



Installation and Upgrade Guide



Installation and Upgrade Guide

Note

Before using this information and the product it supports, read the information in “Notices” on page 195.

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About this book

The installation portion of this document provides installation instructions and prerequisites for the complete default installation of the IBM® Rational® Portfolio Manager solution for the following configurations with DB2® and Oracle databases with Tomcat and WebSphere® Application Servers.

The migration portion of this document outlines the steps to migrate IBM® Rational® Portfolio Manager Database (DB2® V8.2 and Oracle 9i or 10g) from version 6.2.x.x and 7.0.x.x to version 7.1.0.0 and from version 7.1.0.0 or 7.1.0.1 to 7.1.1.1.

Audience

This document is intended for database administrators, system administrators, and network administrators responsible for the installation and configuration of the IBM Rational Portfolio Manager server environment.

What this manual does not cover

This manual does not describe installation of the following:

- UNIX® operating systems
- Linux® operating systems
- Oracle Database Management System
- DB2 Universal Database™ Management System Enterprise Edition
- IBM HTTP Server
- Web application servers
- Lightweight Directory Access Protocol (LDAP)
- Citrix
- Tivoli® Access Manager (TAM)
- WebSEAL

How to use this book

This section describes a typical reading path for the default Rational Portfolio Manager installation and configuration, and for the Rational Portfolio Manager migration from 6.2.x.x to 7.1.x.x to 7.1.1.1.

Installation and configuration for IBM Rational Portfolio Manager

The installation section of this document describes the installation and configuration for IBM Rational Portfolio Manager 7.1.0.0. The following table describes a typical reading path.

Table 1. How to use this book to install Rational Portfolio Manager 7.1.0.0

Task	Document section
Planning the installation	Chapter 1, "Introduction," on page 1 and Chapter 2, "Planning your installation," on page 3

Table 1. How to use this book to install Rational Portfolio Manager 7.1.0.0 (continued)

Task	Document section
Installing the database component	<p>One of the following chapters on installing and configuring Rational Portfolio Manager database:</p> <ul style="list-style-type: none"> • Chapter 3, “Installing and configuring the IBM Rational Portfolio Manager database for DB2 ,” on page 9 • Chapter 4, “Installing the IBM Rational Portfolio Manager database for Oracle,” on page 17
Installing and configuring the middleware component	<p>One of the following chapters on installing and configuring Rational Portfolio Manager middleware:</p> <ul style="list-style-type: none"> • Chapter 5, “Installing middleware: WebSphere Application Servers,” on page 31 • Chapter 6, “Installing middleware: Tomcat 5.5 application server,” on page 95 • Refer to this section to configure middleware environment variables: Chapter 7, “Middleware environment variables reference,” on page 103
Installing the client	Chapter 8, “Setting up the Rational Portfolio Manager client,” on page 113
Installing the data warehouse database component (optional)	<p>One of the following chapters on installing and configuring the Rational Portfolio Manager data warehouse database:</p> <ul style="list-style-type: none"> • Chapter 10, “Data warehouse Single instance installation on DB2,” on page 143 • Chapter 11, “Data warehouse single instance installation on Oracle ,” on page 149
Installing the data warehouse common reporting middleware component (optional)	<p>One of the following chapters on installing and configuring Rational Portfolio Manager data warehouse common reporting middleware:</p> <ul style="list-style-type: none"> • Chapter 12, “Data warehouse common reporting middleware installation: WebSphere Application Server 6.0 ,” on page 153 • Chapter 13, “Data warehouse common reporting middleware installation: Tomcat 5.5 Application Server,” on page 171 • Refer to this section to configure the data warehouse common reporting middleware environment variables: Chapter 14, “Data warehouse common reporting middleware environment variable references,” on page 175

Migration IBM Rational Portfolio Manager from versions 7.1.0.0 to 7.1.0.1 to 7.1.1.1.

The migrations section of this document describes the migration and configuration for IBM Rational Portfolio Manager. The following table describes a typical reading path.

Table 2. How to use this book to migrate to 7.1.1.1

Task	Document section
Migrating the database component from version 6.2.x.x to 7.0.x.x to version 7.1.0.0 (Use this task as part of your reading path if you are migrating from version 6.2.x.x)	<p>One of the following chapters on migrating and configuring the Rational Portfolio Manager database:</p> <ul style="list-style-type: none"> • “Migrating IBM Rational Portfolio Manager database from version 6.2.x.x or 7.0.x.x to version 7.1.0.0 on DB2” on page 119 • “Migrating IBM Rational Portfolio Manager database from version 6.2.x.x or 7.0.x.x to version 7.1.0.0 on Oracle” on page 124
Migrating the database component from 7.1.0.0 to 7.1.0.1 to 7.1.1.1	<p>One of the following chapters on migrating and configuring the Rational Portfolio Manager database from version 7.1.0.0 to 7.1.0.1 to 7.1.1.1:</p> <ul style="list-style-type: none"> • “Migrating IBM Rational Portfolio Manager database from version 7.1.0.0 or 7.1.0.1 to 7.1.1.1” on page 128 • For DB2 see: “Migrating IBM Rational Portfolio Manager on DB2 for the UNIX system” on page 129 • For Oracle see: “Migrating IBM Rational Portfolio Manager on Oracle for the UNIX system” on page 135
Installing and configuring the middleware component	<p>See the following migration chapter on installing and configuring Rational Portfolio Manager middleware:</p> <ul style="list-style-type: none"> • “Deploying Rational Portfolio Manager middleware” on page 142
Installing the data warehouse common reporting middleware component (optional)	<p>One of the following chapters on installing and configuring Rational Portfolio Manager data warehouse common reporting middleware:</p> <ul style="list-style-type: none"> • Chapter 12, “Data warehouse common reporting middleware installation: WebSphere Application Server 6.0,” on page 153 • Chapter 13, “Data warehouse common reporting middleware installation: Tomcat 5.5 Application Server,” on page 171 • Refer to this section to configure the data warehouse common reporting middleware environment variables: Chapter 14, “Data warehouse common reporting middleware environment variable references,” on page 175
Installing the client	Chapter 8, “Setting up the Rational Portfolio Manager client,” on page 113

Before reading this book, make sure you have read the *IBM Rational Portfolio Manager Release Notes*[®] for version 7.1.1.1 and any subsequent update.

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Contacting IBM Client Support for Rational software products

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

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

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

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

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

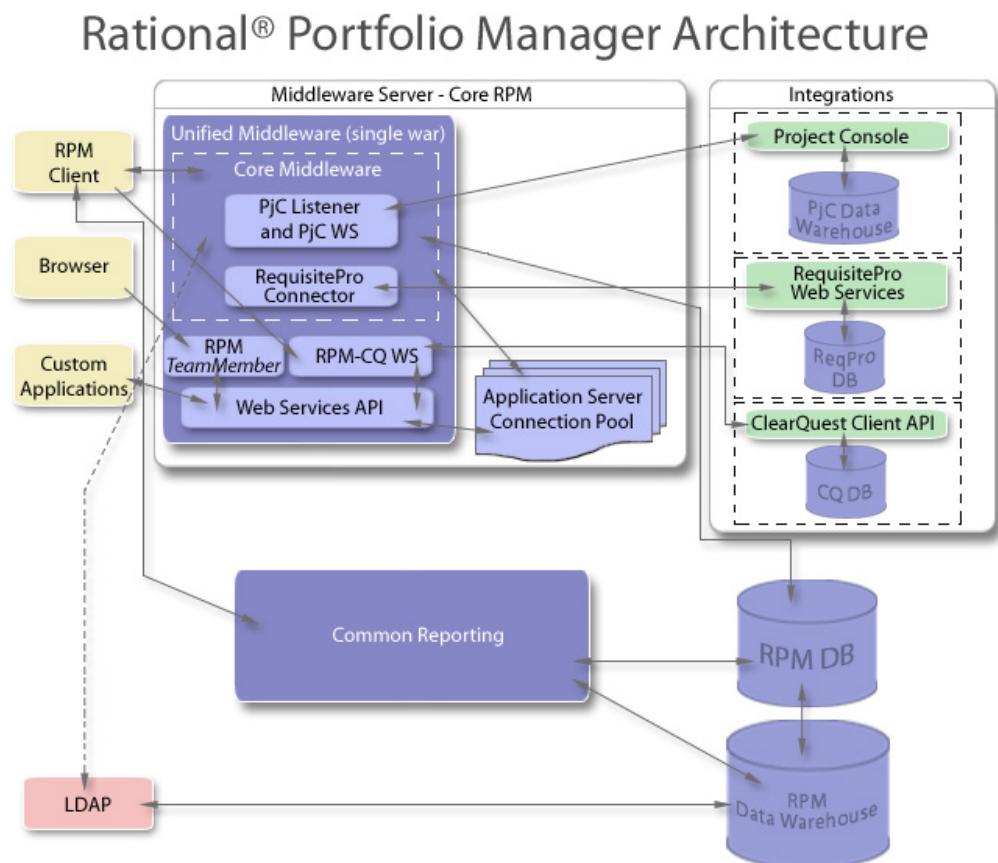
Chapter 1. Introduction

This chapter presents an overview of IBM Rational Portfolio Manager capabilities and architecture, and outlines hardware and software requirements for installation.

Before you begin

Read this chapter and the *IBM Rational Portfolio Manager 7.1.1.1 Release Notes* before you begin your installation.

Figure 1. Rational Portfolio Manager architecture



Project portfolio management

Project portfolio management is about aligning IT projects and investments with business priorities through planning and managing individual projects and portfolios of projects to meet enterprise objectives. IBM Rational Portfolio Manager puts into practice your business strategies by automating the project portfolio lifecycle process from opportunity identification and prioritization through project execution and closure.

Architecture overview

The Web-based architecture of IBM Rational Portfolio Manager leverages several technologies and concepts to deliver access to the application.

Using a three tier architecture as its foundation, Rational Portfolio Manager consists of the following structure:

- Database, where the database is stored.
- User interfaces: A rich Windows® client, a Web-based client and possibly a custom interface that uses the Web Service API.
- A middleware, consisting of components that enable integration with other products, acts as a link between the user interfaces and the databases, provides authentication under certain circumstances and provides an API for custom implementations.

Core Rational Portfolio Manager

Database layer

IBM Rational Portfolio Manager uses a database as the repository for all information that the application manages. The product supports IBM DB2 and Oracle as the Database Management System (DBMS) options for the repository.

Application layer

The middle tier, the application layer, handles most data processing. It is the interface between the user interfaces and the Rational Portfolio Manager database. It is implemented using HTTP protocols with servlets. It receives the request from the user interfaces or from other custom implementations, processes the request and finally submits a request to the IBM Rational Portfolio Manager database. Responses sent from the database are processed by the middleware, which sends the response back to the interfaces or to the custom implementation.

Rational Portfolio Manager requires a servlet container that is compliant with J2EE. The product supports IBM WebSphere Application Server and Apache Tomcat Application Server.

User interfaces

The IBM Rational Portfolio Manager provides three types of user interfaces:

- A Windows based interface
- A Web based user interface (*TeamMember*)
- A custom implementation where customers can take advantage of the Web Services API to interact with the Rational Portfolio Manager system.

Common Reporting

RPM 7.1 has introduced a Common Reporting capability. Common Reporting is a reporting abstraction layer for creating, storing, and viewing reports. The Common Reporting package in Rational Portfolio Manager includes a data warehouse and a middleware application. The data warehouse stores the reports; the middleware application supports a generic browser-based interface to create and view reports, a report administration interface, and a generic interface to multiple third-party reporting tools. For more information, see chapters 10, 11, and 15 for data warehouse installation, and chapters 12, 13, and 14 for the data warehouse common reporting middleware application, and chapter 16 for importing sample reports.

Chapter 2. Planning your installation

Use this information to plan your installation.

Overview of the installation procedure

The installation process is in three parts:

- Data store configuration
- Middleware installation
- Client installation

The installation begins with the database installation, followed by the Rational Portfolio Manager Middleware installation and the Rational Portfolio Manager client, which can be downloaded from the URL of the deployed middleware and installed on any of the supported client machines.

Each of these is discussed in later chapters. For a reading roadmap, see “How to use this book” on page vii.

Prerequisites for installation

The following sections provide information about software and hardware requirements for the installation of IBM Rational Portfolio Manager.

Hardware requirements

IBM Rational Portfolio Manager should be deployed on a three physical-tiers infrastructure, where the following minimum requirements are met.

Table 3. Unix and Linux minimum hardware requirements for Rational Portfolio Manager Server

Platform	Requirements
AIX®	IBM pSeries® p630 or + Quad CPU - 4 GB RAM Min of 40 GB HDD RAID Level 5
Solaris	Sun Fire V880 four-way Quad CPU - 4 GB RAM Min of 40 GB HDD RAID Level 5
HP	HP rp7410 / (PA-RISC, 875MHz) Quad CPU - 4 GB RAM Min of 40 GB HDD RAID Level 5
Linux	Quad CPU - 4 GB RAM Min of 80 GB disk space

Note: These minimum hardware requirements describe use in a Demo or Small production environment (51-300 named users).

Latest supported operating environments

The following table lists the operating environments that Rational Portfolio Manager supports.

Table 4. Rational Portfolio Manager latest supported databases

Database	Version	Operating system	Hardware architecture
DB2	8.2 FP7*	AIX 5.2 (32-bit)	P5
DB2	8.2 FP7	AIX 5.2 (64-bit)	P5
DB2	8.2 FP7	AIX 5.3 (32-bit)	P5
DB2	8.2 FP7	AIX 5.3 (64-bit)	P5
DB2	8.2 FP7	Red Hat Linux AS Version 3 (32-bit) Kernel Version 2.4.21	Xeon™
DB2	8.2 FP7	Red Hat Linux AS Version 4 (32-bit) Kernel Version 2.6.9	Xeon
DB2	8.2 FP7	Red Hat Linux AS Version 4 (64-bit) Kernel Version 2.6.9	Xeon
DB2	8.2 FP7	SuSE Linux 9.2 (32-bit) Kernel Version 2.6.9	Xeon
DB2	8.2 FP7	SuSE Linux 9.2 (64-bit) Kernel Version 2.6.9	Xeon
DB2	8.2 FP7	Solaris 8 (32-bit)	SPARC
Oracle	9.2.0.8	AIX 5.2 (64-bit)	P5
Oracle	9.2.0.8	AIX 5.3 (64-bit)	P5
Oracle	9.2.0.8	Red Hat Linux AS version 3 (32-bit)	Xeon
Oracle	9.2.0.8	HP-UX 11i Version 1 (11.11) (64-bit) (update 4)	HP PA-RISC
Oracle	10.2.0.2	AIX 5.3 (32-bit)	P5
Oracle	10.2.0.2	AIX 5.3 (64-bit)	P5
Oracle	10.2.0.2	HP-UX 11i Version 1 (64-Bit)	HP PA-RISC
Oracle	10.2.0.3	Red Hat Linux AS version 3 (32-bit)	Xeon
Oracle	10.2.0.3	Red Hat Linux AS Version 4 (32-bit)	Xeon
Oracle	10.2.0.3	Red Hat Linux AS Version 4 (64-bit)	Xeon
Oracle	10.2.0.3	SuSE Linux 9.2 (32-bit)	Xeon
Oracle	10.2.0.3	SuSE Linux 9.2 (64-bit)	Xeon

Table 4. Rational Portfolio Manager latest supported databases (continued)

Database	Version	Operating system	Hardware architecture
Oracle	10.2.0.3	Solaris 9 (64-bit) (update 6 or later)	SPARC
Oracle	10.2.0.3	Solaris 10 (64-bit)	SPARC

Note: Oracle Application Server and BEA WebLogic Application Server are not certified with this release of Rational Portfolio Manager.

Table 5. Rational Portfolio Manager supported application servers

Application Server	Version
WebSphere	<ul style="list-style-type: none"> • 5.1 • 6.0 • 6.1
Apache Tomcat	<ul style="list-style-type: none"> • 5.5

Table 6. Rational Portfolio Manager client requirements

Software	Version
Microsoft® Windows XP Server Edition	<ul style="list-style-type: none"> • Professional SP1 • Professional SP2
Microsoft Windows Vista	<ul style="list-style-type: none"> • Enterprise Edition
Microsoft Windows 2000	<ul style="list-style-type: none"> • Professional (96 DPI®) • Server • Advanced Server (latest service pack)
Internet Explorer	<ul style="list-style-type: none"> • 6 or higher (with ActiveX installed) • 7 or higher (with ActiveX installed) <p>Only on Windows XP SP2, Vista Enterprise Editions, and Windows 2000 Server SP1.</p>
Microsoft Project	<ul style="list-style-type: none"> • 2002 (with MDAC* 2.6 or higher for export capabilities) • 2003 (with MDAC* 2.6 or higher for export capabilities)
TAM* WebSeal	<ul style="list-style-type: none"> • v6
Citrix	<ul style="list-style-type: none"> • 3 • 4

* Microsoft Data Access Component (MDAC)

* Tivoli Access Manager (TAM)

Table 7. Installation wizard application server prerequisites

Application Server	Operational System
WebSphere 6.0	<ul style="list-style-type: none"> • AIX 5.3 (32-bit) • AIX 5.3 (64-bit)
WebSphere 6.1	<ul style="list-style-type: none"> • AIX 5.3 (32-bit) • AIX 5.3 (64-bit)
Tomcat 5.5	<ul style="list-style-type: none"> • AIX 5.3 (32-bit) • AIX 5.3 (64-bit)

Table 8. Installation wizard database prerequisites

Database	Operational System
DB2 8.1 FP 7*	<ul style="list-style-type: none"> • AIX 5.3 (32-bit) • AIX 5.3 (64-bit)

* Also known as 8.1 FP 14.

Table 9 lists the integrations that Rational Portfolio Manager supports.

Table 9. Rational Portfolio Manager integrations support

Application	Version
Rational ClearQuest®	<ul style="list-style-type: none"> • 7.0.x.x • 2003.06.15 • 2003.06.16
Microsoft Project *	<ul style="list-style-type: none"> • 2002 standalone version (with MDAC 2.6 or higher) • 2003 standalone version (with MDAC 2.6 or higher)
Rational Method Composer	<ul style="list-style-type: none"> • 7.1 • 7.2
Rational RequisitePro®	<ul style="list-style-type: none"> • 7.0.1
Rational ProjectConsole™	<ul style="list-style-type: none"> • 7.0.0.1 • 7.0.1

* Microsoft Project Server is not supported.

Table 10. TeamMember support

Software	Version
FireFox	<ul style="list-style-type: none"> • 1.5 on Red Hat Linux AS Version 4 and Version 5 • 2.0 on Red Hat Linux AS Version 4 and Version 5

Table 10. TeamMember support (continued)

Software	Version
Internet Explorer	<ul style="list-style-type: none">• 6.x• 7.0 only on:<ul style="list-style-type: none">– Windows XP Server Edition SP2– Windows Vista Enterprise Edition– Windows 2000 Server Edition SP1

Chapter 3. Installing and configuring the IBM Rational Portfolio Manager database for DB2

This chapter explains how to install and configure an IBM Rational Portfolio Manager database for sites that use the DB2 database management system.

The IBM Rational Portfolio Manager database consists of buffer pools, table spaces, tables, indexes, triggers, procedures, and user-defined functions. The IBM Rational Portfolio Manager Database application on the database server side has been developed using DB2 C Stored Procedures and DB2 C not fenced User Defined Functions. Running the DB2 User Defined Functions unfenced is the standard setup. Running them fenced is not advised, but is supported. The DB2 instance must be created before you start the installation because the installation procedure creates only the Rational Portfolio Manager database.

Note: Only one database must be installed on a DB2 instance.

Prerequisites

- Rational Portfolio Manager version 7.1.0.0 installation package
- DB2 version 8.2 FP 7, also known as 8.1 FP 14 (Rational Portfolio Manager 7.1 does not support DB2 version 7.2 and 9.1)
- Valid supported platform, for a list see “Latest supported operating environments” on page 4.

Pre-installation steps

Definitions of terms used in DB2 installation scenarios

Have the following information available before beginning the installation:

DB_NAME

The name of the Rational Portfolio Manager database.

DB_USER

The instance owner that has administrator rights. The instance owner is the DB2 Instance that is defined as logical database server environment. DB_USER can contain only 8 characters or less, and cannot contain any white spaces.

DB_USER_PWD

Password for the instance owner.

