



Installation guide



Installation guide

Note

Before using this information and the product it supports, read the information in "Notices" on page 95.

First Edition (December 2008)

This edition applies to version 7.1.1 of IBM Rational Asset Manager and to all subsequent releases and modifications until otherwise indicated in new editions.

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Overview

This installation guide provides instructions for installing, updating, and uninstalling IBM® Rational® Asset Manager.

You can find the most recent version of this *Installation Guide* online at http://download.boulder.ibm.com/ibmdl/pub/software/rationalsdp/v7/ram/711/docs/install_instruction/install.html.

Before installing, you should consult the release notes for late-breaking installation issues. The release notes file is available online at: <http://download.boulder.ibm.com/ibmdl/pub/software/rationalsdp/v7/ram/711/docs/readme/readme.html>,

Note: Refer to <http://www.ibm.com/software/rational/support/documentation/> for updated documentation and troubleshooting information.

Planning your installation

This section discusses the two basic installation configurations for the Rational Asset Manager server and provides some points to consider before beginning the installation process.

Installation scenarios

Rational Asset Manager offers four basic installation scenarios.

- Upgrading from an existing version of Rational Asset Manager.
- Installing Rational Asset Manager V7.1.1 on a new instance of embedded WebSphere® Application Server V6.1
- Installing Rational Asset Manager V7.1.1 on an existing installation of WebSphere Application Server V6.1
- Manually installing Rational Asset Manager V7.1.1 on a supported version of WebSphere Application Server or Apache Tomcat.

For any of these scenarios, you can optionally install the Rational Asset Manager Eclipse client to interact with the repository.

Database

Rational Asset Manager requires a database for asset and data storage. To improve performance, the database server typically is on a separate physical machine from the application server and on a dedicated disk.

The user who configures the database tables and schema must have database administrator privileges.

Application server

If using WebSphere Application Server, you can choose to install a new embedded WebSphere Application Server, or use your existing version of WebSphere Application Server. Either server may be used in conjunction with any database or other platform software.

Embedded WebSphere Application Server is a lightweight version of the server. It is intended to support environments that run a limited number of applications and do not require the full administration support provided by WebSphere Application Server. The embedded WebSphere Application Server provides a lightweight version of the WebSphere Application Server administration console with limited configurability.

User registries

Although Rational Asset Manager supports adding users from an external registry (such as LDAP or a custom registry), it is not necessary to use an external registry. Users can be added manually.

Security and user authentication

If you plan to *manually* install Rational Asset Manager onto an existing WebSphere Application Server that is already configured for security (for example, using LDAP), reconfigure the application server for file-based security until the installation and configuration of Rational Asset Manager is complete. After installing and configuring the server application to use a custom user registry, you can restore WebSphere Application Server security configuration. For details, see “Configuring file-based security” on page 48.

File-based security is not intended for use in production environments.

Integrations

Optionally, you can integrate with Rational ClearQuest[®], Rational ClearCase[®], and WebSphere Service Registry and Repository. Client applications must be installed on the same machine as the server and Rational Asset Manager server application. To improve performance, the servers for these applications typically will reside on machines other than the application server.

When integrating with Rational ClearCase, the WebSphere Application Server service must be started as the same user who has access to the versioned object base (VOB).

Clusters

When you deploy Rational Asset Manager to a cluster environment, the components must be homogenous with regard to operating system and application server. If you plan to integrate with Rational ClearCase and Rational ClearQuest, client applications must be installed on every component in the cluster, and must have the same installation path on every node in the cluster. Individual nodes cannot be configured independently.

Large numbers of assets

If you expect that the repository will contain a large number of assets (for example, tens or hundreds of thousands), note that several asset management operations, such as indexing, might require several hours. There are data management and hard-disk management techniques that might improve performance under such conditions, such as using a Redundant Array of Independent Disks (RAID) and a technique called disk striping. Disk striping involves dividing data into blocks and storing the data blocks on multiple partitions on multiple hard disk drives. See the documentation for your operating system for instructions about how to set this up for your environment. Also, you might consider placing the repository index, assets and database each on a different disk.

Rational Asset Manager installation scenarios

This section discusses the steps to upgrade IBM Rational Asset Manager, to install it with embedded WebSphere Application Server V6.1, and to install it to an existing installation of WebSphere Application Server or Apache Tomcat server.

Upgrading Rational Asset Manager from a previous version

The following outline guides you through the upgrade process and provides some points to consider before beginning the installation process.

1. Uninstall the old version of Rational Asset Manager (and embedded WebSphere Application Server, if necessary). For WebSphere Application Server, manually uninstall the enterprise and Web archive files and configurations using the WebSphere Administrative Console.
2. If using WebSphere Application Server, create a back up of your server configuration using the `<wasInstall>/bin/backupConfig.bat` command. Refer to the WebSphere Application Server documentation for more information.
3. Retrieve the Rational Asset Manager server setup application from the installation media using Installation Manager. On the Features pages of the Installation Manager, choose the following depending on which application server you use:
 - For WebSphere Application Server, select only Rational Asset Manager (to install the Rational Asset Manager server setup enterprise archive file).
 - For Apache Tomcat, select all of the options that you want to deploy.

On the next Features page, select the option to install to an existing WebSphere Application Server.

4. Manually deploy to the application server.
 - For WebSphere Application Server, follow the instructions in the section entitled “Installing Rational Asset Manager server manually on WebSphere Application Server” on page 48 to deploy the server setup enterprise archive file (`com.ibm.ram.repository.setup.web.ear`).

Note: If you manually changed the context root for any of the Rational Asset Manager applications that you are upgrading, you will need to reset the context roots to those values after upgrading. You must also propagate their Web server plug-ins if one is in use. If this is not done, you might not be able to access the updated applications using your existing bookmarks. Refer to WebSphere Application Server documentation on context root for Web modules settings: http://publib.boulder.ibm.com/infocenter/wasinfo/v6r1/index.jsp?topic=/com.ibm.websphere.nd.iseries.doc/info/iseriend/ae/uweb_contextroot.html.

- For Apache Tomcat, follow the instructions in the section entitled “Installing Rational Asset Manager server on Tomcat” on page 56 for the server enterprise archive file (`com.ibm.ram.repository.web_runtime.ear`). Proceed to step 6

Note: Shared library references for the previous version of Rational Asset Manager must be manually remapped to the RAM1WebApplication after configuration has been completed. (For example, integration with Rational ClearQuest).

5. “Configuring Rational Asset Manager using the server setup application” on page 32: Use the setup assistant to deploy the Rational Asset Manager enterprise and Web applications. This will update the applications to version 7.1.
6. Optionally: Install the Rational Asset Manager Eclipse Client.

Note: Uninstall the Rational Asset Manager Eclipse client plug-ins before installing the latest version of the Rational Asset Manager Eclipse client.

If you installed the Rational Asset Manager V7.0.0.2 Eclipse client into an existing Eclipse V3.3 environment using Installation Manager, you must use Installation Manager to uninstall it. You cannot use the Eclipse Configuration Manager to uninstall it.

If you installed the Rational Asset Manager Eclipse client plug-ins using Eclipse's update manager, use the Eclipse configuration manager (in Eclipse, **Help** → **Software Updates** → **Manage Configuration**) to remove any features entitled Rational Asset Manager prior to installing the latest version of the Rational Asset Manager Eclipse client.

You can install the Rational Asset Manager Eclipse Client by the following methods:

- If you have a supported Eclipse integrated development environment (IDE) installed on your computer, then you can use Eclipse update manager to find and install the Rational Asset Manager Eclipse client plug-ins from a Rational Asset Manager server. To install the client plug-in, follow the Eclipse update process (**Help** → **Software Updates** → **Find and Install**).
- If you do not have an existing Eclipse IDE, then you can install the Eclipse client from the Rational Asset Manager installation media. Note that you can also install the Eclipse client into an existing Eclipse V3.3.2 IDE by this method.

Installing Rational Asset Manager using the embedded WebSphere Application Server V6.1

The following outline guides you through the installation and provides some points to consider before beginning the installation process.

1. Install a database application for Rational Asset Manager:

Rational Asset Manager requires a database for asset and data storage. If you do not already have one of the supported database applications installed, then you can install IBM DB2[®] Enterprise Server Edition, version 9.5 from the Rational Asset Manager launchpad.

To improve performance, the database server typically resides on a machine that is physically separate from the application server and on its own dedicated disk.

Users who configures the database tables and schema must have database administrator privileges.

Choose one of the following databases:

- a. DB2
- b. Oracle
- c. SQL Server

2. Install Rational License Server.

Rational Asset Manager server requires the Rational License Server to distribute license keys to clients.

3. Install the embedded WebSphere Application Server V6.1 and the IBM Rational Asset Manager server application.

Use IBM Installation Manager to install an embedded version of WebSphere Application Server, Version 6.1 and simultaneously install the Rational Asset Manager server application. This is the easiest method for installing Rational Asset Manager server.

4. Configure the Rational Asset Manager Server application using the server setup application.

Before you can use Rational Asset Manager server, you must initially configure the Rational Asset Manager server application. The Rational Asset Manager server setup application is browser-based application and works like a wizard to set up databases, user authentication, and repository settings.

5. For Linux[®] and AIX[®]: Configure the server environment settings.

Additional configuration steps are required on Linux and AIX.

- a. Enable artifact content indexing for Linux.
- b. Enable content indexing to run for non-root users.
- c. Enable database connectivity for non-root users.

6. Optionally: Install the Rational Asset Manager Eclipse Client.

You can install the Rational Asset Manager Eclipse Client by the following methods:

- If you have a supported Eclipse integrated development environment (IDE) installed on your computer, then you can use Eclipse update manager to find and install the Rational Asset Manager Eclipse client plug-ins from a Rational Asset Manager server. To install the client plug-in, follow the Eclipse update process (**Help** → **Software Updates** → **Find and Install**).
- If you do not have an existing Eclipse IDE, then you can install the Eclipse client from the Rational Asset Manager installation media. Note that you can also install the Eclipse client into an existing Eclipse V3.3.2 IDE by this method.

Installing Rational Asset Manager to an existing WebSphere Application Server using Installation Manager

The following outline guides you through the installation and provides some points to consider before beginning the installation process.

1. Install a database application for Rational Asset Manager:

Rational Asset Manager requires a database for asset and data storage. If you do not already have one of the supported database applications installed, then you can install IBM DB2 Enterprise Server Edition, version 9.5 from the Rational Asset Manager launchpad.

To improve performance, the database server typically resides on a machine that is physically separate from the application server and on its own dedicated disk.

Users who configures the database tables and schema must have database administrator privileges.

Choose one of the following databases:

- a. DB2
- b. Oracle
- c. SQL Server

2. Install Rational License Server.

Rational Asset Manager server requires the Rational License Server to distribute license keys to clients.

3. Create a back up of your server configuration using the `<wasInstall>/bin/backupConfig.bat` command. Refer to the WebSphere Application Server documentation for more information.
4. If you are installing to WebSphere Application Server V6.1, make sure application security is enabled.
5. Install the IBM Rational Asset Manager server application on the existing WebSphere Application Server.

Use IBM Installation Manager to install the Rational Asset Manager server application on an existing WebSphere Application Server. On the Features page of the Installation Manager, choose either WebSphere Application Server V6.0 or V6.1 depending on your environment.

6. Configure the Rational Asset Manager Server application using the setup assistant.

Before you can use Rational Asset Manager server, you must initially configure the Rational Asset Manager server application. The Rational Asset Manager server setup application is browser-based and works like a wizard to set up databases, user authentication, and repository settings.

7. For Linux and AIX: Configure the server environment settings.

Additional configuration steps are required on Linux and AIX.

- a. Enable artifact content indexing for Linux.
- b. Enable content indexing to run for non-root users.
- c. Enable database connectivity for non-root users.

8. Optionally: Install the Rational Asset Manager Eclipse Client.

You can install the Rational Asset Manager Eclipse Client by the following methods:

- If you have a supported Eclipse integrated development environment (IDE) installed on your computer, then you can use Eclipse update manager to find and install the Rational Asset Manager

Eclipse client plug-ins from a Rational Asset Manager server. To install the client plug-in, follow the Eclipse update process (**Help** → **Software Updates** → **Find and Install**).

- If you do not have an existing Eclipse IDE, then you can install the Eclipse client from the Rational Asset Manager installation media. Note that you can also install the Eclipse client into an existing Eclipse V3.3.2 IDE by this method.

Installing Rational Asset Manager on an existing Apache Tomcat server

If you do not want to use the Rational Asset Manager with WebSphere Application Server, then you can install and configure Rational Asset Manager manually on Tomcat. The following outline guides you through the process of installing Rational Asset Manager on an existing Apache Tomcat server and provides some points to consider before beginning the installation process

1. Install a database application for Rational Asset Manager:

Choose one of the following databases to install:

- a. DB2
- b. Oracle
- c. SQL Server

Rational Asset Manager requires a database for asset and data storage. If you do not already have one of the supported database applications installed, then you can install IBM DB2 Enterprise Server Edition, version 9.5 which is included with the Rational Asset Manager installation media.

To improve performance, the database server typically resides on a machine that is physically separate from the application server and on its own dedicated disk.

2. Install the Rational Asset Manager server application on an existing Apache Tomcat server.

The following are general steps that you must take to install the Rational Asset Manager server application on an existing application server:

- a. “Installing Rational Asset Manager server using Installation Manager” on page 29: On the Features pages, choose to install only Rational Asset Manager (to install the setup assistant enterprise archive file) and then choose a manual install, instead of installing to an existing WebSphere Application Server or installing with embedded WebSphere Application Server. This will result in the enterprise archives being placed on the file system.
- b. Configure security on the application server.
- c. Configure the data source for your application server.
- d. Deploy the Rational Asset Manager server artifacts.

3. For Linux and AIX: Configure the server environment settings.

Additional configuration steps are required on Linux and AIX.

- a. Enable artifact content indexing for Linux and AIX.
- b. Enable content indexing to run for non-root users.
- c. Enable database connectivity for non-root users.

4. Install Rational License Server.

Rational Asset Manager server requires the Rational License Server to distribute license keys to clients.

5. Configure the Rational Asset Manager Server application.

Before you can use Rational Asset Manager server, you must initially configure the Rational Asset Manager server application. For example, you must enter the location of the license server.

6. Optionally: refer to the Rational Asset Manager Tuning Guide.

An important administrator responsibility is to ensure the best possible performance for users, regardless of the number of concurrent users or the number of assets in the repository.

7. Optionally: Install the Rational Asset Manager Eclipse Client.

You can install the Rational Asset Manager Eclipse Client by the following methods:

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- If you have an existing Eclipse integrated development environment (IDE) installed on your computer, then you can use Eclipse update manager to find and install the Rational Asset Manager Eclipse client plug-ins from a Rational Asset Manager server.
- If you do not have an existing Eclipse IDE, then you can install the Eclipse client from the Rational Asset Manager installation media. Note that you can also install the Eclipse client into an existing Eclipse IDE by this method.

Installation requirements

This section details hardware and software requirements for successfully installing and running your software.

Hardware requirements

Before you can install the product, verify that your system meets the minimum hardware requirements.

Server (Windows® or Linux)

Hardware	Requirements
Processor	Minimum: 2 GHz Intel® Pentium® 4, dual CPU (or higher for best results)
Memory	Minimum: 1 GB RAM (with embedded WebSphere Application Server and DB2 Enterprise Server Edition) or 2 GB (with ClearCase or ClearQuest clients)
Disk space	Minimum: 5 GB (with embedded WebSphere Application Server and DB2 Enterprise Server Edition); if you plan to add ClearCase or ClearQuest clients, consult their disk space requirements
Display	1024 x 768 display minimum using 256 Colors (or higher for best results)
Other hardware	Microsoft® mouse or compatible pointing device

Server (AIX)

Hardware	Requirements
Processor	Minimum: 2 GHz IBM POWER5™ (or higher for best results)
Memory	Minimum (non-production environments): 1 GB RAM (with embedded WebSphere Application Server and DB2 Enterprise Server Edition) Minimum (production environments): 2 GB RAM (with embedded WebSphere Application Server and DB2 Enterprise Server Edition) or 4 GB RAM (with ClearCase or ClearQuest clients)
Disk space	Minimum: 5 GB (with embedded WebSphere Application Server and DB2 Enterprise Server Edition); if you plan to add ClearCase or ClearQuest clients, consult their disk space requirements
Display	1024 x 768 display minimum using 256 Colors (or higher for best results)
Other hardware	Microsoft mouse or compatible pointing device

Client

Hardware	Requirements
Processor	Minimum: 1.4 GHz Intel Pentium 4 (or higher for best results)
Memory	Minimum: 512 MB RAM
Disk space	Minimum: 500 MB
Display	1024 x 768 display minimum using 256 Colors (or higher for best results)
Other hardware	Microsoft mouse or compatible pointing device

Software requirements

Before installing the product, verify that your system meets the software requirements.

Operating system

The following operating systems are supported for this product:

- Intel 32-bit or 64-bit Microsoft Windows Server 2008 Enterprise Edition (for both client and server)
- Intel 32-bit Microsoft Windows Vista Business Edition with Service Pack 1 (for both client and server; server is for demo purposes only)
- Intel 32-bit Microsoft Windows XP Professional with Service Pack 2 or 3 (for both Eclipse and Web clients, and server; server is for demo purposes only)
- Intel 32-bit or 64-bit Microsoft Windows Server 2003 Enterprise Edition with Service Pack 2 (for server only)
- x86 32-bit Red Hat Linux Enterprise AS4 with update 7 (for both client and server)
- x86 32-bit or 64-bit Red Hat Linux Enterprise 5 with update 2 (for both client and server)
- 64-bit Red Hat Linux Enterprise 5 for zSeries
- Intel 32-bit SUSE Linux Enterprise Server (SLES) Version 10 with Service Pack 2 (for both client and server)
- 64-bit SUSE Linux Enterprise Server (SLES) for zSeries Version 9 (limited to WebSphere Application Server Fix Pack 17)
- 64-bit SUSE Linux Enterprise Server (SLES) for zSeries Version 10
- 64-bit IBM AIX 5.3 Power 5 (for server only)
- 64-bit IBM AIX 6.1 (for server only)
- VMware (GSX and ESX); ESX version 3.5 (refer to <http://www-01.ibm.com/support/docview.wss?rs=984&uid=swg21180182>)

Application Server (for server)

You can install Rational Asset Manager server that includes an embedded version of WebSphere Application Server V6.1. Or, you can install Rational Asset Manager server on one of the following application servers:

- WebSphere Application Server V6.1.0.17
- embedded WebSphere Application Server (eWAS) V6.1.0.17
- PPC32 embedded WebSphere Application Server (eWAS) for AIX V6.1.0.17 or later
- PPC64 embedded WebSphere Application Server (eWAS) for AIX V6.1.0.17 or later
- Apache Tomcat V5.5

For WebSphere, both Network Deployment and clustered deployments are supported.

Database application (for server)

One of the following database applications is required for the Rational Asset Manager server:

- DB2 Enterprise Server Edition V9.1 or V9.5
- Microsoft SQL Server 2005
- Oracle 10g, 10.2(g), or 11g

You can use any of these supported databases in conjunction with an installation of Rational Asset Manager server installed on any of the supported application servers.

Web browser

One of the following supported Web browsers is required to run the Rational Asset Manager Web client, to view the documentation, and to support the Eclipse Standard Widget Toolkit (SWT) browser widget:

- Firefox V2 or V3
- Microsoft Internet Explorer V6.0 SP1 or V7

One of the following Java Runtime Environments (JREs):

- Java Runtime Environment 1.5 (JVM plug-in for Internet Explorer)
- Java Runtime Environment 1.5 (JVM plug-in for Firefox)

Requirements for the Rational Asset Manager Eclipse client

The following software is required for installing the Rational Asset Manager Eclipse client.

