Rational Suite installed
- 3 Point-product license

Therefore, a product requests a Suite license before a point-product license if the product is both part of a Rational Suite and a point-product.

Note: Rational RequisiteWeb and ClearQuest Web, unlike other Rational products, request a point-product license first. If you would like to change this license use order, see *Prioritizing Licenses on Your System (License Usage Mapper)* on page 33.

Example: Rational Suite and Point-Product Floating Licenses

A customer installs several Rational Suite Enterprise licenses and Rational ClearQuest licenses on its license server. A user installs Rational Suite Enterprise on a client system. When this user starts ClearQuest, which is a part of Rational Suite Enterprise, the product requests the Rational Suite Enterprise license before the ClearQuest license.

Example: Point-Product Node-Locked and Rational Suite Floating Licenses

A customer purchases several node-locked licenses for Rational RequisitePro and several floating licenses for Rational Suite AnalystStudio. The users install the Rational Suite and the point-product on their laptops. When they are *not* connected to the network, RequisitePro uses the node-locked license. However, when they are connected to the network, RequisitePro requests a floating Suite license first. The users want RequisitePro to use the node-locked license instead of the floating Suite license when they are on the network because they do not want RequisitePro to use up the Suite licenses.

Example: Multiple Rational Suites Floating Licenses

A customer installs several Rational Suite DevelopmentStudio and TestStudio licenses on its license server. Because DevelopmentStudio was installed last on the client systems, a product common to both Rational Suites requests the DevelopmentStudio Suite license first.

Prioritizing Licenses on Your System (License Usage Mapper)

To implement any of the above examples, you can change the default order by using the Rational License Key Administrator (LKAD) License Usage Mapper.

To use the License Usage Mapper:

- 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.
- 3 Move the product license above the suite license under **License Usage Order**.

Note: Check the **Update the License Usage Settings used by services for web applications** if you want ClearQuest Web and RequisiteWeb to use a Suite license.

- 4 Click **OK**.

Upgrading Your Licenses

If you are upgrading from an earlier version of a Rational Suite or point-product, you can reuse your current Suite and point-product license keys.

Adding Rational Suites or Point-Products to Your Licenses

This section describes the conditions under which you must request new license files.

- If you have purchased a different type of Rational Suite from the one you are currently using, you must request a new license file that includes the new Rational Suite keys.
- If you are adding a new product to your system, you have to request a new license file that includes the new point-product.

Moving License Keys

Often, a user replaces an old system or the system administrator decides another system should act as the new license server. Because permanent license keys are tied to a system's host ID, Rational products will not work on another system until you import new license keys that are tied to the new system's host ID.

To move a permanent license, you must first return the license key to your Rational account. This return transaction credits your Rational account. The credit remains until you request a license key for a new system.

To perform these transactions, use Rational AccountLink (<http://www.rational.com/accountlink>) Rational's online licensing management tool.

Note: Return the license file before you remove the Rational software from the first system and install it on another system. For more information, see **Answering Frequently Asked Questions** in the License Key Administrator online Help.

Removing License Keys

As mentioned in the previous section, you return license keys to your Rational account. In Rational AccountLink (<http://www.rational.com/accountlink>), these transactions involve a "Return License Key" transaction. AccountLink holds the licenses in your Rational account until you request license keys for different systems.

Note: Return the license file before you remove the Rational software from the first system and install it on another system. For more information, see **Answering Frequently Asked Questions** in the License Key Administrator online Help.

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 35.
- *FLEXlm Server and Floating Licenses* on page 36.
- *Installing Rational Software and Floating Licenses* on page 37.
- *Requesting a License Key* on page 37.
- *Moving License Keys* on page 38.
- *AccountLink Data Entry* on page 39.
- *host ID* on page 39.
- *Upgrades* on page 40.

An alphabetical list of FLEXlm error messages and possible solutions are in Table 11 on page 40.

Node-locked Licenses

What exactly is a node-locked license? How many users does it support at one time? Does each additional user cost as much as the first?

A node-locked license supports a single user on a single system. For more information, see *What are Node-Locked and Floating Licenses?* on page 5.