CON_USER

The username of the connected user who is the operating system user connecting to Rational Portfolio Manager. This is the user who connects to the database and has been granted rights to update, insert, delete, select on database tables. This user, must be part of the DB2 admin Group. A connected user can also be the instance owner.

CON_USER_PWD

The password for the connected user.

None of the IBM Rational Portfolio Manager database objects are qualified. You can create the database objects by using a schema of your choice. However, certain rules must be followed, depending on which scenario you choose to use:

- Scenario 1:** The instance owner name is used to connect to the database from the IBM Rational Portfolio Manager Web application.

All tables created use the user name of the instance owner as schema. Table aliases are equivalent to the instance owner name and do not need to be created. Schema names are also equivalent to the instance owner.
- Scenario 2:** The connected user is the operating system user who connects to the database from the Rational Portfolio Manager Web application.

All tables created use the user name of the instance owner as schema. Therefore, aliases are created for database tables, and the alias name is the user name for the connected user. Schema names are equivalent to the instance owner name.

After you choose a scenario, you can perform the associated steps in each part of the installation. If at any step you encounter problems, consult the section “Troubleshooting the installation” on page 15 or contact IBM technical support, see “Contacting IBM Client Support for Rational software products” on page x.

Setting file permissions

Before starting the installation, copy the files from your installation or migration package onto a drive on your computer and add execute permissions to all files in Table 11 that will be used by the installation script. Failure to add these permissions on any of these files causes the installation to fail.

Table 11. Permission files

Path	File
<code>\${PACKAGE_ROOT}/Database/DB2/Unix</code>	install, install_func
<code>\${PACKAGE_ROOT}/Database/DB2/Unix/ddl</code>	alias, createdb, db2_set, db2_set64, db_cfg, db_cfg64, dbm_cfg, dbm_cfg64, drop_triggers, grants, reorgstats, alter_tbspace
<code>\${PACKAGE_ROOT}/Database/DB2/Unix/csp_{OS}</code> where {OS} is your operating system. Possible values are: <ul style="list-style-type: none"> • AIX 32 bit instance • csp_AIX32 • AIX 64 bit instance • csp_AIX64 • Linux V3 • csp_Linux3_32 • Linux V4 32bit instance • csp_LInux4_32 • Linux V4 64bit • csp_Linux4_64 • Solaris • csp_SunOS32 Note: Values are case sensitive.	bindall, dropsp

To add execute permission to all files, go to each directory from each path shown in the above table and type this command:

```
chmod +x *
```

Configuring the IBM Rational Portfolio Manager Database table spaces

In the installation package, in the `${PACKAGE_ROOT}/Database/DB2/Unix/ddl` directory, the files in Table 12 contain the creation of table spaces for the IBM Rational Portfolio Manager database. Each `tb_spaces_xxx.sql` file corresponds to a database size.

Table 12. Database table spaces files

File	Number of users	Database size
tb_spaces.sql	25 and less	Demo
tb_spaces_sm.sql	100 -200	Small
tb_spaces_med.sql	200-1500	Medium
tb_spaces_large.sql	1500 and above	Large

Choose and open the `tb_spaces_xxx.sql` file that corresponds to the size of the database that you want to install and edit the tablespaces path to the path where you want them to be created.

The following is an example of how to edit the tablespaces path that are to be created. The path to edit is in bold face type.

```
CREATE TEMPORARY TABLESPACE TEMPSPACE32K IN NODEGROUP IBMTEMPGROUP PAGESIZE 3276
8 MANAGED BY SYSTEM
    USING ('/home/TBS_IBMRPM/data1/rpm/tempspace32k',
          '/home/TBS_IBMRPM/data2/rpm/tempspace32k',
          '/home/TBS_IBMRPM/data3/rpm/tempspace32k',
          '/home/TBS_IBMRPM/data4/rpm/tempspace32k')
EXTENTSIZE 32
PREFETCHSIZE 64
BUFFERPOOL BPTMP32K;
```

The configuration is based on a partition called `/home/` with **RAID 5** configuration. This layout provides the best performance. However, the partitions do not necessarily need to match those shown here. You can choose your own partition, but if you do, you must modify the file `tb_spaces_xxx.sql` file before you begin the installation procedure. Do not change the number of containers in each table space or the number of pages allocated for each container.

Configuring the database installation execution plan

Modify the settings in the `exec_prep.sql` file in `${PACKAGE_ROOT}/Database/DB2/Unix` as shown in Table 13 on page 12. During the installation, the installation script queries this file to run the steps with information entered. The script then records and updates any success and failures in the logs, and creates the table named `exec_prep` that is used for support purposes. This file contains the following information:

- The steps run during the installation
- Package information
- Location of log files
- Instance owner usernames
- Connected users

- Date the script is executed
- Description of error message

Note: You must edit the `exec_prep.sql` file. Failure to do so causes the installation to fail.

Note: When setting values, remove the % notation.

Table 13. Settings for the execution plan

Setting	Notes
%OS_TYPE%	<p>Set this value by replacing %OS_TYPE% with your operating system. Possible values are:</p> <ul style="list-style-type: none"> • Linux • AIX • Sun OS <p>Note: Values are case sensitive.</p> <p>Set this value by replacing the variable %OS_TYPE% with Windows.</p>
%PKG_DIR%	<p>Set this value by replacing %PKG_DIR% with the path to the directory where the install script is located. For example, <code>/\${PACKAGE_ROOT}/Databases/DB2/Unix</code>.</p> <p>Note: Make sure you have execute rights on all the folders you will be pointing to.</p>
%LOG_DIR%	<p>Set this value by replacing %LOG_DIR% with the location where the log files will be created.</p> <p>Note: Make sure you have execute rights on all the folders you will be pointing to.</p>
%CON_USER%	<ul style="list-style-type: none"> • If you are using scenario 1, set this value by replacing %CON_USER% with an empty string, for example, ''. • If you are using scenario 2, set this value by replacing %CON_USER% with the username of the connected user.
%DB_SIZE%	<p>Set this value by replacing %DB_SIZE% with the letter corresponding to the size of the database you are installing:</p> <ul style="list-style-type: none"> • D: Demo, 25 and less users • S: Small, 100 - 200 users • M: Medium, 200 - 1500 users • L: Large, 1500 and above users
%DB_USER%	<p>Set this value by replacing %DB_USER% with the instance owner username.</p>

Creating the Rational Portfolio Manager database

To begin the installation, make sure you have copied the Installation package to the UNIX database server. Login as the user who owns the instance in which you will be building the IBM Rational Portfolio Manager database.

Before you begin

Before you run the installation, you need to make sure that:

- The DB2 command line environment is initialized (db2)
- You are logged in as a user with SYSADM authority
- DB2 is up and running (db2start)

The DB2 command line environment is initialized when you login to the server as the instance owner.

You also need to make sure that the user you are currently logged in as, is a user who is part of the group that is configured in the DB2 manager in order to have SYSADM authority. If you do not know what this group is, login as the instance owner and at the prompt type:

```
db2 get dbm cfg | grep SYSADM_GROUP
```

Look for the value of SYSADM group name. For example:

```
SYSADM group name (SYSADM_GROUP) = DB2IADM1
```

Check that DB2 is running. Depending on how your DB2 installation is set up, DB2 may be started automatically at log in. If it is not, you can start DB2 with the db2start command.

Installation and configuration procedure

Procedure

To install and configure the DB2 database for Rational Portfolio Manager:

1. Locate the Korn shell script install script in `${PACKAGE_ROOT}/Database/DB2/Unix`.

Run the script as follows, supplying values for the command line arguments to match the installation scenario you are using:

- For scenario 1:

```
install DB_NAME DB_USER_PWD
```

- For scenario 2:

```
install DB_NAME DB_USER_PWD CON_USER_PWD
```

Note: Running the install script will take some time, to view progress, open the log files in a text editor and monitor the updates.

2. Verify all log files to ensure that the installation of the database code is successful. All log files are located in the path specified for the log files in the execution plan `exec_prep.sql`. On your screen, the `DB_CHECK.log` file will display information about each step performed by the installation and the error status, if any.

Note: During the installation steps, you might see one of the following SQLSTATE numbers in your log files or others, these are warnings and can be ignored:

- SQLSTATE=02000L: result set of the query is an empty table
- SQLSTATE=42704: undefined name
- SQL0445W=Value value has been truncated
- ERROR_CODE_40005=SEVERE WARNING

Steps performed by the installation

The installation is done with a procedure that creates a DB2 database for Rational Portfolio Manager. The procedure is implemented with a Korn shell script called `install..`

The following steps are an explanation of what happens automatically during installation. Also listed are the names of the log (output) files created for each step.

All log files are created in the directory for log files specified in the `exec_prep.sql`.

1. Validates previously supplied values for user credentials. If the values are valid the procedure continues, if the values are not valid the process is exited.
2. Creates a Rational Portfolio Manager database.
3. Sets DB2 settings and database manager and database configuration parameters.
4. Creates bufferpools > `bufferpools.log`
5. Creates table spaces > `tb_spaces.log`.

Note: You must have first edited the `tb_spaces.sql` file as described in “Configuring the IBM Rational Portfolio Manager Database table spaces” on page 11.

6. Creates tables and indexes for Rational Portfolio Manager database and internal staging area. The internal staging area is used by the data warehouse > `pmodb_model.log`
7. Initializes tables with default records > `initdb.log`
8. Creates aliases (for scenario 2 only) > `alias.log`
9. Grants access rights to users accessing the Rational Portfolio Manager database (for scenario 2 only) > `grants.log`
10. Creates triggers for Rational Portfolio Manager 7.1.0.0 > `triggers.log`
11. Creates stored procedures for Rational Portfolio Manager 7.1.0.0 > `createsp.log` file
12. Runs statistics on tables > `reorgstats.log`
13. Binds Rational Portfolio Manager code > `bindall.log`
14. Runs stored procedures to insert default records to complete the installation > `custom_pivot_initdb.log`
15. Copies the results from the previous step into the `DB_CHECK.log` file located in the log directory specified in the execution plan. The `DB_CHECK.log` file is a report file that contains all installation successes and failures.
16. Checks for successful Rational Portfolio Manager database code installation > Displays the output of the results and copies the report into the `DB_CHECK.log` file.

For more information about the log files, see section “Troubleshooting the installation” on page 15.

Enabling Earned Value

You can use the IBM Rational Portfolio Manager Earned Value functionality to update values on a regular basis for all projects by scheduling a job on the `rollup_ev.sql` file. This file connects to the Rational Portfolio Manager database specified and calls the earned value stored procedure to update Earned Value for all projects.

Prior to scheduling a job, you must edit the `rollup_ev.sql` file located in `$(PACKAGE_ROOT)/Database/DB2/Unix/ddl` by adding the corresponding values for the following parameters:

- `DB_NAME`
- `DB_USER`
- `DB_USER_PWD`

You can use scenario 1 or scenario 2, where the `DB_USER` and `DB_USER_PWD` can be the username and password of the instance owner or the connected user depending on the database scenario you are using.

Note: If you use the IBM Rational Portfolio Manager Earned Value functionality, run the scheduled job during off hours when usage of the system is minimal so that the overall Rational Portfolio Manager performance is not affected. To schedule a job, use DB2 Task Center and go to **Toold.db > Create a Task**.

Attention: Refer to the names used in the scripts for the terms used for the DB2 installation scenarios.

Troubleshooting the installation

At each execution step, the output is written to a log file. Use these files to help troubleshoot any problems with the installation.

If the installation is halted anywhere, note the error and the message returned by the installation script. Save these files and keep them in case technical support needs them. You should go through each of these files and make sure that there were no errors. If you have questions or concerns contact IBM technical support.

If your installation is halted at any point, you must drop the database and restart from the beginning. To drop the database run the script `drop_db`.

1. From the DB2 command line, locate the script `drop_db` in `$(PACKAGE_ROOT)/Database/DB2/Unix`
2. Run the script supplying the value for the command line argument.
`drop_db DB_NAME`

Testing the installation

To test the installation of the IBM Rational Portfolio Manager database server setup, you need to invoke one Rational Portfolio Manager DB2 user-defined function `GET_UNIQUE_ID`, and one Rational Portfolio Manager DB2 stored procedure, `SP_LOGON`.

To test the installation:

1. From the DB2 command line, connect to the Rational Portfolio Manager database based on the scenario you have used.
 - For scenario 1:
`db2 connect to DB_NAME user DB_USER using DB_USER_PWD`
 - For scenario 2:
`db2 connect to DB_NAME user CON_USER using CON_USER_PWD`
2. To invoke Rational Portfolio Manager DB2 user-defined function `GET_UNIQUE_ID`, at the prompt type:
`db2 "values(get_unique_id())"`

The output should be an alphanumeric string with length 32.

3. The next test is calling the stored procedure. With the same connection to the database type, at the prompt:

```
db2 "call SP_LOGON('administrator', 'ibmrpm', 481)"
```

The following result sets are indications of a good install:

- For first time installations, when logging into Rational Portfolio Manager with the default password, the expected result set value will be "200011". This states that the logon date has expired and the user must change the password.
- For other scenarios:
 - 200005 --> USER_DOES_NOT_EXIST
 - 200103 --> INCORRECT_PASSWORD
 - 200026 --> INCOMPATIBLE_VERSION
 - 200019 --> RESOURCE_NOT_ACTIVE
 - 200011 --> PASSWORD_EXPIRED

Chapter 4. Installing the IBM Rational Portfolio Manager database for Oracle

This chapter describes how to install the Rational Portfolio Manager database using the Korn shell for sites using Oracle DBMS.

Installing the database is the first of three parts of installing Rational Portfolio Manager. The other parts are installing the middleware on a Web applications server, and installing the Rational Portfolio Manager client on a Windows machine. Each of these topics is covered in later chapters.

The first step is to create an Oracle database container and initialize it with Rational Portfolio Manager database objects (users, tables, indexes, triggers, functions, and procedures).

Note: Rational Portfolio Manager must have its own database instance.

Configuration and installation steps include:

1. Configuring the PreInstall.cfg file
2. Run the PreInstall file
3. Run the createdb_dbName file
4. Run the createObj_dbName file
5. Test the installation
6. Enabling Earned Value
7. Shared Library configuration
8. Run install_staging.sh
9. Run install_comrpt.sh
10. Run mig_con_user.sh (if a connected user is used)

Prerequisites for installation

- Rational Portfolio Manager version 7.1.0.0 installation package
- sqlplus, jar, and imp, utilities for running Oracle installation and migration scripts.
- Valid supported platform, for a list of these see section on “Latest supported operating environments” on page 4.

Pre-installation steps

Follow the steps in this section before you create and install your database.

Configuring the PreInstall.cfg file

The PreInstall.cfg file, located in the \${PACKAGE_ROOT}/Database/Oracle directory, is a critical element for the overall database instance creation. You must edit this file to configure information for your site. Note that you cannot use a variable such as ORACLE_HOME or ORACLE_BASE in any pathname you specify.

See “Sample PreInstall.cfg file ” on page 19 for an example of a modified version of this file.

1. Go to `#{PACKAGE_ROOT}/Database/Oracle` and open the `PreInstall.cfg` file in a text editor. Locate the `[GENERAL]` section. Supply values for the fields in boldface type in the next example. This information is required.

`[GENERAL]`

LIB_PATH={Enter the path of the leveling library, IBM recommended}
ORACLE_VERSION={Enter the version of Oracle software you have installed}

Note: Enter the full version number with the following format: 9.2.0.1.0 or 10.1.0.2.0 and so on.

2. Locate the `[INSTANCE]` section. Supply values for the fields in boldface type in the next example. This information is required. The other parameters are set for default Rational Portfolio Manager sizing, and can be modified to reflect your system capacity.

`[INSTANCE]`

db_name={Enter the instance database name you would like to create}
dbdomain={Enter your domain name}
sys_password={Enter the sysdba password you would like to set}
oracle_home={Path to Oracle home directory}
admin_directory={Path to Oracle admin directory}
datafile_directory={Path to data file directory}
db_cache_size={Default value set in `PreInstall.cfg`}
shared_pool_size={Default value set in `PreInstall.cfg`}
java_pool_size={Default value set in `PreInstall.cfg`}
large_pool_size={Default value set in `PreInstall.cfg`}
sga_max_size={Default value set in `PreInstall.cfg`}
shared_pool_reserved_size={Default value set in `PreInstall.cfg`}
pga_aggregate_target={Default value set in `PreInstall.cfg`}
option_inter_media=yes
option_oracle_text=yes
util_file_dir={Enter the path for database parameter called `util_file_dir`}

Note: Rational Portfolio Manager logs are saved in the `util_file_dir` directory. Note that these logs are not installation logs.

3. The other two sections that need to be modified are `[OWNER]` and `[CONNUSER]`. Locate these sections and specify values for Owner, Password, connuser, and connected user password for each section.

`[OWNER]`

Owner={Database object owner name}
Password={Database object owner password}
default_tablespace=PMO_DATA_64K

`[CONNUSER]`

connuser={Connected user name}
Password={Connected user password}
default_tablespace=PMO_DATA_64K

4. The remaining sections within the `PreInstall.cfg` file are used to define tablespaces, tables, and indexes. You can optionally modify values in these sections, however, they are not covered in this document.
5. Save and close the `PreInstall.cfg` file.
6. Make sure that all the directories you have mentioned in `PreInstall.cfg` already exist. The installer assumes that these directories exist and does not create them.
7. See the next section for instructions on running the `Preinstall` script.

Sample PreInstall.cfg file

[GENERAL]

```
LIB_PATH=/opt/oracle/product/9.2.0.1.0/bin  
ORACLE_VERSION=9.2.0.1.0
```

[INSTANCE]

```
db_name=IBMRPM  
db_domain=my_dbdomain.com  
sys_password=sys  
oracle_home=/opt/oracle/product/9.2.0.1.0  
admin_directory=/opt/oracle/admin  
datafile_directory=/opt/oracle/oradata  
db_cache_size=134217728  
shared_pool_size=335544320  
java_pool_size=64000000  
large_pool_size=33554432  
sga_max_size=1292969220  
shared_pool_reserved_size=32000000  
pga_aggregate_target=25165824  
option_inter_media=yes  
utl_file_dir=/tmp
```

[OWNER]

```
owner=rpm  
password=rpm  
default_tablespace=PMO_DATA_64K
```

[CONNUSER]

```
connuser=rpm2  
password=rpm2  
default_tablespace=PMO_DATA_64K
```

Note: Any sections not mentioned are not in the scope of this document.

Running the PreInstall file

Follow these steps to run the PreInstall file.

1. Open a shell window and navigate to the `${PACKAGE_ROOT}/Database/Oracle` directory, then set the `${ORACLE_HOME}` environment variable. In this example it is set as `ORACLE_HOME=opt/oracle/product/9.2.0.1.0`.
2. Type the following command to make the PreInstall executable.

```
% chmod +x PreInstall
```
3. At a shell prompt type `./PreInstall`, then press <Enter>. Your output should look similar to the following:

```

192.168.35.117 - Sunsys - SSH Secure Shell
File Edit View Window Help
Quick Connect Profiles
drwxr-xr-x 8 inIx65 dbadmin 1024 Nov 3 19:00 ..
drwxr-xr-x 2 inIx65 dbadmin 2560 Oct 24 17:17 CSP
drwxr-xr-x 2 inIx65 dbadmin 512 Nov 4 15:42 CreateObj
-rw-r--r-- 1 inIx65 dbadmin 981 Oct 8 16:39 DBInstallation.ReadMe
drwxr-xr-x 3 inIx65 dbadmin 512 Oct 26 09:36 JavaSrc
drwxr-xr-x 2 inIx65 dbadmin 3072 Oct 24 17:17 Leveling
drwxr-xr-x 4 inIx65 dbadmin 512 Oct 24 17:17 Logs
drwxr-xr-x 2 inIx65 dbadmin 1024 Oct 31 17:10 OraDDL
-rwxr--r-- 1 inIx65 dbadmin 652 Oct 31 17:09 PreInstall
-rw-r--r-- 1 inIx65 dbadmin 34457 Oct 31 17:00 PreInstall-cfg.Default
-rw-r--r-- 1 inIx65 dbadmin 673 Dec 19 2003 PreInstall.bat
-rw-r--r-- 1 inIx65 dbadmin 34452 Oct 31 17:08 PreInstall.cfg
-rw-r--r-- 1 inIx65 dbadmin 1488 Oct 24 10:14 README
drwxr-xr-x 2 inIx65 dbadmin 512 Nov 4 15:42 createdb
-rw-r--r-- 1 inIx65 dbadmin 980 Oct 10 19:34 index.html
drwxr-xr-x 2 inIx65 dbadmin 512 Oct 24 17:17 utils
inIx65@unknown% ./PreInstall
PreInstall starts. Please wait ..
Current directory is /export/home/inIx/Database
ParseConfig completed.
SetTbs4obj completed.
-Number of tables processed: 108
-Number of indexes processed: 308
CreatePmoInstance completed.
CreatePmoTbs completed.
CreatePmoUser completed.
CreatePmoObj completed.
CreatePmoCode completed.
CreatePmoSecu completed.
CreatePmoSym completed.
PreInstall completed successfully.
inIx65@unknown%
Connected to 192.168.35.117 SSH2 - aes128-cbc - hmac-md5 - none 88x32 NUM

```

Running the Preinstall file generates two new files under the same directory. These files are createdb_<dbName> and CreateObj_<dbName>; where dbName refers to the name of the database instance defined in the PreInstall.cfg file. The next two sections describes how to run these files.