- A supported Web browser.
- For Linux: The GNU Image Manipulation Program Toolkit (GTK+), Version 2.2.1 or later and associated libraries (GLib, Pango).

Requirements for installing the Rational Asset Manager Eclipse client into an existing Eclipse IDE

The Rational Asset Manager Eclipse client can be installed into, or extend, the following Eclipse IDE's:

- IBM Rational Software Delivery Platform products (for example, Rational Application Developer, Rational Software Architect) V7.5
- IBM Rational System Developer or Rational Software Modeler, V7.0.5.1
- IBM Rational Team Concert V1.0
- IBM WebSphere Business Modeler, V6.2
- IBM WebSphere Business Monitor, V6.2
- IBM WebSphere Integration Developer, V6.2
- An Eclipse IDE meeting the following requirements:
 - Eclipse V3.3 (via Installation Manager), or V3.4 P2 (via Rational Asset Manager update site)
 - Eclipse Modeling Framework (EMF) 2.2 or higher
 - Eclipse BIRT plugins 2.1.2 or higher
 - A JRE from one of the following Java™ development kits:
 - Java Version 5 (or JRE 1.5) service release 6
 - Java Version 6 (or JRE 1.6) (using IES 3.4 P2 client)

Additional software requirements

- Adobe® Acrobat Reader
- To view multimedia help, such as tours, tutorials, and demonstrations, you must install Adobe Flash Player.

- For Windows: Version 6.0 release 65 or later
- For Linux: Version 6.0 release 69 or later

Other

You can optionally use Rational Asset Manager in conjunction with any of the following software:

- Source control and defect tracking systems:
 - Rational ClearQuest V7.0.1 or V7.1
 - Rational ClearCase V7.0.1 or V7.1
 - Rational Team Concert V1.0
 - CVS 1.11.22 or later
 - Subversion
- LDAP
 - Microsoft Active Directory Server, 2003 server
- WebSphere Service Registry and Repository V6.1 or V6.2.0.2
- Tivoli® Change and Configuration Management Database (CCMDB) V7.1.1

User privileges requirements

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

- Your user ID must not contain double-byte characters.
- For Windows: You must have a user ID that belongs to the Administrators group.
- For Linux and AIX: You must be able to log in as root.

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 Rational Asset Manager.

About this task

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.

Extracting the files

About this task

Extract each compressed file to the same directory. For 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.

IBM Installation Manager

IBM Installation Manager is a program that helps you install the product packages. It also helps you update, modify, and uninstall this and other packages that you install. A package can be a product, a group of components, or a single component that is designed to be installed by Installation Manager.

In most installation scenarios for Rational Asset Manager, you use Installation Manager. Rational Asset Manager V7.1 requires the IBM Installation Manager V1.1.2.

For more information about IBM Installation Manager, visit the Installation Manager Information Center at <http://publib.boulder.ibm.com/infocenter/install/v1m0r0/index.jsp>.

Preinstallation tasks

Before you install the product, complete these steps:

1. Confirm that your system meets the requirements that are described in the section “Installation requirements” on page 11.
2. Confirm that your user ID meets the required access privileges for installing the product. See “User privileges requirements” on page 14.
3. Read the topic “Planning your installation” on page 3.
4. Read the topic “Rational Asset Manager installation scenarios” on page 5.

Preconfiguring a WebSphere Application Server cluster for Rational Asset Manager

If you will not be using the Rational Asset Manager server setup application to configure the server, and you are installing Rational Asset Manager in a WebSphere Application Server cluster, then complete the steps in this section before installing the Rational Asset Manager enterprise archive files. These steps are in addition to those required to install WebSphere Application Server in a cluster. If you will be using the Rational Asset Manager server setup application to configure the server cluster, it is not necessary to perform the steps in this section.

Before you begin

Before starting, you must determine for each node in the cluster where the persist files and local files will be.

- Each node in the cluster can share the same persist and local file directories. Rational Asset Manager can handle sharing the same physical files between multiple servers within the node of a cluster. In this configuration, the nodes will share the same persist files and the same indexes, thus reducing the requirements for size and time spent in indexing on the local file system.
- It is not necessary that these paths be exactly the same for all nodes in the cluster. It is possible to specify unique paths for each node within the WebSphere Administrative Console.
- The persist folder should be a single, shared folder that every node in the cluster can access.

About this task

The following steps are specific to WebSphere Application Server V6.1. The steps for WebSphere Application Server V6.0 are similar but are not specified.

1. Create the URL resources for the persist and local folders.
 - a. In the WebSphere Administrative Console, navigate to **Resources** → **URLs**.
 - b. In the **Scope** field, select a node.
 - c. Click **New**.
 - d. In the **Name** field, type a name for the URL; for example, Rational Asset Manager Persist.
 - e. In the **JNDI name** field, type `url/RAM_Persist`.
 - f. In the **Specification** field, type the URL to the folder that this node will use for the persist folder; for example, `file:///D:/RAMPersist`. For better performance, use a network or shared drive that all nodes in the cluster can access for the persist folder. The format for this URL is:
 - For Windows: `file://d:/persistfolder`, where the folder is a local folder.
 - For Linux and AIX: `file:/folder1/folder2/persistfolder`, where the folder is a local folder or a mounted folder.

- file:///system1.com/persistfolder, where the folder is located on a universal naming convention (UNC) drive.
- g. Click **OK**.
 - h. Click **New**.
 - i. In the **Name** field, type a name for the URL; for example, Rational Asset Manager Local.
 - j. In the **JNDI name** field, type url/RAM_Local.
 - k. In the **Specification** field, type the URL to the folder that this node will use for the local folder. For better performance, this should not be a shared or remote location. The format for this URL is:
 - For Windows: file://d:/localfolder, where the folder is a local folder.
 - For Linux and AIX: file://folder1/folder2/localfolder, where the folder is a local folder or a mounted folder.
 - file:///system1.com/localfolder, where the folder is located on a universal naming convention (UNC) drive.
 - l. Click **OK**.
 - m. Click **Save**.

If you use network share drives for the persist folder and are using Windows, ensure that WebSphere Application Server has access authority to connect to network share drives. Java processes running as SYSTEM (the default value) will not connect to network share drives.

- a. In the WebSphere Administrative Console, click **Servers** → **Application servers** → **<server_name>** → **Process execution**.
- b. Under General Properties, in the **Run As User** field, type the name of an operating system user that has authority to access the network share drive with the persist folder.
- c. Click **Save**.

Ensure that the WebSphere Application Server process is set to run as the same user.

- a. In Windows, click **Start** → **Settings** → **Control Panel** → **Administrative Tools** → **Services** (or use the path that displays the Services).
- b. Right-click on WebSphere Application Server and click Properties.
- c. On the Log on page, click **This account** and type the same user ID that you entered for Process execution.
- d. Type the password for the user ID in the **Password** and **Confirm Password** text fields.

2. Create the Service Integration Bus.

The Service Integration Bus is the basic communication mechanism and must be created next, before the Java Messaging Service (JMS).

For security in accessing the bus, determine the user account

- a. Define a user that will be used to sign in to the bus. This must be a user that is known to the cluster: either an administrator ID or, if using LDAP authentication, the ID of a user in LDAP.
 - 1) In the WebSphere Administrative Console, click **Security** → **Secure administration, applications, and infrastructure**.
 - 2) In the Authentication section, click **Java Authentication** → **J2C Authentication**.
 - 3) On the next page, click **New**.
 - 4) On the Create Identity page, enter the following values:
 - **Alias**: Type an alias for the user ID for use by WebSphere Application Server.
 - **User ID**: Type the user ID for the user account that will be used to sign in to the bus.
 - **Password**: Type the password for the user ID.
 - **Description**: Optionally, type a description of the user account.
 - 5) Click **OK**.
- b. Create the Service Integration Bus.

- 1) In the WebSphere Administrative Console, click **Service integration** → **Buses**.
 - 2) Click **New**.
 - 3) On the Create a new Service Integration Bus page, type a name for the bus; for example, RAMBus.
 - 4) Click **Next**.
 - 5) Click **Finish**.
- c. Configure where the bus resides and where log files are to be stored.
- 1) On the Display Buses page, select the bus that you created in step 2b on page 20.
 - 2) On the next page, click Bus Members, then click Add.
 - 3) Click **Cluster**.
 - 4) Select the cluster that you are installing to.
 - 5) Click **Next**.
 - 6) Click **File store**.
 - 7) Click **Next**.
 - 8) On the Provide the message store properties page, enter the following information:
 - **Log size:** Type 10.
 - **Log directory path:** Type `${USER_INSTALL_ROOT}/filestores/com.ibm.we.sib/rambus/log`.
 - **Minimum permanent store size:** Type 20.
 - **Permanent store directory path:** Type `${USER_INSTALL_ROOT}/filestores/com.ibm.we.sib/rambus/log`
 - 9) Click **Next**.
 - 10) Click **Finish**.
- d. Configure the security information to define who can access the bus.
- 1) On the Display Buses page, select the bus that you created in step 2b on page 20.
 - 2) Click **Security**.
 - 3) Click **Users and groups in the bus connector role**.
 - 4) Click **New**.
 - 5) Click **User name**.
 - 6) Type the user ID defined for the Service Integration Bus.
 - 7) Click **OK**.
 - 8) Click **Security for <Your_bus_name>**.
 - 9) On the Configure the Securities Settings page, enter the following information:
 - Enable bus security: Check to enable.
 - Inter-engine authentication alias: Select the name of the authentication alias used to authorize communication between messaging engines on the bus; for example, `<cell_manager>/RAMApp`.
 - Permitted transports: Click **Restrict the use of defined transport channel chains to those protected by SSL**.
 - 10) Click **OK**.
- e. Create a topic on the bus. Rational Asset Manager will use the topic for communications between the nodes.
- On the RAMBus page, click **Destinations**.
 - Click **New**.
 - Click **Topic space**.
 - Click **Next**.
 - In the Identifier field, type RAM_Topic.

- Click **Next**.
 - Click **Finish**.
3. Define the Java Messaging Service information.
 Java Messaging Service (JMS) runs on the bus. The bus provides the basic communications between the servers, and JMS provides the interface to the program.
 - a. In the WebSphere Administrative Console, click **Resources** → **JMS** → **Connection factories**.
 - b. In the Connection factories section, click **Scope** and select the cluster.
 - c. Click **New**.
 - d. Click **OK**.
 - e. On the General Properties page, enter the following information:
 - **Name**: Type a name for the factory; for example, Rational Asset Manager Factory.
 - **JNDI name**: Type a JNDI name for the factory; for example, jms/RAM_Factory.
 - **Bus name**: Select the service integration bus that you created in the previous step.
 - **Target type**: Select Bus member name.
 - **Connection proximity**: Select Bus.
 - **Component-managed authentication alias**: Select the alias that you selected in the previous step; for example, <cell_manager>/RAMApp.
 - f. In the WebSphere Administrative Console, click **Resources** → **JMS** → **Topics**.
 - g. In the Topics section, click **Scope** and select the cluster.
 - h. Click **New**.
 - i. In the General Properties page, enter the following information:
 - **Name**: Type a name for the topic; for example, Rational Asset Manager Cache.
 - **JNDI name**: Type a JNDI name for the topic; for example, jms/RAM_Cache.
 - **Topic name**: Type a name for the topic; for example, Rational Asset Manager Cache. This can be the same as the name, above.
 - **Bus name**: Select the bus that you created in the previous step; for example, RAMBus.
 - **Topic space**: Select the topic that you created in the previous step; for example, RAM_Topic.
 4. Save the configuration changes. You are now ready to install the application enterprise archive for Rational Asset Manager to the cluster.

Enabling application security on WebSphere Application Server V6.1

If you are installing to an existing WebSphere Application Server V6.1, application security must be enabled. If application security is not enabled, the Rational Asset Manager server setup application will be unable to make any configuration changes for WebSphere Application Server.

1. In the WebSphere Administrative Console, click **Security**.
2. Make sure **Enable application security** is checked.
3. Click **Apply**.
4. Click **Save**.

Installing from the launchpad program

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

Before you begin

About this task

Use the launchpad program to start the installation of Rational Asset Manager in the following cases:

- 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 automatically installed if it is not already on your computer, and it starts preconfigured with the location of the repository that contains the Rational Asset Manager package. If you install and start Installation Manager directly, then you must set repository preferences manually.

Starting the launchpad program

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

Before you begin

Complete the preinstallation tasks described in “Preinstallation tasks” on page 19, if you have not done so already.

About this task

To start the launchpad program:

1. Insert the IBM Rational Asset Manager CD into your CD drive. For Linux: Ensure that you have mounted the CD drive.
2. If autorun is enabled on your system, the IBM Rational Asset Manager launchpad program automatically opens. If autorun is not enabled on your system:
 - For Windows: Run launchpad.exe, which is located in the root directory of the CD.
 - For Linux and AIX: 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 already, read the release information by clicking **Release notes**.
3. When you are ready to begin the installation, click **Install IBM Rational Asset Manager**.
4. If IBM Installation Manager is not detected on your system or if an older version is already installed, then you must continue with the installation of the latest release.
 - a. Follow the instructions in the wizard to complete the installation of IBM Installation Manager. Refer to “Installing Installation Manager on Windows” on page 89 for more information.

- b. When the installation of IBM Installation Manager completes successfully, click **Finish** to close the wizard. After the installation is complete, IBM Installation Manager opens automatically.
5. If this is a new installation, click **Install Packages** and follow the instructions in the wizard to complete the installation process. For complete details, see [Installing Rational Asset Manager Eclipse client by using the Installation Manager GUI](#)
6. If this is a product update, click **Update Packages** and follow the instructions in the wizard to complete the update process. For complete details, see [Updating Rational Asset Manager](#).

Installing IBM DB2 Enterprise Server Edition, version 9.5

If you do not already have one of the supported database applications installed, then you can install IBM DB2 Enterprise Server Edition, version 9.5 which is included with the Rational Asset Manager installation media.

About this task

Installation instructions and release notes, as well as information about working with DB2 are available in the *IBM DB2 Database for Linux, UNIX[®], and Windows Information Center*. See <http://publib.boulder.ibm.com/infocenter/db2luw/v9r5/index.jsp>.

- For installation instructions, click **Database fundamentals** → **Installing** → **Database systems**. For Windows, click **DB2 Database for Windows** and click the appropriate installation topics. For Linux, click **DB2 Database for Linux and UNIX** → **DB2 Servers** and click the appropriate installation topics.
- For release notes, click **Product overviews** → **DB2 Database for Linux, UNIX, and Windows** → **Release notes**.

To start an installation of DB2 Enterprise Server Edition, version 9.5:

1. Start the DB2 Setup Launchpad program. From the Rational Asset Manager launchpad program, click **Install IBM DB2 Enterprise Server Edition, Version 9.5**. If you are installing from CD media, you might be prompted to insert the first DB2 installation CD. The DB2 Setup Launchpad starts.
2. Make sure that you have read the release information that is available in the DB2 Setup Launchpad or in the information center.
3. In the left menu, click **Install a product**, and then in the page that opens, under **DB2 Enterprise Server Edition**, click **Install new**. The DB2 Setup wizard opens.
4. Follow the instructions in the wizard to complete the installation. For more information, see the installation instructions in the *IBM DB2 Database for Linux, UNIX, and Windows Information Center* or click **Help** in the DB2 Setup wizard.

Registering the DB2 license key

The DB2 Enterprise Server Edition, Version 9.5 license key must be registered using the db2licm command.

About this task

The DB2 product uses the license key information contained in the nodelock file. The nodelock file is created or updated by running the db2licm command and specifying the license file for the DB2 product. Creating or updating the nodelock file is referred to as registering the DB2 product license key.

The DB2 product uses the license key information that is contained in the nodelock file, which is created or updated by running the db2licm command and specifying the license file for the DB2 product. To register the license key, you must run the db2licm command on each computer where DB2 is installed.

To manually register your DB2 product license key using root authority:

1. Log in as a user with root authority.
2. Register the DB2 product license key with the appropriate command:
 - `/usr/opt/db2_08_01/adm/db2licm -a filename` on AIX
 - `/opt/IBM/db2/V8.1/adm/db2licm -a filename` for all other UNIX-based operating systems

where *filename* is the full pathname and filename for the license file that corresponds to the product you are bundling.

For example, on AIX, if the CD-ROM is mounted in the /cdrom directory and the name of the license file is db2ese_o.lic, the command should be: /usr/opt/db2_08_01/adm/db2licm -a /cdrom/db2/license/db2ese_o.lic

After running the db2licm command, the DB2 product license key information is contained in the nodelock file in the following directories:

- AIX: /var/ifor.
- HP-UX, Linux, or Solaris Operating Environment: /var/lum.
- Windows: DB2PATH/sql/lib/license.

To register your DB2 product license key as the instance owner:

1. Create the instance environment and become the instance owner.
2. Register your DB2 product license with the appropriate command:
 - For UNIX operating systems: db2instance_path/adm/db2licm -a *filename*
 - For Windows operating systems: db2instance_path\adm\db2licm -a *filename*

where *db2instance_path* is where the DB2 instance was created and *filename* is the full pathname and filename for the license file that corresponds to the product that you are bundling.

Installing Rational License Server

Rational Asset Manager server requires the Rational License Server to distribute license keys to clients.

About this task

Perform™ the following steps to install and configure Rational License Server for IBM Rational Asset Manager:

1. Install IBM Rational License Server.

If you are using Rational License Server 7.0 or prior on any platform, you will need to upgrade to the Rational License Server for Windows 7.0.1 or the Rational License Server for UNIX and Linux 7.0.0.1. Rational License Server 7.0.1 and 7.0.0.1 are fully compatible with your previously installed license keys and will continue to service your existing client machines.

IBM Rational License Server is included with the Rational Asset Manager installation media.

- For Windows: Use Rational License Server for Windows 7.0.1.
- For Linux: Use Rational License Server for UNIX and Linux 7.0.0.1.

2. Request and install your license keys.

The number of licenses that are available dictates the number of users that can be simultaneously logged in to the Web application.

For more information on Rational licensing and to get your Rational Asset Manager license keys, see the Rational licensing support page at <http://www.ibm.com/software/rational/support/licensing/>.

3. Start the Rational License Server. See the *IBM Rational License Management Guide* or the License Key Administrator Help.
4. Configure Rational Asset Manager server to communicate with Rational License Server.

Configuring Rational Asset Manager server to communicate with Rational License Server can either be done using the Rational Asset Manager server setup application, or manually. For instructions on installing Rational Asset Manager and using the server setup application, see the section “Installing and configuring Rational Asset Manager using Installation Manager and the server setup application” on page 29. For instructions on manually configuring Rational Asset Manager server to communicate with the license server, see the topic “Configuring the Rational Asset Manager server application” on page 60.

What to do next

If you use the Rational Common License (RCL) server, you must order Flex licenses through the Rational ordering link (<http://www.ibm.com/software/rational/support/licensing/>). After ordering the licenses, you must provision the RCL server with the licenses and configure Rational Asset Manager to request licenses from the RCL server. Users of the Rational Asset Manager Eclipse client must configure it to use the Rational Asset Manager repository in order to invoke its licenses.

Installing and configuring Rational Asset Manager using Installation Manager and the server setup application

This section describes how to install and configure the Rational Asset Manager server using Installation Manager and the server setup application.

About this task

There are three primary ways to install and configure the Rational Asset Manager server using Installation Manager:

1. Install Rational Asset Manager server that includes an embedded WebSphere Application Server, V6.1.
2. Install Rational Asset Manager server code on an existing WebSphere Application Server or cluster of servers.
3. Install Rational Asset Manager enterprise and Web archives to the file system, so that they can be manually deployed to an application server.

Installing Rational Asset Manager server using Installation Manager

You can install the Rational Asset Manager server application (which also installs the server setup application), the help and documentation Web archive, or the asset-based development process Web archive using the Installation Manager. You can choose to install the server application with an embedded version of WebSphere Application Server, Version 6.1, on an existing version of WebSphere Application Server, Version 6.1 or 6.0, or to the file system for later deployment on a supported application server. You can install to a single node or to a cluster.