Contact your Rational Sales office for information about pricing for node-locked licenses.

Does the node-locked software use the IP address as the host ID? We have DHCP using Windows NT and the software is Rational Rose 98i.

By default, the node-locked license uses the `disk_serial_num` for the licensed system, not the IP address. Rational Common Licensing does support the use of static IP addresses for floating licenses. To find instructions, refer to *Contacting Rational Licensing Technical Support* on page xi.

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

Node-locked licenses use the host ID or `disk_serial_num` of the licensed system. 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.

FLEXlm Server and Floating Licenses

How do I identify who checked out a license?

It is possible to find out who used which license and when the user did so. If the FLEXlm license server is installed, click **Start > Programs > GLOBEtrouter FLEXlm License Server > License Tools**. License Tools starts the `lmtools` GUI.

- 1 Select **Configuration using Services** in the **Mode** pull-down menu.
- 2 Click the **Server Status** tab and the **Perform Status Enquiry** button in the **Server Status** dialog box.

How do I set up the license server?

For floating licenses, you set up a server by installing FLEXlm License Server software on a system. Then you request permanent license keys through Rational AccountLink (<http://www.rational.com/accountlink>) or other methods mentioned in *Getting Permanent License Keys* on page 11.

What does “The license was not intended for this server” mean? I tried to import a license key file and received a message that reported “The license was not intended for this server.”

You are trying to install the license key on a system other than the one for which the license key was generated. The `license.upd` file specifies the system name and host ID that you entered in the license key request to Rational. You should either import

the file on the correct system or you can move the license file to the system that you are currently using. For more information about moving license keys, see *Moving License Keys* on page 33.

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

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

Installing Rational Software and Floating Licenses

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

You can install Rational software on the appropriate disk for your system. See the online Help in the Rational Software Setup program or see the *Installing Rational Suite* manual.

If you have floating licenses, your license keys are tied to the license server, not client systems. You can install the Rational product on as many client systems connected to the license server as you would like.

Requesting a License Key

How do I submit fax requests for license keys? Please give me the fax number to which I can send my request for permanent node-locked licenses. Not all team members have internet or e-mail so requests need to be centrally controlled.

See *Contacting Rational Licensing Technical Support* on page xi for the appropriate fax number.

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

Yes, you can use Rational 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 e-mail you your license keys as soon as you submit your transaction.

The speed and reliability of your internet connection will also affect when you will receive your permanent keys.

Moving License Keys

How do we move or transfer a license to another system?

If you want to move a license (floating or node-locked) from one system to another, first return the license to Rational. Use Rational AccountLink (<http://www.rational.com/accountlink>) to notify Rational that you want to return a license from the old system. Then in a new transaction, request a license key for the new system. Please return the license keys to your Rational account before you remove the software from your first system.

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

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

What would happen if I did a clean install of the operating system on my machine (which would wipe out all the license keys currently on it) without deleting the license key first? Would it be easy to obtain a new license key or a replacement for this key?

If you install a new version of the operating system or initialize the disk where your license keys are stored, you can request a replacement license key from Rational. To request a replacement, go to Rational AccountLink (<http://www.rational.com/accountlink>) and select “Request Copy of a License File.

How do I move a node-locked license mistakenly installed on a database/repository server to a client system? We purchased two node-locked licenses for 2 client systems. 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.

If you want to move a license (floating or node-locked) from one system to another, first return the license to your Rational account. Use Rational AccountLink (<http://www.rational.com/accountlink>) to notify Rational that you want to return a license from the server system. Then in a new transaction, request a new license key for the client system.

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.

host ID

Why isn't host ID ffffffff valid? ffffffff is the value listed in the host ID field in the FLEXlm License Manager.

When you initialized your disk, your disk did not receive a disk_serial_num. Although the FLEXlm 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, connect to Rational 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 system.

Error Messages

Table 11 lists licensing error messages and their solutions.

