Rational.

IBM Rational RequisitePro

IBM

Version 7.1

IBM Rational RequisitePro Installation and Upgrade Guide

Rational®

IBM Rational RequisitePro

Version 7.1

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Note
Before using this information and the product it supports, read the information in "Notices" on page 217.

7th edition, revised 2008

This edition applies to version **7.1.0.0 of IBM Rational RequisitePro (product number 5724G39)** and to all subsequent releases and modifications until otherwise indicated in new editions. This edition replaces S126-5304-01 and S126-5300-01.

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Preface

This preface introduces the purpose, audience, and structure of the this guide. It provides links to the current version of this guide, support resources, and related documentation.

About this book

This manual provides requirements and instructions for installing, configuring, and licensing IBM® Rational® RequisitePro® and its Web server component Rational RequisiteWeb. It includes administrative tasks for installing and configuring client and server components, in addition to basic installation instructions for team members who are installing the Rational RequisitePro client for Windows®.

Latest version of this document

The latest version of this document is available at the information center: http://publib.boulder.ibm.com/infocenter/reqpro/v7r1m0/

Who should read this book

This book is intended for the following audiences:

Audience	Chapter	Purpose
Administrator	1	• Plan the installation environment including servers, deployment, and licensing.
Administrator Database administrator	2	• Perform an initial installation. • Use the Rational RequisitePro scripts to configure a database for projects.
Administrator	3	Configure the Reporting server and install the reporting client
Web administrator	4	Install and configure RequisiteWeb for access by team members.
LDAP administrator	5	Configure Rational RequisitePro for LDAP user authentication.
Administrator	6	Configure FIPS encryption for additional security.
Team members Project leaders Administrator	7-9	• Install database client software. • Use a browser to access RequisiteWeb. • Install and license the Rational RequisitePro client for Windows. • Create a project. • Configure integration with Rational ClearQuest®. • Migrate a project database to a new database. • Configure e-mail for discussions and change notification.

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Audience	Chapter	Purpose
Administrator	10	Upgrade Rational software and Rational RequisitePro.
Administrator	11	Uninstall Rational software.
Administrator	12	Setup a license server
Web Administrator	Appendix	Customize the Rational Web Platform
All	Notices	Review legal notices

Contacting IBM Customer Support for Rational software products

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

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

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

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

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

Downloading the IBM Support Assistant

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

ISA includes these features:

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

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

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

Related information

This section provides information on related product documentation.

The latest version of this document, online help, and release notes are available at the information center: http://publib.boulder.ibm.com/infocenter/reqpro/v7r1m0/

Previous versions of this document and release notes are available from the IBM Publications Center.

To obtain previous versions:

1. Go to: http://www.ibm.com/shop/publications/order
2. At the IBM Publications Center, select a country.
3. Click **Search for Publications**.
4. Enter either the document title or publication number in the appropriate search field.
   - To search for a document by its title, enter the title in the **Search on** field.
   - To search for a document by its publication (Material ID) number, enter the number in the **Publication number** field.

For the most current information about features and known problems, see the *IBM Rational RequisitePro Release Notes* at the information center.

1 Planning the installation

This chapter provides a high-level guide to planning the installation of IBM Rational RequisitePro. Both administrators and users of the product should read this chapter before beginning the installation.

For the most current information about features and known problems, see the *IBM Rational RequisitePro Release Notes*, as described in "Related information" on page x.

Upgrading from a previous version

If your system currently has a version of Rational RequisitePro or other Rational products that are prior to version 7.1, they must be uninstalled before installing this release. Use the standard **Add or Remove Programs** utility in the Windows **Control Panel** to uninstall versions of Rational RequisitePro older than 7.1.

For upgrade information, see 10, "Upgrading IBM Rational software," on page 109.

If you are upgrading a previous version of Rational RequisitePro that includes an integration with Rational ClearQuest, review upgrade requirements for that product in the *IBM Rational ClearQuest and ClearQuest MultiSite Installation and Upgrade Guide* before you upgrade either product. See also, "Configuring the integration with Rational ClearQuest" on page 105.

Installation overview

The sequence of the chapters in this guide provides an approximate order for your installation process. Two exceptions are 10, "Upgrading IBM Rational software," on page 109 and 12, "Managing licenses with Rational Common Licensing," on page 119. These chapters are relevant early in your process if you are upgrading from a previous installation of Rational products and if you need to configure a license server.

Rational RequisitePro uses the IBM Installation Manager for installation. IBM Installation Manager is a program for installing, updating, and modifying packages. It helps you manage the IBM applications, or packages, that it installs on your computer. Installation Manager does more than install packages – it helps you keep track of what you have installed, determine what is available for you to install, and organize installation directories. For more information, see the IBM Installation Manager Information Center.

Preliminary configuration work is performed by system administrators, database administrators, and Web administrators before the team begins installing the client. That work includes the following tasks:

- Plan the installation and review system requirements
- Install database client software (for IBM DB2® UDB or Oracle), if applicable
- Perform an initial installation of the Rational RequisitePro client for Windows
- Configure a project database
- Configure a reporting server
- Configure a RequisiteWeb server
- Configure LDAP user authentication, if applicable

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- Configure FIPS encryption

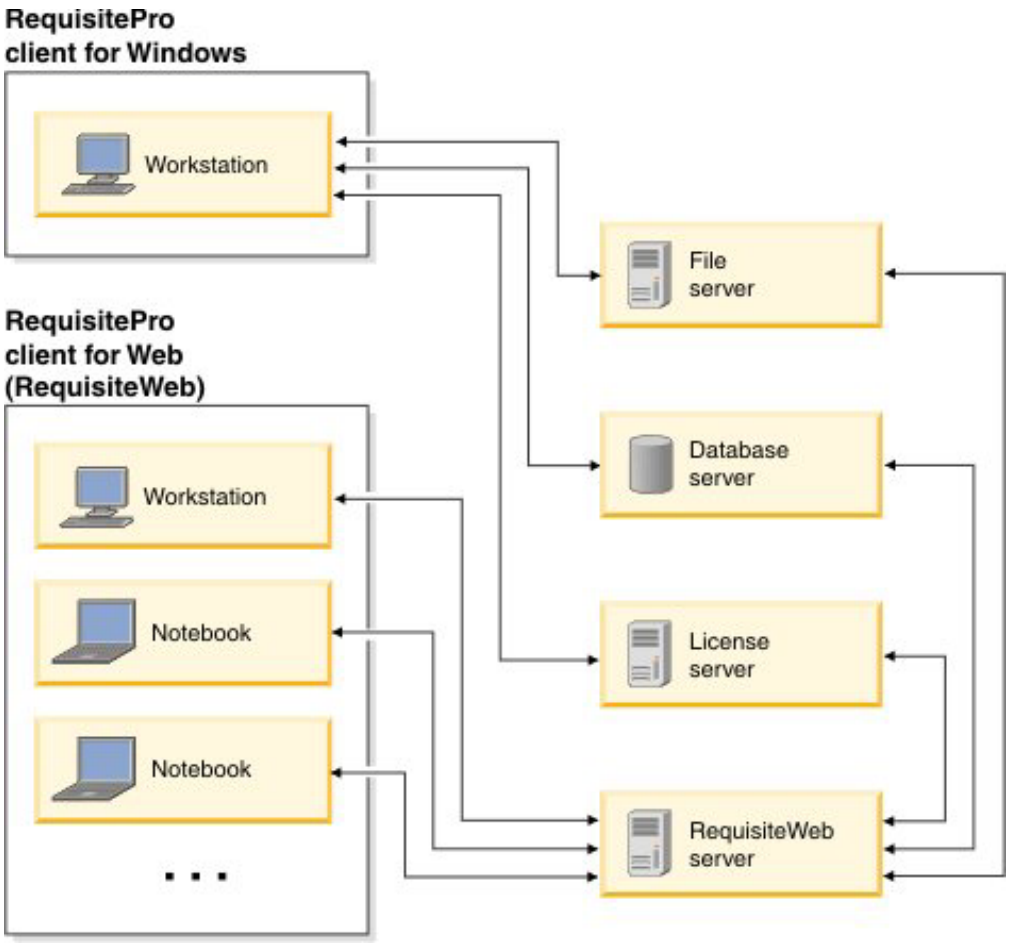
After this configuration work is complete, team members can install the Rational RequisitePro client for Windows or use RequisiteWeb clients to access projects. All team members who need access to a project in DB2 or Oracle must install database client software if they are using the Rational RequisitePro client for Windows; they must also create a database alias on the client computer.

Administrators can perform other tasks before or after team members have configured clients:

- Move project data to a new database using the Data Transport wizard
- Configure e-mail for Rational RequisitePro discussions
- Configure requirement change notification for a project
- Configure integrations with other Rational products

Planning your server and client environment

Rational RequisitePro can be configured to use a license server, project database server, a Web server for RequisiteWeb, and a reporting server. You can install the reporting server on the same computer as the RequisiteWeb server. See the following diagram for a simplified configuration of clients and servers. Clients include the Rational RequisitePro client for Windows and browsers for RequisiteWeb. Integrations with other IBM Rational products can require access to additional servers.



Integrations with other IBM Rational products can require access to additional servers. Administrators can configure user authentication using an LDAP directory on another server. In planning your Rational environment, determine server names, domains, and operating systems. Servers need to be highly available, and might need extra memory and disk space. Table 1 describes the types of servers you might need.

Table 1. Servers used with Rational RequisitePro

Type of server	Description
License server	If you purchased floating licenses, install and set up a server to administer the licenses. For more information, see 12, "Managing licenses with Rational Common Licensing," on page 119.
Database server	• If you are using an enterprise databases with Rational RequisitePro, you should install the database software on one or more dedicated servers. See 2, "Configuring a database," on page 7. • Install and configure the database vendor software before you install Rational RequisitePro. See 7, "Before installing Rational RequisitePro," on page 67. • Microsoft® Access Runtime is installed on the client for Windows when you install Rational RequisitePro; it does not require a dedicated server.
Web server	Web server components, known as RequisiteWeb, provide access to Rational RequisitePro projects from a Web browser on an intranet or the Internet. See 4, "Configuring RequisiteWeb," on page 27. • The Rational Web Platform (RWP) is the Web server for RequisiteWeb. Little or no configuration is required; however, to customize RWP, see the Appendix. • Install RWP on a server that does not have any other Web servers to avoid a port conflict that can cause RWP or the other Web server to fail on start up. If this is not possible, configure the other Web server to use ports that are not being used by RWP or change the RWP port, as described in the Appendix.
Reporting server	Rational RequisitePro reporting features, including the Report Management facility and the Report Designer client, require components that must be selected during initial installation. When you select the IBM Rational RequisitePro Reporting Server component, the required IBM Rational RequisitePro Web Server components are selected by default.

Rational RequisitePro installation workflow

Table 2 outlines the administrative tasks for installing and configuring Rational RequisitePro and RequisiteWeb. Complete these tasks prior to deploying Rational RequisitePro to your team. Table 3 on page 5 outlines tasks that you can perform after installing Rational RequisitePro.

Table 2. Rational RequisitePro installation and configuration tasks

Step	Task	Team member	Document to reference
1	If you are upgrading Rational RequisitePro from a previous version, see the upgrade information.	Administrator	10, "Upgrading IBM Rational software," on page 109

Table 2. Rational RequisitePro installation and configuration tasks (continued)

Step	Task	Team member	Document to reference
2	Review system and software requirements. Note the availability and system capabilities or versions of the following components. Record machine names, domains, and administrator credentials for later reference. • Database server and software. Not required for Microsoft Access database use in product evaluation or very small, local teams. • License server. • Optional RequisiteWeb server. • Optional reporting server. You can install this server on the same computer as the RequisiteWeb server. • Optional directory server for LDAP authentication. • Optional server for the Rational E-mail Reader for e-mail-enabled discussions. • Rational RequisitePro client for Windows PCs. • Microsoft Word and Excel on client for Windows PCs. Microsoft Word is required on client for Web PCs for optional offline editing. • Browsers for RequisiteWeb clients.	Administrator	"System and software requirements" on page 5
3	Review licensing and configure a license server.	Administrator	• 12, "Managing licenses with Rational Common Licensing," on page 119
4	Determine and configure the deployment.	Administrator	"Installation scenarios" on page 72
5	Install database client software if you plan to use DB2 or Oracle database for your Rational RequisitePro projects. Install this on the computer that you plan to use for your initial installation of Rational RequisitePro.	Administrator with consult from database administrator	"Installing database client software" on page 8
7	Perform an initial installation of Rational RequisitePro. This provides access to database configuration scripts. You can optionally use this installation to test deployment, licensing, LDAP, and FIPS encryption. If you install on a server, you can also install reporting components and Web components with this instance of Rational RequisitePro.	Administrator	"Performing an initial installation of Rational RequisitePro" on page 7
8	Configure an enterprise database for Rational RequisitePro projects; options include DB2, Oracle, and Microsoft SQL Server. Microsoft Access Runtime is installed with Rational RequisitePro for small, local projects or for testing your installation. Use the database configuration scripts, which are included in your initial installation (step 7).	Database administrator	2, "Configuring a database," on page 7
9	Configure the RequisiteWeb server.	Web server administrator	4, "Configuring RequisiteWeb," on page 27

Table 2. Rational RequisitePro installation and configuration tasks (continued)

Step	Task	Team member	Document to reference
10	Customize the Rational Web Platform for RequisiteWeb. (Not required for most RequisiteWeb installations.)	Web server administrator	Appendix
11	Configure the Reporting server	Web server administrator	3, "Configuring reporting," on page 25
12	Configure Rational RequisitePro for LDAP authentication (optional).	Administrator	5, "Configuring LDAP for RequisitePro," on page 45
13	Configure FIPS encryption	Administrator	6, "Configuring FIPS," on page 61
14	Deploy Rational RequisitePro to your team. Install Rational RequisitePro clients or configure browsers for access to RequisiteWeb.	Team members or administrator	7, "Before installing Rational RequisitePro," on page 67

Table 3. Rational RequisitePro post-installation administrative tasks

Step	Task	Document to reference
1	Configure the Rational E-mail Reader for discussions.	See "Configuring e-mail for discussions and change notification" on page 106.
2	Configure notification for requirement changes.	See the Rational RequisitePro Help topic ″Requirement change notification overview.″
3	Configure the integration of Rational RequisitePro and Rational ClearQuest.	See the Rational RequisitePro help, which is available at the information center and in the product at the **Help** menu.
4	Apply an interim fix or fix pack.	See the patch readme file that is included with the interim fix or fix pack. Also see "Updating the product" on page 84.
5	Repair or modify Rational products.	"Modifying a product installation" on page 84.
6	Uninstalling Rational RequisitePro	See 11, "Uninstalling Rational RequisitePro," on page 117.

System and software requirements

For information about hardware and software requirements, see the following Web sites:

- Rational RequisitePro client for Windows and related components: http://www.ibm.com/support/docview.wss?uid=swg27013777
- Rational RequisitePro Web components (RequisiteWeb): http://www.ibm.com/support/docview.wss?uid=swg27013775

Restrictions and guidelines

This section describes noteworthy restrictions and guidelines that affect the installation and use of Rational RequisitePro.

Microsoft Vista requires a Help program download

The Windows Help program is not included with the Windows Vista operating system. Vista users must download the Windows Help program at http://www.microsoft.com/downloads/details.aspx?FamilyID=6ebcfad9-d3f5-4365-

8070-334cd175d4bb&DisplayLang=en or search for and download the file WinHlp32.exe at the Microsoft Download Center (http://www.microsoft.com/downloads/) in order to view the following Rational RequisitePro Help files:

- Metrics Help
- Integrated Use Case Management Help (for integrating Rational Rose®)
- Rational RequisitePro Extensibility Interface (RPX) Help

Links to Rational RequisitePro Windows Help files result in errors on the Vista operating system unless the Help program is installed.

Viewing RequisiteWeb documents on Microsoft Vista

When the Rational RequisiteWeb server is installed on the Microsoft Vista operating system and a user attempts to view or create a project document in RequisiteWeb, a COM Java™ Exception error occurs. This is an unsupported configuration, because Vista is not a server operating system; however, you can resolve the problem by changing the launching user in the DCOM configuration for Microsoft Word:

1. On the Start menu, click Run and type `dcomcnfg`. The Component Services window opens.
2. Click Console Root > Component Services > Computers > My Computer > DCOM Config.
3. Right-click the Microsoft Word Document service and click Properties.
4. Click the Identity tab.
5. Click This user and enter a user name and password for an Administrator user who has full permissions.
6. Confirm the password and click OK.

2 Configuring a database

This chapter describes how to configure an enterprise database for Rational RequisitePro. It includes instructions on how to copy the scripts from a Rational RequisitePro installation to the database server, and how to use those scripts to configure your database for Rational RequisitePro projects.

Prerequisites

This chapter assumes you have installed IBM DB2 UDB, Oracle, or Microsoft SQL Server software on the database server. Refer to DB2, Oracle, or Microsoft documentation for information about installing that software.

If you are using a DB2 or Oracle database, you must install client software on client desktops and the RequisiteWeb server before you can access projects from those computers.

You must perform an initial installation of Rational RequisitePro to access database configuration scripts, as described in "Installing database configuration scripts" on page 8.

Performance of Rational RequisitePro can depend on the number of projects and requirements in a database schema. Consider creating additional schemas to manage large numbers of projects and requirements, and plan to separate large projects from one another in different schemas.

Performance is also impacted by insufficient hardware resources. Be sure to review the hardware and software requirements for Rational RequisitePro and your database vendor.

Performing an initial installation of Rational RequisitePro

Perform an initial installation of Rational RequisitePro to access the database configuration scripts, which the database administrator can copy to the database server. You can also use this initial installation to test deployment and licensing server configuration and install Web and reporting components; however, these administrative activities can be done at a later time and on different computers.

Follow the instructions in 8, "Installing software," on page 69 to install the Rational RequisitePro client for Windows using the IBM Installation Manager. Unless you are installing on the server that you plan to use for RequisiteWeb, you do not need to install the Web components, described in "Custom setup options" on page 69, with this initial installation. For more information, see 4, "Configuring RequisiteWeb," on page 27.

The installation of the Reporting server and client is also optional at this point. For more information, see 3, "Configuring reporting," on page 25.

Administrator privileges

To install IBM Rational products on a Windows operating system, you must be logged on to a Windows domain account that is a member of the local computer's Administrators group. You must also have the correct privileges regardless of the

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installation method (including silent installation) that you use. If you are not logged on with the appropriate privileges, the product installation fails. You do not see any information in the installation log file indicating that incorrect privileges caused the failure.

Installing database client software

Rational RequisitePro can be used with DB2, Oracle, Microsoft SQL Server, and Microsoft Access databases. To access Rational RequisitePro projects in DB2 or Oracle databases, you must install database client software on your computer before installing Rational RequisitePro. This is not required for Microsoft SQL Server or Access. See the DB2 or Oracle documentation for information about installing client software.

See 2, "Configuring a database," on page 7 for information about how to configure the DB2, Oracle, or SQL Server database for Rational RequisitePro projects. Use the Rational RequisitePro Data Transport wizard to move a Rational RequisitePro project from one database to another; see the Help for more information about the wizard.

The 64-bit Oracle client is not supported on Rational RequisitePro client computers and RequisiteWeb servers.

RequisiteWeb users do not need to install Rational RequisitePro, DB2, or Oracle client software on their desktops. To configure a RequisiteWeb server for access to a DB2 or Oracle database, install the database client software on the RequisiteWeb server.

Installing database configuration scripts

If you plan to use DB2, Oracle, or Microsoft SQL Server databases for Rational RequisitePro projects, you must configure your database schema with scripts that are provided with Rational RequisitePro. The installation of Rational RequisitePro installs the scripts with your Rational RequisitePro program files. The scripts are installed in the following locations:

- C:\Program Files\IBM\RationalSDLC\RequisitePro\database\db2
- C:\Program Files\IBM\RationalSDLC\RequisitePro\database\oracle
- C:\Program Files\IBM\RationalSDLC\RequisitePro\database\sqlserver

For information about how to use these scripts to configure a project database, see 2, "Configuring a database," on page 7.

Configuring DB2 for Rational RequisitePro

With Rational RequisitePro, you can use DB2 UDB for your project database. To create and access projects in the DB2 database, follow the instructions in this section for enabling your DB2 database compatibility. Rational RequisitePro supports multiple projects within a single DB2 schema. For information about creating a project with DB2, see "Creating a project in DB2" on page 102.

You must complete the following installation and configuration tasks before you can create Rational RequisitePro projects in DB2.

Required DB2 database information

To configure access to DB2 for Rational RequisitePro projects, perform the following tasks. You must have this information to run the database configuration

scripts, as described in “Running the scripts for DB2 version 8.2 or later” on page 11 and “Editing and running the scripts for DB2 version 8.1” on page 12:

- Identify the DB2 instance in which you are creating the database for Rational RequisitePro projects.
- Identify the DB2 administrator user ID and password that you will use when creating the DB2 schema for Rational RequisitePro.
- Identify the name of the DB2 database that you plan to create using the configuration scripts. This is the database you will use for Rational RequisitePro projects.
- Create an operating system user ID, such as `reqpro`, and a password on your DB2 server for logging in to the DB2 database. All projects must access the DB2 database by using the same user ID. After connecting to a DB2 database, Rational RequisitePro uses this user information to control access to a project.

Creating a DB2 schema for Rational RequisitePro

Use the DB2 scripts for Rational RequisitePro that are described in this section to create one or more databases and schemas on your DB2 server. These scripts configure a DB2 schema to store projects. The scripts allocate disk space for the database tables and indexes based on the following approximations:

- 25 projects
- 250 documents (10 per project)
- 125 document types (5 per project)
- 125 requirement types (5 per project)
- 1,250 user-defined attributes (10 per requirement type)
- 125 user groups (5 per project)
- 100 users
- 12,500 requirements (500 per project)
- 12,500 discussions (500 per project)

The scripts provide an initial size for the Rational RequisitePro schema. They do not constrain the size or number of projects. As the database administrator, you can customize the scripts to adjust the buffer pool size and tablespace allocations for tables and indexes to accommodate how your organization expects to use of Rational RequisitePro. There is a different set of scripts and a different procedure for configuring DB2 version 8.1 and DB2 version 8.2 or later, as noted in the following sections.

Use the scripts in Table 4 to create a Rational RequisitePro schema within your database in DB2 version 8.2 or later. Use the scripts in Table 5 on page 10 to create a Rational RequisitePro schema within your database in DB2 version 8.1.

Table 4. DB2 configuration scripts for DB2 version 8.2 or later.

Script	Description
createdb.bat (version for the Windows operating system)	Creates a database on the Windows operating system; includes settings for adjusting the buffer pool size and tablespace allocations for tables and indexes; invokes the other scripts.

Table 4. DB2 configuration scripts for DB2 version 8.2 or later. (continued)

Script	Description
createdb.sh (version for UNIX® systems and Linux)	Creates a database on UNIX systems or Linux; includes settings for adjusting the buffer pool size and tablespace allocations for tables and indexes; invokes the other scripts.
data.sql	Inserts initial data into the database.
DB2Upgrade71.bat	Updates an existing RequisitePro database created prior to 7.1 to the 7.1 schema
DB2SchemaUpgrade71.sql	Creates new schema objects for the 7.1 database.
foreign.sql	Creates foreign key relationships between tables.
indexes.sql	Creates indexes on tables to enhance performance.
rqdelete_project.sql, rqdrop_view.sql, rqdrop_views.sql	Stored procedures.
reqdelproj_block.sql, rqprojlock_delete.sql, rqprojlock_insert.sql	Triggers.
tables.sql	Creates tables and a primary key for each table. This script creates a schema with the same name as the operating system user ID for the DB2 server.

Table 5. DB2 configuration scripts for DB2 version 8.1.

Script	Description
buffpool.sql	Allocates memory to be used for performing database queries.
createdb.sql	Creates a database.
data.sql	Inserts initial data into the database.
DB2SchemaUpgrade71.sql	Creates new schema objects for the 7.1 database.
foreign.sql	Creates foreign key relationships between tables.
grant.sql	Grants permissions to run stored procedures. This script is generated by the package.sql script.
indexes.sql	Creates indexes on tables to enhance performance.
package.sql .	Generates **grant.sql**
procedures.sql	Compiles and loads stored procedures for deleting or moving projects in the DB2 database. This script is only required for configuring DB2 on UNIX systems and Linux or after upgrading DB2 for Windows with some fix packs. For more information, see “Stored procedures for DB2 version 8.1” on page 14 and “Compiling stored procedures for DB2 version 8.1” on page 15.

Table 5. DB2 configuration scripts for DB2 version 8.1. (continued)

Script	Description
putprocs.sql	Loads stored procedures into a schema. This script is intended for use on Windows operating systems only.
tables.sql	Creates tables and a primary key for each table. This script creates a schema with the same name as the operating system user ID for the DB2 server.
tablespace.sql	Creates tablespaces for data and indexes. Creates disk files to support these tablespaces.
triggers.sql	Creates triggers.

Copying the Rational RequisitePro scripts

You can copy the database creation scripts from any installation of the Rational RequisitePro client for Windows. Copy the scripts to a subdirectory on your DB2 database server.

The DB2 scripts are located by default in the following installation directories:

- For DB2 version 8.1 on the Windows operating system:
  `C:\Program Files\IBM\RationalSDLC\RequisitePro\database\db2\windows`
- For DB2 version 8.1 on UNIX systems or Linux:
  `C:\Program Files\IBM\RationalSDLC\RequisitePro\database\db2\unix`
- For DB2 version 8.2 or later on the Windows operating system:
  `C:\Program Files\IBM\RationalSDLC\RequisitePro\database\db2\windows\8.2`
- For DB2 version 8.2 or later on UNIX systems or Linux:
  `C:\Program Files\IBM\RationalSDLC\RequisitePro\database\db2\unix\8.2`

Be sure to perform the following tasks:

- For DB2 version 8.1, remove the read-only option for all scripts.
- For DB2 version 8.2 or later, remove the read-only option from the createdb.bat or createdb.sh script to adjust the buffer pool size and tablespace allocations for tables and indexes.
- Check the path of the scripts subdirectory to ensure that it does not contain any spaces.
- If your database server is running on an international operating system, check the path to these scripts to ensure that it does not include folders with double-byte character names.

Running the scripts for DB2 version 8.2 or later

This section describes steps for running the Rational RequisitePro database configuration scripts for DB2 version 8.2 or later. For instructions on configuring DB2 version 8.1, see “Editing and running the scripts for DB2 version 8.1” on page 12. To use the configuration scripts, you must know the values for the parameters described in Table 6.

Table 6. Required parameters for running the createdb.bat script.

Parameter	Description
`<instance>`	The instance in which you are creating your database; the instance must already exist

Table 6. Required parameters for running the createdb.bat script. (continued)

Parameter	Description
<database>	Database name to be created
<user>	DB2 server operating system user name for RequisitePro projects, such as reqpro
<password>	DB2 server operating system user password for RequisitePro projects
<db2admin>	Administrator user ID specified during your DB2 installation
<db2adminpswd>	Administrator password
<path1>	Drive and path for storing system managed tablespace files for temporary data such as sorting information (must be different from path2 and path3)
<path2>	Drive and path for storing system managed tablespace files for temporary data such as sorting information (must be different from path1 and path3)
<path3>	Drive and path for storing database managed tablespace files for storing tables and indexes (must be different from path1 and path2)

After copying the scripts to DB2 server, perform the following steps:

1. Log on to the DB2 server as the DB2 administrator user and navigate to the directory that contains the installation scripts for DB2 version 8.2.
2. Adjust the buffer pool size and tablespace allocations for tables and indexes by editing the SIZE parameters in the createdb.bat script.
3. Open a DB2 Command Window to run the createdb.bat script on the Windows operating system or the createdb.sh script on the UNIX or Linux operating system.
4. Depending on your operating system, use the parameters described in Table 6 on page 11 to run one of the following scripts:
   - On the Windows operating system:

     ```
     createdb.bat <instance> <database> <user> <password> <db2admin> <db2adminpswd>
     <path1> <path2> <path3>
     ```

   - On UNIX systems or Linux:

     ```
     createdb.sh <instance> <database> <user> <password> <db2admin> <db2adminpswd>
     <path1> <path2> <path3>
     ```

   If error messages are displayed indicating that a connect reset failed, ignore them. When the installation is complete, the following message is displayed: `Database installation complete. Check createdb.log for messages and errors.`

The database creation for DB2 version 8.2 or later is complete. For information about configuring clients and RequisiteWeb servers, see "Setting up computers for DB2 access" on page 16.

Editing and running the scripts for DB2 version 8.1

This section describes steps for running the Rational RequisitePro database configuration scripts for DB2 version 8.1. For instructions on configuring DB2 version 8.2 or later, see "Running the scripts for DB2 version 8.2 or later" on page 11.

The following tasks must be done in order:

1. Open each script and replace the variables with the following information:

Variable	Description
<database>	Database name to be created
<instance>	The instance in which you are creating your database; the instance must already exist
<user>	DB2 server operating system user name for RequisitePro projects, such as reqpro
<password>	DB2 server operating system user password
<db2admin>	Administrator user ID specified during your DB2 installation
<db2admin_pwd>	Administrator user password specified during your DB2 installation
<path1>	Drive and path for storing system managed tablespace files for temporary data such as sorting information (must be different from path2 and path3)
<path2>	Drive and path for storing system managed tablespace files for temporary data such as sorting information (must be different from path1 and path3)
<path3>	Drive and path for storing database managed tablespace files for storing tables and indexes (must be different from path1 and path2)
<script_path>	Location of scripts on your database server

2. Make sure that the <path1>, <path2>, and <path3> directories exist.
3. Optional: Update buffpool.sql SIZE clauses according to DB2 tuning guidelines.
4. Optional: Update tablespace.sql to increase the number of pages for each data file.

Running the DB2 configuration scripts on Windows systems: After you edit the scripts, be sure that you are logged in to your DB2 server as an administrator to run the scripts. Use the DB2 Command Window to issue the script commands. Run the scripts in the following order with the indicated syntax:

```
db2 -l <path_to_scripts>\createdb.log -tf <path_to_scripts>\createdb.sql

db2 -l <path_to_scripts>\createdb.log -tf <path_to_scripts>\buffpool.sql

db2 -l <path_to_scripts>\createdb.log -tf <path_to_scripts>\tablespace.sql

db2 -l <path_to_scripts>\createdb.log -tf <path_to_scripts>\tables.sql

db2 -l <path_to_scripts>\createdb.log -tvf <path_to_scripts>\foreign.sql

db2 -l <path_to_scripts>\createdb.log -tf <path_to_scripts>\indexes.sql

db2 -l <path_to_scripts>\createdb.log -tf <path_to_scripts>\data.sql

db2 -l <path_to_scripts>\createdb.log -td@ -f <path_to_scripts>\
triggers.sql

db2 -l <path_to_scripts>\createdb.log -tf <path_to_scripts>\putprocs.sql

db2 -l <path_to_scripts>\createdb.log -td@ -f <path_to_scripts>\package.sql

db2 -l <path_to_scripts>\createdb.log -tf <path_to_scripts>\grant.sql
```

```
db2 -l <path_to_scripts>\createdb.log -tf <path_to_scripts>\
DB2SchemaUpgrade71.sql

db2 terminate
```

If you receive a `sql0598w` warning after running the tables.sql script, disregard it.

Running the DB2 configuration scripts on UNIX systems and Linux: After you edit the scripts, be sure that you are logged in to your DB2 server as an administrator to run the scripts. Use the DB2 Command Window to issue the script commands. Run the scripts in the following order with the indicated syntax:

```
db2 -l /createdb.log -tf createdb.sql

db2 -l /createdb.log -tf buffpool.sql

db2 -l /createdb.log -tf tablespace.sql

db2 -l /createdb.log -tf tables.sql

db2 -l /createdb.log -tvf foreign.sql

db2 -l /createdb.log -tf indexes.sql

db2 -l /createdb.log -tf data.sql

db2 -l /createdb.log -td@ -f triggers.sql

db2 -l /createdb.log -td@ -f package.sql
```

The putprocs.sql script is not included in this list; that script is intended for configuration on Windows only. If you receive warnings after running the tables.sql or `package.sql` scripts, disregard the warnings. Next, before running the procedures.sql script, see the following sections "Stored procedures for DB2 version 8.1," "Supported compilers on UNIX systems and Linux," and "Compiling stored procedures for DB2 version 8.1" on page 15.

Stored procedures for DB2 version 8.1

The DB2® Universal Database™ implementation for Rational RequisitePro requires stored procedures on the DB2 server for deleting or moving projects. These stored procedures run select statements to identify all information specific to a single project in the database. This identification is only required when deleting or moving a project.

The stored procedures (.sar files) that are installed with Rational RequisitePro do not meet the current requirements for DB2 on the UNIX systems and Linux platforms. The Windows stored procedures might be obsolete after you upgrade the DB2 server software with fix packs. If this occurs, you might encounter problems when deleting or moving projects in DB2. The Rational RequisitePro installation includes a script, procedures.sql, that you can use to compile the correct stored procedures for your operating system, t. For instructions on running this script, see the section "Compiling stored procedures for DB2 version 8.1" on page 15.

Supported compilers on UNIX systems and Linux: This section lists the supported C/C++ compilers for DB2 on various UNIX operating systems and

Linux. You must have a C/C++ compiler to create the stored procedures for deleting and moving projects in DB2. If you are not using one of these compilers, see your DB2 documentation for instructions on how to configure DB2 to detect and run your installed compiler.

Table 7. Supported C/C++ compilers for DB2 on UNIX operating systems and Linux.

Operating system	Compiler
AIX	• IBM C for AIX Version 3.6.6 (Version 3.6.6.3, 4.0, and 5.0 for 64-bit) • IBM C Set++ for AIX Version 3.6.6 (Version 3.6.6.3 for 64-bit) • IBM VisualAge® C++ Version 4.0, 5.0 (32-bit and 64-bit)
HP-UX	• HP C Compiler Version A.11.00.03 • HP C++ Version A.03.25
Linux	• GNU/Linux gcc version egcs-2.91.66 (egcs-1.1.2 release) • GNU/Linux g++ version egcs-2.91.66 (egcs-1.1.2 release)
OS/2®	• IBM VisualAge C++ for OS/2 Version 3.6.5 and 4.0
Solaris	• Forte/Workshop Compiler C Versions 4.2 (for 32-bit), and 5.0, 6.0 and 6.1 (for 32-bit and 64-bit) • Forte/Workshop Compiler C++ Version 4.2 (for 32-bit) and 5.0, 6.0 and 6.1 (for 32-bit and 64-bit) Note: These compilers were formerly called 'SPARCompiler'.

Compiling stored procedures for DB2 version 8.1

This section describes the use of the procedures.sql script to compile the following stored procedures and load them into your DB2 schema:

- rqdelete
- rqdropviews

Prerequisites: You must have the following components installed on the DB2 database server to compile the stored procedures:

- DB2 Application Development Client
- A DB2-supported C/C++ compiler

If the supported default compiler is not installed on the DB2 server operating system, see the DB2 documentation to obtain information about configuring DB2 to perform the following actions:

1. Detect the installed C/C++ compiler
2. Use the compile command for the installed compiler

Running the procedures.sql script: To run the procedures.sql script, run the following script command:

```
db2 -l <path to log file>procedure.log -td@ -f procedure.sql
```

If the application developer is not installed or the compiler is not set up correctly, the script output might include the following errors:

```
DB21034E The command was processed as an SQL statement because it was not a
valid Command Line Processor command. During SQL processing it returned:
SQL7032N SQL procedure "RQDROP_VIEW" not created. Diagnostic file is
"P2284867.log". SQLSTATE=42904 CC: not found
```

If the script is successful, it creates the following stored procedures and loads them into the DB2 schema:

- rqdelete.sar
- rqdropviews.sar

Setting up computers for DB2 access

For information about configuring Rational RequisitePro clients and RequisiteWeb servers for use with projects in DB2, see "Defining a DB2 database alias" on page 101.

Configuring Oracle for Rational RequisitePro

With Rational RequisitePro, you can use Oracle for your project database. To create and access projects in the Oracle database, follow the instructions in this section for enabling Oracle database compatibility. Rational RequisitePro supports multiple projects within a single Oracle schema. To create a project in the Oracle database, see the "Creating a project in Oracle" on page 103.

You must complete the following installation and configuration tasks before you can create Rational RequisitePro projects in Oracle.

Oracle database administration

Be sure to set the initialization parameter, OPEN_CURSORS, to at least 110.

To configure access to Oracle for projects, establish the following information:

- Oracle database server name (TCP/IP host name)
- Oracle database alias or service name
- Oracle schema name for storing projects
- Your user ID for logging on to the Oracle database
- Your user password for logging on to the Oracle database

The following sections provide instructions for configuring the last three of these items.

Creating an Oracle schema for Rational RequisitePro

Oracle database administration enables you to create multiple schemas within your Oracle database instance. The Rational RequisitePro database implementation is compatible with all Oracle-supported platforms. Use the scripts listed below to create a Rational RequisitePro user and schema within Oracle for storing your projects. The scripts are designed to initially allocate disk space for the various database tables and indexes based on the following approximations:

- 25 projects
- 250 documents (10 per project)
- 125 document types (5 per project)

- 125 requirement types (5 per project)
- 1,250 user defined attributes (10 per requirement type)
- 125 user groups (5 per project)
- 100 users
- 12,500 requirements (500 per project)
- 12,500 discussions (500 per project)

The scripts provide an initial size for the Rational RequisitePro schema. They do not place constraints on size or number of projects.

Extents are set to the same size as the initial allocations. They define additional tablespace that Oracle will allocate if the original allocation becomes insufficient. You can customize the scripts to adjust the tablespace allocations for tables and indexes to accommodate your organization's expected use of Rational RequisitePro. See the section "Editing scripts for creating an Oracle schema" on page 18.

Schema creation scripts

The following scripts are used for creating a Rational RequisitePro schema within your Oracle database. They can be run automatically by running the main script, CREATE_REQPRO, as described in the procedure "Creating a schema" on page 19, or you can run them individually as needed.

CREATE_REQPRO
Establishes a log that can be used to review the results of running the script and runs the other scripts listed.

CREATE_USER
Creates the default Rational RequisitePro user (REQPRO) and password (REQPRO) and connects to the database with that user ID.

DATA Inserts data into the RqKeys and RqRequisite tables.

FOREIGN
Creates foreign key relationships between tables.

FUNCTIONS
Creates customer-defined functions for use within Rational RequisitePro.

GRANT_ROLE
Creates a user role with access to the Rational RequisitePro schema objects.

INDEXES
Creates indexes for the Rational RequisitePro database.

ORACLEUPGRADE71
Updates an existing RequisitePro database created prior to 7.1 to the 7.1 schema.

ORACLESCHEMAUPGRADE71
Creates new schema objects for the 7.1 database.

PRIMARY
Creates primary keys for each table in Rational RequisitePro.

PROCEDURES
Creates stored procedures for use within Rational RequisitePro.

SEQUENCE
Creates sequences and triggers for auto-sequencing primary keys.

TABLES
Creates tables for the Rational RequisitePro database.

TABLESPACE
Creates tablespaces for data and indexes. Creates disk files to support these tablespaces.

Copying the Rational RequisitePro scripts

After installing Rational RequisitePro, the database creation scripts are located in `C:\Program Files\IBM\RationalSDLC\RequisitePro\database\oracle`.

Copy the scripts to a subdirectory on your Oracle database server. Create an Oracle directory below the home directory on the server.

If your database server is running on an international operating system, be sure that the path to these scripts does not include folders with double-byte character names.

Editing scripts for creating an Oracle schema

Changing the name of your schema (optional): To change the name of your schema to a different entry other than the default, modify the following entries in the `Create_ReqPro` script:

```
#DEFINE ReqPro_Data= schemaName_DATA
#DEFINE ReqPro_Index=schemaName_INDEX
```

Modifying the user name and password (optional): To create the schema with a different entry than the default user name and password values of ″ReqPro″, modify the following entries:

```
DEFINE USR=reqpro
DEFINE PWD=reqpro
```

Do not use non-English characters when entering the password for the schema.

Specifying the path for the schema scripts: Edit the `DEFINE PATH` entry to indicate the full path where the Oracle scripts for Rational RequisitePro are located. The suggested path (from “Copying the Rational RequisitePro scripts”) is `DEFINE PATH="$HOME/sql/"`.

Do not use spaces when entering the full path to where the SQL scripts for Rational RequisitePro are located. If your environment limits your path to a maximum 8-character name for directories, reflect this format in your entry.

Indicating data and index files directory: Edit the `DEFINE ORACLE_DATA` entry to indicate the path and directory where the data file for the data table space will be created:

```
DEFINE ORACLE_DATA=<full path>/ORACLE_DATA/
```

Edit the `DEFINE ORACLE_INDEX` entry to indicate the path and directory where the data file for the index table space will be created:

```
DEFINE ORACLE_INDEX=<full path>/ORACLE_INDEX/
```

You must create both the `ORACLE_DATA` and the `ORACLE_INDEX` subdirectories in your path before running the script.

Specifying a temporary tablespace: Edit the DEFINE TEMP entry in the CREATE_REQPRO script to assign temporary tablespace for storing temporary objects for the user's operations.

```
DEFINE TEMP=TEMP
```

Make sure that the value for this entry is a valid, existing tablespace in your Oracle database. Some versions of Oracle use TEMPORARY_DATA rather than TEMP. Your installation of Oracle may contain a custom name for the temporary tablespace.

Customizing disk space allocation for database objects: The schema creation scripts are designed to allocate disk space for the various database tables and indexes that are used by an average set of projects, as described in "Creating an Oracle schema for Rational RequisitePro" on page 16.

If you anticipate a much larger or smaller requirement for your organization's use of Rational RequisitePro, you can customize the disk space allocation specified in the CREATE_REQPRO script to accommodate your projected capacity.

Edit the following sizing variables:

SMALL = 10K

MEDIUM = 100K

LARGE = 1000K

REQS = 6000K

REQHIST
= 75000K

Note: The last two variables, REQS and REQHIST, are used for the requirements (RqRequirements) and requirement history (RqRequirementHistory) tables, respectively.

Edit the DEFINE DATA_SIZE and DEFINE INDEX_SIZE entries to reflect the change in the total size of the database caused by your edits to the sizing variables.

Modifying the limits of the VARCHAR2 data type: Rational RequisitePro uses the VARCHAR2 data type to store searchable text for requirement text, revision history reasons, and textual attribute values.

The Oracle scripts for Rational RequisitePro set the limit on this data type to 2,000 characters. Current versions of Oracle support up to 4,000 characters, allowing you to expand the constraints on the size of the searchable text. To modify this limit, increase the MAX_VARCHAR value in the CREATE_REQPRO script from 2,000 to a maximum of 4,000.

Creating a schema

To create a Rational RequisitePro schema in Oracle:

1. Edit the CREATE_REQPRO script as described in the section "Editing scripts for creating an Oracle schema" on page 18.
2. On the Oracle database server, log on to SQL*Plus with system administrator permissions.

   If you run SQL*Plus from a remote client, you need to edit the Rational RequisitePro CREATE_USER script. Change the entry connect &3/&4 to the following: **connect &3/&4@**<*target Oracle database server alias*>

3. Run the CREATE_REQPRO script by using the following command:
   @<*setup directory*>**\CREATE_REQPRO**

This script runs the schema creation scripts. A message opens upon successful completion of the schema creation. If errors occur or the completion message is not displayed, review the CREATE_REQPRO.LOG log.

User ID for accessing Oracle database

All Rational RequisitePro projects should access the Oracle database using the same user ID, which was created during the schema creation process already described. The initial user name and password created by the script are **reqpro** and **reqpro**, unless you modified the CREATE_REQPRO script as described in "Editing scripts for creating an Oracle schema" on page 18. You can also change the password using your Oracle database utilities.

Each user does not need a separate Oracle account because Rational RequisitePro uses its own user and user group tables to control access to a project.

Using multiple projects within an Oracle database

Rational RequisitePro supports multiple projects within a single Oracle schema. For instructions about adding an Oracle database project within Rational RequisitePro, see "Creating a project in Oracle" on page 103. Use the same schema name for each of your Rational RequisitePro projects.

Connecting projects across databases

Perform the following steps to enable cross-project traceability between projects in distributed Oracle databases.

Creating a reference to the remote database instance

To run traceability queries between projects in distributed Oracle databases, define a reference in each database instance that refers to the remote database instances. Edit the tnsnames.ora file, located on the Oracle server, to define the name, host, port, and protocol of the remote service.

The following example shows the syntax for defining the database instance "server02" as a remote database server to "server01" in the tnsnames.ora file:

```
Server02.world =

(DESCRIPTION =

(ADDRESS_LIST =

(ADDRESS =

(COMMUNITY = tcp.world)

(PROTOCOL = TCP)

(Host = server02)

(Port = 1521)))

(CONNECT_DATA = (SID = ORCL)))
```

In similar manner, the ″server02″ database instance needs an entry to define the remote ″server01″ database instance:

```
Server01.world =

(DESCRIPTION =

(ADDRESS_LIST =

(ADDRESS =

(COMMUNITY = tcp.world)

(PROTOCOL = TCP)

Host = server01)

(Port = 1521)))

(CONNECT_DATA = (SID = ORCL)))
```

Note: This feature was tested using TNSNAMES for service name resolution. The use of Oracle Names Server or any other name server mechanism requires a different setup.

Creating a database link to the remote database

Next, create a database link to each remote database in each database instance using a SQL utility. The link should be defined under the user account that owns the Rational RequisitePro schema. The following example shows the required syntax for linking to ″server02″ from ″server01″:

```
   CREATE DATABASE
LINK server02.world
   CONNECT TO reqpro IDENTIFIED BY reqpro
   USING `server02.world';
```

A similar statement should be run on the server02 database instance in order to define a link to server01.

If the **db_name.db_domain** does not result in a unique name for each database for which a link is required, use the `@connection_qualifier` syntax to create a unique name.