Before you begin

Before you begin this installation, make sure that the database application (DB2, Oracle, or SQL Server) is installed and running.

If you are installing to a WebSphere Network Deploy Server, make sure you have at least one cluster defined.

If you are installing to a cluster and will not be using the Rational Asset Manager server setup application to configure the servers, make sure that you have completed the steps in the section entitled "Preconfiguring a WebSphere Application Server cluster for Rational Asset Manager" on page 19.

About this task

If you start the installation from the launchpad, you will be prompted to install Installation Manager if it is not already on your system. Then the Install Packages wizard starts automatically.

1. Start the Rational Asset Manager launchpad program (see "Installing from the launchpad program" on page 23). To use a different language, select it from the **Language selection** list.
2. Select **Install IBM Rational Asset Manager server V7.1**. The Install Packages wizard opens.
3. On the Install page, select IBM Rational Asset Manager server Version 7.1. If the latest version of Installation Manager is not installed, it will also be listed; select it. If installing from the launchpad, proceed to step 7 on page 30.
4. To search for updates to the IBM Rational Asset Manager server package, click **Check for Other Versions and Extensions**.

Note: For Installation Manager to search the predefined IBM update repository locations for the installed packages, the preference **Search service repositories during installation and updates** on the Repositories preference page must be selected. This preference is selected by default. Internet access is also required.

Installation Manager searches for updates at the predefined service repository for the product package. It also searches any repository locations that you have set. A progress indicator shows that the search is taking place. You can install updates at the same time that you install the base product package.

5. If updates are found for the IBM Rational Asset Manager server package, then they are displayed in the **Installation Packages** list on the Install Packages page following their corresponding product. Only the latest updates are displayed by default.
6. Select **Rational Asset Manager server** and any updates to the package that you want to install. Updates that have dependencies are automatically selected and cleared together.

Note: If you install multiple packages at the same time, then all of the packages will be installed into the same package group.

Note that the Rational Asset Manager client is not required for installing the server application.

7. Click **Next** to continue.
8. 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. You can select each package version to display its license agreement to the left. The package versions that you selected to install (for example, the base package and an update) are listed under the package name.
 - a. If you agree to the terms of each license agreement, click **I accept the terms of the license agreements**.
 - b. Click **Next** to continue.
9. On the Location page, type the path for the *shared resources directory* in the **Shared Resources Directory** field; or accept the default path. The shared resources directory contains resources that can be shared by one or more package groups. Click **Next** to continue.

The default path is:

- For Windows: C:\Program Files\IBM\IBMIMShared
- For Linux and AIX: /opt/IBM/IBMIMShared

Important: You can specify the shared resources directory only the first time that you install a package. Use your largest disk for this directory to help ensure that adequate space is available for the shared resources of future packages. You cannot change the directory location unless you uninstall all packages.

10. On the Location page, either choose an existing *package group* to install the IBM Rational Asset Manager server package into, or create a new one. 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. The name for the package group is created automatically.

The default path is:

 - For Windows: C:\Program Files\IBM\RAM71Server
 - For Linux and AIX: /opt/IBM/RAM71Server
 - c. Click **Next** to continue.

11. On the Features page under **Languages**, select the languages for the package group. The corresponding national language translations for the user interface and documentation for the IBM Rational Asset Manager server package will be installed. Note that your choices apply to all packages installed under this package group.

12. On the next Features page, select **IBM Rational Asset Manager server**, and choose from three options:
- Rational Asset Manager. This installs the server enterprise archive file, including the Web client, and the server setup enterprise archive file. You must select this option if you want to use the server setup to deploy the Rational Asset Manager server and Web applications.

Note: When installing into a cluster, the Rational Asset Manager server application is the only application installed on the server. The other files will be deployed via the server setup application.

- Asset-based Development and Governance Process: This installs a Web archive with documentation about asset-based development process.
- Rational Asset Manager Help and Documentation Web Archive: This installs a Web archive with user assistance for the Rational Asset Manager Web client.

If you choose not to install any of these options and proceed with the installation process, the Rational Asset Manager installation root folders will be created, which contain configuration files, database scripts, a documentation folder with the readme and installation guide files, and embedded WebSphere Application Server (if you select it in the next step).

13. On the next Features page, select the application server:
- Packaged embedded WebSphere Application Server: Installs a new embedded WebSphere Application Server and the features you selected in step 12. If you choose this option, proceed to step 14.
 - WebSphere Application Server V6.0.x. Installs the features you selected in step 12 into an existing installation of WebSphere Application Server V6.0.x that you specify. If you choose this option, proceed to step 15.
 - WebSphere Application Server V6.1.x. Installs the features you selected in step 12 into an existing installation of WebSphere Application Server V6.1.x that you specify. If you choose this option, proceed to step 15.
 - Manual. Places the features you selected in step 12. Choose this option if you want to deploy the enterprise and Web archives using the server setup application. If you choose this option, click **Next** and proceed to step 16 on page 32.
14. If you selected Packaged embedded WebSphere Application Server, indicate the server configuration:
- To create a service for the application server, click **Yes**.
 - Specify the embedded WebSphere Application Server ports, or leave the default port assignments. The Available column indicates whether the port is already in use or not.

Table 1. Port definitions for embedded WebSphere Application Server V6.1

Port name	Default value
HTTP Transport Port (WC_defaulthost)	13080
Administrative Console Port (WC_adminhost)	13060
HTTPS Transport Port (WC_defaulthost_secure)	13443
Administrative Console Secure Port (WC_adminhost_secure)	13043
Bootstrap Port (BOOTSTRAP_ADDRESS)	13809
SOAP Connector Port (SOAP_CONNECTOR_ADDRESS)	13880

- Proceed to step 17 on page 32
15. If you selected WebSphere Application Server V6.0.x or V6.1.x, indicate the server configuration:
- In the Application server location text field, type the full path to the application server on the local machine, or click **Browse** and navigate to it. For example, on a full installation of WebSphere Application, enter `C:\Program Files\IBM\WebSphere\AppServer\profiles\`

<profile_name> (where profile name is the name of the profile on the server). On an installation of embedded WebSphere Application Server installed with Rational Asset Manager, by default this is C:\Program Files\IBM\RAM71Server\ram\ewas\profiles\profile1.

- b. In the Server root URL text field, type the root URL for the server. By default, this URL is `http://localhost:9080`. If you use a different port number for your WebSphere Application Server administrative console for the profile you selected in the previous step (for example, if security is enabled, or if there are multiple profiles on the application server), enter that port number here in place of 9080.
 - c. If you have security enabled on your application server, type an administrator's user name and password. If security is not enabled, clear the checkbox.
 - d. In the Type of server configuration section, indicate whether you are installing a single node or a cluster and provide the server or cluster name. The server must be identified in the Server Configuration section and must be running.
 - e. Click the **Get list from server** button.
 - For single node installations, the name of the server will be displayed in the text field (for example, "server1").
 - For cluster installations, a list of cluster names will be displayed. Select the name of the cluster to install to from the list.
 - f. Click **Next**.
16. On the Summary page, review your choices. If you want to change the choices or configuration details that you made on previous pages, click **Back**, and make your changes.
 17. When you are satisfied with your installation choices, click **Install**. A progress indicator shows the percentage of the installation completed.
 18. 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. Click **Finish**. The Install Package wizard closes.

Unless you chose a manual installation in step 13 on page 31, the Rational Asset Manager Configuration Web page opens in a browser window. Follow the instructions to restart the server (or restart the server, if it was already running) and then click the link to start the Rational Asset Manager server setup application. The server setup application is a wizard for configuring the database, the database connection, security, and repository settings. For instructions on using the server setup application, refer to the section entitled "Configuring Rational Asset Manager using the server setup application."

If you chose a manual installation, manually deploy the server setup application to the application server. To manually deploy the server setup application to a cluster, see the topic "Manually deploying Rational Asset Manager server setup to a cluster" on page 47.

Configuring Rational Asset Manager using the server setup application

The server setup application is a browser-based Web application that opens after the Installation Manager has finished installing Rational Asset Manager features on a new embedded WebSphere Application Server or an existing WebSphere Application Server. It functions like a wizard to help you configure database, security, and repository settings. You can use the server setup application to later modify these settings instead of using the Administration pages within Rational Asset Manager Web client. You can also use the server setup application to deploy any of the Rational Asset Manager features on an application server.

Before you begin

To use the server setup application, the following prerequisites must be met:

- The `com.ibm.ram.repository.setup.web` enterprise archive must be deployed on a running application server. This could have been done by using the Installation Manager to install the Rational Asset Manager feature:
 - With embedded WebSphere Application Server
 - On an existing WebSphere Application Server
 - Manually, and then manually deploying the enterprise archive on an existing application server.

Refer to “Installing Rational Asset Manager server using Installation Manager” on page 29 for more information on these options in Installation Manager.

- A database application must be installed, either locally or remotely, that the Rational Asset Manager server can access. You must have administrative access to the database server. If you plan to use the server setup application to configure DB2, the browser that you run the server setup application in must be located on the machine where DB2 is installed.

About this task

The setup enterprise archive must be deployed and running, and the database server must be running. If the setup enterprise application is not already open, open it in a browser using the URL: `http://<host>:<port>/com.ibm.ram.repository.setup.web`. If security is enabled on the application server, you will be prompted for the user ID and password for an application server administrator.

1. On the Introduction page, indicate the type of database and user authentication to be used.
 - a. Select the database application from the list: IBM DB2, Oracle, or SQL Server.
 - b. Select the type of user authentication that the Rational Asset Manager Web application will use:
 - LDAP: user information is stored in a Lightweight Directory Access Protocol repository. You will need administrative information for accessing the repository.
 - Other custom: user information is stored in a custom user registry, as defined for your application server; this might appear in the list as the name of the custom registry as defined for the application server. An example custom user registry is *File*, where user information is stored in a flat file on the server. Select this option if you are not using any of the other types of authentication.

Note: File-based authentication is not intended for use in a production environment.

 - Federated repository: user information is stored in multiple repositories, such as LDAP repositories. This type of authentication is managed by WebSphere Application Server.
 - Local operating system: user information is stored in the user accounts database on the local operating system. This type of authentication is managed by WebSphere Application Server.
 - c. Confirm that the server or cluster listed is the one that you want to configure.
 - d. Click **Next**.
2. In Section 1, Part 1, connect to either a new database that you will create and populate or to an existing database.
 - a. Select whether to create a new database or use an existing database.
 - To create and populate a new database, click **Create a Database**. Proceed to step 2b.
 - To use an existing database (for example, if you are upgrading from a previous version of Rational Asset Manager), click **Use Existing Database**. Proceed to step 3 on page 34
 - b. Create a database.
 - For DB2, you can use a Java applet to create and populate the database, or you can perform these manually.
 - To use the Java applet:
 - 1) After the applet loads, it looks for an instance of DB2 on the local machine. Note that the browser that you run the server setup application on must be located on the computer

where DB2 is installed. If it finds one, the location of the DB2 installation and its version are displayed. If it does not find one, you are prompted to enter the location.

- 2) To use a different installation of DB2, click **Change DB2 location**.
- 3) Once you have selected the appropriate location, type a name for the database in the Database name field (for example, RAMDB) and click **Create Database**.
 - To manually create and configure the DB2 database, click **Manually configuring and creating tables in DB2** and follow the displayed instructions.
- For Oracle or SQL Server, follow the instructions to manually create and populate the database.

The instructions displayed in the server setup application are identical to those in “Creating and configuring a database for Rational Asset Manager” on page 41.

3. In Part 2, specify the database connection properties.
 - a. Type the name of the database in the **Database name** field; for example, RAMDB.
 - b. Type the host name or IP address of the database server in the **Database server** text field; for example, `servername.example.com`. (Do not use `localhost`.)
 - c. Type the port number in the **Port** field. For example, the default value for DB2 is 50000.
 - d. Type the user ID and password of a user with administration authority for the database application.
 - e. Select to either provide the location of the archive file or files required by the database on the server, or to upload them to the server.
 - To enter the location of the archive files on the server, type the full path to the folder that contains them; for example, `C:\Program Files\IBM\SQLLIB\java`.
 - To upload the files to the server, select that option and browse to the file or files on the local machine. By default, these are available in `<RAM V7.1 install root>\ram\ewas\universalDriver\lib` on the local machine. When uploaded to the server, they will be placed in `<WAS_install_directory>\profiles\<profile_name>\config\cells\<cell_name>\ram_jdbc`
 - f. Click **Test Connection**. The server setup application will report whether the server could connect to the database.
 - g. If the connection test was successful, click **Next**. If the database was configured correctly, the Database Configuration summary page is displayed.
 - h. The server setup application will prompt you to restart the server. If you will be continuing through other sections of the server setup application, you can wait to restart the server until you have finished those sections. If you are done with your configuration settings (for example, if you are using the server setup application to make changes to an existing setup), restart the server now.
 - i. Click **Next**.
4. In Section 2, configure users and authentication.
 - If you chose File-based authentication in step 1b on page 33, add or delete users from the list on the Configure File-based Authentication page. File-based authentication means that user information is stored in a text file on the server. By default there are six users (“admin” and “user1” through “user5”).

Note: The passwords for the six default users are the same as their user IDs.

- a. Add, edit, or delete users.

- To filter the list of users, type a search string in the Search text field and click Search. Wild cards (*) can be used. To see the entire list, type * in the Search text field.
 - To add a user, click **Add User** and type the user's ID and password.
 - To delete a user, click **Delete** next to that user's name.
 - b. When finished, click **Next**. The Users and Authentication Configuration summary page opens.
 - c. You can restart the application server to complete the configuration, or restart the server after you have completed the other steps in the server setup application.
 - d. Click **Next**.
 - e. Proceed to step 5 on page 36.
- If you chose LDAP authentication in step 1b on page 33, configure the connection to the LDAP on the Configure LDAP Authentication page. LDAP must be running and the LDAP server must be accessible from this machine.
 - a. Configure the LDAP repository connection. On this page, you define the information that Rational Asset Manager server will use to contact the LDAP server: the address of the LDAP server, the communications port, and if necessary, a user ID and password Rational Asset Manager will sign in as in order to query the registry.
 - **LDAP Vendor**: Select your LDAP software.
 - **Server**: Type the name of the machine where LDAP is installed; for example, ldap.example.com. If security is enabled on the LDAP server, check **SSL enabled**.
 - **Port**: Type the port number of the LDAP server.
 - **Connect Anonymously**: Check this box if your LDAP repository does not require a user ID and password for access. If it does require a user ID and password, clear this box and complete the **Bind User DN** and **Bind Password** text fields.
 - **Bind User DN**: Type the distinguished name (DN) of a user that has access to query the LDAP database. Rational Asset Manager will use this user name to access LDAP. For example, uid=123456,c=us,ou=exampleorganization,o=example.com.
 - **Bind password**: If you typed a user DN, type the password for the user name.
 - b. Click **Test connection**. If the server setup application was able to connect to LDAP, continue. You cannot proceed with LDAP Authentication until a connection has been properly configured.
 - c. Identify a user in the LDAP registry who will be a Rational Asset Manager repository administrator.
 - **Administrator ID**: Type the unique ID of the user who will be the repository administrator for Rational Asset Manager. The repository administrator is responsible for configuring Rational Asset Manager server. For example (if your LDAP uses e-mail address as the unique identifier) Administrator@example.com.
 - **Password**: Type the password for the administrator ID.
 - **User search filter**: Type the syntax that LDAP will use to query for a user. The %v represents the search term that was entered from an input text field. The search will perform as if a wild card is appended to the search term. The default search template is constructed to find all *person* objectClasses where either the *mail* property or the *name* property is the same as the search term.
 - **User search base**: Type the path of the root from where to start searching the LDAP registry for users; for example, ou=exampleorganization,o=example.com.
 - d. Click **Verify the User**.
 - e. If the server setup application was able to find the user in the LDAP registry, click **Next**. Do not continue configuring LDAP authentication until a user has been identified as the repository administrator.
 - f. On the next page, map user properties in Rational Asset Manager to the corresponding user properties in your LDAP registry. Rational Asset Manager requires this information for user authentication, for user data retrieval and display, and to communicate with users by e-mail.

- **Unique identifier:** Type the property name of the user's *objectClass* instance that represents the unique user's ID. For example: (objectClass) *person*'s `serialNumber` property, or the (objectClass) *user*'s `sAMAccountName` property. The default value is `uid`.
 - **Login identifier:** Type the (objectClass) property that users use as their login ID. Even though it is common for the Unique ID and login ID to be the same, it is possible that the registry may be set so that a user logs in using another ID (for example, an e-mail address). For example, `userPrincipleName`.
 - **LDAP user name query:** Type the LDAP search query that maps the short name of a user to an LDAP entry; for example, `*:userPrincipleName` or `*:uid`.
 - **E-mail:** Type the name of the property that contains a user's e-mail address; for example, `mail`.
 - **Phone number:** Type the name of the property that contains a user's phone number; for example, `telephonenumber`.
 - **Image URL Template:** It is common to store images somewhere other than an LDAP registry. If it is possible to retrieve a user's image using a URL, configure this template to retrieve the image at the same time as the user information in the registry. In the template, `$(value)` represents a LDAP user property of the user object that is going to be replaced when the image is retrieved. For example, for a user with a `uid` property=123456, the default template `https://<image_server_url>/photo/$(uid).jpg` results in the URL `https://<image_server_url>/photo/123456.jpg`.
- g. Click **Test the Mapping**. If all mappings are correct, the administrator's user ID, name, e-mail, phone number, and photo are displayed, with a success message.
 - h. Specify user group properties in LDAP. User group information in LDAP can be retrieved and reused by Rational Asset Manager communities. In Rational Asset Manager, communities are the primary organizational grouping within a repository: they are collections of users with a common interest in a set of assets, and each community can define its members, member roles, permissions, processes, and assets.
 - **User group search filter:** filter for searching groups. The default searches any of *groupOfUniqueNames* (static group), *groupOfNames* (static LDAP group), *groupOfUrls* (dynamic LDAP group), *group* (Active Directory defined group) for the search term entered by the user.
 - **User group search base:** Type the base search for searching groups; for example, `ou=memberlist,ou=groups,o=example.com`.
 - **Group ID Map:** Type the LDAP search query that maps the short name of a group to an LDAP entry; for example, `*:cn`.
 - **Group Member ID Map:** Type the LDAP search query that identifies user-to-group relationships; for example, `memberof:member`.
 - i. Click **Next**. The Users and Authentication Configuration summary page opens.
 - j. You can restart the application server to complete the configuration, or restart the server after you have completed the other steps in the server setup application.
 - k. Click **Next**.
- If you chose to use a federated repository, the local operating system, or a custom user registry (other than file-based) in step 1b on page 33, you will be prompted to confirm that the user ID of the administrator for the user registry will be the repository administrator. There are no configuration options for these types of authentication.
5. In Section 3, Applications that are successfully deployed are indicated, with the cluster or server name that they are deployed on listed. To deploy any Rational Asset Manager enterprise archives that were not deployed by Installation Manager.
 - a. Make sure that the check box for that application is checked.
 - b. Select the cluster or server to deploy to from the list.
 - c. Click **Deploy Applications**. The progress of the deployments is displayed on a separate page, and the result of the process is displayed on the Deploy Rational Asset Manager page.

- d. Click **Next**.
 - e. On the Summary page, click **Next**.
6. In Section 4, configure settings for Rational Asset Manager.
- a. Type the address for the license server in the format <port>@<host_name>; for example, 27000@example.com. By default, Rational License Server uses TCP/IP port 27000.
 - b. Configure the address of the server with the applications that were deployed in step 5 on page 36. Type the protocol, fully qualified host name, and port number; for example, http://example.com:9080.