Table 11 Licensing Error Messages

Message or Condition	Description and Action
Cannot find SERVER hostname Cannot find SERVER hostname in network database. The lookup for the hostname on the SERVER line in the license file failed.	Confirm with your system administrator: <ul style="list-style-type: none">▪ Your system is connected to the license server (that you specified in the Service Configuration dialog box of the License Key Administrator).▪ The FLEXlm license service is running on the license server system.▪ You have entered the correct name for the license server (in the Service Configuration dialog box of the License Key Administrator).
NO SUCH FEATURE EXISTS Failed to check out a <product-name> key.	There is no license key for the product in the node-locked license file or on the license server (if your system is requesting a floating license key). Look at your License Key Certificate to make sure you have a license for the product. If you do, return the license file to Rational and request a new one that contains the correct data.

Table 11 Licensing Error Messages (continued)

Message or Condition	Description and Action
The license for this product will expire...	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. Click OK to run the product. This warning message appears each time you start the application until you install a permanent license key or another TLA license key. You can turn off the warning by clicking Settings > Display Expiration Warnings in the Rational License Key Administrator.

Technical Notes

The Rational Web site contains Technical Notes about licensing issues. For example, you can use a Technical Note to find out how to:

- Use the FLEXlm options file to exclude certain users.
- Troubleshoot the FLEXlm License Server functions.

New Technical Notes appear on a regular basis. Go to <http://www.rational.com>. Click **Support > Technical Notes > Licensing (Technical Notes Index)** to see the Technical Notes about Rational Common Licensing.

For more technical notes related to licensing Rational Suite, click **General** or **Rational Suite Enterprise**, under **Rational Suite (Technical Notes Index)**.

Understanding Rational Licensing Components

8

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

Locating the Licensing Components

All FLEXlm software files and Rational license key files are installed in *<Install Path>\Rational\Common* unless otherwise noted. Client FLEXlm software files are installed during the installation of Rational software products. FLEXlm License Server software files are installed on the license server.

Guide to Rational Licensing Components

The following table provides pointers to topics in this chapter.

Table 12 Guide to Rational Licensing Components

For more information about	See
The FLEXlm License Server components	<i>FLEXlm License Server Components</i> on page 44
Server set up in the license key file	<i>Server Setup</i> on page 47
The client configuration in the server set up process	<i>Client Configuration</i> on page 48
How the license server grants licenses to clients	<i>License Server Activation Process</i> on page 48
Floating license time-out period	<i>Floating License Time-out Period</i> on page 49
Restricting access to floating licenses and other options	<i>Setting up the FLEXlm Options File</i> on page 49
Rational Common License files	<i>More About Rational Common License Files</i> on page 50
Rational Common License file names	<i>License File Names</i> on page 51

Table 12 Guide to Rational Licensing Components

For more information about	See
Supported license key options and examples	<i>Supported FLEXlm License Key Options</i> on page 51 and <i>Rational FLEXlm License Key Examples</i> on page 54
Unsupported license key options	<i>Other License Key Options Not Used by Rational</i> on page 57
Diagnostic tools	<i>Diagnostic Tools</i> on page 58
Windows registry information	<i>Windows Registry Information</i> on page 58
Other sources of help	<i>Additional Help</i> on page 60

Understanding the FLEXlm License Server Process

The following sections provide information about the FLEXlm license server, including descriptions of the license daemons running on the server systems.

FLEXlm License Server Components

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

- License manager daemon (lmgrd)
- Vendor daemon
- License key file
- LM_LICENSE_FILE Variable
- Application program

License Manager Daemon (lmgrd)

FLEXlm 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 FLEXlm 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.

License Manager Version

Rational currently ships `lmgrd` version 7.0 or later with Rational Common Licensing on Windows and FLEXlm 6.0 or later with UNIX products.

Vendor Daemon

The vendor daemon is a program developed by the software vendor implementing FLEXlm. The vendor daemon keeps track of how many licenses are checked out and who has them. Rational's vendor daemon (called `rational.exe`) is customized to behave in a specific manner. Other vendors may customize their vendor daemons to behave differently.