This naming convention will work regardless of the setting of the **global_names** parameter in the initorcl.ora file.

Defining database aliases on each Rational RequisitePro client

Define SQL*Net database aliases or Net8 service names (resulting in local tnsnames.ora file entries) on each Rational RequisitePro client (or shared centrally on a network) for each database instance. For cross-project traceability to function correctly, the database alias or service name on the client must match the database link you defined in the sections “Creating a reference to the remote database instance” on page 20 and “Creating a database link to the remote database.”

Setting up desktops for Oracle access

Direct users to use the Oracle SQL*Net or Net8 Easy Configuration tool to configure access from their clients to the Oracle database server. If they plan to share projects with other users, they must use a consistent database alias or service name.

Creating a project in Oracle

For information about creating a Rational RequisitePro project in Oracle, see "Creating a project in Oracle" on page 103. Use the same schema name for each of your Rational RequisitePro projects.

Configuring SQL Server for Rational RequisitePro

With Rational RequisitePro, you can use Microsoft SQL Server for your project database. To create and access Rational RequisitePro projects in a SQL Server database, follow the instructions in this section for enabling SQL Server database compatibility.

Rational RequisitePro supports multiple projects within a single SQL Server schema. This database implementation is compatible with all SQL Server-supported platforms; and it can use SQL Server 2000 ″Named Instances.″

This section includes database management information for setting up a SQL Server schema to accommodate projects. To create a project in the SQL Server database, see "Creating a project in SQL Server" on page 104.

If you have an existing Rational RequisitePro database in SQL Server and your SQL Server software was upgraded to version 7.0 from a previous version, you must run the following stored procedure in SQL Server to set the database compatibility level to SQL Server 7.0. This is required to prevent SQL Server syntax errors in Rational RequisitePro.

sp_dbcmptlevel <*database name*>**, 70**

For example:

```
sp_dbcmptlevel Rational RequisitePro, 70
```

You must complete the following installation and configuration tasks before you can create Rational RequisitePro projects in SQL Server.

SQL Server database administration

Before you configure access to SQL Server from Rational RequisitePro, establish the following information:

- SQL Server machine name (TCP/IP host name).
- SQL Server default database for Rational RequisitePro projects, such as `Rational RequisitePro` Database names that contain spaces are not supported for use with Rational RequisitePro projects.
- A user ID for logging on to the SQL Server database, such as `ReqPro`.
- A user password for logging on to the SQL Server database, such as `reqpro`.

See the following sections for detailed instructions.

Creating a SQL Server schema for Rational RequisitePro

Use the following instructions to create a SQL Server database and schema for Rational RequisitePro projects. The initial database size is based on the following approximations:

- 25 projects
- 250 documents (10 per project)
- 125 document types (5 per project)
- 125 requirement types (5 per project)
- 1,250 user-defined attributes (10 per requirement type)
- 125 user groups (5 per project)
- 100 users
- 12,500 requirements (500 per project)
- 12,500 discussions (500 per project)

To create a database in SQL Server 7.0:

1. Enter a name for the Rational RequisitePro database. The database has an .MDF extension. A suggested database name is ″RequisitePro.″

   If you use a different database name, modify the database configuration scripts to reflect the actual name.
2. Set the initial size of the database to 150 MB.
3. Set the initial size of the transaction log file (.LDF) to one third the size of the database (in this case, 50 MB).

Schema creation scripts

The scripts listed are used for creating a Rational RequisitePro schema within your SQL Server database.

- Login and User. Creates a default Rational RequisitePro login and user. For more information, see ““Default login and user” on page 24.”
- Tables and Indexes. Creates the tables and indexes required by Rational RequisitePro.
- Triggers. Creates triggers that enforce cascading deletes.
- Initial Data. Inserts data required by Rational RequisitePro when it first runs.

Copying the Rational RequisitePro scripts

After installing Rational RequisitePro, the database creation scripts are located in `C:\Program Files\IBM\RationalSDLC\RequisitePro\database\sqlserver`.

Copy the scripts to a subdirectory on your SQL Server database server. Create a `sql` directory below the home directory on the server.

Running schema creation scripts

The scripts listed are used for creating a schema within your SQL Server database. Run the scripts in the order given. Run the scripts individually by using the SQL Server Query Analyzer. Select the Rational RequisitePro database when running the scripts.

To run the provided SQL Server database scripts, you must be logged in as **sa** or as a user with system administrator and security administrator privileges.

1. login and user.sql
2. tables and indexes.sql
3. triggers.sql

4. initial data.sql

Default login and user

The schema creation scripts create default user information for accessing and creating projects in SQL Server. The user name also establishes the ownership and name of the schema (by default, **reqpro**). The default user permissions are required for use with Rational RequisitePro.

Note: If you modify the login and user.sql script to use a different login and user name, you need to modify subsequent scripts.

Note: Do not use non-English characters when entering the password for the schema.

The scripts create the following default user information:

User	Login	Password
ReqPro	ReqPro	reqpro

The ReqPro user is assigned the following statement permissions in SQL Server:

User Statement Permissions

ReqPro
Create Default, Create Procedure, Create Rule, Create Table, Create View

As the owner of the Rational RequisitePro database objects, the ReqPro user is assigned the following database permissions in SQL Server:

User Database Permissions

ReqPro
Select, Insert, Update, Delete, DRI on all Tables and Views

Creating a project in SQL Server

For information about creating a project, see “Creating a project in SQL Server” on page 104. Use the same schema name for each of your Rational RequisitePro projects.

3 Configuring reporting

There are two software components required to design and use reports: the BIRT Report Designer client for creating and customizing reports, and the server-based Rational RequisitePro Report Management facility for launching reports. Select the optional reporting components to support these capabilities when installing Rational RequisitePro using the IBM Installation Manager.

The BIRT (Business Intelligence Reporting Tool) Report Designer client is used by team leads to create and modify report templates. The BIRT Report Designer client must be configured to connect to the Reporting server by adding the Rational ODA driver.

The Rational RequisitePro Report Management facility is a server-based application that is accessed by team members through a standard Web browser. It is used to launch reports (using report templates) and make minor modifications, such as renaming a report template.

Installing the Reporting server

To configure the Report Management facility for Web access by your team, you must select the optional install package feature **Reporting Server** when installing Rational RequisitePro on a server.

RequisiteWeb components are included as required components with the installation of the Reporting server. You can install the Reporting server on the same computer as the RequisiteWeb server.

Installing the reporting client

Team leads and project managers should select the **Reporting Client** component during the installation of the Rational RequisitePro client for Windows to configure the BIRT Report Designer client for creating and modifying report templates.

The installation and configuration of this client is a three-step process:

1. Download the BIRT Report Designer client from the publicly available Eclipse open-source development site.
2. When installing the Rational RequisitePro client for Windows, select the optional install package feature **Reporting Client**.
3. Copy the IBM Rational ODA driver to the BIRT Report Designer client plugin.

The procedure below describes the steps to download BIRT from the Eclipse Open Source Web site, and then add two JAR files which contain the new driver.

Note: You must download BIRT version 2.2.2.

To install and configure the Report Designer client:

1. Point your Web browser to http://download.eclipse.org/birt/downloads/.
2. Click the **RCP Designer** button.
3. Select a download server and download the file. A zip file containing BIRT is created in the location you selected.

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4. Extract the files in the zip file. A new folder named `birt-r-rcp-report-designer-2_2_2` is created. You can optionally rename this folder to `Report Designer`.
5. Copy both JAR files from the folder `C:\ProgramFiles\IBM\RationalSDLC\RequisitePro\Reporting` into the `plugins` folder for Report Designer.
   - `com.ibm.rational.report.oda.reqpro.runtime_1.0.0.jar`
   - `com.ibm.rational.report.oda.reqpro.ui_1.0.0.jar`
6. Edit the `BIRT.ini` file and add `-clean` to the beginning of the file.

Now you can launch the Report Designer by double-clicking `BIRT.exe`.

4 Configuring RequisiteWeb

You can use RequisiteWeb to read, create, and modify Rational RequisitePro project requirements, documents, and projects on an intranet or the Internet. RequisiteWeb uses the Web browsers to provide platform-independent, thin-client access to projects. RequisiteWeb can access projects that use IBM DB2, Oracle, Microsoft SQL Server, or Microsoft Access databases. RequisiteWeb must be installed on a Windows server.

This chapter contains information about installing and configuring RequisiteWeb. For system requirements, see "System and software requirements" on page 5.

IBM product Web services are all built upon the Rational Web Platform (RWP). For more information about RWP, see the appendix.

Prerequisites for RequisiteWeb servers

Before setting up RequisiteWeb, perform the following tasks:

- Configure the Rational RequisitePro project database.
- Install and configure the DB2 or Oracle client software on the RequisiteWeb server if you have chosen one of those databases to store your Rational RequisitePro projects.
- If a firewall is enabled on the RequisiteWeb server, enable the 8080 and 11080 ports before installing RequisiteWeb.

  Note: Installing RWP on a server that is already running another Web server can result in a port conflict that can cause RWP or the other Web server to fail when started. If possible, install RWP on a server that does not need to run any other Web servers; otherwise, configure the other Web server to use ports that are not being used by RWP or configure RWP to use ports not used by the other Web server. For more information about RWP, see Appendix A.
- Install the RequisiteWeb components. If you have not installed these components, see 8, "Installing software," on page 69. If you install in a location other than the default C:\Program Files\, see "Editing the configuration file for an alternate installation directory" on page 30.

Prerequisites for RequisiteWeb clients

RequisiteWeb users should perform the following tasks prior to accessing RequisiteWeb:

- Install a Web browser listed in "System and software requirements" on page 5. No additional client installation is required.
- Install Microsoft Word if the user plans to edit offline Word documents on the client system.
- Set browsers to allow cookies and enable JavaScript™ to ensure proper RequisiteWeb operation.

Configuring the RequisiteWeb server

This section describes how to configure the RequisiteWeb components on your Rational Web Server.

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Note: To access projects that are stored in a DB2 or Oracle database, configure client software on the server before installing RequisiteWeb.

Creating the ReqWebUser

RequisiteWeb requires that you create a user who will start the ReqWeb servlet engine service on the RequisiteWeb server and will use DCOM to open Microsoft Word. When project files are located elsewhere on the network, you should create this RequisiteWeb user as a domain user who has network permissions to access the remote project files. This user can be given any name; but, for the purposes of this guide, the user name is ReqWebUser. Use the instructions in this section and the following sections to create the ReqWebUser, grant the necessary permissions, and modify the ReqWeb servlet engine service to log on with this user account.

If all projects that will be accessible through ReqWeb will be located on drives that are local to the RequisiteWeb server, create ReqWebUser as a local user on the RequisiteWeb server. If any of the projects accessible through ReqWeb are located on network file shares within your domain, create ReqWebUser as a domain user on your primary domain controller server and grant rights to your project directory.

Note: If you create the ReqWebUser user on the Windows domain server, be sure to log in to your Windows domain.

To create the ReqWeb user:

1. Log on to the RequisiteWeb server as an administrator.
2. Click **Start > Programs > Administrative Tools > Computer Management**.
3. Expand **Domain Users and Groups**. Right-click **Users**; select **New User**.
4. In the **Username** field, type **ReqWebUser** and type a password of your choice.
5. Clear the check box **User must change password at next login**, and select the check box **Password never expires**. Click **Create** and click **Close**.
6. Close the **Computer Management** application.

Adding the ReqWebUser to the local administrator group

To add the ReqWebUser to the local administrator group:

1. Log on to the RequisiteWeb server as an administrator.
2. Click **Start > Programs > Administrative Tools > Computer Management**.
3. Expand **Local Users and Groups**. Select **Groups**. Right-click **Administrators** and select **Add to Group**. In the Administrators Properties window, click **Add**. A user selection window opens.
4. Do one of the following:
   - For Windows 2000 Server: In the **Look in** box, select the domain where you created the ReqWebUser.
   - For Windows 2003 Server: Click **Advanced**. Click **Locations** and select the domain where you created the ReqWebUser. Click **OK**. Click **Find Now**.
5. Select the **ReqWebUser** and click **Add**.
6. Click **OK** to close the window. Click **OK** to finish.
7. Close the Computer Management application.

Granting ReqWebUser access to network projects

Use the instructions in this section if you have projects on network file shares within your domain that are accessible through RequisiteWeb.

1. Click **Start > Settings > Control Panel > Administrative Tools > Services**.
2. Locate the service: IBM WebSphere® Application Server V6 - Rational Web Platform, ReqWeb servlet engine. Double-click the service's icon to display the Properties window.
3. Select the **Log On** tab and click **This account**. Enter the ReqWebUser and password that you created and click **Apply**. Click **OK** and close the Rational Web Platform window.
4. Start or restart the Rational Web Platform, ReqWeb servlet engine service to finish.

Restart required

At this point you must restart your system. After restarting, log in as the same user to complete the installation procedure.

Assigning DCOM permissions to the local administrators group

RequisiteWeb uses DCOM to start Microsoft Word. To achieve this, the ReqWebUser should be a member of the Administrators group on the RequisiteWeb server.

Note: If you have not already installed Microsoft Word on your RequisiteWeb server, you must do so now.

For Windows Server 2003

To assign access permissions to the local administrators group (in Windows Server 2003):

1. On the **Start** menu, click **Run** and type **dcomcnfg**. The Component Services window opens.
2. Click **Console Root > Component Services > Computers**.
3. Right-click **My Computer** and select **Properties**.

   Note: If you see the DCOM Configuration Warning window, close the warning and proceed to the next step.
4. Select the **Default COM Security** tab. In Access Permissions, click **Edit Default**. In the Access Permission window, click **Add**.
5. At the Select Users or Groups window, click **Locations**.
6. At the Locations window, select your local machine from the **Location** list. Click **OK**.
7. At the Select Users or Groups window, click **Advanced**. Click **Find Now**.
8. In the **Name** list, select the Administrators group and click **OK**. Click **OK**.
9. At the Access Permission box, verify that the **Allow Access** check box is selected.
10. Click **OK** to return to the My Computer Properties window.

To assign launch permissions to the local administrators group (in Windows Server 2003):

1. At the **Default COM Security** tab, in Launch Permissions, click **Edit Default**.
2. At the Launch Permission window, verify that the **Launch Permission Allow** check box is selected.
3. Click **OK** twice.

4. Close the Component Services window and restart your system.

For Windows 2000 Servers

To assign access permissions to the local administrators group (in Windows 2000):

1. On the **Start** menu, click **Run** and type **dcomcnfg**.

   Note: At this point, you may see the DCOM Configuration Warning window. Close the warning and proceed to the next step.
2. Select the **Default Security** tab. Under **Default Access Permissions**, click the **Edit Default** button.
3. In the Registry Value Permissions window, click **Add**.
4. At the Add Users and Groups window, select your local machine from the **List Names From** drop-down list field.
5. Select the **Administrators group** in the **Names** list and click **Add**.
6. At the **Type of Access** field, select **Allow Access**. Click **OK** twice to return to the Distributed COM Configuration Properties window.

To assign launch permissions to the local administrators group (in Windows 2000):

1. Select the **Default Security** tab. Under **Default Launch Permissions**, click the **Edit Default** button.
2. In the Registry Value Permissions window, click **Add**.
3. At the Add Users and Groups window, select your local machine from the **List Names From** drop-down list field.
4. Select the **Administrators group** in the **Names** list and click **Add**.
5. At the **Type of Access** field, select **Allow Launch**. Click **OK** twice to return to the Distributed COM Configuration Properties window.
6. Close DCOM and restart your system.

Editing the configuration file for an alternate installation directory

You must edit the RequisiteWeb configuration file if you install Rational RequisitePro and the Web components in a location other than the default directory: `C:\Program Files\IBM\RationalSDLC\`. This includes installations on foreign operating systems, such as German where the default installation location is `C:\Programme`. In the configuration file, use the RPXCatalog setting to indicate the location of the `catalog.txt` file, which provides access to projects.

Open the `config.txt` file using a text editor. The default location of the configuration file is:

```
C:\Program Files\IBM\RationalSDLC\profiles\profile2\installedApps\
DefaultNode\ReqWeb.ear\ReqWeb.war\WEB-INF\classes\
config.txt
```

Replace the `C:\Program Files\IBM\RationalSDLC\` entry with your alternate installation directory.

Considerations:

- Rational Web Platform must be restarted for configuration changes to take effect. Follow the instructions “To start, stop, and restart RWP” in Appendix A.
- Back up the `config.txt` file before making changes.

- Contact RequisiteWeb customer support before you change any `config.txt` settings not listed in this table.
- This example assumes that you have installed the RequisiteWeb application on your `C:\` drive. Substitute the appropriate drive, if necessary, when performing this step.
- Edit the `catalog.txt` file, as described in "Managing projects in RequisiteWeb" on page 42, to preserve access to the Rational RequisitePro sample projects.

Settings	Description	Default
RPXCatalog	The path to the project catalog file that is used to locate Rational RequisitePro projects. For example: `RPXCatalog=C:\Program Files\IBM\RationalSDLC\RequisitePro\ReqWeb\Projects\catalog.txt`	<blank>

Avoiding path problems with RequisiteWeb executable files

Be sure that the paths to the RequisiteWeb executable files are unique. Use caution when the paths include spaces.

When users attempt to reach RequisiteWeb by using the URL to the login page, an Internal Error 500 might be displayed. The error might include the following string: `%1 Is Not a Valid Win32 Application`.

When Windows starts a service, it parses the path of the service from left to right. Windows might be unable to locate the service if both of the following conditions are true:

- The path of a service's executable file contains spaces.
- There is a file or folder on your computer's hard disk that has the same name as a file or folder in the path to the service's executable file.

In this case, Windows might locate and try to run the a similarly named file or folder before it locates and runs the executable file for the service; for example, if the path to the RequisiteWeb executable file is `C:\Program Files\IBM\RationalSDLC\RequisitePro\bin\RqProxy.exe`, and if a folder that is named `C:\Program` also exists on your hard disk, then the Windows operating system first locates the `C:\Program` folder and is unable to find the RequisiteWeb executable file. The same error might occur with the path to the RequisiteWeb application service: `C:\Program Files\IBM\RationalSDLC\common\rwp\IHS\bin\apache.exe`.

For more details, see the Microsoft Knowledge Base article "Event ID 7000 and '%1 is not a valid win32 Application' Error Message When You Start a Service" at http://support.microsoft.com/kb/812486.

Enabling SSL (Secure Socket Layer)

RequisiteWeb supports SSL, an encryption system that ensures the confidentiality of data exchanged between RequisiteWeb and a client Web browser. To use SSL with RequisiteWeb, follow the instructions in Appendix A.

Note: If you are using a proxy server, it is not necessary to configure RWP to enable SSL. Instead, enable SSL on the proxy server.

Configuring RequisiteWeb for Internet use

This section describes how to configure your network to provide Internet access to RequisiteWeb. In addition to the overview, the following procedures are provided:

- Using IBM HTTP Server as a reverse proxy server
- Using Apache 2.x as a reverse proxy server
- Determining the URL to RequisiteWeb

Your organization's customers, contractors, and remote team members can now access RequisiteWeb using the Internet. Internet access to live requirements data using RequisiteWeb provides timely, invaluable feedback between your development team and other requirements stakeholders.

When configuring Internet access for RequisiteWeb, you must take careful steps to protect your organization's intellectual property and infrastructure. Setting up a firewall can help protect your corporate network. You should use a reverse proxy server to monitor and control all access across the firewall between the Internet and resources such as RequisiteWeb on your corporate network. This central access point allows you to focus on securing the proxy server instead of securing every machine on your corporate network. A proxy server also conceals information about your corporate network from Internet users, including the names, locations, and implementation details of resources.

Note: Network security, firewall configuration, and proxy server configuration are complex issues requiring the attention of trained IT staff.

The following steps summarize the configuration tasks for providing Internet access to RequisiteWeb:

1. Install and configure firewall software or hardware to protect your corporate network from unauthorized access. The firewall should allow Internet users to connect to the proxy server using HTTP or HTTPS.
2. Identify and configure an appropriate reverse proxy server. This machine will be publicly exposed to the Internet by one network interface and connected to your corporate network (LAN or WAN) on another interface. This machine can also act as the firewall by running the appropriate software.
3. Select, install, and configure reverse HTTP proxy software to provide access to RequisiteWeb from the Internet. To protect the confidentiality of your requirements data, configure this software to require Internet users connecting to RequisiteWeb to use the encrypted HTTPS protocol.

This document provides guidance on configuring the following reverse HTTP proxy software solutions to work with RequisiteWeb:

- Apache 2
- IBM HTTP Server versions 2.0.42.2 or higher. Version 2.0.42.2 requires a fix pack; refer to the support Web site at `http://www.ibm.com/software/webservers/httpservers/support.html` and search for "PQ77489". Later versions do not require this fix pack.

Using IBM HTTP Server as a reverse proxy server

To provide access to RequisiteWeb using the IBM HTTP server as a reverse proxy server:

1. Install IBM HTTP Server version 2.0.42.2 or higher on the proxy server. Version 2.0.42.2 requires a fix pack, as already described.

   Note: See the IBM HTTP Server documentation for detailed installation instructions.
2. Configure the IBM HTTP Server to load the necessary modules by including the following lines in the server configuration context in httpd.conf:

```
LoadModule ibm_ssl_module modules/mod_ibm_ssl.so LoadModule proxy_module
modules/mod_proxy.so LoadModule proxy_http_module modules/
mod_proxy_http.so
```

3. Configure the IBM HTTP Server to use secure connections. See the section ″Getting started quickly with secure connections″ in the IBM HTTP Server documentation.
4. Configure the IBM HTTP Server to act as a reverse proxy to RequisiteWeb as shown in the following example.

The following is an example excerpt from the server configuration context of httpd.conf that configures the IBM HTTP Server to proxy requests for RequisiteWeb to a server named ″rw.rational.com″:

```
<IfModule mod_proxy.c>

# Disable forward proxy requests

ProxyRequests Off

# Allow requests from selected hosts or domains

<Proxy *>

Order Allow,Deny

#Allow from rational.com

</Proxy>

#Configure access to RequisiteWeb

ProxyPass /ReqWeb http://rw.rational.com/ReqWeb

ProxyPass /reqweb http://rw.rational.com/reqweb

ProxyPassReverse /ReqWeb http://rw.rational.com/ReqWeb

ProxyPassReverse /reqweb http://rw.rational.com/reqweb

ProxyPass /ReqWebSetup http://rw.rational.com/ReqWebSetup

</IfModule>
```

Note: You must specify your own ″Allow from″ directive based on which hosts you want to allow to access RequisiteWeb.

Note: You must replace ″rw.rational.com″ with the actual name of the RequisiteWeb server on your corporate network.

Caution: The previous example allows unencrypted HTTP access to RequisiteWeb. To require encrypted HTTPS connections, move the preceding configuration lines into the virtual host context of the virtual host used for secure connections. A virtual host context for secure connections usually contains KeyFile and SSLEnable directives and looks like this:

```
# Accept connections on port 443

Listen 443

# Create a virtual host for secure connections

<VirtualHost _default_:443>

# Set the key database file containing certificate

KeyFile "C:/Program Files/IBM HTTP Server 2.0/key.kdb"

# Enable SSL

SSLEnable

# move RequisiteWeb proxy directives here to require HTTPS

</VirtualHost>
```

Using Apache 2 as a reverse proxy server

1. Install Apache 2 on the proxy server, including the following modules:
   - mod_ssl -- This module enables HTTPS connections, encrypting traffic between the Internet and the proxy server using secure sockets layer (SSL)
   - mod_proxy -- This module enables Apache to act as a forward or reverse proxy server
   - mod_proxy_http -- This module enables HTTP connections between the proxy server and the RequisiteWeb server

   Note: In order to obtain a binary version of Apache 2 that contains mod_ssl, you will most likely need to build Apache 2 from source. See the Apache 2 documentation at `http://www.apache.org`.
2. Configure Apache 2 to load the necessary modules by including the following lines in the server configuration context in httpd.conf:

   ```
   LoadModule ssl_module modules/mod_ssl.so
   LoadModule proxy_module modules/mod_proxy.so
   LoadModule proxy_http_module modules/mod_proxy_http.so
   ```
3. Configure mod_ssl as normal. See the documentation for your release of Apache 2.
4. Configure Apache 2 to act as a reverse proxy to RequisiteWeb. The following is an example excerpt from the server configuration context of httpd.conf that configures Apache to proxy requests for RequisiteWeb to a server named ″rw.rational.com″:

   ```
   <IfModule mod_proxy.c>
   # Disable forward proxy requests
   ProxyRequests Off
   # Allow requests from selected hosts or domains
   <Proxy *>
   Order Allow,Deny
   #Allow from rational.com
   </Proxy>
   ```

```
# Configure reverse proxy requests for RequisiteWeb
ProxyPass /reqweb http://rw.rational.com/ReqWeb
ProxyPass /ReqWeb http://rw.rational.com/ReqWeb
ProxyPassReverse /reqweb http://rw.rational.com/ReqWeb
ProxyPassReverse /ReqWeb http://rw.rational.com/ReqWeb
ProxyPass /ReqWebSetup http://rw.rational.com/ReqWebSetup
# Require SSL between browsers and the proxy server for ReqWeb
<Location ~ "^/(ReqWeb|reqweb)">
SSLRequireSSL
</Location>
</IfModule>
```

When implementing this example code, specify your own ″Allow from″ directive based on which hosts that you want to allow to access RequisiteWeb. Replace ″rw.rational.com″ with the actual name of the RequisiteWeb server on your corporate network. The “SSLRequireSSL” directive is optional. Comment it out if you do not want to require encrypted HTTPS connections.

Determining the URL to RequisiteWeb

After you configure your proxy server to access RequisiteWeb, your proxy server appears as if it is a RequisiteWeb server to your Internet users. Internet users can access RequisiteWeb using a URL starting with ″http://″ or ″https://″, followed by the fully qualified Internet host name of the proxy server, such as rw.rational.com, and ending with ″/ReqWeb″ or ″/reqweb″.

Local users within your corporate LAN or WAN can use the same URL or replace the fully qualified name of the proxy server with the internal name of the proxy server or the RequisiteWeb server. Using the internal name of the RequisiteWeb server provides the best performance because it bypasses the proxy server; however, RequisiteWeb administrators may prefer that all users access RequisiteWeb using the proxy server host name, because this allows the administrator to replace the RequisiteWeb server or change its name transparently.

RequisiteWeb and IIS

RequisiteWeb uses Rational Web Platform (RWP) as its Web service. Because RWP and IIS can conflict with one another, you must choose one of the following options to run RequisiteWeb on a server with IIS running.

Disable IIS

Check to see if any programs are using IIS before you disable it.

To disable IIS:

1. Click **Start > Settings > Control Panel > Administrative Tools > Services**.
2. Locate the World Wide Web Publishing service and double-click the icon to display the Properties window.
3. On the **General** tab under Server status, click **Stop** and change the Startup type to **Disabled**. Click **OK** and close the Services window.
4. Click **OK** to close the window. Close the Internet Services Manager.

Change and redirect the default RWP HTTP port

The following steps allow RequisiteWeb and IIS to coexist by changing and redirecting the default RWP HTTP port. Additional instructions for configuring RWP are available in Appendix A.

1. Change the default RWP HTTP port (80). Use an editor such as NotePad to modify content in the following files, as indicated:
   - File: `C:\Program Files\IBM\RationalSDLC\common\IHS\conf\httpd.conf`

     Modify: `Listen 0.0.0.0:80`
   - File: `C:\Program Files\IBM\RationalSDLC\common\eWAS\profiles\plugin-cfg.xml`

     Modify: `<VirtualHost Name="*:80" />`
   - File: `C:\Program Files\IBM\RationalSDLC\profiles\profile2\config\cells\DefaultNode\virtualhosts.xml`

     Modify: `<aliases xmi:id="HostAlias_2" hostname="*" port="80"/>`
2. Create a virtual directory for RequisiteWeb on your RequisiteWeb server:
   a. To start the Internet Services Manager, click **Start > Programs > Administrative Tools/Internet Services Manager**.
   b. Right-click the **Default Web Site** and select **New Virtual Directory**.
   c. In the Virtual Directory Creation wizard, click **Next** and type **ReqWeb** as the alias.
   d. Click **Next** and navigate to and select

      `C:\Program Files\IBM\RationalSDLC\profiles\profile2\installedApps\DefaultNode\ReqWeb.ear\ReqWeb.war`

      Click **Next**.
   e. Click **Next** and **Finish**.
3. In the properties of your newly created virtual directory, select a redirection to a URL and redirect to `http://`*<server name>*`:`*<new port>*`/reqweb`.
4. Close the Internet Services Manager and restart the Rational Web Platform. Follow the instructions ″Starting, stopping, and restarting RWP″ in the appendix.

Load balancing the application servers

You can install multiple RequisiteWeb servers on your network and configure a single Web server to load balance a cluster of application servers. Install RequisiteWeb on all servers and designate one as the Web server. This is the server that your users access with the RequisiteWeb URL. Designate each of the other servers as an application server in the cluster.

Designating application servers

To designate the RequisiteWeb application servers, perform the following task on each application server in the cluster. You can also configure the Web server as an application server using these steps.

1. Open the `server.xml` file in a text editor. This file is located in the following directory, by default:

   ```
   C:\Program Files\IBM\RationalSDLC\profiles\profile2\config\cells\DefaultNode\nodes\DefaultNode\servers\server1
   ```
2. Locate the following element in the `server.xml` file:

   ```
   <components xmi:type="applicationserver.webcontainer:WebContainer" ... >
   </components>
   ```

3. Add the following properties within the <components> element:

```
<properties xmi:id="Property_1128095187738" name="HttpSessionCloneId"
value="12345" required="false"/>
```

   where:

   - For the numeric portion of the xmi:id, match the other xmi:id values in the WebContainer section.
   - The value property is a unique identifier that you create for the application server in the cluster, as described in "Configure load balancing on the Web server." Make a record of this CloneID value.

4. Save and close the server.xml file.
5. If you want to prevent Web access to the application server, modify the IBM HTTP Server service. Click **Start > Run**. Type services.msc. Open the IBM HTTP Server and change the **Startup Type** to **Manual**.
6. Restart the application server.
7. Repeat this task for each RequisiteWeb application server in the cluster and the Web server, if applicable.

Configure load balancing on the Web server

On the RequisiteWeb Web server, configure the load balancing by referencing the application servers that you configured in the previous task.

Note: See Table 8 on page 38 for more information about the configuration file attributes described in this task.

1. Open the plugin-cfg.xml file in a text editor. This file is located in the following directory, by default:

```
C:\Program Files\IBM\RationalSDLC\common\eWAS\profiles
```

2. Locate the following element:

```
<ServerCluster Name="profile2_Cluster">
  <Server Name="server1">
  <Transport Hostname="localhost" Port="11080" Protocol="http" />
  </Server>
</ServerCluster>
```

3. Replace that ServerCluster element with the following element:

```
<ServerCluster CloneSeparatorChange="false" Name="profile2_Cluster"
RetryInterval="60" LoadBalance="RoundRobin">
  <Server CloneID="12345" ConnectTimeout="5" LoadBalanceWeight="1"
      Name="server1">
      <Transport Hostname="hostname1" Port="11080" Protocol="http"/>
  </Server>
  <Server CloneID="12346" ConnectTimeout="20" LoadBalanceWeight="1"
      Name="server2">
      <Transport Hostname="hostname2" Port="11080" Protocol="http"/>
  </Server>
  <Server CloneID="12347" ConnectTimeout="20" LoadBalanceWeight="1"
      Name="server3">
      <Transport Hostname="hostname3" Port="11080" Protocol="http"/>
  </Server>
  <PrimaryServers>
     <Server Name="server1"/>
     <Server Name="server2"/>
     <Server Name="server3"/>
  </PrimaryServers>
</ServerCluster>
```

   where:

- The `CloneID` values match the values `applicationserver.webcontainer` property `value` that you designated for each application server in the previous task.
- The `Hostname` values match the host names of the application servers. Modify the number of server entries to match the number of application servers in your cluster.

4. Add `<Uri Name="/ReqWeb/GenDoc/*.html"/>` within the `<UriGroup>` tag. This will fix a problem with redirection of incoming requests to HTML documents on load-balanced servers. Without this fix documents generated on one load-balanced server may not show up on other load-balanced servers. Example:

```
<UriGroup Name="profile2_Cluster_URIs">
<Uri Name="/ReqWeb/GenDoc/*.html"/>
<Uri Name="/ReqWeb/*.jsp"/>
<Uri Name="/ReqWebservlet/*"/>
</UriGroup>
```

5. Save and close the `plugin-cfg.xml` file.
6. Restart the Web server.

Table 8. Elements and attributes in the `plugin-cfg.xml` file

Server (one or more elements for each ServerCluster)	A WebSphere Application Server instance that is configured to handle requests routed to it given the routing rules of the plug-in configuration. The *Server* should correspond to an application server running on either the local machine or a remote machine.
Name (exactly one attribute for each Server)	The administrative or logical name for the server.
Log	The log describes the location and level of log messages that are written by the plug-in. If a log is not specified within the configuration file, then, in some cases, log messages are written to the Web server error log. For example, you might specify the following: `<Log LogLevel="Error" Name="/log_directory/filename"/>`
Name (exactly one attribute for each Log)	The fully qualified path to the log file to which the plug-in will write error messages. **Note:** The time the information was written to the log file and the process ID will be appended to the file name specified on this element.

Table 8. Elements and attributes in the `plugin-cfg.xml` file (continued)

LogLevel (zero or one attribute for each Log)	The level of detail of the log messages that the plug-in should write to the log. You can specify one of the following values for this attribute: • `Trace`. All of the steps in the request process are logged in detail. • `Stats`. The server selected for each request and other load balancing information relating to request handling is logged. • `Warn`. All warning and error messages resulting from abnormal request processing are logged. • `Error`. Only error messages resulting from abnormal request processing are logged. If a *LogLevel* is not specified for the `Log` element, the default value `Error` is used. Be careful when setting the level to `Trace`. Many messages are logged at this level which can cause the file system to fill up very quickly. A `Trace` setting should never be used in a normally functioning environment as it adversely affects performance.
RetryInterval (zero or one attribute for each ServerCluster)	There is a setting in the plug-in configuration file that allows you to specify how long to wait before retrying a server that is marked as down. This is useful in avoiding unnecessary attempts when you know that the server is unavailable. The default is 60 seconds. This setting is specified in the ServerCluster element using the RetryInterval attribute. An example of this in the plugin-cfg.xml file is as follows: `<ServerCluster Name="PluginCluster" RetryInterval="120">` This would mean that if a cluster member were marked as down, the plug-in would not retry it for 120 seconds. The value chosen depends on your environment. For example, if you have numerous cluster members, and one cluster member being unavailable does not affect the performance of your application, then you can safely set the value to a very high number.

Table 8. Elements and attributes in the `plugin-cfg.xml` file (continued)

CloneID (zero or one attribute for each Server)	If this unique ID is present in the HTTP cookie header of a request (or the URL if using URL rewriting), the plug-in routes the request to this particular server, provided all other routing rules are met. If a *CloneID* is not specified in the Server, then session affinity is not enabled for this server. This attribute is used in conjunction with session affinity. When this attribute is set, the plug-in checks the incoming cookie header or URL for JSESSIONID. If JSESSIONID is found then the plug-in looks for one or more clone IDs. If clone IDs are found, and a match is made to the value specified for this attribute, then the request is sent to this server rather than load balanced across the cluster. If you are not using session affinity then it is best to remove these clone IDs from the configuration because there is added request processing in the plug-in when these are set. If clone IDs are not in the plug-in then it is assumed that session affinity is not on and the request is load balanced across the cluster.
LoadBalance (zero or one attribute for each ServerCluster)	The default load balancing type is `Round Robin`. The Round Robin implementation has a random starting point. The first server will be picked randomly. Round Robin will be used to pick servers from that point forward. This implementation ensures that in multiple process based Web servers, all of the processes don't start up by sending the first request to the same Application Server.
LoadBalanceWeight (zero or one attribute for each Server)	The weight associated with this server when the plug-in does weighted Round Robin load balancing. The algorithm for this attribute decrements all weights within the server cluster until all weights reach zero. Once a particular server's weight reaches zero, no more requests are routed to that server until all servers in the cluster have a weight of zero. After all servers reach zero, the weights for all servers in the cluster are reset and the algorithm starts over. When a server is shut down, you set the weight for that server to zero. The plug-in can then reset the weights of the servers that are still running, and maintain proper load balancing.

Table 8. Elements and attributes in the plugin-cfg.xml file (continued)

ConnectTimeout (zero or one attribute for each Server)	To determine what setting should be used, you need to take into consideration how fast your network and servers are. If the server cannot respond before the *ConnectTimeout*, the plug-in will mark it as down. Where the Application Server is on a remote server in a slower part of the network, you might want to set a higher *ConnectTimeout* setting to compensate for this. Where an Application Server is on a faster part of the network (including the same machine), it is safer to set the *ConnectTimeout* to a lower value.
CloneSeparatorChange (zero or one attribute for each ServerCluster)	Some pervasive devices cannot handle the colon character (:) used to separate clone IDs in conjunction with session affinity. This attribute for the server group tells the plug-in to expect the plus character (+) as the clone separator. You must change application server configurations so that an application server separates clone IDs with the plus character as well. The value can be true or false.
PrimaryServers (zero or one element for each server cluster)	Specifies a list of servers to which the plug-in routes requests for this cluster. If a list of primary servers is not specified, the plug-in routes requests to servers defined for the server cluster.

Adjusting the thread pool size

The WebSphere Application Server (WAS) maintains a thread pool to process inbound HTTP(S) requests for resources. These include requests to execute the servlets, beans, and JSP code. To maximize performance, you can adjust the size of the thread pool on servers with faster processors and higher RAM.

To modify the thread pool size for WAS, perform the following steps.

1. Stop the RequisiteWeb servlet engine by using the service ″IBM WebSphere Application Server V6 - Rational Web Platform, ReqWeb servlet engine″ or by using the command line.
2. Open Windows Explorer and navigate to the following directory:

   ```
   <install_dir>\IBM\RationalSDLC\profiles\profile2\config\cells\
   DefaultNode\nodes\DefaultNode\servers\server1
   ```

   Note: If you install Rational RequisitePro in the default location on the English version of Windows, the `<install_dir>` is `C:\Program Files`.
3. Save a copy of the `server.xml` file so that you can restore it if you encounter problems.
4. Open `server.xml` using a text editor. Search for `name="WebContainer"` and locate the following XML element:

   ```
   <threadPools xmi:id="ThreadPool_<sequnce_number>" minimumSize="10"
   maximumSize="50" inactivityTimeout="3500" isGrowable="false"
   name="WebContainer"/>
   ```

   Note: The `<sequence_number>` is different for each RequisiteWeb server.

5. Change the values for `minimumSize` and `maximumSize` to the desired values; for example, set `minimumSize` to 25 and `maximumSize` to 75. After making the changes, the XML should be similar to the following example:

   ```
   <threadPools xmi:id="ThreadPool_<sequnce_number>" minimumSize="25"
   maximumSize="75" inactivityTimeout="3500" isGrowable="false"
   name="WebContainer"/>
   ```

6. Save and close the `server.xml` file.
7. Start the ReqWeb servlet engine.

Repeat these steps on each server in the RequisiteWeb cluster if you implemented load balancing. You can vary the thread pool settings based on the hardware configuration of each server.

Testing RequisiteWeb

To test a Rational RequisitePro project in RequisiteWeb:

1. Open a Web browser.
2. Set the URL address to "`http://`*<server name>*`/reqweb`" on your RequisiteWeb server and press Enter.

   Note: If your Internet Explorer window is blank, click **Tools > Internet Options**. At the **Security** tab, add **RequisiteWeb** to your list of trusted sites. Refresh your browser view of RequisiteWeb, if necessary.
3. Select a project that contains documents from the Project list. If your project is not on the list, refer to the procedure "Managing projects in RequisiteWeb."
4. Type your Rational RequisitePro user name and password and click **Log in**.
5. Select a document in the Explorer and open it. If the document opens correctly, the test is successful; RequisiteWeb is properly installed.

   Note: If the Microsoft Word installer opens, you must allow it to complete.

Managing projects in RequisiteWeb

You can create Rational RequisitePro projects in RequisiteWeb and access existing projects. To modify project structure and security, use the Rational RequisitePro client for Windows.

Using the RequisiteWeb projects catalog

RequisiteWeb uses a catalog text file to provide access to Rational RequisitePro projects. By default, the file contains entries for two Learning Projects. The projects that are listed in your catalog file are displayed in the **Projects** list on the RequisiteWeb logon page.

To add your own projects to the catalog, you must type the full path for the project file, which has a .rqs extension. If you install RequisiteWeb on a foreign operating systems, such as German where the default installation location is `C:\Programme`, you must modify the catalog.txt file to reflect this path.

Note: Be sure that all projects that are listed in the Web server catalog.txt are accessible at all times. If any project in this file is unavailable, Web server performance for available projects may be affected.

To edit the catalog, perform the following procedure on the RequisiteWeb server:

1. Navigate to the directory
   `C:\Program Files\IBM\RationalSDLC\RequisitePro\ReqWeb\Projects`

   Note: If your projects are installed in a directory other than C:\ you must edit the catalog.txt file to reflect the correct installation directory.
2. Using a text editor, open the catalog.txt file.
3. Create an entry on each line with the full path to the project file. Copy the format of the default project entries.

   Note: Use a full path for local projects on the RequisiteWeb server. To access projects on another server, you must specify a Universal Naming Convention (UNC) path to the shared folder containing the .rqs project file. For example, `\\server_name\full_path\my_project.rqs`.
4. Save and close the catalog.txt file.

To view updates to the catalog.txt file, you must log off of RequisiteWeb and then select a project at the RequisiteWeb project log in page.

Accessing project databases

After the project catalog is configured, RequisiteWeb can access Rational RequisitePro projects that are located on remote project servers; however, the ReqWebUser domain user must have Change or Modify permission for the directory containing the .rqs project file on the remote project server.

5 Configuring LDAP for RequisitePro

You can configure an LDAP directory for authenticating Rational RequisitePro users.

You can configure Rational RequisitePro to authenticate users in one of two ways:

- By using Rational RequisitePro project user records.

  With this method, a user enters a user name and password to log on. Rational RequisitePro verifies that these match a user name and password stored in the project database. Use the Rational RequisitePro security capabilities to enter and manage user name and password information. These capabilities are available for project administrators by clicking **File > Project Administration > Security**.
- By using a Lightweight Directory Access Protocol (LDAP) directory on your network.

  With this method, a user enters a user name and password in the same Project Logon window and Rational RequisitePro checks an LDAP directory for a matching user record. Authenticating users in this way can decrease administration and user support costs by centralizing user records for multiple applications and reducing the number of passwords that users must remember. It can also improve security by enforcing the password management policies implemented in the directory.

Regardless of the type of authentication that you use, a user account for each user is required in the Rational RequisitePro database; if you are using LDAP authentication, Rational RequisitePro user information is mapped to the LDAP directory and user passwords are not stored in Rational RequisitePro. The Rational RequisitePro user information is used to determine the privileges granted to each user or user group for access to projects, documents, and requirements. To specify access authorization, in Rational RequisitePro click **File > Project Administration > Security**.

This chapter is intended for Rational RequisitePro administrators and describes the following topics:

- Overview of the LDAP authentication model
- Prerequisites for LDAP authentication
- Supported LDAP servers and platforms
- Collecting LDAP configuration information
- Configuring a project for LDAP authentication
- Enabling Secure Sockets Layer (SSL) communication using the IBM Tivoli® GSKit application so that information sent between Rational RequisitePro and the LDAP directory is encrypted
- Command reference for configuration commands and subcommands
- User interface reference, which describes changes to the Rational RequisitePro security windows that add support for LDAP authentication

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Authentication overview

You can enable LDAP authentication at both the project level and the individual user level in any project that has security enabled. This approach allows Rational RequisitePro to support a mixed authentication environment. A project that is configured for LDAP authentication can support users who are designated for either Rational RequisitePro or LDAP authentication. You can also set authentication for all users within a project to one of the two modes.

For LDAP-enabled projects, Rational RequisitePro performs user authentication as follows:

1. A user who is designated for LDAP authentication enters a user name and password in the Project Logon window.

   The administrator might instruct users to enter an alternate identifier, such as a user ID or e-mail address, instead of the actual user name when logging in to a project with LDAP authentication enabled. The administrator specifies this unique identifier when configuring LDAP authentication.
2. Rational RequisitePro establishes a connection to the LDAP directory based on the configuration parameters supplied by the administrator during setup.
3. Rational RequisitePro uses the logon value of the user name or unique identifier to search the LDAP directory for a matching user record. Rational RequisitePro then authenticates the user password by using the user record in the LDAP directory.
4. Rational RequisitePro searches the project for a user record that corresponds to the LDAP directory user record.

   When configuring LDAP, the administrator specifies a Rational RequisitePro user record field and an LDAP user record attribute for mapping corresponding records.
5. If Rational RequisitePro finds a matching user record, it opens the project and grants access to project artifacts based on the security privileges assigned to the user.

Prerequisites

Before you configure RequisitePro to authenticate against an LDAP directory, perform the following tasks:

- Collect information about your LDAP environment from your LDAP administrator.
- Ensure that the LDAP server is installed and configured.
- Ensure that the LDAP directory has been created and populated with user information.
- Identify which users will be authenticated against the project user records and which users will be authenticated against the LDAP directory.
- Decide whether to enable SSL encryption. If you choose to enable SSL encryption, determine whether to use only server certificates or both client and server certificates.
- Decide whether to enable SSL encryption. If you decide to use SSL, secure the help of your LDAP administrator or someone else who is familiar with SSL.