Important: Always use a host name or IP address for these entries. Do not use localhost.

- c. Configure the paths for the applications. The default paths are based on the server address provided.
 - Rational Asset Manager: Type the deployment URL for the Rational Asset Manager server application; for example, http://example.com:9080/com.ibm.ram.repository.web.
 - Web Services: Type the deployment URL for the Web services; for example, http://example.com:9080/com.ibm.ram.repository.web.ws.was
 - Help and User Assistance: Type the deployment URL for the Rational Asset Manager user assistance application; for example, http://example.com:9080/help.
 - Asset-Based Development Process: Type the deployment URL for the Rational Asset-based Development Process application; for example, http://example.com:9080/com.ibm.ram.repository.web/abdprocess.

To modify the locations or context roots (for example, if you have specified different context roots in WebSphere Application Server), click **Edit**.

- d. Click **Next**.
- e. Configure the persist and local storage folder locations. If you are installing to a cluster, the cluster name is displayed and you must do this for every node in the cluster.
 - **Persist folder:** Type the full path to the folder where assets and search indexes are to be stored on the file system. This can be a mapped directory. If installing to a cluster, this must be a location that is shared between all of the nodes of the cluster.
 - **Local storage folder:** Type the full path to the folder where data are to be stored by the Rational Asset Manager Web application. This must be a location on the local machine, and not a mapped or shared location. If installing to a cluster, each node in the cluster must have its own local storage folder that is not shared with the other nodes. If installing multiple servers on the same physical node, the servers should all use the same physical local storage folder.

Tip: For best performance, the drive should be capable of fast reads and writes, and should not be the same drive as the operating system or application server. For cluster installations, each machine should have its own local folder on a hard disk local to the machine. Using a local folder that is shared between all application servers will degrade performance.

For cluster installation, to use the settings that you entered for the first node for all nodes, click **Use these settings for all nodes**.

- f. Click **Next**.
 - g. For cluster installations, Java Messaging Service (JMS) must be correctly configured for Rational Asset Manager to communicate between servers in the cluster. Confirm that JMS is configured correctly and click **Next**.
7. In Section 5, confirm that the settings are correct and restart the server.
- Click the section headings to view settings. If settings are not correct, or to make changes, click **Previous** or the name of the section at the top of the page to return to that section.

- Click **Restart the Server** at the bottom of the page to restart WebSphere Application Server. You cannot launch any of the Rational Asset Manager deployed applications until the server has been restarted. After the server has restarted, proceed to step 8.
8. Rational Asset Manager is now running. You can do any of the following:
 - **Tour the Web Client.** Select this option to view a multimedia tour of the Web client. The Help and User Assistance Web archive must be installed to view the tour.
 - **Start Administering.** Select this option to launch the Rational Asset Manager Web client and continue configuring the repository, set up user communities, or begin working with assets.
 - **Performance and Tuning Settings.** Select this option to configure settings that might improve server performance. If you choose this option, proceed to step 9
 - Exit the server setup application.
 9. Optionally, you can configure settings for WebSphere Application Server on the Configure Performance and Tuning Settings page.
 - a. Configure server settings.
 - **Class garbage collection:** Optionally, type the name of the garbage collection algorithm to use. The recommended value is intended to result in increased server performance:
 - For Windows: `-XX:+UseParallelGC`
 - For Linux or AIX: `-Xgcpolicy:optavgpause`
 - **JDBC maximum connections:** Type a number equal to or greater than the number of users that might be logged in to Rational Asset Manager at one time. For example, 100.
 - **Performance monitoring:** For best performance, performance monitoring should remain disabled. To turn on performance monitoring on the application server, check **Enable**.
 - **Maximum number of sessions:** Type the number of sessions that WebSphere Application Server will maintain in memory. The default value is 1000. Increase this number to allow more sessions to be maintained in memory.
 - **Session timeout (minutes):** Type a number for the number of minutes before a user's session times out. The default number of minutes in WebSphere Application Server is 30.

Tip: Reducing this number might allow for more users, especially if many users will be making brief transactions, but setting it too low might interfere with a user's experience or prevent users from uploading large assets.
 - **Web container minimum size:** Type the minimum number of threads to allow in the Web container. The default value is 25 for Windows and 15 for Linux and AIX. Increase this number if the CPU for the server is underutilized, or decrease it if the CPU is overutilized.
 - **Web container maximum size:** Type the maximum number of threads to allow in the Web container. The default value is 50 for Windows and 30 for Linux and AIX. Increase this number if the CPU for the server is underutilized, or decrease it if the CPU is overutilized.
 - b. If you use DB2, you can configure database settings. Suggested values and current values for the following parameters are listed. Changes made to settings take effect when you restart the database server.
 - **MAXLOCKS:** Type a number between 1 and 100 to specify the percentage of the lock list that is reached when the database manager performs escalation, from row to table, for the locks held by the application. Although the escalation process does not take much time, locking entire tables versus individual rows decreases concurrency, and potentially decreases overall database performance for subsequent attempts to access the affected tables.
 - **LOGFILSIZ:** Type a number to specify the size of each primary and secondary log file. The size of these log files limits the number of log records that can be written to them before they become full and a new log file is required. The value of the logfilsiz should be increased if the database has a large number of update, delete, or insert transactions running against it which will cause the log file to become full quickly.

Note: Changing this parameter from the default is only necessary when there are a large number of assets in the repository (for example, tens or hundreds of thousands).

- **LOCKTIMEOUT:** Type a number between 1 and 30000 to specify the number of seconds that an application waits to obtain a lock. Setting this property helps avoid global deadlocks for applications. A value of -1 means lock timeout detection is turned off.
 - **LOCKLIST:** Type a number between 4 and 60000, inclusive, to specify the amount of storage that is allocated to the lock list.
 - **MAXAPPLS:** Type a number greater than the number of expected concurrent connections.
- c. Click **Next**.
 - d. On the Configure Java Virtual Memory Heap Settings page, you can change the heap size for the server. If installing to a cluster, you can set the heap size per node. The default is "No setting." Before selecting one of the other options (Low, Medium or High), ensure you know how much physical memory is available on the machine.
 - e. Click **Next**. The summary page is displayed again. You can choose from the options in step 8 on page 38.

What to do next

For additional performance tuning information, refer to the "Rational Asset Manager Tuning Guide" on page 65.

Manually installing and configuring Rational Asset Manager on an existing application server

Follow these procedures to manually install and configure Rational Asset Manager if you want to use your existing WebSphere Application Server or cluster environment.

About this task

The following list is the order of the steps that you must take to install Rational Asset Manager for use with an existing application server:

1. Create the database tables in an existing database (DB2, Oracle or SQL Server 2005).
2. Retrieve the Rational Asset Manager server artifacts from the installation media using IBM Installation Manager.
3. Configure a datasource for your application server (WebSphere Application Server or Tomcat).
4. Configure security on the application server.
5. Deploy the Rational Asset Manager server artifacts to the application server.

Creating and configuring a database for Rational Asset Manager

If your database software is installed and the database server is running, you can create and configure a database either prior to installing Rational Asset Manager, or while using the Rational Asset Manager server setup application (after Rational Asset Manager has been installed). If you are using DB2, the server setup application can create and configure the database for you.

If you choose to create and configure your database through the Rational Asset Manager server setup application, skip this section and proceed to “Installing and configuring Rational Asset Manager using Installation Manager and the server setup application” on page 29.

Manually configuring and creating tables in DB2 using database scripts (Windows and Linux only)

These are the instructions for Windows and Linux only for creating and populating tables in DB2 for Rational Asset Manager.

Before you begin

You can create the database and tables automatically by running batch files. DB2 must already be installed and running. Ensure that you know the location of the SQL scripts (typically, *path to installation media* \ db_scripts \ DB2). Finally, ensure that you also know the installation directory for DB2 (typically C:\Program Files\IBM\SQLLIB for Windows and opt/IBM/DB2/V9.5 for Linux).

About this task

Note: This method is not supported for AIX. Instead, follow the instructions described in the topic “Manually configuring and creating tables in DB2” on page 42.

1. If you are installing from the CD, then copy the SQL scripts to your local file system.
2. For Linux: Check that you have write permission for the directory containing the SQL scripts.
3. In a command line, change to the directory containing the SQL scripts for DB2 (*path to installation media* \ db_scripts \ DB).
4. Run db2create_populate.bat (for Windows) or db2create_populate.sh (for Linux).

5. When prompted, enter the name of the database or press the Enter key to accept the default database name (RAMDB).
6. At the next prompt, enter the installation directory path for DB2, or press the Enter key to accept the default value (C:\Program Files\IBM\SQLLIB for Windows, and /opt/IBM/DB2/V9.5 for Linux).
7. The batch file runs. The script performs the following actions:
 - A database with the name that you entered is created.
 - Tablespace is configured for the database.
 - Tables and schema for RAM are created in the database.

Note: When you run the batch file for the first time, you might see a number of SQL0204N error messages that *name* is an undefined name, and they will be similar to the following example:

```
** CLI error in executing the SQL statement:
(-204): [IBM][CLI Driver][DB2/NT] SQL0204N  "RAMSCHEMA.FORUM" is an undefined name.  SQLSTATE=42704
```

If you are running the batch file for the first time, then you can safely ignore these messages.

8. Verify that the tables were created. For example, start the DB2 Control Center and browse for the RAMDB database. Verify that the database and tables were created.

Manually configuring and creating tables in DB2

These are the instructions for manually configuring DB2 and creating and populating tables for Rational Asset Manager in DB2. Follow these instructions if you cannot run the batch files used in the preceding instructions (for example, if you are running AIX).

Before you begin

DB2 must already be installed and running. Also, make sure that you know the location of the SQL scripts (typically, *path to installation media*\db_scripts\DB2). Finally, ensure that you also know the installation directory for DB2 (typically C:\Program Files\IBM\SQLLIB for Windows, opt/ibm/DB2/V9.5 for Linux and /opt/IBM/db2/V9.5 for AIX).

About this task

To configure DB2 and create the database tables:

1. Start the **DB2 Control Center**.
2. Select the instance of the database.
3. Create and add a new database.
 - a. Click **Tools** → **Command Editor**.
 - b. In the command editor, type (in uppercase):


```
ATTACH TO <DATABASE_INSTANCE>
```

(where <DATABASE_INSTANCE> is the name of the database instance you selected in step 2)
 - c. Click **Execute**.
 - d. Clear the previous command from the command editor and type (in uppercase):


```
CREATE DATABASE <DATABASE_NAME> AUTOMATIC STORAGE YES USING CODESET UTF-8 TERRITORY US
```

(where <DATABASE_NAME> may be any name you choose; for example, RAMDB)
 - e. Click **Execute**.
 - f. Click **Add**, select the database you just created, and click **OK**.
4. Execute the dbcreate.sql script.
 - a. Click **Open**.
 - b. Navigate to the dbcreate.sql file.

- c. Click **OK**.
 - d. Click **Yes**.
 - e. Click **Execute**.
5. Execute the RAMSCHEMA_DB2.sql script.
 - a. Click **Open**.
 - b. Navigate to the RAMSCHEMA_DB2.sql file.
 - c. Click **OK**.
 - d. Click **Yes**.
 - e. In the **Statement termination character** text field, in place of the default semi-colon character (;), type a caret (^).
 - f. Click **Execute**.
 6. Execute the bootstrap_DB2.sql script.
 - a. Click **Open**.
 - b. Navigate to the bootstrap_DB2.sql file.
 - c. Click **OK**.
 - d. Click **Yes**.
 - e. In the **Statement termination character** text field, in place of the caret (^), type a semi-colon (;).
 - f. Click **Execute**.
 7. Verify that the tables were created.
 - a. Click **Object View** and open the database instance.
 - b. Click **Tables** to verify that the tables contain data.

Creating and configuring a database in Oracle 11g or 10.2(g)

These are the instructions for manually creating and populating tables for Rational Asset Manager in Oracle 11g or 10.2(g).

Before you begin

Oracle must already be installed and running. Also, make sure that you know the location of the SQL scripts (typically, *path to installation media* \db_scripts\Oracle).

About this task

To create the database tables:

1. Using the Oracle Database Configuration Assistant, follow the steps in the wizard to create a new database.
 - a. Use global database name ramdb_<your domain>, and a system identifier (SID) ramdb.
 - b. On the **Custom Scripts** tab, do **not** run the SQL scripts that are mentioned in the later steps. You must create a user account first.
 - c. On the Character Sets page, select **Use Unicode (AL32UTF8)**.
 - d. Also on the Character Sets page, for National Character Set, select **UTF8 - Unicode 3.0 UTF-8**.
 - e. Complete the other pages in the wizard, accepting the default values.
2. Create a database user.
 - a. Open Database Control.
 - b. Navigate to the **Users** page. (In Oracle 10.2(g), click **Administration**, then **Users**; in Oracle 11(g), click **Server**, then click **Users** in the Security section.)
 - c. Create a user named RAMSCHEMA that meets the following qualifications:
 - The user has the resource and connect roles.

- The user's quota setting is unlimited.
- For tablespace, you can use any default tablespace (with the exception of Temp) that meets the access level requirements for the user that you created.

Tip: Oracle provides a default user named "Scott" that has the appropriate permissions. You can use this default user as the basis for your new user account.

3. Run the scripts that will populate the database. (This step is not necessary if you are using the setup assistant; the setup assistant will run the scripts for you.)
 - a. Click **SQL+** to open it.
 - b. Open the RAMSCHEMA_Oracle.sql file in the sqlscripts/oracle folder. Highlight the entire contents of the file, copy them (right-click, and then **Copy**), and then paste them into the top of the **SQL+**.
 - c. Click **Execute**. When the process finishes, delete the commands from the top window.
 - d. Repeat these steps for the bootStrap_Oracle.sql file.
4. Verify that the tables were created.

Creating and configuring a database in Microsoft SQL Server 2005

These are the instructions for manually creating and populating tables for Rational Asset Manager in Microsoft SQL Server 2005.

Before you begin

SQL Server 2005 must already be installed and running. Also, make sure that you know the location of the SQL scripts (typically, *path to installation media \db_scripts\SQLServer*).

About this task

To create the database tables:

1. Ensure that your ID has permission to execute CREATE SCHEMA statements. (Typically, the database owner has this permission.)
2. Create a new database with database name RAMDB.
3. Execute the scripts that will populate the database.
 - a. Open a command prompt.
 - b. Type `sqlcmd -d RAMDB -i path to SQL scripts\RAMSCHEMA_SQLServer.sql` (where *RAMDB* is the name of the database that you created in step 2), and press Enter.
 - c. Type `sqlcmd -d RAMDB -i path to SQL scripts\bootStrap_SQLServer.sql` (where *RAMDB* is the name of the database that you created in step 2), and press Enter.
4. Verify that the tables were created.

Retrieving Rational Asset Manager applications from the installation media

To retrieve the Rational Asset Manager enterprise and Web archive files from the installation media, you can run the Installation Manager from the launchpad and choose to do a manual installation instead of installing with embedded WebSphere Application Server or to an existing WebSphere Application Server.

Retrieving the Rational Asset Manager server application for Windows and Linux from the installation media

To install IBM Rational Asset Manager server on an existing application server, you must first obtain the EAR or WAR files for the server application from the installation media.

Before you begin

To obtain the EAR or WAR files for the server application:

1. Start the Rational Asset Manager launchpad program (see “Installing from the launchpad program” on page 23) and then select **IBM Rational Asset Manager**. If Installation Manager is not already installed, follow the steps in the installation wizard to complete the installation. The Install Packages wizard opens. Installation Manager is required for this procedure.
2. The Install page of Install Packages wizard lists all the packages that are found in the repositories that Installation Manager searches. If two versions of a package are discovered, only the most appropriate version of the package is displayed.
3. To search for updates to the IBM Rational Asset Manager server package, click **Check for Other Versions and Extensions**.

Note: For Installation Manager to search the predefined IBM update repository locations for the installed packages, the preference **Search service repositories during installation and updates** on the Repositories preference page must be selected. This preference is selected by default. Internet access is also required.

Installation Manager searches for updates at the predefined service repository for the product package. It also searches any repository locations that you have set. A progress indicator shows the search is taking place. You can install updates at the same time that you install the base product package.

4. If updates for the IBM Rational Asset Manager server package are found, then they will be displayed in the **Installation Packages** list on the Install Packages page following their corresponding product. Only the most appropriate updates are displayed by default.
5. Select **Rational Asset Manager server** and any updates to the package that you want to install. Updates that have dependencies are automatically selected and cleared together.
6. Click **Next** to continue.

Note: If you install multiple packages at the same time, then all the packages will be 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 to install (for example, the base package and an update) are listed under the package name.
 - a. If you agree to the terms of each license agreement, click **I accept the terms of the license agreements**.
 - b. Click **Next** to continue.

8. If you are installing the first package on this computer, then on the Location page, type the path for the *shared resources directory* in the **Shared Resources Directory** field; or accept the default path. The shared resources directory contains resources that can be shared by one or more package groups. Click **Next** to continue.

The default path is:

- For Windows: C:\Program Files\IBM\IBMIMShared
- For Linux and AIX: /opt/IBM/IBMIMShared

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

9. On the Location page, either choose an existing *package group* to install the IBM Rational Asset Manager server package into, or create a new one. 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. This is the directory where the Rational Asset Manager application files for manual installation will be created. The name for the package group is created automatically.
The default path is:
 - For Windows: C:\Program Files\IBM\RAM71Server
 - For Linux and AIX: /opt/IBM/RAM71Server
 - c. Click **Next** to continue.
10. On the Features page under **Languages**, select the languages for the package group. The corresponding national language translations for the user interface and documentation for the IBM Rational Asset Manager server package will be installed. Note that your choices apply to all packages installed under this package group.
 11. On the next Features page, select **Rational Asset Manager manual installation options** and clear **Embedded version of the IBM WebSphere Application Server v6.1**. Ensure that you select the archive that matches your application server.

Note: For best results, select **Rational Asset Manager Help and Documentation Web archive** since you need to access to the help files for some configuration instructions.
 12. On the Summary page, review your choices before installing the package. If you want to change the choices or configuration details that you made on previous pages, click **Back** and make your changes.
 13. When you are satisfied with your installation choices, click **Install** to install the package. A progress indicator shows the percentage of the installation completed.
 14. When the installation process is complete, a message confirms the success of the process.

What to do next

The EAR and WAR files for installing the IBM Rational Asset Manager server application on an existing WebSphere Application Server are now available in the directory *installation directory*\ram\apps.

Table 2. Locations of downloaded files

Path	File names	Description
<i>installation directory</i> \ram\apps\was	<ul style="list-style-type: none"> • com.ibm.ram.repository.web_runtime.ear • com.ibm.ram.repository.setup.web.ear 	<ul style="list-style-type: none"> • Rational Asset Manager Enterprise Archive for WebSphere Application Server • Rational Asset Manager Server Setup Enterprise Archive
<i>installation directory</i> \ram\apps\tomcat	<ul style="list-style-type: none"> • com.ibm.ram.repository.web.tomcat_runtime.war • com.ibm.ram.repository.web.ws.tomcat_runtime.war 	Rational Asset Manager Web Archive for Tomcat
<i>installation directory</i> \ram\apps\WAR	rmcabdgovernprocess.war	Asset-based Development and Governance process
<i>installation directory</i> \ram\apps	iehs.war	Rational Asset Manager Help and Documentation web archive

Retrieving the Rational Asset Manager server application for AIX from the installation media

To install the version of IBM Rational Asset Manager server for the AIX operating system on an existing application server, you must first obtain the EAR or WAR files for the server application from the installation media.