Rational specifies the path to the `rational.exe` vendor daemon using the FLEXlm DAEMON line. Rational also supports specifying the path to the FLEXlm 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	Explanation
DAEMON	Tells FLEXlm that the vendor's license daemon name and path are specified in this line.
rational	The name of Rational's license server daemon. Both floating and node-locked licenses have this value defined in the DAEMON string.

Item in DAEMON Line	Explanation
D:\Rational\common\rational.exe	The path to Rational's FLEXlm server executable. The default value is: <rational_directory>\common\rational.exe

In FLEXlm, licenses are granted by running processes (unless they're node-locked, uncounted, in which case they only need to read the license key file to run). There is one process or vendor daemon for each software vendor (for example, Rational) which has a FLEXlm-licensed product on the network.

If the vendor daemon terminates for any reason, all users lose their licenses. (This does not mean the applications suddenly stop running. Users can save their work and exit safely.) Users normally regain their license automatically when `lmgrd` restarts the vendor daemon, although the applications may exit if the vendor daemon remains unavailable.

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 system running an application can use different hardware platforms or even different operating systems (for example, Windows NT as a server system and Windows 95 as a client).

License Key File

Licensing data is stored in a text file called the *license key file*. The license key file is created by the software vendor and is edited and installed by the License Key Administrator. For details about the files used by Rational, see Table 13 on page 51. To see a typical SERVER line in a license key file, refer to *Server Setup* on page 47.

LM_LICENSE_FILE Variable

The `LM_LICENSE_FILE` variable is used on UNIX systems and on systems with multiple license key files to set the location of the license file.

You will not typically need to set the `LM_LICENSE_FILE` variable in order to use Rational software products. We strongly recommend that you keep a copy of the license key file in the vendor's default location, so that users do not need to set `LM_LICENSE_FILE` to run their applications.

Application Program

The application program (for example, Rational TestStudio) that uses FLEXlm is linked with the program module (called the FLEXlm client library). The program module provides communication with the license server. With the help of the license manager daemon (`lmgrd`), the application program communicates with the vendor daemon to request a license.

Server Setup

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

The FLEXlm SERVER line

A typical Rational FLEXlm SERVER line is similar to the example below:

```
SERVER    curly    DISK_SERIAL_NUM=12345678
```

Item in SERVER Line	Explanation of Item
SERVER	Tells FLEXlm 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 <code>VENDOR</code> or <code>DAEMON</code> line.
curly	The hostname of the license server machine. FLEXlm allows the license server's hostname or IP address to populate the hostname field in the <code>SERVER</code> line. Rational also allows both values. The hostname value is not encrypted into floating license keys.
12345678	The host ID of the license server machine. The default value is the disk serial number (<code>DISK_SERIAL_NUM</code>) of the user's boot drive. The <code>HOST ID</code> value is encrypted into floating license keys.

Client Configuration

The hostname of the license server or license file is written to the file `rational_redirect.dat` in the `<rational>\common` directory on the client. Rational does not use the `LM_LICENSE_FILE` option to specify the location of the license source.

The `rational_redirect.dat` file is initially empty. The Rational License Key Administrator updates this file with the name of your license server(s) when you select server-based licensing.

Note: Rational Common Licensing on Windows does not use the `LM_LICENSE_FILE` variable to specify the location of a license server or file.

License Server Activation Process

When you run a “counted” FLEXlm-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, which lists the hostname of the license server and the port number of the license manager daemon, `lmgrd`.
- 2 The client establishes a connection with the license manager daemon (`lmgrd`) and specifies the appropriate vendor daemon.
- 3 The `lmgrd` determines which machine and port correspond to the master vendor daemon and returns that information to the client.
- 4 The client establishes a connection with the specified vendor daemon and sends its license request.
- 5 The vendor daemon 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.
- 7 ‘Uncounted’ features, where the number of licenses is ‘0’ (zero), do not require a server and the FLEXlm client library routines in the application grant or deny usage based solely upon the license contents. Node-locked licenses, for example, set the license number to 0 (zero).

Floating License Time-out Period

The Rational FLEXlm license server reclaims 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 FLEXlm server has reclaimed its license, the product checks out the license again from the FLEXlm server.