Supported LDAP servers

Rational RequisitePro supports the following LDAP servers that support LDAP protocol Version 3:

- IBM Lotus® Domino® LDAP Server
- IBM Tivoli Directory Server
- Microsoft Active Directory Server
- Novell eDirectory Server
- Sun Java System Directory Server

Supported platforms

You can enable LDAP authentication for Rational RequisitePro on all platforms that RequisitePro supports.

LDAP authentication for RequisiteWeb users

In order to implement LDAP authentication for RequisiteWeb users, the ReqWebUser domain user must have read access to the LDAP configuration file.

Setting up LDAP authentication

Collecting LDAP information

In many organizations, the Rational RequisitePro project administrator and the LDAP administrator are two different people. Use the questionnaire in Table 9 to collect necessary information from your LDAP administrator. To see how the example answers shown are used with the rpsetup subcommands to configure LDAP authentication, see "Configuring Rational RequisitePro" on page 48.

Table 9. LDAP information worksheet

Question	Example answer	Your answer
A. What is the host name of the LDAP server? You can specify multiple hosts so that RequisitePro can attempt to connect to an alternate host if it cannot connect to the first one.	`'ourldapserver.ourcompany.com altldapserver.ourcompany.com'`	
B. What is the TCP port number (SSL or non-SSL) where the LDAP server listens for communications?	`389 (non-SSL default) or 636 (SSL default)`	
C. Does the LDAP server allow anonymous searches? If it does not, specify an account that has sufficient privileges to allow Rational RequisitePro to search the directory for LDAP-authenticated users (C1 and C2).	`No`	
C1. What is the distinguished name (DN) of the search account?	`cn=search_user,cn=Users, dc=cqldapmsft,dc=com`	
C2. What is the password of the search account?	`secret_password`	
D. What is the base DN from which to start searching for LDAP user directory entries that correspond to Rational RequisitePro users? The base DN must be high enough in the directory hierarchy to include all users that might need to be authenticated; however, a base DN that is too high in the hierarchy might slow login performance.	`ou=my_dept,dc=cqldapmsft,dc=com`	
E. What is the scope of the search from the base DN: sub (subtree), one (one level below), or base (base DN only)?	`sub`	

Table 9. LDAP information worksheet (continued)

Question	Example answer	Your answer
F. Which LDAP attribute is used to store the user login name value? Rational RequisitePro uses the text string entered in the Project Logon window to search the LDAP directory for a matching LDAP attribute value. This LDAP attribute must store unique values for all entries in the scope of the search.	`samAccountName`	
G. What is the LDAP search filter that Rational RequisitePro must use, based on the attribute specified in the previous question? Use %login% as a variable for the text string the user enters in the Project Logon window. Assign this variable to search for a matching text string in the assigned LDAP attribute.	This example is a typical search filter for use with Microsoft Active Directory. `(&(objectCategory=person)(samAccountName=%login%)(!(userAccountControl:1.2.840.11%login%3556.1.4.803:=2)))`	
H. Besides the attribute specified in F, are there other LDAP attributes that are unique for each user? In mapping between LDAP entries and Rational RequisitePro users, you can one of these attributes rather than the login name. Use the %login% variable, as described in G, to streamline the search process.	`emailaddress`	
I. What is the login name of a user entry that can be used to validate that Rational RequisitePro can correctly authenticate a user against the LDAP directory? This can be a test user or an actual user.	`test_user`	
J. What is the password for the user entry specified in the previous question?	`test_user_password`	

Configuring Rational RequisitePro

This section provides instructions for configuring LDAP authentication for Rational RequisitePro. These instructions include information about how to create a configuration file for accessing an LDAP directory, enable a Rational RequisitePro project for LDAP authentication, and designate project users for LDAP authentication.

Configuration process overview

To configure LDAP authentication between a Rational RequisitePro project and a specific LDAP directory:

1. Create a configuration file.
2. Enable a project for LDAP authentication by referencing the configuration file.
3. Designate LDAP authentication for project users.

To perform these configuration tasks, use the rpsetup command line utility with the subcommands described in "Creating a configuration file." Run these subcommands on a test project before you run them on a production project. For your convenience, you can create a batch script of these subcommands.

Creating a configuration file

Begin configuring LDAP authentication by creating a configuration file. The configuration file is not specific to a single project and can be used by multiple

projects. The configuration file is a text file with a .ini extension. Use the appropriate security for your operating system to restrict access to this file.

Note: In order to implement LDAP authentication for RequisiteWeb users, the ReqWebUser domain user must have read access to the LDAP configuration file. For more information, see "Configuring the RequisiteWeb server" on page 27.

Create the configuration file by using the rpsetup command line utility and the following subcommands. Each subcommand is described in the "Command reference" on page 52. Run the subcommands in the following order:

1. Use the setldapinit subcommand to create a configuration file for access to a specific LDAP-compliant directory. For command and options, see "setldapinit" on page 53. To review your settings, use the getldapinit subcommand.
2. Use the setldapsearch subcommand to specify the LDAP search string to use to find user records in the LDAP directory. For syntax and options, see "setldapsearch" on page 55. To review your search settings, use the getldapsearch subcommand.
3. Use the setrpldapmap subcommand to specify the Rational RequisitePro and LDAP attributes to use for mapping (that is, matching) users in the LDAP directory to Rational RequisitePro projects. For syntax and options, see "setrpldapmap" on page 57. To review your map settings, use the getrpldapmap subcommand.
4. Use the verifyconfig subcommand to check the LDAP configuration and report any LDAP configuration issues. For syntax and options, see "verifyconfig" on page 58.

Enabling a project for LDAP authentication

Associate a Rational RequisitePro project with an LDAP directory by using the following subcommands:

- Use the rpsetup command line utility and the setldapconfig subcommand to enable a project for LDAP authentication by specifying an LDAP configuration file. For syntax and options, see "setldapconfig" on page 58.
- Use the getldapconfig subcommand to review the project configuration that you specified.

Designating LDAP authentication for project users

Administrators can selectively apply LDAP authentication to some users in a project and Rational RequisitePro authentication to others. To assign LDAP authentication to project users, the administrator can use one of two methods:

- Use the Add User or Edit User window in the Rational RequisitePro client for Windows to set LDAP authentication for a user:
  1. Click **File > Project Administration > Security**.
  2. Select a user group and a user name and click **Add** or **Edit**.
  3. Select the **LDAP authentication** check box.

     For more information about these security windows, see the Rational RequisitePro Help.
- Use the rpsetup command line utility and the setauthenticationmode subcommand to designate LDAP authentication for all users or individual users within a project. By using this subcommand, users who are not specified for LDAP authentication are authenticated by Rational RequisitePro. For syntax and options, see "setauthenticationmode" on page 59.

Use the getauthenticationmode subcommand to review the designations you have set for all users or individual users within a project.

Enabling SSL Encryption with GSKit

To help ensure that communication between Rational RequisitePro and the LDAP directory server is private and secure, enable Secure Sockets Layer (SSL). SSL is a protocol that encrypts data sent between clients and servers, such as Web browsers and Web servers or LDAP clients and LDAP servers. Use SSL to prevent hackers from obtaining user IDs and passwords that are sent between Rational RequisitePro and the LDAP directory server.

To ensure secure communications, SSL uses digital certificates. You must store these certificates in a key database. The Rational RequisitePro installation procedure installs a utility, Global Security Kit (GSKit iKeyman), that you use to create a key database and create and import certificates. To enable SSL encryption, perform the following administrative tasks, as described in the subsequent sections of this document.

Setting JAVA_HOME

With the GSKit IKeyMan utility, you can create a key database for storing SSL certificates. To use the utility, set the JAVA_HOME environment variable to point to the directory where the Java runtime environment (JRE) is installed on your administrative PC. By default, the Rational RequisitePro installation procedure installs the JRE in the `C:\Program Files\IBM\RationalSDLC\common\Java\jre`.

1. On your Windows desktop, right-click **My Computer** and select **Properties**.
2. Click the **Advanced** tab and then click **Environment Variables**.
3. In the **System variables** area click **New**.
4. In the **Variable name** field, enter `JAVA_HOME`. Enter the path name of the JRE installation directory in the **Variable value** field. For example: `C:\Program Files\IBM\RationalSDLC\common\Java\jre`. Click **OK**.
5. Click **OK**.

Creating a key database

Use the GSKit Ikeyman utility to create a key database file for storing your SSL certificates. To use the Ikeyman utility, you must set the JAVA_HOME environment variable. See Seting JAVA_HOME.

To create a key database file, perform the following steps on your administrator PC:

1. In Windows Explorer navigate to the `C:\Program Files\IBM\GSK7` directory and double-click gsk7ikm.exe. The Ikeyman GUI opens.
2. Click **Key Database File > New**. The New window opens.
3. Select CMS in the Key database type list.
4. Enter a name for the key database file in the **File Name** field. At runtime, Rational RequisitePro can use several methods to find the key database file. If all other methods fail, Rational RequisitePro looks for a key database file named ldapkey.kdb in the directory `C:\Program Files\IBM\RationalSDLC\common`. See “Distributing the key database file” on page 51 for details about how Rational RequisitePro finds the key database file.
5. Enter the path name for the directory that contains the key database file in the **Location** field. Click **OK**. The Password Prompt window opens.
6. Enter a password for accessing the key database file in the **Password** and **Confirm Password** fields.
7. Select the **Stash the password to a file?** check box, which stores an encrypted version of the password in a file with a .sth extension. The Ikeyman utility stores the file in the same location as the key database file and uses the same

root name as the key database file. For example, if you named the key database file ldapkey.kdb, the password stash file is ldapkey.sth.

8. Click **OK**.

Use one of the following procedures to add SSL certificates to the key database file.

Multiple projects in Rational RequisitePro can use different LDAP servers and SSL certificates for authentication. If there are external connections between projects, you must store all certificates in one key database file to connect to external projects when logging in to Rational RequisitePro.

Using certificates from a commercial certificate authority

If some of your Rational RequisitePro users are with other organizations that are helping with your designs or development, then you can use a certificate from a commercial certificate authority. Rational RequisitePro supports certificates from a variety of commercial certificate authorities. To view and select a supported certificate authority, perform the following steps:

1. If the iKeyman GUI is not open, open it by navigating to the \Program Files\IBM\GSK7 directory and double-clicking gsk7ikm.exe.
2. Click Key Database File > Open. Enter the name of the key database file. Click OK. Enter the password for the key database file. Click OK.
3. In the Key database content area, select Signer Certificates from the list.

If you want to use a commercial certificate authority that is not on this list, then you can use the GSKit to add support for the signer certificate from that certificate authority.

Importing self-signed certificates

If your LDAP directory server uses self-signed certificates or certificates that are not from one of the commercial certificate authorities installed in the key database file, you must import them into the key database file. Get copies of the certificates from your LDAP server administrator.

To import a certificate into the key database file, perform the following steps:

1. If the Global Security Kit (GSKit) iKeyman GUI is not open, open it by navigating to the \Program Files\IBM\GSK7 directory and double-clicking gsk7ikm.exe.
2. Click Key Database File > Open. Enter the name of the key database file. Click OK. Enter the password for the key database file. Click OK.
3. In the Key database content area, select Signer Certificates from the list.
4. Click Add. The Add CA's Certificate from a File window opens.
5. In the Certificate file name field, enter the name and location of the certificate that you received from your LDAP server administrator. Click OK.
6. Enter a label name. Choose a name that identifies the certificate authority. For example, you might use MYLDAP to identify the LDAP server as the self-signed certificate authority. Click OK. The new certificate appears in the list of signer certificates.

Distributing the key database file

After you create the key database file and import any self-signed certificate or certificates that are not ″well-known″ into it, you must make the key database file and password stash file available to all clients that access the LDAP directory server. When Rational RequisitePro attempts to authenticate a user against the LDAP directory server using SSL, it retrieves the appropriate certificate from the

key database file. If Rational RequisitePro cannot find the key database file and password stash file, it cannot authenticate the user.

Choose one of the following methods for making the key database file available for all clients:

- If you name the key database file and password stash file ldapkey.kdb and ldapkey.sth, respectively, you can distribute copies of both files to all clients and instruct the users to store the files in the default location: `install drive:\install directory\IBM\RationalSDLC\common`.
- Place the key database file and password stash file in a location that is accessible to all clients, such as a network share. When you configure the project for LDAP authentication, you identify the location of the key database file and password stash file by specifying the –K option to the rpsetup setldapinit subcommand.
- Distribute the key database file and password stash file to all clients and instruct the users to store the files in a specific location. The location's path name must be the same on all client computers, including the drive letter. When you configure the project for LDAP authentication, you identify the location of the key database file and password stash file by specifying the –K option to the rpsetup setldapinit subcommand.
- Distribute the key database file and password stash file to all clients and let each user decide where to store the files on their computers. Each user must set the RATL_SSL_KEYRING environment variable to point to the location of the files.

It is possible to use a combination of these methods. For example, some clients might use the default location and other clients might use the RATL_SSL_KEYRING environment variable to identify the location of the files. Rational RequisitePro uses the following algorithm to attempt to find the key database file and password stash file:

1. If the RATL_SSL_KEYRING environment variable is set on the client computer, RequisitePro uses that location.
2. If the RATL_SSL_KEYRING environment variable is not set, and you identified the location by specifying the –K option to the rpsetup setldapinit subcommand, Rational RequisitePro uses that location.
3. If the RATL_SSL_KEYRING environment variable is not set and you did not specify the –K option to the rpsetup setldapinit subcommand, Rational RequisitePro looks in the default location for ldapkey.kdb and ldapkey.sth.

Setting the LDAP connection information for SSL

When you use the rpsteup setldapinit subcommand to set a parameter string for connecting your project to the LDAP directory, you can include a parameter that specifies an SSL connection. See "Command reference" for the syntax for the rpsteup subcommands and examples of SSL implementation.

Command reference

This section provides information about Rational RequisitePro LDAP configuration commands and subcommands. The following rpsteup subcommands are presented in the order in which you typically implement them.

rpsetup

The rpsetup command is used to configure Rational RequisitePro for LDAP authentication. Run this command from the Rational RequisitePro `bin` directory, which is installed by default at `C:\Program Files\IBM\RationalSDLC\RequisitePro\bin`.

rpsetup *subcommand "argument"*

Arguments for the rpsetup command

Argument	Description
subcommand	See the list of subcommands in the introduction to this section "Command reference" on page 52. Detail for each subcommand syntax is provided in this section.
argument	A string that specifies subcommand parameters for the rpsetup command. See each subcommand for a description of parameters.

setldapinit

rpsetup setldapinit *config_filename "ldap_parameters"*

Use the setldapinit subcommand to specify a configuration file and set the parameters that are required to initialize a connection to the LDAP directory. This subcommand creates a new file if one does not exist, or overwrites an existing file of the same name. If the *ldap_parameters string* string is blank (""), all entries in an existing configuration file are cleared.

Arguments for the setldapinit subcommand

Argument	Description
config_filename	The name of the LDAP configuration file, which has an .ini extension. It is helpful to locate this file on a shared network location and use Universal Naming Convention (UNC) for specifying the path. If RequisitePro cannot reference this file, LDAP authentication cannot occur.
ldap_parameters string	A string that specifies the parameters for initializing a connection to the LDAP directory. For a description of the parameters, see the following table. Use a backslash (\) to escape any double quotes within the string. Enclose any value in single quotes if it contains a space. These parameters are a subset of the arguments available for use with the IBM Tivoli Directory Server ldapsearch function. For more information, see the syntax for that function in the *IBM Tivoli Directory Administration Guide*.

Parameters for the setldapinit subcommand

Parameter	Description
-h *ldaphost*	A host on which the LDAP server is running. The IBM Tivoli documentation describes several ways to specify multiple host names. Use single quotes to enclose multiple host names.
-p *ldapport*	A TCP port where the LDAP server listens. The default LDAP port is 389. If you specify –Z and do not specify a port with –p, the default SSL port 636 is used.
-w *passwd*	Specifies the password to use to authenticate the user record at the DN that you specify with the –D argument. This password is encrypted in the configuration file; do not attempt to edit this value in a text editor.
–wz *passwd*	Specifies the password to use to authenticate the user record at the DN that you specify with the –D argument. This password is encrypted using a FIPS-compliant encryption system.
-D *bindname*	Binds a user record to a distinguished name (DN) in the LDAP directory tree. The binddn argument is a string-represented DN.
-K *keyfile*	The name of the SSL key database file (with extension of kdb). You can override the –K setting by setting the RATL_SSL_KEYRING environment variable. If you do not specify –K or set the RATL_SSL_KEYRING environment variable, the rpsetup utility looks in the `IBM\RationalSDLC\common` directory for a file called ldapkey.kdb.
-N *certificatename*	The label associated with the client certificate in the key database file.
–P *keyfilepw*	The key database file password. This password is required to access the encrypted information in the key database file (which may include one or more private keys). If you do not specify this argument, GSKit looks in the directory that contains the key database file for a password stash file of the same name as the key database file with an extension of .sth. The .sth extension identifies a password stash file, which can contain an encrypted password that GSKit knows how to retrieve. If you do not specify –Z and –K, the rpsetup utility ignores the –P argument.
-R	Disables referral chasing (typically for MS Active Directory)
–Z	Indicates that a secure SSL connection is to be used to communicate with the LDAP server. This option is supported only when the SSL component, as provided by the IBM GSKit, is installed.

In the following example, the setldapinit subcommand creates the `configfile.ini` file for connecting to the LDAP directory. The host on which the LDAP server runs is `ourldapserver` on the `ourcompany` domain. The LDAP port is `123`.

```
rpsetup setldapinit \\server\share\configfile.ini  "-h
ourldapserver.ourcompany.com -p 123 -D 'bind name' -w my_passwd"
```

The following example uses the –K option to identify the location of the key database file and stash password file. The locations are accessible to all clients. The –Z option indicates that SSL is to be used.

```
rpsteup setldapinit \\server\share\configfile.ini "-h
'ourldapserver.ourcompany.com  altldapserver.ourcompany.com' -Z -K
\share\cqdata\ldapkey.kdb"
```

The following example omits the –K option because the key database file and password stash file are not stored in a central location that is accessible to all clients. Instead, the administrator distributed copies of the files to all clients, and the users either stored the files in the default location or stored them in a different location and set the RATL_SSL_KEYRING environment variable to point to that location.

```
rpsteup setldapinit \\server\share\configfile.ini "-h
'ourldapserver.ourcompany.com altldapserver.ourcompany.com' -Z"
```

Including the -R parameter at the end of the `installutil setldapinit` command will disable referral chasing. The -R parameter needs to be inside the quoted part of the command in order to be recognized, for example:

```
installutil setldapinit connection1 admin "" "-h ldap1.domain.com -p 389 -D
'CN=user,OU=org1,DC=domain,DC=com' -w password -R"
```

getldapinit

rpsetup getldapinit *config_filename*

Use the getldapinit subcommand to retrieve and display the setldapinit parameters of an LDAP configuration file, as in the following example:

```
rpsetup getldapinit \\server\share\configfile.ini
```

setldapsearch

rpsetup setldapsearch *config_filename "setldapsearch_parameters"*

Use the setldapsearch subcommand to specify the LDAP search criteria to use to find an LDAP user record for authentication. The setldapsearch subcommand uses the user name value that the user enters in the RequisitePro Logon window. This subcommand overwrites any existing search criteria in the configuration file. If the *setldapsearch_parameters* string is blank (*""*), all search criteria in the configuration file are cleared.

Arguments for the setldapsearch subcommand

Argument	Description
config_filename	The name of the LDAP configuration file.

Arguments for the setldapsearch subcommand

Argument	Description
setldapsearch_parameters	A string delimited by double quotes that specifies the LDAP search criteria for finding an LDAP user record for authentication. For a description of the parameters, see the following table. Use a backslash (\) to escape any double quotes within the string. Enclose any value in single quotes if it contains a space. Within the *setldapsearch_parameters* string, you can use the **%login%** parameter to designate the attribute for matching the value the user enters in the **Username** field in the Logon window. You can set this parameter to any LDAP attribute that contains a unique value, such as user name, e-mail address, or employee ID. Tell users with LDAP authentication the value they must enter when logging in to Rational RequisitePro. These parameters are a subset of the arguments available for use with the IBM Tivoli Directory Server ldapsearch function. For more information, see the syntax for that function in the *IBM Tivoli Directory Administration Guide*.

Parameters for the setldapsearch subcommand

Parameter	Description
–b *searchbase*	Identifies a DN to use as the starting point for the search. This option is required and must be specified with the –s *scope* option, which defines the scope of the search.
filter	A string representation of the filter to apply in the search. Simple filters can be specified as *attributetype=%login%*. For information about specifying more complex filters, see *IBM Tivoli Directory Administration Guide*.
–s *scope*	Specifies the scope of the search. Acceptable values are: • base: base object • one: one level • sub: subtree The default is sub.

In the following example, the setldapsearch subcommand identifies the configuration `configfile.ini` file and specifies the search string to use to search the LDAP directory for the user record that corresponds to the user's login entry. The DN search begins with the country as `us`, the organizational unit as `hr_dept`,

and the organization as `ourcompany.com`. The search string specifies to search for a user record with an e-mail address attribute that contains the same value as the login name in the Project Logon window.

```
rpsetup setldapsearch \\server\share\configfile.ini "-b c=us,ou=hr_dept,
o=ourcompany.com \"emailaddress=%login%\""
```

getldapsearch

rpsetup getldapsearch *config_filename*

Use the getldapsearch subcommand to retrieve and display the search criteria of an LDAP configuration file, as in the following example:

```
rpsetup getldapsearch \\server\share\configfile.ini
```

setrpldapmap

rpsetup setrpldapmap *config_filename reqpro_user_field ldap_user_attribute*

The setrpldapmap subcommand identifies the Rational RequisitePro user record field and the LDAP user attribute that Rational RequisitePro uses to associate corresponding user records in the project and the LDAP directory. Rational RequisitePro retrieves the value of the LDAP user record attribute to search the project for a matching user record. If a match is found, the user records are considered to be valid corresponding records.

The value stored in the Rational RequisitePro user field is compared against the value found in the LDAP user attribute. If there is a match, Rational RequisitePro uses the information in both records to authenticate the user and grant access to the project.

Arguments for the setldapmap subcommand

Argument	Description
config_filename	The name of the LDAP configuration file.
reqpro_user_field	One of the following Rational RequisitePro user fields for mapping a user record to an LDAP user record: • RP_USERNAME. The user name. • RP_EMAILADDRESS. The user e-mail address. • RP_FULLNAME. The full name of the user.
ldap_user_attribute	The LDAP user record attribute that maps to the specified reqpro_user field. If this attribute is also specified as the **%login%** search parameter, Rational RequisitePro compares the user login value directly to the mapped value in the Rational RequisitePro user record field. This is a potential performance improvement because it avoids unnecessary access to the LDAP directory.

In the following example, the setrpldapmap subcommand identifies the configuration `configfile.ini` file, and specifies that the RequisitePro user record RP_EMAILADDRESS field should map to the LDAP emailAddress attribute.

```
rpsetup setrpldapmap \\server\share\configfile.ini RP_EMAILADDRESS emailAddress
```

getrpldapmap

rpsetup getrpldapmap *config_filename*

Use the getrpldapmap subcommand to retrieve and display the mapping of user record values in Rational RequisitePro fields and LDAP attributes as specified by the LDAP configuration file, as in the following example:

```
rpsetup getrpldapmap \\server\share\configfile.ini
```

verifyconfig

rpsetup verifyconfig *config_filename ldap_login ldap_password*

Use the verifyconfig subcommand to confirm that an LDAP configuration is working correctly.

Arguments for the verifyconfig subcommand

Argument	Description
config_filename	An LDAP configuration file
ldap_login	An LDAP user login name
ldap_password	An LDAP login password

The verifyconfig subcommand uses an LDAP user name and password and the LDAP configuration settings to test the LDAP authentication. The subcommand checks for the following conditions:

- There is a valid, accessible LDAP server.
- The user record can be located and authenticated using the specified search criteria.
- The LDAP mapping attribute exists.

If the validation is successful, the project is ready to authenticate Rational RequisitePro users with the LDAP server.

In the following example, the verifyconfig subcommand checks the LDAP configuration settings in the `configfile.ini` file for the default project and specified LDAP directory. The subcommand uses the LDAP user `jsmith@ourcompany.com` and LDAP password `js_pwd` to attempt to perform an LDAP authentication.

```
rpsetup verifyconfig \\server\share\configfile.ini jsmith@ourcompany.com js_pwd
```

setldapconfig

rpsetup setldapconfig *reqpro_project reqpro_admin reqpro_password config_filename*

Use the setldapconfig subcommand to enable LDAP authentication for a project through an LDAP directory that is specified in a configuration file.

The subcommand setldapconfig returns an error if it cannot do any of the following:

- Find the specified project.
- Log in to the project as an administrator with the provided user name and password.

This subcommand uses the authentication mode for this administrator record to authenticate.

- Find the configuration file.

Arguments for the setldapconfig subcommand

Argument	Description
reqpro_project	The path and name of the project file, with the .rqs extension. Use Universal Naming Convention (UNC) to access project files on network servers.
reqpro_admin	The user name of a project administrator.
reqpro_password	The password of the reqpro_admin project administrator.
config_filename	The name of the LDAP configuration file.

In the following example, the setldapconfig subcommand enables LDAP authentication for the `my_proj` project by using the `admin` administrator name and password and the configuration file `configfile.ini` to connect to the LDAP directory.

```
rpsetup setldapconfig "\\server\Program Files\IBM\RationalSDLC\Requisitepro\
projects\my_proj\my_proj.rqs" admin admin_pwd \\server\share\configfile.ini
```

getldapconfig

rpsetup getldapconfig *reqpro_project reqpro_admin reqpro_password*

Use the getldapconfig subcommand to retrieve and display the LDAP configuration settings for a project, as shown in the following example:

```
rpsetup getldapconfig "\\server\Program Files\IBM\RationalSDLC\Requisitepro\
projects\my_proj\my_proj.rqs" admin admin_pwd
```

setauthenticationmode

Use the setauthenticationmode subcommand to enable authentication for an individual user or for all users in the project. If you enable LDAP authentication, the RequisitePro password of the user is removed. If LDAP is disabled later, the administrator or user must create a new password for the user in Rational RequisitePro.

If you enable LDAP authentication for all users, keep one administrator record that is authenticated in Rational RequisitePro. This ensures that you can access Rational RequisitePro administrative functions if the LDAP directory is unavailable.

rpsetup setauthenticationmode *reqpro_project reqpro_admin reqpro_password reqpro_user authentication_mode ldap_login_name* [-enableAll]

Argument	Description
reqpro_project	Identifies the name of the project that contains the user whose authentication mode you are setting.
reqpro_admin	The user name of the project administrator.
reqpro_password	The password of the project administrator.

Argument	Description
reqpro_user	The name of the user whose authentication mode you are setting. This user must be an active user in Rational RequisitePro; that is, the user is not assigned to the Deleted Users group.
authentication_mode	Sets authentication for the user in LDAP or in Rational RequisitePro. Valid values are: • LDAP_AUTHENTICATION • REQPRO_AUTHENTICATION Administrators who are currently logged in cannot set their own authentication to LDAP. They must log in as a different administrator to set the mode for their user record.
ldap_login_name	Specifies a user login name in the LDAP directory for authentication. The utility copies the value in the LDAP mapping attribute to the mapped field in the corresponding Rational RequisitePro user record, except when the mapping attribute is the RP_USERNAME. If this value is blank, the utility modifies the user record to require LDAP authentication. It also verifies that the mapping field value unique among all users in the project who are enabled for LDAP authentication.
-enableAll	This option sets the specified authentication mode for all users. If you use this argument to set the authentication mode to LDAP for all users, it does not set the authentication for the administrator who is logged in.

In the following example, the setauthenticationmode subcommand logs in to the `my_proj` project as the `admin` user and sets the `jsmith` user record to LDAP authentication.

```
rpsetup setauthenticationmode
"\\server\Program Files\IBM\RationalSDLC\Requisitepro\projects\my_proj\my_proj.rqs"
admin admin_pwd "jsmith" LDAP_AUTHENTICATION jsmith@ourcompany.com
```

getauthenticationmode

rpsetup getauthenticationmode *reqpro_project reqpro_admin reqpro_password reqpro_user* [-reportAll]

Use the getauthenticationmode subcommand to retrieve and display the LDAP authentication mode settings for a single user or all users within a project. The following example retrieves authentication mode settings for all users with the `my_proj.rqs` project:

```
rpsetup getauthenticationmode
"\\server\Program Files\IBM\RationalSDLC\Requisitepro\projects\my_proj\my_proj.rqs"
admin admin_pwd "" -reportAll
```

6 Configuring FIPS

IBM Rational RequisitePro can be configured to use project passwords which comply with the Federal Information Processing Standard (FIPS).

This chapter is intended for Rational RequisitePro administrators and describes the following topics:

- Overview of the FIPS-compliant encryption feature used by Rational RequisitePro
- Procedure for creating and implementing new keys
- Procedure for migrating legacy projects to a FIPS-compliant encryption scheme
- How to apply a new key to the access control database used in Rational ClearQuest integrations

Implementing a FIPS-compliant encryption scheme has implications for configuring LDAP-based authentication. Administrators should review that chapter before implementing FIPS.

FIPS overview

The Federal Information Processing Standard (FIPS) Publication 140-2 is a U.S. government computer security standard used to accredit cryptographic modules. By default, all new projects, including projects created from baselines, use FIPS-compliant passwords.

Background information

FIPS 140-2 lists approved methods for encrypting sensitive information, one of which is AES-128 (Advanced Encryption Standard). AES-128 is a 128-bit symmetric key encryption method, which means the same key is used for both encryption and decryption. RequisitePro uses AES-128 to restrict access to the Rational RequisitePro database, and to restrict access to the LDAP-based authentication system.

Versions of Rational RequisitePro earlier than 7.1 used an encryption method that is not sanctioned by FIPS 140-2. A mechanism is provided to convert projects created with older versions to the newer, FIPS-compliant format.

Encryption keys are stored in a local repository known as a key database. Rational RequisitePro administrators can manage keys in the keystore through the Global Security toolkit, which is a utility included with RequisitePro. Access to the keystore is controlled by a password.

Rational RequisitePro supports two mechanisms for validating the user name and password of someone trying to access Rational RequisitePro projects:

- Validation against a password stored in the database managed by Rational RequisitePro (non-LDAP)
- Validation against a LDAP service, which is a network-based authentication system designed for enterprise networks

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Note: Administrators who want to comply with FIPS should implement LDAP-based authentication.

FIPS impact on non-LDAP installations

Access to the database containing the user names and passwords of all projects managed by a Rational RequisitePro server are protected by a master password encrypted using AES-128. AES-128 is only used to control access to the Rational RequisitePro database; it is not used to encrypt individual user logon passwords.

Note: As part of the initial configuration process, administrators should replace the default key used for new installations with a new key.

FIPS impact on installations that use LDAP

In environments where the corporate network already provides LDAP service, Rational RequisitePro administrators have the option to implement LDAP-based authentication. In this scenario, passwords are not stored in a database managed by Rational RequisitePro. When users try to use Rational RequisitePro, their login credentials are validated using the LDAP service.

If the LDAP service requires the Bind DN user and Bind DN passwords for authentication, assess to the LDAP server can be protected through this mechanism. To do this, administrators should enable FIPS encryption by using the **–wz** switch to specify the password instead of **–w** with the `setldapinit` command:

```
rpsetup setldapinit -wz password
```

After doing this, users can authenticate (bind) using the LDAP service.

Creating a key database

The encryption key database can be created with the IBM Global Security Toolkit.

The name of the key database used by Rational RequisitePro is `requisitepro.kdb`. It must be located in <install_path>\common.

Note: The default installation path is `C:\Program Files\IBM\RationalSDLC\`.

Note: Access to the key database should be carefully controlled by the RequisitePro Administrator. Anyone who can access this file can compromise the security restrictions on all projects managed by Rational RequisitePro.

1. Verify that you have the `JAVA_HOME` environment variable set correctly: `JAVA_HOME=<install_path>\common\java\jre`.
   a. Open Windows **Control Panel**.
   b. Double-click the **System** icon.
   c. Click the **Advanced** tab.
   d. Click the **Environment Variables** button.
   e. Select the **New** button for the upper window to create a new environment variable.
   f. For **Variable name** enter `JAVA_HOME`.
   g. For **Variable value** enter `C:\Program Files\IBM\RationalSDLC\common\java\jre`. If you've chosen to use an installation path other than the default, use that instead.

h. Click **OK**. You can now close the Control Panel window

2. Navigate to C:\Program Files\IBM\GSK7\bin\ and launch the IBM Global Security Toolkit by double-clicking **gsk7ikm.exe**.

   Note: If the JAVA_HOME variable is not set you will see an error message which says ″failed to parse JAVA_HOME setting″.
   The IBM Key Management window will appear.
3. Create a new key database file of type **CMS** called requisitepro.kdb in <install_path>\common.
   a. Select **Key Database File** → **New**.
   b. Select **Key database type** → **CMS**.
   c. In the **File Name** field enter requisitepro.kdb.
   d. In the **Location** field enter C:\Program Files\IBM\RationalSDLC\common\. If IBM Rational RequisitePro is installed somewhere other than C:\Program Files\IBM Rational\ use that path instead.
   e. Click **OK**.

   The Password Prompt window appears.
4. In the Password Prompt window set the **Password** to RequisitePro71. Enter the same password in the **Confirm Password** field.
5. **Optional:** Set an expiration time.
6. Click **OK**.
7. Do one of the following:
   - Import an existing certificate:
     a. Set key label RequisitePro.
     b. Set this certificate as the default certificate.
   - Create a new self-signed certificate:
     a. Set key label RequisitePro.
     b. Enter values for other required fields.
     c. Set this certificate as the default certificate.
8. Exit the IBM Global Security Toolkit by selecting **File** → **Exit**.

Changing the encryption key

Digital certificates containing the encryption key can be set to expire in a given period of time. Before this happens, the RequisitePro Administrator can update the encryption of all current projects using a new encryption key. The new key can be based on an existing certificate or created.

The JAVA_HOME environment variable must be set to <install_path>\common\java\jre

Note: The default installation path is C:\Program Files\IBM\RationalSDLC\.

1. Launch the IBM Key Management application by navigating to C:\Program Files\IBM\GSK7\bin and double-clicking **gsk7ikm.exe**.
2. Select **Key Database File** → **Open**.
3. Browse to C:\Program Files\IBM\RationalSDLC\common\ and select **requisitepro.kdb**. If IBM Rational RequisitePro is installed somewhere other than C:\Program Files\IBM\RationalSDLC\ use that path instead.
4. Do one of the following:

- Create a new key and assign a unique label (Example: ReqProNew).
- Import an existing certificate and assign a unique label.

The procedure for creating a key or importing a certificate is described in "Creating a key database" on page 62.

5. **Key Database File → New** create new keystore of type CMS with password `RequisitePro71`.
6. From **Key database content** select **Personal certificates** and click **Import**.
7. Select `<install_path>\common\RequisitePro.kdb`. Select the new certificate (ReqProNew). Assign the label `RequisitePro`.
8. Exit the IBM Key Management application.
9. Navigate to `C:\Program Files\IBM\RationalSDLC\RequisitePro\bin\` and double-click **RqProjectEncryption.exe**.
10. Enter the **Project path**, **Username** and **Password**.
11. Enter the **Current key label** and **New key labels**. Click **Update Encryption**.
12. Rename `<install_path>\common\requisitepro.kdb` (example: `requisitepro.kdb.off`). Rename the new keystore to `<install_path>\common\requisitepro.kdb`.
13. Verify that Rational RequisitePro can use the new keystore to open a project.
14. Optional: delete `requisitepro.kdb.off`.

The RequisitePro Administrator must run `rpsetup setldapinit` command and the batch refresh configuration after changing the encryption key. See "Batch refresh configuration file" on page 65 for more information.

Changing the default password for the key database

The default password for the key database can be changed. This allows Administrators to assign different passwords to key databases distributed throughout the enterprise.

Note: The default password for the key database is **RequisitePro71**.

Note: The default installation path is `C:\Program Files\IBM\RationalSDLC\`.

The procedure uses the IBM Global Security Toolkit and the Project Encryption configuration utility.

1. Launch the IBM Global Security Toolkit by navigating to `C:\Program Files\IBM\GSK7\bin\` and double-clicking **gsk7ikm.exe**.
2. Select **Key Database File → Open** and navigate to **requisitepro.kdb** which is in the `<install_path>\common\` folder.
3. Select **File → Change Password**.
4. Enter a new password.
5. Exit **gsk7ikm**.
6. Navigate to `C:\Program Files\IBM\RationalSDLC\RequisitePro\bin` and double-click **RqProjectEncryption.exe** The Project Encryption configuration window opens.
7. Click **Key database password**. The Key database password window appears with the file name of the key database. By default, this is `RequisitePro.kdb`.
8. Enter the new password and click **OK**. The utility creates a stash file named `requisitepro.kdb.rp.sth` in the `<install_path>\common\` folder.

9. Verify that Rational RequisitePro can use the key database to open a project.

The RequisitePro Administrator must now distribute the key database (`requisitepro.kdb`) and the stash file (requisitepro.kdb.rp.sth) to all users. Both of these files should be located in the `<install_path>\common\` folder.

Changing the encryption method for legacy projects

The encryption method used to secure projects created with versions of Rational RequisitePro prior to 7.1 can be upgraded to one that is FIPS-compliant.

You will need the Administrator's password to perform this procedure.

There are two possible methods for encrypting passwords used to restrict access Rational RequisitePro projects:

- A built-in encryption method (⌂RequisitePro encryption⌂). This was the only option prior to 7.1.
- AES-128, which is a FIPS-compliant encryption method. This is the default method for projects created with Rational RequisitePro 7.1 or later.

Legacy projects can be upgraded to the more secure AES-128 method using a utility application provided with Rational RequisitePro 7.1 or later.

1. Navigate to `C:\Program Files\IBM\RationalSDLC\RequisitePro\bin\`.
2. Double-click `RqProjectEncryption.exe`. The Project Encryption configuration window appears.
3. Enter the full path to the RQS file associated with the project you want to upgrade.
4. Enter **Username** and **Password**.
5. Select **AES-128** as the encryption method.
6. Click **Encrypt**.

Batch refresh configuration file

This file is used when Rational ClearQuest is integrated with Rational RequisitePro.

Encrypted passwords can exist in the following places:

- RQL files (one for each project)
- The LDAP configuration file (one for each Rational RequisitePro database)
- The batch refresh configuration file (only present when Rational RequisitePro is integrated with Rational ClearQuest)

The batch refresh configuration file contains the encrypted database password for Rational ClearQuest.

Note: The default installation path is `C:\Program Files\IBM\RationalSDLC\`. This is indicated as `<install_path>`.

The batch refresh configuration file is located at `<install_path>\RequisitePro\bin\CQIRefresh.xml`.

To implement a FIPS-compliant password, Rational RequisitePro administrators should start the batch refresh configuration, specify all the configuration parameters and click **Save**. This will update an existing configuration file or create a new configuration file.

Note: This process must be repeated every time the encryption key is changed.

7 Before installing Rational RequisitePro

This section describes how to prepare for installing Rational RequisitePro.

For the most current information about features and known problems, see the *IBM Rational RequisitePro Release Notes*, as described in "Related information" on page x.

Client installation checklist

Use the checklist in Table 10 to prepare your installation of Rational RequisitePro.

Table 10. RequisitePro client for Windows installation checklist

Done	Task
Before installation	
	Contact your administrator to get a license key to run Rational RequisitePro on your computer. Your administrator might configure a license server, which you can point to in the Rational License Key Administrator wizard.
	Make sure that your computer has access to the database servers that provide storage for the Rational RequisitePro projects. If your organization plans to use an IBM DB2 or Oracle database, install the client software for that database type on your computer and create an alias for the Rational RequisitePro database. See "Installing the DB2 client" and "Installing the Oracle client" on page 68. Create the database alias for accessing your project database; see "Defining a DB2 database alias" on page 101 or "Defining an Oracle database alias" on page 101.
	Make sure that you have administrator privileges on your desktop. See "Administrator privileges" on page 7.
	Verify that your computer meets the system and software requirements for running RequisitePro. See "System and software requirements" on page 5.
	Ask your administrator which deployment type has been selected for your team. For more information, see 8, "Installing software," on page 69.
Installing Rational RequisitePro	
	See 8, "Installing software," on page 69 for instructions on installing using the selected deployment method for your team.
After installation	
	See the tutorials and Help, available in Rational RequisitePro for help in getting started. For information about creating projects in an enterprise database, see the section "Creating projects" on page 102.

Installing the DB2 client

If your team is using DB2 for Rational RequisitePro projects and you are using the Rational RequisitePro client for Windows rather than a RequisiteWeb browser on your computer, you must install compatible DB2 client software on your computer. For installation information, search for "DB2 client" at the IBM Publications Center http://www.ibm.com/shop/publications/order.

After the client software is installed, use the DB2® Connect™ Personal Edition to create a DB2 alias on your desktop client to access the DB2 database server. If you plan to share projects with other users, be sure to use a consistent database alias as determined by your database administrator or project administrator.

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Note: Clear the **Register this database for ODBC** check box if it is selected.

Installing the Oracle client

If your team is using Oracle for Rational RequisitePro projects and you are using the Rational RequisitePro client for Windows rather than a RequisiteWeb browser on your computer, you must install compatible Oracle client software on your computer. To install Oracle client software, see the Oracle product documentation.

After the client software is installed, create an alias using the Oracle Net Configuration Assistant or Oracle SQL Net Easy Configuration tool. If you plan to share projects with other users or RequisiteWeb servers, use a consistent database alias, as determined by your database administrator or project administrator.

Setting up the RequisiteWeb client

Use the checklist in Table 11 to configure the RequisiteWeb client on your desktop.

Table 11. Rational RequisitePro Web client installation checklist

Done	Task
	Check with your administrator to ensure that the RequisiteWeb server is operating before you continue with this checklist.
	To use RequisiteWeb, be sure that one of the supported Web browsers is installed on your computer. See “System and software requirements” on page 5 for the supported Web browsers.
	For proper RequisiteWeb operation, set your browser to allow cookies and enable JavaScript.
	(Optional) Install Microsoft Word for offline editing of Word documents.
	Log on to RequisiteWeb.

To access RequisiteWeb from clients, users should install a Web browser listed in “System and software requirements” on page 5. You do not need to install Rational software, database client software, or a license key on your computer.

Logging on to RequisiteWeb

To log on to RequisiteWeb for the first time:

1. Ask your administrator for the ReqWeb database server name and the user name and password you should use.
2. Start your Web browser and type the following:

   http://<*server name*>**/ReqWeb**

   where *server name* is the name of the database server.
3. Press Return.

   The RequisiteWeb Logon page opens.
4. In the RequisiteWeb Logon page:
   a. From the **Project** list, select the project.
   b. In the **User** and **Password** fields, type the information that your administrator gave you.
   c. Click **Logon**.

8 Installing software

This section describes how to install Rational RequisitePro using the IBM Installation Manager.

Custom setup options

The Install Packages Location page of the Installation Manager displays a default installation path. If you are installing on a 64-bit operating system and plan to use an Oracle database for your projects, do not install Rational RequisitePro or RequisiteWeb in the default path, which includes `C:\Program Files (x86)\IBM\RationalSDLC\`. Install in a custom path that does not include parentheses.

If you install Rational RequisitePro with the Web components in a location other than the default 32-bit OS directory `C:\Program Files\IBM\RationalSDLC\`, you must edit the RequisiteWeb configuration file and the `catalog.txt` file, which provides access to projects. See "Editing the configuration file for an alternate installation directory" on page 30 and "Managing projects in RequisiteWeb" on page 42.

The Installation Manager includes an Install Packages Features page, which presents options for installing Rational RequisitePro components that are not part of the default installation. You can include these options in addition to the Rational RequisitePro client for Windows and associated default components. Use Table 12 to determine which components to install.

Table 12. Install packages features options for Rational RequisitePro

Option	Description
IBM Rational RequisitePro Reporting Client	Includes client software that is used by team leads to design reports. See "Installing the reporting client" on page 25.
RequisitePro Client	Includes the Rational RequisitePro client for Windows, database configuration scripts, and related components.
RequisiteWeb	Includes RequisiteWeb server program files. For more information, see 4, "Configuring RequisiteWeb," on page 27.
Reporting Server	Includes the server-based Rational RequisitePro Report Management facility for launching reports. Team members access the server and launch reports using a Web browser. See "Installing the Reporting server" on page 25.

IBM Installation Manager

IBM Installation Manager is a program that helps you install a product package on your computer. It also helps you update, modify, and uninstall any package that you install. A package can be a product, a group of components, or a single component that is specifically designed for Installation Manager to install.

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IBM Installation Manager offers several time-saving features, which you can use to complete the following tasks:

- Install product packages
- Manage licenses for installed product packages
- Search for and install updates to installed product packages
- Modify installed product packages
- Roll back installed product packages to earlier versions
- Uninstall product packages

For more information about IBM Installation Manager, see the Installation Manager Information Center:

http://www.ibm.com/software/awdtools/installmanager/support/index.html

Preinstallation tasks

Before you install the product, complete these steps:

1. Confirm that your system meets the requirements described in "Installation requirements" on page 72.
2. Run the Rational Uninstall tool if applicable. See "Uninstall Rational products"
3. Confirm that your user ID meets the required access privileges for installing the product. See "User privilege requirements for installing the product" on page 72.
4. Read "Planning to install the product package" on page 72.
5. If you are on a UNIX or Linux platform and you want to enable the product to be used by users other than root, then you must set the umask variable to 0022 **before you install the product**. To set this variable, log in as root user, start a terminal session, and type umask 0022.

Uninstall Rational products

Before installing Rational products with Installation Manager, you must use the rationaluninstalltool.exe tool to uninstall previous versions of Rational products that were installed with the MSI based install technology.