Before you begin

For AIX, the EAR or WAR files for the AIX server application must be manually copied from the AIX CD or disk image of Rational Asset Manager to a local disk image. The Rational Asset Manager files are in the following locations:

Table 3. Locations of installation files for Rational Asset Manager server for AIX

Path	File names	Description
<i>disk root</i> \apps\was	<ul style="list-style-type: none">com.ibm.ram.repository.web_runtime.earcom.ibm.ram.repository.setup.web.ear	<ul style="list-style-type: none">Rational Asset Manager Enterprise Archive for WebSphere Application ServerRational Asset Manager Server Setup Enterprise Archive
<i>disk root</i> \apps\tomcat	<ul style="list-style-type: none">com.ibm.ram.repository.web.tomcat_runtime.warcom.ibm.ram.repository.web.ws.tomcat_runtime.war	Rational Asset Manager Web Archive for Tomcat
<i>disk root</i> \apps\WAR	rncabdgovernprocess.war	Asset-based Development and Governance process
<i>disk root</i> \apps	iehs.war	Rational Asset Manager Help and Documentation web archive

Manually deploying Rational Asset Manager server setup to a cluster

To manually deploy the Rational Asset Manager server setup application to a cluster, it is necessary to run a Jython script. If you used Installation Manager to install Rational Asset Manager to a cluster, Installation Manager performed this step.

Before you begin

Before running these scripts, you must have used Installation Manager and selected to do a manual installation.

1. Locate the following scripts in the <Rational_Asset_Manager_install_directory>\ram\conf\bin folder:
 - deployClusterSetup.py
 - UninstallSetup.py
2. To deploy Rational Asset Manager server setup enterprise archive to the cluster, run the following command (Windows):

```
wsadmin.bat -lang jython -user <user_name> -password <password> -f <install_dir>\ram\conf\bin\deployClusterSetup.py <
```

On AIX or Linux, run the following command:

```
wsadmin.sh -lang jython -user <user_name> -password <password> -f <install_dir>/ram/conf/bin/deployClusterSetup.py <ins
```

where:

- <user_name> is the name of a WebSphere Application Server administrator
- <password> is the administrator's password
- <install_dir> is the Rational Asset Manager installation directory
- <server_name> is the name of the server; for example, RAMCluster
- <context_root> is the context root of the server setup application; for example, com.ibm.ram.repository.setup.web or ram.setup

Example

Note: The path to the Python script should contain backslashes on Windows and forward slashes on AIX and Linux. The path to the EAR file should contain forward slashes, regardless of platform.

What to do next

To uninstall it from the cluster, run the following command (Windows):

```
wsadmin.bat -conntype NONE -lang jython -f <installdir>\ram\conf\bin\UninstallSetup.py com.ibm.ram.repository.setup.w
```

On AIX or Linux, run the following command:

```
wsadmin.sh -conntype NONE -lang jython -f <installdir>/ram/conf/bin/UninstallSetup.py com.ibm.ram.repository.setup.web.ear
```

Installing Rational Asset Manager server manually on WebSphere Application Server

About this task

You can manually install the Rational Asset Manager server on an existing WebSphere Application Server installation.

Configuring file-based security

When initially installed, the Rational Asset Manager server application uses file-based security for user authentication. If you perform the installation scenario where you install the Rational Asset Manager server with an embedded WebSphere Application Server, the Installation Manager will automatically configure this for you.

To install Rational Asset Manager onto an existing WebSphere Application Server you must configure file-based security yourself.

Important: If you install Rational Asset Manager onto an existing WebSphere Application Server that is already configured for security (for example, using LDAP), then you must reconfigure the application server for file-based security until the installation and configuration of Rational Asset Manager is complete. After installing and configuring the server application to use a custom user registry, you can restore WebSphere Application Server security configuration. File-based security is not intended for production environments.

Configuring file-based security on WebSphere Application Server V6.1

You can authenticate users for Rational Asset Manager using file-based security on your local operating system. These instructions are for configuring file-based security on WebSphere Application Server V6.1.

Before you begin

Before starting, note the location of the files named `users.props` and `groups.props`. The install process places these in *WebSphere Application Server install root/ram/conf/security*.

1. Start the server and open the administrative console.
 - a. Open a command window and change to `WAS_PROFILE/bin` directory.
 - b. Type `startServer.bat server1`.
 - c. When the server has started, open a web browser and go to `http://localhost:13060/ibm/console`. (This port number might be different than 13060; to check, look in `WAS_PROFILE/properties/portdef.props` for the value of the `WC_adminhost` property and use it instead) If security is enabled, use `https://localhost:13043/ibm/console`. (This port number might be different than 9043; to check, look in `WAS_PROFILE/properties/portdef.props` for the value of the `WC_adminhost_secure` property and use it instead.)
2. Click **Security**.
3. Click **Secure administration, applications, and infrastructure**.
4. Under **Available realm definitions**, select **Standalone custom registry** and click **Configure**.
5. Click **Custom Properties**.
6. Click **New**.
7. In the **Name** field, type `groupsFile`.
8. In the **Value** field, type the path to the `groups.props` file.
9. Click **Apply**.
10. Click **OK**.
11. Click **New**.
12. In the **Name** field, type `usersFile`.
13. In the **Value** field, type the location of the `users.props` file.
14. Click **Apply**.
15. Click **Standalone custom registry** at the top of the page.
16. Click **Save**.
17. In the **Primary administrative user name**, **Server user ID** and **Password** fields, type `admin`.
18. Click **OK**.
19. On the **Configuration** page, select **Enable administrative security** and disable **Use Java 2 security...**
20. Ensure **Enable application security** remains checked.
21. Ensure that **Available realm definitions** is set to **Standalone custom registry**.
22. Click **Set as current**.
23. Click **Apply**.
24. Click **Save**.
25. Log out of the administrative console.
26. Restart the server or restart the computer. If you are using a clustered environment, restart the server or restart the computer where the Domain Manager (DM) is located.

Configuring database connections

This section describes creating a connection between the database and WebSphere Application Server.

Configuring a database connection between WebSphere Application Server V6.1 and DB2

You can manually create a database connection between WebSphere Application Server V6.1 and the database tables created for Rational Asset Manager in DB2.

About this task

If you work in a clustered server environment, use the WebSphere Administrative Console on the Domain Manager (DM) for all WebSphere Application Server Console steps.

1. Start the **WebSphere Administrative Console**.
2. Log in using the user ID **admin** and the password **admin** (defined in the section "Configuring security," above).
3. If DB2 and WebSphere Application Server are not installed on the same server, make sure that DB2 Agent Installer is installed with WebSphere Application Server in order to communicate with a remote installation of DB2.
4. Create a database connection
 - a. Click **Resources** in the navigation pane.
 - b. Click **JDBC**.
 - c. Click **JDBC Providers**.
5. Create a JDBC Provider.
 - a. Click **New**.
 - b. For the database type, select **DB2**
 - c. For the provider type, select **DB2 Universal JDBC Driver**.
 - d. For the implementation type, select **Connection pool data source**.
 - e. Click **Next**.
 - f. On the **Enter database class path information** page, type the path to the DB2 java directory in the **Directory location** field.
 - g. Click **Next**.
 - h. Click **Finish**.
 - i. On the **JDBC Providers** page, click **Save**.
6. Bind the database to a JNDI name.
 - a. Click the **DB2 Universal JDBC Driver Provider** link.
 - b. Under **Additional Properties**, click **Data sources**.
 - c. Click **New**.
 - d. In the **JNDI name** field, type **jdbc/RAM_Con**.
 - e. Click **Next**.
 - f. In the **Database name** field, type the name of the database.
 - g. In the **Server name** field, type the name of the server.
 - h. Click **Next**.
 - i. Click **Finish**.
7. Set up J2C authentication.
 - a. On the **JAAS-J2C authentication data** page, enter the **Alias**, **User ID** and **Password** for authentication to the DB2 database.
 - b. Click **DB2 Universal JDBC Driver Provider**.
 - c. Select **node_name/db2admin** (or the name that you created for your JAAS-J2C authentication alias). In normal circumstances, the authentication alias is prefixed with the node name.
 - d. Click **OK**.
 - e. Click **Save**.
8. Log out of the console.
9. Restart the server.
10. In a clustered environment, the Domain Manager (DM) must be restarted.

Configuring a database connection between WebSphere Application Server and Oracle

You can manually create a database connection between WebSphere Application Server V6.1 or V6.0.2 and the database tables created for Rational Asset Manager in Oracle 11g or 10.2(g).

About this task

If you work in a clustered server environment, use the WebSphere Administrative Console on the Domain Manager (DM) for all WebSphere Administrative Console steps.

1. Ensure that the `odbc14.jar` file is from Oracle 10g (10.2) or later. Older versions of this file will not work. If necessary, copy the needed version of the file to a folder on the WebSphere Application Server server (for example, `D:\0racle`).
2. Start the **WebSphere Administrative Console**.
3. Log in using the user ID `admin` and the password `admin` (defined in the earlier section "Configuring security," above).
4. Set up the Oracle driver path.
 - a. Click **Environment** in the navigation pane.
 - b. Click **WebSphere Variables**.
 - c. Click **New**.
 - d. In the **Name** field, select `Oracle_JDBC_DRIVER_PATH`
 - e. In the **Value** field, select the path to the Oracle library with the required version of the `odbc14.jar` file (for example, `D:\0racle`.)
 - f. Click **Apply**.
 - g. Click **OK**.
5. Set up J2C authentication.
 - a. Click **Security**.
 - b. Click **Global Security**.
 - c. In the **Authentication** section of the **Global Security** window, click **JAAS Configuration**.
 - d. Click **J2C Authentication Data**.
 - e. Click **New**.
 - f. In the **Alias Entry** field, type `RAM_Con`.
 - g. In the **User ID** field, type an Oracle user ID with administration privileges. For Oracle, the user ID defined here must be the name given to the schema (for example, `ramschema`).
 - h. In the **Password** field, type the password for the user ID.
 - i. Click **Apply**.
 - j. Click **OK**.
6. Create a database connection
 - a. Click **Resources** in the navigation pane.
 - b. Click **JDBC Providers**.
 - c. If you use a remote installation of DB2, make sure the **Node** and **Server** entries are cleared and click **Apply**.
 - d. If you work in a clustered environment, type the name of the cluster in the **Cluster** field and click **Apply**.
7. If any other JDBC drivers have been defined for Rational Asset Manager (for example, `JNDI Name = jdbc/RAM_Con`), delete those drivers before completing the following steps.
8. Create a JDBC Provider.
 - a. Click **New**.
 - b. For the database type, select **Oracle**.

- c. For the provider type, select **Oracle JDBC Driver**.
 - d. For the implementation type, select **Connection pool data source**.
 - e. Click **Next**.
 - f. Click **Apply**.
 - g. Click **Data sources**.
 - h. Click **New**.
9. Bind the database to a JNDI name.
 - a. For the **JNDI name**, select **jdbc/RAM_Con**.
 - b. For the **Data store helper class name**, select the level of Oracle installed (for example, Oracle 9i and prior data store helper).
 - c. For the **Component-managed authentication alias** field, select the J2C authentication that you created earlier.
 - d. For the **URL** field, type the path that the Oracle administrator provides. It will have the following form:
`jdbc:oracle:thin:@fully_qualified_machine_name:oracle_port_number:database_name.`
 - e. Click **Apply**.
 - f. Click **OK**.
 - g. Click **Test Connection**.
 10. Save the WebSphere Application Server configuration.
 - a. Click **Save** at the top of the window.
 - b. In the next window, click **Save**.
 11. Log out of the console.
 12. Restart the server.
 13. In a clustered environment, the Domain Manager (DM) must be restarted.

Configuring a database connection between WebSphere Application Server V6.1 and Microsoft SQL Server 2005

You can manually create a database connection between WebSphere Application Server V6.1 and the database tables that are created for Microsoft SQL Server 2005.

About this task

If you work in a clustered server environment, use the WebSphere Administrative Console on the Domain Manager (DM) for all WebSphere Application Server Console steps.

1. Start the **WebSphere Administrative Console**.
2. Log in using the user ID `admin` and the password `admin` (defined in the earlier section "Configuring security").
3. Click **Environment** → **WebSphere Variables**. The WebSphere Variables page opens.
4. Click **MSSQLSERVER_JDBC_DRIVER_PATH**. The **MSSQLSERVER_JDBC_DRIVER_PATH** page opens.
5. In the Value field, type the path to the directory that contains the Microsoft JDBC driver for MSSQLServer 2005(`sqljdbc.jar`), and then click **OK**.
6. Click **Resources** → **JDBC Providers**, and then, in the JDBC Providers page that opens, click **New**.
7. Create a JDBC provider.
 - a. In the JDBC providers page, click **New**.
 - b. For the database type, select **User-defined**.
 - c. For **Implementation class name**, type `com.microsoft.sqlserver.jdbc.SQLServerXADataSource`.
 - d. For **Name**, type `Microsoft SQL Server 2005 JDBC provider`.

- e. Click **Next**.
- f. For **Class path**, type `${MSSQLSERVER_JDBC_DRIVER_PATH}/sqljdbc.jar`.
- g. Click **Finish**.
8. Bind the database to a JNDI name.
 - a. On the JDBC providers page, click **Microsoft SQL Server 2005 JDBC provider** (the link for the JDBC provider that you created in the previous step).
 - b. Under **Additional Properties**, click **Data sources**.
 - c. Click **New**.
 - d. In the **Data source name** field, type Microsoft SQLServer 2005 JDBC RAM.
 - e. In the **JNDI name** field, type `jdbc/RAM_Con`.
 - f. Click **Next**.
 - g. For **Data store helper class name**, type `com.ibm.websphere.rsadapter.ConnectJDBCDataStoreHelper`
 - h. Click **Next** and then click **Finish**.
 - i. On the Microsoft SQLServer 2005 JDBC RAM data source page, under **Additional Properties**, click **Custom Properties**.
 - j. On the Custom properties page, click **New**.
 - k. In the **Name** field, type `databaseName`, and in the **Value** field type `RAMDB` or the name that you used for the database.
 - l. Click **OK**. You return to the Custom properties page.
 - m. Add another custom property for the server name. Click **New**. In the **Name** field, type `serverName`, and in the **Value** field type *your server name* (for example, `myserver.com`), and then click **OK**.
 - n. Add another custom property for the port number. Click **New**. In the **Name** field, type `portNumber`, and in the **Value** field type *your port number* (the default is usually 1443), and then click **OK**.
 - o. Click **OK**. You return to the Custom properties page.
9. Set up J2C authentication.
 - a. Click the link **Microsoft SQLServer 2005 JDBC RAM** near the top of the page.
 - b. Under **Related items**, click **JAAS-J2C authentication data**.
 - c. Click **New**.
 - d. Enter the **Alias**, **User ID** and **Password** for authentication to the Microsoft SQL Server 2005 database.
 - e. Click **OK**.
 - f. Click the link **Microsoft SQLServer 2005 JDBC RAM** near the top of the page.
 - g. Under **Container-managed authentication**, select the entry that is the name that you created for your JAAS-J2C authentication alias. The node name is usually prefixed to the name of the authentication alias.
 - h. Click **OK**.
 - i. Click **Save**.
10. Log out of the console.
11. Restart the server.
12. In a clustered environment, the Domain Manager (DM) must be restarted.

Deploying Rational Asset Manager server on WebSphere Application Server

This section describes deploying the Rational Asset Manager server application on WebSphere Application Server.

Deploying Rational Asset Manager on WebSphere Application Server V6.1

You can manually install Rational Asset Manager on an existing installation of WebSphere Application Server V6.1.

Before you begin

If installing the product into a clustered environment, use the WebSphere Administrative Console on the Domain Manager (DM) for all administrative console steps.

1. Locate the Rational Asset Manager Enterprise Archive for WebSphere Application Server file `com.ibm.ram.repository.web_runtime.ear`. Refer to “Retrieving the Rational Asset Manager server application for Windows and Linux from the installation media” on page 44 or “Retrieving the Rational Asset Manager server application for AIX from the installation media” on page 47 to locate this file.
2. Launch the **WebSphere Administrative Console**.
3. Click **Applications**.
4. Click **Enterprise Applications**.
5. Click **Install**.
6. Type the path and file name of the Rational Asset Manager Server EAR file.
7. Click **Show me all installation options and parameters**.
8. Click **Next** until you reach **Step 6: Map Resource references to resources**, or select this step in the navigation pane.
9. On the page titled Map Resource References to resources, perform the following steps:
 - a. In the `javax.sql.DataSource` section, select both modules in the table.
 - b. Under **Specify authentication method** in the same section, select **Use default method (many-to-one mapping)** and under Authentication data entry select `node_name/RAM_Con` from the menu.
 - c. Under **JNDI names**, select `jdbc/RAM_Con` and click **Apply**.
 - d. In the section `javax.sql.DataSource` under **Specify Authentication Data Entry**, select **Use Default Method** and select `node_name/RAM_Con` from the menu.
 - e. Click **Apply**.
 - f. Click **Next**.

Note: A page might display with a series of warnings that resource assignments (`jms/RAM_Factory`, `jms/RAM_Cache`, `url/RAM_Local`, and `url/RAM_Persist`) are missing for resource references. You can safely ignore these warnings. Click **Continue**.

10. Click **Next** on the next three pages, or click **Step 10** in the navigation pane.
11. On the page titled Summary, click **Finish**.
12. When the installation of the EAR file finishes, click **Save to Master Configuration**.
13. Click **Save**.
14. Install the Rational Asset Manager Help and Documentation web archive:
 - a. Click **Applications** → **Enterprise Applications**.
 - b. Click **Install**.
 - c. In the **Specify path** field, type the path and file name of the Rational Asset Manager Help and Documentation WAR file `iehs.war`. Refer to “Retrieving the Rational Asset Manager server

- application for Windows and Linux from the installation media” on page 44 or “Retrieving the Rational Asset Manager server application for AIX from the installation media” on page 47 to locate this file.
- d. In the **Context root** field, type help for the context root.
 - e. Click Next until you reach **Step 3: Map virtual hosts for Web modules**. Select the Web module and click **Next**.
 - f. On the page titled Summary, click **Finish**.
 - g. When the installation of the WAR file finishes, click **Save to Master Configuration**.
 - h. Click **Save**.
15. Install the Asset-based Development and Governance process web archive:
 - a. Click **Applications** → **Enterprise Applications**.
 - b. Click **Install**.
 - c. In the **Specify path** field, type the path and file name of the Asset-based Development and Governance process WAR file rmcabdgovernprocess.war. Refer to “Retrieving the Rational Asset Manager server application for Windows and Linux from the installation media” on page 44 or “Retrieving the Rational Asset Manager server application for AIX from the installation media” on page 47 to locate this file.
 - d. In the **Context root** field, type com.ibm.ram.repository.web/abdprocess for the context root.
 - e. Click Next until you reach **Step 3: Map virtual hosts for Web modules**. Select the Web module and click **Next**.
 - f. On the page titled Summary, click **Finish**.
 - g. When the installation of the WAR file finishes, click **Save to Master Configuration**.
 - h. Click **Save**.
 16. Start the application.
 - a. In the navigation pane, click **Applications**.
 - b. Click **Enterprise Applications**.
 - c. Select the newly installed Rational Asset Manager application and click **Start**.
 17. If Rational Asset Manager is accessed through the IIS or Apache server, perform the following steps; if Rational Asset Manager is accessed without a Web server front end, skip this step.
 - a. In the navigation pane, click **Servers**.
 - b. Click **Web Servers**.
 - c. Select the Web server name and click **Generate Plug-in**. (If the Web server plug-in has never been created, refer to Installing Web server plug-ins.)
 - d. Check the Web server name again and click **Propagate Plug-in**. This sends the plug-in to the Web server so that the Rational Asset Manager Server application can be referenced through the installed Web server.
 18. Restart WebSphere Application Server and Web servers.
 19. Use the following URLs to access Rational Asset Manager.
 - a. If you use a Web server, type `http://machine_name/com.ibm.ram.repository.web/home.faces`.
 - b. If you do not use a Web server, type `http://machine_name:13080/com.ibm.ram.repository.web/home.faces`. (If this URL does not work, use the port number for the Default Host that is defined in Virtual Hosts under Environment in the navigation pane.)
 20. Configure the Rational Asset Manager server application. Refer to “Configuring the Rational Asset Manager server application” on page 60.