Running the createdb_<dbName>file

The next step is to run the createdb_<dbName> file.

1. First, issue the following at the shell prompt to make the files executable:

```

% chmod +x createdb_RPM
% chmod +x createObj_RPM

```

```

drwxr-xr-x  2 inIx65  dbadmin    512 Nov  4 15:42 CreateObj
-rw-r--r--  1 inIx65  dbadmin    981 Oct  8 16:39 DBInstallation.ReadMe
drwxr-xr-x  3 inIx65  dbadmin    512 Oct 26 09:36 JavaSrc
drwxr-xr-x  2 inIx65  dbadmin   3072 Oct 24 17:17 Leveling
drwxr-xr-x  4 inIx65  dbadmin    512 Oct 24 17:17 Logs
drwxr-xr-x  2 inIx65  dbadmin   1024 Oct 31 17:10 OraDDL
-rwxr--r--  1 inIx65  dbadmin    652 Oct 31 17:09 PreInstall
-rw-r--r--  1 inIx65  dbadmin   34457 Oct 31 17:00 PreInstall-cfg.Default
-rw-r--r--  1 inIx65  dbadmin    673 Dec 19 2003 PreInstall.bat
-rw-r--r--  1 inIx65  dbadmin   34452 Oct 31 17:08 PreInstall.cfg
-rw-r--r--  1 inIx65  dbadmin   1488 Oct 24 10:14 README
drwxr-xr-x  2 inIx65  dbadmin    512 Nov  4 15:42 createdb
-rw-r--r--  1 inIx65  dbadmin    980 Oct 10 19:34 index.html
drwxr-xr-x  2 inIx65  dbadmin    512 Oct 24 17:17 utils
inIx65@unknosm% ./PreInstall
PreInstall starts. Please wait ..
Current directory is /export/home/inIx/Database
ParseConfig completed.
SetTbs40b completed.
-Number of tables processed: 108
-Number of indexes processed: 308
CreatePmoInstance completed.
CreatePmoTbs completed.
CreatePmoUser completed.
CreatePmoObj completed.
CreatePmoCode completed.
CreatePmoSecu completed.
CreatePmoSyn completed.
PreInstall completed successfully.
inIx65@unknosm% chmod +x createdb_RPM
inIx65@unknosm% chmod +x CreateObj_RPM
inIx65@unknosm%

```

2. At the shell prompt, type the following, where <dbName> is your database name:

```
./createdb_<dbname>
```

This can take quite some time depending on your memory size and CPU speed. At the end of the database creation process, you should see the message ORACLE instance started.

Note: Other Oracle tools can also be used to create the instance for Rational Portfolio Manager database, such as Oracle Database Configuration Assistant (dbca). To install a database instance in Oracle 10g, run dbca to create the instance using the information and pfile parameters you provided in the PreInstall.cfg file. When creating your instance using dbca, make sure that you set the character set to UTF8. If you are using dbca to create your database instance, skip this step and go to step Running the CreateOBJ_<dbName> file.

3. Verify that the instance creation is successful by log in to SQL Plus and starting the database by using the startup command as follows:
 - a. To start SQL Plus, type the following in the command window:

```
sqlplus /nolog
```

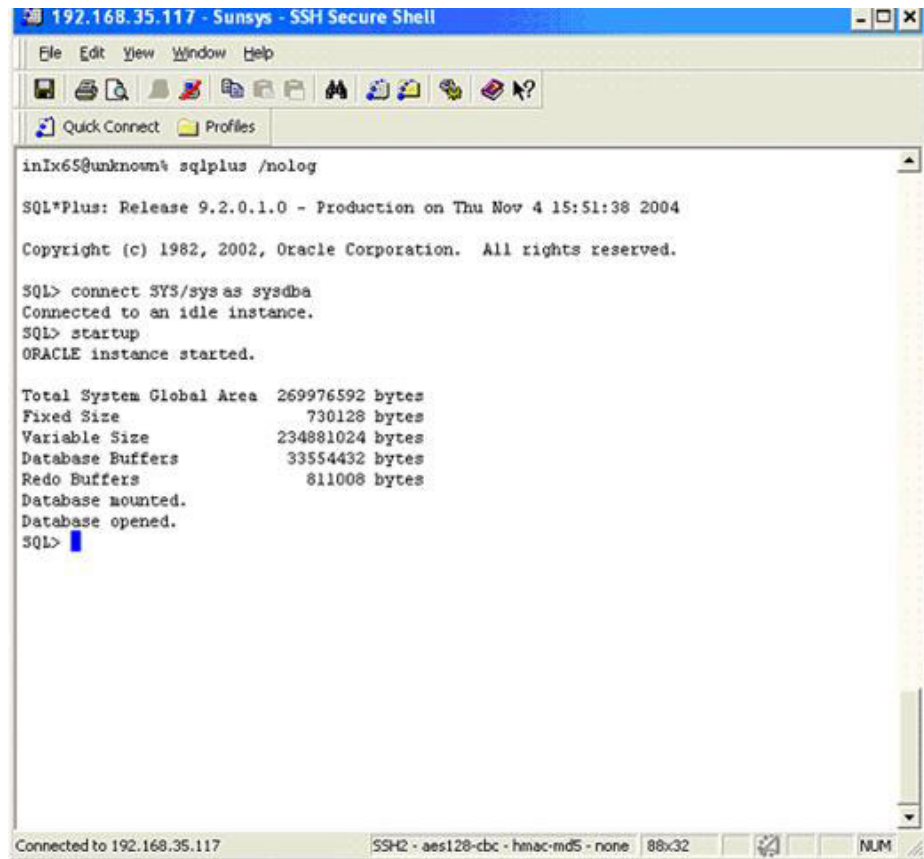
The display of the SQL> prompt indicates that SQL Plus has started successfully.

- b. Log in to SQL Plus as sys by typing:

```
connect sys/<sys_password> as sysdba
```

where <sys_password> is the password for sys user.

- c. Start the database by typing the startup command:
startup ;



```
192.168.35.117 - Sunsys - SSH Secure Shell
File Edit View Window Help
Quick Connect Profiles
inIx65@unknown% sqlplus /nolog
SQL*Plus: Release 9.2.0.1.0 - Production on Thu Nov 4 15:51:38 2004
Copyright (c) 1982, 2002, Oracle Corporation. All rights reserved.
SQL> connect SYS/sys as sysdba
Connected to an idle instance.
SQL> startup
ORACLE instance started.

Total System Global Area 269976592 bytes
Fixed Size 730128 bytes
Variable Size 234881024 bytes
Database Buffers 33554432 bytes
Redo Buffers 811008 bytes
Database mounted.
Database opened.
SQL>
```

- d. Select a sample of the instance table with the following command:
select status, instance_name, host_name, version from v\$instance;

If there is only one instance installed on the machine, the result should be similar to the next figure.

```
192.168.35.117 - Sunsys - SSH Secure Shell
File Edit View Window Help
Quick Connect Profiles
Connected to:
Oracle9i Enterprise Edition Release 9.2.0.1.0 - 64bit Production
With the Partitioning, OLAP and Oracle Data Mining options
JServer Release 9.2.0.1.0 - Production

SQL> select status,instance_name, host_name, version from v$instance
2 /

STATUS      INSTANCE_NAME
-----
HOST_NAME
-----
VERSION
-----
OPEN      RPM
unknown
9.2.0.1.0

SQL>
Connected to 192.168.35.117      SSH2 - aes128-cbc - hmac-md5 - none 80x20
```

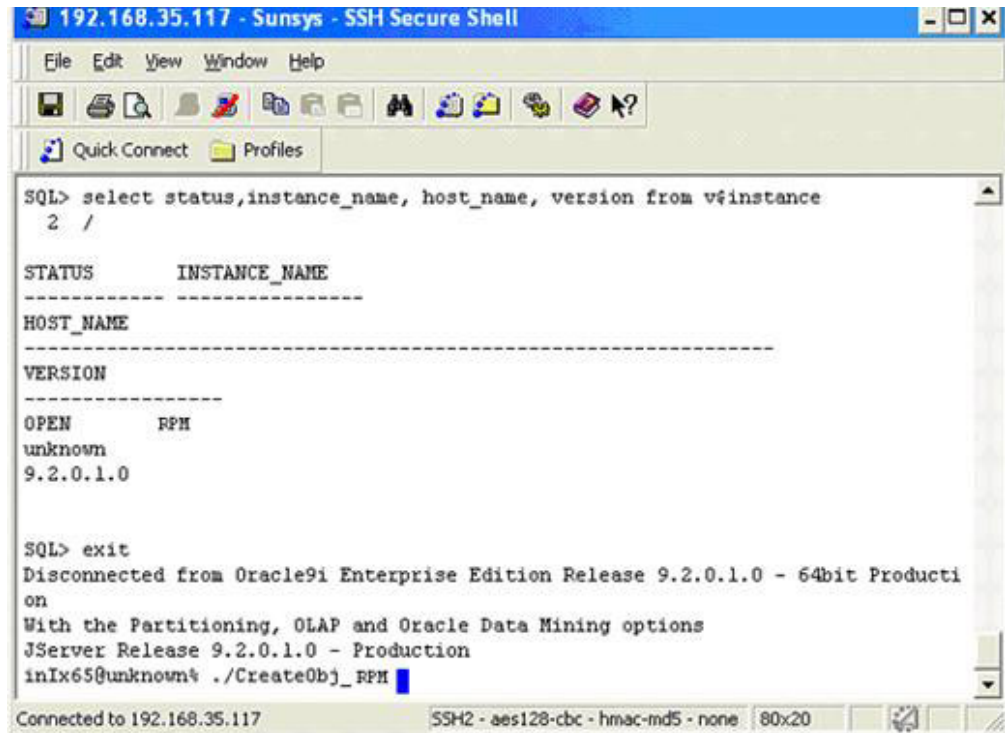
- e. Exit the SQL Plus environment by typing:
`exit ;`
- 4. Next, display the Oracle SID Database name by typing this command in the shell window:
`echo $ORACLE_SID`

Note: The instance name should be equal to the dbname property of the PreInstall.cfg file.

Running the CreateOBJ_<dbName> file

Similarly to database creation, issue the CreateObj_<dbName> command at the shell prompt:

```
./CreateObj_<dbName>
```



```
192.168.35.117 - Sunsys - SSH Secure Shell
File Edit View Window Help
Quick Connect Profiles
SQL> select status,instance_name, host_name, version from v$instance
2 /
STATUS      INSTANCE_NAME
-----
HOST_NAME
-----
VERSION
-----
OPEN        RPM
unknown
9.2.0.1.0
SQL> exit
Disconnected from Oracle9i Enterprise Edition Release 9.2.0.1.0 - 64bit Producti
on
With the Partitioning, OLAP and Oracle Data Mining options
JServer Release 9.2.0.1.0 - Production
inIx65@unknown% ./CreateObj_RPM
```

Log files will be created in the `${INSTALLATION_HOME}/Database/Oracle/Logs` folder. It is always recommended to look at the log files to see if scripts were run successfully.

Testing the installation

After you have installed the database instance, you can verify that it is installed correctly.

1. Make sure that ORACLE_HOME is set correctly by typing from the command prompt:

```
echo $ORACLE_HOME
```

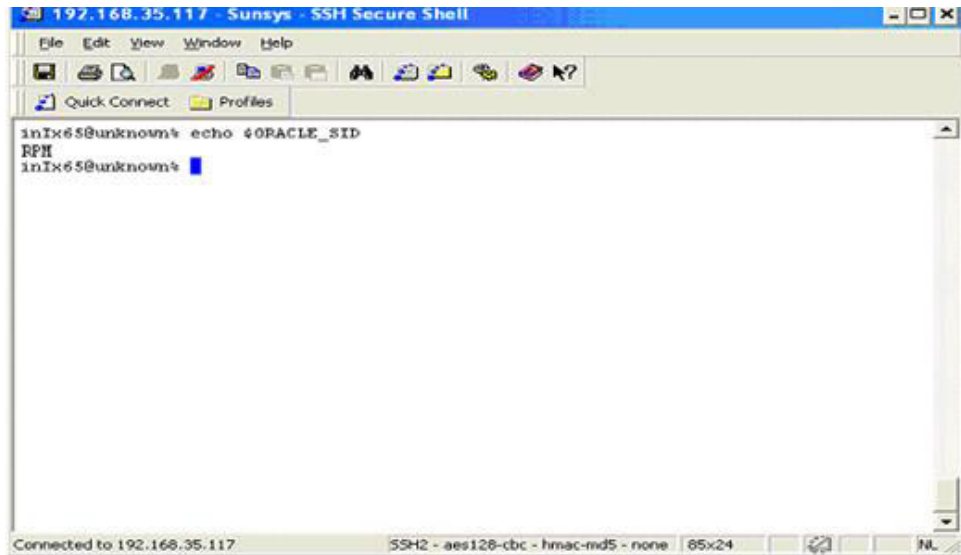
The returned value should match the setting for the ORACLE_HOME property of the PreInstall.cfg file.

2. Make sure that ORACLE_SID is set. From a command prompt, type:

```
echo $ORACLE_SID
```

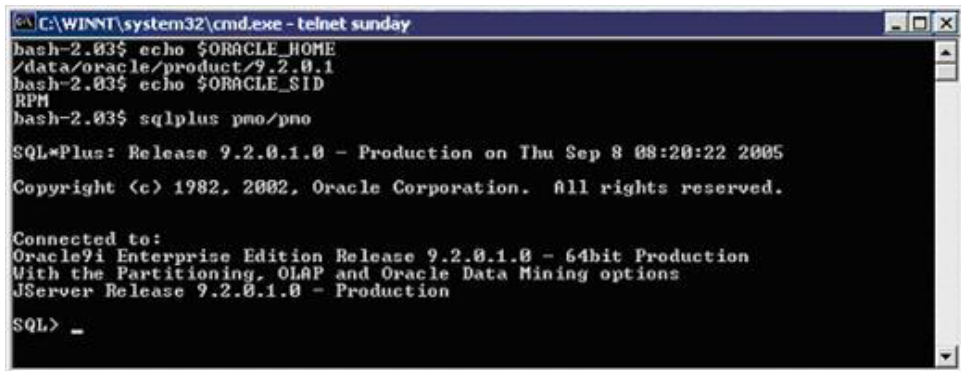
This should also be the same as the dbName property of the PreInstall.cfg file.

Note: If the two environment variables are not set to the correct values, then you need to reset them prior to logon.



3. Login through sqlplus. Use the owner of the database objects:
`sqlplus ownerusername/ownerpassword`

In the following example, *owner* was set to pmo under the [OWNER] tag in the PreInstall.cfg file.

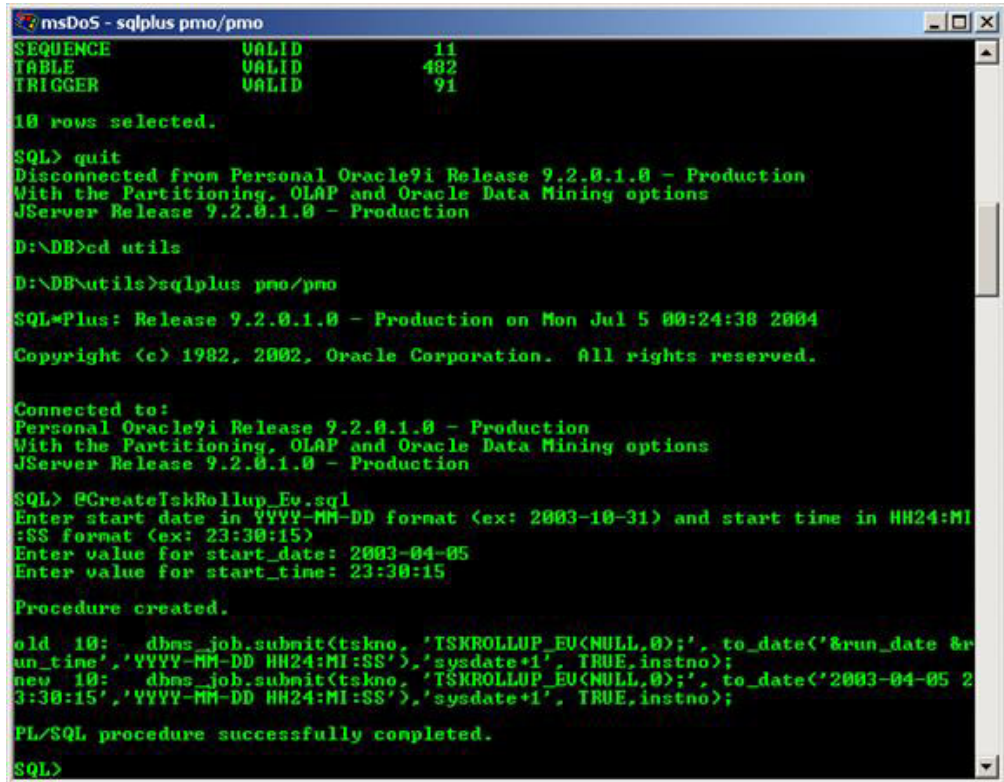


4. Verify that all the objects in the database are valid by issuing the following query from the SQL prompt:
`select distinct object_type,status,count(status) as total
from user_objects group by object_type,status order by object_type;`

You should have the following object types in your database and all the objects should be valid:

function, index, library, lob, package, package_body, procedure, sequence, table, and trigger.