Note: If your Rational product is installed on a Linux or UNIX system platform, you must still uninstall this product before upgrading to the next version with Installation Manager, but you can uninstall your current version with the uninstall option of **install_release**.
The following products, which were installed with MSI based install technology, must be uninstalled:

- Rational ClearQuest
- Rational ClearCase
- Rational RequisitePro
- Rational Project Console
- Rational Test Manager
- Rational Robot
- Rational SoDA

Note: You must not attempt to uninstall these products with the MSI uninstall technology. The rationaluninstalltool.exe tool must be used.

If the rationaluninstalltool.exe tool is not run prior to installing a 7.1 release, the Installation Manager will warn that you have a previous version of a Rational product installed, which must be removed before Installation Manager can continue.

The rationaluninstalltool.exe tool offers two uninstall scenarios; a clean uninstall and a user data preserved uninstall.

The clean uninstall completely removes the Rational install directory as well the Rational Software registry keys under both HKEY_LOCAL_MACHINE and HKEY_CURRENT_USER.

The user data preserved uninstall does not remove files that are used to customize the environment. Use this method if you want to save customizations from your current deployment for your Installation Manager deployment. The following information identifies the files that are preserved for each of the products by this uninstall method.

Rational ClearCase

- ClearCase\var directory
- The IHS\Conf directory
- Ccweb.conf for the CCweb feature
- HKEY_LOCAL_MACHINE\Software\Atria

Rational ClearQuest

- Under both HKEY_LOCAL_MACHINE and HKEY_CURRENT_USER
  - Rational Software\Email registry key
  - Rational Software\ClearQuest registry key
- Rational ClearQuest Web Application Server:
  - jtl.properties
  - common.properties
  - dct.properties
- Rational ClearQuest Request Manager
  - common.properties
  - jtl.properties
  - logging.xml
  - rmmanager.properties
  - saved.properties
  - csm.properties

Rational RequisitePro

- RequisitePro\projects directory
- Catalog.txt

Rational SoDA

- SoDAWord\logs directory
- SoDAWord\temp directory

The rationaluninstalltool.exe tool will remove all of the Rational products listed above at once. It does not need to be re-run for each product.

To remove Rational products with the rationaluninstalltool.exe tool:

1. Copy the rationauninstalltool.exe to the computer on which you must remove the Rational products
2. From a Windows Command Prompt, run rationaluninstalltool.exe. Consult the command reference below.

Synopsis

rationaluninstalltool.exe <*log file name*> [**–c**]

Description

Use the **rationaluninstalltool.exe** command with the following subcommands:

- <*log file name*> Specify the name and location of the log file you want the logging information stored.
- [**–c**] Requests that everything is removed. The clean uninstall completely removes the Rational install directory as well the Rational Software registry keys under both HKEY_LOCAL_MACHINE and HKEY_CURRENT_USER.

  Note: If you want to run a user-data preserved uninstall, do not invoke the **–c** option. **rationaluninstalltool.exe** automatically preserves the data previously specified when this option is not used.

Installation requirements

This section details hardware, software, and user privilege requirements that must be met to successfully install and run your software.

User privilege requirements for installing the product

You must have a user ID that meets the following requirements before you can install the product.

- Your user ID must not contain double-byte characters.
- Linux You must be root.
- On UNIX systems, you must be root.
- Windows
  - **For Windows Vista**, you must log in to the Administrator account (or run as Administrator: right-click the program file or shortcut; then select **Run as Administrator**) to perform the following tasks:
    - Install or update IBM Installation Manager
    - Install or update a product offering
    - Install an Authorized-User license key for your product by using IBM Installation Manager
  - **For other supported Windows versions**, you must have a user ID that belongs to the Administrators group.

Planning to install the product package

Read all the topics in this section before you begin to install or update any of the product features. Effective planning and an understanding of the key aspects of the installation process can help ensure a successful installation.

Installation scenarios

You can follow several scenarios when you install or update the product.

The following factors might determine your installation scenario:

- The format and method by which you access your installation files (for example, from CDs or files downloaded from IBM Passport Advantage®)
- The location for your installation (for example, you can install the product onto your own workstation, or make the installation files available to your enterprise)
- The type of installation (for example, you can use the Installation Manager GUI, or install silently)

These are the typical installation scenarios you might follow:

- Installing from the CDs
- Installing from a downloaded electronic image on your workstation
- Installing from an electronic image on a shared drive
- Installing from a repository on an HTTP or HTTPS Web server

Note: Silent install is supported for the electronic image scenarios. For details, see "Installing silently" on page 89.

Installing from CDs

In this installation scenario, you have the CDs that contain the product package files, and typically you install the product on your own workstation.

See "Installing from CDs: task overview" on page 75.

Installing from a downloaded electronic image on your workstation

In this scenario, you download the installation files from IBM Passport Advantage and you install the product on your own workstation.

See "Installing from an electronic image on your workstation: task overview" on page 76 for an overview of the steps.

Installing from an electronic image on a shared drive

In this scenario, you place the electronic image on a shared drive so that users in your enterprise can access the installation files for the product from a single location.

See "Installing from an electronic image on a shared drive: task overview" on page 76.

Installing from a repository on an HTTP or HTTPS Web server

This scenario is the fastest method for installing the product on a network and is different from the shared-drive installation.

To place product package files for the product on an HTTP or HTTPS Web server, you must use IBM Packaging Utility to copy the installation files in a package format to the server. The directory on the server that contains the product package is called a repository. IBM Packaging Utility is provided with the product. The Packaging Utility is on the Enterprise Deployment CD.

See "Installing from a repository on an HTTP or HTTPS Web server" on page 78 and "Placing the product package on an HTTP Web server" on page 77.

Installation repositories

IBM Installation Manager retrieves product packages from specified repository locations.

By default, IBM Installation Manager uses the embedded URL provided for each Rational software product to connect to a repository server over the Internet. Installation Manager then searches for the product packages, product updates, and new product features.

Note: Your organization might require you to redirect the repository to use intranet sites.

If the launchpad starts Installation Manager, the repository information is passed to Installation Manager. If you start the Installation Manager, you must specify an installation repository that contains the product packages to install.

Specify repository locations in the Preferences window on the Repositories page. See "Setting repository preferences in Installation Manager."

Setting repository preferences in Installation Manager:

When the launchpad program starts the installation of the product, the location of the repository that contains the product package you are installing is already defined for IBM Installation Manager. If you start Installation Manager, you must specify the repository preference, which means the URL for the directory that contains the product package, in Installation Manager before you can install the product package.

Note: Before you start the installation process, obtain the installation package repository URL from your administrator.

To add, edit, or remove a repository location in Installation Manager:

1. Start Installation Manager.
2. On the Start page of Installation Manager, click **File** → **Preferences**, and then click **Repositories**.

   The Repositories page shows any available repositories, their locations, and whether they are accessible.
3. On the Repositories page, click **Add Repository**.
4. In the Add repository window, specify the URL of the repository location and a file path.
5. Click **OK**.

   If you provided an HTTPS or restricted FTP repository location, then you are prompted to enter a user ID and password.

   The new or changed repository location is listed. If the repository is not accessible, a red x is displayed in the **Accessible** column.
6. Repeat the previous steps for other products you may be installing at this time.
7. To exit, click **OK**.

Note: To enable Installation Manager to search the default repository locations for the installed packages, in the Preferences window, on the Repositories page, ensure that the **Search service repositories during installation and updates** option is selected.

Package groups and the shared resource directory

When you install a product package using IBM Installation Manager, you must choose a package group and a shared resource directory.

Package groups

During the installation process, you must specify a *package group* for the product package. A package group represents a directory in which packages share resources with other packages in the same group. When you install the product package using Installation Manager, you create a new package group or install the packages into an existing package group. Some packages might not be able to share a package group, in which case the option to use an existing package group is unavailable.

When you install multiple packages at the same time, all the packages are installed into the same package group.

A package group is assigned a name automatically; however, you choose the installation directory for the package group.

After you create the package group by successfully installing a product package, you cannot change the installation directory. The installation directory contains files and resources that are specific to the product package that is installed into that package group. Resources in the product package that other package groups can potentially use are placed in the shared resources directory.

Shared resources directory

The *shared resources directory* is the directory where installation artifacts are located so that one or more product package groups can use them.

Important:

- You can specify the shared resources directory once: the first time that you install a package. For the best results, use your largest disk drive. You cannot change this directory location unless you uninstall all packages.
- For Windows Vista, to enable users who *do not* have Administrator privileges to work with the product on a Windows Vista system, *do not* choose a directory in the C:\Program Files path.

Installation tasks

The following sections provide an overview of the installation scenarios that the "Installation scenarios" on page 72 section describes. The main steps link to detailed instructions.

Your organization's installation strategy determines which installation task you must complete.

Installing from CDs: task overview

In this installation scenario, you have the CDs that contain the installation files, and typically, you install the product on your own workstation.

The following steps describe how to install the product from CDs:

1. Complete the preinstallation steps listed in "Preinstallation tasks" on page 70.

2. Insert the first product installation CD into your CD drive.

   Linux Mount the CD drive.

3. Start the installation of the product from the launchpad. For details, see "Starting an installation from the launchpad program" on page 80.

   If IBM Installation Manager is detected on your workstation, it starts automatically. Otherwise, the Installation Manager is installed for you and opens when the installation is complete.

4. Click **Install Packages** and follow the instructions in the Install Packages wizard to complete the installation.

   For details, see "Installing the product package using the Installation Manager GUI" on page 80.

5. Linux Increase the number of file handles on your workstation.

   For details, see "Increasing the number of file handles on Linux workstations" on page 83.

Placing the electronic image on a shared directory

In this scenario, you place the electronic image on a shared directory or drive so that users in your enterprise can access the installation files for the product from a single location.

To place the installation image on a shared directory or drive, perform the following steps:

1. Ensure that your shared directory or drive has sufficient disk space to store the extracted installation image. If you plan to download from IBM Passport Advantage to the shared directory, it must also have sufficient space for the downloaded files.
2. From IBM Passport Advantage, download all required parts for the product image to a temporary directory.
3. Extract the installation image from the downloaded files into an accessible directory on the shared directory or drive and verify that the installation image is complete. For details, see "Verifying and extracting electronic images" on page 78.

Installing from an electronic image on a shared drive: task overview

In this scenario, you access the electronic image on a shared directory or drive and start the installation process from the launchpad.

To access the installation image on a shared drive and start the installation from the launchpad, you perform the following steps:

1. Change to the disk1 directory on the shared drive that contains the installation image.
2. Follow the steps in "Installing from an electronic image" on page 77.

Installing from an electronic image on your workstation: task overview

The following steps describe how to install the product from an electronic installation image:

1. Ensure that your workstation has sufficient space to store both the files you must download from IBM Passport Advantage and the extracted installation image.

2. From IBM Passport Advantage, download all the required parts for the product image to a temporary directory.
3. Extract the installation image from the downloaded file and verify that the installation image is complete. For details, see “Verifying and extracting electronic images” on page 78.
4. Continue with the steps in “Installing from an electronic image” below.

Installing from an electronic image

1. Complete the preinstallation steps listed in “Preinstallation tasks” on page 70.
2. Start the launchpad program. For details, see “Starting the launchpad program” on page 80.
3. Start the installation of the product from the launchpad. For details, see “Starting an installation from the launchpad program” on page 80.
   - If IBM Installation Manager is *not* detected on your workstation, you must install it to continue. When the installation completes, Installation Manager starts automatically. For details, see “Installing Installation Manager on Windows” on page 84.

     Note: If you exit Installation Manager before completing the product installation, you must restart Installation Manager from the launchpad. If you start the Installation Manager directly, it is not preconfigured with the necessary installation repositories.
   - If IBM Installation Manager is detected on your workstation but a newer version is found, confirm that you want to install it and click **OK** to proceed. Installation Manager automatically installs the new version, stops, restarts, and resumes.

     Note: To enable Installation Manager to search the predefined IBM update repository locations for Installation Manager, in the Preferences window, on the Repositories page, the **Search the linked repositories during installation and updates** preference must be selected. This preference is selected by default. Internet access is also required.
4. To complete the installation, click **Install Packages** and follow the instructions in the Install Packages wizard.

   For details, see “Installing the product package using the Installation Manager GUI” on page 80.
5. Configure your license. By default, a trial license for the product is included. You must configure the license to ensure that you have continued access to the product.

   See 12, “Managing licenses with Rational Common Licensing,” on page 119 for details.
6. Linux Increase the number of file handles on your workstation.

   For details, see “Increasing the number of file handles on Linux workstations” on page 83.

Placing the product package on an HTTP Web server

To prepare the product for installation from a repository on an HTTP or HTTPS Web server:

1. Ensure that the HTTP or HTTPS Web server has sufficient disk space to store the product package.

2. Ensure that your workstation has sufficient disk space to store both the files that you must download from IBM Passport Advantage and the extracted installation image.
3. From IBM Passport Advantage, download all the required parts for the product image to a temporary directory on your workstation.
4. Extract the installation image from the downloaded files into another temporary directory on your workstation and verify that the installation image is complete. For details, see "Verifying and extracting electronic images."
5. From the Enterprise Deployment CD (or electronic disk) appropriate for your platform, install on your workstation the IBM Packaging Utility. See "Installing Packaging Utility" on page 87
6. Using the Packaging Utility, copy the product package. See "Copying product packages using Packaging Utility" on page 88
7. Copy the output of the Packaging Utility to an HTTP or HTTPS Web Server.
8. From the Enterprise Deployment CD, copy the installation files for IBM Installation Manager to a shared drive.
9. Instruct users in your organization to install Installation Manager.
10. Provide users with the URL to the repository that contains the product package you created earlier.

Installing from a repository on an HTTP or HTTPS Web server

In this scenario, IBM Installation Manager retrieves the product packages from an HTTP or HTTPS Web server.

These steps assume that the repository that contains the package for the product has been created on the HTTP or HTTPS Web server.

To install the product package from a repository on an HTTP or HTTPS server:

1. Complete the preinstallation steps listed in "Preinstallation tasks" on page 70.
2. Linux Increase the number of file handles on your workstation. For details, see "Increasing the number of file handles on Linux workstations" on page 83.
3. Install IBM Installation Manager. See "Managing IBM Installation Manager - Working with IBM Installation Manager" on page 84. In this example, the Installation Manager installation files are available from a shared drive.
4. Start Installation Manager. For details, see Starting Installation Manager..
5. In Installation Manager, set the URL of the repository that contains the package of the product as a repository preference. See "Setting repository preferences in Installation Manager" on page 74.
6. In Installation Manager, start the Install Packages wizard and follow the instructions to complete the installation. For details, see "Installing the product package using the Installation Manager GUI" on page 80.

Verifying and extracting electronic images

If you download the installation files from IBM Passport Advantage, you must extract the electronic image from the compressed files before you can install the product.

You might want to verify the completeness of the downloaded files before extracting the image.

If you select the Download Director option for downloading the installation files, the Download Director applet automatically verifies the completeness of each file that it processes.

Alternatively, you can compare the published MD5 values with the checksum of the downloaded files to determine whether the downloaded file is corrupt or invalid.

Extracting the downloaded files

Extract each compressed file to the same directory.

Linux Do not include spaces in the directory names, or you will not be able to run the launchpad.sh command to start the launchpad from a command line.

Installing from the launchpad program

The launchpad program provides you with a single location to view release information and start the installation process.

Use the launchpad program to start the product installation if you use any of the following methods:

- Installing from the product CDs
- Installing from an electronic image on your local file system
- Installing from an electronic image on a shared drive

By starting the installation process from the launchpad program, IBM Installation Manager is installed automatically if it is not on your computer, and it starts preconfigured with the location of the repository that contains the product package. If you install and start Installation Manager directly, you must set repository preferences manually.

To install from the launchpad:

1. If you have not done so, complete the preinstallation tasks that are described in "Preinstallation tasks" on page 70.
2. Start the launchpad program. See "Starting the launchpad program" on page 80.
3. Start to install the product. See "Starting an installation from the launchpad program" on page 80.

To complete the installation, follow the instructions in the Install Packages wizard. For details, see "Installing the product package using the Installation Manager GUI" on page 80.

Windows Vista requirements for the launchpad program

Review the following requirements before starting the launchpad program on your Windows Vista system:

- You must run the launchpad program as Administrator.
  - If you start the product installation from the launchpad program, you must run the launchpad programs as Administrator.
  - If the launchpad program starts automatically (for example, if you are installing from a CD), stop the launchpad program and restart it by using the

Run as administrator command. At the root level of the CD or disk image, right-click launchpad.exe; then click **Run as Administrator**.

- You should not select installation directories in the C:\Program Files path.

  If you select an installation location or a shared resources directory in the C:\Program Files path, the packages that you install must be run as Administrator.

Starting the launchpad program

If you have not done so, complete the preinstallation tasks that are described in "Preinstallation tasks" on page 70.

If you are installing from a CD and autorun is enabled on your workstation, the product launchpad starts automatically when you insert the first installation disk into your CD drive. If you install from an electronic image, or if autorun is not configured on your workstation, you must start the launchpad program manually.

To start the launchpad program:

1. Insert the product CD into your CD drive.

   Linux Mount the CD drive.
2. If autorun is enabled on your system, the product launchpad program opens automatically. If autorun is not enabled on your system, complete these steps:
   - Windows Run launchpad.exe, which is located in the root directory of the CD.
   - Linux Run launchpad.sh, which is located in the root directory of the CD.

Starting an installation from the launchpad program

1. Start the launchpad program.
2. If you have not done so, read the release information by clicking **Release notes**.
3. When you are ready to begin the installation, click **Install <productName>**.

   If IBM Installation Manager is not detected on your system, or if a newer version is available, you must install the latest version.

   To complete the installation of IBM Installation Manager, follow the instructions in the wizard. See "Installing Installation Manager on Windows" on page 84 for more information.

   When the installation of IBM Installation Manager completes, click **Finish** to close the wizard.

   - If this is a new installation, click **Install Packages** and follow the instructions in the wizard to complete the installation process.

     For details, see "Installing the product package using the Installation Manager GUI."
   - If this is a product update, click **Update Packages** and follow the instructions in the wizard to complete the update process.

     For details, see "Updating the product" on page 84.

Installing the product package using the Installation Manager GUI

The following steps describe how to install the product package by using the Installation Manager graphical user interface (GUI). You can optionally install product updates at the same time that the base product package is installed; skip the update steps in this topic if they do not apply to your installation.

1. From the Installation Manager Start page, click **Install**.

Note: If a new version of Installation Manager is found, confirm that you want to install it to continue. Installation Manager automatically installs the new version, stops, restarts, and resumes.

2. The Install page of the Install Packages wizard lists all the packages found in the repositories that Installation Manager searched. If two versions of a package are discovered, only the most recent, or recommended, version of the package is displayed.
   - To display all versions of any package found by Installation Manager, click **Show all versions**.
   - To return to the display of only the recommended packages, deselect **Show all versions**.
3. Click the product package to display its description in the Details pane.
4. To search for updates to the product package, click **Check for Other Versions and Extensions**.

   Installation Manager searches for package updates in the predefined IBM update repository. It also searches any repository locations that you have set.

   Note: To enable Installation Manager to search the predefined IBM update repository locations for the installed packages, in the Preferences window, on the Repositories page, select the **Search service repositories during installation and updates** option. Internet access is also required.
5. If updates for the product package are found, they are displayed in the **Installation Packages** list on the Install Packages page, below their corresponding product. Only recommended updates are displayed by default.
   - To view all updates found for the available packages, click **Show all versions**.
   - To display a package description under Details, click the package name. If additional information about the package is available, such as a readme file or release notes, a **More info** link is included at the end of the description text. Click the link to display the additional information in a browser. To fully understand the package you are installing, review all the information before you start the installation.
6. Select the product package and any updates to the package that you want to install. Updates that have dependencies are automatically selected and cleared together. Click **Next** to continue.

   Note: If you install multiple Rational packages at the same time, or if you return to install another package later, all the Rational packages are installed into the same package group.
7. On the Licenses page, read the license agreement for the selected package.

   If you selected more than one package to install, there might be a license agreement for each package. On the left side of the **License** page, click each package version to display its license agreement. The package versions that you selected (for example, the base package and an update) are listed under the package name.
   a. If you agree to the terms of all the license agreements, click **I accept the terms in the license agreements**.
   b. Click **Next** to continue.
8. On the Location page, type the path for the *shared resources directory* in the **Shared Resources Directory** field, or accept the default path. (If you are installing on Linux, ensure that you do not include any spaces in the directory

path.) The shared resources directory contains resources that one or more package groups can share. Click **Next** to continue.

The default path is as follows:

- Windows: C:\Program Files\IBM\IMShared
- Linux or UNIX: /opt/IBM/IMShared

Important: You can specify the shared resources directory only the first time that you install a package. To help ensure adequate disk space for shared resources for future packages, use your largest disk drive. You cannot change the directory location unless you uninstall all the packages.

9. On this page, you will create a *package group* for the product package. A package group represents a directory in which packages share resources with other packages in the same group.

   To create a new package group:

   a. Click **Create a new package group**.
   b. Type the path for the installation directory for the package group or use the default path. The name for the package group is created automatically. (For Linux, the directory path cannot include spaces.)

      Important: For Windows Vista, do not select the default C:\Program Files directory unless you want your users to run the product as an Administrator. For details, see "Windows Vista user privilege requirements for running the product" on page 83.

10. Type a path for the *installation directory* or accept the default path.

    Note: Ensure that your installation path does not contain parenthesis or double-byte characters.

11. Click **Next** to continue.
12. Under **Languages**, select the languages for the package group. The corresponding national language translations for the user interface and documentation for the product package will be installed.
13. On the Features page, select the features you want to install. To display a description of a feature in the Details section, click on the feature name.
14. On the Features configuration pages, provide the necessary configuration information for the features you are installing. You can invoke the context sensitive help by clicking the question mark icon, or by pressing the F1 key, to learn more about the configuration requirements.
15. On the Summary page, review your choices before installing the product package. To change the choices that you made on previous pages, click **Back** and make the changes. When you are satisfied with your installation choices, click **Install** to install the package.
16. When the installation process is complete, a message confirms the success of the process.

    a. Click **View log file** to open the installation log file for the current session in a new window. You must close the Installation Log window to continue.
    b. In the Install Package wizard, select whether you want the product to start when you exit the wizard.
    c. To open the selected package, click **Finish**. The Install Package wizard closes and you return to the Start page of Installation Manager.

Increasing the number of file handles on Linux workstations

Important: For best results, before you work with your Rational product, increase the number of file handles available. A system administrator might need to make this change.

Exercise caution when you follow these steps to increase the file descriptors on Linux. Failure to follow the instructions might result in a computer that does not start correctly. For the best results, have your system administrator perform this procedure.

To increase the file descriptors:

1. Log in as root. If you do not have root access, you must obtain it before you continue.
2. Change to the etc directory.
3. Locate the initscript shell script. Open the file or create it with a Linux text editor.

   Important: Do not leave an empty initscript file on your computer. If you do so, your computer will not start the next time that you turn it on or restart it.
4. On the first line, set ulimit to a number significantly larger than 1024, the default on most Linux computers.

   ```
   ulimit -n 4096
   ```

   Caution: Setting ulimit too high can impact system-wide performance.
5. On the second line, type `eval exec "$4"`.
6. Save and close the shell script.

For more information on the ulimit command, refer to the man page for ulimit.

Windows Vista user privilege requirements for running the product

Windows Vista users have additional considerations related to user privileges and product installation choices.

To enable users who do *not* have Administrator authority to work with the product, complete the following steps:

- Do not install the product into a package group that uses the C:\Program Files directory path.
- Do not choose a shared resources directory in the C:\Program Files directory path.

Note: Similarly, if you are extending an existing Eclipse installation on Windows Vista, do not install Eclipse in the C:\Program Files directory path.

If you *do* install the product in a package group that uses C:\Program Files or choose a shared resource directory in C:\Program Files, Windows Vista users must run the product as Administrator.

If, at a later time, you want to allow Windows Vista users to run as a non-Administrator user, you must reinstall the product to make new selections for the package group and shared resources directory.

Updating the product

You can install updates for packages that were installed by using IBM Installation Manager. Package updates provide fixes and updates to installed features and might include new features that you can install by using the Modify Packages wizard.

For information on installing updates, see the topic Installing Updates in the IBM Installation Manager Information Center: http://publib.boulder.ibm.com/infocenter/install/v1r2/index.jsp?topic=/com.ibm.cic.agent.ui.doc/topics/t_install_updates.html.

Modifying a product installation

IBM Installation Manager enables you to modify the language and feature selections of an installed product package.

For information on modifying packages, see the topic Modifying Installed Packages in the IBM Installation Manager Information Center: http://publib.boulder.ibm.com/infocenter/install/v1r2/index.jsp?topic=/com.ibm.cic.agent.ui.doc/topics/t_modify_install_pkg.html.

Uninstalling the product

The Uninstall option in IBM Installation Manager enables you to uninstall packages from a single installation location. You can uninstall all installed packages from every package group.

For information on uninstalling, see the topic Uninstalling Products, Packages, and Updates in the IBM Installation Manager Information Center: http://publib.boulder.ibm.com/infocenter/install/v1r2/index.jsp?topic=/com.ibm.cic.agent.ui.doc/topics/t_uninstall.html.

Managing IBM Installation Manager - Working with IBM Installation Manager

This section deals with common IBM Installation Manager tasks. For more information, see the Installation Manager online help or the Installation Manager Information Center at http://www.ibm.com/software/awdtools/installmanager/support/index.html.

Installing IBM Installation Manager

When you installed your prerequisite host software application, you first installed IBM Installation Manager. For instructions on installing Installation Manager, refer to the *Installation Guide* for your host software application. (For example, see the *Installation Guide* for Installation Manager.

Installing Installation Manager on Windows

If the launchpad program starts the product installation, IBM Installation Manager is installed automatically if it is not installed. For more information about this process, see “Installing from the launchpad program” on page 79. In other cases, you must manually install Installation Manager.

To manually install Installation Manager:

1. From the InstallerImage_win32 folder on the first installation disk or from the directory where you extracted the product installation files, run `install.exe`.
2. On the Install Packages page, click **Next**.
3. On the License Agreement page, review the license agreement, and to accept it, select **I accept the terms in the license agreement**, and click **Next**.
4. If required, to change the installation location, on the Destination Folder page, click **Browse**, and click **Next**.
5. On the Summary page, click **Install**. When the installation process is complete, a message confirms the success of the process.
6. Click **Finish**. IBM Installation Manager opens.

Installing Installation Manager on Linux

The launchpad program installs IBM Installation Manager. For more information about this process, see "Installing from the launchpad program" on page 79.

To install Installation Manager manually:

1. Open a terminal window with root user privileges.
2. From the InstallerImager_linux folder on the first installation disk or from the directory where you unzipped and extracted the product installation files, run `./install`.
3. On the Install Packages screen, click **Next**.
4. On the License Agreement page, review the license agreement and, to accept it, select **I accept the terms in the license agreement**, and click **Next**.
5. If necessary, edit the installation directory location, and click **Next**.
6. On the information summary page, click **Install**. When the installation process is complete, a message confirms the success of the process.
7. Click **Finish**. IBM Installation Manager opens.

Starting Installation Manager on Windows

You should start IBM Installation Manager from the launchpad program. Doing so starts Installation Manager with a configured repository preference and selected product packages. For information on starting the launchpad program, see the section Starting the launchpad program in the topic "Installing from the launchpad program" on page 79. If you start Installation Manager directly, you must set a repository preference and choose product packages manually. For more information on setting a repository preference and selecting product packages, see "Planning to install the product package" on page 72.

To start Installation Manager manually:

On the Windows taskbar, click **Start > All Programs > IBM Installation Manager > IBM Installation Manager**.

Starting Installation Manager on Linux

You should start IBM Installation Manager from the launchpad program. Doing so starts the Installation Manager with a configured repository preference and selected product packages. For information on starting the launchpad program, see the section Starting the launchpad program in the topic "Installing from the

launchpad program" on page 79. If you start Installation Manager directly, you must set a repository preference and choose product packages manually. For more information on setting a repository preference and selecting product packages, see "Planning to install the product package" on page 72.

To start Installation Manager manually:

1. Open a terminal window with root user privileges.
2. Change directories to the installation directory for Installation Manager By default, this is`/opt/IBM/InstallationManager/eclipse`.
3. Run `./IBMIM`.

Uninstalling Installation Manager on Windows

To uninstall Installation Manager:

1. Click **Start > Settings > Control Panel**, then double-click **Add or Remove Programs**. Select the entry for IBM Installation Manager and click **Remove**.

Uninstalling Installation Manager on Linux

You must uninstall IBM Installation Manager by using the package management tool that is included with your Linux version.

To uninstall Installation Manager manually on Linux:

1. Open a terminal window with root user privileges.
2. Change directories to the uninstall directory for Installation Manager. By default, this is `/var/ibm/InstallationManager/uninstall`.
3. Run `./uninstall`.

Silently installing and uninstalling Installation Manager

You can silently install and uninstall IBM Installation Manager.

Silently installing Installation Manager

To install Installation Manager silently, extract the installer and switch to the InstallerImage_*platform* subdirectory, and then use the following commands:

- Windows For Windows: `installc –-launcher.ini silent-install.ini -log <log file path and name>`.

  For example: installc --launcher.ini silent-install.ini -log c:\mylogfile.xml
- For other platforms: `install --launcher.ini silent-install.ini -log <log file path and name>`.

  For example, install --launcher.ini silent-install.ini -log /root/mylogs/mylogfile.xml

After the installation, you can use Installation Manager or the Installation Manager installer to silently install packages.

Silently uninstalling Installation Manager from Windows

To silently uninstall Installation Manager on Windows:

1. From a command line, go to the uninstall directory for Installation Manager. By default, this is `C:\Documents and Settings\All Users\Application Data\IBM\Installation Manager\uninstall`

2. Enter the following command: `uninstallc.exe --launcher.ini silent-uninstall.ini`.

Silently uninstalling Installation Manager on other platforms

To silently uninstall Installation Manager on other platforms:

1. From a terminal window, go to the uninstall directory of Installation Manager. By default, this is `/var/ibm/InstallationManager/uninstall`.
2. Run the following command: `uninstall --launcher.ini silent-uninstall.ini`

IBM Packaging Utility

Use IBM Packaging Utility software to set up a repository for Installation Manager and to copy product packages to the repository. After you copy product packages, you define the repository location in Installation Manager, in the Preferences window.

Packaging Utility software is located on the Enterprise Deployment CD for each platform (Windows and Linux) that is included with the product.

To place a repository that contains a product package on a shared drive, you must use the Packing Utility to copy the product package of the product into the repository.

If you want to place a repository that contains a product package on a Web server that will be available over HTTP or HTTPS, you must use Packaging Utility to copy the product package of the product into the repository.

Use this utility to perform the following tasks:

- Create a new Installation Manager repository for product packages.
- Copy the product packages to a new repository.

  You can copy multiple product packages into a single repository, which creates a common location from which IBM Installation Manager can install product packages.
- Delete product packages from a repository.

For more information about the Packaging Utility, see the online help or the Installation Manager Information Center at http://www.ibm.com/software/awdtools/installmanager/support/index.html.

Installing Packaging Utility

You must install IBM Packaging Utility from the Enterprise Deployment CD before you can use it to copy the product package.

To install IBM Packaging Utility software from the Enterprise Deployment CD:

1. Navigate to the Enterprise Deployment CD for the appropriate platform and extract the compressed file from the CD.
2. Navigate to the Packaging Utility directory and extract the Packaging Utility installation package from the compressed file (pu.disk_win32.zip or pu.disk_linux.zip).
3. Locate the executable file for the Packaging Utility installer.
   - Windows Change to the InstallerImage_win32 directory in the area where the pu.disk_win32.zip file was unpacked. Locate the executable file for the installer, which is named install.exe.

- Linux Change to the InstallerImage_linux directory in the area where the pu.disk_linux.zip file was extracted. Locate the executable file for the installer, which is named install.

4. Start the executable file and follow the instructions in the wizard to install the Packaging Utility.
5. (Optional). If IBM Installation Manager is not detected on your workstation, you are prompted to install it and then the installation wizard starts. Follow the instructions in the wizard to complete the installation of Installation Manager. For details, see "Installing Installation Manager on Windows" on page 84.

   When the installation of Installation Manager completes, Installation Manager starts and automatically begins the Install Packages wizard.
6. If Installation Manager is installed on your computer, Installation Manager starts and automatically begins the Install Packages wizard.
7. Follow the instructions in the Install Packages wizard to complete the installation.

Copying product packages using Packaging Utility

To create a repository from which Installation Manager can install product, you must use the Packaging Utility to copy the product package to the repository.

Note that Packaging Utility can also be used to combine multiple product packages into a single repository location. See the Packaging Utility online help for more information.

To copy product packages with Packaging Utility:

1. If you are copying packages from a CD image, insert the first installation CD into your CD drive.

   Linux Mount the CD drive.

   Note: If autorun is enabled on your system, the prodcut launchpad program opens automatically. Close the launchpad program.
2. Start Packaging Utility.
3. On the main page of the utility, click **Copy product package**.
4. On the Prerequisite page, complete one of these steps:
   - If you have not yet defined an accessible repository, click **I will be downloading product packages from IBM Web**.
   - If you have defined an accessible repository, click **I will be obtaining the product packages from other sources**.
5. Click **Next**.
6. On the Source page, if no product packages are available, open a repository that contains product packages:

   Note: A repository can be a path to a directory in the file system, a disk drive that contains the first CD of the product, or a URL to a directory on a server.
   - Click **Open repository**.
   - In the Open Repository window, browse to and select a repository location: either the common root directory that contains the electronic disk images or the drive that contains the first product installation CD.

     For example, if the product (disk 1, disk 2, and so on) reside in C:\My product\unzip, you should define this location as a repository.
   - Click **OK**.

7. On the Destination page, browse to and select an existing repository directory, or create a new folder to store the products.
8. Click **OK**. The file path that you defined is listed on the Destinations page, in the **Directory** field.
9. Click **Next**.
10. On the Summary page, to copy the selected product packages to the destination repository, click **Copy**.
11. After the copy process finishes, on the Complete page, review the product packages that were copied successfully.
12. To return to the Packaging Utility main page, click **Done**.

After you use the Packaging Utility to copy the product installation files into a repository, you can go to the preferences page of IBM Installation Manager and define this location as a repository. You can also place the repository on a UNC drive, or place the repository on a Web server to make the directories and files available over HTTP.

Installing silently

You can install the product package silently by running Installation Manager in silent installation mode. When you run Installation Manager in silent mode, the user interface is not available; instead, Installation Manager uses a response file to input the commands that are required to install the product package.

Running Installation Manager in silent mode is helpful because it enables you to use a batch process to install, update, modify and uninstall product packages through scripts.

You must install Installation Manager before you can silently install the product.

Two main tasks are required for silent installation:

1. Create the response file.
2. Run Installation Manager in silent installation mode.

For more information about Installation Manager and installing silently, see the Installation Manager Information Center: http://www.ibm.com/software/awdtools/installmanager/support/index.html.

Creating a response file with Installation Manager

You can create a response file by recording your actions as you install a product package using Installation Manager or install the Installation Manager installer. When you record a response file, all the selections that you make in the Installation Manager GUI are stored in an XML file. When you run Installation Manager in silent mode, Installation Manager uses the XML response file to complete the installation.

To record a response file for installation (or for uninstalling):

1. At a command line, change to the eclipse subdirectory in the directory where you installed Installation Manager. For example:
   - Windows `cd C:\Program Files\IBM\Installation Manager\eclipse`
   - For other platforms: `cd /opt/IBM/InstallationManager/eclipse`

2. At a command line, type the following command to start Installation Manager, substituting your own file name and location for the response file and (optionally) the log file:

   ```
   IBMIM -record <response file path and name> -log <log file path and
   name>
   ```

   Note: You can record a response file without installing or uninstalling a product by adding the optional `-skipInstall <agentDataLocation>` argument. The directory *<agentDataLocation>* is a writeable folder that Installation Manager uses to keep registry and temporary configuration files. This directory must be different from the installation folder for Installation Manager. For example, you can use the directory /usr/temp/IMData for *<agentDataLocation>* on Linux. After the response file has been created, you can delete files in this directory.

   Location of the installation folder for IBM Installation Manager

   - Windows
     - Vista & 2008 Server: C:\ProgramData\IBM\Installation Manager
     - Other releases: C:\Documents and Settings\All Users\Application Data\IBM\Installation Manager
   - For other platforms: /var/ibm/InstallationManager

   Note: Ensure the file paths specified in the command line exist; Installation Manager does not create directories for the response file and the log file.
3. Follow the instructions in the Install Packages wizard to make your installation choices. For details, see "Installing the product package using the Installation Manager GUI" on page 80.
4. Click **Finish**, and then close Installation Manager.

An XML response file is created and resides in the location specified in the command.

Recording a response file using Installation Manager

To create a response file to install or uninstall Installation Manager or a product, without installing or uninstalling the product, use the `-skipInstall <agentDataLocation>` argument. Using `-skipInstall` is faster because Installation Manager does not install or uninstall the product; it only records installation data. The `<agentDataLocation>` must be a writable directory.

Later, if you want to record updates or modifications to a product, record license management, or record uninstalling the product, you must use the same `<agentDataLocation>` in subsequent recording sessions. Note that installed products or the preferences, including repository settings, that you record when not using `-skipInstall` option are not available.

Recording a response file for the installer:

To record installation data for the installation of Installation Manager:

1. Extract Installation Manager, and then go to the InstallerImage_*platform* directory.
2. To start recording, enter `install -record <response file path and name> -skipInstall <agentDataLocation> -vmargs -Dcom.ibm.cic.agent.hidden=false`

Recording a response file for a product install:

To record installation data for a product install with the Installation Manager installer, follow these steps:

1. Go to the InstallerImage_*platform* directory where you extracted Installation Manager.
2. Open the install.ini file and remove the following lines: `-input` and `@osgi.install.area/install.xml`
3. Enter the following command: `IBMIM -record <response file path and name> -skipInstall <agentDataLocation>`. For example, IBMIM -record c:\mylog\responsefile.xml -skipInstall c:\temp\recordData
4. Start Installation Manager and complete the Install Packages wizard.

Installing and running Installation Manager in silent mode

Use the Installation Manager installer to install Installation Manager, and then use Installation Manager to silently install product packages from a command line.

For additional documentation about running Installation Manager in silent mode, see the Installation Manager Information Center: http://www.ibm.com/software/awdtools/installmanager/support/index.html.

The following table describes the arguments to use with the silent installation command:

Argument	Description
-vm	Specifies the Java launcher. In silent mode, always use java.exe on Windows, and java on other platforms.
`-nosplash`	Suppresses the splash screen.
`--launcher.suppressErrors`	Suppresses the JVM error dialog box.
-silent	Runs the Installation Manager installer or Installation Manager should be run in silent mode.
`-input`	Specifies an XML response file as the input to the Installation Manager installer or the Installation Manager. A response file contains commands that installer or Installation Manager runs.
`-log`	(Optional) Creates a log file that records the result of the silent installation. The log file is an XML file.

Both the Installation Manager installer and the Installation Manager have an initialization or .ini file: `silent-install.ini`. This file includes default values for the arguments in the table.

The Installation Manager installer installs Installation Manager.

Extract the installer, switch to the eclipse subdirectory, and then use the following commands:

- Windows For Windows: `installc –launcher.ini silent-install.ini -log <log file path and name>`

For example, installc --launcher.ini silent-install.ini -log c:\mylogfile.xml

- For other platforms: `install --launcher.ini silent-install.ini -log <log file path and name>`

  For example, install --launcher.ini silent-install.ini -log /root/mylogs/mylogfile.xml

After Installation Manager is installed, you can use it to install other products.

To run Installation Manager in silent mode, run the following command from the eclipse subdirectory:

- Windows For Windows: `IBMIMc.exe --launcher.ini silent-install.ini -input <response file path and name> -log <log file path and name>`

  For example, IBMIMc.exe --launcher.ini silent-install.ini -input c:\mylog\responsefile.xml -log c:\mylog\silent_install_log.xml
- For other platforms: `IBMIM --launcher.ini silent-install.ini -input <response file path and name> -log <log file path and name>`

  For example, IBMIM --launcher.ini silent-install.ini -input /root/mylog/responsefile.xml –log /root/mylog/silent_install_log.xml

When the Installation Manager installer or Installation Manager runs in silent installation mode, it reads the response file and writes a log file to the directory that you specified. A response file is required; log files are optional. The result of this execution should be a status of 0 for success and a non-zero number for failure.

Searching for and silently installing all available products

You can silently search for and install updates for all available products.

To search for and silently install all available products:

1. On a command line, change to the eclipse subdirectory in the directory where you installed Installation Manager.
2. Enter and run the following command, substituting your own locations for the response file and, optionally, the log file:
   - Windows For Windows: `IBMIMc.exe --launcher.ini silent-install.ini -installAll -log <log file path and name>`
   - For other platforms: `IBMIM --launcher.ini silent-install.ini -installAll -log <log file path and name>`

All available products known to Installation Manager are installed.

Silently installing updates to all currently installed products

You can silently search for and install updates for all currently installed products.

To search for and silently install updates for all available products:

1. On a command line, change to the eclipse subdirectory in the directory where you installed Installation Manager.
2. Enter and run the following command, substituting your own locations for the response file and, optionally, the log file:
   - Windows For Windows: `IBMIMc.exe --launcher.ini silent-install.ini -updateAll -log <log file path and name>`
   - For other platforms: `IBMIM --launcher.ini silent-install.ini –-updateAll -log <log file path and name>`

All available product updates known to Installation Manager are installed.

Response file commands

To use the silent installation capabilities of Installation Manager, you must create a response file that contains all the commands that Installation Manager must run. To do this, you should create a response file by recording your actions as you install the product package. However, you could also create or edit a response file manually.

The response file has two categories of commands:

- **Preference commands** set the preferences in Installation Manager that are located under **File > Preferences**, such as repository location information.
- **Silent installation commands** emulate the Install Packages wizard in Installation Manager.

Silent installation preference commands

Although you typically specify preferences in the Preferences window, you can also specify preferences (identified as keys) in a response file for use during a silent installation.

Note: You can specify more than one preference in a response file.

When you define preferences in a response file, the XML code looks similar to the following example:

```
<preference
 name = "the key of the preference"
 value = "the value of the preference to be set">
</preference>
```

Use the following table to identify keys and their associated values for silent installation preferences:

Key	Value	Comments
com.ibm.cic.common.core.preferences.logLocation	Specifies the location of Installation Manager log file.	**Important:** This key is optional and is designed for testing and debugging. If you do not specify a location for the log file, both silent installation and the UI version of Installation Manager use the same location.
com.ibm.cic.license.policy.location	Specifies a URL that defines where the remote license policy file resides.	
com.ibm.cic.common.core.preferences.http.proxyEnabled	True or False	False is the default value.

Key	Value	Comments
com.ibm.cic.common.core.preferences.http.proxyHost	Host name or IP address	
com.ibm.cic.common.core.preferences.http.proxyPort	Port number	
com.ibm.cic.common.core.preferences.http.proxyUseSocks	True or False	False is the default value.
com.ibm.cic.common.core.preferences.SOCKS.proxyHost	Host name or IP address	
com.ibm.cic.common.core.preferences.SOCKS.proxyPort	Port number	
com.ibm.cic.common.core.preferences.ftp.proxyEnabled	True or False	False is the default value.
com.ibm.cic.common.core.preferences.ftp.proxyHost	Host name or IP address	
com.ibm.cic.common.core.preferences.ftp.proxyPort	Port number	
com.ibm.cic.common.core.preferences.eclipseCache	c:\IBM\common (Windows) /opt/IBM/common (Linux) **Note:** The paths above are default values for this preference; typically, install packages provide their own values for this preference.	You cannot change this location if you have already installed a package.
com.ibm.cic.agent.core.pref.offering.service.repositories.areUsed	True or False	Change this preference to False to disable it. When the value is True, all linked repositories are searched when products are installed or updated.

Key	Value	Comments
com.ibm.cic.common.core.preferences. preserveDownloadedArtifacts	True or False	Change this preference to False to disable it. When the value is True, the files that are required to roll back the package to a previous version are stored on your system. When the value is False, these files are not stored. If you do not store these files, you must connect to your original repository or media to roll back a version.

Silent installation commands

The following table lists response file commands for a silent installation.

Response file commands	Description

Profile
`<profile`
`id="the profile (package group) id"`
`installLocation="the install location of the profile">`
`<data key="key1" value="value1"/>`
`<data key="key2" value="value2"/>`
 	
`</profile>`
	Use this command to create a package group (or installation location). If the specified package group exists already, the command has no effect. Currently, when it creates the profile, the silent installation also creates two installation contexts: Eclipse and native. A profile is an installation location.
	
	Use the <data> element to set profile properties.
	
	The following list contains the currently supported keys and their related values:
	• The eclipseLocation key specifies an existing Eclipse location, such as c:\myeclipse\eclipse.
	• The cic.selector.nl key specifies the Natural Language (NL) locale selections, such as en, fr, and es.
	
	Note: Separate multiple NL values with commas.
	
	The following list contains the currently supported language codes:
	• English (en)
	• French (fr)
	• Italian (it)
	• Simplified Chinese (zh_CN)
	• Russian (ru)
	• Traditional Chinese - (zh_TW)
	• German (de)
	• Japanese (ja)
	• Polish (pl)
	• Spanish (es)
	• Czech (cs)
	• Hungarian (hu)
	• Korean (ko)
	• Portuguese (pt_BR)

Repositories
`<server>`
`<repository location="http://example/repository/">`
`<repository location="file:/C:/repository/">`
`<!–add more repositories below-->`
`<...>`
`</server>`
	Use this command to specify the repositories that are used during a silent installation. Use a URL or UNC path to specify remote repositories; use directory paths to specify local repositories.

Response file commands	Description

Install
`<install>`
`<offering profile= "profile id"`
`features= "feature ids"`
`id= "offering id" version= "offering version"></offering>`
 	
`<!–add more offerings below>`
`<...>`
 	
`</install>`
	Use this command to specify the installation packages to install.
	