Installing Rational Asset Manager server on Tomcat

About this task

You can manually install Rational Asset Manager on an existing installation of Apache Tomcat.

Deploying Rational Asset Manager on Apache Tomcat V5.5 connected to DB2

Rational Asset Manager can be installed manually on an existing installation of Apache Tomcat. These instructions are for deploying Rational Asset Manager on Tomcat V5.5.

Before you begin

Tomcat server must be installed and running.

1. Locate the Rational Asset Manager server WAR files. The installer places these files in *Rational Asset Manager install root/tomcat*
2. Start the Tomcat Manager: open <http://localhost:8080/manager/html>.
3. Configure Tomcat to access DB2.
 - a. Open the file `TOMCAT_INSTALL_PATH\conf\server.xml` in a text editor.
 - b. Locate any lines in `server.xml` that begin with `<Connector` and contain `port="8080"` or `port="8009"`. Change the start of this line to `<Connector URIEncoding="UTF-8"`.
 - c. Between the opening and closing tags for Global JNDI resources `<GlobalNamingResources>` and `</GlobalNamingResources>` in `server.xml`, enter the text below for your version Tomcat.

Note: For the values *your_username* and *your_password*, use a userid and password that has access to the database. The values shown for "maxWait," "maxActive" and "maxIdle" are sample values and can be adjusted according to your performance needs.

Type:

```
<Resource name="jdbc/RAM_Con"
type="javax.sql.DataSource"
driverClassName="com.ibm.db2.jcc.DB2Driver"
username="your_username"
password="your_password"
url=" jdbc:db2://fully_qualified_server_name:db2_port_number/database_name "
poolPreparedStatements="true"
maxWait="5000"
maxActive="4"
maxIdle="2"/>
```

4. Configure Tomcat server for security.
 - a. Edit the file `Tomcat_install_path\conf\tomcat-users.xml`.
 - b. Add user IDs that are required for authentication.
5. Copy the following JAR files from the *DB2 installaton location\java* folder of your DB2 installation to the `Tomcat_install_path\common\lib` folder:
 - `db2jcc_license_cu.jar`
 - `db2jcc.jar`
6. Restart Tomcat server.
7. Install the Rational Asset Manager WAR files on Tomcat server:
 - a. Open Tomcat Manager (<http://localhost:8080/manager/html>) and log with the correct userID and password for administrator.
 - b. In the **Select WAR file to upload** field at the bottom of the Tomcat Web Application Manager page under WAR file to deploy, browse to the location where you retrieved the file `com.ibm.ram.repository.web.tomcat_runtime.war` from the installation media. Refer to "Retrieving

- the Rational Asset Manager server application for Windows and Linux from the installation media” on page 44 or “Retrieving the Rational Asset Manager server application for AIX from the installation media” on page 47 to locate this file.
- c. Click **Deploy**.
 - d. Repeat the previous steps to deploy the com.ibm.ram.repository.web.ws.tomcat_runtime.war file, entering this file as the WAR file to upload.
 - e. The WAR files are displayed in the list of applications
8. Install the Rational Asset Manager help WAR file on Tomcat server:
 - a. In Tomcat Manager in the section Deploy directory or WAR file located on server, enter the location where you retrieved the file iehs.war from the installation media in the field **WAR or Directory URL**. Refer to “Retrieving the Rational Asset Manager server application for Windows and Linux from the installation media” on page 44 or “Retrieving the Rational Asset Manager server application for AIX from the installation media” on page 47 to locate this file.
 - b. Type /help in the **Context Path (optional)** field.
 - c. Click **Deploy**.
 - d. The WAR file is displayed in the list of applications
 9. Install the Rational Asset Manager Asset-based Process Governance documentation WAR files on Tomcat server:
 - a. In Tomcat Manager in the section Deploy directory or WAR file located on server, enter the location where you retrieved the file rmcabdgovernprocess.war from the installation media in the field **WAR or Directory URL**. Refer to “Retrieving the Rational Asset Manager server application for Windows and Linux from the installation media” on page 44 or “Retrieving the Rational Asset Manager server application for AIX from the installation media” on page 47 to locate this file.
 - b. Type /abdprocess in the **Context Path (optional)** field,
 - c. Click **Deploy**.
 - d. The WAR file is displayed in the list of applications
 10. Open Rational Asset Manager using Tomcat (<http://localhost:8080/com.ibm.ram.repository.web/home.faces>) or through a Web server (http://Webserver_Name/com.ibm.ram.repository.web/home.faces).

Deploying Rational Asset Manager on Apache Tomcat V5.5 connected to Oracle

Rational Asset Manager can be installed manually on an existing installation of Apache Tomcat. These instructions are for deploying Rational Asset Manager on Tomcat V5.5.

Before you begin

Tomcat must be installed and running.

1. Locate the Rational Asset Manager Server WAR files. The installer places these files in *<Rational Asset Manager install root>/tomcat*.
2. Launch the Tomcat Manager: open <http://localhost:8080/manager/html>.
3. Configure Tomcat server to access Oracle.
 - a. Open the file *TOMCAT_INSTALL_PATH\conf\server.xml* in a text editor.
 - b. Locate any lines in server.xml that begin with `<Connector` and contain `port="8080"` or `orport="8009"`. Change the start of this line to `<Connector URIEncoding="UTF-8"`.
 - c. Between the opening and closing tags for Global JNDI resources `<GlobalNamingResources>` and `</GlobalNamingResources>` in server.xml, enter the text below for your version Tomcat.

Note: For the values *your_username* and *your_password*, use a userid and password that has access to the database. The values shown for "maxWait," "maxActive" and "maxIdle" are sample values and can be adjusted according to your performance needs.

Type:

```
<Resource name="jdbc/RAM_Con"
type="javax.sql.DataSource"
driverClassName="oracle.jdbc.driver.OracleDriver"
username="your_username"
password="your_password"
url="jdbc:oracle:thin:@fully_qualified_machine_name:oracle_port_number:database_name"
poolPreparedStatements="true"
maxWait="5000"
maxActive="4"
maxIdle="2"/>
```

4. Configure Tomcat server for security.
 - a. Edit *Tomcat_install_path*\conf\tomcat-users.xml.
 - b. Add user IDs that are required for authentication.
5. Add the following JAR file to the *Tomcat_install_path*\common\lib folder:
 - ojdbc14.jar

This file should be available from your database application provider.
6. Restart Tomcat.
7. Install the Rational Asset Manager WAR files on Tomcat server:
 - a. Open Tomcat Manager (<http://localhost:8080/manager/html>) and log with the correct userID and password for administrator.
 - b. In the **Select WAR file to upload** field at the bottom of the Tomcat Web Application Manager page under WAR file to deploy, browse to the location where you retrieved the file `com.ibm.ram.repository.web.tomcat_runtime.war` from the installation media. Refer to "Retrieving the Rational Asset Manager server application for Windows and Linux from the installation media" on page 44 or "Retrieving the Rational Asset Manager server application for AIX from the installation media" on page 47 to locate this file.
 - c. Click **Deploy**.
 - d. Repeat the previous steps to deploy the `com.ibm.ram.repository.web.ws.tomcat_runtime.war` file, entering this file as the WAR file to upload.
 - e. The WAR files are displayed in the list of applications
8. Install the Rational Asset Manager help WAR file on Tomcat server:
 - a. In Tomcat Manager in the section Deploy directory or WAR file located on server, enter the location where you retrieved the file `iehs.war` from the installation media in the field **WAR or Directory URL**. Refer to "Retrieving the Rational Asset Manager server application for Windows and Linux from the installation media" on page 44 or "Retrieving the Rational Asset Manager server application for AIX from the installation media" on page 47 to locate this file.
 - b. Type `/help` in the **Context Path (optional)** field.
 - c. Click **Deploy**.
 - d. The WAR file is displayed in the list of applications
9. Install the Rational Asset Manager Asset-based Process Governance documentation WAR files on Tomcat server:
 - a. In Tomcat Manager in the section Deploy directory or WAR file located on server, enter the location where you retrieved the file `rmcabdgvprocess.war` from the installation media in the field **WAR or Directory URL**. Refer to "Retrieving the Rational Asset Manager server application for Windows and Linux from the installation media" on page 44 or "Retrieving the Rational Asset Manager server application for AIX from the installation media" on page 47 to locate this file.

- b. Type /abdprocess in the **Context Path (optional)** field,
 - c. Click **Deploy**.
 - d. The WAR file is displayed in the list of applications
10. Open Rational Asset Manager using Tomcat (<http://localhost:8080/com.ibm.ram.repository.web/home.faces>) or through a Web server (http://Webserver_Name/com.ibm.ram.repository.web/home.faces).

Deploying Rational Asset Manager on Apache Tomcat V5.5 connected to SQL Server 2005

Rational Asset Manager can be installed manually on an existing installation of Apache Tomcat. These instructions are for deploying Rational Asset Manager on Tomcat V5.5.

Before you begin

Tomcat server must be installed and running.

1. Locate the Rational Asset Manager Server WAR files. The installer places these files in *Rational Asset Manager install root*/tomcat.
2. Start the Tomcat Manager: open <http://localhost:8080/manager/html>.
3. Configure Tomcat server to access SQL Server.
 - a. Open the file `TOMCAT_INSTALL_PATH\conf\server.xml` in a text editor.
 - b. Locate any lines in `server.xml` that begin with `<Connector` and contain `port="8080"` or `orport="8009"`. Change the start of this line to `<Connector URIEncoding="UTF-8"`.
 - c. Between the opening and closing tags for Global JNDI resources `<GlobalNamingResources>` and `</GlobalNamingResources>` in `server.xml`, enter the text below for your version Tomcat.

Note: For the values *your_username* and *your_password*, use a userid and password that has access to the database. The values shown for "maxWait," "maxActive" and "maxIdle" are sample values and can be adjusted according to your performance needs.

Type:

```
<Resource name="jdbc/RAM_Con"
type="javax.sql.DataSource"
driverClassName="com.microsoft.jdbc.sqlserver.SQLServerDriver"
username="your_username"
password="your_password"
url="jdbc:microsoft:sqlserver://fully_qualified_server_name:SQLServer_port_number:db_name"
poolPreparedStatements="true"
maxWait="5000"
maxActive="4"
maxIdle="2"/>
```

4. Configure Tomcat server for security.
 - a. Edit `Tomcat_install_path\conf\tomcat-users.xml`.
 - b. Add user userIDs that are required for authentication.
5. Add the following JAR file to the `Tomcat_install_path\common\lib` folder:
 - `sqljdbc.jar`

This file should be available from your database application provider.

6. Restart Tomcat.
7. Install the Rational Asset Manager WAR files on Tomcat server:
 - a. Open Tomcat Manager (<http://localhost:8080/manager/html>) and log with the correct userID and password for administrator.
 - b. In the **Select WAR file to upload** field at the bottom of the Tomcat Web Application Manager page under WAR file to deploy, browse to the location where you retrieved the file

com.ibm.ram.repository.web.tomcat_runtime.war from the installation media. Refer to “Retrieving the Rational Asset Manager server application for Windows and Linux from the installation media” on page 44 or “Retrieving the Rational Asset Manager server application for AIX from the installation media” on page 47 to locate this file.

- c. Click **Deploy**.
 - d. Repeat the previous steps to deploy the com.ibm.ram.repository.web.ws.tomcat_runtime.war file, entering this file as the WAR file to upload.
 - e. The WAR files are displayed in the list of applications
8. Install the Rational Asset Manager help WAR file on Tomcat server:
- a. In Tomcat Manager in the section Deploy directory or WAR file located on server, enter the location where you retrieved the file iehs.war from the installation media in the field **WAR or Directory URL**. Refer to “Retrieving the Rational Asset Manager server application for Windows and Linux from the installation media” on page 44 or “Retrieving the Rational Asset Manager server application for AIX from the installation media” on page 47 to locate this file.
 - b. Type /help in the **Context Path (optional)** field.
 - c. Click **Deploy**.
 - d. The WAR file is displayed in the list of applications
9. Install the Rational Asset Manager Asset-based Process Governance documentation WAR files on Tomcat server:
- a. In Tomcat Manager in the section Deploy directory or WAR file located on server, enter the location where you retrieved the file rmcabdgovernprocess.war from the installation media in the field **WAR or Directory URL**. Refer to “Retrieving the Rational Asset Manager server application for Windows and Linux from the installation media” on page 44 or “Retrieving the Rational Asset Manager server application for AIX from the installation media” on page 47 to locate this file.
 - b. Type /abdprocess in the **Context Path (optional)** field,
 - c. Click **Deploy**.
 - d. The WAR file is displayed in the list of applications
10. Open Rational Asset Manager using Tomcat (<http://localhost:8080/com.ibm.ram.repository.web/home.faces>) or through a Web server (http://Webserver_Name/com.ibm.ram.repository.web/home.faces).

Configuring the Rational Asset Manager server application

To finalize configuration of the Rational Asset Manager server application, perform the steps in this section.

Before you begin

Note: Sample values in the section are for a basic standalone environment. For a more complex installations, the server administrator will need to customize these settings for their environment.

The application server that hosts the Rational Asset Manager server application must be started before you can complete the following steps:

1. Access the Rational Asset Manager server application using the appropriate URL:

- On embedded WebSphere Application Server:

`http://host_name:port_number/com.ibm.ram.repository.web/home.faces`

where *port number* (HTTP transport port, or WC_defaulthost) is 13080 by default.

For example, type:

`http://localhost:13080/com.ibm.ram.repository.web/home.faces`

To confirm the port number (WC_defaulthost) value, open the file *installation location*\ram\ewas\profiles\profile1\properties\portdef.props in a text editor and check the value of wc_defaulthost, where *installation location* is the installation location of Rational Asset Manager.

- On WebSphere Application server:

`http://host name:port number/com.ibm.ram.repository.web/home.faces`

where *port number* (HTTP transport port, or WC_defaulthost) is 9080 by default.

For example, type:

`http://localhost:9080/com.ibm.ram.repository.web/home.faces`

To confirm the WC_defaulthost value, open the WebSphere Application Server administrative console and click **Servers** → **Application Servers** → *server_name* → **Ports**.

- On Apache Tomcat:

`http://host name:8080/com.ibm.ram.repository.web/home.faces`

For example, type:

`http://localhost:8080/com.ibm.ram.repository.web/home.faces`

2. Log in using admin for both the **User ID** and **Password**.
3. The first time that you access Rational Asset Manager, you will see a Configuration Error page. Click the **here** link and enter the administrator user ID and password at the prompts. The Rational Asset Manager Configuration page opens.
4. Specify the license server path:
 - a. Under License Server Path, type the port number, then the full name of the license server, separated by '@'. For example, 8010@license_server_path. If you have multiple license servers, separate multiple entries with commas. For example, 27000@license_server_path_a.example.com, 27000@license_server_path_b.example.com, 27777@license_server_path_c.example.com.
5. Specify the Web server path:
 - a. Under Web Server Path, type:
`http://host name:port number/com.ibm.ram.repository.web`

where *host name* is the host name of the application server and *port number* is the HTTP transport port.
For example, type:
`http://www.example.com:9080/com.ibm.ram.repository.web`
6. Specify the Web Services path:
 - a. Under Web Services Path, type:
`http://host name:port number/com.ibm.ram.repository.web.ws.was`

where *host name* is the host name of the application server and *port number* is the HTTP transport port.
For example, type:
`http://www.example.com:9080/com.ibm.ram.repository.web.ws.was`
7. Specify the documentation path:
 - a. Under Path to Information center, if the help and documentation Web application is on the same server as the server application, check **Use default**. Otherwise, clear the **Use default** check box and type the URL to the server where the help Web application is installed; for example, `http://www.example.com:8080/help`.
 - b. Under Path to Asset-based Development process, if the Asset-based Development and Governance Process documentation Web application is on the same server as the server application, check **Use default**. Otherwise, clear the **Use default** check box and type the URL to the server where the help Web application is installed; for example, `http://www.example.com:8080/com.ibm.ram.repository.web/abdprocess`.

8. Click on the **Help** link. (If the help system does not open, check that you included the documentation when you installed Rational Asset Manager server.)
9. In the navigation pane, expand the section "Administering the repository," then "Configuring repository settings."
10. Complete the remaining topics in the section entitled "Post-installation configuration." Additional steps that may be needed, depending on your configuration, are included in the section entitled "Optional configuration."

Additional configuration requirements for Linux and AIX

If you are running Rational Asset Manager on Linux or AIX, perform the tasks in this section as needed to complete your configuration.

Enabling artifact content indexing for Linux and AIX

To enable artifact content indexing on Linux and AIX, you must add the Stellent files to your library path environment variable `LD_LIBRARY_PATH` (for Linux) or `LIBPATH` (for AIX).

Before you begin

The Stellent files are located in the following directories, depending on which application you used for installing Rational Asset Manager server:

- Embedded WebSphere Application Server V6.1: `RAM_install_directory/ram/ewas/profiles/appServerName/installedApps/node/RAM1WebApplication.ear/com.ibm.ram.repository.web.ws.was.war/WEB-INF/classes/oiexport/`
- WebSphere Application Server: `appServer_install_directory/profiles/appServerName/installedApps/node/RAM1WebApplication.ear/com.ibm.ram.repository.web.ws.was.war/WEB-INF/classes/oiexport/`
- Apache Tomcat: `appServer_install_directory/com.ibm.ram.repository.web.ws.tomcat_runtime.war/WEB-INF/classes/oiexport/`

About this task

If you do not modify your library path variable to enable content indexing, you typically see an error on the Rational Asset Manager status page indicating that artifact indexing has been turned off.

To add update your library variable:

1. Consult your shell's man page for specific details on how to set environment variables. For example, in the Bash shell, enter the command `LD_LIBRARY_PATH=$LD_LIBRARY_PATH:path for WebSphere Application Server or Tomcat path shown above.`
2. After you update the environment variable, restart the Rational Asset Manager server.

Enabling content indexing to run for non-root users (Linux and AIX)

If you must run WebSphere Application Server or Apache Tomcat as a non-root user, then set the appropriate exporter permission on the directory that contains the files for Stellent content indexing.

About this task

To set exporter permission:

1. Log in as root.
2. In a command line, change to the directory of the Stellent content indexing files described in "Enabling artifact content indexing for Linux and AIX."
3. Type the following command: `chmod 755 exporter.`

Enabling database connectivity for non-root users (Linux and AIX)

If you must run WebSphere Application Server or Apache Tomcat as a non-root user, then you must set the appropriate permission on the database Java archive files that you upload.

About this task

To set permission:

1. Log in as root.
2. In a command line, change to the `<WAS_install_directory>/profiles/<profile_name>/config/cells/<cell_name>/ram_jdbc` directory.
3. Type the following command: `chmod 755 database jar file name` (for example, `chmod 755 db2jcc.jar`).
4. Repeat step 3 for each database Java archive file that you uploaded.

Rational Asset Manager Tuning Guide

The performance of Rational Asset Manager heavily depends on how you tune your application server, database, Web server, caching proxy, load balancer, and operating system. This section provides guidelines for how to tune these systems and Rational Asset Manager. Although it is not possible to cover every setting, the information provided here is a good starting point for driving high user loads on Rational Asset Manager. This section does not cover hardware setups or the expected user loads that can be supported in various setups. Refer to the Rational Asset Manager Capacity Planning Guide for this information.

Rational Asset Manager Tuning

The Rational Asset Manager configuration page has settings that you can adjust to achieve optimal performance. This page can be accessed by any repository administrator.