Enabling Earned Value



```
msDOS - sqlplus pmo/pmo
SEQUENCE          VALID          11
TABLE             VALID          482
TRIGGER           VALID          91

10 rows selected.

SQL> quit
Disconnected from Personal Oracle9i Release 9.2.0.1.0 - Production
With the Partitioning, OLAP and Oracle Data Mining options
JServer Release 9.2.0.1.0 - Production

D:\DB>cd utils

D:\DB\utils>sqlplus pmo/pmo

SQL*Plus: Release 9.2.0.1.0 - Production on Mon Jul 5 00:24:38 2004
Copyright (c) 1982, 2002, Oracle Corporation. All rights reserved.

Connected to:
Personal Oracle9i Release 9.2.0.1.0 - Production
With the Partitioning, OLAP and Oracle Data Mining options
JServer Release 9.2.0.1.0 - Production

SQL> @CreateTskRollup_Ev.sql
Enter start date in YYYY-MM-DD format (ex: 2003-10-31) and start time in HH24:MI
:SS format (ex: 23:30:15)
Enter value for start_date: 2003-04-05
Enter value for start_time: 23:30:15

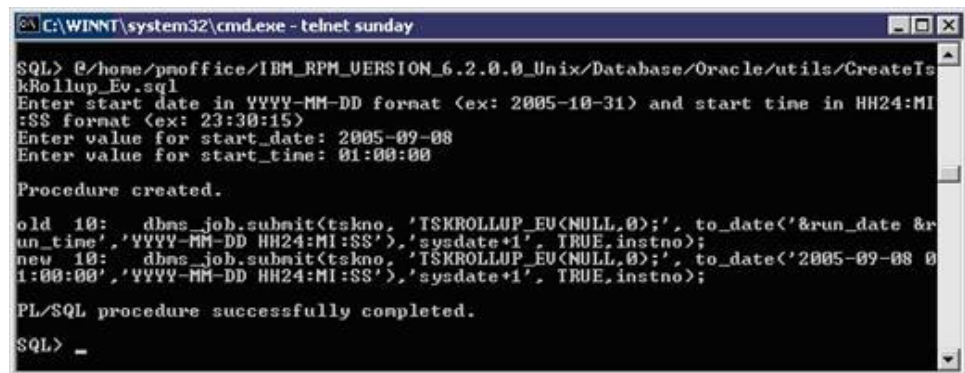
Procedure created.

old 10:  dbms_job.submit(taskno, 'TSKROLLUP_EU(NULL,0);', to_date('&run_date &
un_time', 'YYYY-MM-DD HH24:MI:SS'), 'sysdate+1', TRUE, instno);
new 10:  dbms_job.submit(taskno, 'TSKROLLUP_EU(NULL,0);', to_date('2003-04-05 2
3:30:15', 'YYYY-MM-DD HH24:MI:SS'), 'sysdate+1', TRUE, instno);

PL/SQL procedure successfully completed.

SQL>
```

1. While still in sqlplus, go to `/${package_root}/Database/Oracle/utils`, and run the `CreateTskRollup_Ev.sql` file.
If this file does not exist in the directory shown in the shell window, specify the path so sqlplus will be able to find it:
`SQL> @${package_root}/Database/Oracle/utils/CreateTskRollup_Ev.sql`
2. As prompted by the script, enter a start date in YYYY-MM-DD format (ex: 2005-10-31) and a start time in HH24:MI:SS format (ex: 23:30:15). This will create a task that will run on a daily basis. Choose a time when the database is the least busy.



```
C:\WINNT\system32\cmd.exe - telnet sunday

SQL> @/home/pnoffice/IBM_RPM_VERSION_6.2.0.0_Unix/Database/Oracle/utils/CreateTsk
kRollup_Ev.sql
Enter start date in YYYY-MM-DD format (ex: 2005-10-31) and start time in HH24:MI
:SS format (ex: 23:30:15)
Enter value for start_date: 2005-09-08
Enter value for start_time: 01:00:00

Procedure created.

old 10:  dbms_job.submit(taskno, 'TSKROLLUP_EU(NULL,0);', to_date('&run_date &
un_time', 'YYYY-MM-DD HH24:MI:SS'), 'sysdate+1', TRUE, instno);
new 10:  dbms_job.submit(taskno, 'TSKROLLUP_EU(NULL,0);', to_date('2005-09-08 0
1:00:00', 'YYYY-MM-DD HH24:MI:SS'), 'sysdate+1', TRUE, instno);

PL/SQL procedure successfully completed.

SQL> _
```

Shared library configuration

Follow these steps to configure shared library information.

1. Depending on what your operating system is, move the appropriate external library (LevelingLib.so) from the package to the path you have specified for the external library in the PreInstall.cfg file for LIB_PATH. Typically, it is set to the \${ORACLE_HOME}/bin directory.

For example, for HP:

```
cp ${PACKAGE_ROOT}/Database/Oracle/Leveling/hp/9i-64bit/LevelingLib.so
${ORACLE_HOME}/bin
```

2. To check the dependencies, open a shell window, change your directory to where you copied the shared library and type the following:

```
ldd LevelingLib.so
```

3. Make sure that the following section is included in the \${ORACLE_HOME}/network/admin/tnsnames.ora (do not copy and paste):

```
EXTPROC_CONNECTION_DATA =
  (DESCRIPTION =
    (ADDRESS_LIST =
      (ADDRESS = (PROTOCOL = IPC)(KEY = EXTPROC0))
    )
    (CONNECT_DATA =
      (SID = PLSExtProc)
      (PRESENTATION = RO)
    )
  )
)
```

Note: The installation generates both tnsnames.ora and listener.ora files. Move the files manually, therefore DO NOT use those files contained in the output directory.

4. Add the following entries to the \${ORACLE_HOME}/network/admin/listener.ora file (do not copy and paste):

```
LISTENER =
  (DESCRIPTION_LIST =
    (DESCRIPTION =
      (ADDRESS_LIST =
        (ADDRESS = (PROTOCOL = IPC)(KEY = EXTPROC0))
      )
      (ADDRESS_LIST =
        (ADDRESS = (PROTOCOL = TCP)(HOST = {HOSTNAME_OR_IP})(PORT = 1521))
      )
    )
  )
)
SID_LIST_LISTENER =
  (SID_LIST =
    (SID_DESC =
      (SID_NAME = PLSExtProc)
      (ORACLE_HOME = %ORACLE_HOME%)
      (PROGRAM = extproc)
    )
    (SID_DESC =
      (GLOBAL_DBNAME = IBMRPM)
      (ORACLE_HOME = %ORACLE_HOME%)
      (SID_NAME = IBMRPM)
    )
  )
)
```

5. Stop and start the Oracle listener
 - a. \${ORACLE_HOME}/bin/lsnrctl stop
 - b. \${ORACLE_HOME}/bin/lsnrctl start

Running the install_staging.sh file

Creating the staging user is a mandatory step for Oracle in a Rational Portfolio Manager 7.1.0.0 installation, it is done by running the install_staging.sh file. This script creates a staging user and its default password is staging. After the installation of this script is completed you can change the password. Follow the steps below to install staging user:

1. Edit staging_tb_spaces.sql file located in the `${INSTALLATION_HOME}/Database/Oracle/OraDDL` folder by updating the default path to the path where you want the tablespaces to be created.
2. Open a shell window and navigate to `${INSTALLATION_HOME}/Database/Oracle` directory and run the script.

The script will run and ask you a series of questions:

3. Have you performed the pre-install step and edited staging_tb_spaces.sql? (y/n)
 - If you have, type y to continue.
 - If you did not, answer n so that the install_staging.sh script does not run and

Edit staging_tb_spaces.sql and run the install_staging.sh script again.

4. The script uses the `$ORACLE_HOME` environment variable of the machine which you are running the script from.
5. Is your Rational Portfolio Manager database installed on this machine?
 - a. If you answer n, you will be prompted to enter:
 - TNS string
 - IBMRPM schema owner
 - IBMRPM schema owner password
 - SYS password
 - b. If you answer y, you will be prompted to enter:
 - ORACLE_SID value
 - IBMRPM schema owner
 - IBMRPM schema owner password
 - SYS password
6. Are you sure you want to start the install now? Answer y to start the installation.
7. Log files will be created in the `${INSTALLATION_HOME}/Database/Oracle/Logs` folder. It is recommended to look at the log files to see if scripts were run successfully before continuing.
8. Change password if so desired.

Running the install_comrpt.sh file

Creating the common reporting user is a mandatory step for Oracle in Rational Portfolio Manager 7.1 installation, it is done by running the install_comrpt.sh file. This script creates the comrpt user and its default password is comrpt.

After the installation is finished you can change the comrpt password.

Common reporting user uses the following tablespaces:

- STG_TEMP
- TB_STAG_MAIN

- TB_STAG_ADMIN
- TB_STAG_RES
- TB_STAG_LOBS
- TB_STAG_INDEX
- TB_STAG_CDOY

Before starting the comrpt installation, make sure that the above tablespaces have already been created in your database. These tablespaces should have already been created in the previous step “Running the install_staging.sh file” on page 28 which creates the staging user. If these have not yet been created, edit the staging_tb_spaces.sql file located in the `${INSTALLATION_HOME}/Database/Oracle/OraDDL` directory by changing the default paths to the paths where you want the tablespaces to be created. Login to SQL Plus as sys and run the staging_tb_spaces.sql script.

Note: There is no specific path required for tablespaces, however, the default path you specify for tablespaces must be a valid path on your machine.

1. Open a shell window and navigate to `${INSTALLATION_HOME}/Database/Oracle` directory and run the `install_comrpt.sh` script.

installation script will run and ask you a series of questions:

2. The script uses the `$ORACLE_HOME` environment variable of the machine which you are running the script from. Enter the required information when prompted.
3. Is your RPM database installed on this machine? (y/n)
 - If you answer n, you are prompted to enter:
 - TNS string
 - IBMRPM schema owner
 - IBMRPM schema owner password
 - SYS password
 - If you answer y, you are prompted to enter:
 - ORACLE_SID value
 - IBMRPM schema owner
 - IBMRPM schema owner password
 - SYS password
4. Are you sure you want to start installation now?
To start the installation, answer y.
5. Log files will be created in the `${INSTALLATION_HOME}/Database/Oracle/Logs` folder. It is recommended to look at the log files to see if scripts were run successfully before continuing.
6. Change the comrpt password if so desired.

Running the mig_con_user.sh file (Optional)

After the staging and comrpt user have been created, the connected user must be updated to be able to connect to these two users, this is done by running the mig_con_user.sh file. This step is optional and it must be performed only if you are using connected user. To update the connected user follow the steps below.

1. Open a command prompt window and change the directory to `${INSTALLATION_HOME}/Database/Oracle` and run `mig_con_user.sh` script.

2. The script uses your `${ORACLE_HOME}` environment variable of the machine which you are running the script from. Enter the required information when prompted.
3. Is your RPM database installed on this machine? (y/n)
 - If you answer n, you are prompted to enter:
 - a. TNS string
 - b. IBMRPM schema owner
 - c. IBMRPM schema owner password
 - If you answer y, you are prompted to:
 - a. Verify the `ORACLE_SID` value
 - b. Enter IBMRPM schema owner
 - c. Enter IBMRPM schema owner password
4. Enter Rational Portfolio Manager connected user name when prompted
5. Enter Rational Portfolio Manager connected user password when prompted
6. Enter staging password when prompted, the default password will be staging if you have not changed it.
7. Enter comrpt password when prompted, the default password is comrpt if you have not changed it.
8. Enter the password for sys user when prompted.
9. Are you sure you want to migrate your connected user now? (y/n)
To start the migration, answer y.
10. The log files will be created in the `${INSTALLATION_HOME}/Database/Oracle/Logs` folder. It is recommended to look at the log files to see if the script ran successfully before continuing.

Chapter 5. Installing middleware: WebSphere Application Servers

This chapter describes how to deploy IBM Rational Portfolio Manager on a WebSphere Application Server (WAS) for the following WAS versions and databases.

- WebSphere 5.1 with DB2
- WebSphere 6.0 with DB2 and Oracle databases
- WebSphere 6.1 with DB2

Deploying IBM Rational Portfolio Manager middleware on WebSphere Application Server 5.1

To deploy Rational Portfolio Manager middleware on WebSphere Application Server 5.1, use the procedures in sequence. The Rational Portfolio Manager middleware deployment is done in the WebSphere Administration Console.

Starting the application server

1. To start the application server, click **Start Menu > Programs > IBM WebSphere > Application Server v5.1 > Profiles > default > Start the server.**
2. To log in to the Administration Console, click **Start Menu > Programs > IBM WebSphere > Application Server v5.1 > Administrative console.** When prompted, enter your login user ID and click **OK.**

Note: The WebSphere administrator user credentials are defined when WebSphere is installed. Consult your WebSphere administrator for the correct user credentials. If security is not enabled, you will not be required to enter a User ID.

Configuring the Middleware Runtime Options

To install Rational Portfolio Manager middleware, the first step is to configure the runtime parameters. This is done by creating a set of resource environment variables. This section describes how to configure the optional parameters used by the Rational Portfolio Manager middleware at run time. These parameters have default working values. For the list of available runtime parameters, their default values, and JNDI mappings, see Chapter 7, “Middleware environment variables reference,” on page 103. The example used in this section, changes the environment variable `webServicesUseSessionTimeout` from its default value of `true` to `false`; the effect is to disable the session timeout feature. To override any other variable, start with step 6 on page 32 through 6h on page 53. For each variable that you configure, make sure that the JNDI name, the variable name, and value are consistent with the list of runtime parameters from Chapter 7, “Middleware environment variables reference,” on page 103.

Note: All environment variables in Chapter 7, “Middleware environment variables reference,” on page 103 must be manually configured with the available values or set to the default. Environment variable values are case sensitive.

To configure the Rational Portfolio Manager Middleware runtime parameters:

1. In the left navigation tree, click **Resources > Resource Environment > Resource Environment providers**.
2. On the right side of the window, from the scope list, select node.
3. Click **New**.
4. In the field **Name**, type the name of the container that will contain all WebSphere environment variables, `RPMStringProvider`, and click **Apply**.
5. Create a new Referenceable to access the environment variable container.
To create a new Referenceable:
 - a. On the right side of the window in **Additional Properties**, click **Referenceables**.
 - b. Click **New**.
 - c. In the required fields, type the **Factory class name** and the **Class Name**:
 - Factory Classname: `com.ibm.rpm.factory.StringFactory`
 - Class name: `java.lang.String`
 - d. Click **OK**.
6. Create and configure the new resource environment variable (`webServicesUseSessionTimeout` is used in this example):
 - a. At the top of the window, click the blue link **RPMStringProvider**. This action returns you to the screen in step 5. In the **Additional Properties** section, click **Resource environment entries**.

Configuration

General Properties

Scope	* cells.LGS5178:nodes.LGS5178	<small> ⓘ The scope of the configured resource. This value indicates the configuration location for the configuration file.</small>
Name	* RPMStringProvider	<small> ⓘ The name of the resource provider.</small>
Description		<small> ⓘ A text description for the resource provider.</small>

Apply OK Reset Cancel

Additional Properties

[Referenceables](#) The referenceable holds the factoryClassname of the factory that will convert information in the name space into a class instance for the type of resource desired, and for the classname of the type to be returned.

[Resource Env Entries](#) An environment resource that will be the binding target for a resource-env-ref in some application's deployment descriptor.

[Custom Properties](#) Properties that may be required for Resource Providers and Resource Factories. For example, most database vendors require additional custom properties for data sources that will access the database.

Something similar to the following should be displayed:

[Resource Environment Providers > RPMStringProvider >](#)

Resource Env Entries

An environment resource that will be the binding target for a resource-env-ref in some application's deployment descriptor. ⓘ

Total: 0

Filter

Preferences

New Delete

<input type="checkbox"/> Name	JNDI Name	Description	Category
None			

- b. Click **New** and provide the name of the environment variable and the JNDI name associated to the variable.
 - Name: `webServicesUseSessionTimeout`
 - JNDI name: `com/ibm/rpm/webServicesUseSessionTimeout`

- c. Click **Referenceable** (com.ibm.rpm.factory.StringFactory).
- d. Click **Apply**.
- e. On the right side of the window, under Additional Properties, the **Custom Properties** link is now enabled. Click **Custom Properties**. Something similar to the following should be displayed:

[Resource Environment Providers](#) > [RPMStringProvider](#) > [Resource Env Entries](#) > [webServicesUseSessionTimeout](#) >

Custom Properties

Custom properties that may be required for Resource Providers and Resource Factories. For example, most database vendors require additional custom properties for data sources that will access the database. [i](#)

Total: 0				
<input type="checkbox"/> Filter				
<input type="checkbox"/> Preferences				
<input type="button" value="New"/>		<input type="button" value="Delete"/>		
<input type="checkbox"/>	Name ▾	Value ▾	Description ▾	Required
None				

- f. Click **New**.
- g. Set the following fields to suit your configuration.
 - Name: webServicesUseSessionTimeout
 - Value: false
 - Type: java.lang.String

Note: The description field is optional.

[Resource Environment Providers](#) > [RPMStringProvider](#) > [Resource Env Entries](#) > [webServicesUseSessionTimeout](#) > [Custom Properties](#) > **New**

Custom properties that may be required for Resource Providers and Resource Factories. For example, most database vendors require additional custom properties for data sources that will access the database. [i](#)

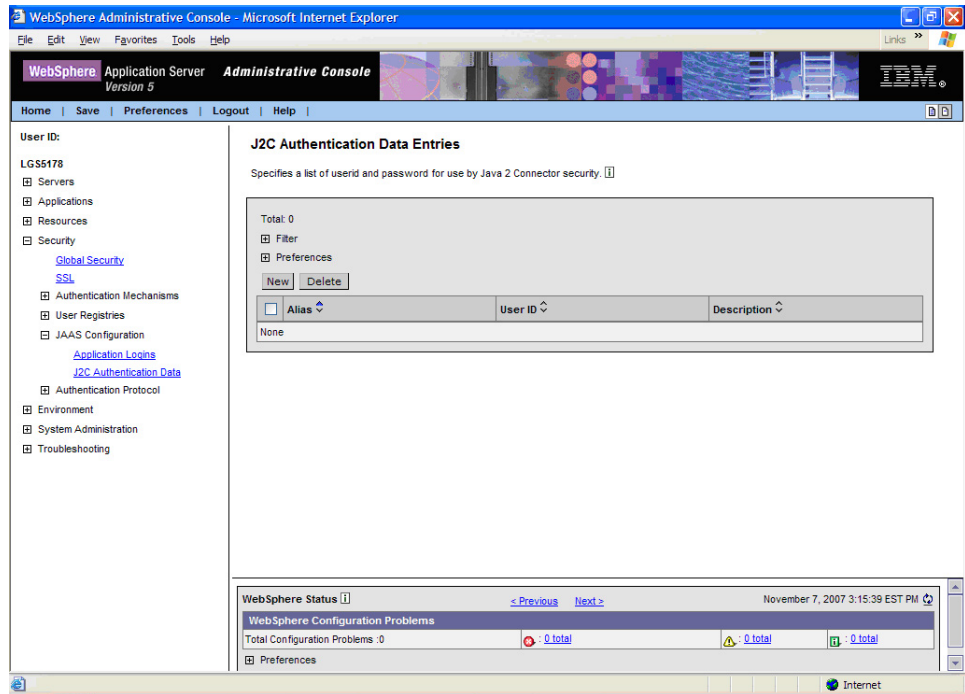
Configuration		
General Properties		
Scope	cells:LG55178:nodes:LG55178	i The scope of the configured resource. This value indicates the configuration location for the configuration file.
Required	false	i
Name	webServicesUseSessionTimeout	i Name associated with this property (for example, PortNumber and ConnectorURL).
Value	false	i Value associated with this property in this property set.
Description		i Text to describe any bounds or well-defined values for this property.
Type	java.lang.String	i Fully qualified Java type of this property (java.lang.Integer, java.lang.Byte).
<input type="button" value="Apply"/> <input type="button" value="OK"/> <input type="button" value="Reset"/> <input type="button" value="Cancel"/>		

- h. Click **OK**.
7. Repeat step 6 on page 32 for each variable described in Chapter 7, "Middleware environment variables reference," on page 103.
8. To commit your changes, click **Save**.
9. To save workspace changes to the master configuration, click **Save**.
10. Restart WebSphere or the Rational Portfolio Manager middleware application for the new parameters to be taken into account.
11. Continue to the next step "Create the RPMCredentials authentication aliases."

Create the RPMCredentials authentication aliases

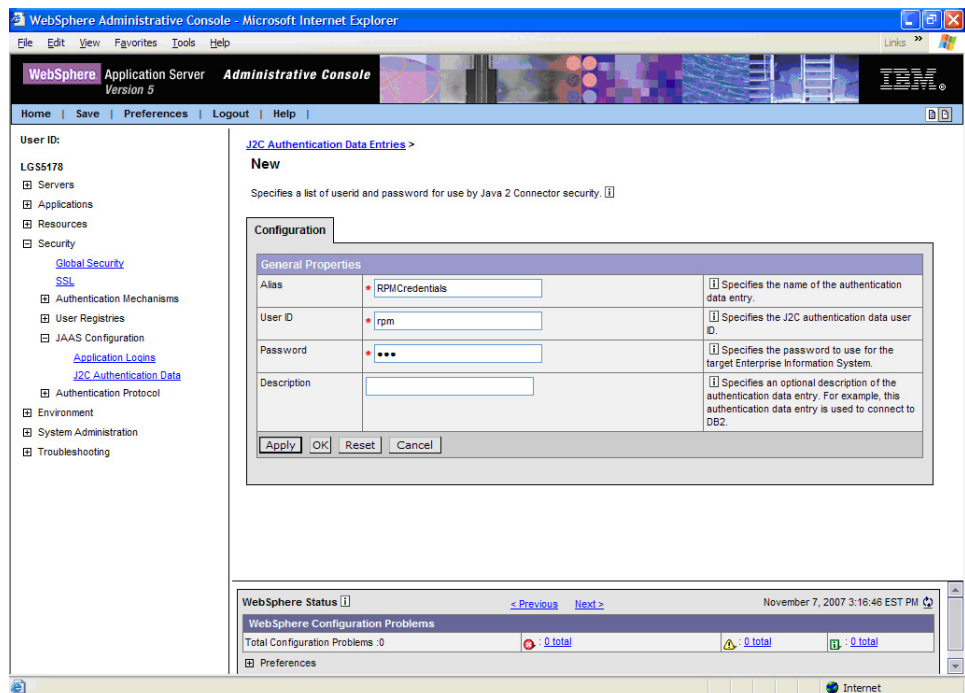
To create the **RPMCredentials** Authentication alias:

1. From the WebSphere Administrative Console tree, click **Security** > **JAAS Configuration** > **J2C Authentication Data**.