	The profile ID must match an existing profile or a profile created by the set profile command.
	
	Feature IDs can be optionally specified by a comma-separated list, such as ″feature1, feature2″ and so on. If no feature IDs are specified, all the default features in the specified offering are installed.
	
	The version number is not required. If no version is specified, Installation Manager installs the most recent product with the specified ID and any available updates and fixes.
	
	Note: Required features are included for installation, even if they are not explicitly specified in the comma-separated list.

<install modify=″true″> or <uninstall modify=″true″> (optional attribute)
`<uninstall modify="true">`
`<offering profile="profileID"`
`id="Id" version="Version"`
`features="-"/>`
`</uninstall>`
	Use the <install modify=″true″> attribute on install and uninstall commands to indicate that you want to modify an existing installation.
	
	If the attribute is not set to `true`, the value defaults to `false`. If the intent of the modify operation is only to install additional language packs, use a hyphen “-“ in the offering feature ID list to indicate no new features are being added.
	Important: You must specify ″modify=true″ and a hyphen ″-″ feature list as specified in the example; otherwise, the install command installs the offering’s default features and the uninstall command removes all the features.

Uninstall
`<uninstall>`
`<offering profile= "profile id"`
`features= "feature ids"`
`id= "offering id" version= "offering version"></offering>`
 	
`<!–add more offerings below>`
`<...>`
 	
`</uninstall>`
	Use this command to specify the packages to uninstall.
	
	The profile ID must match an existing profile or a profile specified in a profile command. If no feature IDs are specified, all the features in the specified offering are uninstalled; if no offering IDs are specified, all the installed offerings in the specified profile are uninstalled.

Response file commands	Description

Rollback
`<rollback>`
`<offering profile= "profile id"`
`id= "offering id"`
`version= "offering version">`
`</offering>`
 	
`<!–add more offerings below`
`<...>`
 	
`</rollback>`
	Use this command to roll back to the specified offerings from the version currently installed on the specified profile. You cannot specify features in a roll back command.

InstallAll
`<installALL/>`
 	
Note: This command is equivalent to using
`–silent –installAll`
 	
.
	Use this command to silently search for and install all available packages.

UpdateAll
`<updateALL/>`
 	
Note: This command is equivalent to using
`–silent –updateAll`
 	
.
	Use this command to silently search for and update all available packages.

License
`<license policyFile="policy file`
`location"/>`
 	
For example:
`<license policyFile="c:\mylicense.opt"/>`
	Use this command to generate a response file that contains a license command by starting the license wizard after starting Installation Manager in record mode.
	
	In record mode, if you set flex options through the license management wizard, the options you set are recorded in a license policy file named “license.opt” in the same directory as the generated response file; the response file contains a license command that references the policy file.

Wizard
`<launcher -mode wizard -input`
`< response file >`
	Use this command to start Installation Manager in UI mode. The UI mode starts Installation Manager in either the install wizard or the uninstall wizard. However, in this case, the response file can only contain preference commands and install commands or preference command and uninstall commands; you cannot mix install and uninstall commands in the same response file when you run Installation Manager in UI mode.

Reference: Sample response file

You can use an XML-based response file to specify predefined information such as silent installation preferences, repository locations, installation profiles, and so on. Response files are beneficial for teams and companies that want to install installation packages without intervention and to standardize the locations and preferences for installation packages.

Sample response file

```
<agent-input >

<!-- add preferences -->
<preference name="com.ibm.cic.common.core.preferences. http.proxyEnabled"
value="c:/temp"/>

<!-- create the profile if it doesn't exist yet -->
<profile id="my_profile" installLocation="c:/temp/my_profile"></profile>

<server>
<repository location=
"http://a.site.com/local/products/sample/20060615_1542/repository/"></repository>
</server>

<install>
 <offering profile= "my_profile" features= "core" id= "ies"
version= "3.2.0.20060615">
 </offering>
</install>

</agent-input>
```

Silent installation log files

You can use silent install log files to examine the results of a silent installation session.

The silent installation functionality creates an XML-based log file that records the result of the silent install execution (as long as a log file path is specified using –log <your log file path>.xml). If your silent installation session is successful, the log file contains just the root element of <result> </result>. However, if errors occur during the installation, the silent install log file contains error elements with messages such as the following one:

```
<result>
 <error> Cannot find profile: profile id</error>
 <error> some other errors</error>
</result>
```

For detailed analyses, you can look at the log files that are generated in the Installation Manager data area. By using a preference command, you can optionally set the data area to your preferred location.

9 After installing RequisitePro

This section describes procedures for all users and administrators to perform after installing Rational RequisitePro.

To complete your configuration and get started with Rational RequisitePro, do the following:

- Create a DB2 or Oracle database alias, if applicable.
- Open Rational RequisitePro and help home page, and review the Quick Tour, tutorial, release notes, and other resources.
- Open a sample project or create a project from a template.
- Add an existing project to your catalog and open it. For more information, see the RequisitePro Help topic "Adding projects to the project list."

Administrators can perform additional tasks after installation:

- Use the Database Transport wizard to move projects from one database to another.
- Configure e-mail for discussions and change notification.
- Reinstall the product for modification or repair.

If you install the Rational RequisitePro client for Windows, you can use RequisiteWeb also. To use the RequisiteWeb client, see “Logging on to RequisiteWeb” on page 68.

Defining a DB2 database alias

If your team uses DB2 for storing Rational RequisitePro projects, you must install client software on your Windows client computer. See “Installing database client software” on page 8 for more information.

After installing the client software, use the DB2 Connect Personal Edition to create a DB2 alias on your desktop client to access the DB2 database server. If you plan to share projects with other users, be sure to use a consistent database alias as determined by your database administrator or project administrator.

Note: Clear the **Register this database for ODBC** check box if it is selected.

Defining an Oracle database alias

If your team uses Oracle for storing Rational RequisitePro projects, you must install client software on your Windows client computer. See “Installing database client software” on page 8 for more information.

After installing the client software, use the Oracle SQL*Net or Net8 Easy Configuration tool to configure access from your client to the Oracle database server. If you plan to share projects with other users, be sure to use a consistent database alias or service name as determined by your database administrator.

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Starting Rational RequisitePro

To start Rational RequisitePro, click **Start → Programs → Rational RequisitePro → IBM Rational**.

If the License Key Administrator (LKAD) opens, see 12, "Managing licenses with Rational Common Licensing," on page 119.

Accessing release notes

For the most current information about features and known problems, see the Requirements Management Information Center.

The installed release notes are available from the **Start** menu by clicking **All Programs → IBM Rational → Rational RequisitePro → Release Notes**.

Creating projects

Ask your database administrator for the database type that is configured for Rational RequisitePro projects, and follow the instructions in this section for that database type.

These sections describe how to create projects in the Rational RequisitePro client for Windows. To create a project in RequisiteWeb, see the topic ″Creating projects″ in the RequisiteWeb Help.

To move a project from database to another, use the Database Transport wizard, as described in "Using the Data Transport wizard" on page 105.

Creating a project in DB2

Perform the following steps to create a Rational RequisitePro project that uses DB2 for the project database.

Use the DB2 Client Configuration Assistant tool to configure access from your client computer to the DB2 database server. If you plan to share projects with other users, be sure to use a consistent database alias as determined by your database administrator.

To configure access to DB2 from Rational RequisitePro, the database administrator must provide the following information:

- DB2 database alias
- DB2 schema name for storing Rational RequisitePro projects
- Your user ID for logging on to the DB2 database
- Your user password for logging on to the DB2 database

To create a project in DB2:

1. In Rational RequisitePro, click **File > New > Project**. The Create Project window opens.
2. Select a project template. The details in the lower part of the window provide an explanation as you select each template.
3. Click **OK**. The Rational RequisitePro Project Properties window opens.
4. Enter a project name and directory location.

5. In the **Database** field, select **DB2** from the drop-down list and click **Properties**. The Database Properties window opens.
6. Click **Configure**. The Configure DB2 window opens.
7. Type the DB2 database alias you entered when configuring your desktop for access to the DB2 database. Desktops that will access shared RequisitePro projects in the DB2 database must have this same database alias.
8. Click **OK**. The Database Properties window opens.
9. Click **Account Info**. The Database Account Info window opens.
10. Type your user name for logging in to the DB2 server as supplied by your DB2 database administrator.
11. Type your user password for logging in to the DB2 server as supplied by your DB2 database administrator.
12. Retype your password in the **Verify Password** field.
13. In the **Schema** field, type the name of the DB2 schema that your DB2 database administrator has established for storing RequisitePro data in DB2.
14. Click **OK** to close the Database Account Info window. Click **OK** to close the Database Properties window.
15. Finish creating your project and click **OK** to close the Project window.

Creating a project in Oracle

Use the following procedure to create a Rational RequisitePro project that uses Oracle for the project database.

Use the Oracle SQL*Net or Net8 Easy Configuration tool to configure access from your client computer to the Oracle database server. If you plan to share projects with other users, use a consistent database alias or service name as determined by your database administrator.

To configure access to Oracle from Rational RequisitePro, the database administrator must provide the following information:

- Oracle database server name (TCP/IP host name)
- Oracle database alias or service name
- Oracle schema name for storing Rational RequisitePro projects
- Your user ID for logging on to the Oracle database
- Your user password for logging on to the Oracle database

To create a project in Oracle:

1. In Rational RequisitePro, click **File** → **New** → **Project**. The Create Project window opens.
2. Select a project template.

   The details in the lower part of the window provide an explanation as you select each template.
3. Click **OK**. The Rational RequisitePro Project Properties window opens.
4. Enter a project name and directory location.
5. At the **Database** field, select **Oracle** from the list and click **Properties**. The Database Properties window opens.
6. Click **Configure**. The Microsoft ODBC for Oracle Setup window opens.

   Do not modify the default entries in the **Data Source Name** and **Description** fields.

7. Type your user name for logging in to the Oracle database, as provided by your Oracle database administrator. The default user name is **reqpro**.
8. In the **Server** field, type the alias or service name you entered when configuring your computer for access to the Oracle database.

   Computers that access shared projects in the Oracle database must have this same database alias or service name.
9. Click **OK**. The Database Properties window opens.
10. Click **Account Info**. The Database Account Info window opens.
11. Do not modify the **User ID** field. This should match the user name you entered in the previous window.

    Type your user password for logging in to the Oracle server. (Your Oracle database administrator should have supplied the password.)
12. Retype your password in the **Verify Password** field.
13. In the **Schema** field, type the name of the Oracle schema that your Oracle database administrator has established for storing Rational RequisitePro data in Oracle.
14. Click **OK** to close the Database Account Info window. Click **OK** to close the Database Properties window.
15. Finish creating your project and click **OK** to close the Project window.

Creating a project in SQL Server

Perform the following steps to create a Rational RequisitePro project that uses SQL Server for the project database.

To configure access to SQL Server from Rational RequisitePro, the database administrator must provide you with the following information:

- SQL Server machine name (TCP/IP host name)
- SQL Server default database for Rational RequisitePro projects, such as **RequisitePro.**
- User ID for logging on to the SQL Server database, such as **ReqPro**.
- User password for logging on to the SQL Server database, such as **reqpro.**

To create a project in SQL Server:

1. In Rational RequisitePro, click **File** → **New** → **Project**. The Create Project window opens.
2. Select a project template. The details in the lower part of the window provide an explanation as you select each template.
3. Click **OK**. The Rational RequisitePro Project Properties window opens.
4. Enter a project name and directory location.
5. At the **Database** field, select **SQL Server** from the list.
6. Click **Properties**. The Database Properties window opens.
7. In the Database Properties window, click **Configure**. The Create a New Data Source to SQL Server window opens.
8. In the **Server** field, type the name of the SQL Server supplied by your database administrator. Do not modify the data source **Name** or **Description** fields.
9. Click **Next**. The second data source screen opens.
10. Select the option **With SQL Server authentication using a login ID and password entered by the user**.

11. Be sure the check box **Connect to SQL Server to obtain default settings for the additional configuration options** is selected.
12. Type the login ID and password supplied by your database administrator, such as **ReqPro** and **reqpro**. Click **Next**.
13. Select the check box **Change the default database to** and select a database name supplied by your database administrator, such as **RequisitePro**. Click **Next**.
14. Click **Next** to accept the default language, character, and regional settings. The use of log files, shown on the following screen, is optional.

    Do not select the check box **Change the language of SQL Server system messages to...**. Selecting this check box prevents users from opening the project after its initial creation.
15. Click **Finish**. The ODBC Microsoft SQL Server Setup window opens.
16. Click **Test Data Source**. The SQL Server ODBC Data Source Test window opens.
17. Click **OK**. The ODBC Microsoft SQL Server Setup window opens.
18. Click **OK**. The Database Properties window opens.
19. On the Database Properties window, click **Account Info**. The Database Account Info window opens.
20. Type the user ID and password supplied by your database administrator for accessing the SQL Server database, such as **ReqPro** and **reqpro**.
21. Retype your password in the **Verify Password** field.
22. In the **Schema** field, type the user name of the owner of the RequisitePro database tables supplied by your database administrator, such as **ReqPro**.
23. Click **OK** to close the Database Account Info window. Click **OK** to close the Database Properties window.
24. Finish creating your project and click **OK** to close the Project window.

Configuring the integration with Rational ClearQuest

To configure an integration of Rational ClearQuest integration with Rational RequisitePro, see the Rational RequisitePro help, which is available at the information center and in the product at the **Help** menu.

The Rational Administrator manages projects and data stores for Rational RequisitePro, IBM Rational ClearQuest, and Rational TestManager. It is included with the Rational RequisitePro installation. For more information, see the Rational Administrator Help and “Configuring the integration with Rational ClearQuest.”

Using the Data Transport wizard

The Data Transport wizard enables you to move a Rational RequisitePro project from one database to another. The wizard can move projects between DB2, Oracle, SQL Server, and Microsoft Access databases. It can also move an enterprise database project to another database of the same type (DB2, Oracle, or SQL Server). The wizard moves one project at a time; it does not move projects that are connected by cross-project traceability. For more information, see the Help in the Data Transport wizard.

Start the Data Transport wizard by navigating in Windows Explorer to the directory `C:\Program Files\IBM\RationalSDLC\RequisitePro\bin\` and double-clicking the executable `rqdatatransportwiz.exe`.

Configuring e-mail for discussions and change notification

This section provides guidelines on configuring e-mail for discussions (with and without the Rational E-mail Reader). It also contains content that applies to requirement change notification in Rational RequisitePro.

Using Rational E-mail Reader for discussions

The Rational E-mail Reader offers full e-mail integration with Rational RequisitePro by associating an e-mail handler with each project. Use the Rational E-mail Reader application to configure e-mail for all discussion participants with a valid e-mail address in their Rational RequisitePro user information. Initial discussion items and replies are automatically stored in the Rational RequisitePro database and sent to discussion participants by e-mail. Participants can reply to the discussion items using their e-mail, and from within Rational RequisitePro.

The Rational E-mail Reader application is included with your installation at the following default location:

```
C:\Program Files\IBM\RationalSDLC\ClearQuest\mailreader.exe
```

The following are the requirements for configuring discussion e-mail using the Rational E-mail Reader:

- You must configure a unique e-mail address for each Rational RequisitePro project
- The project must be closed when configuring the Rational E-mail Reader.
- MAPI protocol is not supported with the Rational E-mail Reader for discussion and requirement change notification in Rational RequisitePro and RequisiteWeb. You can use MAPI in Rational RequisitePro for discussions, but you cannot use MAPI to configure the Rational E-mail Reader to deliver notifications. Use SMTP when configuring the Rational E-mail Reader for projects.
- To complete the Rational E-mail Reader setup for SMTP protocol, obtain the following information from your e-mail administrator:
  - SMTP Server name
  - POP3 Server name
  - E-mail address for each Rational RequisitePro project
  - POP3 Server login and password for the e-mail address
- Be sure to specify a Log File Path on the **Reader Information and Options** tab in the Rational E-mail Reader.
- When configuring e-mail with the Rational ClearQuest Mail service, stop the service before configuring and restart the service when done.
- For network-based projects, configure the properties of the Rational ClearQuest Mail service on the **Log On** tab. Select **This account** and enter your domain user name and password. When browsing for an account name, see the **examples** link in the Select User window.
- The **E-mail Setup** option on the Rational RequisitePro **Tools** menu does not configure e-mail for RequisiteWeb discussions. Use the Rational E-mail Reader to configure e-mail for RequisiteWeb discussions.

Note: Refer to the online Help in the Rational E-mail Reader for more information.

Configuring e-mail for discussions and change notification

The Collaboration Data Objects file (cdo.dll) is required for the MAPI configuration to work with discussion e-mail and requirement change notification. This component is installed with Microsoft Outlook.

The performance of discussion e-mail that uses the MAPI protocol is inconsistent on similarly configured Windows 2000 and Windows XP computers running Office 2000 and XP. Error messages are generated when the system attempts to send e-mail notification messages. Rational RequisitePro uses Microsoft Outlook as the default e-mail system. To avoid this problem, install the Microsoft Outlook Collaboration Data Objects feature. For more information, see Technote 1125556 at www.ibm.com/software/rational/support/.

10 Upgrading IBM Rational software

This section includes information on upgrading Rational RequisitePro software, projects, databases, and the integration with Rational ClearQuest. In also contains information on retaining customized versions of the Microsoft Word template.

Upgrading Rational RequisitePro projects and databases to version 7.1

Databases that contain any projects created with an older version of Rational RequisitePro must be upgraded to add new database objects to the schema to support new features of Rational RequisitePro version 7.1.

After the upgrade process is complete, all projects in a database will be upgraded to version 7.1. Only version 7.1 can then be used to open the projects. Be sure you are ready to upgrade all projects on a database to Rational RequisitePro version 7.1 before proceeding.

Before following the steps for upgrading the database, it is recommended that a backup of the database is created. It is recommended but not required that all users be disconnected from the database.

The following informational message appears when attempting to open a project in a DB2, Oracle, or SQL Server database created with an older version of Rational RequisitePro:

```
Cannot open the RequisitePro project file: C:\Program Files\IBM\RationalSDLC\
RequisitePro\Projects\projectname\projectname.rqs. This project was created
with an older version of RequisitePro. Please contact your Database
Administrator for upgrade instructions.
```

Upgrading a DB2 version 8.2 database to Rational RequisitePro 7.1

If your current version of Rational RequisitePro uses any DB2 version 8.2 databases, they must be upgraded to the Rational RequisitePro version 7.1 schema.

You will need to know the database name as well as the Rational RequisitePro user name and password.

The following steps must be executed either on the server machine or on a client machine which has been configured to connect to the DB2 server.

Note: These instructions are for upgrading DB2 version 8.2 and later. To upgrade a DB2 version 8.1 database, see “Upgrading a DB2 version 8.1 database to Rational RequisitePro 7.1” on page 110

1. Copy DB2SchemaUpgrade71.SQL and DB2Upgrade71.bat from `C:\Program Files\IBM\RationalSDLC\RequisitePro\database\db2\windows\8.2` to a working directory.
2. Open a DB2 command window.
3. Navigate to the working directory that contains the upgrade scripts.
4. Issue the following command: `DB2Upgrade71.bat <databasename> <username> <password>`.
5. Check the contents of upgrade.log for any errors.

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You can now open projects in the database with Rational RequisitePro version 7.1.

Upgrading a DB2 version 8.1 database to Rational RequisitePro 7.1

If your current version of Rational RequisitePro uses any DB2 databases, they must be upgraded to the Rational RequisitePro version 7.1 schema.

You will need to know the database name as well as the Rational RequisitePro user name and password.

The following steps must be executed either on the server machine or on a client machine which has been configured to connect to the DB2 server.

Note: These instructions are for upgrading DB2 version 8.1 databases. To upgrade databases created with DB2 version 8.2 or later, see "Upgrading a DB2 version 8.2 database to Rational RequisitePro 7.1" on page 109

1. Copy the file DB2SchemaUpgrade71.SQL from `C:\Program Files\IBM\RationalSDLC\RequisitePro\database\db2\windows` to a working directory.
2. Edit DB2SchemaUpgrade71.SQL and enter the correct values for `<database>`, `<user>`, and `<password>`.
3. Open a DB2 command window.
4. Navigate to the working directory
5. Issue the following command: `db2 -l upgrade.log -tf DB2SchemaUpgrade71.sql`.
6. Check the contents of `upgrade.log` for any errors.

You can now open projects in the database with Rational RequisitePro version 7.1.

Upgrading an Oracle database to Rational RequisitePro 7.1

If your current version of Rational RequisitePro uses any Oracle databases, they must be upgraded to the Rational RequisitePro version 7.1 schema.

You will need to know the tablespace name for tables and indexes, as well as the Rational RequisitePro user name and password.

The following steps must be executed either on the server machine or on a client machine which has been configured to connect to the Oracle server.

1. Copy the following two files to a working directory:
   - `C:\Program Files\IBM\RationalSDLC\RequisitePro\database\oracle\windows\OracleSchemaUpgrade71.SQL`
   - `C:\Program Files\IBM\RationalSDLC\RequisitePro\database\oracle\windows\OracleUpgrade71.sql`
2. Edit the file OracleUpgrade71.sql and make the following changes:
   a. Locate this line in the script: `DEFINE PATH="$HOME/sql/"`
   b. Change `"$HOME/SQL/"` to the working directory where the update scripts are located.
3. Locate these two lines in the script: `DEFINE REQPRO_DATA=REQPRO_DATA` and `DEFINE REQPRO_INDEX=REQPRO_INDEX .`
   a. Change `REQPRO_DATA` to the tablespace name for the tables. The name is usually the schema name of the existing database.

For example, if the existing schema name was `ReqProTest` the revised lines would be the following:

```
DEFINE REQPRO_DATA=ReqProTest_DATA
DEFINE REQPRO_INDEX=ReqProTest_INDEX
```

4. Locate this line in the script: `DEFINE USR=reqpro`.
   a. Change `reqpro` to the schema name.
5. Save the file.
6. Log onto SQL Plus as the RequisitePro user.
7. Run the **OracleUpgrade71.sql** script by issuing the following command: `@<working directory>\OracleUpgrade71.sql`
8. Check the results for any errors.

You can now open projects in the database with Rational RequisitePro version 7.1.

Upgrading a SQL Server database to Rational RequisitePro 7.1

If your current installation of Rational RequisitePro uses one or more SQL Server databases, they must be upgraded to the Rational RequisitePro version 7.1 schema.

To upgrade a SQL Server Database:

1. Copy SQLServerSchemaUpgrade71.SQL from `C:\Program Files\IBM\RationalSDLC\RequisitePro\database\sqlserver` to a working directory.
2. Logon to **SQL Server Query Analyzer** or the **SQL Server Management Console** as the System Administrator.
3. Open a new query window.
4. Select the RequisitePro database that will be upgraded.
5. Copy the contents of SQLServerSchemaUpgrade71.SQL into the query window and execute that script.
6. Check the results for any errors.

You can now open projects in the database with Rational RequisitePro version 7.1.

Maintaining compatible versions of Rational products

If you install this version of Rational RequisitePro on a computer with other Rational products that are earlier than version 7.1, the earlier Rational products are no longer in a supported state. You must install and upgrade each product on the computer to version 7.1.

For compatibility with this release, if your team accesses shared Rational RequisitePro projects from multiple clients and RequisiteWeb, you must upgrade all of your Rational RequisitePro and RequisiteWeb installations to version 7.1.

To determine the version of the Rational products that are installed on your system, click **Start > Programs > IBM Rational Software > Rational Software Installed Product Information**.

Upgrading the Rational ClearQuest integration

If you use the Rational RequisitePro integration with Rational ClearQuest, see the *IBM Rational ClearQuest and ClearQuest MultiSite Installation and Upgrade Guide* and read the upgrade information before you upgrade Rational RequisitePro.

For more information about configuring and using the integration, see the Rational RequisitePro help.

Upgrading the Rational ClearQuest integration to version 7.0 or later

The upgrade to version 7.0 or later does not require upgrade steps to maintain the integration with Rational ClearQuest as implemented in version 2003.06; however, to implement version 7.0 features of the integration, including creating Rational ClearQuest requirements, integrating test artifacts, and batch refresh scheduling, you must reconfigure the integration as described in the Help *Integrating Rational RequisitePro and Rational ClearQuest* in the section "Configuring the integration of Rational RequisitePro and Rational ClearQuest."

Using the version 7.0.1 integration with the AnalystStudio or DevelopmentStudio schema

If you plan to configure the integration with the 7.0.1 versions of the products using the provided AnalystStudio® or DevelopmentStudio schema in Rational ClearQuest, you must upgrade the RequisitePro 1.8 package in the schema to the latest version 1.9. This ensures that all record forms in Rational ClearQuest have the correct fields for the integration. The Enterprise schema is already configured with the correct fields, so no upgrade of the RequisitePro package is required for that schema.

Retaining customized versions of the Microsoft Word template

Rational RequisitePro uses one Word template, reqpro10.dot, for all versions of Word. A Word template is associated with a Rational RequisitePro document outline, which can be used to create documents. Document outline information is stored in .def files. For more information about Rational RequisitePro outlines, see the Help.

You can edit the Word template to include your company name and other information specific to your organization. You can type the company name, and other information in the Microsoft Word **File > Properties** window. Then in the document, right-click the **Company-Name** field, and select **Update Field**.

If you customize the Rational RequisitePro Word template, be sure to back up the reqpro10.dot file before upgrading to a new version of Rational RequisitePro. Apply the changes to the new reqpro10.dot template after the upgrade. Customization of the reqpro10.dot template is neither required nor supported.

Upgrading Rational RequisitePro

This section provides guidance for upgrading Rational RequisitePro. The topics discussed include:

- Upgrade preparation and planning
- Upgrade prerequisite software
- System shutdown and backup
- Upgrade servers
- Upgrade clients
- New features and post-upgrade activities
- Additional instructions for upgrade procedures

Upgrade preparation and planning

Before upgrading Rational RequisitePro and other IBM Rational products, administrators must carefully plan the process. Perform the following tasks:

- Review the upgrade documentation for all products that you intend to install. Develop a consolidated upgrade plan for those products. Decide which products to upgrade and in which order to perform the upgrade. See 10, "Upgrading IBM Rational software," on page 109.
- Document the existing environment. Create an inventory of the existing Rational RequisitePro environment and include the following information:
  - Database servers, Web servers, license servers, and clients.
  - Hardware and system software on these servers and clients.
  - Related servers and clients, for example, systems with Rational ClearQuest and Rational ClearCase.
- Determine whether any prerequisites must be met. These include operating system versions, database software versions, hardware requirements, and other required software. Database servers can use any operating system that is supported by the vendor software. See "Upgrading prerequisite software."
- Save any information from the current deployment that must be manually preserved. For RequisiteWeb, make a copy of the catalog.txt file, described in "Managing projects in RequisiteWeb" on page 42. See also "Retaining customized versions of the Microsoft Word template" on page 112.
- Determine whether any special requirements apply. This can include upgrading a project from a pre-2002.05.20 release, which requires schema update. See "Upgrade projects prior to 2002.05.20" on page 115.
- Prepare a checklist for the upgrade procedure.
- Decide which new features to implement. For version 7.0, these include:
  - LDAP authentication using SSL. To use LDAP authentication for a Rational RequisitePro project, all clients must be upgraded to version 2003.06.15 or later. To use SSL authentication, all clients must be upgrade to version 7.0. See 5, "Configuring LDAP for RequisitePro," on page 45.
  - Enhanced integration with Rational ClearQuest. See "Configuring the integration with Rational ClearQuest" on page 105.

  For more information about new features, see the *IBM Rational RequisitePro Release Notes*.
- Prepare upgrade instructions for users. These can include instructions for upgrading client systems and accessing database and license servers.

Upgrading prerequisite software

Each Rational RequisitePro server and client requires prerequisite hardware and software with specific release levels for operating systems, database software, and Web browsers. Some of these prerequisites have changed with this release of Rational RequisitePro. In most cases you should upgrade the prerequisite software in phases well before the upgrading the Rational RequisitePro installation. This spreads out the overall upgrade process and reduces risk, by making it easier to diagnose and fix problems as they arise.

For the list of new and continuing support for hardware and software, see "System and software requirements" on page 5.

Performing the upgrade

Perform the following tasks to upgrade Rational RequisitePro.

Shut down and back up the servers

Begin the upgrade process by closing all Rational RequisitePro projects. Create project baselines or archives; back up all databases and other repositories. This permits you to restore the original state of your systems if there are problems with the upgrade. Perform the following steps:

1. Announce to users prior to the upgrade that they should bring all offline documents online, save all changes to their projects, and log out of the projects.
2. Back up (archive or baseline) all projects in Rational RequisitePro.
3. Shut down the project databases. This process is specific to the database vendor; for example, with Oracle, shut down the Oracle "instance" for that database; with DB2, stop the "database manager instance." This prevents Rational RequisitePro clients from accessing or updating the databases.
4. Shut down all other Rational products, such as Rational ClearCase.
5. Create a full backup of all databases and repositories needed to preserve a consistent state across your integrated Rational products. This includes backing up databases, settings, configuration files, ClearCase® VOBs (if you are upgrading Rational ClearCase too), and so on.

Upgrade the servers

After you shut down your Rational products and back up their repositories, you are ready to upgrade your server systems. For Rational RequisitePro, upgrade the following server systems:

- Database Servers. These systems do not require Rational software, but they must have the correct versions of your DB2, Oracle, or SQL Server database software. Database software requires the operating system version as specified by the vendor. For information about accessing projects with earlier versions of Microsoft Access, see "Upgrade to Microsoft Access 2000" on page 115.
- Web Servers: These systems run the RequisiteWeb server. For the Rational RequisitePro database, a RequisiteWeb server functions as another client system; however, for RequisiteWeb users, this is the application server system and their Web browsers are the clients. Upgrade the operating system to a supported version. Install and configure the updated RequisiteWeb software as described in 8, "Installing software," on page 69 and 4, "Configuring RequisiteWeb," on page 27. Restore the copy of the catalog.txt file that you saved in your preparation for the upgrade.

  The current installation of the Web server components for Rational RequisitePro includes the client for Windows, even if your previous installation included Web components only. This provides easy access to sample projects, administrative utilities, and other capabilities on the Web server.

Restart and verify the servers

Start each server and then verify that the upgraded components are functioning properly. Begin by restarting the database servers. This process can vary by database vendor; for example, on Oracle you start the "instance" for the database; on DB2 you start the "database manager instance."

To test the project database, install a single Rational RequisitePro client on the network or start up the RequisiteWeb server and open a project from a browser. As a minimum verification, read, write and modify requirements in the project. If you plan to access the project database with mixed versions of the client, test a pre-7.0 version now.

If you did not start the RequisiteWeb server, do so now and test access to a Rational RequisitePro project.

You can now announce the availability of the servers. Users can now access the projects through supported RequisiteWeb browsers or Rational RequisitePro clients at version 2002.05.20 or later (or 2003.06.15 or later if LDAP is enabled). If your organization is planning to upgrade all clients to version 7.0 at this time, delay this announcement until after performing the upgrades described in "Upgrade client software."

Upgrade projects prior to 2002.05.20

If you upgrade from a release earlier than 2002.05.20, you must upgrade the database schema for your Rational RequisitePro projects. For later releases, no upgrade is required. This schema upgrade is performed by the Database Upgrade wizard when you open each project. After the schema is updated, pre-2002.05.20 clients cannot connect to that project. For more information about the Database Upgrade Wizard, see the Help.

If necessary, perform this upgrade by installing the current version of Rational RequisitePro and open each project.

If you upgrade a project in a version earlier than 4.0, you must upgrade the project to Rational RequisitePro 4.0 before you use the Database Upgrade wizard. For information, contact IBM Customer Support.

Upgrade client software

Prior to announcing the client upgrade process, follow the procedures in 1, "Planning the installation," on page 1 and subsequent chapters for configuring a database, the software licensing, and deployment. This can include the creation of a license server and a release area for client installation. Be sure to provide users with all the information they need to install and run Rational RequisitePro.

If you use DB2 or Oracle databases for your Rational RequisitePro projects, users of the client for Windows must install current versions of the database client software, as described in 7, "Before installing Rational RequisitePro," on page 67.

Follow the instructions in 8, "Installing software," on page 69 to install the Rational RequisitePro client for Windows when previous versions were uninstalled. To upgrade a version 7.1 or later installation using Installation Manager, see "Updating the product" on page 84.

Upgrade to Microsoft Access 2000

Microsoft Access 2000 is the default database format for Rational RequisitePro version 2000.02.10 and later. If you have a project that was created in an earlier version of Rational RequisitePro, the project database is in Microsoft Access 97 format. If you want to view the project in Microsoft Access 2000 or 2002, you must upgrade the project database to Microsoft Access 2000.

IBM provides a utility to convert projects based on Microsoft Access 97 to Access 2000 format. You can run the utility RqAcc2KConv.exe either by dragging the project file (.rqs) to the executable or running it from the command line and specifying the entire path to the project file. The default location for this utility is `C:\Program Files\IBM\RationalSDLC\RequisitePro\bin`. As part of the conversion process, the utility creates a backup copy of your database with the .tac

extension rather than the .mdb extension. You can remove the backup copy when you are satisfied that the conversion was successful. The utility also repairs and compacts the database.

11 Uninstalling Rational RequisitePro

This section provides information about removing versions of Rational RequisitePro, including critical steps you should take before beginning that process.

Note: Starting with version 7.1, Rational RequisitePro must be uninstalled using the IBM Installation Manager. Earlier versions should be uninstalled with the standard Windows Add or Remove Programs utility.

For information about upgrading RequisitePro, see 10, "Upgrading IBM Rational software," on page 109.

Before you uninstall Rational RequisitePro

This section provides general requirements that must be met before you remove Rational RequisitePro, including how to return a license key.

Make sure that no one is using the application or any associated files. You cannot remove files that are in use.

If you plan to move the application to another system, first return the license key file to your Rational software account. Use AccountLink to return a node-locked or floating license key. To find AccountLink, go to http://www.ibm.com/software/rational/support/licensing/. For more information about moving licenses or returning licenses, see 12, "Managing licenses with Rational Common Licensing," on page 119.

Note: Uninstalling Rational RequisitePro does not delete the license key file, project databases, and other files that you created while using the product. If you plan to install an upgrade of Rational RequisitePro to a different drive or use a new installation path, back up these files and remove them manually.

Before removing the Rational products (including the Rational license server) from clients, record the specified license server host names in the License Key Administrator (LKAD).

1. Click **Start → Programs → IBM Rational → IBM Rational License Key Administrator**.
2. Find the host names. Click **Settings → Client/Server Configuration**.
3. After you install the new Rational products, reset the license server name in the LKAD. The LKAD wizard starts after the installation. If the wizard does not start, click **Start → Programs → IBM Rational → IBM Rational License Key Administrator**.

How to uninstall Rational RequisitePro

Starting with version 7.1, Rational RequisitePro must be uninstalled using the IBM Installation Manager.

To uninstall RequisitePro version 7.1 or later, see "Uninstalling the product" on page 84.

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Select RequisitePro, then click the **Uninstall** button.

Detailed information about the Installation Manger is provided at http://publib.boulder.ibm.com/infocenter/install/v1m0r0/indexhttp://publib.boulder.ibm.com/infocenter/install/v1m0r0/index.jsp

To uninstall versions of Rational RequisitePro older than 7.1, use the standard Windows **Add or Remove Programs** utility:

1. Click **Start** → **Control Panel**, then double-click **Add or Remove Programs**.
2. Select **IBM Rational RequisitePro** and click **Remove**.

If you want to uninstall Rational products older than 7.1 from the command line, you must use the MSIEXEC.exe application. For information about this command and its parameters, go to http://www.microsoft.com/resources/documentation/window, or run `MSIEXEC.exe /?` from a Windows command prompt.

Removing a Rational fix pack

After a fix pack is applied, you cannot uninstall the updates it makes on your computer. To revert to your previous configuration of a IBM Rational product:

- Uninstall all IBM Rational products for which the fix pack was applied.
- Install the preferred version of the Rational product again.

12 Managing licenses with Rational Common Licensing

Information on managing licenses across the Rational product line.

License server setup

Before requesting license keys

IBM Rational Common Licensing (powered by FLEXlm software) and supported configurations.

Rational uses a software-based license management tool called FLEXlm from Acresso Corporation to build a customized licensing model.

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

Remember: Rational Common Licensing is an optional licensing enforcement feature for IBM Rational Software Delivery Platform tools.

Rational Common Licensing (powered by FLEXlm software) support is enabled in a new release of IBM Rational License Server software for version 7.0 Rational Rational Software Delivery Platform products built on the Eclipse platform. The new version of Rational License Server software serves both previous Rational Common Licensing enabled Team products (IBM Rational ClearCase, IBM Rational ClearQuest , etc.) and the new IBM Rational 7.0 products. If you must serve both the Rational version 7.0 client products and the version 7.0 Team products, you must upgrade to the latest version of the Rational License Server software. Two separate servers are not required since Rational License Server 7.0 is backward compatible with client products that use Rational Common Licensing from earlier releases. Support for serving license keys to both new clients and clients which have installed Rational Product version 2003.xx is included.

Getting started with IBM Rational Common Licensing

List of administrator licensing tasks.

Table 13 lists common administrator licensing tasks. Table 14 on page 120 lists optional or additional administrator licensing tasks.

Table 13. Getting started with Rational Common Licensing

Task	Procedure
Upgrade license keys.	“Upgrading license keys” on page 127.

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Table 13. Getting started with Rational Common Licensing (continued)

Task	Procedure
Get the permanent license key for the product.	If you have purchased authorized user, floating, or named-user floating licenses, use your Proof of Entitlement certificate to request permanent license keys from Rational License Key Center, the Web-based license key management tool. See "Requesting license keys" on page 129 for more information. If there is a delay in receiving your permanent authorized user or floating license keys, use the temporary license key on the Proof of Entitlement certificate. See "Using your Proof of Entitlement certificate" on page 121.
Get an evaluation license key for the product.	Your IBM sales representative sends you an evaluation license key.
Install authorized user license keys on your client.	"Installing authorized user license keys" on page 195.
Install the floating and named-user floating keys on the Rational license server for Windows.	"Configuring a license server for Windows systems" on page 134.
Install the floating keys on the Rational license server for UNIX systems.	"Configuring a UNIX system license server" on page 148.

Table 14. Optional or additional tasks

Task	Procedure
Configure redundant license servers on Windows or UNIX system servers.	"Setting up redundant license servers" on page 145.
Remove the Rational license server software from a Windows server.	"Removing the Rational License Server software" on page 147.
Remove the Rational license server software from a UNIX system server.	"Removing the Rational License Server software" on page 147.
Use floating license keys for working at home or traveling.	"Using license keys for home use or travel" on page 127.
Combine license files from multiple vendors.	Do not combine license key files from multiple vendors; instead, keep the license keys in separate files.
Understand license installation problems and error messages.	"Administrator Privileges for LKAD" on page 178 "Troubleshooting licenses" on page 170
Understand the mechanics of IBM Rational Common Licensing.	"Understanding IBM Rational Common Licensing components" on page 163.

Using your Proof of Entitlement certificate

Information provided by your Proof of Entitlement certificate.

The IBM Proof of Entitlement certificate (PoE) is a document that IBM sends to customers who purchase software products. The PoE confirms to you the eligible products and level of use for which you are authorized. It includes important order information such as your IBM customer number, IBM site number, and IBM order number. IBM emails the PoE by default to the Primary Site Contact on the order from the email account "Passport_Advantage@ibm.com" and with the subject of either "IBM Passport Advantage Proof of Entitlement" or "IBM Passport Advantage Express Proof of Entitlement".

The information, especially the account number, on this certificate verifies that your company has purchased licenses to operate IBM Rational products.

- To get your Authorized User, Authorized User Fixed Term License (FTL), or floating license keys, supply information from your PoE certificate to the License Key Center. See "Requesting license keys" on page 129 for more information about the License Key Center.
- If you have purchased an IBM Rational XDE™ product, the single-string desktop key on the PoE is your permanent license. Do not order a permanent license key from License Key Center. Optionally, you can enable floating license enforcement for Rational XDE.
- To evaluate most Rational products, get a temporary key from a sales representative.
- To evaluate an Rational product based on the Eclipse framework, download the product. Depending on the product, you will have 30 to 60 days to evaluate the product. After evaluation, either purchase a permanent activation kit or implement IBM Rational Common Licensing.
- If you are unable to access the License Key Center or there is a delay in receiving your permanent keys, enter thetemporary license key from your PoE into License Key Administrator (LKAD).

Opening License Key Administrator (LKAD)

IBM Rational License Key Administrator (LKAD) is installed with many IBM Rational products and with your IBM Rational License Server software

This application provides an interface to IBM Rational Common Licensing (powered by FLEXlm software). Use LKAD or the LKAD wizard to enter or import license keys and change your license configuration.

Remember: For Rational products built on the Eclipse framework, use the IBM Installation Manager to manage your license configuration on the client.

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

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

To access the Help, click **Help** in the LKAD main menu, click **Help** in the LKAD wizard, or open *install path*\IBM Rational\doc\help\licadmin\index.htm.

Using LKAD after installation

Managing license keys using LKAD.

You can start IBM Rational License Key Administrator (LKAD) and LKAD wizard after an IBM Rational product installation finishes.

On a client, use LKAD to:

- Import a authorized user license file.
- Enter a temporary authorized user license key.
- Specify a license server to request floating licenses.
- Go to License Key Center to request permanent license keys.

Remember: For IBM Rational products based on the Eclipse framework, use the IBM Installation Manager to manage your license configuration on the client.

On a license server, use LKAD to:

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

Defining the "user" in IBM Rational Common Licensing

Rational Common Licensing (powered by FLEXlm software) checks out licenses on behalf of a "user" that is defined as follows:

- On Windows, the "user" is the Windows operating system login ID.
- On UNIX systems, a "user" is the account name of the person that runs the UNIX system shell.
- On Web products, the "user" is the product login ID.

Defining license types

Description of different license types.

Table 15. License types

License type	Products	Description
Authorized user	All products included in IBM Rational Common Licensing.	• An authorized user license (formerly called a node-locked license) is created for a specific client. It allows a user to use an IBM Rational product only on that specified client. • The user can use multiple sessions of a product concurrently on the specified computer using a single license key. • Because authorized user licenses are uncounted licenses, no license server is required to manage them.

Table 15. License types (continued)

License type	Products	Description
Authorized user fixed term license (FTL)	Available for many IBM Rational software products	• An IBM Rational Authorized User FTL allows a single, specific individual to use an Rational product for a specific length of time (the term). • Purchasers must obtain an Authorized User FTL for each individual user accessing the product in any manner. • An Authorized User FTL may not be reassigned unless the purchaser is replacing the original assignee on a long-term or permanent basis. • Currently, this license type is not available for Rational products based on the Eclipse framework.
Floating	All products included in Rational Common Licensing.	• A license administrator installs the Rational license server software on single, multiple, or redundant servers. The administrator then installs the floating licenses on the license servers. These floating licenses are created for the specific license server. • Client users obtain licenses from the license server when they start the software. One license is granted per client per product, except performance testing products. Performance testing products can check out multiple licenses. • Floating licenses allow anyone on your network to use Rational products while a license is available. Thus, the number of licenses that you purchase and register in License Key Center determines the maximum number of users who can use Rational products concurrently.
Named-User Floating	• IBM Rational PureCoverage® • IBM Rational Purify® • IBM Rational Quantify®	• Similar to a floating license, except the license administrator assigns licenses to specific users. That is, only specific users can request floating license keys from the license server. • A named-user floating license requires a license administrator to create a list of authorized users.

Defining license key types

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

Table 16 on page 124 defines the license key types used in IBM Rational Common Licensing (powered by FLEXlm software).

Table 16. License key types

License key type	Description
Permanent	• A license issued to a customer to use products for an indefinite period of time. • To order your permanent floating, named-user floating, or authorized user license keys for most products, use the IBM Rational License Key Center. • To acquire an authorized user license key for IBM Rational products based on the Eclipse framework, purchase and download an activation kit from Passport Advantage. See "Requesting license keys" on page 129 for information about ordering keys from the License Key Center.
Temporary (evaluation or emergency)	• A time-limited license issued to a customer for using IBM Rational products. You can use it on any computer until the specified expiration date. • Temporary license keys can be floating or authorized user. • Temporary keys are generated only for single or multiple license servers. They are not generated for redundant servers. • To evaluate a product, ask your sales representative for an evaluation key.
TLA (Term License Agreement)	• TLAs allow users access to IBM Rational software for a negotiated period of time. The expiration date is built into the license key. • TLA license keys can be floating or authorized user. • The processes of requesting and installing TLA license keys are the same as requesting and installing permanent licenses. • To order your TLA floating, named-user floating, or authorized user license keys, use License Key Center. See "Requesting license keys" on page 129 for more information about License Key Center.

Using point-product keys and suite keys

Descriptions of how products use multiple license keys and how multiple products use one license key.

Using multiple license keys:

A client user can check out multiple floating or authorized user license keys.

Using ClearQuest Web and RequisiteWeb:

Using a floating license key for different Rational clients on the same computer.

A single user can use the IBM Rational ClearQuest native client and Web client on the same computer simultaneously with a single floating license key while the user's Windows login ID is the same as the user's ClearQuest login ID. The same logic applies to IBM Rational RequisitePro native client and Web client. See "Defining the "user" in IBM Rational Common Licensing" on page 122.

Using suite license keys:

Using a suite license key with multiple products .

A license key indicates if it is a IBM Rational Suite license, such as Rational Suite Enterprise. A Rational license file can contain multiple suite and individual product license keys. A Rational Suite license key lets you use all of the products contained within Rational Suite at the same time on a single computer. Any add-on product, such as IBM Rational XDE, uses its own license key instead of the Rational Suite license key.