The FLEXlm options TIMEOUT and TIMEOUTALL can be used if the customer wants to customize the time-out period. The value for each of these options must be greater than 7200 seconds (or 120 minutes).

The FLEXlm Options File for Floating Licenses

Rational's current implementation of FLEXlm 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 FLEXlm 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.

Rational supports using the FLEXlm options file with Rational Suite 1.1 and higher.

Note: This file applies only to floating licenses.

Setting up the FLEXlm Options File

To use FLEXlm options, create a text file, `rational.opt`, in the `<rational flexlm dir>\common` directory.

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

Details on FLEXlm options are located on the GLOBEtrotter Web site at <http://www.globetrotter.com/chap6.htm>.

FLEXlm Options File Examples

This section gives two simple examples of how the FLEXlm options file can be used.

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 FLEXlm options file as follows:

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

Where:

Item in Options File	Explanation
RESERVE	Tells the FLEXlm server to reserve a license
1	Is the number of licenses to reserve
ClearQuest	Is the name of the license to reserve
USER	Tells FLEXlm to reserve a license for a specific user id
greg	Is the userid for which the license will be reserved

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 FLEXlm options file as follows:

```
EXCLUDE    ClearQuest    USER  bob
```

More About Rational Common License Files

As a system administrator, you need to be aware of the files used by Rational software licensing. You will need access to them when you are changing your license configuration. Table 13, License Key Files, on page 51 describes the license key files.

The FLEXlm license file is a text file that stores the license key files. Rational creates the license file based on the information you give to Rational AccountLink.

The license key file, which is also a text file, 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. For more information about these license key option lines, see *Supported FLEXlm License Key Options* on page 51.

License File Names

The following table describes the types of Rational license files.

Table 13 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_redirect.dat	Used on a client to specify the name of the license server system that manages floating licenses.	This file is initially empty. The Rational License Key Administrator updates this file with the name of your license server(s) when you select server-based licensing.
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.

Supported FLEXlm License Key Options

The following sections describe common FLEXlm options that Rational Software supports in the Common Licensing FLEXlm license key definition.

INCREMENT

The string INCREMENT tells FLEXlm that the information that follows in the line defines a FLEXlm license key. Other vendors often define license keys using the FEATURE option instead of INCREMENT. All Rational license keys use INCREMENT because it supports the use of the SUPERSEDE option.

SUPERSEDE

All Rational license keys include the SUPERSEDE option. This option tells FLEXlm to use the most recent INCREMENT line in situations where two license keys with the same INCREMENT name appear in the same license file.

ISSUED

All Rational license keys include the ISSUED option. The value of the option is the date on which the license key was encrypted.

VENDOR_STRING

All Rational license keys include the VENDOR_STRING option. This option allows Rational to include company-specific information in the key, which is generally product-related. For example, Rational defines the point products in a Suite using the VENDOR_STRING.

Note: The VENDOR_STRING options and values are encrypted into the key. Addition or removal of any characters in the VENDOR_STRING will invalidate the key.

DISK_SERIAL_NUM

The term “host ID” is a generic term that is used to signify something specific to a machine e.g. the machine’s disk serial number or the machine’s ethernet address.

The HOST ID field is used to associate the key with other entities; the most common are the ethernet card address or machine’s DISK_SERIAL_NUM (disk serial number). FLEXlm allows vendors to determine which HOST ID values are acceptable for their enforcement models.

With Rational Common Licensing, the default HOST ID value on Windows systems 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.

Running Multiple Operating Systems

In cases where the Windows machine are configured to run multiple operating systems, the HOST ID routine will continue to return the value of the boot drive’s disk serial number by default. Rational software licensed to a particular disk serial number may not work if the act of booting various operating systems results in the boot drive’s disk serial number changing depending on the operating system used. In those cases, customers can license the software to the machine’s ethernet card instead of the disk serial number.