Table 4. Cross-Platform Rational Asset Manager Tuning Parameters

Problem	Parameter / Setting	Additional Details
Slow responses when searching for assets	Local folder / Do not use a shared folder	For best performance, each application server should have its own local folder on a hard disk local to the machine. This folder contains the search index, so it is recommended that the local folder be placed on a drive capable of fast reads and writes. This should not be the same hard disk on which the application server or operating system is installed. Although you can use a local folder that is shared between all application servers, this will degrade performance. To set the parameter, log in to Rational Asset Manager as an administrator and navigate to Administration → Configuration → Local folder .
General performance issues at regular intervals	Statistics index builder schedule / 10 minutes	Frequently running the statistics index builder leads to poor performance. A default setting of 10 minutes is adequate for most environments. To set the parameter, log in to Rational Asset Manager as an administrator and navigate to Administration → Configuration → Statistics index builder schedule .
General performance issues at regular intervals	Process subscriptions schedule / Set time for low workload periods	Subscriptions can be processed at custom intervals. For better performance, set this interval to a time when Rational Asset Manager experiences a relatively low workload. To set the parameter, log in to Rational Asset Manager as an administrator and navigate to Administration → Configuration → Statistics index builder schedule .
General performance issues at regular intervals	User and group information update schedule / Set time for low workload periods	User and group information can be processed at custom intervals. For better performance, set this interval to a time when Rational Asset Manager experiences a relatively low workload. To set the parameter, log in to Rational Asset Manager as an administrator and navigate to Administration → Configuration → User / group information update schedule .

Table 4. Cross-Platform Rational Asset Manager Tuning Parameters (continued)

Problem	Parameter / Setting	Additional Details
General performance issues at regular intervals	Review process notifications schedule / Set time for low workload periods	<p>Review process notifications can be processed at custom intervals. For better performance, set this interval to a time when Rational Asset Manager experiences a relatively low workload.</p> <p>To set the parameter, log in to Rational Asset Manager as an administrator and navigate to Administration → Configuration → Review process notification schedule.</p>

In addition to the above parameters, administrators can access the Job Status page in Rational Asset Manager by navigating to **Administration** → **Configuration** → **View Job Status**. This page will display currently running or previously run jobs that might impact performance in Rational Asset Manager. Error messages might also display on the Job Status page.

Application Server Tuning

Rational Asset Manager works closely with your application server; therefore, optimizing your application server settings will improve the performance of Rational Asset Manager.

This section specifically covers WebSphere Application Server V6.1 settings that significantly affect performance. You can also adjust these setting in WebSphere Application Server V6.0, but the instructions to set the parameters might be different.

Important: Back up your WebSphere Application Server profile before changing any parameters.

Table 5. Cross-Platform WebSphere Application Server V6.1 Tuning Parameters

Problem	Parameter / Setting	Additional Details
Out of memory errors in logs	Java Virtual Machine heap size / Between 1300 and 2000	<p>On a server with 4GB of memory is installed, you can specify two instances with a heap size of 1300MB, or one instance with a heap size of 2000MB. You must watch the system paging to make sure that there is enough memory available. If your server has 8GB of memory, then specify 2 instances with a heap size of 2000MB for each instance.</p> <p>To set the parameter, log in to WebSphere Administrative Console and navigate to Servers → Application servers → Java and process management → Process definition → Java virtual machine → Initial heap size and Maximum heap size.</p>
Database connection errors	JDBC Maximum Connections / 100	<p>Make sure that there are enough JDBC connections available to support all users that are logged into Rational Asset Manager.</p> <p>To set the parameter, log in to WebSphere Administrative Console and navigate to Resources → JDBC → Data sources → <Rational Asset Manager data source> → Connection pool properties → Maximum connections.</p> <p>Refer also to topic "MAXAPPLS and MAXAGENTS parameters" under DB2 tuning.</p> <p>Refer also to topic "Maximum number of processes for AIX and Linux" under operating system tuning.</p>

Table 5. Cross-Platform WebSphere Application Server V6.1 Tuning Parameters (continued)

Problem	Parameter / Setting	Additional Details
Out of memory errors in logs - session issues	Session Timeout / Default (30 minutes)	<p>The default value for a session timeout in WebSphere Application Server 6.1 is 30 minutes. Although we did not change this value for our tests, setting this value to a shorter time will allow for more users, especially if you have many users making quick transactions. Setting this value too low might not allow users to upload very large assets.</p> <p>To set the parameter, log in to WebSphere Administrative Console and navigate to Servers → Application servers → <Server name> → Session management → Set timeout.</p>
High CPU usage observed	Performance monitor infrastructure / disabled	<p>By default, WebSphere Application Server v6.1 enables basic performance monitor infrastructure (PMI). Although PMI is a good tool for tuning an application server, for maximum performance, disable this feature after the server has been properly tuned. You must disable it for all instances and node agents.</p> <p>To set the parameter, log in to WebSphere Administrative Console and navigate to Monitoring and Tuning → Performance Monitoring Infrastructure (PMI) → <Server name> → Enable Performance Monitoring Infrastructure (PMI).</p>
General performance issues	Prepared Statement Cache / 100	<p>WebSphere Application Server provides the ability cache commonly used prepared statements. If cached statements are being discarded, turn on PMI in WebSphere Application Server and increase the value.</p> <p>To set the parameter, log in to WebSphere Administrative Console and navigate to Resources → JDBC → Data sources → <Rational Asset Manager data source> → WebSphere Application Server data source properties → Statement cache size.</p> <p>Refer also to topic "Further Information for Tuning WebSphere Application Server."</p>
Session timeout issues	Maximum In-Memory Session Count / Default	<p>By default, Websphere Application Server 6.1 will maintain up to 1000 sessions in memory. However, the Allow Overflow option is also selected, which indicates that additional sessions will be stored in a secondary session table. If you expect to have more than 1000 in memory sessions, you must increase the number for the secondary session table.</p> <p>To set the parameter, log in to WebSphere Administrative Console and navigate to Servers → Application Servers → <Server name> → Session Management → Maximum in-memory session count.</p>
Periodic slowness; observed performance spikes due to garbage collections	Class Garbage Collection / Xgcpolicy:optavgpause5.0 (for WebSphere Application Server Fix Pack 16 and below) or -Xgcpolicy:gencon (for WebSphere Application Server Fix Pack 17 and above)	<p>Your specific server environment or workload might benefit from one of the other garbage collection settings. See http://java.sun.com/docs/hotspot/5.0/gc_tuning_5.html for more information on garbage collection settings.</p> <p>To set the parameter, log in to WebSphere Administrative Console and navigate to Servers → Application servers → <Server name> → Java and process management → Process definition → Java virtual machine → Generic JVM arguments.</p>

Table 5. Cross-Platform WebSphere Application Server V6.1 Tuning Parameters (continued)

Problem	Parameter / Setting	Additional Details
Server fails during transfer of large files; possibly with out of memory or malloc errors in logs	Web container custom property channelwritetype / synchronous data transfer (sync)	<p>The use of asynchronous data transfer may require an excessive number of buffers to send data over a TCP/IP connection.</p> <ol style="list-style-type: none"> 1. In the WebSphere Administrative Console, navigate to Servers → Application Servers → serverName → Web Container Settings → Web Container → Custom Properties. 2. Click New. 3. Add the following pair: <ul style="list-style-type: none"> • Name: com.ibm.ws.webcontainer.channelwritetype • Value: sync <p>Click OK and then save the configuration. Restart the application server to pick up the property.</p> <p>For a deployment manager:</p> <ol style="list-style-type: none"> 1. Start an interactive wsadmin session: <pre><dmgr-profile-root>\bin>wsadmin -lang jac1</pre> 2. Copy the following block of lines, then paste them all at once at the wsadmin> prompt: <pre>set dmgr [\$AdminConfig getid /Server:dmgr/] set webcontainer [\$AdminConfig list WebContainer \$dmgr] \$AdminConfig create Property \$webcontainer {{name com.ibm.ws.webcontainer.channelwritetype value sync}} \$AdminConfig show \$webcontainer \$AdminConfig save</pre> 3. Restart the deployment manager to pick up the property. <p>For more information, refer to http://www.ibm.com/support/docview.wss?uid=swg21317658.</p>

Table 6. AIX / Linux WebSphere Application Server V6.1 Tuning Parameters

Problem	Parameter / Setting	Additional Details
CPU is being overused or underused	WebContainer Pools / 30	<p>Web container threads are used by the application server to handle requests. If you notice that the CPU of the server is underused, try increasing this number. If it is overused, try reducing this number. Do not set the web container threads above 50.</p> <p>To set the parameter, log in to WebSphere Administrative Console and navigate to Servers → Application servers → <Server name> → Thread pools → WebContainer.</p> <p>Minimum size: 15 Maximum size: 30</p>

Table 7. Windows WebSphere Application Server 6.1 Tuning Parameters

Problem	Parameter / Setting	Additional Details
CPU is being overused or underused	WebContainer Pools / 50	<p>Web container threads are used by the application server to handle requests. If you notice that the CPU of the server is underused, try increasing this number. If it is overused, try reducing this number. Do not set the web container threads above 50.</p> <p>To set the parameter, log in to WebSphere Administrative Console and navigate to Servers → Application servers → <Server name> → Thread pools → WebContainer.</p> <p>Minimum size: 25</p> <p>Maximum size: 50</p>

In addition to these parameters, you can tune WebSphere Application Server under a specific workload by turning on Performance Monitor Infrastructure (PMI). This will provide detailed graphs showing performance data. Although you should have PMI turned on under a normal workload to capture data, this will decrease performance and it should be turned off after data capture is complete.

To enable PMI, log in to WebSphere Administrative Console and navigate to **Monitoring and Tuning** → **Performance Monitoring Infrastructure (PMI)** → **<Server name>** → **Enable Performance Monitoring Infrastructure (PMI)**.

Additional resources:

- http://publib.boulder.ibm.com/infocenter/wasinfo/v6r1/index.jsp?topic=/com.ibm.websphere.base.doc/info/aes/ae/tprf_tunepf.html

Database Server Tuning

A well tuned database is extremely important to achieving a high level of performance in Rational Asset Manager. This section is specific to DB2 version 9.1, but many of the parameters here are available in other versions of DB2. There might be similar parameters in Oracle and SQL Server.

Table 8. Cross-Platform DB2, version 9.1 Tuning Parameters

Problem	Parameter / Setting	Additional Details
No connections available	MAXAPPLS / AUTOMATIC (WebSphere Application Server maximum JDBC connections * the number of instances)	<p>Make sure that MAXAPPLS is set high enough to handle the number of JDBC Connection Pools that are specified in your application server. The MAXAPPLS setting must be greater than or equal to the JDBC Maximum Connections setting.</p> <p>Setting location: Database parameters</p> <p>Also refer to topic "JDBC Maximum Connections" under Application Server Tuning</p>
No connections available	MAXAGENTS / AUTOMATIC (WebSphere Application Server maximum JDBC connections * the number of instances)	<p>Make sure that MAXAGENTS is set high enough to handle the number of JDBC Connection Pools that are specified in your application server. The MAXAGENTS setting must be greater than or equal to the JDBC Maximum Connections setting.</p> <p>Setting location: Instance parameters</p> <p>Also refer to topic "JDBC Maximum Connections" under Application Server Tuning</p>

Table 8. Cross-Platform DB2, version 9.1 Tuning Parameters (continued)

Problem	Parameter / Setting	Additional Details
Deadlocks	MAXLOCKS / AUTOMACTIC (80)	The MAXLOCKS parameter indicates the maximum percentage of available locks within DB2 that an application can hold before escalating row locks to table locks. These table locks can result in deadlocks. Setting location: Database parameters
Deadlocks	LOCKLIST / AUTOMATIC (20000)	The LOCKLIST parameter represents the available memory for locks in DB2. You can use the following formula to set this parameter in a specific environment: $LOCKLIST = [(512 * 64 * MAXAPPLS) / 4096]*2$ Do not set this higher than the memory heap that is available to DB2. Setting location: Database parameters
Deadlocks	LOCKTIMEOUT / 60	If a single lock is stopping other transactions, this can result in a deadlock. To make sure this does not happen, set the lock time out to 60 seconds. Setting Location: Database parameters
General performance issues	Statistics / Schedule regular runs	Running statistics against the tables will help the optimizer determine the best path for accessing data. Statistics should be run on a regular basis or scheduled automatically.
Errors during database migrations	LOG_FIL_SIZ / 10000	The migration function in Rational Asset Manager might not work on databases with thousands of assets if the LOG_FIL_SIZ is set too low.

Table 9. AIX / Linux DB2, version 9.1 Tuning Parameters

Problem	Parameter / Setting	Additional Details
Unable to access DB2 server	*See Topic: Maximum number of processes for AIX and Linux under operating system tuning.	If you cannot access the DB2 server, it might be possible that the db2agents have used the maximum number of processes.

Other parameters to check in your specific environment can include, but is not limited to:

- APP_CTLHEAP_SZ
- DATABASE_MEMORY
- DFT_PREFETCH_SZ
- NUM_IOCLEANERS
- NUM_IOSERVERS
- SORTHEAP
- MAX_QUERYDEGREE

Setting parameters to AUTOMATIC within DB2 will allow DB2 to tune the parameters based on the current workload. At first, this can result in a negative performance impact and some potential errors if certain values are not tuned quickly enough, but it is a good way to determine what parameters may need to be tuned to achieve maximum performance.

If you set a parameter too high and cannot start the DB2 control center, the parameter can be changed on the DB2 command line by using the statement `db2 update db cfg for db_name using parameter_name value.`

Additional Resources:

- DB2 is a complex system with many tuning parameters that have not been covered in this very brief overview. One of the most comprehensive articles for tuning DB2 is “Best Practices for Tuning DB2 UDB V8.1 and its Databases” by Fraser McArthur. <http://www.ibm.com/developerworks/db2/library/techarticle/dm-0404mcarthur/>

Web Server Tuning

This section provides tuning information for IBM HTTP Web Server, which is included in the supplements for Websphere Application Server.

The parameters that are described in this section can be modified in the httpd.conf file.

Table 10. Cross-Platform Web Server Tuning Parameters

Problem	Parameter / Setting	Additional Details
Connection closed errors	MaxKeepAliveRequests / 0	This directive signifies the maximum number of requests that a single client can make before the connection is closed. Generally, this value is set to 0.
General performance issues	LoadModule / ibm_afpa_module modules/mod_afpa_cache.so	To cache static content such as images, uncomment the following line: LoadModule ibm_afpa_module modules/mod_afpa_cache.so This will activate the Fast Response Cache Accelerator (FRCA).
General Performance Issues	Afpa Logging / off	If you do not need FRCA logging turned on, you can turn it off by placing the comment character ('#') before the AfpaLogFile directive. Doing this will also boost server performance. #AfpaLogFile "_path_to_server_/logs/afpalog" V-ECLF

Table 11. AIX / Linux Web Server Tuning Parameters

Problem	Parameter / Setting	Additional Details
Out of threads errors in web server logs	ThreadLimit / 25	Depending on how many users access Rational Asset Manager at a given time, it might be necessary to increase the thread limit. To see if you need to increase the limit, check the web server logs for out of threads errors or warnings.
Out of threads errors in web server logs	ThreadsPerChild / 25	Depending on how many users access Rational Asset Manager at a given time, it might be necessary to increase the thread limit. To see if you need to increase the limit, check the web server logs for out of threads errors or warnings.

Table 12. Windows Web Server Tuning Parameters

Problem	Parameter / Setting	Additional Details
Out of threads errors in web server logs	ThreadLimit / 4000	Depending on how many users access Rational Asset Manager at a given time, it might be necessary to increase the thread limit. To see if you need to increase the limit, check the web server logs for out of threads errors or warnings.
Out of threads errors in web server logs	ThreadsPerChild / 3000	Depending on how many users access Rational Asset Manager at a given time, it might be necessary to increase the thread limit. To see if you need to increase the limit, check the web server logs for out of threads errors or warnings.

Additional Resources:

- http://publib.boulder.ibm.com/infocenter/wasinfo/v6r1/index.jsp?topic=/com.ibm.websphere.ihs.doc/info/ihs/ihs/tihs_startadmserv.html
- <http://httpd.apache.org/>

Caching Proxy Tuning

This section specifically covers IBM Edge Caching Proxy.

You can modify the parameters that are described in this document in the `ibmproxy.conf` file.

Table 13. IBM Edge Server Tuning Parameters

Problem	Parameter / Setting	Additional Details
Unable to upload assets with large file sizes	LimitRequestBody / 2G	By default, this parameter is set to 10 M. Change this to a larger value so that users can upload large files.
Unable to upload assets with large file sizes due to timeouts	InputTimeOut / 60 Minutes	Changing this parameter to 60 minutes will give users sufficient time to upload large assets. Refer also to topic "Session Timeout" under Application Server Tuning
Unable to upload assets with large file sizes due to timeouts	ReadTimeout / 60 Minutes	Changing this parameter to 60 minutes will give users sufficient time to upload large assets. Refer also to topic "Session Timeout" under Application Server Tuning
Unable to upload assets with large file sizes due to timeouts	ScriptTimeout / 60 Minutes	Changing this parameter to 60 minutes will give users sufficient time to upload large assets. Refer also to topic "Session Timeout" under Application Server Tuning

Table 14. Additional Settings

Parameter	Setting
SendRevProxyName	yes
PurgeAge	3
DirShowCase	off
MaxActiveThreads	110
ConnThreads	15
MaxPersistRequest	15
ServerConnPool	on
CacheMemory	1200 M (max)
CacheAlgorithm	responsetime
numclient	100
flexibleSocks	off
listenBacklog	256

Operating System Tuning

Cross-Platform:

- Make sure that the page file size is at least 2GB.
- On AIX systems, define the paging file on a disk that is separate from the disk where WebSphere resides.

Windows:

Table 15. Windows Operating System Settings

Problem	Parameter / Setting	Additional Details
“Address already in use” errors seen when testing with Rational Performance Tester.	registry item MaxUserPort / 65534	<ol style="list-style-type: none"> 1. In the registry editor, navigate to My Computer\HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters. 2. Right-click Parameters, click New → DWORD Value. 3. Type MaxUserPort for the name of the DWORD value. 4. Right-click the value and click Modify. 5. Set the value to 65534. 6. Under base, select Decimal. 7. Reboot the machine.
To avoid session availability bottleneck (seen with 900 users on 6-instance cluster)	registry item TcpTimedWaitDelay / 30	<ol style="list-style-type: none"> 1. In the registry editor, navigate to My Computer\HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\Tcpip\Parameters. 2. Right-click Parameters, click New → DWORD Value. 3. Type TcpTimedWaitDelay for the name of the DWORD value. 4. Right-click the value and click Modify. 5. Set the value to 30. 6. Under Base, select Decimal. 7. Reboot the machine.

Additional Resources:

- <http://www.redbooks.ibm.com/abstracts/redp3943.html?Open>

AIX/Linux

The following instructions are specific to AIX.

Maximum number of processes

The maximum number of processes that a user can run must be set to a high enough level. This is especially true of the database server, which can have many database agents.

To view the set maximum number of processes, use the following command:

```
lsattr -E -l sys0 -a maxuproc
```

To set the maximum number of processes, use the following command:

```
chdev -l sys0 -a maxuproc=2000
```

This will result in a limit of 2000.

File descriptors

In the /etc/security/limits file, change all settings to unlimited.

```
Soft FILE Size      -1
Soft CPU Time       -1
Soft STACK Size     -1
Soft CORE File Size -1
Hard FILE Size      -1
Hard CPU Time       -1
Hard STACK Size     -1
Hard CORE File Size -1
```

This can also be accomplished by using the `ulimit` command.