2. Click **New**.
3. To create the **RPMCredentials** alias, enter values for the following General Properties mandatory fields:
 - **Alias:** RPMCredentials
 - **User ID:** The user ID used to connect to your Rational Portfolio Manager database.
 - **Password:** The password for this user ID

Note: The Description field is optional.



4. Click **OK**.
5. To apply your workspace changes to the master configuration, at the top of the page in the message box, click the **Save URL**.
6. To save your changes to the master configuration, click **Save**.
7. Continue to configure the Rational Portfolio Manager.
 - a. If you are using a DB2 database, continue with the next section “Modify the path value of the DB2UNIVERSAL_JDBC_DRIVER_PATH variable.”
 - b. If you are using an Oracle database, skip to section “Modify the path value of the ORACLE_JDBC_DRIVER_PATH variable” on page 40.

Modify the path value of the DB2UNIVERSAL_JDBC_DRIVER_PATH variable

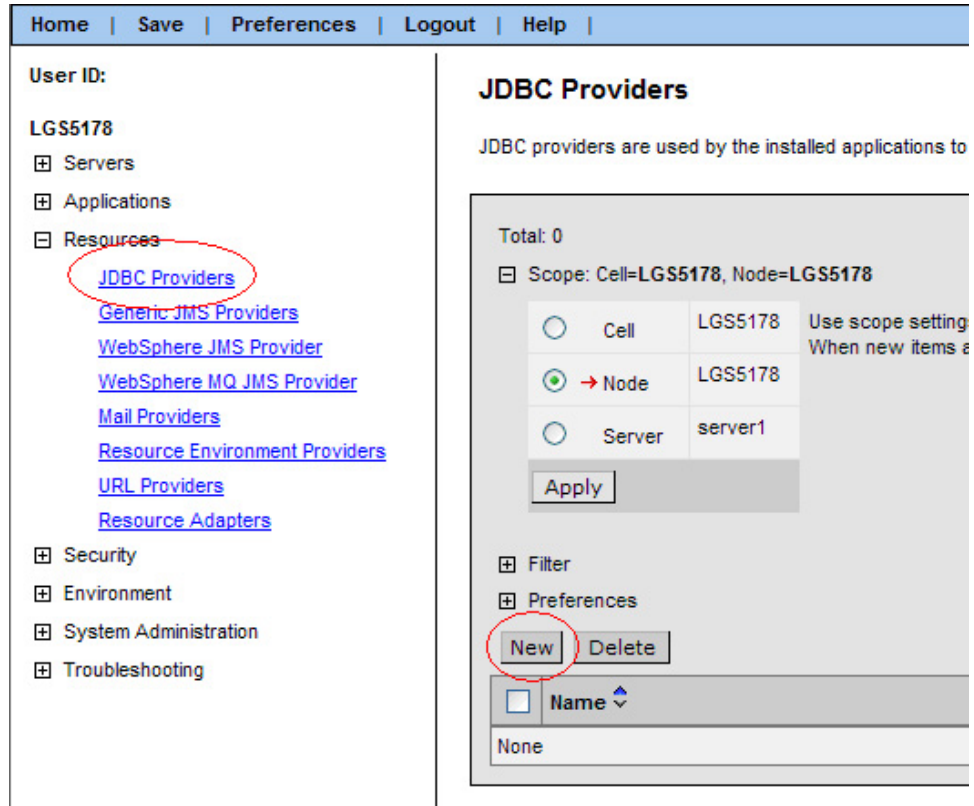
To modify the path value of the DB2UNIVERSAL_JDBC_DRIVER_PATH variable:

1. From the WebSphere Administrative Console window, click **Environment > WebSphere Variables**. The **Node** radio button is selected; do not clear this selection
2. To modify the variables DB2UNIVERSAL_JDBC_DRIVER_PATH:
 - a. From the Administration Console navigation, click **Environment > WebSphere Variables**. The **Node** radio button is selected; do not clear this selection.
 - b. To modify the variable DB2UNIVERSAL_JDBC_DRIVER_PATH:
 - 1) Click the variable DB2UNIVERSAL_JDBC_DRIVER_PATH URL.
 - 2) In General Properties, set the field **Value** to /opt/IBM/SQLLIB/java or to the folder path where the DB2 driver files (db2jcc.jar and db2jcc_license_cisuz.jar) are installed.
 - 3) Click **Apply** or **OK**.
 - 4) To save your changes to the master configuration, at the top of the page in the message box, click the **Save URL**.
 - 5) To save your workspace changes to the master configuration, click **Save**.

Create the JDBC Providers for DB2

To create the JDBC Providers for DB2:

1. From the WebSphere Administrative Console window, click **Resources > JDBC Providers**. If DB2 Universal JDBC Driver Provider has already been created, continue to step 5 on page 36.
2. To add a new provider, click **New**.



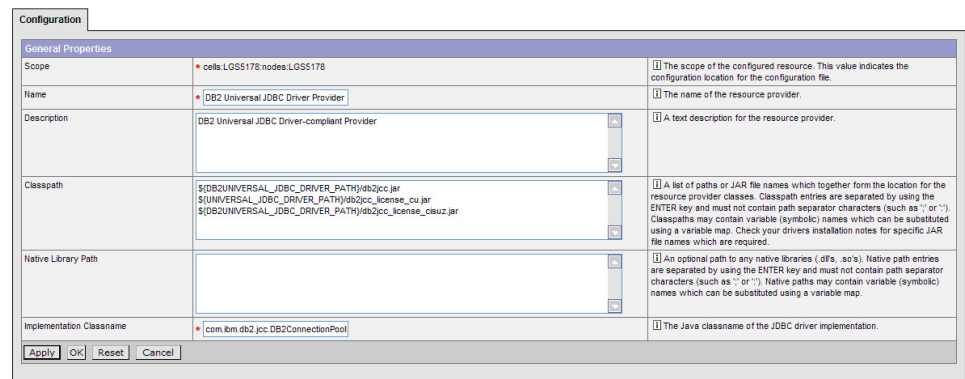
3. From the JDBC Provider menu, click **DB2 Universal JDBC Driver Provider**.
4. Click **Apply**.
5. Verify that the scope is set to your Node, that the name is DB2 Universal JDBC Driver Provider, and that the classpath and the implementation class name are each as shown. Classpath should be:


```

      ${DB2UNIVERSAL_JDBC_DRIVER_PATH}/db2jcc.jar
      ${UNIVERSAL_JDBC_DRIVER_PATH}/db2jcc_license_cu.jar
      ${DB2UNIVERSAL_JDBC_DRIVER_PATH}/db2jcc_license_cisuz.jar
      
```

Implementation class name should be:

```
com.ibm.db2.jcc.DB2ConnectionPoolDataSource
```



6. Click **OK**.
7. Click the **Save URL**.

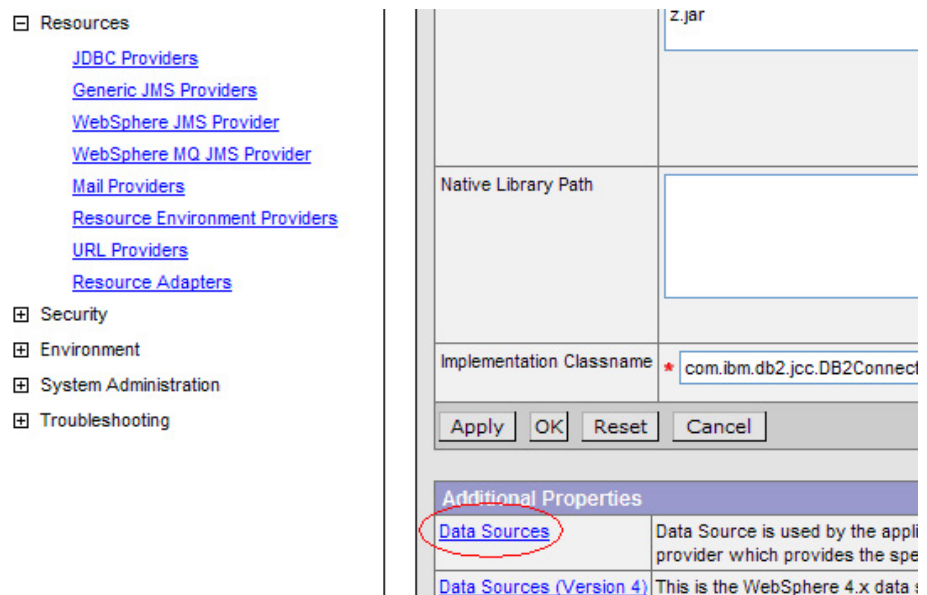
8. To save your workspace changes to the master configuration, click **Save**. You are returned to the JDBC Providers window.

Create the data sources and test the connection for DB2

To access information in the Rational Portfolio Manager repository, the data source information or Data Source Name (DSN) must be set correctly. The information specified in the DSN allows the Rational Portfolio Manager to connect to the repository database.

To create the Data Sources, you need the following data source information that is used by the client to log in to the server:

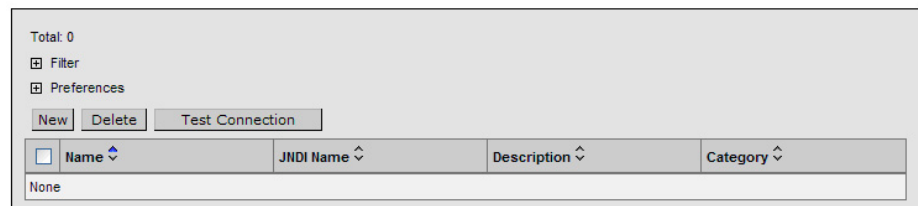
- The database host
 - The database name
 - The user name and password for this database
1. To create the **jdbc/RPMDATASOURCE**:
 - a. From the Administration Console, click **Resources > JDBC providers**.
 - b. Click **DB2 Universal JDBC Driver Provider**.
 - c. In the Additional Properties area, click **Data Sources > New**.
 - d. Click **New**.



[JDBC Providers > DB2 Universal JDBC Driver Provider >](#)

Data Sources

Data Source is used by the application to access the data from the database. A data source is created under a JDBC provider which provides the specific JDBC driver implementation class. [i](#)















- e. On the General Properties panel:
 - 1) Verify the Scope (should be a node).

- 2) Enter a name of the Rational Portfolio Manager data source.
- 3) Enter the JNDI name (must be jdbc/RPMDATASOURCE).
- 4) Select the check box **Use this Data source in container managed persistence (CMP)**.
- 5) Verify that the **Datasource Helper Classname** is set to com.ibm.websphere.rsadapter.DB2UniversalDataStoreHelper.
- 6) In the sections **Component-managed authentication alias** and **Container-managed Authentication Alias**, select the Rational Portfolio Manager credentials previously created.
- 7) In the Mapping-Configuration Alias drop-down menu, click **DefaultPrincipalMapping**.

[JDBC Providers](#) > [DB2 Universal JDBC Driver Provider](#) > [Data Sources](#) >

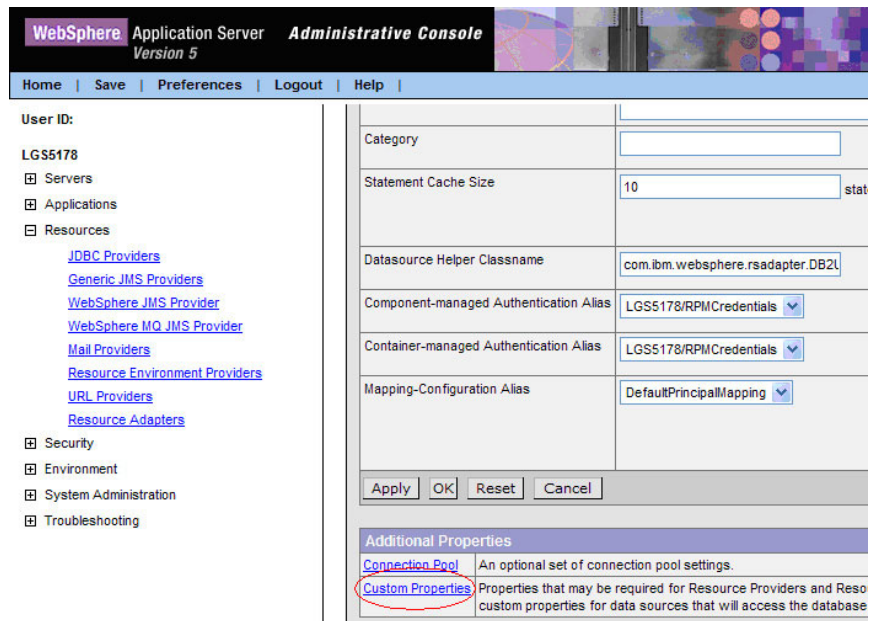
New

Data Source is used by the application to access the data from the database. A data source is created under a JDBC provider which provides the specific JDBC driver implementation class. 

Configuration		
General Properties		
Scope	* cells.LGS5178:nodes.LGS5178	 The scope of the configured resource. This value indicates the configuration location for the configuration file.
Name	* RPM Datasource	 The required display name for the resource.
JNDI Name	jdbc/RPMDATASOURCE	 The JNDI name for the resource.
Container managed persistence	<input checked="" type="checkbox"/> Use this Data Source in container managed persistence (CMP)	 Enable if this data source will be used for container managed persistence of EJBs. This will cause a corresponding CMP connection factory which corresponds to this datasource to be created for the relational resource adapter.
Description	RPM Datasource	 An optional description for the resource.
Category		 An optional category string which can be used to classify or group the resource.
Statement Cache Size	10 statements	 Number of free prepared statements per connection. This is different from the old datasource which is defined as number of free prepared statements per data source.
Datasource Helper Classname	com.ibm.websphere.rsadapter.DB2L	 The datastore helper that is used to perform specific database functions.
Component-managed Authentication Alias	LGS5178/RPMCredentials	 References authentication data for component-managed signon to the resource.
Container-managed Authentication Alias	LGS5178/RPMCredentials	 References authentication data for container-managed signon to the resource.
Mapping-Configuration Alias	DefaultPrincipalMapping	 Select a suitable JAAS login configuration from the security-JAAS configuration panel to map the user identity and credentials to a resource principal and credentials that is required to open a connection to the back-end server.
<input type="button" value="Apply"/> <input type="button" value="OK"/> <input type="button" value="Reset"/> <input type="button" value="Cancel"/>		

- 8) Click **Apply**.
- 9) In the message box at the top of the page, click the **Save URL** .

- 10) To save your workspace changes to the master configuration, click **Save**.
- 11) In the left navigation tree, under Resources, click **JDBC Providers**.
- 12) Click **DB2 Universal JDBC Driver Provider**.
- 13) Click **Data Sources**.
- 14) Click **RPMDATASOURCE**.
- 15) In the Additional Properties table, click **Custom Properties** (use the scroll bar to locate this table).



- 16) Set the properties for this connection.
 - a) Enter the database name.
 - b) Select the driver type (should be type 4).
 - c) Enter server name.
 - d) Enter the port number, ask your DB2 Database Administrator for the appropriate number.

[JDBC Providers > DB2 Universal JDBC Driver Provider > Data Sources > RPMDataSource >](#)

Custom Properties

Custom properties that may be required for Resource Providers and Resource Factories. For example, most database vendors require additional custom properties for data sources that will access the database. [i]

Total: 18

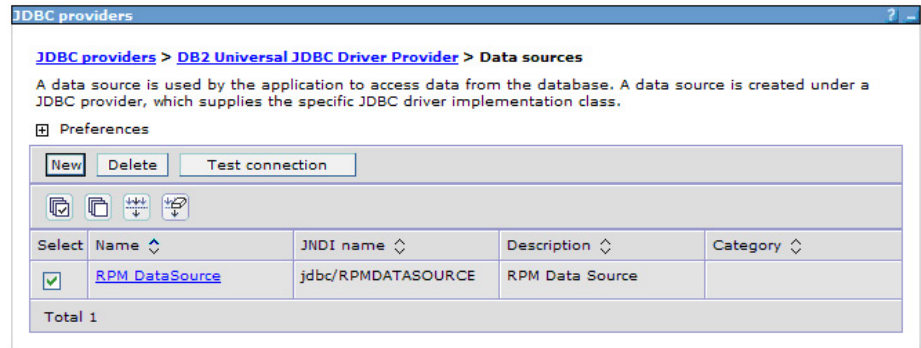
Filter

Preferences

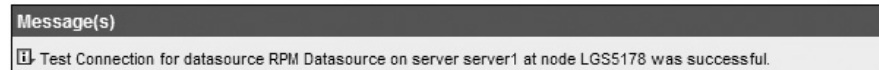
<input type="checkbox"/> Name	Value	Description	Required
<input type="checkbox"/> databaseName	IBM RPM	This is a required property. This is an actual database name, and its not the locally catalogued database name. The Universal JDBC Driver does not rely on information catalogued in the DB2 database directory.	true
<input type="checkbox"/> driverType	4	The JDBC connectivity-type of a data source. If you want to use type 4 driver, set the value to 4. If you want to use type 2 driver, set the value to 2.	true
<input type="checkbox"/> serverName	rpmdev07	The TCP/IP address or host name for the DRDA server. If custom property driverType is set to 4, this property is required.	false
<input type="checkbox"/> portNumber	60001	The TCP/IP port number where the DRDA server resides. If custom	false

- e) At the top of the page in the message box, click the **Save URL**.

- f) To save your workspace changes to the master configuration, click **Save**.
2. Test the connection.
 - a. From the Administration Console, click **Resources > JDBC providers**.
 - b. Click the Oracle JDBC Driver.
 - c. Click **Data Sources**.
 - d. Select the new connection and click **Test Connection**.



- 1) If your installation is successful, you will see a confirmation message at the top of the page:



- 2) If your installation failed, verify that the following information that you provided throughout the installation is accurate.
 - a) RPMcredentials
 - b) JDBC Driver path
 - c) Datasource

Test the connection again. If the connection continues to fail, verify with your database administrator that the database values are correct.
3. Continue with next step, "Deploying the rpm-middleware-x.x.x.x.war file" on page 47.

Modify the path value of the ORACLE_JDBC_DRIVER_PATH variable

To modify the path value of the ORACLE_JDBC_DRIVER_PATH variable:

1. From the WebSphere Administration Console navigation, click **Environment > WebSphere Variables**. The **Node** radio button is selected; do not clear this selection.
2. To modify the variable ORACLE_JDBC_DRIVER_PATH:
 - a. Click the URL variable ORACLE_JDBC_DRIVER_PATH.
 - b. In General Properties, set the field **Value** to /opt/oracle/product/10.2.0/jdbc/lib or to the folder path where the Oracle driver file (ojdbc14.jar) is installed.

Note: If you are running the application server with JDK 1.4 or later versions, use the Oracle driver file ojdbc14.jar. If you are running the application server with JDK 1.2 or JDK 1.3, use the Oracle driver file classes12.jar. To know which JDK is used by WebSphere, look in the

startServer.log file in $\{\text{WAS_INSTALL_ROOT}\}/\text{logs}/\text{server1}$
 $\%\text{WAS_INSTALL_ROOT}\%\backslash\text{logs}\backslash\text{server1}$ folder.

- c. Click **Apply** or **OK**.
 - d. To apply changes to the master configuration, at the top of the page in the message box, click the **Save URL**.
 - e. To save your workspace changes to the master configuration, click **Save**.
3. Continue with the next step, "Create the JDBC provider for Oracle."

Create the JDBC provider for Oracle

To add a new provider:

1. From the Administration Console, click **Resources > JDBC providers** and click **New**.

The screenshot shows the WebSphere Administration Console interface. The top navigation bar includes 'Home', 'Save', 'Preferences', 'Logout', and 'Help'. The left sidebar shows the navigation tree with 'Resources' expanded and 'JDBC Providers' selected. The main content area displays the 'JDBC Providers' configuration for Cell=LGS5178, Node=LGS5178. A table lists the providers with columns for Cell, Node, and Server. The 'New' button is circled in red.