Using a different suite license from the suite edition installed:

You can install a IBM Rational Suite on a client and specify that products within the suite check out a different type of Rational Suite license.

For example, you can install Rational Suite Enterprise on the client and have the products within the Rational Suite check out a Rational Suite AnalystStudio license from the license server. To select a different license for a product, use the License Key Administrator (LKAD) on the client. See "Changing license usage order" on page 200 for more information.

Using license keys for the Rational Rose variant installed:

License keys for different variants of IBM Rational Rose.

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

Table 17. License keys for Rational Rose variant

Variant	Variant license key:
Rational Rose Enterprise Edition	• Rose Enterprise • Rational Suite® Enterprise • Rational Suite DevelopmentStudio for Windows
Rational Rose Modeler Edition	• Rose Modeler
Rational Rose Professional Data Modeler	• Rose Data Modeler • Rational Suite AnalystStudio
Rational Rose for UNIX systems	• Rose for UNIX systems • Rational Suite DevelopmentStudio for UNIX systems • Rose Enterprise for UNIX systems

Using license keys on different platforms:

Rational Rose can start with license keys specified for different platforms.

To do this, change the license usage order on your computer. See "Changing license usage order" on page 200 for more information.

- Rational Rose for UNIX systems uses a Rational Rose Enterprise for Windows key.
- Rational Rose Enterprise for Windows uses a Rational Rose for UNIX systems key.

Using ClearCase and Rational ClearCase MultiSite license keys

IBM Rational ClearCase version 7.1 supports using IBM Rational Common Licensing with IBM Rational ClearCase and IBM Rational ClearCase MultiSite®.

With this release you can use either Rational ClearCase licensing (formerly known as Atria licensing) or Rational Common Licensing (powered by FLEXlm software). In previous releases, Rational Common Licensing was supported only for use with Rational ClearCase LT. If you want to use Rational Common Licensing, select this option during the installation or dynamically switch license modes after installation.

Review the information and procedures to understand the license management tools, license key types, and how to set up your license server configuration and import license keys.

ClearCase MultiSite license keys:

IBM Rational ClearCase MultiSite requires both a IBM Rational ClearCase license key and a Rational ClearCase MultiSite license key.

This licensing model is similar to IBM Rational ClearQuest MultiSite, as explained in "Using ClearCase and Rational ClearCase MultiSite license keys."

Using Rational ClearQuest MultiSite license keys

Determining the number of requiredIBM Rational ClearQuest MultiSite licenses.

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

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

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

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

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

site B purchased three Rational ClearQuest licenses, they would also purchase three Rational ClearQuest MultiSite licenses.

Using license keys for products built on the Eclipse platform

IBM Rational License Server versions 7.0.0.1 and later extend floating license support for IBM Rational Software Delivery Platform tools built on the Eclipse open-source framework. This family of products, including IBM Rational Application Developer, IBM Rational Software Architect, and other products version 7.0 and above, include support for a subset of IBM Rational Common Licensing (powered by FLEXlm software) that enables administrators to manage and enforce licensing across the enterprise.

Floating license enforcement is an optional licensing feature for Rational Software Delivery Platform tools. You can choose to purchase an Authorized User license and download the product activation kit which contains a permanent license key. The permanent license key is not provided or managed through Rational Common Licensing. At any time, you can switch between implementation of an activation kit or floating license support using the IBM Rational product installation and license management utility, IBM Installation Manager for the Rational Software Delivery Platform.

Use the information and procedures in “License server setup” on page 119 to learn about floating licenses, obtaining floating license keys, and installing Rational License Server. Refer to “Client setup for Rational Software Delivery Platform software” on page 193 to learn about implementing floating license support on clients.

Upgrading license keys

When you should order new license keys.

If you upgrade from an earlier version of IBM Rational Suite, you can use your current Rational Suite keys.

You must order new license keys from the IBM Rational License Key Center under the following conditions:

- If you purchase a different version of Rational Suite from the one that you are currently using, return the license file and request a new license file that includes the new Rational Suite key.
- If you add a new IBM Rational product to your system, return the license file and request a new license file that includes the new product license key.
- If you upgrade to a different version of IBM Rational Rose, remove the existing version and install the new version and license key.

To return an existing key: “Returning or moving keys for client users” on page 192 or “Returning or moving keys for administrators” on page 162.

To request a permanent or term license agreement key: “Requesting license keys” on page 129.

Using license keys for home use or travel

Configuring licenses for disconnected use.

If your product uses floating keys, with disconnected mode you can use IBM Rational software at home for a three day period. You must activate for disconnected use within a three day period of acquiring a floating license key and

disconnecting from the network at work. After you activate for disconnected use, you can use the software for three days from that day and time.

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

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

There are two other options for home use or travel:

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

Changing the disconnect time-out to delay disconnected use:

If you have a slow network at work, your software automatically goes into disconnected use mode if it does not receive a response from the license server within 5 seconds.

You then see a window that states that you are in disconnected use mode after the 5 seconds.

You can change the time-out period before your IBM application goes into disconnected use mode. The default setting is 5 seconds. To change the setting:

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

IBM Rational licensing configurations

Supported IBM Rational licensing configurations.

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

Table 18. Supported Rational licensing configurations

Configuration	Supported platforms
Authorized user license key	Windows / UNIX systems
Rational license server and Windows products installed on a single computer.	Windows
Rational license server and UNIX system products installed on a single computer.	UNIX systems

Table 18. Supported Rational licensing configurations (continued)

Configuration	Supported platforms
Floating or named-user floating licenses for Windows products.	UNIX system server serving licenses to Windows clients
Permanent floating licenses with redundant license servers.	Windows server serving licenses to UNIX system clients
Permanent floating licenses with redundant license servers.	Windows server serving licenses to Windows clients
Permanent floating licenses with redundant license servers.	UNIX system server serving licenses to UNIX system clients

Requesting license keys

Using Rational License Key Center to manage license keys.

Permanent floating and authorized user license keys (formerly referred to as node-locked license keys) are managed through IBM Rational License Key Center. You, as the license administrator, can request permanent license keys in Rational License Key Center.

The information is intended for system administrators or users who manage licenses. It provides information about requesting and receiving permanent floating and authorized user license keys from Rational License Key Center.

Accessing the IBM Rational License Key Center

The IBM Rational License Key Center is the online licensing tool that you use to get or return your Rational software license keys.

To access the License Key Center:

1. Go to IBM Software Support for Rational products Licensing Web page.
2. Click IBM Rational License Key Center and then click **Continue**.
3. Log in to the IBM Rational License Key Center.

Migrating existing license keys to the License Key Center

Information to help you move your existing license keys to IBM Rational License Key Center.

License key migration:

Generate license keys in the IBM Rational License Key Center as AccountLink license keys will not be displayed in the center.

- The Rational License Key Center shows only keys that it generates. It does not show license keys you received from AccountLink or from IBM before the Rational License Key Center became available.
- Review your IBM Rational software deployments throughout your enterprise and generate keys for all existing products using the Rational License Key Center.

FLEXlm license keys:

Creating licenses using the Rational License Key Center.

Most of the IBM Rational product portfolio uses a license key manager that is powered by FLEXlm software. These products include IBM Rational Suite, IBM Rational ClearQuest, IBM Rational Rose, IBM Rational PurifyPlus™, IBM Rational Robot, and a series of other products.

When you download license keys from the Rational License Key Center, the downloaded file does not contain the license keys for your host that you received before the Rational License Key Center went online in May 2006. If you import this file onto your existing Windows or UNIX system license server, the import feature will replace your existing license key file with the keys in the downloaded file. This means you must use the Rational License Key Center to generate new keys to replace your existing keys that you received from IBM before May 2006.

For example, you had received 50 Rational Rose keys and 75 Rational Robot keys for host XYZ using the earlier AccountLink license key fulfillment system. Now, you want to add 100 Rational ClearQuest keys for the same host, XYZ. You access the Rational License Key Center, and generate 100 Rational ClearQuest keys for host XYZ. The file that is downloaded from the Rational License Key Center for host XYZ will not contain the Rational Rose and Rational Robot license keys because those keys came from AccountLink. When you import the downloaded file from the Rational License Key Center the existing license key file containing the 50 Rational Rose keys and 75 Rational Robot keys is *overwritten* with the downloaded license key file that contains only the Rational ClearQuest license keys. As a result, the license server manages the Rational ClearQuest keys only.

To prevent this situation, you must go to the Rational License Key Center and generate Rational Rose and Rational Robot keys for host XYZ. The license key file will then include keys for all three products for host XYZ:

License key file downloaded from the Rational License Key Center for host XYZ:

- 100 Rational ClearQuest keys
- 50 Rational Rose keys
- 75 Rational Robot keys

Downloading and importing this file from the Rational License Key Center will overwrite the existing license file with the new license file that now contains keys for the three products: Rational Robot, Rational Rose, and Rational ClearQuest.

To add another license key for Rational PurifyPlus to this host, generate the Rational PurifyPlus keys for host XYZ, download and import the file that now contains keys for the four products.

Rational ClearCase license keys:

IBM Rational License Key Center shows two types of license keys for IBM Rational ClearCase: "classic" Rational ClearCase keys, and Rational ClearCase keys based on FLEXlm software.

The term "classic" Rational ClearCase license keys refers to the proprietary license manager used by Rational ClearCase. This manager is also referred to as the "Rational ClearCase license manager." The license manager supports Rational ClearCase through version 7.0.

Version 7.0 offers the choice of using the classic Rational ClearCase license manager or using IBM Rational Common Licensing (powered by FLEXlm

software). The benefit of using the license manager based on FLEXlm is that you can have a single Rational license server manage your Rational ClearCase, IBM Rational ClearQuest, and other IBM Rational product license keys using Rational Common Licensing.

Generating classic Rational ClearCase license keys:

When you generate a classic license key for IBM Rational ClearCase, the IBM Rational License Key Center gives you the license key that you generated plus all other Rational ClearCase keys that you have previously generated for that host using the Rational License Key Center.

For example, the first time a customer generates a classic Rational ClearCase key for host ABC, the Rational License Key Center shows the following key:

-license ClearCase RATL *.2 NONE 44561c.dac92b9f.02

If the customer returns to the Rational License Key Center and obtains another classic Rational ClearCase key for the same host, the Rational License Key Center now shows the new key in addition to the previously generated key:

-license ClearCase RATL *.7 NONE 88261c.dac92b9f.08

-license ClearCase RATL *.2 NONE 44561c.dac92b9f.02

When you install the new Rational ClearCase keys, always replace your installed license keys with the keys that the Rational License Key Center shows for your host.

Using License Key Center to request permanent license keys

In IBM Rational License Key Center, you can order and return permanent authorized user, floating, and named-user floating license keys for Windows, Linux, and the UNIX system products.

For more information about license types, see “Defining license key types” on page 123.

Remember: Rational License Key Center does not support temporary license key transactions. Contact your sales representative for more information about license key transactions.

Rational License Key Center offers a range of license key management transactions as shown in Table 19 on page 132.

Table 19. License Key management transactions

Transaction	Description
Generate license keys	Request your permanent license key. To order a permanent key, you must have your Proof of Entitlement certificate, the host name and host ID, or Ethernet address of the license server or client. You can register: • IBM Rational products on Windows or UNIX systems that will be served from a license server. • Single, multiple, or redundant license servers on Windows or UNIX system operating systems. • Remote Windows or UNIX systems computers. You do not have to sit at the computer you are requesting license keys for. To find out more about the host name and host ID, see "Finding the host ID." To order permanent license keys for a redundant server environment, specify in the following order the host IDs for the redundant servers: • Primary license server • Secondary license server • Tertiary or back up license server The clients communicate with the redundant servers in this order.
Move your license keys	Return an existing license key to your account and then request a license key for a new client or server. This adjusts the count of registered products in your account and enables you to receive a license key for the new computer. To learn more about returning license keys, see "Returning or moving keys for administrators" on page 162.
View your Sales Orders	The View order history page shows you all the Sales Orders that are associated with your account. You can click **Sales Order Number** to view details about the order. Clicking the **License keys for this order** hyperlink enables you to generate keys associated with your order.
View your installed keys	The View keys by host page displays a complete list of hosts that currently have installed keys that were generated from the specified account.
Add other members to your account	The Account members page shows a list of users who are members of your account along with each member's e-mail address, title, and privileges. The same user can be a member of multiple accounts with differing privileges across accounts.
Add yourself to other accounts	It is possible that your company has multiple Rational License Key Center accounts that you must access. You have two options to access the accounts: the account administrator of the account you want to access can add you as a member or you can add yourself to the new account.
Switch between accounts	If you are a member of multiple Rational License Key Center accounts, the **Switch account** link is displayed in the left menu.

Finding the host ID

Default host ID values for Windows or UNIX systems.

The term host ID is a generic term that specifies the computer hard disk drive serial number or Ethernet address (network ID).

With IBM Rational Common Licensing (powered by FLEXlm software), the default host ID value on Windows computers is the serial number of the startup hard disk drive. In this case, the host ID field is: DISK_SERIAL_NUM=*nnnnnnn*. Example: DISK_SERIAL_NUM=12345678.

The default host ID value on UNIX system computers is the Ethernet address of the system written in this format: HOSTID=*nnnnnnnnnnnn*. Do not confuse the format HOSTID=*nnnnnnnnnnnn* with the hard disk drive serial number format DISK_SERIAL_NUM=*nnnnnnnn* that is referred to in IBM Rational documentation, online Help, and Rational License Key Center as the host ID.

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

Finding the host ID on a Windows computer:

To get the host name, host ID, or Ethernet address of a Windows computer, click **License Keys → Host Data** in the License Key Administrator menu.

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

Accommodating frequent host ID changes:

Registering the host ID of the startup hard disk drive might not be possible if you have dual boot systems, if you frequently reformat your disks, or if you ghost your hard disk images.

These processes change the host ID of the startup drive. Because the products and license keys are registered to a specific host ID, you cannot use your IBM Rational products if the host ID changes.

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

- Use floating licenses that are served by a license server with a constant host ID.
- Use the address of the Ethernet card in the computer as a host ID.
- Make sure that you keep the hard disk drive serial number of the startup drive constant when images are created to refresh the computer.

Finding the host ID on a UNIX system server:

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

- If the license server software is installed, use the lmhostid command to find the Ethernet address of the server.
- On Sun computers, type lmhostid at the prompt. This command returns the value of the Sun host ID.

Requesting license keys without an internet connection or Rational License Key Center availability

Steps for getting a permanent license key when you do not have an internet connection or when the IBM Rational License Key Center is unavailable.

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

- *rational_dir*\common\License Fax Form - Chinese.htm
- *rational_dir*\common\License Fax Form - French.htm
- *rational_dir*\common\License Fax Form - German.htm
- *rational_dir*\common\License Fax Form - Japanse.htm

2. Use the Proof of Entitlement certificate to complete the form. Make sure that the contact, account number, product, licensing, and host details are correct. Errors will cause delays in receiving your license keys.
3. Fax the request to IBM.

Call IBM Software Support for Rational products if you cannot use the Rational License Key Center or the fax form to order your permanent license keys.

Receiving permanent license keys

Import the license key to a license server or client.

After you order your keys in the IBM Rational License Key Center, an IBM Rational license file is generated. Click Download Keys to download the license file in Rational License Key Center.

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 by e-mail. You can copy the permanent license file from the e-mail enabled computer and install it on the computer that is not e-mail enabled. If you cannot provide an e-mail address, contact IBM Software Support for Rational products.

After you receive the license key file:

- Import the floating or named-user floating license key file on the license server. For more information about importing a license key file on a license server, see "Configuring a license server for Windows systems" or "Configuring a UNIX system license server" on page 148.
- Import the User Authorized license key file on the client. See "Installing authorized user license keys" on page 195.

Configuring a license server for Windows systems

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

This topic describes how to set up and use IBM Rational license servers for the Windows operating system. This information is intended for the system administrators or users who manage the licenses. If you are using client licenses, see "Installing authorized user license keys" on page 195.

Some of the tasks described in "Setting up floating licenses for Windows servers" on page 135 require knowledge of the Windows operating system and IBM Rational Common Licensing (powered by FLEXlm software).

Remember: Rational Common Licensing (powered by FLEXlm software) support for version 7.0 Rational Software Delivery Platform products built on the Eclipse platform is enabled in a new release of Rational License Server software. The new version of Rational License Server software serves both previous Rational Common Licensing enabled Rational Team products (Rational ClearCase, Rational ClearQuest, etc.) and the new Rational 7.0 products. If you must serve both the Rational 7.0 client products and the Rational Team 7.0 products, you must upgrade

to this latest version of the license server. Two separate servers are not required since this new version of the server supports the previous clients and the new Rational 7.0 clients.

For Rational Software Delivery Platform version 7.0 products built on the Eclipse framework, the enablement of Rational Common Licensing and floating licenses on clients is an optional feature allowing administrators to easily manage and enforce licensing across the enterprise.

Setting up floating licenses for Windows servers

Steps required to set up floating and named-user floating license keys.

Table 20. Guide to setting up floating licenses for Windows servers

Task	Procedure
Set up floating licenses	• Understand the IBM Rational Common Licensing model. See "Before requesting license keys" on page 119. • Request and receive permanent license keys. See "Requesting license keys" on page 129. If you are evaluating the product, use the temporary license keys. • Make sure that your license server and clients can work with the network configuration that you have set up. See "Working with a supported network configuration" on page 137. • Install the IBM Rational License Server software on the server. See "Installing the server software on a Windows server" on page 137. • Install the evaluation or permanent license keys on the license server. See "Opening License Key Administrator (LKAD)" on page 121 and "Using floating keys on a Windows license server" on page 139. • Start the Rational License Server software. See "Starting the Windows license server" on page 141. • Tell client users to specify the license server in their client.

Table 20. Guide to setting up floating licenses for Windows servers (continued)

Task	Procedure
Set up named-user floating licenses (only applies to RationalPurify, RationalQuantify, and RationalPureCoverage).	• Understand the Rational Common Licensing model. See "Before requesting license keys" on page 119. • Request and receive permanent license keys. See "Requesting license keys" on page 129. If you are evaluating the product, use the temporary license keys. • Make sure that your license server and clients can work with the network configuration that you have set up. See "Working with a supported network configuration" on page 137. • Install the Rational License Server software on the server. See "Installing the server software on a Windows server" on page 137. • Install the named-user floating license keys on the license server. See "Opening License Key Administrator (LKAD)" on page 121 and "Using named-user keys on a Windows license server" on page 140. If the keys are temporary, enter the license key information in the LKAD wizard (You do not have to edit the file `rational.opt`). • Edit the file rational.opt with the names of specific users. See "Using named-user keys on a Windows license server" on page 140. • Start the Rational License Server software. See "Starting the Windows license server" on page 141. • Tell client users to specify the license servers in their clients.
Specify the Rational License Server software on a Web server	See "Specifying the license server on Windows Web servers" on page 143.
Use floating licenses with a firewall	See "Using floating licenses with a firewall" on page 146.
Change the lmgrd port	See "Changing the lmgrd port" on page 147.
Configure redundant license servers	See "Setting up redundant license servers" on page 145.
Use License Key Administrator commands for configuring license servers on clients	See "Using the LKAD command line on Windows (optional)" on page 142.
Change the order in which IBM Rational products use licenses	You cannot use the license server to change the license usage order for all clients. To change it, each user will have to go into the License Usage Mapper in the client LKAD or, for products built on the Eclipse platform, the Manage Licenses wizard in the client's IBM Installation Manager. The order is tied to the user_ID. See "Changing license usage order" on page 200.
Modify the time-out period	See "Modifying the floating license time-out period" on page 144.
Monitoring license server activity	See "License monitoring (optional)" on page 146.
Upgrading the Rational License Server software	You can upgrade the License Server software to the most current version, but do not use different versions of License Server software on the same computer.

Table 20. Guide to setting up floating licenses for Windows servers (continued)

Task	Procedure
Using multiple license servers on the same server	Uaw a separate lmgrd instance for each vendor daemon and keep license keys in separate files.
Diagnose problems with the Rational License Server software	See the following topics: • "Checking the Windows license server" on page 174. • "Checking the Windows network connection" on page 175.
Remove the Rational License Server software	See "Removing the Rational License Server software" on page 147.

Working with a supported network configuration

Information about network configurations.

Dial-up support:

Using floating licenses with a dial-up network connection.

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

If the dial-up connection is lost while a client has checked out a floating license, the server will automatically reclaim the floating license. When the connection is lost, the client is unable to periodically refresh its license from the license server. As a result, you can use the Rational product for a limited period of time. This time period is dependent on the Rational product in use.

WAN support:

Using licenses in a WAN environment.

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

Novell support:

Support for Novell 5.0.

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

Authorized user licenses with Novell 5.0 are supported.

Installing the server software on a Windows server

Use the IBM Installation Manager to install the Rational License Server software

The Rational License Server enables you to flexibly install and manage license keys. A license key is not required to operate the Rational License Server software.

Downloading Rational License Server:

Obtaining License Server software online.

If you do not have a CD with the version of IBM Rational License Server software you require, you can download the license server from the IBM Rational Download and Licensing Center. Registration is required.

Before you install the license server on a Windows server:

Requirements for installing Rational License Server software on a Windows server.

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

Remember: Make sure that you have a current backup of your registry and system directories before you start the installation program.

License installation:

Use the IBM Installation Manager to install the Rational License Server.

You can install the License server for an IPv4 or IPv6 network.

Note: For IPv6, the IPv6 stack must be enabled on Windows before you install the License server.

Opening License Key Administrator (LKAD)

IBM Rational License Key Administrator (LKAD) is installed with many IBM Rational products and with your IBM Rational License Server software

This application provides an interface to IBM Rational Common Licensing (powered by FLEXlm software). Use LKAD or the LKAD wizard to enter or import license keys and change your license configuration.

Remember: For Rational products built on the Eclipse framework, use the IBM Installation Manager to manage your license configuration on the client.

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

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

To access the Help, click **Help** in the LKAD main menu, click **Help** in the LKAD wizard, or open *install path*\IBM Rational\doc\help\licadmin\index.htm.

Using floating keys on a Windows license server

Description of importing or entering floating license keys on the Rational License Server software.

Importing floating license keys:

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

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

To import a license key file in LKAD:

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

Other methods for importing permanent authorized user keys.:

Use e-mail, file attachments or License Key Administrator (LKAD) wizard.

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

Entering temporary floating license keys:

Steps for using a temporary floating license.

You can enter a temporary or evaluation license key on the license server if you are evaluating the product or the Rational License Key Center is unavailable.

Remember: You must have local administrative privileges for the server before you can enter the license key into License Key Administrator (LKAD).

To enter license information in LKAD:

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

Using named-user keys on a Windows license server

Named-user license keys perform as floating license keys, except that during the import process, License Key Administrator (LKAD) gives you the opportunity to specify a user for each license key.

You assign a user to a key by editing the options file rational.opt. The options file locks the floating license key to the user; allowing the user to useIBM Rational Purify, IBM Rational Quantify, or IBM Rational PureCoverage on multiple clients.

Importing named-user license keys:

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

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

To import a license key file:

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

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

Entering temporary named-user license keys:

Steps for using a temporary named-user licenses.

You can enter a temporary or evaluation license key on the license server if you are evaluating the product or the License Key Center is unavailable.

Remember: You must have local administrative privileges for the server before you can enter the license key into License Key Administrator (LKAD).

To enter license information in LKAD:

1. Click **License Keys → Enter a License**.
2. Select the type of license.
3. In the next window, enter the following information:
   - Product
   - Expiration Date
   - License Key
   - Quantity (if you are installing a floating license key)

4. Click **Finish**. LKAD adds this information to the license key *.dat file in <*Install Path*>\Rational\Common.

Starting the Windows license server

Start the IBM Rational License Server software after you have imported or entered the license keys..

The license server will not start until license keys are installed. Use the correct procedure based on the version of the Windows operating system on your license server.

Remember: Although the control panel applet may still be on your server from an earlier release of the license server software, the Rational License Server software does not use the FLEXlm control panel applet.

Starting the license server on Windows XP:

Steps for starting the license server.

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

Starting the license server on Windows 2000:

Steps to start the license server.

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

Starting the license server on Windows NT:

Steps for starting the license server.

Click **Start** → **Settings** → **Control Panel** → **Services** → **FLEXlm License Manager** → **Start**.

Switching to manual startup:

Setting the IBM Rational License Server software service to be started manually.

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

Switching startup type on Windows XP:

Steps for changing startup type.

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

Switching startup type on Windows 2000:

Steps for changing startup type.

1. Click **Start** → **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:

Steps for changing startup type.

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

Using the LKAD command line on Windows (optional)

To automate license configuration on clients, create a text file that specifies single, multiple, and redundant license servers on clients.

Users enter commands in Windows to use the text file.

Remember: These commands do not support authorized user license keys.

- Use the command line to direct LKAD to use information in the text file. To set up the text file and start LKAD from the command line, see "Creating the text file that specifies license servers."

Creating the text file that specifies license servers:

Instructions for setting up the text file that specifies single, multiple, or redundant license servers.

These instructions also provide the commands for starting License Key Administrator (LKAD) from a command window if users are not performing a silent installation.

Specifying single or multiple license servers:

To specify the name of single or multiple license servers in a client's License Key Administrator (LKAD):

1. Create a file with the name *server-info.txt* in a text editor that contains the following line where *server1* is the name of the license server:

   PortAtHost:*27000@server1*

   When you type this line:

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

   To add an additional license server with the name of server2, enter: *@server2*;**PortAtHost**:*27000@server1*;*@server2*;
2. Save the file.
3. If you are not using a silent installation, enter the following command: licadmin -f *server-info.txt*

   Your client will be configured to use floating license keys from server1 and server2.

The results of executing this command are written to the status file *server-info.txt_STATUS* in the same directory where you saved the file *server-info.txt*.

Specifying redundant license servers:

To specify the names of redundant license servers in a client's License Key Administrator (LKAD):

1. Create a file with the name *server-info.txt* in a text editor that contains the following line:

   PortAtHost:*27000@redundant1*,*27000@redundant2*, *27000@redundant3*;

   where *redundant1* is the name of the primary IBM Rational License Server, *redundant2* is the name of the secondary license server, and *redundant3* is the name of the tertiary license server.

   When you type this line:

   - The license servers must be specified in the order of Primary, Secondary, and Tertiary (Backup) server. For more information about redundant server order, see "Setting up redundant license servers" on page 145.
   - PortAtHost is case sensitive.
   - 27000 is the default port number.
   - Use commas in the series of redundant server names. The trailing semicolon is also required.
   - You can specify redundant servers and multiple servers in one file. Use commas between redundant servers and semicolons between servers.

     PortAtHost:*27000@redundant1*,*27000@redundant2*, *27000@redundant3*;*27001@server1*;*@server2*;

     Or

     PortAtHost:*27001@server1*;*27000@redundant1*, *27000@redundant2*,*27000@redundant3*;*@server2*;
2. Save the file.
3. If you are not using a silent installation, enter the following command: licadmin -f*server-info.txt*

   The results of this command are written to the status file *server-info.txt_STATUS* in the same directory where you saved the file *server-info.txt*.

Specifying the license server on Windows Web servers

In the case of IBM Rational RequisiteWeb and IBM Rational ClearQuest Web, the Web server is the client of the license server.

For example, when a user opens Rational RequisiteWeb on a client, the Rational RequisiteWeb Requirements server, on behalf of the user, requests the floating license from the license server.

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

1. Open License Key Administrator (LKAD):
   - After the product installation is complete, start the LKAD wizard and LKAD. The LKAD main window and the LKAD wizard open.
   - If you decided not to start the LKAD wizard and LKAD immediately after product installation, click **Start** → **Programs** → **Rational** ***product name*** → **Rational License Key Administrator**. The LKAD main window and the LKAD wizard open.

2. Select **Settings → Client/Server Configuration**.
3. Click **Add Server**.
4. Single should be the default value next to Server Type. Enter the host name of the license server in the Values column next to Server Name by clicking **New-Server**. After entering the host name, press **Enter**.

Additional Servers:

To add license servers, click **Add Server** and enter the host name for each server.

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

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

Your Web server requests licenses from servers in the order that you enter the servers in License Key Administrator (LKAD). If you want to change this order, see "Changing the server search order" on page 186.

Configuring Web servers to use redundant Windows servers:

Redundant servers are a system of three servers that work as a team to manage a single pool of floating license keys.

If one of the servers goes down, the other two license servers automatically continue managing the license pool.

To enter the redundant license servers on the Web server:

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

Difference between time-out period and linger time

Time-out period has default of 120 minutes while linger interval is set and cannot be changed.

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

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

Modifying the floating license time-out period:

Steps to set the time-out period for a floating license.

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

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

The value for each of these options must be a minimum of 1800 seconds (30 minutes) and can be greater than the default value of 7200 seconds (120 minutes). The minimum value for the IBM Rational Common Licensing time-out setting differs from the value used by the IBM Rational ClearCase Licensing time-out setting.

Setting up redundant license servers

Rational license servers can be set up in a fault-tolerant configuration known as redundant servers.

Redundant servers are a system of three servers that work as a team to manage a single pool of floating license keys. If one of the servers goes down, the other two license servers automatically continue managing the license pool. This type of redundant configuration requires that a minimum of two license servers started at all times. If any two license servers no longer work, the third license server will no longer serve licenses. Two servers must operate to serve licenses to clients.

Example:

You have purchased 25 floating licenses and wish to set up a redundant server configuration on three Windows computers. You request permanent keys for the redundant servers using License Key Center. You install the IBM Rational License Server software on each of the three redundant servers; servers A, B, and C. When you receive the license file of 25 permanent floating keys, you install the license file on each server.

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

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

To configure redundant license servers:

1. Install Rational License Server software on three computers. See “Working with a supported network configuration” on page 137 and “Installing the server software on a Windows server” on page 137.

   Attention: Use a redundant environment of either all Windows servers or all UNIX system servers.
2. Import a license file that you receive from IBM on each license server. See “Using floating keys on a Windows license server” on page 139 for more information.

3. Start the license servers. The sequence is not important, but you should start the servers soon after one another. See “Starting the Windows license server” on page 141 for instructions.
4. Give client users the Primary, Secondary, and Tertiary (Backup) license server host names in the order in which you requested them in License Key Center. They must enter the host names in their License Key Administrators (LKAD).

License monitoring (optional)

You can monitor and report license usage.

You can monitor and report license usage. Acresso Corporation offers a solution for license usage reporting FLEXnet Manager. It is available only through Acresso Corporation. Detailed information on FLEXnet Manager can be found at: http://www.acresso.com/products/licensing/flexnet_manager.htm.

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

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

Using floating licenses with a firewall

The IBM Rational licensing implementation supports a firewall.

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

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

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

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

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

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

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

Assigning port numbers in the license server:

Steps for setting port values.

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

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

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

Changing the lmgrd port:

Use the following procedures to change the lmgrd port in single, multiple, or redundant server environments.

When another application is using the TCP/IP port 27000 that is used by lmgrd (license manager daemon), change the lmgrd port. You do not have to enter a value in the rational vendor because it uses a random TCP/IP port. These procedures assume that you have already started the license servers and entered the host names of the license servers in the configuration utility of each client.

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

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

Removing the Rational License Server software

Steps for removing Rational License Server software from the server.

Before you remove the IBM Rational License Server software:

Steps to take before removing the license software.

1. Make sure that no one is using the license server or any associated files. You cannot remove files that are in use.
2. Return the license keys to your account through License Key Center. For more information about moving or returning licenses, see “Returning or moving keys for administrators” on page 162.

3. To remove the software from a Windows computer, you must have Windows administrator privileges on the local computer.

Removing the Rational License Server software:

Use the Windows Add/Remove Program control panel to select and remove the IBM Rational License Server software.

The Rational installation program removes the files from your computer. It does not remove directories that contain files that you created while you were using the software. It also does not remove the license key files from the server.

Configuring a UNIX system license server

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

Remember: For Rational Software Delivery Platform version 7.0 products built on the Eclipse framework, the enablement of IBM Rational Common Licensing and floating licenses on clients is an optional feature allowing administrators to easily manage and enforce licensing across the enterprise.

This topic describes how to set up and use UNIX system license servers. This information is intended for the system administrators or users who manage the licenses. If you want to use a Windows license server, see "Configuring a license server for Windows systems" on page 134.

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

Remember: Rational Common Licensing (powered by FLEXlm software) support for version 7.0 Rational Software Delivery Platform products built on the Eclipse platform is enabled in a new release of Rational License Server software. The new version of Rational License Server software serves both previous Rational Common Licensing enabled Team products (Rational ClearCase , Rational ClearQuest, etc.) and the new Rational 7.0 products. If you must serve both the Rational 7.0 client products and the 7.0 Team products, you must upgrade to this latest version of the license server. Two separate servers are not required since this new version of the server supports the previous clients and the new Rational 7.0 clients.

Windows clients using a UNIX system license server

For information about configuring a UNIX system license server, refer to the relevant IBM Rational product version for the UNIX system installation manual

If you do not have access to a Rational software installation manual, follow the procedures to set up a UNIX system license server. Instructions for configuring UNIX system clients to access the UNIX system license server are not provided.

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

Description of general steps required to set up floating or named-user floating licenses on a UNIX systems license server.

Table 21 provides a checklist of tasks and references to more detailed instructions.

Table 21. Guide to setting up floating licenses on a UNIX system server

Task	Procedure
Set up floating licenses.	• Understand IBM Rational Common Licensing. See "Before requesting license keys" on page 119. • Access License Key Center to order permanent license keys for the products on your Windows clients. See "Requesting license keys" on page 129 for more information about License Key Center. • Make sure that your license server and clients are connected. See "Before you install the license server" on page 150. • Install the license server software and license keys on the UNIX system license server. See "Installing the license server and license on a UNIX system server" on page 150. • Tell users to specify the Rational license server in their Windows clients. See "Configuring clients to use floating keys" on page 183.
Set up named-user floating licenses (only applies to Rational Purify, Rational Quantify, and Rational PureCoverage).	• Understand the IBM Rational Common Licensing. See "Before requesting license keys" on page 119. • Access License Key Center to order permanent license keys for the products on your Windows clients. See "Requesting license keys" on page 129 for more information about License Key Center. • Make sure your license server and clients are connected. See "Before you install the license server" on page 150. • Install the Rational license server software and license keys on the UNIX system server. See "Installing the server and named-user keys on a UNIX system server" on page 152. • The License_Setup script asks you for user ids to assign to the license keys. • Tell users to specify the license servers in their Windows clients. See "Configuring clients to use floating keys" on page 183.
Configure redundant license servers.	See "Setting up redundant license servers" on page 145.
Change the order in which IBM Rational products use licenses.	The license server does not set license usage order. Use the client to change the order. For Team Unifying Products, see "Changing license usage order" on page 200and for Software Development Products, see "Changing license usage order" on page 200.

Table 21. Guide to setting up floating licenses on a UNIX system server (continued)

Task	Procedure
Using license keys for home use or travel.	Disconnected use from UNIX system license servers is not supported. See "Using license keys for home use or travel" on page 127 for other options.
Modify the time-out period.	See "Modifying the floating license time-out period" on page 144.
Monitoring license server activity.	See "License monitoring (optional)" on page 161.
Upgrading the license server software.	You can upgrade the Rational license server software to the most current version, but do not usedifferent versions of Rational license server software on the same computer.
Using multiple license servers on the same computer.	Start a separate lmgrd instance for each vendor daemon and keep license keys in separate files. Most vendors have an expected location for the license file. If your company has license files from multiple vendors, you can keep the data in separate files and set the **LM_LICENSE_FILE** environment variable to reference these multiple files.
Remove the license server software.	See "Removing the Rational License Server software" on page 147.

Installing the license server and license on a UNIX system server

Installing the license server software on a UNIX system computer includes installing or entering the license keys.

You should have your license key file when you install the IBM Rational license server. Go to License Key Center to order your permanent license keys. See "Requesting license keys" on page 129 for more information about License Key Center.

Before you install the license server:

Requirements for license server.

To set up the license server on a Linux or a UNIX system, retrieve the Rational license_setup script and licensing executables from the IBM Rational Download and Licensing Center. Registration is required.

The requirements are as follows:

- The license server can be installed on all the UNIX system platforms that IBM Rational supports.
- There is no minimum processor, memory, or disk space.
- The license server software must be installed locally (NFS is not supported). The server starts a FLEXlm lmgrd process and a vendor daemon process to manage licenses. For more information about these processes, see "Understanding IBM Rational Common Licensing components" on page 163.
- To check the connection between the server and clients, use the following UNIX system commands: ping, arp, rsh, rlogin, or telnet.

- The License Key Center sends the license file to an e-mail account when you request a license. It has a filename format similar to license_for_server.upd. You must have the license file *filename.upd* stored in a known location, such as the $HOME directory, on the license server.

It is not necessary to run the license server as root. If you do run the server as root, you will receive a message indicating a possible security risk. Attempts could be made to access the lmgrd process through its TCP/IP port and run other programs with root permissions. If you install the license server to the directory /opt/rational and the directory is owned by root, run the license_setup as root. For a non-root user, you can create the directory /opt/rational as root, change the directory ownership to a non-root user and run license_setup as the non_root user.

License_setup creates the lmgrd start script start_lmgrd_on_HOST. To change the user who runs the license server, modify the lmgrd start script located by default in the directory /opt/rational/config. Update the line LICENSE_USER=*user* where *user* is the ID used to start the license server.

The lmgrd start script may be located in the system start directory with the file name S98Rational. If the file S98Rational exists, modify the LICENSE_USER line in this file. If the file S98Rational does not exist in the system start directory, you can copy the file start_lmgrd_on_HOST to the directory and rename it to S98Rational. This allows the license server to restart after a machine reboot.

Default system start directories:

- HP-UX: /sbin/init.d/S98Rational
- Solaris: /etc/rc2.d/S98Rational
- Linux: /etc/rc.d/init.d/S98Rational
- AIX: check the inittab file for a reference to the start script. For example:
  /etc/inittab: lmgr:234:once:/bin/sh /opt/rational/config/start_lmgrd_on_HOST

Installing the server software and floating license keys:

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

1. Download the IBM Rational License Server from the IBM Rational Download and Licensing Center.

   The download contains a tar.gz file, the name of which depends on the intended platform. The name is of the form PARTNUM.tar.gz. For example, *C85W8JA.tar.gz*.

   Important: Be sure to download the appropriate version for the platform on which you are installing.
2. Unpack the files using gzip or gtar as shown in the following example.

   Example using the *C85W8JA tar* file:

   gzip –dc C85W8JA.tar.gz | tar –xf –

   This will create a directory called RationalLicenseServer.7.0.0.1.PLATFORM, where PLATFORM is one of AIX, Linux, Solaris, or HP-UX.

   If you have GNU tar (gtar), it has the option to uncompress the file (-z) as it untars the file. For example:

   gtar –xzf C85W8JA.tar.gz
3. Start the license_setup script in the directory created by the uncompress/tar command. The directory will not have the suffix .tar.*. For example:

cd RationalLicenseServer.7.0.0.1.Linux

./license_setup

The script starts by providing instructions for using license_setup.

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

4. Choose to accept or not accept the IBM Rational license agreement.
   - If you accept the license agreement, the script continues.
   - If you do not accept the license agreement, you cannot continue with the script. Exit the program. The script exits and makes no changes to the server.
5. Choose your license option from the Licensing Options Menu. Options are summarized below:
   a. Option 1: You must choose this option whether you have a permanent license key or a Fixed Term License. This option upgrades the license server software (FLEXnet 10.x) and allows you to import the file license.updthat you receive.

      Remember: The license_setup script prompts you to provide the location of the license file or gives you the option to enter the license key information manually. If you do not have a license file containing your license keys, see "Requesting license keys" on page 129.

      If you are using a permanent license, proceed to the next step to provide license file information.

   b. Option 2: Do not use option 2. Licenses will not be issued using this option.
6. Provide your license file information by doing one of the following:
   - Import the information from the license file automatically by giving the path to the file .upd.
   - Enter none to provide the license key information manually. Print the content of the file .upd. Follow the prompts to enter the information.

   Important: It is recommended not to enter the data manually as the data is both case-sensitive and literal.
7. Define the location for the file *server-name*.dat file that will be created from the information supplied by the file license_for_server.upd. By default, license_setup creates the file *server-name*.dat and stores it in the *rational_dir*/config directory.

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

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

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

Assigning named-user license keys to specific users during installation.

Named-user license keys behave like floating license keys except that you can specify a user for each license key. You assign a user to a key by creating a file

rational.opt. This options file locks the floating license key to the user; so that the user can use Rational Purify, Rational Quantify, or Rational PureCoverage on multiple systems.

Follow the procedures explained in “Installing the server software and floating license keys” on page 151. The only difference that you will see is the script will prompt you for user names and create the file rational.opt for you.

Restarting the UNIX license server when it reboots

Start script commands for different operating systems.

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

The following topics provide the start script commands for these operating systems:

IBM AIX:

Commands for restarting the server.

% su

Edit /etc/inittab. Add this line:

lmgr:234:once:/bin/sh *rational_dir*/config/start_lmgrd_on_*server-name*

HP-UX:

Commands for restarting the server.

% su

cp *rational_dir*/config/start_lmgrd_on_*server-name*\

/sbin/init.d/S98Rational

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

Linux:

Commands for restarting the server.

% su

cp*rational_dir*/config/start_lmgrd_on_*server-name*\

/etc/rc.d/init.d/S98Rational

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

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

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

Sun Solaris:

Commands for restarting the server.

$ su

cp *rational_dir*/config/start_lmgrd_on_*server-name*\

/etc/rc2.d/S98Rational

Setting up redundant license servers

Rational license servers can be set up in a fault-tolerant configuration known as redundant servers.

Redundant servers are a system of three servers that work as a team to manage a single pool of floating license keys. If one of the servers goes down, the other two license servers automatically continue managing the license pool. This type of redundant configuration requires that a minimum of two license servers started at all times. If any two license servers no longer work, the third license server will no longer serve licenses. Two servers must operate to serve licenses to clients.

Example:

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

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

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

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

Before you install the license server on redundant UNIX system servers

Download and install license keys.

To set up the license server software on redundant UNIX system servers, you must have the licensing executables from the IBM Rational download site and a license key file for redundant UNIX system servers from License Key Center. Then configure a start script and start each server.

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

Here are the requirements for setting up redundant servers:

- If you have already set up a license server and want to use that server in the redundant server configuration, remove the IBM Rational License Server software from the computer. See "Removing the Rational License Server software" on page 147.
  1. Return the license keys to License Key Center ("Moving or removing license keys on a UNIX system server" on page 160).
  2. Follow instructions for installing the license server and license keys in a redundant server configuration.
- Request the license key file for redundant UNIX system servers. Go to License Key Center and request a license for redundant servers. License Key Center will ask you for the primary, secondary and backup servers. Be sure to specify the redundant servers in the correct order:
  - Host ID is the primary server
  - Host Name 2 is the secondary server
  - Host Name 3 is the backup server
- If you have problems receiving or working with the redundant server license file, contact IBM Software Support for Rational products.

  Reminder: If you do not have an internet connection, see "Requesting license keys without an internet connection or Rational License Key Center availability" on page 133.
- The license server can be installed on all of the UNIX system platforms that Rational supports.
- There is no minimum processor, memory, or disk space.
- License Key Center sends the license file to an e-mail account when you request a license. It has the file name format similar to license_for_server.upd.
- To check the connection between the servers and clients, use the following UNIX system commands: ping, arp, rsh, rlogin, or telnet.
- The servers should be on the same subnet.
- The license server software must be installed locally (NFS is not supported). Each server uses a FLEXlm lmgrd process and a rational daemon process to manage licenses. For more information about these processes, see "Understanding IBM Rational Common Licensing components" on page 163.
- You must manually install the license server software on the servers.

Installing the server software and keys on redundant UNIX servers:

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

1. Place a copy of the license file that you receive from Rational License Key Center on each of the three license servers and ensure that the order of the SERVER lines is the same in each file.
   a. You can verify the order of the SERVER lines by opening the license file and checking for three server lines.
      - If you do not have a three-server license file, return your license file to License Key Center (Return transaction) and request a new license file for

redundant UNIX system servers. If you have problems receiving, returning, or working with the redundant server license file, contact IBM Software Support for Rational products.

- If the SERVER lines are not in the correct order, you can edit the file to change the order, change the server name (not the host ID), and change the port number. You cannot add or delete server lines.

b. The license file license_for_primary.upd must be copied to the *rational_dir*/config directory. You must maintain this file on all three servers. Copy and rename the file to rational.dat as shown in the following example:

   cp license_for_primary.upd *rational_dir*/config/rational.dat

c. Assign a TCP/IP port to each server. You must assign a TCP/IP port number to each server by modifying the port assignment in each SERVER line.

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

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

   - Check the file etc/services

     grep "[ ]1706/" /etc/services
   - Check the NIS services by using the ypcat services command.

     ypcat services | grep "[ ]1706/"

     Remember: There is a tab and a space character between the [ ].
   - Edit the license file to use the new port numbers.

     cd *rational_dir*/config

     vi rational.dat

   Your license file should look similar to the following example.

   SERVER primary *8001d410 1706*

   SERVER secondary *8001d625 1706*

   SERVER backup *8001d873 1706*

2. Locate the FLEXlm utilities in the Rational License Server package. The files are in one of the extras/flexlm.* directories. The directory name depends on the FLEXlm version and platform. Example: extras/flexlm.10.8.0.1.i386_linux2.
3. Copy the FLEXlm files to the *rational_dir*/config directory on all three servers. The term *rational_dir*/config is used herein to represent the location from which you plan to use the license server software.

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

Configuring and starting the redundant UNIX system license servers

To start the redundant servers:

- Configure the start script for each server. This is best done by copying a template file from the IBM Rational Download and Licensing Center and modifying it.

- Start each license server manually by using the start_lmgrd script.

Configuring the start script:

Working from the rational_dir/config directory, create a start script for each server.