Using the Imhostid Command to Get the Ethernet Address

Rational allows customers to license Rational software to the value returned by GLOBEtrouter's **Imhostid** command. This is supported on Windows and is the default for Rational software licensed to UNIX systems. The **Imhostid** returns the ethernet address (network id) of the system, which is written in the format `HOSTID=nnnnnnnnnnnnnn`. Do not confuse this format 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.

Forcing the LKAD to Use the Ethernet Address

On Windows systems, the License Key Administrator (LKAD) can be forced to use the ethernet address instead of the disk serial number by changing a registry setting. To do this, go the registry under: `HKEY_LOCAL_MACHINE\SOFTWARE\Rational Software\Licensing\1.0` and set "UseNIC=TRUE". This will force LKAD to use the ethernet address rather than the disk serial number.

Note: FLEXIm allows for multiple values of HOST ID to be defined within a single key, but Rational currently does not support this configuration.

DUP_GROUP

Rational currently supports the use of the DUP_GROUP feature in license keys. The DUP_GROUP allows the vendor to control the behavior of the key under specific circumstances. Most products will have DUP_GROUP=UH in their licenses. The UH value allows a single user to run multiple sessions of a single product (or products in a Suite) on the same machine at the same time and consume a single floating license.

OVERDRAFT

The OVERDRAFT feature is supported in Rational floating license keys with the value of 0 (zero) only. This feature enables the vendor to allow their customers to check out more floating licenses than they actually have purchased. The OVERDRAFT value for Rational products is set to zero.

Vendor_info

All Rational license keys include the `vendor_info` option. This option allows Rational to include customer-specific licensing information in the license key such as the customer's account number.

`Vendor_info` information is *not* encrypted into the license key.

NOTICE

All Rational license keys include the NOTICE feature. The value of the NOTICE field is the customer's name which is encrypted into the key.

Rational FLEXlm License Key Examples

This section provides examples of Rational FLEXlm license keys for floating and node-locked products.

Floating License Key for Windows

```
INCREMENT AnalystStudio rational 1.0 02-MAR-2000 2 D292AB08B025 \
VENDOR_STRING="3121-08471|Floating|0|ClearQuest:1.1, \
RequisitePro:4.0, soda_word:3.5, rose_modeler_windows:6.0, \
UnifiedProcess:5.1" OVERDRAFT=0 SUPERSEDE DUP_GROUP=UH \
vendor_info="999999-0-999|Rational Suite AnalystStudio \
1.0|<B.0.V.>" ISSUED=31-AUG-1999 NOTICE="EBIZ Company" ck=88
```

Where:

Item in License Key	Explanation
INCREMENT	Tells FLEXlm that the information that follows defines a license key.
AnalystStudio	Defines the FLEXlm "feature name". FLEXlm uses this value as the name of the license key.
rational	The name of Rational's license server daemon. It is defined for both floating and node-locked licenses.
1.0	The license key release number.
02-MAR-2000	The license key expiration date. License keys with the string "permanent" or "1-jan-0" in this field do not expire.
2	The license count field. The FLEXlm server allows two users to use this license at one time because the value of the field in this example is "2".

Item in License Key	Explanation
D292AB08B025	The license key code. This code is specific to all the information in the license key with the exception of the value of the "vendor_info" field. The key becomes invalid if any of the information in the key is changed (with the exception of the vendor_field).
VENDOR_STRING	Allows the vendor to encrypt vendor-specific information into the key.
3121-08471 Floating 0 ClearQuest:1.1,RequisitePro:4.0,soda_word:3.5,rose_modeler_windows: 6.0, UnifiedProcess:5.1	The value of the VENDOR_STRING for a Rational Suite Enterprise license. 3121-8471 represents the product part number, "floating" indicates the product is node-locked. The remainder of the VENDOR_STRING value lists the Suite point products.
OVERDRAFT	Defines the number of licenses FLEXlm allows the customer to use when the license pool for that feature has been exhausted. The value of the OVERDRAFT field is "0" for all floating products.
SUPERSEDE	All Rational license keys include this option. Tells FLEXlm to use the most recent INCREMENT line in situations where two license keys with the same INCREMENT name appear in the same license file.
DUP_GROUP=UH	Defines the configuration in which FLEXlm allows the user to run multiple sessions with the license key. The value UH allows the same user on the same host to run multiple instances of Rational Analyst Studio with a single license key.
vendor_info="999999-0-999 Rational Suite AnalystStudio 1.0 <B.0.V.>	The customer's account number and the product are defined in this field. These values are not encrypted into the license key code.
ISSUED=31-AUG-1999	Defines the date on which the license key was encrypted by Rational.
NOTICE="EBIZ Company"	Defines the customer's company name.