Table 16. AIX/Linux Operating System Settings

Problem	Parameter / Setting	Additional Details
Going to external DNS	<code>/etc/netsvc.conf</code>	Add this line to the <code>netnsvc.conf</code> file: <code>hosts=local,bind4</code>
Ethernet adapter is doing Segmentation Offload	<code>no -o tcp_recvspace=65536</code> <code>no -o tcp_sendspace=65536</code> <code>no -o udp_sendspace=65536</code> <code>no -o udp_recvspace=65536</code> <code>no -o tcp_finwait2=60</code> <code>no -o tcp_timewait=1</code> <code>no -o tcp_keepidle=600</code> <code>no -o tcp_keepintvl=10</code> <code>no -o tcp_keepinit=40</code>	The impact of these commands is affected by how big the TCP/IP packets are that your application creates, sends, or receives. The "no -a" commands are in effect until the system is rebooted. To make them permanent, add them to the <code>/etc/tunables/nextboot</code> file. These can also be set on a per-tcpip-interface basis. Check the "lsattr -E -l en0" and if they are not set there, then AIX uses the "no -a" values.
AIX sees a number of virtual processors that is greater than the number of physical processors.	<code>smtctl -m off</code>	The AIX <code>smtctl</code> command shows how many virtual processors that AIX sees. Turn SMT off with the command: <code>smtctl -m off</code> The two threads on each physical processor share a Level1 cache. If the threads are unrelated, they corrupt the other cache data, which can end up slowing down the overall throughput as the system waits for more memory fetches to refresh the cache. Consider making a couple of test runs with this on and off to see what setting is best for your workload.
NIS is running.	Disable NIS.	If the <code>/etc/hosts</code> and <code>/etc/passwd</code> files contain lines with '+', then the system is running 'NIS', also called YellowPages. This can also be seen by <code>ps -ef grep yp</code> NIS is not normally enabled on AIX-out-of-the-box. If you do not need this for the application server, consider a test run with NIS disabled.
Many sockets in FIN_WAIT_2 state	<code>no -o tcp_finwait2=60</code>	If the "netstat -an" shows many sockets in FIN_WAIT_2 state, this means "high connection rates occur" and will correspond to the "Address already in use" message that is in server logs. This can be controlled by a "no" command. First look at the current setting, <code>"no -a grep fin"</code> and see the default of 1200 half-seconds (i.e., 10 minutes). Try a test run with the following setting: <code>no -o tcp_finwait2=60</code> The "no" command is good until reset or until a reboot. To make it permanent, define it in <code>/etc/tunables/nextboot</code> .
The processor is capable of using large pages, but is not doing so.	Add parameter to JVM: <code>-Xlp/-Xlp64</code>	Enables 64 KB pages.

Additional Resources:

- http://publib.boulder.ibm.com/infocenter/wasinfo/v6r1/index.jsp?topic=/com.ibm.websphere.base.doc/info/aes/ae/tprf_tuneprf.html
- <http://www.redbooks.ibm.com/redbooks/pdfs/sg246392.pdf>
- http://publib.boulder.ibm.com/infocenter/wasinfo/v4r0/index.jsp?topic=/com.ibm.websphere.v4.doc/wasa_content/0901.html
- ftp://ftp.software.ibm.com/software/webserver/appserv/library/v61/wasv610nd_tune.pdf

Creating a backup of a Rational Asset Manager repository

To make a backup copy of your Rational Asset Manager repository that can be restored later:

1. Log into the Rational Asset Manager Web client as an administrator.
2. Navigate to **Administration** → **Configuration**.
3. Note the location of the persist folder.
4. Stop the server.
5. On the machine where the database is located, create a backup of the Rational Asset Manager database. Refer to the documentation for your database application for instructions.
6. In the operating system, create a backup copy of the persist folder

Installing the Rational Asset Manager Eclipse Client

This section describes how to install the Rational Asset Manager Eclipse client application.

About this task

You can install the Rational Asset Manager Eclipse Client by the following methods:

- If you have an existing Eclipse integrated development environment (IDE) installed on your computer, then you can use Eclipse update manager to find and install the Rational Asset Manager Eclipse client plug-ins from a Rational Asset Manager server. To install the client plug-in, follow the Eclipse update process (**Help** → **Software Updates** → **Find and Install**).
- If you do not have an existing Eclipse IDE, then you can install the Eclipse client from the Rational Asset Manager installation media. Note that you can also install the Eclipse client into an existing Eclipse IDE by this method.

Installing Rational Asset Manager Eclipse client using Eclipse update manager

You can install the Rational Asset Manager Eclipse client into an existing version of Eclipse by using the Eclipse update manager.

Before you begin

Your Eclipse IDE must meet the software requirements before you can install the Rational Asset Manager Eclipse client into it. See “Software requirements” on page 12 for detailed requirements. You must also know the URL for accessing the Rational Asset Manager server using the Web client.

1. Start Eclipse.
2. Click **Help** → **Software Updates** → **Find and Install**.
3. In the Install/Update pane, select **Search for new features to install**.
4. Click **New Remote Site**
5. Provide the Update site details:
 - a. Type a name for the new entry; for example, type Rational Asset Manager.
 - b. Open the Rational Asset Manager Web client and click **Extensions** in the header or footer of the application.
 - c. On the Extensions page in the **Eclipse Client Plug-in** section, copy the URL listed next to **Update site** and paste it into the **URL** field.

If the Rational Asset Manager server is only available on an https protocol, the Eclipse client will not be able to use the update site. To resolve this, refer to the topic entitled Adding the server’s public certificate to the Eclipse client.
6. Click **OK**.
7. Select the new Rational Asset Manager site.
8. Accept the license agreement and click **Next**.
9. Click **Finish**.
10. Click **Install All**.

Note: If you are installing the Rational Asset Manager Eclipse client into Rational Team Concert, you can uncheck these features, which should already be installed:

- IBM Rational common user assistance

- IBM Rational common user assistance resources

Results

To verify that the installation was successful, open the Asset Management perspective; click **Window** → **Open Perspective** → **Other** and then select **Asset Management** from the list. Click **OK**.

Installing IBM Rational Asset Manager Eclipse client using the IBM Installation Manager graphical interface

The following steps describe how to install the Rational Asset Manager Eclipse client package with the Installation Manager GUI.

1. Start the Rational Asset Manager launchpad program (see “Installing from the launchpad program” on page 23) and then select **IBM Rational Asset Manager**. If Installation Manager is not already installed, follow the steps in the installation wizard to complete the installation. The Install Packages wizard opens.
2. The Install page of Install Packages wizard lists all the packages found in the repositories that Installation Manager searched.
3. To search for updates to the IBM Rational Asset Manager package, click **Check for updates**.
4. Select the **Rational Asset Manager client** 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 packages at the same time, then all the packages will be installed into the same package group.

5. 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 to install (for example, the base package and an update) are listed under the package name.
 - a. If you agree to the terms of all of the license agreements, click **I accept the terms of the license agreements**.
 - b. Click **Next** to continue.
6. If you are installing the first package on this computer, then on the Location page, type the path for the *shared resources directory* in the **Shared Resources Directory** field; or accept the default path. The shared resources directory contains resources that can be shared by one or more package groups. Click **Next** to continue.

The default path is:

- For Windows: C:\Program Files\IBM\SDP70Shared
- For Linux: /opt/IBM/SDP70Shared

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

7. On the Location page, either choose an existing *package group* to install the IBM Rational Asset Manager Eclipse client package into, or create a new one. 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. The name for the package group is created automatically.

The default path is:

- For Windows: C:\Program Files\IBM\SDP70
 - For Linux: /opt/IBM/SDP70
- c. Click **Next** to continue.
8. On the next Location page, you can choose to extend an existing Eclipse IDE already installed on your system, adding the functionality in the packages that you are installing.
 - If you do not want to extend an existing Eclipse IDE, click **Next** to continue.
 - To extend an existing Eclipse IDE:
 - a. Select **Extend an existing Eclipse**.
 - b. In the **Eclipse IDE** field, type or navigate to the location of the folder containing the eclipse executable file (eclipse.exe or eclipse.bin). Installation Manager will check if the Eclipse IDE version is valid for the package that you are installing. The **Eclipse IDE JVM** field displays the Java Virtual Machine (JVM) for the IDE that you specified.
 - c. Click **Next** to continue.
 9. On the Features page under **Languages**, select the languages for the package group. The corresponding national language translations for the user interface and documentation for the IBM Rational Asset Manager package will be installed. Note that your choices apply to all packages installed under this package group.
 10. On the next Features page, click **Next**. Note that the one feature for IBM Rational Asset Manager cannot be cleared.
 11. On the Summary page, review your choices before installing the IBM Rational Asset Manager package. If you want to change the choices that you made on previous pages, click **Back** and make your changes. When you are satisfied with your installation choices, click **Install** to install the package. A progress indicator shows the percentage of the installation completed.
 12. 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 IBM Rational Asset Manager client to start when you exit.
 - c. Click **Finish** to launch the selected package. The Install Package wizard closes and you are returned to the Start page of Installation Manager.

Installing silently

About this task

You can install a product package 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.

Note: For Rational Asset Manager, only the Eclipse client can be installed silently.

Note that you must install Installation Manager before you can silently install a package.

There are two main tasks required for silent installation:

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

What to do next

For details on creating a response file and running Installation Manager in silent mode, see the Installation Manager online help.

Adding the server public certificate to the Eclipse client

If the Rational Asset Manager server is only available on an https protocol, the Eclipse client will not be able to use the update site. To resolve this, you must add the server's public certificate to the Eclipse client.

About this task

These instructions are for a Windows computer with a Firefox browser. Instructions for Linux are similar.

1. Save the certificate.
 - a. Access the Rational Asset Manager Web client using a browser.
 - b. Double-click the security icon in the status bar. The Security window opens.
 - c. Click **View Certificate**.
 - d. In the Certificate Viewer, click the Details tab.
 - e. On the Details page, click **Export**.
 - f. In the Save Certificate to File window, select X.509 Certificate (DER) in the Save as Type list.
 - g. Click **Save**.
2. (Optional) Create the keystore. You can use an existing keystore or create a new one. To create a new keystore, run the following command from a command prompt:
`keytool.exe -genkey -keystore ram.keystore -storepass ibmram`

The keystore will contain the keys for the Eclipse client.

3. Import the certificate to the keystore.
 - a. From a command prompt, run the following command to import the certificate:
`keytool.exe -import -alias [server] -file [server].der -keystore ram.keystore -storepass ibmram`

Where server is the name of the server with Rational Asset Manager server.

- b. Type yes to accept the certificate and press Enter.
 - c. Verify that the certificate was added to the keystore.
4. Launch the Eclipse client from a command prompt using the following command:

```
eclipse -vmargs -Djavax.net.ssl.trustStore="drive:\path\to\certificate\ram.keystore" -Djavax.net.ssl.trustStorePassword=
```

Where drive:\path\to\certificate\ram.keystore is the full path to the ram.keystore file. Eclipse will start and will trust the connection with the server.

Uninstalling Rational Asset Manager

The Uninstall Packages option in the Installation Manager enables you to uninstall packages from a single installation location. You can also uninstall all the installed packages from every installation location.

Before you begin

To uninstall the packages, you must log in to the system using the same user account that you used to install the product packages.

Note: If you are uninstalling Rational Asset Manager server, Installation Manager will only remove the files that it installed. If you installed the Rational Asset Manager server manually on an application server, then you must uninstall it manually.

Note: If you deployed enterprise or Web archive files using the Rational Asset Manager setup assistant, you must uninstall them manually or through the setup assistant. Installation Manager can only uninstall applications that it has installed.

About this task

To uninstall the packages:

1. Close the programs that you installed using Installation Manager.
2. If you are uninstalling Rational Asset Manager server on embedded WebSphere Application server, then stop the server. For example, run the `stopServer.bat server1` from a command prompt in the `WAS_PROFILE/bin` folder.
3. On the Start page click **Uninstall Packages**.
4. In the Uninstall Packages page, select the Rational Asset Manager product package that you want to uninstall. Click **Next**.
5. In the Summary page, review the list of packages that will be uninstalled and then click **Uninstall**. The Complete page is displayed after the packages are removed.
6. Click **Finish** to exit the wizard.

Uninstalling Rational Asset Manager applications installed using the server setup application

If you used the Rational Asset Manager server setup application to deploy Rational Asset Manager applications, instead of using the Installation Manager to install them, you can uninstall the enterprise and Web archives from the application server using the server setup application, but you must manually remove any other settings and configurations.

1. Launch the Rational Asset Manager server setup application.
2. On the deployment page, click uninstall for each enterprise or Web archive to be removed from the application server.
3. Open the WebSphere Administrative Console and remove changes made for Rational Asset Manager. Refer to the section entitled "Installing Rational Asset Manager server manually on WebSphere Application Server" on page 48 for assistance identifying configurations that were set up for Rational Asset Manager.

Uninstalling Rational Asset Manager from WebSphere Application Server manually

If you want to uninstall Rational Asset Manager manually, use the following instructions to uninstall the enterprise and Web archives from the application server and remove any other settings and configurations.

1. Start the WebSphere Administrative Console.
2. Log in using an administrator user ID and password.
3. Delete the datasource.
 - a. Locate and click the Datasource with the JNDI name jdbc/RAM_Con
 - If you are using a standalone server, you may find it under the Server scope.
 - If you are using a network server, you may find it under the cluster that Rational Asset Manager was installed on.
 - b. Note the name of the component-managed authentication alias that the datasource uses.
 - c. Delete the datasource.
 - d. Navigate to **Security** → **Secure administration, applications & Infrastructure** → **Java Authentication and Authorization Service** → **J2C Authentication Data**.
 - e. Delete the entry whose name matches the component-managed authentication alias that you noted.
4. Optionally, if your server is a network deployment, delete system integration bus.
 - a. Navigate to **Service Integration** → **Buses**.
 - b. Delete the bus named RAMBus.
 - c. Navigate to **Resources** → **JMS** → **Connection Factories**.
 - d. Delete the factory named RAM Factory. It might be under the scope of the cluster that Rational Asset Manager was installed on.
 - e. Navigate to **Resources** → **JMS** → **Topics**.
 - f. Delete the topic named RAM Cache. It might be located under the scope of the cluster that Rational Asset Manager was installed on.
5. Remove the applications.
 - a. Click **Applications** → **Enterprise Applications** in the navigation pane.
 - b. Check any of the applications that are installed:
 - RAM1WebApplication
 - com.ibm.ram.repository.setup.web.ear
 - iehs_war
 - rmcabdgovernprocess_war
 - c. Click **Uninstall**.
 - d. Click **Save** to apply the changes to the master configuration.
6. Optionally, if Rational Asset Manager was the only application on the server, remove any environment variables.
 - a. Click **Environment** → **WebSphere Variables** in the navigation pane.
 - b. Click the name of any environment variables that were set up for Rational Asset Manager (for example, Oracle_JDBC_DRIVER_PATH).
 - c. Click **Delete**.
 - d. Click **Save** to apply the changes to the master configuration.

7. Optionally, reconfigure authentication and security settings. If you configured security specifically for Rational Asset Manager, then revert any settings to the previous configuration. If the security settings apply to other applications, do not modify them.
8. Restart the server.

Working with IBM Installation Manager

About this task

This section deals with some common tasks relating to IBM Installation Manager. For more information, see the Installation Manager online help or the Installation Manager Information Center at <http://publib.boulder.ibm.com/infocenter/install/v1m0r0/index.jsp>.

Installing Installation Manager on Windows

About this task

If you start the installation of your product from the launchpad program, then the installation of IBM Installation Manager is started automatically if it is not already installed on your workstation. (For more information on this process, refer to “Installing from the launchpad program” on page 23.) In other cases, you must manually start the installation of Installation Manager.

To start the installation of Installation Manager manually:



1. Run `install.exe` from the `InstallerImage_win32` folder on the first installation disk.
2. Click **Next** on the Install Packages page.
3. Review the license agreement on the License Agreement page and select **I accept the terms in the license agreement** to accept. Click **Next**.
4. Click the **Browse** button on the Destination Folder page to change the installation location if required. Click **Next**.
5. Click **Install** on the Summary page. 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 and AIX

About this task

IBM Installation Manager is installed by the launchpad. For more information on this process, refer to “Installing from the launchpad program” on page 23.

To install Installation Manager manually:

1. Open a terminal window with root user privileges.
2. Run `install`.
 -  This file is located in the `InstallerImager_linux` folder on the first installation disk.
 -  This file is located in the `InstallerImager_aix` folder on the first installation disk.
3. Click **Next** on the Install Packages screen.
4. Review the license agreement on the License Agreement page and select **I accept the terms in the license agreement** to accept. Click **Next**.
5. If necessary, edit the installation directory location. Click **Next**.
6. Click **Install** on the information summary page. 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

About this task

IBM Installation Manager should be started from the launchpad program. Doing so starts Installation Manager with a configured repository preference and selected Rational Asset Manager packages. If you start Installation Manager directly, then you must set a repository preference and choose product packages manually. For more information, see [Planning to install](#).

To start Installation Manager manually:

1. Open the **Start** menu from the **Taskbar**.
2. Select **All Programs** → **IBM Installation Manager** → **IBM Installation Manager**.

What to do next

Starting Installation Manager on Linux and AIX

About this task

IBM Installation Manager should be started from the launchpad program. Doing so starts the Installation Manager with a configured repository preference and selected Rational Asset Manager packages. If you start Installation Manager directly, then you must set repository preference and choose product packages manually. For more information, see [Planning to install](#).

To start Installation Manager manually:

1. Open a terminal window with root user privileges.
2. Change directory to the installation directory for Installation Manager (by default, `/opt/IBM/InstallationManager/eclipse`) and run `IBMIM`.

Uninstalling Installation Manager on Windows

About this task

To uninstall Installation Manager:

1. Open the **Start** menu from the **Taskbar**.
2. Select **All Programs** → **IBM Installation Manager** → **Uninstall IBM Installation Manager**.
3. Click **Next** on the Uninstall page. The IBM Installation Manager is selected for uninstallation.
4. Click **Uninstall** in the Summary page.

Results

Note: You can also uninstall Installation Manager by using the Control Panel. Click **Start** → **Settings** → **Control Panel**, and then double-click **Add or Remove Programs**. Select the entry for IBM Installation Manager and click **Remove**.

Uninstalling Installation Manager on Linux and AIX

About this task

IBM Installation Manager must be uninstalled using the package management tool that is included with your Linux or AIX version.

To uninstall Installation Manager manually on Linux or AIX:

1. Open a terminal window with root user privileges.
2. Change directory to the uninstallation directory of Installation Manager. By default, this is `/var/ibm/InstallationManager/uninstall`. If IBM Installation Manager has been installed to a location other than the default path, locate the uninstall directory relative to where Installation Manager is installed.
3. Run `./uninstall`.

IBM Packaging Utility

Use IBM Packaging Utility software to copy product packages to a repository that can be placed on a Web server available over HTTP or HTTPS.

Packaging Utility software is located on the Enterprise Deployment CD for each platform (Windows and Linux) that is included with Rational Asset Manager. If you want to place a repository that contains a Rational Asset Manager package on a Web server that will be available over HTTP or HTTPS, you must use Packaging Utility to copy the product package of Rational Asset Manager into the repository.

Use this utility to perform the following tasks:

- Generate a new repository for product packages.
- Copy product packages to a new repository. You can copy multiple product packages into a single repository, thereby creating a common location for your organization from which product packages can be installed using IBM Installation Manager.
- Delete product packages from a repository.

Refer to the online help for Packaging Utility for full instructions using the tool.

Installing Packaging Utility

IBM Packaging Utility must be installed from the Enterprise Deployment CD before it can be used to copy the Rational Asset Manager product package.

About this task

Use the following steps 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 zip 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 Packaging Utility installer executable.
 - For Windows: Change to the InstallerImage_win32 directory in the area where the pu.disk_win32.zip file was unpacked. Locate the installer executable "install.exe".
 - For Linux: Change to the InstallerImage_linux directory in the area where the pu.disk_linux.zip file was unpacked. Locate the installer executable "install".
4. Start the installer executable and follow the instructions in the wizard to install the Packaging Utility.
5. 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.
6. When the installation of Installation Manager completes, or if it is already 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.

Notices

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