1. Obtain a template start script at the IBM Rational Download and Licensing Center.
2. Copy the start_lmgrd template file to the config directory:
   cp *start_lmgrd_template* rational_dir/config/start_lmgrd
3. Change these 4 lines to match your installation. The template assumes rational_dir is /opt/rational, the license file is license.dat, and joe is the user ID that owns the lmgrd/rational process when it executes as root during system start.
   LICENSE_DIR =/opt/rational/config
   LICENSE_DAT = $LICENSE_DIR/*license.dat*
   LICENSE_LOG = $LICENSE_DIR/*license.log*
   LICENSE_EXE = $LICENSE_DIR/lmgrd
   LICENSE_USER = *joe*

Solaris Example:
FLEXROOT=/usr/rational/flexlm.7.0f

LICENSE_DIR=*rational_dir*/config/sun4_solaris2

LICENSE_DIR=*rational_dir*/config/rational.dat

LICENSE_DIR=*joe*

HP-UX Example:
FLEXROOT=/usr/rational/flexlm.7.0f

LICENSE_DIR=*rational_dir*/config/hppa_hpux

LICENSE_DIR=*rational_dir*/config/rational.dat

LICENSE_DIR=*joe*

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

Starting redundant UNIX license servers:

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

1. At the rational_dir/config directory where you copied the template start script (start_lmgrd), enter the following command:
   ./start_lmgrd
2. Repeat Step 1 for the secondary and backup servers.
3. Check the status of each server:
   ./start_lmgrd lmstat -a
   You should see the three servers listed as started and a list of the served license keys.

To stop the license servers:

Stop each license server by entering the following command:

./start_lmgrd stop

To verify the license file:

Check the Rational INCREMENT lines by executing the exinstal command:

./start_lmgrd ex

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

Problems starting the redundant UNIX system license servers:

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

1. Error message: `ulimit: bad ulimit`

   If you see this message when you use start_lmgrd, remove the ulimit command from the script.
2. If there are any other problems, check that the start scripts reference the correct license file (LICENSE_DAT), the license directory (LICENSE_DIR), and the license log file (LICENSE_LOG). Mail the start scripts, the license files, and the log files to IBM Software Support for Rational products.

Restarting the redundant UNIX servers when they reboot:

Set up all redundant license servers to be restarted at boot time.

To set this up, copy the start script to the appropriate system directory.

Attention: For security reasons, do not execute lmgrd as root. Execute lmgrd as a user by setting *LICENSE_USER*. The user ID that you specify must exist on the system that has the start script. In the following example, the user is set to "joe".

LICENSE_USER=*joe*

In previous releases, IBM Rational used the file SlmRational.sh in the system start directories. If there is a SlmRational.sh file under any of the /etc/ or /sbin directories, remove and replace the file with S98Rational. The following topics provide the start script commands for each operating system.

Remember: You must be root to perform the steps.

Sun Solaris:

Reboot a Sun Solaris server using the following commands:

cd /usr/rational/flexlm

cp start_lmgrd /etc/rc2.d/S98Rational

If you must remove a reference to the SlmRational.sh file, use the following command:

/bin/rm -f /etc/rc2.d/SlmRational.sh

HP-UX:

Reboot a HP-UX server using the following commands:

cd /usr/rational/flexlm

cp start_lmgrd /sbin/init.d/S98Rational

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

If you must remove a reference to the file SlmRational.sh, use the following command:

/bin/rm -f /sbin/*.d/SlmRational.sh

IBM AIX:

Reboot an IBM AIX server using the following commands:

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

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

Linux:

Reboot a Linux server using the following commands:

cd /usr/rational/flexlm

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

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

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

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

License manager commands

System administration commands and daemons used by License Manager.

IBM Rational Common Licensing uses the License Manager from Acresso Corporation. The License Manager includes the following components:

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

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

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

% ps axw | grep -v grep | egrep “lmgrd|*vendor*"

or

% ps -e | grep -v grep | egrep “lmgrd|*vendor*"

Where *vendor* is *rational* or *ibmratl*.

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

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

-c /rational/config/servername.dat

-l /rational/config/servername.log

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

Table 22. License Manager system administration commands

Command	Description
lmdiag	Enables you to diagnose problems when you cannot checkout a license.
lmdown	Shuts down license and vendor daemons.
lmhostid	Reports license manager host ID of workstation.
lmremove	Returns specific licenses to license pool on license server.
lmreread	Rereads license file, starts new vendor daemons.
lmstat	Reports status on daemons and feature usage.
exinstal	Reports on *rational* licenses in license file that you specify on the command line. The exinstal and exinstrl commands check the license file format and license codes to see if everything is consistent.
exinstrl	Reports on *ibmratl* licenses in license file that you specify on the command line. The exinstal and exinstrl commands checks the license file format and license codes to see if everything is consistent.

Additional licensing commands

Using the license_check command.

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

Moving or removing license keys on a UNIX system server

Instructions for moving or removing license keys.

Use the instructions in “Returning or moving keys for administrators” on page 162 to return or move license keys on the UNIX system server. To remove the license server from a UNIX system server, see “Removing the Rational License Server software” on page 147.

Modifying the floating license time-out period

Steps to set the time-out period for a floating license.

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

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

The value for each of these options must be a minimum of 1800 seconds (30 minutes) and can be greater than the default value of 7200 seconds (120 minutes). The minimum value for the IBM Rational Common Licensing time-out setting differs from the value used by the IBM Rational ClearCase Licensing time-out setting.

License monitoring (optional)

Information on license usage reporting solutions from Acresso.

You can monitor and report license usage. Acresso Corporation offers a solution for license usage reporting FLEXnet Manager. It is available only through Acresso Corporation. Detailed information on FLEXnet Manager can be found at: http://www.acresso.com/products/licensing/flexnet_manager.htm.

Removing the Rational License Server software

Steps for removing Rational License Server software from the server.

Before you remove the IBM Rational License Server software:

Return the license keys to your IBM Rational account through the IBM Rational License Key Center, the online license management tool.

For more information about moving or returning licenses, see “Moving or removing license keys on a UNIX system server” on page 160.

Removing the Rational License Server software:

Commands to remove the IBM Rational License Server software from the UNIX system server.

1. Go to *rational_dir*/config or /usr/rational/flexlm.7.0f
2. Shut down the server with one of the following commands:

   lmdown -c *license_file*

   or

   lmdown -c *port@host*

   or

   ps -e | grep lmgrd #

See “Command Examples” for examples of using these commands.

3. Stop the lmgrd process by running the command:

   kill *pid* #

   where *pid* is the process ID of lmgrd

   Attention: If you use kill -9 *pid* #, the server might leave a lockrational or lockibmratl file in either /tmp or /usr/tmp. You must remove this file.

4. To remove the license server software, go to *rational_dir*/config and delete the IBM Rational FLEXlm directory:

   cd *rational-dir*/config or /usr/rational/config/flexlm.7.0

   rm -fr *rational_dir*/config/flexlm.7.0f

Command Examples:

Removing license server software.

Specifying the License File: lmdown -c rational.dat

Specifying the port and host: lmdown -c 27000@hershey

Remove command for Solaris::

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

Remove command for HP-UX::

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

Returning or moving keys for administrators

Returning license keys to the license server.

If you must upgrade your license keys, replace an old license server, or move the license keys to another computer, you must perform a floating or authorized user license key return transaction in License Key Center. Because permanent authorized user and floating license keys are tied to a computer’s host ID, IBM Rational products will not work on another computer until you register the products to the new computer.

Returning or removing permanent license keys

Use IBM Rational License Key Center to return authorized user, floating, named-user floating, and redundant server license keys to your IBM Rational account.

Remember: For IBM Rational products built on the Eclipse framework, permanent authorized user license keys from the activation kit are not managed by Rational License Key Center and cannot be returned.

When you return a license key, you do not physically give the license key back to IBM Rational. Instead, you use the return transaction in Rational License Key Center. The Rational License Key Center transaction updates records to indicate that you are no longer using a Rational product on that computer. This adjusts the count of registered products in your account.

After making the adjustments to your account, Rational License Key Center sends you a license key file that contains updated license key information. You receive the license key file even if you have returned all the license keys for that computer.

Remember: To comply with your License Agreement, import this updated license file (whether the file is empty or not) on the computer.

If you have problems returning or requesting a new redundant server license file, IBM Software Support for Rational products will make the correct changes to your account and create a new license file for you.

To return a license key:

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

Moving permanent license keys

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

Remember: If you have problems returning or requesting a new redundant server license file, contact IBM Software Support for Rational products to correct changes to your account and create a new license file.

To move license keys from one computer to another:

1. Use License Key Center to return the license keys to your IBM Rational account. See “Returning or removing permanent license keys” on page 162.

   Tip: To help prevent you from confusing the license key update file for the old computer with the license key file for the new computer, you may want to complete the return transaction before you order license keys for the new computer.
2. Request new license keys for the new computer in Rational License Key Center.
3. Remove the Rational software or license server software from the old computer. See the installation guide for your IBM Rational product for the removal procedures.
4. Install the Rational software or license server software on the new computer.
5. Import the new license key file on the new computer.
6. If you moved the license keys to a new license server, give client users the host name of the new license server.

Understanding IBM Rational Common Licensing components

Description of FLEXlm software features and options used in IBM Rational Common Licensing.

Locating the licensing components

Directory location for license key files.

IBM Rational files and license key files are installed in *install_dir*\Rational\Common\ unless otherwise noted.

Understanding the license server process

Licenses are managed by a license manager that runs on a license server.

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

The Rational license configuration includes these major components:

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

License key file:

License key definitions are stored in a text file called the license key file.

The license key file is created based on the data that you provided in IBM Rational License Key Center. The license file can contain license key data for several products and is created for a specific host. License Key Administrator (LKAD) installs the license key file.

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

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

License file names:

Description of license key files.

Table 23. License key files

File Name	Description	Notes
rational_temp.dat	Contains all authorized user temporary license keys.	Obtain a permanent license key to continue to use your IBM Rational product past the temporary key expiration date.
rational_perm.dat	Contains all authorized user permanent license keys.	Go to IBM Rational License Key Center to request permanent keys.
rational_server_temp.dat	Contains all temporary floating license keys on a license server.	Obtain a permanent license key to continue to use your Rational product.

Table 23. License key files (continued)

File Name	Description	Notes
rational_server_perm.dat	Contains all permanent floating license keys on a license server.	Go to Rational License Key Center to request new permanent license keys.

The floating license SERVER line:

Format of the SERVER line entry in license key file that is used to set up a license server.

The format for a SERVER line entry is shown below. Items in italics are specific to your environment:

SERVER *host* DISK_SERIAL_NUM=*hostid*

SERVER
Tells the server that the license file will be used for floating or counted authorized user licenses. This is required in a floating license file along with a VENDOR or DAEMON line.

host The host name of the license server.

Allows the license server's host name or IP address to populate the host name field in the SERVER line. Both values are allowed. The host name value is not encrypted into floating license keys.

hostid The host ID of the license server.

The default value is the disk serial number (DISK_SERIAL_NUM) of the user's boot drive. The host ID value is encrypted into floating license keys.

Entering the license server name on the client:

Location of the license directory on the client.

When you enter the name of the license server in License Key Administrator (LKAD) of the client, LKAD writes the host name of the license server to an empty license file in the *rational_dir*\common directory on the client.

License manager daemon (lmgrd):

Information on lmgrd.

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

- lmgrd, the license manager daemon
- vendor daemon

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

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

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

Vendor daemon:

Use rational.exe or ibmratl.exe to track licenses.

The vendor daemon is a program (rational.exe or ibmratl.exe) developed by IBM Rational implementing FLEXlm. The vendor daemon keeps track of how many licenses are checked out and who has them. The path to the vendor daemon is specified using the VENDOR line in the license key file. The path to the options file is also specified on the VENDOR line after the vendor daemon path. The VENDOR line uses the following syntax:

VENDOR *vendor [vendor_daemon_path]* [[OPTIONS=]*options_file_path*] [[PORT=]*port*]

For example, a typical VENDOR line for Windows systems is displayed as:

VENDOR rational C:\Rational\common\rational.exe

or

VENDOR ibmratl C:\Rational\common\ibmratl.exe

A typical VENDOR line for UNIX systems is displayed as:

VENDOR rational /opt/rational/common/rational

Note: If the rational vendor daemon is located in the same directory as lmgrd, you can use: VENDOR rational. If the rational vendor daemon is not located in the same directory, you must provide the full path as shown in the example.

Where:

Item in VENDOR Line	Description
VENDOR	The license daemon name and path are specified in this line.
rational, ibmratl	The name of the license server daemon. Both floating and authorized user licenses have this value defined in the VENDOR string.
install_path\Rational\common\rational.exe or ibmratl.exe	The path to the IBM Rational License Server executable.

License keys are granted by active processes. Only one process, or vendor daemon, manages keys for all licensed IBM Rational products on the network.

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

The application program communicates with the vendor daemon, usually through TCP/IP network communications. You can use the application program and the daemon processes (the license server) 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 client can use different hardware platforms or even different operating systems.

License server process:

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

1. The license module in the client application finds the license key file on the license server, which lists the host name of the license server and the port number of the license manager daemon (lmgrd.exe).
2. The client establishes a connection with the license manager daemon (lmgrd.exe) and specifies the vendor daemon (rational.exe or ibmratl.exe).
3. The lmgrd.exe determines which computer and port correspond to rational.exe or ibmratl.exe and returns that information to the client.
4. The client establishes a connection with rational.exe or ibmratl.exe 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.

The options file for floating licenses

Using the options file to reserve or deny licenses.

IBM Rational provides the least restrictive licensing environment possible. By default, the server does not restrict access to any client requesting a license key. This configuration works best for most customers. If you want a more controlled floating license environment, you can use the options file to reserve or deny licenses for certain users, hosts, displays, groups, or IP addresses. You can also limit the number of licenses each user or group can access.

Setting up the options file:

To create an options file:

1. Create a text file with the name rational.opt or ibmratl.opt in the *rational_dir*\common directory.

   Note: If you use the rational daemon only, rename the file to rational.opt. If you use the ibmratl daemon only, rename the file to ibmratl.opt. If you use both rational and ibmratl daemons, you must create two options files: rational.opt and ibmratl.opt.
2. Enter a command line in the file to reserve or exclude licenses for specified users. See “Example 1” on page 168 and “Example 2” on page 168 for examples of command lines.

Table 24 lists several options file command attributes.

Table 24. Options File Command

Options File Command Attributes	Description
EXCLUDE	Prevents a user from obtaining a license.
RESERVE	Tells the server to reserve a license.
1	Number of licenses to reserve. Used with the RESERVE option
product	Name of the license to reserve.
USER	Tells the licensing software to reserve a license for a specific user ID.
userid	User ID for which the license will be reserved.

Remember: For the server to recognize the file or any changes made to it, restart the license server. The lmreread diagnostic tool will not detect changes made to the options file.

For more information on the daemons rational and ibmratl, see "License manager commands" on page 159 or "Vendor daemon" on page 166.

Example 1:

Example of an options file that reserves licenses.

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

RESERVE 1 ClearQuest USER greg

RESERVE 1 ClearQuest USER peter

Example 2:

Example of an options file that excludes users from accessing a license.

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

EXCLUDE ClearQuest USER bob

Diagnostic tools

Tools for diagnosing license issues.

lmtools:

The lmtools application is designed to help diagnose licensing problems.

The lmtools application is available on Windows only. It is installed with all products in the *rational_dir*\common directory. If the license server is installed, you can use the License Tools Start menu to access the lmtools GUI.

lmutil:

Location of the lmutil program.

By default, the lmutil program is installed in the *rational_dir*\common directory. The command lmutil is fully supported and has a number of useful options. More information can be found in the FLEXnet Licensing End Users Guide.

lmreread:

Description of the lmreread command.

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

Remember: The lmutil lmreread command does not detect changes to the options file. For more information about the options file, see "Setting up the options file" on page 167.

Windows registry information

Description of the Windows Registry settings for IBM Rational Common Licensing (powered by FLEXlm software).

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

Rational Common Licensing registry entries are located in:
HKEY_LOCAL_MACHINE\SOFTWARE\IBM Rational\Licensing\1.0

The *install_path* in Table 25 below refers to the path specified during installation. The default value is C:\Program Files\IBM Rational.

Table 25. Licensing registry entries

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

Troubleshooting licenses

Common license questions and error messages.

For more common license questions, see the Frequently Asked Question documents on the IBM Rational Support site .

Authorized user licenses

Effect of changing the IP address.

Does a change in the IP address and internet address affect the authorized user license?

Authorized user licenses use the host ID (disk_serial_num) or ethernet address of the licensed computer. A change in the IP address or Internet address does not affect your license. If the e-mail address of the license contact has changed, you should notify IBM Software Support for Rational products.

License server and floating licenses

Using licenses from a different domain, installing on a second disk and restarting a redundant server.

Can an IBM Rational product on a client in one Windows domain obtain licenses from a license server that is on a different Windows domain?

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

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

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

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

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

Moving license keys

Time for moving a license key and moving a license key to a client.

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

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

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

To move and return license keys, see “Returning or moving keys for client users” on page 192.

License Key Center data entry

Finding your account number.

What is my Account Number? I just downloaded the upgrade to Rational product. I am now unable to use the software. I do not know my Account Number which is a required field in License Key Center.

Use the account number specified on your Proof of Entitlement certificate. If you cannot find your Proof of Entitlement certificate, contact IBM Software Support for Rational products with your purchase order or sales order number.

Host ID

Reformatted hard drive, upgraded operating system, deleted license .dat files, invalid host ID and moving from a FAT to a NTFS file system.

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

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

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

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

If you do not have to reformat your hard drive to do the upgrade, your licenses stay on your computer in the Rational/Common directory. After you perform the upgrade, all of your licenses should still be available. If you must reformat the disk, see the previous question.

What if my license .dat files get deleted?

Go to License Key Center and get copies of the license files.

The host ID ffffffff is not valid. Why?

"ffffffff" is the value listed in the host ID field in the License Manager. When you initialized your disk, your disk did not receive a disk_serial_num. Although the software accepted this entry, licensing services regards this value as invalid. You can reset your host ID by using vendor disk utility tools. 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?

OR

I changed my system disk and the licenses no longer work.

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

Upgrades

Obtaining temporary license keys before upgrading a server.

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

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

Error messages on Windows and UNIX system platforms

Suggested actions for licensing error messages.

Table 26 and Table 27 on page 173 explain licensing error messages for Windows and UNIX systems, respectively.

Table 26. Licensing error messages for Windows

Message or Description	Action
• Cannot find SERVER host name in network database • Cannot connect to license SERVER • NO SUCH FEATURE EXISTS • Failed to check out a *product_name* key	Confirm on the client: • You entered the correct name for the license server in the Client/Server Configuration window of the License Key Administrator (LKAD) or in the Manage Licenses wizard of the IBM Installation Manager. For more information, see "Checking the Windows client configuration" on page 176. • You entered the correct vendor port number if there is a firewall between the client and the license server. For more information, see "Using floating licenses with a firewall" on page 146. • The network connection between the client and the license server is working. For more information, see "Checking the Windows network connection" on page 175. Confirm on the license server: • The license server (lmgrd) and the rational.exe or vendor daemon are started. See "Checking the Windows license server" on page 174. • There are numbers assigned to the lmgrd and vendor ports on the license server (if there is a firewall between the license server and the client). For more information, see "Using floating licenses with a firewall" on page 146. In all cases, if you do not see any problems with the network connection or the license file, yet applications cannot acquire license keys, stop and start the license server from the License Manager (See "Starting the Windows license server" on page 141). It may also be helpful to reboot the server, particularly if the license manager is started as a service. If all else fails, contact IBM Software Support for Rational products.

Table 26. Licensing error messages for Windows (continued)

Message or Description	Action
License keys are not for this machine. or The license was not intended for this server.	• You are installing the license key on a computer other than the one for which the license key was generated. The file license.upd specifies the computer name and host ID that you entered in the license key request to License Key Center. Import the file on the correct computer. • Confirm that the license key file you received contains the correct host ID and host name of the license server or client. To find this information, use a text editor to view the license key (*.dat) file in *install_path*\IBM Rational\Common\. • Compare the Disk Volume Serial Number found in **License Tools → System Settings**, with what is displayed in the **SERVER** line in the license key file. These two numbers should match. Occasionally 0 or a dash will be found in the license file.
The license for this product will expire...	Your temporary or Term License Agreement (TLA) license key is nearing its expiration date. This warning message is displayed every time you start the application until you install a permanent license key or another TLA license key. To continue using the product, contact your IBM sales representative to purchase the product or extend your TLA. You can turn off the warning by clicking **Settings → Display Expiration Warnings** in LKAD.

Table 27. Licensing error messages for UNIX systems

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

Table 27. Licensing error messages for UNIX systems (continued)

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

Checking the Windows license server

Determine whether one of the license daemons: lmgrd.exe, rational.exe or ibmratl.exe, is not working.

1. Click **Start** → **Programs** → **Rational License Server** → **License Tools**. This brings up lmtools, a FLEXlm utility that is a GUI version of the command line utility lmutil.
2. In the Services/License Files tab, select **Configuration** using **License File** and enter the complete path (including drive letter) to the license file on the license server in the text box.
3. Go to the Server Status tab. Select **Display Everything** and click **Perform Status Inquiry**.
   a. If the license server is started, you will see the following lines in the status output window:

      server_hostname: license server UP (MASTER) v_number

      Vendor daemon status (on server_hostname):

      rational: UP v_number

      The first line refers to the status of lmgrd.exe, the second line to the status of the vendor daemon.

      Because the IBM Rational license server software is started, the problem may be the network communication between client and server. See "Checking the Windows network connection" on page 175.

b. If lmgrd.exe is started, but rational.exe or ibmratl.exe is not, the following lines are displayed in the status output window:

   server_hostname: license server UP (MASTER) v_number

   Vendor daemon status (on server_hostname):

   rational [or] ibmratl: The desired vendor daemon is down.

   Check the following:

   - The daemon *vendor name* was unexpectedly terminated and lmgrd has not yet restarted it. Select the **Stop/Reread** tab in the License Tools utility. Expand the Remote Server List and select **rational**. Click **Reread License File**.
   - The license file does not correctly specify the path to the vendor daemon in the line. For example: DAEMON rational [complete path to rational.exe or ibmratl.exe, including drive letter].
   - The version of lmgrd.exe may be incompatible with rational.exe or ibmratl.exe. You already have FLEXlm (lmgrd.exe) installed on the license server. Confirm that the date and size of the file *install_directory*\common\lmgrd.exe matches the lmgrd.exe found in the \common directory of the product installation CD.

c. If both lmgrd.exe and the vendor daemon are not started, the resulting status output window will contain the lines:

   lmgrd is not running: Cannot connect to server

   FLEXlm error: -15.10.

   Check the following:

   - Review the setup and start instructions for the Rational license server.
   - There may be a phantom vendor daemon process started. This occurs when the lmgrd process is terminated unexpectedly. Press **Ctrl-Alt-Del** to bring up the Task Manager. On the Processes tab, look for rational.exe or ibmratl.exe and/or lmgrd.exe. Terminate these processes. Start the license server (see "Starting the Windows license server" on page 141) and check the **Server Status** in **Rational License Server → License Tools**. If the license server is still not started, and it is configured to start as a service, restart the computer twice.
   - The FLEXlm License Manager application may be out of date or corrupted.

Checking the Windows network connection

Test the network connection between the license server and the client.

1. On the client, bring up an MS-DOS window by clicking **Start → Run** and then type cmd in the open text box.
2. At the command prompt, type: ping *server_hostname*.
3. If you see an IP address appear, a computer of that host name has responded. There may be more than one computer on the network with the same host name. To make sure the IP address that you see in the Window is the server's IP address, check the IP address of the server.
4. To find the IP address of the license server:
   a. Go to your license server and click **Rational License Server → License Tools**.
   b. Click the **System Settings** tab in the LMTools window.
   c. Check the IP address under Hostid Settings.

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

To replace the host name in the license key file:

a. In *install_directory*\Rational\common of the license server, look for the file rational_server_perm.dat.

b. Replace the host name with the IP address in the line that begins with SERVER:

   SERVER *server_hostname server_hostid*...

   Do not change the server_hostid and the vendor daemon information on this line.

c. Enter the IP address of the server in LKAD **Settings → Client/Server Configuration** window.

Checking the Windows client configuration

Verify that the IBM Rational Team software client is correctly configured for IBM Rational Common Licensing (powered by FLEXlm software).

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

  Click the **System Settings** tab in the LMTools window. Check the entry next to Computer/Hostname under Hostid Settings.
- In the client's Windows registry, look under HKEY_LOCAL_MACHINE\SOFTWARE\IBM Rational\Licensing\1.0. The value "Serve List" should have the server host name.

Technotes

The IBM Rational software site contains technotes about additional licensing issues.

New technotes appear on a regular basis. To find the technotes, go to the IBM Software support site.

- You can search for licensing topics in the search engine. Search result options include troubleshooting documents, such as technotes, by default.

Client setup for Rational Team software

Before installing license keys

Basic tasks for licensing your IBM Rational products.

Information and procedures in "Client setup for Rational Team software" apply to all Rational products included in IBM Rational Common Licensing, except tools built on the Eclipse platform. (See "Client setup for Rational Software Delivery Platform software" on page 193 for information on supporting Floating licenses for IBM Rational Software Delivery Platform products built on the Eclipse platform.)

The tables below describe common client licensing tasks and direct you to the correct topics for instructions. If you are upgrading your environment, see "Upgrading license keys" on page 179.

Table 28 directs you to procedures for entering, importing, and requesting licenses for your Rational products.

Table 29 provides links to advanced user tasks that you may have to perform. For example, you may have to change clients or you want your client to request a point product license before a suite license.

Table 28. Getting started with Rational Common Licensing

Task	Scenario	Procedure
Get your permanent (or Fixed Term License) license key. Fixed Term License means the license key has an expiration date built into it.	You have purchased a authorized user, floating, or named-user floating licenses.	Use your Proof of Entitlement certificate to request permanent license keys from Rational License Key Center, the Rational Web-based license key management tool. See "Requesting license keys" on page 129 for more information about the Rational License Key Center.
Get your evaluation license key.	You want to evaluate a Rational product.	Your IBM sales representative sends you or your license administrator an evaluation license key. You either install a authorized user key on your client or point your client to a Rational license server that your license administrator has set up for you.
Install authorized user license keys on your client.	You received a authorized user license key.	Use License Key Administrator (LKAD) wizard to install your authorized user license keys. The LKAD wizard starts at the end of product installation. If it does not start, open LKAD from the **Start** menu under the Rationalfolder. See "Installing authorized user license keys" on page 195 for more information.
Configure your client to request floating licenses from the license server.	Your license administrator has set up a Rational license server to serve floating license keys to clients.	Get the name of the license server from your administrator. Then use License Key Administrator (LKAD) wizard to specify the license server. The LKAD wizard starts at the end of the product installation. If it does not, open LKAD from the **Start** menu under the Rational folder.

Table 29. Additional client tasks

Task	Procedure
Change the order in which Rational products use licenses.	"Changing license usage order" on page 200.
Move or return license keys.	"Returning or moving keys for client users" on page 192.
Use license keys for home or travel.	"Using license keys for home use or travel" on page 127.

Table 29. Additional client tasks (continued)

Task	Procedure
Configure the UNIX system clients.	See the Rational product or the UNIX system installation guide.
To configure the UNIX system license server for Windows clients.	"Configuring a UNIX system license server" on page 148.

Opening License Key Administrator (LKAD)

IBM Rational License Key Administrator (LKAD) is installed with many IBM Rational products and with your IBM Rational License Server software

This application provides an interface to IBM Rational Common Licensing (powered by FLEXlm software). Use LKAD or the LKAD wizard to enter or import license keys and change your license configuration.

Remember: For Rational products built on the Eclipse framework, use the IBM Installation Manager to manage your license configuration on the client.

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

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

To access the Help, click **Help** in the LKAD main menu, click **Help** in the LKAD wizard, or open *install path*\IBM Rational\doc\help\licadmin\index.htm.

Administrator Privileges for LKAD

Certain administrative privileges are required to complete tasks in License Key Administrator (LKAD)

If you cannot perform a task in LKAD, it might mean that you are missing local administrative privileges on that computer. Grayed out menu options in the LKAD wizard, menu bar, or button bar indicate limited privileges.

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

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

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

Upgrading license keys

Descriptions of conditions that require new license keys.

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

You must order new license keys in License Key Center under the following conditions:

- If you have purchased a different edition of Rational Suite from the one that you are currently using, return the license file and request a new license file that includes the new Rational Suite key.
  - See "Returning or moving keys for client users" on page 192 or "Returning or moving keys for administrators" on page 162 for returning the existing key.
  - See "Requesting license keys" on page 129 for requesting permanent or TLA license keys.
- If you are adding a new product to your system, return the license file and request a new license file that includes the new product license key.
  - See "Returning or moving keys for client users" on page 192 or "Returning or moving keys for administrators" on page 162 for returning the existing key.
  - See "Requesting license keys" on page 129 for requesting permanent or TLA license keys.
- If you have upgraded to a different variant of IBM Rational Rose, remove the existing variant and install the new variant and license key.

Using license keys for home use or travel

Configuring licenses for disconnected use.

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

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

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

There are two other options for home use or travel:

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

Before installing license keys:

Basic tasks for licensing your IBM Rational products.

Information and procedures in “Client setup for Rational Team software” on page 176 apply to all Rational products included in IBM Rational Common Licensing, except tools built on the Eclipse platform. (See “Client setup for Rational Software Delivery Platform software” on page 193 for information on supporting Floating licenses for IBM Rational Software Delivery Platform products built on the Eclipse platform.)

The tables below describe common client licensing tasks and direct you to the correct topics for instructions. If you are upgrading your environment, see “Upgrading license keys” on page 179.

Table 30 directs you to procedures for entering, importing, and requesting licenses for your Rational products.

Table 31 on page 181 provides links to advanced user tasks that you may have to perform. For example, you may have to change clients or you want your client to request a point product license before a suite license.

Table 30. Getting started with Rational Common Licensing

Task	Scenario	Procedure
Get your permanent (or Fixed Term License) license key. Fixed Term License means the license key has an expiration date built into it.	You have purchased a authorized user, floating, or named-user floating licenses.	Use your Proof of Entitlement certificate to request permanent license keys from Rational License Key Center, the Rational Web-based license key management tool. See “Requesting license keys” on page 129 for more information about the Rational License Key Center.
Get your evaluation license key.	You want to evaluate a Rational product.	Your IBM sales representative sends you or your license administrator an evaluation license key. You either install a authorized user key on your client or point your client to a Rational license server that your license administrator has set up for you.
Install authorized user license keys on your client.	You received a authorized user license key.	Use License Key Administrator (LKAD) wizard to install your authorized user license keys. The LKAD wizard starts at the end of product installation. If it does not start, open LKAD from the **Start** menu under the Rationalfolder. See “Installing authorized user license keys” on page 195 for more information.
Configure your client to request floating licenses from the license server.	Your license administrator has set up a Rational license server to serve floating license keys to clients.	Get the name of the license server from your administrator. Then use License Key Administrator (LKAD) wizard to specify the license server. The LKAD wizard starts at the end of the product installation. If it does not, open LKAD from the **Start** menu under the Rational folder.

Table 31. Additional client tasks

Task	Procedure
Change the order in which Rational products use licenses.	"Changing license usage order" on page 200.
Move or return license keys.	"Returning or moving keys for client users" on page 192.
Use license keys for home or travel.	"Using license keys for home use or travel" on page 127.
Configure the UNIX system clients.	See the Rational product or the UNIX system installation guide.
To configure the UNIX system license server for Windows clients.	"Configuring a UNIX system license server" on page 148.

Installing authorized user license keys

Installing permanent, term license agreement, and temporary authorized user license keys on clients.

An authorized user license key is created for a specific client and does not require a license server. Authorized user license keys allow for portability, especially for customers who have isolated computers or laptops.

- If you are a client user and must use floating or named-user floating license keys, see "Configuring clients to use floating keys" on page 183.
- If you are the license administrator and must install the floating or named-user license keys on a Rational license server, see "Configuring a license server for Windows systems" on page 134 or "Configuring a UNIX system license server" on page 148.

Opening License Key Administrator (LKAD)

IBM Rational License Key Administrator (LKAD) is installed with many IBM Rational products and with your IBM Rational License Server software

This application provides an interface to IBM Rational Common Licensing (powered by FLEXlm software). Use LKAD or the LKAD wizard to enter or import license keys and change your license configuration.

Remember: For Rational products built on the Eclipse framework, use the IBM Installation Manager to manage your license configuration on the client.

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

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

To access the Help, click **Help** in the LKAD main menu, click **Help** in the LKAD wizard, or open *install path*\IBM Rational\doc\help\licadmin\index.htm.

Reviewing your license information in LKAD

Displaying information about licenses that are in use.

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

Table 32 defines each of the options in the **View → Show** menu.

Table 32. Show licenses

License	Shows
Invalid and expired licenses	All expired authorized user, floating, and served licenses on the system that you are using.
Floating licenses	All floating licenses on the system that you are using.
Authorized user licenses	All authorized user licenses on the client that you are using.
Served licenses	All floating licenses that IBM software on your system could request from the license server.

Installing permanent or temporary keys

Request permanent authorized user license keys from Rational License Key Center

Rational License Key Center sends you a permanent license file that contains license keys for the client that you specified in Rational License Key Center.

Importing permanent authorized user keys:

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

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

To import a license key file in LKAD:

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

Other methods for importing permanent authorized user keys.:

Use e-mail, file attachments or License Key Administrator (LKAD) wizard.

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

- Use the LKAD wizard.

Entering temporary or evaluation license keys

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

- Your IBM sales representative gives you an evaluation license key.
- The temporary license key is in your Proof of Entitlement certificate.

Entering temporary authorized user license keys:

Temporary authorized user license keys can be entered in License Key Administrator (LKAD). Start LKAD after installing the product.

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

To enter license information in LKAD:

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

Configuring clients to use floating keys

IBM Rational products on a Windows client can check out floating and named-user floating license keys from a Windows or UNIX system license server.

This topics explains how to specify a license server in your client's License Key Administrator (LKAD).

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

- Your system administrator has set up a silent installation. The silent installation may include a post-installation command that specifies the license server. For more information about the silent installation command syntax, see the installation guide for your Rational product.
- Your administrator may give you a text file to use from a command window. See "Using the License Key Administrator command line" on page 187.
- Your computer is also the Rational license server.

If you have a authorized user license, see "Installing authorized user license keys" on page 195.

Use Table 33 on page 184 to guide you through the steps for specifying a license server.

Table 33. Floating license tasks on clients

Task	Procedure
Open the License Key Administrator (LKAD).	"Opening License Key Administrator (LKAD)" on page 121.
Configure the client to use a single or multiple license servers.	"Configuring clients to use single or multiple license servers" on page 185
Configure the client to use redundant license servers.	"Configuring clients to use redundant license servers" on page 185.
Assign a port value in a firewall situation.	"Entering a port value to support a firewall" on page 186.
Change the license server search order.	"Changing the server search order" on page 186.
Remove a license server from the search order.	"Removing a license server from the server search order" on page 186.
Use the LKAD command line.	"Using the License Key Administrator command line" on page 187.
Use floating license keys when you work at home or travel.	"Using license keys for home use or travel" on page 127.

Opening License Key Administrator (LKAD)

IBM Rational License Key Administrator (LKAD) is installed with many IBM Rational products and with your IBM Rational License Server software

This application provides an interface to IBM Rational Common Licensing (powered by FLEXlm software). Use LKAD or the LKAD wizard to enter or import license keys and change your license configuration.

Remember: For Rational products built on the Eclipse framework, use the IBM Installation Manager to manage your license configuration on the client.

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

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

To access the Help, click **Help** in the LKAD main menu, click **Help** in the LKAD wizard, or open *install path*\IBM Rational\doc\help\licadmin\index.htm.

Reviewing your license information in LKAD

Displaying information about licenses that are in use.

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

Table 32 on page 182 defines each of the options in the **View → Show** menu.

Table 34. Show licenses

License	Shows
Invalid and expired licenses	All expired authorized user, floating, and served licenses on the system that you are using.
Floating licenses	All floating licenses on the system that you are using.
Authorized user licenses	All authorized user licenses on the client that you are using.
Served licenses	All floating licenses that IBM software on your system could request from the license server.

Configuring clients to use Rational license servers

Enter the license server's host name in License Key Administrator (LKAD) of your client.

Your license administrator should tell you whether the license server has been started before you specify the license server.

Configuring clients to use single or multiple license servers:

Use the following procedure to specify one or multiple license servers on your client.

Attention: Do not use the following procedure to enter redundant servers.

To enter the license server host names on a client:

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

Additional Servers:

Listing additional license servers.

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

Your client applications request licenses from servers in the order that you enter the servers in License Key Administrator (LKAD). If you want to change this order, see "Changing the server search order" on page 186.

Configuring clients to use redundant license servers:

Steps to set up redundant license servers on a client using License Key Administrator (LKAD).

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

To enter the redundant license servers on a client:

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

Entering a port value to support a firewall:

Assigning a value to the port in your License Key Administrator is necessary in firewall situations.

Do not assign a value to this port unless your administrator instructs you to do so. To learn more about IBM Rational licensing and firewalls, see "Using floating licenses with a firewall" on page 146. The following procedure assumes the license administrator has provided you the Rational vendor port value.

To enter a port value on a client:

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

Changing the server search order:

You can change the order of the license servers that the IBM Rational products installed on your client will access.

The license server list is displayed in the Client/Server window. The task of changing the server search order does not affect the order in which Rational products request licenses from a server. If you have a combination of authorized user, floating, suite, and point-product license keys in your environment, see "Changing license usage order" on page 200.

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

Removing a license server from the server search order:

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

To remove a server from the server search order:

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

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

Removing the license server from your client:

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

Using the License Key Administrator command line

To automate licensing, your administrator may have you use License Key Administrator (LKAD) from the command window.

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

1. Move the text file that your administrator gives you to any directory.
2. Open a command window and navigate to that directory.
3. Enter the following command:
   licadmin -f *filename.txt*
   where *filename.txt* is the text file that contains the license parameter commands.

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

Using license keys for home use or travel

Configuring licenses for disconnected use.

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

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

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

There are two other options for home use or travel:

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

Changing the disconnect time-out to delay disconnected use:

If you have a slow network at work, your software automatically goes into disconnected use mode if it does not receive a response from the license server within 5 seconds.

You then see a window that states that you are in disconnected use mode after the 5 seconds.

You can change the time-out period before your IBM application goes into disconnected use mode. The default setting is 5 seconds. To change the setting:

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

Changing license usage order

IBM Rational products request licenses in a specific order.

If you have multiple packages installed that share components in your environment or have a combination of authorized user, floating, suite, and product license keys in your environment, you must understand the license usage order and how you can change it. To understand the explanation in the following topics, you must know the definitions of the license types. For more information, see "Defining license key types" on page 123 and "Using point-product keys and suite keys" on page 124.

Understanding license usage order

Description of the order in which licenses are requested.

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

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

The license key usage order has changed for version 7.x of IBM Rational products. In releases before 7.x, when a suite product was being installed, the Rational License Key Administrator (LKAD) application would first try to find a license key corresponding to the Suite. If the suite key was not available, LKAD would then look for a key corresponding to the product that was started.

You can use the License Usage Mapper in LKAD to change the release 7.x license usage order or have the application not search for any or all suite keys.

Table 35 describes the default license usage order for each Rational product that uses Rational Common Licensing (powered by FLEXlm software).

Table 35. Default license usage order

IBM Rational product	Default search order (from first to last)
ClearCase	ClearCase

Table 35. Default license usage order (continued)

IBM Rational product	Default search order (from first to last)
ClearCase LT	ClearCase LT, Rational Suite Enterprise, Rational Suite Team Unifying Platform™, Rational Suite DevelopmentStudio, Rational Suite TestStudio®, Rational Suite AnalystStudio, Rational Suite DevelopmentStudio RealTime
ClearQuest	ClearQuest, Rational Suite Enterprise, Rational Suite Team Unifying Platform, Rational Suite DevelopmentStudio, Rational Suite TestStudio, Rational Suite AnalystStudio, Rational Suite DevelopmentStudio RealTime
ProjectConsole™	ProjectConsole, Rational Suite Enterprise, Rational Suite Team Unifying Platform, Rational Suite DevelopmentStudio, Rational Suite TestStudio, Rational Suite AnalystStudio, Rational Suite DevelopmentStudio RealTime
Purify	Purify, PurifyPlus, Rational Suite Enterprise, Rational Suite TestStudio, Rational Suite DevelopmentStudio, Rational Suite DevelopmentStudio RealTime
PurifyPlus	PurifyPlus, Rational Suite Enterprise, Rational Suite DevelopmentStudio, Rational Suite DevelopmentStudio RealTime
Quantify	Quantify, PurifyPlus, Rational Suite Enterprise, Rational Suite TestStudio, Rational Suite DevelopmentStudio, Rational Suite DevelopmentStudio RealTime
PureCoverage	PureCoverage, PurifyPlus, Rational Suite Enterprise, Rational Suite TestStudio, Rational Suite DevelopmentStudio, Rational Suite DevelopmentStudio RealTime
RequisitePro	RequisitePro, Rational Suite Enterprise, Rational Suite Team Unifying Platform, Rational Suite DevelopmentStudio, Rational Suite TestStudio, Rational Suite AnalystStudio, Rational Suite DevelopmentStudio RealTime
Robot	Robot, Rational Suite Enterprise, Rational TestStudio
Rose Enterprise	Rose Enterprise, Rational Suite Enterprise, Rational Suite DevelopmentStudio
Rose DataModeler	Rose DataModeler, Rational Suite AnalystStudio
Rose Modeler	Rose Modeler
Rose C++	Rose C++
Rose Professional J	Rose Professional J
Rose VB	Rose VB
Rose RealTime	Rose RealTime

Table 35. Default license usage order (continued)

IBM Rational product	Default search order (from first to last)
SoDA®	SoDA for Word, Rational Suite Enterprise, Rational Suite Team Unifying Platform, Rational Suite DevelopmentStudio, Rational Suite TestStudio, Rational Suite AnalystStudio, Rational Suite DevelopmentStudio RealTime
Test RealTime	Test RealTime
TestManager	TestManager, Robot, Rational Suite Enterprise, Rational Suite Team Unifying Platform, Rational Suite DevelopmentStudio, Rational Suite TestStudio, Rational Suite AnalystStudio, Rational Suite DevelopmentStudio RealTime
RUP®	Not applicable
XDE	Not applicable

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

RequisiteWeb and ClearQuest Web:

Floating licenses required.

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

Rational Rose:

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

Cross-platform Rational Rose keys:

IBM Rational Rose Enterprise can use a license key for Rational Rose on a UNIX system.

You must change the license usage order on your client for Rational Rose Enterprise to use the license key for Rational Rose on a UNIX system.

Changing suite license usage on your computer

How to change the order by which a product on your computer requests suite and product licenses.

Use License Key Administrator's License Usage Mapper on Windows systems or the file License_Map on Linux and UNIX systems to change the order of license requests.

Servers and license usage order:

Use the License Usage Mapper on the clients to change the license usage order.

To change the order for Web clients, use the License Usage Mapper on the Web servers. If the license server computer is also a client, the license server's License Usage Mapper changes only the license usage order for specific user IDs on the client. (See "Changing your license usage order on Windows systems" for more information.) You cannot use the License Usage Mapper on the license server to change the order for all clients and user IDs.

Changing your license usage order on Windows systems:

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

To change the license usage order on your client:

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

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

Changing your license usage order on Linux and UNIX systems:

The License_Map file is a text file that defines license usage order.

A default License_Map file is created and stored in the config subdirectory when you install an IBM Rational Suite product. The License_Map file name can be product specific. For example, IBM Rational PurifyPlus for Linux and UNIX systems uses the name PurifyPlus_License_Map.

The file is initially set to claim a suite license for all products. It contains lines of the following format:

component_designator product_designator {, product_designator}

For example, the initial setting in the License_Map file for IBM Rational ClearQuest should be similar to this:

ClearQuest:1.0 DevelopmentStudioUNIX:1.0, standalone

This line tells a Rational ClearQuest license client to first request a IBM Rational Suite DevelopmentStudio license. If a Rational Suite DevelopmentStudio license is unavailable, the client will request a standalone Rational ClearQuest license. Depending on the suite product you install, the line you see might differ from the previous example.

You can modify the settings to customize license usage for all users or for individual users.

To change the license usage order on your client:

1. Use the user setup script (such as rs_setup.csh or rs_setup.ksh) to verify that the environment variable *RSU_LICENSE_MAP* is set.

   This environment variable is used to find the location of the correct License_Map file. If the environment variable is not set, the setup script sets the pathname to the default license map file, for example, config/License_Map.
2. In the License_Map file, edit the license usage order.
3. Save your changes and close the file.

Reminder: The license_setup command creates the License_Map file when configured properly. However, you can create a License_Map file from scratch using a text file. The file name should match this wild card: *License_Map*.

For more information about the license_setup script, see "Configuring a UNIX system license server" on page 148.

Returning or moving keys for client users

If you have to upgrade your license keys or move them to another computer, your license administrator has to perform a floating or authorized user license key return transaction in License Key Center.

Floating and authorized user keys are tied to a computer's host ID. IBM Rational products licensed with these keys will not work until your license administrator registers the products to the new computer.

Returning or removing permanent authorized user keys

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

To return a license key:

1. Your license administrator performs the return transaction in License Key Center.
2. When you receive the update file from License Key Center, import the file on your old client. Importing the update file completes the return transaction. For more information, see "Installing permanent or temporary keys" on page 182.

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

Moving permanent authorized user keys

Moving a authorized user license key from one client to another requires a return transaction and a new license key transaction in IBM Rational License Key Center.

To help prevent you from confusing the license key update file for the old client with the license key file for the new client, ask your license administrator to order license keys for the new client after you receive the license key update file for the old client.