Cell	Node	Server
<input type="radio"/>	LGS5178	Use scope setting
<input checked="" type="radio"/>	→ Node	LGS5178
<input type="radio"/>	Server	server1

2. Complete the information about the provider by selecting the following options in the pop-up menu for each of the following fields and click **Next**.
 - a. In the JDBC Provider drop-down menu, click **Oracle JDBC Driver > Apply**.
 - b. Verify that the Scope set to your node.
 - c. Verify that the Name is set to Oracle JDBC Driver.
 - d. Verify the class path and the Implementation class name:
 - 1) The classpath name: $\{\text{ORACLE_JDBC_DRIVER_PATH}\}/\text{ojdbc14.jar}$ for JDK 1.4 or later or $\{\text{ORACLE_JDBC_DRIVER_PATH}\}/\text{classes12.jar}$ for JDK 1.3 or earlier or $\%\text{ORACLE_JDBC_DRIVER_PATH}\%\backslash\text{ojdbc14.jar}$ for JDK 1.4 or later or $\%\text{ORACLE_JDBC_DRIVER_PATH}\%\backslash\text{classes12.jar}$ for JDK 1.3 or earlier.
 - 2) The implementation class name:
oracle.jdbc.pool.OracleConnectionPoolDataSource

Configuration		
General Properties		
Scope	* cells:LGS5178:nodes:LGS5178	<small>[i] The scope of the configured resource. This value indicates the configuration location for the configuration file.</small>
Name	* Oracle JDBC Driver	<small>[i] The name of the resource provider.</small>
Description	Oracle JDBC Driver	<small>[i] A text description for the resource provider.</small>
Classpath	\${ORACLE_JDBC_DRIVER_PATH}/ojdbc14.jar	<small>[i] A list of paths or JAR file names which together form the location for the resource provider classes. Classpath entries are separated by using the ENTER key and must not contain path separator characters (such as ';' or ':'). Classpaths may contain variable (symbolic) names which can be substituted using a variable map. Check your drivers installation notes for specific JAR file names which are required.</small>
Native Library Path		<small>[i] An optional path to any native libraries (.dlls, .so's). Native path entries are separated by using the ENTER key and must not contain path separator characters (such as ';' or ':'). Native paths may contain variable (symbolic) names which can be substituted using a variable map.</small>
Implementation Classname	* oracle.jdbc.pool.OracleConnectionPo	<small>[i] The Java classname of the JDBC driver implementation.</small>
<input type="button" value="Apply"/> <input type="button" value="OK"/> <input type="button" value="Reset"/> <input type="button" value="Cancel"/>		

3. Click **OK**.
4. To save your workspace changes to the master configuration, click the **Save URL**. You are returned to the JDBC Providers window.
5. Continue with the next step, "Create the Data sources and test the connection to the Oracle database."

Create the Data sources and test the connection to the Oracle database

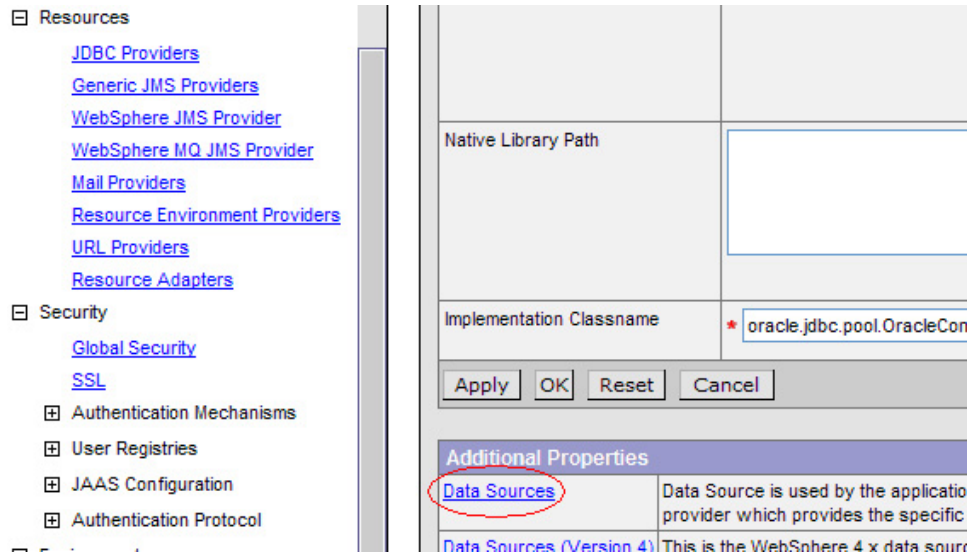
To access information from the Rational Portfolio Manager repository when using the Rational Portfolio Manager Middleware, the data source information or Data Source Name (DSN) must be set correctly. The information specified in the DSN allows the Rational Portfolio Manager Middleware to connect to the Rational Portfolio Manager repository database.

To create the data sources, you need the following data source information that is used by the client to log in to the server.

- The database host
- The database name
- The user name and password for this database

To create the jdbc/RPMDATASOURCE:

1. From the Administration Console, click **Resources > JDBC providers** and click the Oracle JDBC Driver URL.
2. In the Additional Properties area, click **Data Sources > New**.



[JDBC Providers](#) > [Oracle JDBC Driver](#) >

Data Sources

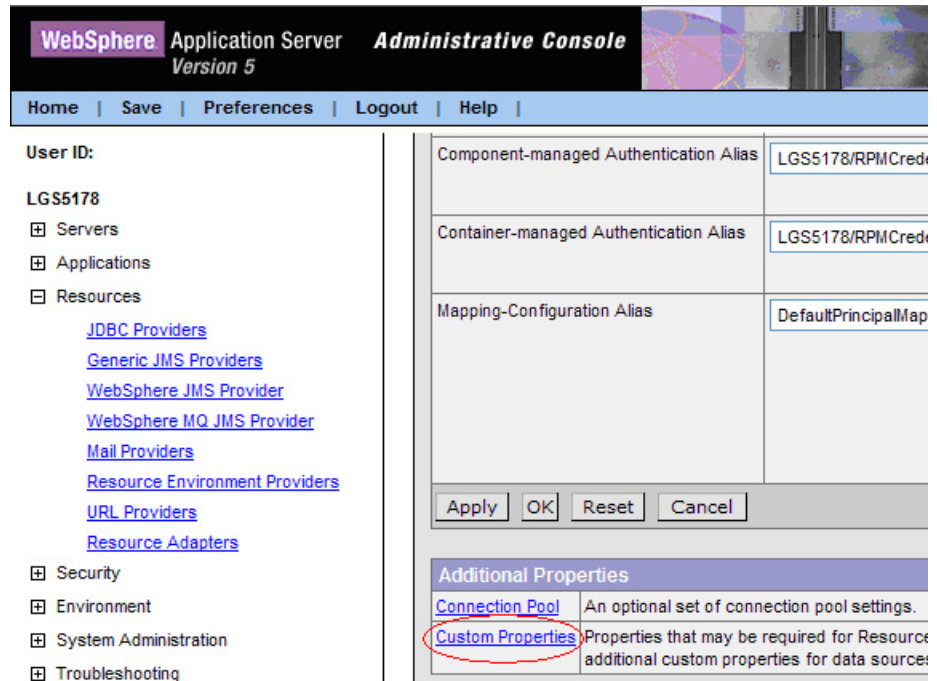
Data Source is used by the application to access the data from the database. A data source is created under a JDBC provider which provides the specific JDBC driver implementation class. [\[1\]](#)



3. On the General Properties panel:
 - a. Enter the Data source name: RPM Datasource
 - b. Enter a name and the JNDI name: jdbc/RPMDATASOURCE
 - c. Select Use this Data Source in container managed persistence (CMP) check box.
 - d. Verify that Datasource Helper Classname is set to com.ibm.websphere.rsadapter.OracleDataStoreHelper.
 - e. Select the RPMCredentials previously created in the **Component-managed authentication alias** and **Container-managed Authentication Alias** drop-down menu.
 - f. In the **Mapping-Configuration Alias** drop-down menu, click **DefaultPrincipalMapping**.

Configuration		
General Properties		
Scope	* cells:LGS5178.nodes:LGS5178	The scope of the configured resource. This value indicates the configuration location for the configuration file.
Name	* RPM Datasource	The required display name for the resource.
JNDI Name	jdbc/RPMDATASOURCE	The JNDI name for the resource.
Container managed persistence	<input checked="" type="checkbox"/> Use this Data Source in container managed persistence (CMP)	Enable if this data source will be used for container managed persistence of EJBs. This will cause a corresponding CMP connection factory which corresponds to this datasource to be created for the relational resource adapter.
Description	RPM Datasource	An optional description for the resource.
Category		An optional category string which can be used to classify or group the resource.
Statement Cache Size	10 statements	Number of free prepared statements per connection. This is different from the old datasource which is defined as number of free prepared statements per data source.
Datasource Helper Classname	re.rsadapter.OracleDataStoreHelper	The datastore helper that is used to perform specific database functions.
Component-managed Authentication Alias	LGS5178/RPMCredentials	References authentication data for component-managed signon to the resource.
Container-managed Authentication Alias	LGS5178/RPMCredentials	References authentication data for container-managed signon to the resource.
Mapping-Configuration Alias	DefaultPrincipalMapping	Select a suitable JAAS login configuration from the security-JAAS configuration panel to map the user identity and credentials to a resource principal and credentials that is required to open a connection to the back-end server.
<input type="button" value="Apply"/> <input type="button" value="OK"/> <input type="button" value="Reset"/> <input type="button" value="Cancel"/>		

- g. Click **Apply**.
- h. At the top of the page in the message box, click the **Save URL**.
- i. To save your workspace changes to the master configuration, click **Save**.
- j. In the left navigation tree, click **Resources > JDBC Providers**.
- k. Click **DB2 Universal JDBC Driver Provider**.
- l. Click **Data Sources**.
- m. Click **RPMDATASOURCE**.
- n. In the Additional Properties table, click **Custom Properties** (use the scroll bar to locate this table).



4. Set the properties of this connection:
 - a. URL (jdbc:oracle:thin:@yourserver:portnumber/databasename).
 - b. driver type: 4
 - c. portNumber: 1521, ask your Oracle Database administrator for the appropriate number.

Custom Properties

Custom properties that may be required for Resource Providers and Resource Factories. For example, most database vendors require additional custom properties for data sources that will access the database. [i](#)

Total: 15

Filter

Preferences

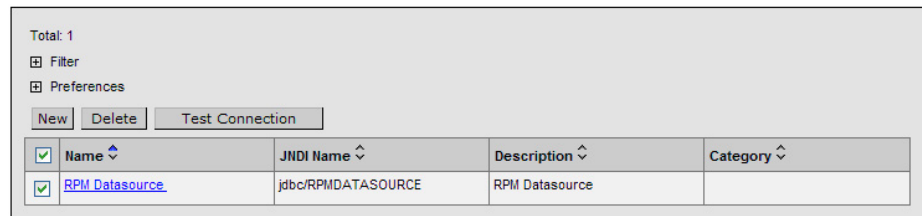
<input type="checkbox"/> Name	Value	Description	Required
<input type="checkbox"/> URL	jdbc:oracle:thin:@rpmdev08/IBM RPM	This is a required property. The URL indicating the database from which the Data Source will obtain connections, such as 'jdbc:oracle:thin:@localhost:1521:sample' for thin driver and 'jdbc:oracle:oci8:@sample' for thick driver.	true
<input type="checkbox"/> driverType	4	The type of the driver. The possible values are: thin, oci8.	false
<input type="checkbox"/> oraclelogPrintMask	62	The oraclelogPrintMask controls which information is printed with each trace message. Oracle9i requires the use of ojdbc14.jar. Default is 62 which is (/OracleLog.FIELD_OBJECT for 9i/ OracleLog.FIELD_CONN for 8i/ 32/ OracleLog.FIELD_CATEGORY 16/ OracleLog.FIELD_SUBMOD 8/ OracleLog.FIELD_MODULE 4/ OracleLog.FIELD_TIME 2). Possible values: OracleLog.FIELD_TIME 2, OracleLog.FIELD_MODULE 4, OracleLog.FIELD_SUBMOD 8, OracleLog.FIELD_CATEGORY 16, OracleLog.FIELD_OBJECT 32, OracleLog.FIELD_THREAD 64.	false
<input type="checkbox"/> oraclelogModuleMask	1	The oraclelogModuleMask controls which modules write debug output. Oracle9i requires the use of ojdbc14.jar. Default is 1 which is (/OracleLog.MODULE_DRIVER 1). Possible values (/OracleLog.MODULE_DRIVER 1, OracleLog.MODULE_DBACCESS 2).	false
<input type="checkbox"/> oraclelogCategoryMask	47	The oraclelogCategoryMask controls which category to be output. Oracle9i requires the use of ojdbc14.jar. Default is 47 which is (/OracleLog.USER_OPER 1/ OracleLog.PROG_ERROR 2/ OracleLog.ERROR 4/ OracleLog.WARNING 8/ OracleLog.DEBUG1 32). Possible values (/OracleLog.USER_OPER 1, OracleLog.PROG_ERROR 2, OracleLog.ERROR 4, OracleLog.WARNING 8, OracleLog.FUNCTION 16, OracleLog.DEBUG1 32, OracleLog.SQL_STR 128).	false
<input type="checkbox"/> TNSEntryName	-	The entry name which is used for the Oracle OCI driver.	false

- d. At the top of the page in the message box, click the **Save URL**.
 - e. To save your workspace changes to the master configuration, click **Save**.
5. Test the connection:
- a. To test your connection to the Oracle database, click **Resources > JDBC providers** and click the Oracle JDBC Driver.
 - b. Click **Data Sources**.
 - c. Select the new connection and click **Test Connection**.

[JDBC Providers](#) > [Oracle JDBC Driver](#) >

Data Sources

Data Source is used by the application to access the data from the database. A data source is created under a JDBC provider which provides the specific JDBC driver implementation class. [i](#)



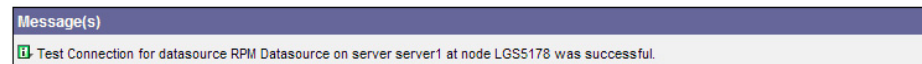
Total: 1

Filter

Preferences

<input checked="" type="checkbox"/>	Name ▾	JNDI Name ▾	Description ▾	Category ▾
<input checked="" type="checkbox"/>	RPM Datasource	jdbc/RPMDATASOURCE	RPM Datasource	

- a. If your installation is successful, you will see a confirmation message at the top of the page:



- b. If your installation has failed, verify that the following information that you provided throughout the installation is accurate.
- 1) RPMCredentials
 - 2) JDBC Driver path
 - 3) Datasource

Test the connection again. If the connection continues to fail, verify with your database administrator that the database values are correct.

6. Continue with the next step, "Deploying the rpm-middleware-x.x.x.x.war file."

Deploying the rpm-middleware-x.x.x.x.war file

These steps describe how to deploy the Rational Portfolio Manager middleware Enterprise Application.

1. Before you begin, upload the rpm-middleware-x.x.x.x.war file to a temporary directory on the server where WebSphere is installed. You can use an ftp utility, or any other method appropriate for your platform. Take note of the full path where you uploaded the file. In the following examples we will use c:\tempfolder.
2. In the **WebSphere Administrative Console** window, click **Applications > Install New Application**.
Attention: If you have previously configured the optional runtime parameters or previously deployed the rpm-middleware_xxxx.war file, you will be presented with a page prompting you to choose not to override existing bindings or to override existing bindings, select the **Override existing bindings** radio button and click **Next**.
3. Select the **Server path** radio button and enter the full path and rpm-middleware-x.x.x.x.war file name you noted in step a (you can also browse to the file).

Note: Do not use the **Local File System** radio button option. Selecting this option causes the Administrative console to timeout.

4. In the **Context root** field enter: IBMRPM

Note: The context root name must be unique and cannot start with /..

Preparing for the application installation

Specify the EAR/WAR/JAR module to upload and install.

Path: Local path: Server path: Choose the local path if the ear resides on the same machine as the browser. Choose the server path if the ear resides on any of the nodes in your cell context.

Context Root: You must specify a context root if the module being installed is a WAR module.

5. Click **Next** until you reach the panel with the option to **Finish**, click **Finish**, then wait for the deployment to complete.

Note: Deployment may take a long time.

Install New Application

Allows installation of Enterprise Applications and Module

- [Step 1](#) Provide options to perform the installation
- [Step 2](#) Map resource references to resources
- [Step 3](#) Map resource env entry references to resources
- [Step 4](#) Map virtual hosts for web modules
- [Step 5](#) Map modules to application servers

→ Step 6: Summary

Summary of Install Options

Options	Values
Distribute Application	Yes
Use Binary Configuration	No
Cell/Node/Server	Click here
Enable Class Reloading	No
Create MBeans for Resources	Yes
Deploy EJBs	No
Reload Interval in Seconds	0
Application Name:	rpm-middleware-7_1_1_1_war
Directory to Install Application	
Pre-compile JSP	No
Application Name	rpm-middleware-7_1_1_1_war
Deploy WebServices	No

If the Rational Portfolio Manager Middleware is installed successfully the status page displayed will look similar to the following graphic:

ADMA5013I: Application rpm-middleware-7_1_1_1_war installed successfully.

Application rpm-middleware-7_1_1_1_war installed successfully.

If you want to start the application, you must first save changes to the master configuration.

[Save to Master Configuration](#)

If you want to work with installed applications, then click [Manage Applications](#).

[Manage Applications](#)

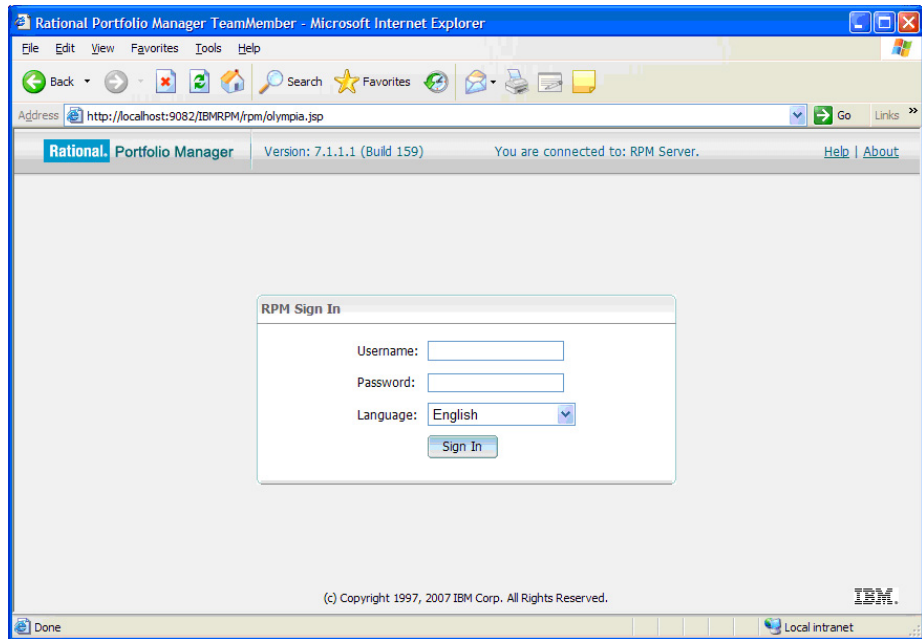
Note: If there are any warning, this means that the corresponding variables have not been bound successfully. Verify that each environment variable name and its JNDI names are correct.

6. Save your settings:
 - a. Click the **Save to Master Configuration** URL.
 - b. Click **Save**.
7. Start the Rational Portfolio Manager middleware Enterprise Application.
 - a. In the left menu, click **Applications > Enterprise Applications**.
 - b. Make sure that the **rpm-middleware** box is selected.
 - c. To start the application that you deployed, click **Start**.