Node-locked License Key for Windows

```

INCREMENT RationalSuiteEnterprise rational 1.0 31-DEC-1999
uncounted \
3665A1B59899 \
VENDOR_STRING="3121-08470|NodeLocked|ClearQuest:1.1, \
RequisitePro:4.0, soda_word:3.5, rose_enterprise_windows:6.0, \
TestFactory:7.1, Robot:7.1, TestManager:7.1, LogViewer:7.1, \
VisualPureCoverage:6.0, PurifyNT:6.0, VisualQuantify:6.0, \
UnifiedProcess:5.1 " DISK_SERIAL_NUM=14760cf6 SUPERSEDE \
vendor_info="43999S-0-728|Rational Suite Enterprise 1.0|1.0" \
ISSUED=23-JUN-1999 NOTICE="EBIZ Company" ck=60

```

Where:

Item in License Key	Explanation
INCREMENT	Tells FLEXlm that the information that follows defines a license key.
RationalSuiteEnterprise	Defines the FLEXlm “feature name”. FLEXlm uses this value as the name of the license key.
rational	The name of Rational’s license server daemon. It is defined for both floating and node-locked licenses.
1.0	The license key release number.
31-DEC-1999	The license key expiration date. License keys with the string “permanent” or “1-jan-0” in this field do not expire.
uncounted	The license count field. Node-locked products on Windows have “uncounted” in this field.
3665A1B59899	The license key code. This code is specific to all the information in the license key with the exception of the value of the “vendor_info” field. The key becomes invalid if any of the information in the key is changed (with the exception of the vendor_field).
VENDOR_STRING	Allows the vendor to encrypt vendor-specific information into the key.

Item in License Key	Explanation
3121-8470 NodeLocked ClearQueue:1.1,RequisitePro:4.0, soda_word:3.5,Rose_enterprise_windows:6.0,TestFactory:7.1,Robot:7.1,TestManager:7.1,LogViewer:7.1,VisualPureCoverage:6.0,PurifyNT:6.0,VisualQuantify:6.0,UnifiedProcess:5.1	The value of the <code>VENDOR_STRING</code> for a Rational Suite Enterprise license. 3121-8470 represents the product part number; “node-locked” indicates the product is node-locked. The remainder of the <code>VENDOR_STRING</code> value lists the Suite point products.
<code>DISK_SERIAL_NUM=14760cf6</code>	By default this is the disk serial number of the host machine on Windows systems.
<code>SUPERSEDE</code>	All Rational license keys include this option. Tells <code>FLEXlm</code> to use the most recent <code>INCREMENT</code> line in situations where two license keys with the same <code>INCREMENT</code> name appear in the same license file.
<code>vendor_info="43999S-0-728 Rational Suite Enterprise 1.0 1.0 "</code>	The customer’s account number and the product are defined in this field. These values are not encrypted into the license key code.
<code>ISSUED=23-JUN-1999</code>	Defines the date on which the license key was encrypted by Rational.
<code>NOTICE="EBIZ Company"</code>	Defines the customer’s company name.

Other License Key Options Not Used by Rational

The information below describes `FLEXlm` options that other software vendors commonly include in their `FLEXlm` implementations. Rational chose not to use these options because they did not meet a specific license enforcement need.

FEATURE

`FLEXlm` allows license keys to be defined using the `FEATURE` option instead of `INCREMENT`. Rational uses `INCREMENT` instead of `FEATURE` because `INCREMENT` supports multiple license keys with the same name in the license file. Rational does not ship license keys using `FEATURE`.