To move a license key from one client to another:

1. Your license administrator performs the return transaction in License Key Center.
2. After you receive the update file from License Key Center, import the file on your client. Importing the update file completes the return transaction. For more information, see "Installing permanent or temporary keys" on page 182.
3. Tell the license administrator to order a new license key file in License Key Center for the new client.
4. Remove the IBM Rational software from the old client. See the installation guide for your IBM Rational product for the removal procedures.
5. Install the Rational software on the new client.
6. Import the license key file on the new client. For more information, see "Installing permanent or temporary keys" on page 182.

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

Client setup for Rational Software Delivery Platform software

Before installing license keys

Tasks to license your IBM Rational products built on the Eclipse platform.

Table 36 directs you to procedures for entering, importing, and requesting licenses for your IBM products.

Table 37 on page 194 provides links to advanced user tasks that you can perform. For example, you can change clients or you want your client to request an IBM Rational Software Modeler license before an IBM Rational Software Architect license in cases where there are shared components.

Table 36. Getting started with Rational Common Licensing

Task	Scenario	Procedure
Get your permanent (or Fixed Term License) license key. Fixed Term License means the license key has an expiration date built into it.	You have purchased floating licenses.	Use your Proof of Entitlement certificate to request permanent license keys from License Key Center, the IBM Rational Web-based license key management tool. See "Requesting license keys" on page 129 for more information about License Key Center.
Get your trial license key.	You want to evaluate an Rational product.	Download a copy of the product software from IBM. The download includes a trial license key for either 30 or 60 days, depending on the product.

Table 36. Getting started with Rational Common Licensing (continued)

Task	Scenario	Procedure
Install permanent license keys on your client.	You have purchased and downloaded a product enablement kit for your trial product.	Use the Manage Licenses wizard in the IBM Installation Manager to install your permanent license keys. The Manage Licenses wizard imports the new license key and agreement from the product enablement kit. See "Installing authorized user license keys" on page 195 for more information.
Configure your client to request floating licenses from the license server.	Your license administrator has set up an IBM Rational license server to serve floating license keys to clients.	Get the name of the license server from your administrator. Then use the Manage Licenses wizard in the Installation Manager to specify the license server.

Table 37. Additional client tasks

Task	Procedure
Change the order in which Rational products use licenses.	"Changing license usage order" on page 200.
Move or return license keys.	"Returning or moving keys for client users" on page 192.
Use license keys for home or travel.	"Using license keys for home use or travel" on page 127.
Configure UNIX system clients.	See the Rational product or UNIX system installation guide.
To configure a UNIX system license server for Windows clients.	"Configuring a UNIX system license server" on page 148.

Using license keys for home use or travel

Configuring licenses for disconnected use.

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

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

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

There are two other options for home use or travel:

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

Changing the disconnect time-out to delay disconnected use:

If you have a slow network at work, your software automatically goes into disconnected use mode if it does not receive a response from the license server within 5 seconds.

You then see a window that states that you are in disconnected use mode after the 5 seconds.

You can change the time-out period before your IBM application goes into disconnected use mode. The default setting is 5 seconds. To change the setting:

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

Installing authorized user license keys

Information on how to install both permanent and Fixed Term License (FTL) authorized user license keys on client computers.

An authorized user license key is created for a specific client and does not require a license server. Authorized user license keys enable portability, especially for use scenarios that include isolated computers or notebooks.

- If you are a client computer user and must use floating license keys, see "Configuring client computers to use floating keys" on page 196.
- If you are the license administrator and must install the floating license keys on an Rational license server, see "Configuring a license server for Windows systems" on page 134 or "Configuring a UNIX system license server" on page 148.

Opening the IBM Installation Manager to manage licenses

The IBM Installation Manager for Rational Software Delivery Platform is installed with your IBM Rational product.

Through the Manage Licenses wizard, the application provides an interface to IBM Rational Common Licensing (powered by FLEXlm software). Use the Manage Licenses wizard to manage your floating license configuration.

- To access the Manage Licenses wizard on a client or server, click **Start** → **Programs** → **IBM Installation Manager** → **IBM Installation Manager**.

To access the Help, click **Help** in the IBM Installation Manager main menu.

Reviewing your license information in the Manage Licenses wizard

Menu selection to view license information in the IBM Installation Manager.

Click **File** → **Open** → **Manage Licenses**

Installing permanent or Fixed Term License (FTL) keys

Permanent authorized user license keys are included in the product activation kit that you purchase.

You download the product activation kit from Passport Advantage. The product activation kit file contains license keys and the license agreement for a specific product.

Importing permanent authorized user keys:

Using the Manage Licenses wizard for importing license key files.

In the IBM Installation Manager, use the Manage Licenses wizard to import the license key file for your client after you download the activation kit. For details on importing a product activation kit, see Help in the Installation Manager.

Configuring client computers to use floating keys

IBM Rational products that run on a Windows client can check out floating license keys from a Windows or a UNIX system license server.

This section explains how to specify a license server in your client's IBM Installation Manager.

Remember: IBM Rational License Server version 7.0.0.1 for Windows does not support serving floating license keys to IBM Rational SDP tools built on the Eclipse platform. This capability will be available in a future release of IBM Rational License Server.

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

- Your system administrator has set up a silent installation. The silent installation might include a post-installation command that specifies the license server. For more information about the silent installation command syntax, see the installation guide for your Rational product.
- Your computer is also the Rational license server.

If you have a permanent authorized user license that you obtained with a product activation kit, see "Installing authorized user license keys" on page 195.

Use Table 38 to guide you through this section.

Table 38. Floating license tasks on clients

Task	Procedure
Open the Manage Licenses wizard.	"Opening the IBM Installation Manager to manage licenses" on page 197.
Configure the client to use a single or multiple license servers.	"Configuring clients to use single or multiple license servers" on page 185.
Configure the client to use redundant license servers.	"Configuring clients to use redundant license servers" on page 185.
Assign a port value when working with a firewall situation.	"Entering a port value to support a firewall" on page 186.
Change the license server search order.	"Changing the server search order" on page 186.

Table 38. Floating license tasks on clients (continued)

Task	Procedure
Remove a license server from the search order.	"Removing a license server from the server search order" on page 186.
Use floating license keys when you work at home or travel.	"Using license keys for home use or travel" on page 127.

Opening the IBM Installation Manager to manage licenses

The IBM Installation Manager for Rational Software Delivery Platform is installed with your IBM Rational product.

Through the Manage Licenses wizard, the application provides an interface to IBM Rational Common Licensing (powered by FLEXlm software). Use the Manage Licenses wizard to manage your floating license configuration.

- To access the Manage Licenses wizard on a client or server, click **Start** → **Programs** → **IBM Installation Manager** → **IBM Installation Manager**.

To access the Help, click **Help** in the IBM Installation Manager main menu.

Reviewing your license information in the Manage Licenses wizard

Menu selection to view license information in the IBM Installation Manager.

Click **File** → **Open** → **Manage Licenses**

Configuring clients to use IBM Rational license servers

Type the license server host name in the IBM Installation Manager of your client.

Consult your license administrator regarding whether the license server has been started before you specify the license server host name.

Configuring clients to use single or multiple license servers:

Use the following procedure to specify one or multiple license servers for your client using IBM Installation Manager.

Attention: Do not use the following procedure to specify redundant servers.

Your applications request licenses from servers in the order that you enter the servers in the Manage Licenses wizard of the IBM Installation Manager. If you want to change this order, see "Changing the floating license key usage order" on page 199.

To enter the license server host names on a client:

1. In the IBM Installation Manager, click **File** → **Open** → **Manage License**.
2. Select a version of a package, and then select **Configure Floating license support**.
3. Click **Next**.
4. Click **Enable Floating license enforcement**.
5. Specify one or more license server connections.
   a. Click **Add**.

b. Type the host name of the license server.
c. Optional: Type a value in Port for environments where a firewall is used. Do not assign a value to this port unless your administrator instructs you to do so.
d. Optional: You can click **Test Connection** to confirm that the connection information is correct and that the server is available.
e. Click **OK**.
f. If your system administrator has provided you the host names of additional license servers, repeat steps a through e above to add each server.

6. Click **Next**.
7. Optional: Configure the license request order for your shell shared or custom packages. The order of licenses in the list determines the order by which your software attempts to obtain license keys for a license.
8. Click **Finish**.

Configuring clients to use redundant license servers:

Steps to set up redundant license servers on a client using IBM Installation Manager

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

To specify the redundant license servers on a client:

1. In the IBM Installation Manager, click **File** → **Open** → **Manage License**.
2. Select a version of a package, and then select **Configure Floating license support**.
3. Click **Next**.
4. Ensure that **Enable Floating license enforcement** is selected.
5. Configure the license server connections.

   For a redundant servers configuration, where three servers are used, type each host name in this format: *hostname*1, *hostname*2, *hostname*3, where *hostname* is the name of the server. For each port number, type accordingly: *host1port#*, *host2port#*, *host3port#*, where # is the port number.
6. Click **Next**, and then click **Finish**.

Assigning a port value to support a firewall:

Assigning a value to the port in Installation Manager is necessary in firewall situations.

Do not assign a value to this port unless your administrator instructs you to do so. To learn more about IBM Rational licensing and firewalls, see "Using floating licenses with a firewall" on page 146. The following procedure assumes the license administrator has provided you the Rational vendor port value.

To assign a port value on a client:

1. In the Installation Manager, click **File** → **Open** → **Manage Licenses**.
2. Select a version of a package, and then select **Configure Floating license support**.
3. For each server you have specified in the table, click **Edit**.

4. Type the required value in Port. Do not assign a value to this port unless your administrator instructs you to do so.
5. Click **OK**.
6. Click **Next** → **Finish**.

Changing the floating license key usage order:

In some cases, you might want to customize the order by which floating license keys are used by your installed packages.

For example, you might want to have a shared component in a package search for a specific license key first.

To change the default order for using license keys:

1. In the Installation Manager, click **File** → **Open** → **Manage Licenses**.
2. Select a version of a package, and then select **Configure license servers**.
3. Click **Next** → **Next**.
4. On the License Usage Order page, add a shell-shared package to the list, if necessary.
   a. Click **Add**.
   b. Type the package name and version number.
   c. Click **OK**.
5. Select a package name and then click **Up** or **Down** to set the check-out order of the floating license keys. The package name at the top of the list will request a floating license key for components first. If a license key is not available, then a license key is requested for the next package in the list.
6. Click **Finish**.

Changing the server search order:

You can change the order by which IBM Rational products on your client access license servers.

The license server list is displayed in the Manage Licenses wizard. The task of changing the server search order does not affect the order by which Rational products request licenses from a server. If you have multiple packages installed that share components in your environment, see "Changing license usage order" on page 200.

If you want to change the server search order, select the license server in the list and click **Up** or **Down** to change its position. Click **Next** → **Finish** to complete the change.

Using license keys for home use or travel

Configuring licenses for disconnected use.

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

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

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

There are two other options for home use or travel:

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

Changing the disconnect time-out to delay disconnected use:

If you have a slow network at work, your software automatically goes into disconnected use mode if it does not receive a response from the license server within 5 seconds.

You then see a window that states that you are in disconnected use mode after the 5 seconds.

You can change the time-out period before your IBM application goes into disconnected use mode. The default setting is 5 seconds. To change the setting:

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

Changing license usage order

IBM Rational products request licenses in a specific order.

If you have multiple packages installed that share components in your environment or have a combination of authorized user, floating, suite, and product license keys in your environment, you must understand the license usage order and how you can change it. To understand the explanation in the following topics, you must know the definitions of the license types. For more information, see “Defining license key types” on page 123 and “Using point-product keys and suite keys” on page 124.

Understanding license usage order

Using a floating license key for another Rational product enabled in the same shell.

When you install IBM Rational products that share components, or shell share, you can open a product that subsequently checks out a floating license key for another product. For example, suppose you install Rational Software Modeler and IBM Rational Software Architect in the same shell, C:\IBM\devtools. Both packages have been enabled for Rational Common Licensing (powered by FLEXlm software) to use floating licenses. When the Rational Software Modeler attempts to check out a floating license for shared components and fails, it can then attempt to check out an available license for Rational Software Architect.

You can use the Manage Licenses wizard in the IBM Installation Manager to change the version 7.0 license usage order. You may want to customize the license usage order in some cases. For example, change the order to have a product search for a specific license key first.

Changing license usage on your computer

How to change the order by which a product on your computer requests suite and product licenses.

Use the License usage order page of the Manage Licenses wizard in IBM Installation Manager to change the order of license requests.

Servers and license usage order:

Use the License usage order page of the Manage Licenses wizard on the clients to change the license usage order.

To change the order for Web clients, use the License usage order page of the Manage Licenses wizard on the Web servers.

Changing your license usage order:

To change the license usage order on your client:

1. In the Installation Manager, click **File** → **Open** → **Manage Licenses**.
2. Select a version of a package, and then select **Configure license servers**.
3. Click **Next** → **Next**.
4. Change the order of licenses in License usage order by clicking **Up** and **Down**.
5. Click **Finish**.

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

Moving keys for client users

If you have to move your IBM Rational software to another computer, the activation kit must be imported after the new installation.

Moving permanent authorized user keys

If you want to move a product installation with an authorized user license from one computer to another, you must uninstall the product on the first machine and reinstall the product on the second machine.

Attention: During the uninstallation process, the permanent license key is also removed. Be sure to have your original product activation kit on hand to import the permanent license key and license agreement to the new computer. If your activation kit did not come on a CD and you no longer have the downloaded activation kit, go to Passport Advantage to download another activation kit using your product order information.

To move a license key from one computer to another:

1. Remove the IBM Rational software from the old computer. See the installation guide for your IBM Rational product for the removal procedures.
2. Install the Rational software on the new computer.
3. In the IBM Installation Manager, import the license key file from the activation kit to the new computer. For more information, see “Installing permanent or Fixed Term License (FTL) keys” on page 196.

Appendix. Configuring the IBM Rational Web Platform

The IBM Rational Web Platform (RWP) provides server-side support for Web interfaces to certain IBM products.

Note: This information applies to Windows systems only.

RWP is installed with a default configuration suitable for most sites. Some sites may need to modify the RWP configuration after installation to accommodate various host- or site-specific requirements. For example:

- To make RWP use a different HTTP port number
- To change RWP logging defaults
- To configure access to RWP from another Web server acting as a proxy
- To configure RWP to use secure sockets

RWP is based on the embedded WebSphere Application Server (WAS) and IBM HTTP Server (IHS). For additional information about eWAS, see the WebSphere Application Server page. For additional information about IBM HTTP Server, see the IBM Publications Center.

Uninstalling and reinstalling a product that includes RWP may overwrite existing RWP configuration settings. Before upgrading a product that utilizes RWP, save your configuration file. The default location of the RWP configuration file is `C:\Program Files\IBM\RationalSDLC\common\IHS\conf`.

If you are currently using Open SSL certificates and are upgrading your point product, see the procedures in "Converting Open SSL certificates to IBM SSL" on page 215.

Note: The Rational Web Platform supports only the Web interfaces to IBM products. Using it to serve other Web applications or content is not supported.

RWP installation location

RWP files are normally installed in the following folders:

- C:\Program Files\IBM\RationalSDLC\common\rwp
- C:\Program Files\IBM\RationalSDLC\common\IHS
- C:\Program Files\IBM\RationalSDLC\common\eWAS

The RWP folder includes the following:

- bin - Server control scripts: rwp_startup, rwp_shutdown, and rwp_restart scripts
- EmbeddedExpress - profiles folder
- IHS - Conf\Include folder
- profiles -

The IHS folder includes the following:

- bin
- conf
- error

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- logs
- license
- readme
- uninstall

The eWAS folder includes the following:

- bin
- configuration
- logs
- profiles

RWP configuration files

RWP is preconfigured when you install it. After the installation, you can customize RWP by editing the following files:

- ..\common\IHS\Conf\httpd.conf specifies configuration parameters for the RWP server.
- ..\common\IHS\Conf\ssl.conf specifies configuration parameters for secure sockets if they are used by the RWP server.

Because IHS, the Web server for RWP, is powered by Apache 2.0, refer to http://httpd.apache.org/docs-2.0/ for a complete list of the directives subset used in httpd.conf.

To customize configuration for point products that use RWP, edit the configuration file for the product. You can locate these files in the ..rwp/conf/include/ subdirectory (ccweb.conf and cqweb.conf, for example).

You can edit these configuration files with a text editor such as Notepad on Windows or vi on the UNIX system and Linux. This section describes a few of the parameters that you may need to change. Each file includes additional information about editing configuration parameters.

Note: After changing any configuration parameter in any of these files, you must stop and restart RWP before the change takes effect.

Changing the default HTTP port

The default HTTP port number can be changed to any available port.

The port on which RWP listens for HTTP requests is defined by the Listen parameter in httpd.conf. For example, `Listen 80` tells RWP to listen on port 80, which is the default port number. You can change this to specify any available port number. For example, `Listen 8000` tells RWP to listen on port 8000.

If you want to change the default RWP port, or add additional ports, you must modify the httpd.conf, plugin_cfg.xml and virutalhosts.xml files. If you are using more than one profile, you must modify all of these files for every profile you use. See “To change the default RWP ports” on page 205 for file locations.

You do not need to modify the serverindex.xml file, which defines the WAS ports, unless you have another instance of WAS installed that is using the same ports.

Note: If you change the RWP HTTP port number to anything other than 80, all Web addresses that reference RWP must include the port number. For example: `http://RWP_host.domain:8000/reqweb/`.

To change the default RWP ports

The WAS plugin ports (used for communication between IHS and eWAS) are composed of IHS, SSL, and RWP servlet ports. None of these ports are changeable during installation.

If these ports are used by another application on the RWP host, reconfigure that application to use different ports. If you cannot, you must change the ports RWP uses after installation.

If you change ports in `httpd.conf` or `serverindex.xml`, you have to also change those in `plugin-cfg.xml` and `virtualhosts.xml`. In the `virtualhosts.xml` file, change the port number in the HostAlias_*x* section of the XML.

The default IHS port is 80. This information is listed in `httpd.conf` and `plugin-cfg.xml`. This port is changeable during installation.

The default SSL port is 443. This information is listed in `ssl.conf` and `plugin-cfg.xml`. This port is not changeable during installation.

WC_defaulthost is the port that relays non-SSL communication between IHS and eWAS for the RWP Servlet and RWP ReqWeb Servlet. The default port number for WC_defaulthost is 10080 (profile1 [all applications except RequisiteWeb]) and 11080 (for profile2 [RequisiteWeb]). There are a total of 6 ports defined in `serverindex.xml` for each profile (12, for 2 profiles) for the RWP servlet that needs to be changed. WC_defaulthost is also defined in plugin-cfg.xml, WC_adminhost, WC_defaulthost_secure, WC_adminhost_secure, BOOTSTRAP_ADDRESS, and SOAP_CONNECTOR_ADDRESS.

Refer to the following table for information about files containing default RWP port numbers that you might need to change:

Table 39. Files containing default RWP port information

File	Pathname to file
httpd.conf	..\common\IHS\Conf\
ssl.conf	..\common\IHS\Conf\
serverindex.xml (Profile 1)	..profiles\profile1\config\cells\ DefaultNode\nodes\DefaultNode
serverindex.xml (Profile 2 - RequisiteWeb)	..profiles\profile2\config\cells\ DefaultNode\nodes\DefaultNode
virtualhosts.xml (Profile 1)	..profiles\profile1\config\cells\DefaultNode
virtualhosts.xml (Profile 2 - RequisiteWeb)	..profiles\profile2\config\cells\DefaultNode
plugin_cfg.xml	..\common\eWAS\profiles\

To configure an alternate port number:

1. Add an additional Listen statement in http.conf. For example, to add port 8000, add the line `add Listen 8000`.
2. Add the alternate port to the virtualhost group in plugin-cfg.xml.
3. Add the alternate port to the virtualhosts.xml file, in the HostAlias_*x* section.

RWP log configuration

Any errors encountered by RWP are recorded in log files. Information in these files can be used for troubleshooting.

RWP errors can be found in the following files:

- WAS Embedded Express log files (`..\IBM\RationalSDLC\profiles\profile`*n*`\logs`). The logging is profile-based, with *n* representing either 1 or 2, based on the profile number. RequisiteWeb, for example, which has its own separate profile (profile2), will store the logs separately from other applications.
- IHS log files (`..\common\IHS\logs`)
- RWP startup and shutdown scripts log errors to the `rwp\logs` folder.

A number of configuration parameters related to access, error, and event logging in `httpd.conf` are grouped under the heading **Logging-related directives**. You may want to change any of the following:

- ErrorLog specifies the name of the file where errors are logged. For example, `ErrorLog IHS\logs\error.log` specifies that errors will be logged in the file `logs\error.log` under the RWP installation directory.

  Note: Any RWP log file may be piped to the rotatelogs command, as described in "Log rotation and log cleanup" on page 207.
- LogLevel specifies the type and severity of errors to be logged. For example, `LogLevel warn` specifies that errors up to and including warnings will be logged. The table below lists the various log levels in order of decreasing severity. Specifying any of these values logs events of that severity and all lower severities.

Table 40. RWP log levels

LogLevel	Messages logged
emerg	Emergency messages about events that may render the server inoperable (Highest severity)
alert	Conditions that should be corrected immediately
crit	Critical conditions such as hardware or system errors
error	All other errors
warn	Warning messages
notice	Conditions that may require special handling
info	Informational messages (lowest severity)
debug	Debugging RWP

- LogFormat specifies the format in which events are logged. You can choose one of the predefined formats (for example, common), or you can define your own format. For more information about format tokens and the rules for constructing log file strings, see the documentation for mod_log_config at http://www.apache.org/.
- CustomLog specifies the name of the file in which RWP access requests are logged. For example, `CustomLog logs\accesserror.log common` specifies that access requests will be logged in the file `logs\accesserror.log` under the RWP installation directory in the common log file format.

Log rotation and log cleanup

In the default configuration, most RWP log files are piped to the rotatelogs program, which periodically creates a new log file.

The following DOS command uses rotatelogs to create a new copy of the accesserror.log file every 86,400 seconds (24 hours).

```
CustomLog "|\"C:\Program Files\IBM\RationalSDLC\common\IHS\bin\rotatelogs.exe\"
\"C:\Program files\IBM\RationalSDLC\common\IHS\logs\access.log\" 86400" common
```

The log rotation period begins when RWP is started.

IHS log files grow in size over time, so you must periodically run the perl script cleanuplogs.pl to remove old log files. You can modify this script to change the frequency with which it runs, the age of the log files it removes, or any other aspect of its operation. The default location for this script is `C:\Program Files\IBM\RationalSDLC\common\rwp\bin`.

This script can be run automatically by using an ″at″ script.

Note: If you change any of the default RWP log locations, you must also modify the cleanuplogs.pl script so that it looks for these logs in their new location.

Local log-on permission required

Users who log on to a Windows 2003 server with a domain account may encounter authentication failures if the server does not grant that domain account permission to log on locally.

To prevent this, adjust the server's local security policy to grant **Allow log on locally** permission to the appropriate domain users or groups.

Modifying RWP configurations

Exercise caution in modifying RWP configurations.

Do not modify any RWP configuration files other than those described in this chapter. Some of the configuration options cannot be changed without adversely affecting the operation of RWP. Any configuration change not described in this chapter should be carefully evaluated before introducing the change into a production environment.

Changing the RWP user account

During installation, RWP is configured to run with the identity of a built-in user account. You can change this account with the procedure described here.

RWP is started at boot time by the Windows Service Control Manager and runs with the identity of the built-in LocalSystem account (NT AUTHORITY\SYSTEM).

To change the identity of RWP running on Windows:

1. Run the Services application by selecting **Control Panel → Services** or **Control Panel → Administrative Tools → Services**. RWP includes the following services:
   - IBM HTTP Server 6.1
   - IBM WebSphere Application Server Version 6.1 - RWP ReqWeb Servlet

2. Edit each service's Log On properties to specify either a local or domain account.
3. Run rwp_restart to stop and restart RWP.

Starting, stopping, and restarting RWP

RWP is normally started at boot time. If you need to stop or restart RWP (for example, to force it to re-read a changed configuration file), navigate to the RWP bin directory and run one of the following three scripts. These scripts start and stop both IHS and eWAS portions of RWP. These scripts are normally located at `C:\Program Files\IBM\RationalSDLC\common\rwp\bin`.

- rwp_startup starts RWP if it is not already running.
- rwp_shutdown stops RWP.
- rwp_restart runs the rwp_shutdown and rwp_startup commands, in that order, to restart RWP.

You can also manually start and stop RWP by running individual commands contained in the scripts, for example, if you only need to start or stop a single profile.

You can also start, shutdown, or restart these services by clicking **Start → Control Panel → Administrative Tools → Component Services**. From here, you can access the following services:

- IBM WebSphere Application Server Version 6.1 - RWP ReqWeb Servlet

To configure access to RWP from another Web server

Some sites may need to access RWP by proxy or redirection from another Web server. In this configuration, the other Web server redirects specific Web addresses to an RWP process running on the same host but using a different port, or running on a separate host. Two common use cases require this type of configuration.

- **RWP and another Web server must run on the same host.** Install RWP on a host that will not run any other Web servers. If this is impossible, configure the other Web server to use ports that are not being used by RWP. If you cannot do this, you must configure RWP to use ports not used by the other Web server (see "To change the default RWP HTTP port" on page 212) and optionally configure the other Web server to redirect Web addresses for IBM Web clients to RWP.
- **RWP must run behind a firewall.** To restrict access to RWP, a Web server running on the public side of a firewall can be configured to pass specific URLs to an RWP instance running on the other side of the firewall.

Follow the instructions in this section to enable a proxied or redirected configuration that provides access to RWP from either of the following Web servers:

- Apache HTTP Server
- Microsoft Internet Information Server (IIS)

Note: Instructions for configuring proxied or redirected access to an IBM product Web application are specific to the application and the Web server acting as the proxy. Only the Web servers and IBM Software products that are specifically cited in this section can be supported in a proxied or redirected configuration.

Configuring mod_proxy support for Apache

To configure an instance of Apache HTTP Server to support proxy access to RWP, you must configure the Apache HTTP Server with proxy support supplied by the Apache mod_proxy module. Detailed information about how to do this is available at http://www.apache.org/. The following is a summary of the steps you will need to take:

1. Configure the Apache HTTP Server to load the mod_proxy module and the other modules upon which it depends. This typically requires you to uncomment various LoadModule directives related to mod_proxy support in the Apache httpd.conf file. For example:

   ```
   LoadModule proxy_module modules/mod_proxy.so
   LoadModule proxy_connect_module modules/mod_proxy_connect.so
   LoadModule proxy_http_module modules/mod_proxy_http.so
   ```

2. Uncomment the ProxyRequests On directive in the <IfModule mod_Proxy.c> block in httpd.conf:

   ```
   <IfModule mod_proxy.c>
   ProxyRequests On
   </IfModule>
   ```

   If you are configuring reverse proxy support, change the ProxyRequests parameter value from On to Off. For forward proxy support, leave this parameter set to On. Setting ProxyRequests to Off does not disable use of ProxyPass directives.

3. Add the appropriate ProxyPass and ProxyPassReverse directives within the <IfModule mod_proxy.c> block in httpd.conf. ProxyPass and ProxyPassReverse directives are application specific.

   In this example, which uses cqweb as an example, the *hostname* is the name of the RWP server host and *port* is an optional port number, which you must specify if you have changed the default port on which RWP listens for HTTP requests (see "To change the default RWP HTTP port" on page 212).

   ```
   ProxyPass / http://hostname[:port]/
   ProxyPass /cqweb/ http://hostname[:port]/cqweb/
   ProxyPass /wre/ http://hostname[:port]/wre/
   ProxyPass /common/ http://hostname[:port]/common/
   ProxyPass /px/ http://hostname[:port]/wre/px/
   ProxyPass /wpf/ http://hostname[:port]/wre/wpf/
   ProxyPass /dct/ http://hostname[:port]/dct/
   ProxyPass /scripts/ http://hostname[:port]/scripts/
   ProxyPass /view/ http://hostname[:port]/view/
   ProxyPass /siteconfig/ http://hostname[:port]/wre/siteconfig/
   ProxyPass /help/ http://hostname[:port]/view/browser/help/
   ProxyPass /doc/ http://hostname[:port]/doc/
   ProxyPass /html/ http://hostname[:port]/wre/common/html/

   ProxyPassReverse / http://hostname[:port]/
   ProxyPassReverse /cqweb/ http://hostname[:port]/cqweb/
   ProxyPassReverse /wre/ http://hostname[:port]/wre/
   ProxyPassReverse /common/ http://hostname[:port]/common/
   ProxyPassReverse /px/ http://hostname[:port]/wre/px/
   ProxyPassReverse /wpf/ http://hostname[:port]/wre/wpf/
   ProxyPassReverse /dct/ http://hostname[:port]/dct/
   ProxyPassReverse /scripts/ http://hostname[:port]/scripts/
   ProxyPassReverse /view/ http://hostname[:port]/view/
   ProxyPassReverse /siteconfig/ http://hostname[:port]/wre/siteconfig/
   ProxyPassReverse /help/ http://hostname[:port]/view/browser/help/
   ProxyPassReverse /doc/ http://hostname[:port]/doc/
   ProxyPassReverse /html/ http://hostname[:port]/wre/common/html/
   ```

For example, the following directives would configure the proxy server to support access by the Rational ClearQuest Web interface to an RWP process listening on port 81 of a host named **RWP_host**.

```
ProxyPass / http://RWP_host:81/
ProxyPass /cqweb/ http://RWP_host:81/cqweb/
ProxyPass /wre/ http://RWP_host:81/wre/
ProxyPass /common/ http://RWP_host:81/common/
ProxyPass /px/ http://RWP_host:81/wre/px/
ProxyPass /wpf/ http://RWP_host:81/wre/wpf/
ProxyPass /dct/ http://RWP_host:81/dct/
ProxyPass /scripts/ http://RWP_host:81/scripts/
ProxyPass /view/ http://RWP_host:81/view/
ProxyPass /siteconfig/ http://RWP_host:81/wre/siteconfig/
ProxyPass /help/ http://RWP_host:81/view/browser/help/
ProxyPass /doc/ http://RWP_host:81/doc/
ProxyPass /html/ http://RWP_host:81/wre/common/html/

ProxyPassReverse / http://RWP_host:81/
ProxyPassReverse /cqweb/ http://RWP_host:81/cqweb/
ProxyPassReverse /wre/ http://RWP_host:81/wre/
ProxyPassReverse /common/ http://RWP_host:81/common/
ProxyPassReverse /px/ http://RWP_host:81/wre/px/
ProxyPassReverse /wpf/ http://RWP_host:81/wre/wpf/
ProxyPassReverse /dct/ http://RWP_host:81/dct/
ProxyPassReverse /scripts/ http://RWP_host:81/scripts/
ProxyPassReverse /view/ http://RWP_host:81/view/
ProxyPassReverse /siteconfig/ http://RWP_host:81/wre/siteconfig/
ProxyPassReverse /help/ http://RWP_host:81/view/browser/help/
ProxyPassReverse /doc/ http://RWP_host:81/doc/
ProxyPassReverse /html/ http://RWP_host:81/wre/common/html/
```

Note: The Web addresses specified in this example must be written in the httpd.conf file exactly as specified, with the exception of the host name and optional port number.

For the ClearCase Web interface, add these ProxyPass and ProxyPassReverse directives:

ProxyPass /ccweb http://*hostname*[:*port*]/ccweb

ProxyPassReverse /ccweb http://*hostname*[:*port*]/ccweb

ProxyPass /Java_Plugins http://*hostname*[:*port*]/Java_Plugins

ProxyPassReverse /Java_Plugins http://*hostname*[:*port*]/Java_Plugins

The *hostname* is the name of the RWP server host and *port* is an optional port number, which you must specify if you have changed the default port on which RWP listens for HTTP requests (see "To change the default RWP HTTP port" on page 212). For example, the following directives would configure the proxy server to support access by the ClearCase Web interface to an RWP process listening on port 81 of a host named **RWP_host**.

```
ProxyPass        /ccweb http://RWP_host:81/ccweb
ProxyPassReverse /ccweb http://RWP_host:81/ccweb
ProxyPass        /Java_Plugins http://RWP_host:81/Java_Plugins
ProxyPassReverse /Java_Plugins http://RWP_host:81/Java_Plugins
```

For the ClearQuest Web interface, add these ProxyPass and ProxyPassReverse directives:

- For the ClearQuest Web interface, add the ProxyPass and ProxyPassReverse directives of the following form for the ccweb Web address.

  ProxyPass /wpf/ http://*hostname*[:*port*]/wpf/

  ProxyPass /px/ http://*hostname*[:*port*]/px/

  ProxyPass /images/ http://*hostname*[:*port*]/images/

  ProxyPass /dct/ http://*hostname*[:*port*]/dct/

ProxyPass /common/ http://*hostname*[:*port*]/common/

ProxyPass /../view/ http://*hostname*[:*port*]/view/

ProxyPass /view/ http://*hostname*[:*port*]/view/

ProxyPass /cqweb/ http://*hostname*[:*port*]/cqweb/

ProxyPass /cqattachments/ http://*hostname*[:*port*]/cqattachments/

ProxyPassReverse / http://*hostname*[:*port*]/

The *hostname* is the name of the RWP server host and *port* is an optional port number, which you must specify if you have changes the default port on which RWP listens for HTTP requests. The following example supports proxy access by the ClearQuest Web interface to an RWP process listening on port 81 of a host named RWP_host.

```
ProxyPass         /wpf/ http://RWP_host:81/wpf/
ProxyPass        /px/ http://RWP_host:81/px/
ProxyPass        /images/ http://RWP_host:81/images/
ProxyPass        /dct/ http://RWP_host:81/dct/
ProxyPass        /common/ http://RWP_host:81/common/
ProxyPass        /../view/ http://RWP_host:81/view/
ProxyPass        /view/  http://RWP_host:81/view/
ProxyPass        /cqweb/ http://RWP_host:81/cqweb/
ProxyPass        /cqattachments/ http://RWP_host:81/cqattachments/
   ProxyPassReverse / http://RWP_host:81/
```

The Web addresses used by Web interfaces to IBM products may change when you install a new release of ClearCase, ClearQuest, or any other IBM products on the RWP host. To find the currently valid Web addresses for IBM products on the RWP host, examine the *.conf files in the RWP conf/include directory. The application Web addresses are embedded as arguments to Alias or JkMount directives. For example: `JkMount /CQWeb/* ajp13` indicates that /CQWeb is a Web address that supports (omit the trailing `/*`). Similarly: `Alias /ccweb "_CC_HOME_/web"` indicates that /ccweb is a Web address that RWP supports.

Configuring URL redirection for Internet Information Server

If RWP must co-exist on a host with an instance of Microsoft Internet Information Server (IIS) that listens for HTTP requests on port 80, you must reconfigure RWP to listen for HTTP requests on a different port. See "To change the default RWP HTTP port" on page 212) and then do one of the following:

- Include a port specifier (for example http://*hostname*:81/*application_directory_name*/login/)) in the Web addresses used by IBM Web interfaces served by this instance of RWP.
- Use the IIS redirection facility to force IBM Web interface Web addresses to port 80 (and received by IIS) to be redirected to RWP.

To configure IIS to use redirection:

1. Run the IIS configuration utility (Internet Services Manager).
2. Create a new virtual directory in the IIS Default Web Site folder:
   - For the **Virtual Directory Alias**, choose a name that reflects the name of the Web client that will use the virtual folder (for example, ccwebcqweb)
   - For the **Web Site Content Directory**, you must specify a physical directory on the Web server host. Although this directory must exist on the host, it will not be used to hold any Web site content after you configure redirection in Step 4 on page 212. Create a new directory for this purpose and apply protections to it that reduce the chances of its being accidentally deleted.

Note: If you create this directory as a subdirectory of the RWP installation directory, it will be deleted if RWP is reinstalled on the host.

- For **Access Permissions**, specify **Read** and **Run scripts**.

3. Right-click the virtual directory you created in Step 2 on page 211 and open its **Properties** window.
4. In the **When connecting to this resource, the content should come from** section of the **Virtual Directory** tab, select **A redirection to a URL**.
5. In the **Redirect to:** box, type the Web address used by the IBM Web interface that you are redirecting to RWP. For example, to redirect the Web interface to use an instance of RWP listening on port 81, type `http://hostname:81/application_directory_name/login` .

   The *hostname* is the name of the host running RWP and IIS and *application_directory_name* is the directory name used by the Web interface you are running.
6. In the **The client will be sent to** section, select **The exact URL entered above**.
7. Verify that browsing to http://*hostname*/*application_directory_name*/login redirects you to the Web interface at the URL specified in Step 5.

To change the default RWP HTTP port

The port on which RWP listens for HTTP requests is defined by the Listen parameter in httpd.conf. For example, `Listen 80` tells RWP to listen on port 80 (the default for HTTP). You can change this to specify any available port number. For example, `Listen 8000` tells RWP to listen on port 8000.

If you want to change the default RWP port, or add additional ports, you must modify the httpd.conf, plugin_cfg.xml and virutalhosts.xml files. If you are using more than one profile, you must modify all of these files for every profile you use. See also "To change the default RWP ports" on page 205 for file locations. You do not need to modify the serverindex.xml file, which defines the WAS ports, unless you have another instance of WAS installed that is using the same ports.

Note: If you change the RWP HTTP port number to anything other than 80, all Web addresses that reference RWP must include the port number. For example: `http://RWP_host.domain:8000/reqweb/`.

To change and redirect the default RWP HTTP port, change the default RWP HTTP port (80). Use a text editor to modify content in the following files, as indicated:

- File: `C:\Program Files\IBM\RationalSDLC\common\IHS\conf\httpd.conf`
  Modify: `Listen 0.0.0.0:80`
- File: `C:\Program Files\IBM\RationalSDLC\common\eWAS\profiles\plugin-cfg.xml`
  Modify: `<VirtualHost Name="*:80" />`
- File: `C:\ProgramFiles\IBM\RationalSDLC\profiles\profile2\config\cells\DefaultNode\virtualhosts.xml`
  Modify: `<aliases xmi:id="HostAlias_2" hostname="*" port="80"/>`

Restart the Web services.

Configuring secure access to RWP

There are a number of ways to configure RWP to use SSL to provide secure communications with Web clients for IBM products.

A typical configuration allows Web clients on the public Internet to access RWP through a firewall. Communications between RWP and the hosts supporting the Web product use the HTTPS protocol and are secured by SSL. Communications between RWP and the hosts on the corporate intranet use ordinary remote procedure calls (RPCs) and are not secure. Ordinary RPCs cannot communicate through a firewall, so you cannot place a firewall between RWP and the host servers.

In a typical configuration, for example, the Web address would be https://*hostname*/*application_directory_name*

In this example, the *hostname* is the name of the RWP server host and *application_directory_name* is the application-specific directory name. The default port for communications between Web clients and RWP is 443, the default for HTTPS.

Configuring RWP to use secure sockets

To provide secure communications between Web clients and RWP, you can configure RWP to support the IBM Secure Sockets Layer (IBM SSL) protocol. To do this,

1. The current version of RWP no longer supports Open SSL. If you are upgrading a product that uses RWP and wish to use previously created Open SSL certificates, see "Converting Open SSL certificates to IBM SSL" on page 215 to convert your existing certificates for use with IBM SSL. If you choose to perform the conversion, you do not need to perform any of the steps below. To create new certificates using IBM SSL, follow the rest of the steps below.
2. Uncommment the `Include conf/ssl.conf` statement in `httpd.conf`
3. If you have not created the files `common/IHS/key.kbd` and `key.sth`, do so using IKeyMan, the IBM utility for creating and managing SSL keys and key databases. Run IKeyMan from the `common/IHS/bin` directory. For more information, see Help for IKeyMan (http://www.ibm.com/software/webservers/httpservers/doc/v10/ibm/9atikeyu.htm) and then see "Creating HTTP server keys."
4. Next, create your certificate. See Creating a self-signed certificate for the HTTP server. For information about creating a new Certificate Request to send to Certificate Authority, see the Help for IKeyMan (http://www.ibm.com/software/webservers/httpservers/doc/v10/ibm/9atikeyu.htm).
5. To force processing of non-SSL requests as SSL requests, using RWP, use the optional procedure "Forcing an SSL connection using RWP" on page 214.

Creating HTTP server keys

The IBM HTTP server key file stores certificates used by the IBM HTTP server.

To create IBM HTTP server (IHS) keys using the IBM HTTP server Key Management Utility, do the following

1. Stop the IBM HTTP server if it is currently running.
2. Start the IBM HTTP server Key Management Utility tool by doing the following:
   - On Windows, Click **Start > Programs > IBM HTTP Server 6.0.2 > Start Key Management Utility**.
   - On UNIX systems and Linux, Navigate to the `/opt/rational/common/IHS/bin` directory and enter the command: `./ikeyman`.

3. Ensure you have the location of the keystore file you created, such as `C:\Program Files\IBM\RationalSDLC\common\IHS\key.kdb` , before performing this step. Click **Key Database File > New** and enter the following information, and then click **OK**:
   - For Key Database Type, enter `CMS key database file`
   - For Location, on Windows, enter *drive letter*`:\Program Files\IBM\RationalSDLC\common\IHS\`. On UNIX systems and Linux, enter `/opt/rational/common/IHS/`.
4. Enter `key.kdb` as the new keystore file name.
5. At the password prompt, enter a password, and then confirm it. This password protects the key file you are creating.

   Note: You can optionally set a password expiration time in days. If you enter 365 days, a new password must be created after 365 days.
6. Ensure **Stash the password to a file** is checked. When you check this option, the HTTP Server is allowed access to the certificates contained in the keystore file by using the password.
7. Click **OK**
8. Restart the IBM HTTP server.

Creating a self-signed certificate for the HTTP server

1. Start the IBM HTTP server Key Management Utility tool (if it is not already running).
2. Click **Key Database File > Open > Select Key database type CMS** and click browse to navigate to your key store file (key.kdb).
3. Enter the keystore password and click **OK**
4. In **Key database content**, click the drop down menu and select **Personal Certificates** (if you are creating a self-signed certificate) or **Personal Certificate Requests** (if you are creating a certificate request to be sent to an Independent certificate authority (CA)).
5. If you are creating a self signed certificate, click **New Self-Signed**. The Create a New Self-Signed Certificate window opens.
6. Enter a key label for this certificate by filling in the following fields, and then click **OK**. Do not use spaces in the key label.
   - For the Version field, select **X509 V3**.
   - For the Key Size field, select **1024**.
   - For the Common Name field, enter the fully qualified address of the HTTP Server, for example *Servername*`.ibm.com`.
   - For the Organization field, enter the name of your company or area. The Common Name and Organization are required fields of the Distinguished Name. The Organization Unit, Locality, State/Province, and other fields are optional.
   - Select the appropriate value for the Country field.
   - For the Validity Period field, enter `365`.

Forcing an SSL connection using RWP

To force processing of non-SSL requests as SSL requests, using RWP, do the following:

1. Add or modify the virtualhost settings in httpd.conf to include the following commands:

```
<VirtualHost *:80>
ServerName yourservername
RewriteEngine on
RewriteCond %{SERVER_PORT} !^443$
RewriteRule ^(.*)$ https://yourservername$1 [R]
RewriteLogLevel 0
RewriteLog "C:/Program Files/Rational/common/rwp/IHS/logs/rewrite.log"
</VirtualHost>
```

Note: Ensure these commands are placed appropriately in the httpd.conf file, to execute before the load of the WebSphere Application module and before the load of the WebSphere Plug-in module.

2. Include the ssl.conf file by adding the following commands:

```
#
# include ssl information
#
Include conf/ssl.conf
```

3. Edit the ssl.conf file, providing the correct SSL certificate path information.

Converting Open SSL certificates to IBM SSL

If you are upgrading your point product and are currently using Open SSL certificates, you must first export your certificates to PKCS12 format, before importing them as IBM SSL certificates. These exported private and public certificates will be stored in a password protected file.

To export and import your existing Open SSL certificates to PKCS12 format, do the following:

1. Export the certificate to PKCS12 format:
   a. Using a command prompt, navigate to `C:\Program Files\IBM\RationalSDLC\common\rwp\bin`
   b. From that directory, enter the following command:

      `openssl pkcs12 -export -in` *your_server_certificate.crt* `-out` *mapped_shared_location\server_cert.p12* `-inkey` *your_server_private_key.key* `-name` *ibmhttp*

      Note: Note the location of the file *server_cert.p12*. This is the PKCS12 formatted file which will be imported into the IBM SSL Key Management store.
   c. Enter the pass phrase used when the private key was originally created.
   d. Enter an export password.
2. Upgrade the IBM SDK Policy Files to use the unrestricted version to enable recognition of non-IBM certificate files.

   Note: Failure to upgrade the Policy File will result in an error while importing the PKCS12 certificate.
   Follow the procedures in http://www.ibm.com/support/docview.wss?uid=swg21201170. Download the 1.4.2 version of the unrestricted policy files and replace the existing two policy files located at `C:\Program Files\IBM\RationalSDLC\common\rwp\IHS\_jvm\jre\lib\security`

   Import the certificate into the IBM SSL Key Management store:
   a. Start the IBM HTTP server Key Management Utility tool (if it is not already running).

b. In the tool, click **Key Database File > Open > Select Key database type CMS** and click **Browse** to navigate to your key store file (key.kdb).
c. Enter the keystore password and click **OK**.
d. In the Key database content area, click the drop down menu and select **Personal Certificates**.
e. Click **Import** , then click **Key File type** and choose **PKCS12**.
f. Click the **Browse** button and navigate to the .p12 file you wish to import, then click **OK**.
g. If prompted, enter a password for the key database, then click **OK**.
h. Click **OK** again to complete the import process.

Note: If the certificate you are attempting to import has an expired validity date, you will not be able to import it.

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