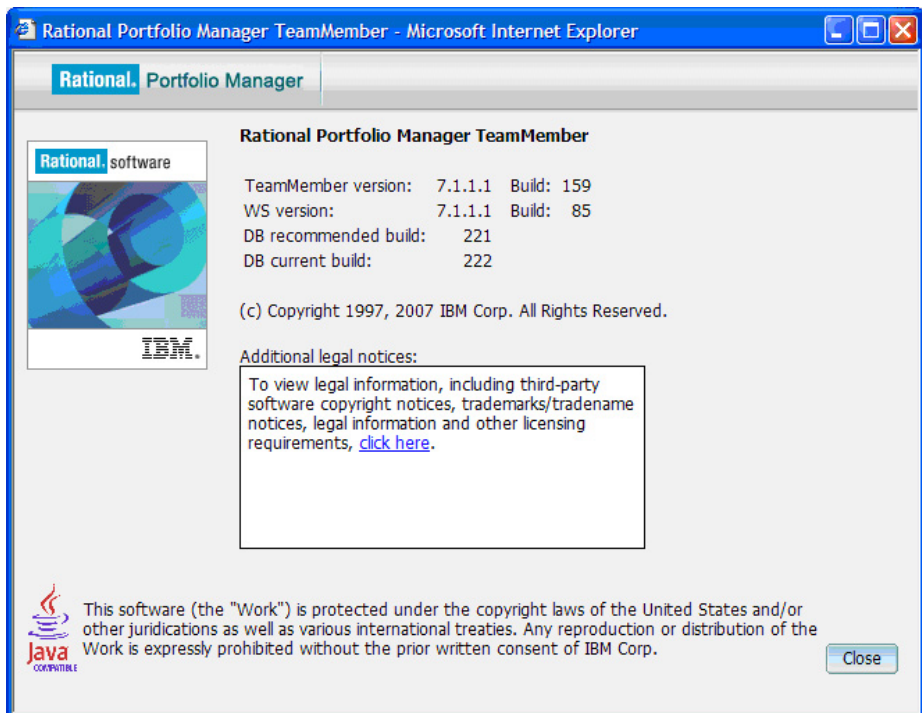
The screenshot shows the WebSphere Administrative Console interface. The top navigation bar includes 'Home', 'Save', 'Preferences', 'Logout', and 'Help'. The left sidebar shows a tree view with 'Enterprise Applications' selected. The main content area is titled 'Enterprise Applications' and contains a table of installed applications. The table has columns for 'Name' and 'Status'. The application 'rpm-middleware-7_1_1_1_war' is selected (checkbox checked) and has a red status icon. Other applications listed are 'DefaultApplication', 'adminconsole', and 'ivtApp', all with green status icons. Above the table are buttons for 'Start', 'Stop', 'Install', 'Uninstall', 'Update', 'Export', and 'Export DDL'.

<input type="checkbox"/>	Name	Status
<input type="checkbox"/>	DefaultApplication	➔
<input type="checkbox"/>	adminconsole	➔
<input type="checkbox"/>	ivtApp	➔
<input checked="" type="checkbox"/>	rpm-middleware-7_1_1_1_war	✖

8. Test the connection to the application.
 - a. Open a browser and go to: `http://hostname:portnumber/IBMRPM/rpm/olympia.jsp`.
 - b. On the page that opens, click **About** in the top right corner.



- c. A page similar to the following should be displayed. If the database recommended build and database current build are displayed, the connection is working and the middleware is ready to use.



The Rational Portfolio Manager middleware is now enabled and ready to use.

Deploying the IBM Rational Portfolio Manager middleware on WebSphere Application Server 6.0

To deploy Rational Portfolio Manager middleware on WebSphere Application Server 6.0, use the procedures in sequence. The Rational Portfolio Manager middleware deployment is done in the WebSphere Administration Console.

Starting the application server

1. To start the application server, click **Start Menu > Programs > IBM WebSphere > Application Server v6 > Profiles > default > Start the server.**
2. To log in to the Administration Console, click **Start Menu > Programs > IBM WebSphere > Application Server v6 > Profiles > default > Administrative console.** When prompted, enter your login user ID and click **Log in.**

Note: The WebSphere administrator user credentials are defined when WebSphere is installed. Ask your WebSphere administrator for the correct user credentials. The User ID is not mandatory. If user credentials were not defined when WebSphere was installed, this field can also be left in blank.

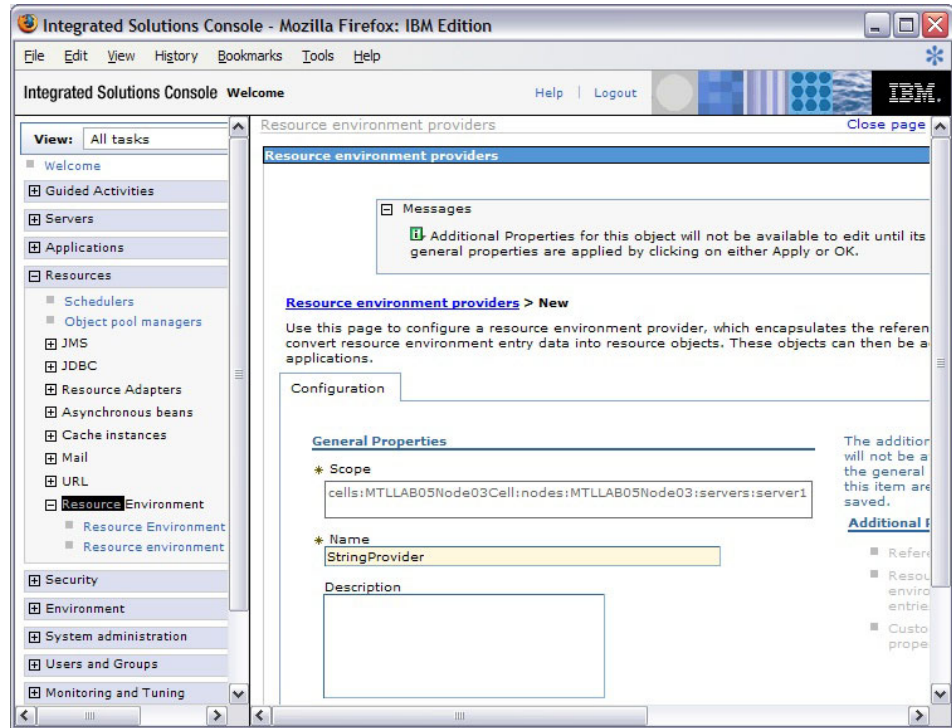
Configuring the Middleware Runtime Options

To install Rational Portfolio Manager middleware, the first step is to configure the runtime parameters. This is done by creating a set of resource environment variables. This section describes how to configure the optional parameters used by the Rational Portfolio Manager middleware at run time. These parameters have default working values. For the list of available runtime parameters, their default values, and JNDI mappings, see Chapter 7, “Middleware environment variables reference,” on page 103. The example used in this section, changes the environment variable `webServicesUseSessionTimeout` from its default value of `true` to `false`; the effect is to disable the session timeout feature. To override any other variable, repeat step 6 on page 52. For each variable that you configure, make sure that the JNDI name, the variable name, and value are consistent with the list of runtime parameters from Chapter 7, “Middleware environment variables reference,” on page 103.

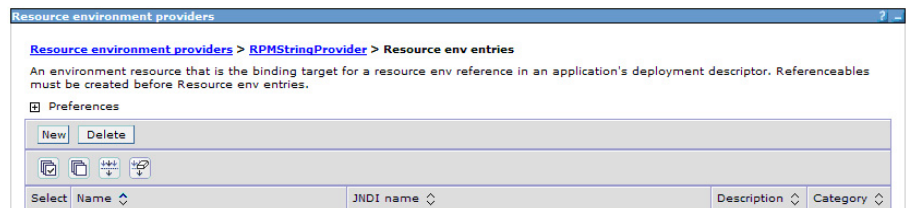
Note: All environment variables in Chapter 7, “Middleware environment variables reference,” on page 103 must be manually configured with the available values or set to the default. Environment variable values are case sensitive.

To configure the Rational Portfolio Manager Middleware runtime parameters:

1. In the left navigation tree, click **Resources > Resource Environment providers.**
2. On the right side of the window, from the scope list, select node.
3. Click **New.**
4. In the field **Name**, type the name of the container that will contain all the WebSphere environment variables, `RPMStringProvider`, and click **Apply.**

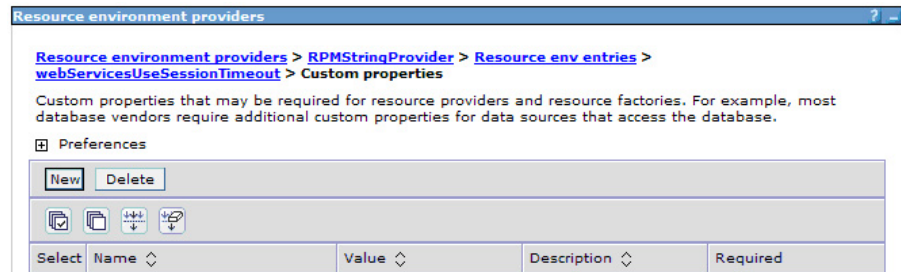


5. Create a new Referenceable to access the environment variable container.
To create a new Referenceable:
 - a. On the right side of the window in **Additional Properties**, click the **Referenceables** hyperlink.
 - b. Click **New**.
 - c. In the required fields, type the **Factory class name** and the **Class Name**:
 - Factory class name: `com.ibm.rpm.factory.StringFactory`
 - Class name: `java.lang.String`
 - d. Click **OK**.
6. Create and configure the new resource environment variable (`webServicesUseSessionTimeout` is used in this example):
 - a. At the top of the window, click the blue link **RPMStringProvider**. This action returns you to the screen in step 5. On the right side of the window, click **Resource environment entries**. A screen similar to the following graphic should be displayed:



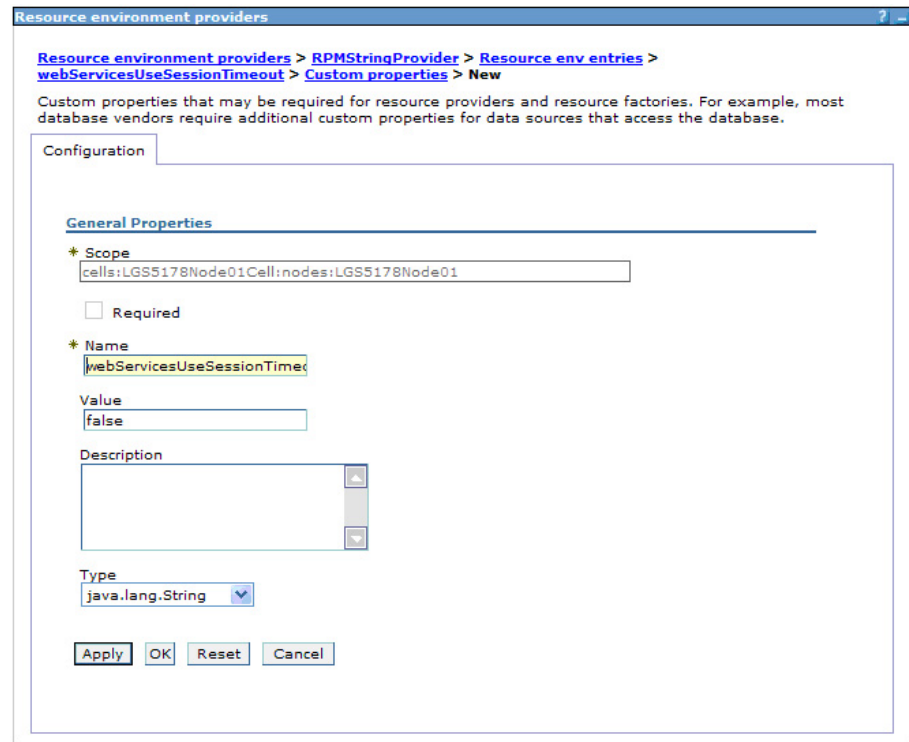
- b. Click **New** and provide the name of the environment variable and the JNDI name associated to the variable.
 - Name: `webServicesUseSessionTimeout`
 - JNDI name: `com/ibm/rpm/webServicesUseSessionTimeout`
 - c. From the Referenceables drop-down menu, select `com.ibm.rpm.factory.StringFactory`.

- d. Click **Apply**.
- e. On the right side of the window, under Additional Properties, the **Custom Properties** link is now enabled. Click **Custom Properties**. The following should be displayed:



- f. Click **New**.
- g. Set the following fields to suit your configuration.
 - Name: webServicesUseSessionTimeout
 - Value: false
 - Type: java.lang.String

Note: The description field is optional.



- h. Click **OK**.

Note: Ignore the Required column in the WebSphere Application Server GUI.

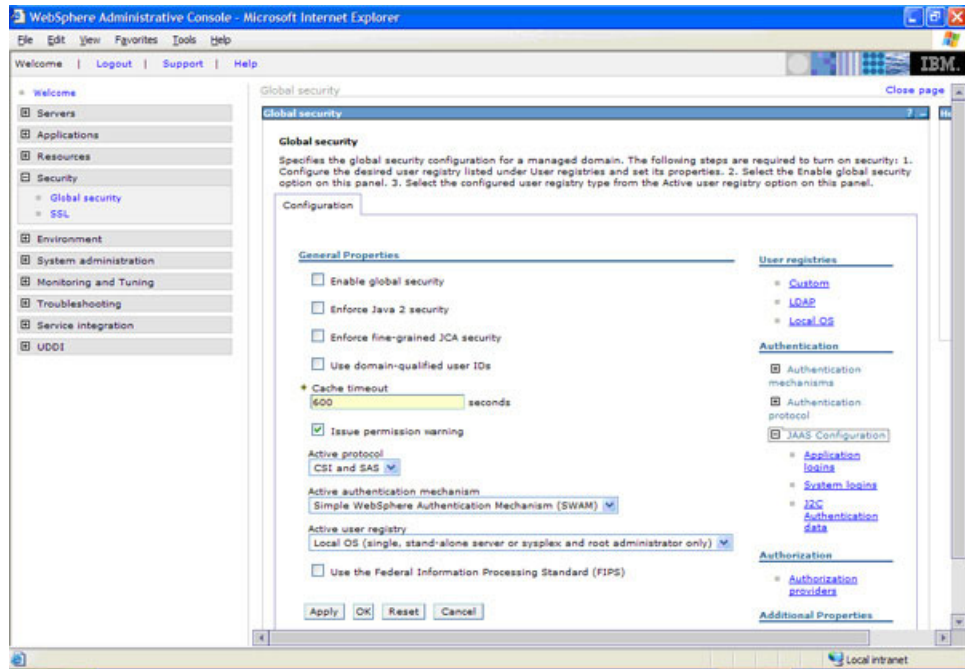
7. Repeat step 6 on page 52 for each variable described in Chapter 7, "Middleware environment variables reference," on page 103.
8. To commit your changes, click **Save**.
9. To save workspace changes to the master configuration, click **Save**.

10. Restart WebSphere or the Rational Portfolio Manager middleware application for the new parameters to be taken into account.
11. Continue to the next step “Create the RPMCredentials authentication aliases.”

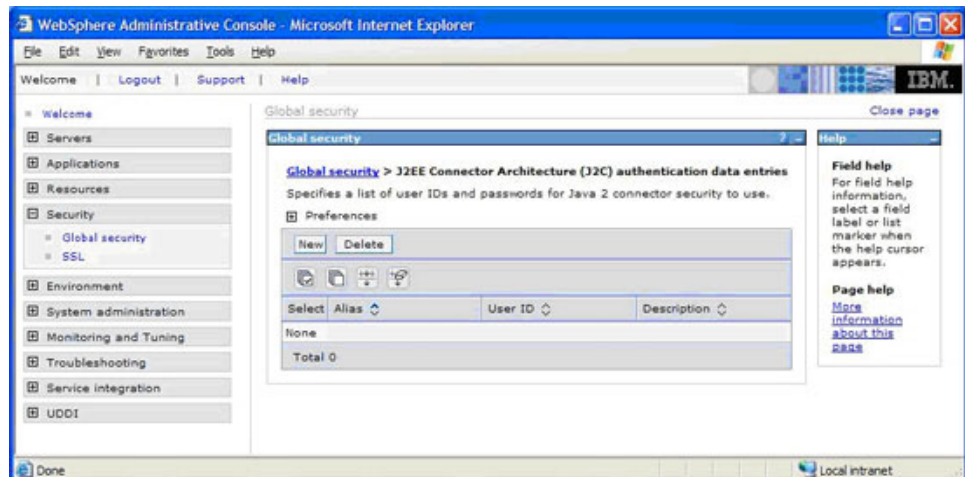
Create the RPMCredentials authentication aliases

To create the **RPMCredentials** Authentication alias:

1. From the WebSphere Administrative Console tree, click **Security > Global Security**.



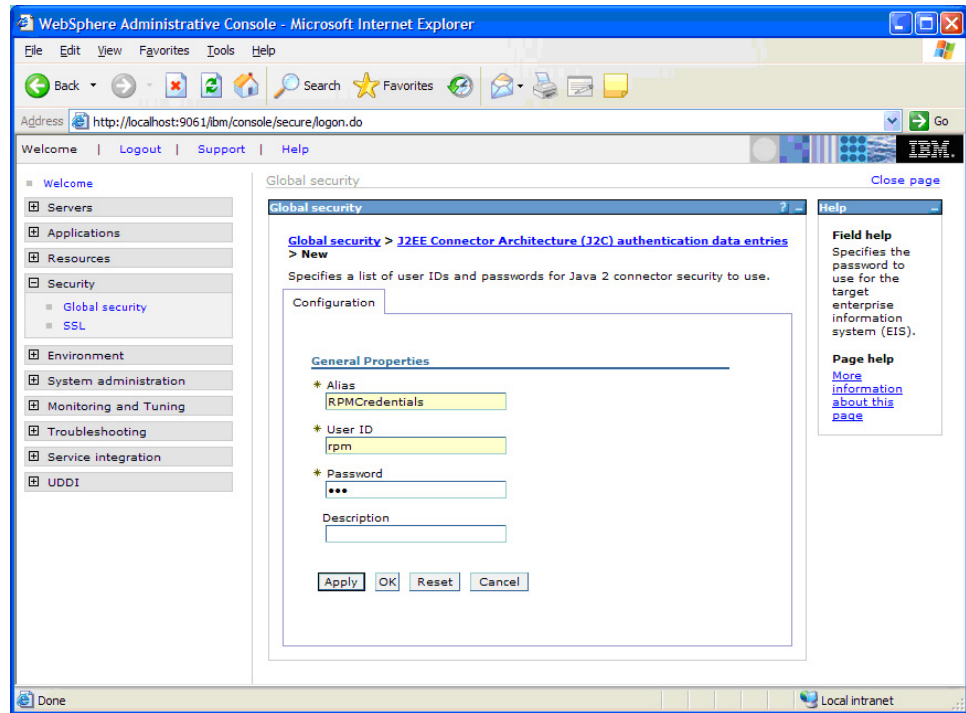
2. From the **Authentication** menu, click **JAAS Configuration > J2C Authentication Data**.



3. Click **New**.
4. To create the **RPMCredentials** alias by entering values for the following General Properties mandatory fields:
 - **Alias:** RPMCredentials

- **User ID:** The user ID used to connect to your Rational Portfolio Manager database.
- **Password:** The password for this user ID

Note: The Description field is optional.



5. Click **OK**.
6. To save your workspace changes to the master configuration, at the top of the page in the message box, click the **Save URL**.
7. Click **Save**.
8. You will now continue to configure the Rational Portfolio Manager.
 - a. If you are using a DB2 database, continue with the next section “Modify the path value of the DB2UNIVERSAL_JDBC_DRIVER_PATH variable.”
 - b. If you are using an Oracle database, skip to section “Modify the path value of the ORACLE_JDBC_DRIVER_PATH variable” on page 60.