UPGRADE

Rational does not use the `UPGRADE` feature in the `INCREMENT` line. To define upgraded products, Rational uses a combination of `INCREMENT` and `SUPERSEDE`.

SUITE

Rational does not use the SUITE option to define Rational Suite license keys. Suite point products are defined using the `VENDOR_STRING` in the Rational Suite `INCREMENT` lines.

Diagnostic Tools

lmtools

The `lmtools` application from GLOBEtrotter is designed to help diagnose FLEXlm issues. It is available on Windows only. Rational installs this application with all products in the `<rational>\common` directory. If the FLEXlm 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 FLEXlm 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 FLEXlm Options File on page 49.

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 system unusable!

Windows Registry entries are located in:

HKEY_LOCAL_MACHINE\SOFTWARE\Rational Software\Licensing\1.0

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

Table 14 Rational Licensing Registry Entries

Key and Description	Default Value
UseLicenseServer Is this system using a license server to obtain its license keys?	FALSE
LicenseRequest Path of license request file	<Install Path>\common\rational_request.dat
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
LicenseServer Path of file containing name of license server	<Install Path>\common\rational_redirect.dat
LicenseRequestAddress E-mail address for sending license requests to Rational	auto-licensing@rational.com
LicenseServerName Name of system used as a license server	This registry entry appears when the system points to a license server.
ClientInstalled Does this system have client software installed?	TRUE
ServerInstalled Is this system a license server?	FALSE

Additional Help

FLEXlm Technical Information

For a summary of questions regarding FLEXlm, see the FLEXlm FAQs at <http://www.globetrotter.com/faq.htm>.

Licensing Messages

For a description of FLEXlm error codes, see the FLEXlm error code documentation at <http://www.globetrotter.com/chap12.htm>.

Licensing Glossary

AccountLink. Rational's Web-based license management tool. Customers can use this tool to request and return licenses to their Rational accounts.

ANY-HOST. A license key issued for ANY-HOST will run on any system, and is not tied to the customer's system ID. Startup, Evaluation and Emergency Keys must be configured to run on any machine, since the Back Office won't yet have the necessary information to encrypt into a specific key

Emergency Key. A temporary key that lets a customer use Rational software for a fixed period of time if they cannot use their own license for some reason. The duration of the Emergency Key is 5 days. Emergency Keys can be node-locked or floating. Emergency Keys are distributed by the Licensing Support Group and run on any host.

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 Sales team and run on any host.

Floating License. A license type that links products to a License Server system. Client systems obtain licenses from the License Server system 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.

GLOBEtrotter FLEXlm Server. Software license manager for Windows 95/98/2000, Windows NT, UNIX, Java, and VMS.

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

License. A legal right to use a product. A customer receives a license when they purchase the product. However, they need a License Key to actually associate the product and the system on which it is running with a license.

License Key. Generic term used in this document to describe keys that enable licenses on a customer system. 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 system. For hosting floating licenses, the License Key Administrator is installed when the Globetrotter FLEXlm server is installed on a License Server system.

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.

Node-Locked License. A type of license that links a product to a system. Typically, one node-locked license is issued per software copy.

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 system. Floating Permanent Keys are installed on a License Server system. Obtain Permanent Keys from the Rational Back Office. Note: A Term License Agreement, a variation of a permanent key, does have an expiration date. See *Term License Agreement*.

Permanent Key Code. The FLEXlm encrypted code that lets a customer run a particular Rational product using a Permanent Key.

Temporary Key. A short-term license key that lets a customer run Rational software products. Temporary licenses are not keyed to a specific system. Temporary Keys can be node-locked or floating. Node-locked Temporary Keys are installed on a client system. Floating Temporary Keys are installed on a License Server system. Temporary Keys are issued by the Rational Back Office and run on any host until the specified expiration date.

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

Temporary 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. The Temporary License Key Certificate is shipped to the customer with the software installation media.

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. TLAs are issued by Rational Sales and have an expiration date.

Vendor. A software supplier using the GLOBEtrouter FLEXlm license server. For example, Rational Software is a license server vendor.

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