Modify the path value of the DB2UNIVERSAL_JDBC_DRIVER_PATH variable

To modify the path value of the DB2UNIVERSAL_JDBC_DRIVER_PATH variable:

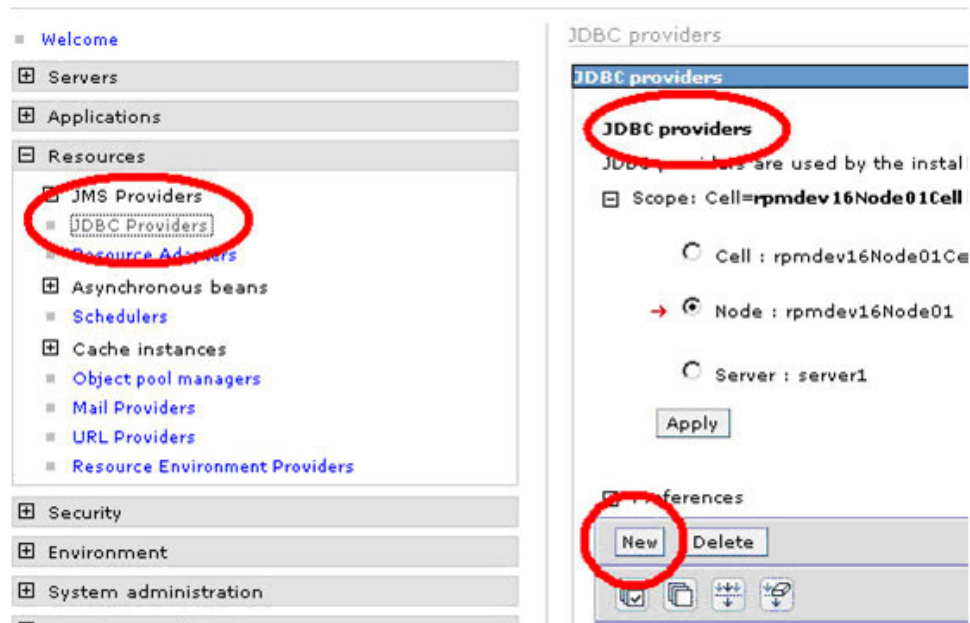
1. From the WebSphere Administrative Console window, click **Environment > WebSphere Variables**. The **Node** radio button is selected; do not clear this selection
2. To modify the variables DB2UNIVERSAL_JDBC_DRIVER_PATH:
 - a. From the Administration Console navigation, click **Environment > WebSphere Variables**. The **Node** radio button is selected; do not clear this selection.
 - b. To modify the variable DB2UNIVERSAL_JDBC_DRIVER_PATH:
 - 1) Click the variable DB2UNIVERSAL_JDBC_DRIVER_PATH URL.

- 2) In General Properties, set the field **Value** to /opt/IBM/SQLLIB/java or to the folder path where the DB2 driver files (db2jcc.jar and db2jcc_license_cisuz.jar) are installed.
- 3) Click **Apply** or **OK**.
- 4) To save your changes to the master configuration, at the top of the page in the message box, click the **Save URL**.

Create the JDBC Providers for DB2

To create the JDBC Providers for DB2:

1. From the WebSphere Administrative Console window, click **Resources > JDBC Providers**. If DB2 Universal JDBC Driver Provider has already been created, continue to step 8 on page 79.
2. To add a new provider, click **New**.



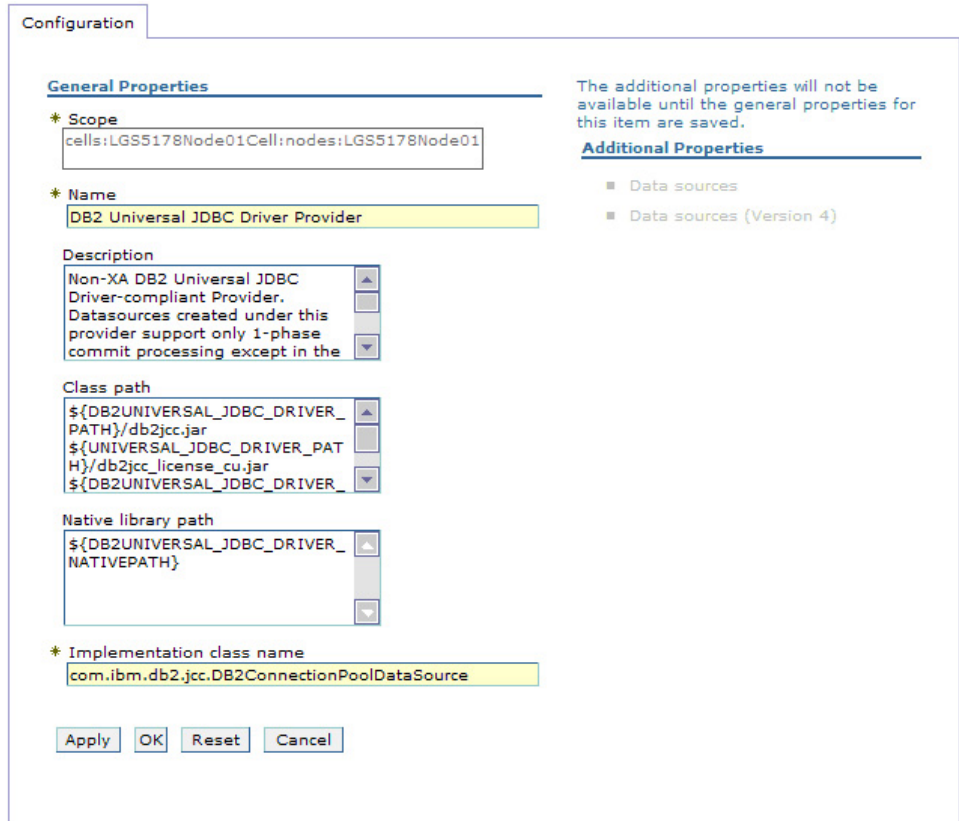
3. To complete the information about the provider, by select the following options from the drop-down menu for each of the following fields:
 - **Step 1: Select the database type database type:** DB2
 - **Step 2: Select the provider type provider type::** DB2 Universal JDBC Driver Provider
 - **Step 3: Select the implementation type implementation type::** Connection pool data source
4. Click **Next**.
5. Verify that the classpath and the implementation class name are as shown. Classpath should be:


```

      ${DB2UNIVERSAL_JDBC_DRIVER_PATH}/db2jcc.jar
      ${UNIVERSAL_JDBC_DRIVER_PATH}/db2jcc_license_cu.jar
      ${DB2UNIVERSAL_JDBC_DRIVER_PATH}/db2jcc_license_cisuz.jar
      
```

Implementation class name should be:

```
com.ibm.db2.jcc.DB2ConnectionPoolDataSource
```

6. Click **Apply** or **OK**.
7. To save your workspace changes to the master configuration, click the **Save URL**.
8. Click **Save**. You are returned to the JDBC Providers window.

Create the data sources and test the connection for DB2.

To access information to the Rational Portfolio Manager repository, the data source information or Data Source Name (DSN) must be set correctly. The information specified in the DSN allows the Rational Portfolio Manager to connect to the repository database.

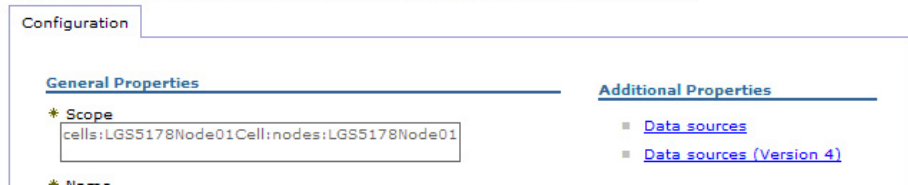
To create the data sources, you need the following data source information that is used by the client to log in to the server:

- The database host
- The database name
- The user name and password for this database

1. To create the **jdbc/RPMDATASOURCE**:
 - a. From the Resources navigation tree, select JDBC providers.
 - b. Click the **DB2 Universal JDBC Driver Provider** hyperlink and from the Additional Properties section of the page, click **Data sources**.
 - c. Click **New**.

[JDBC providers](#) > [DB2 Universal JDBC Driver Provider](#)

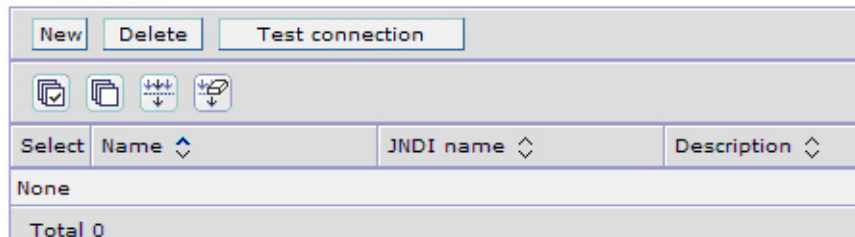
JDBC providers are used by the installed applications to access data from databases.



[JDBC providers](#) > [DB2 Universal JDBC Driver Provider](#) > [Data sources](#)

A data source is used by the application to access data from the database. A data source is associated with a JDBC provider, which supplies the specific JDBC driver implementation class.

+ Preferences



- d. On the General Properties panel:
 - 1) Verify the Scope (should be a node).
 - 2) Enter a name of the Rational Portfolio Manager data source.
 - 3) Enter this JNDI name: jdbc/RPMDATASOURCE
 - 4) Select the check box **Use this Data source in container managed persistence (CMP)**.
 - 5) In the section **Data store helper class name**, select the **DB2 Universal data store helper**.
 - 6) In the section **Component-managed authentication alias**, select the Rational Portfolio Manager credentials previously created.
 - 7) Configure the DB2 Universal data source properties.
 - a) Enter the database name
 - b) Select the driver type (should be type 4),
 - c) Enter server name
 - d) Enter the port number
 - e) Click **Apply**.

General Properties

* Scope

cells:LGS5178Node01Cell:nodes:LGS5178Node01

* Name

RPM DataSource

JNDI name

jdbc/RPMDATASOURCE

Use this Data Source in container managed persistence (CMP)

Description

RPM Data Source

Category

Data store helper class name

Select a data store helper class

Data store helper classes provided by WebSphere Application Server

DB2 Universal data store helper
(com.ibm.websphere.rsadapter.DB2UniversalDataStoreHelper)
DB2 for iSeries data store helper
(com.ibm.websphere.rsadapter.DB2AS400DataStoreHelper)

Specify a user-defined data store helper

Enter a package-qualified data store helper class name

Component-managed authentication alias

Component-managed authentication alias

LGS5178Node01/RPMCredentials

Container-managed authentication

Container-managed authentication alias (deprecated in V6.0, use resource reference authentication settings instead)

(none)

Mapping-configuration alias (deprecated in V6.0, use resource reference authentication settings instead)

(none)

DB2 Universal data source properties

* Database name

IBMRPM

* Driver type

4

Server name

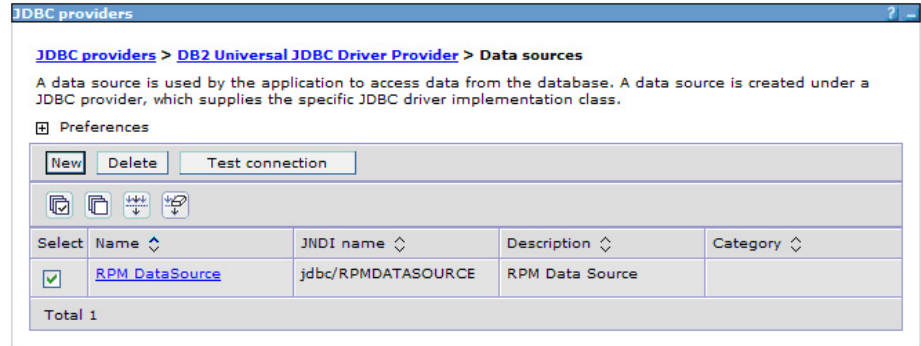
rpmdev09.mtllab.ibm.com

Port number

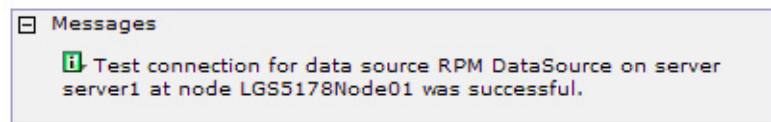
60001

Apply OK Reset Cancel

- e. To save your changes to the master configuration, at the top of the page in the message box, click the **Save URL**.
- f. To save your workspace changes to the master configuration, click **Save**.
- g. Select the check box and click **Test Connection**



- 1) If your installation is successful, you will see a confirmation message returned at the top of the page as shown:



- 2) If your installation failed, verify that the following information that you provided throughout the installation is accurate.
 - a) RPMCredentials
 - b) JDBC Driver path
 - c) Datasource

Test the connection again. If the connection continues to fail, verify with your database administrator that the database values are correct.
2. Continue with the next step, "Deploying the rpm-middleware-x.x.x.x.war file" on page 65.

Modify the path value of the ORACLE_JDBC_DRIVER_PATH variable

To modify the path value of the ORACLE_JDBC_DRIVER_PATH variable:

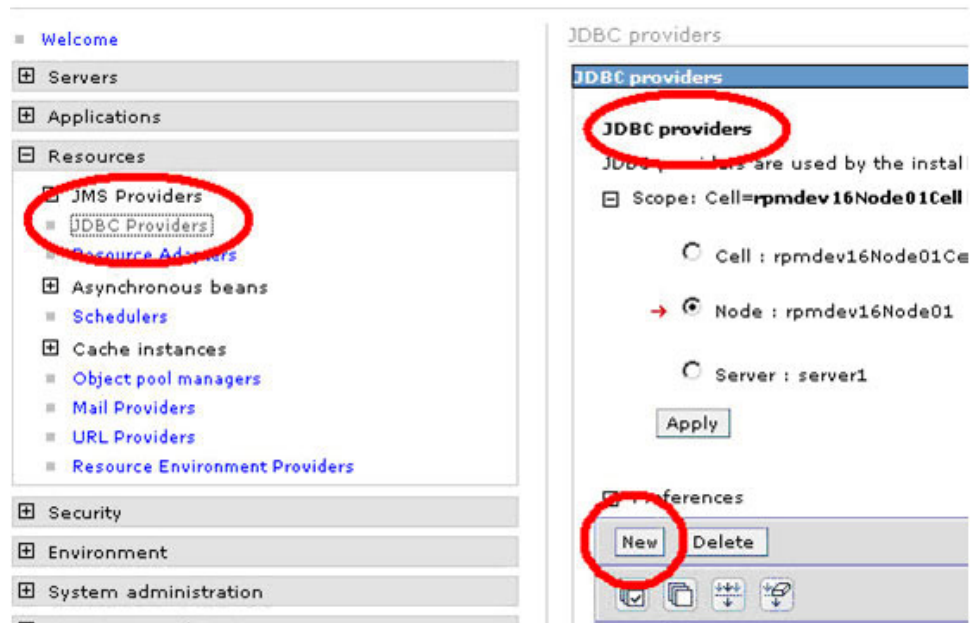
1. From the WebSphere Administration Console navigation, click **Environment > WebSphere Variables**. The **Node** radio button is selected; do not clear this selection.
2. To modify the variable ORACLE_JDBC_DRIVER_PATH:
 - a. Click the URL variable ORACLE_JDBC_DRIVER_PATH.
 - b. In General Properties, set the field **Value** to /opt/oracle/product/10.2.0/jdbc/lib or to the folder path where the Oracle driver file (ojdbc14.jar) is installed.

Note: If you are running the application server with JDK 1.4 or later versions, use the Oracle driver file dojdbc14.jar. If you are running the application server with JDK 1.2 or JDK 1.3, use the Oracle driver file classes12.jar.

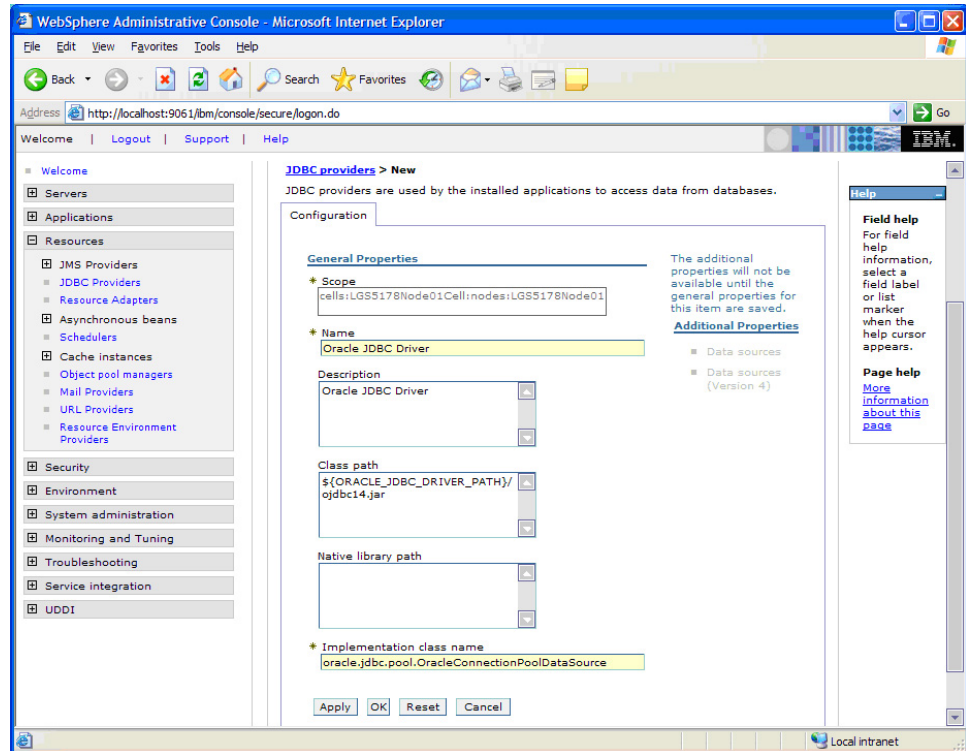
- c. Click **Apply** or **OK**.
 - d. To apply changes to the master configuration, at the top of the page in the message box, click the **Save URL**.
 - e. Click **Save** to save your workspace changes to the master configuration.
3. Continue with the next step, "Create the JDBC provider for Oracle."

Create the JDBC provider for Oracle

1. To add a new provider, from the Administration Console, click **Resources > JDBC providers** and click **New**.



2. To complete the information about the provider, select the following options in the pop-up menu for each of the following fields and click **Next**.
 - a. **Step 1: Select the database type database type:** Oracle
 - b. **Step 2: Select the provider type provider type:** Oracle JDBC Driver
 - c. **Step 3: Select the implementation type implementation type:** Connection pool data source
3. Click **Next**.
4. Enter the class path: `${ORACLE_JDBC_DRIVER_PATH}/ojdbc14.jar`
`%ORACLE_JDBC_DRIVER_PATH%\ojdbc14.jar`



5. Click **Apply**.
6. To save your changes to the master configuration, click **Save**. You are returned to the JDBC Providers window.
7. Continue with the next step, "Create the Data sources and test the connection to the Oracle database."

Create the Data sources and test the connection to the Oracle database

To access information from the Rational Portfolio Manager repository when using the Rational Portfolio Manager Middleware, the data source information or Data Source Name (DSN) must be set correctly. The information specified in the DSN allows the Rational Portfolio Manager Middleware to connect to the Rational Portfolio Manager repository database.

To create the data sources, you need the following data source information that is used by the client to log in to the server.

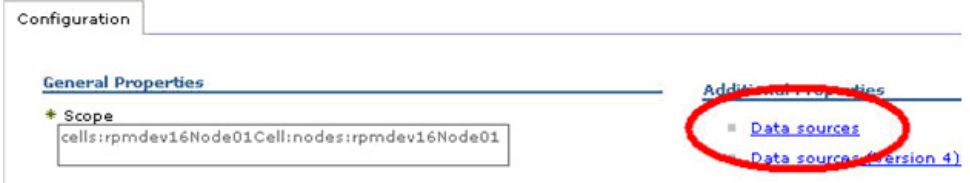
- The database host
- The database name
- The user name and password for this database

To create the jdbc/RPMDATASOURCE:

1. Click the Oracle JDBC Driver URL, and click **Data Sources > New**.

[JDBC providers](#) > **Oracle JDBC Driver**

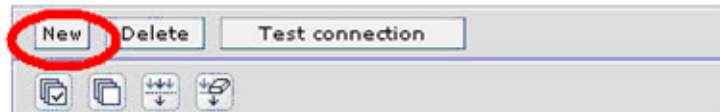
JDBC providers are used by the installed applications to access data from databases.



[JDBC providers](#) > **Oracle JDBC Driver** > **Data sources**

A data source is used by the application to access data from the database which supplies the specific JDBC driver implementation class.

⊕ Preferences



2. On the General Properties panel:
 - a. Enter the Data source name: RPM Datasource
 - b. Enter a name and the JNDI name: jdbc/RPMDATASOURCE
 - c. Select Use this Data Source in container managed persistence (CMP) check box.
 - d. In the section Data store helper class name, select the data store helper class for the version of Oracle you are using.
 - e. Select the RPMPredentials previously created in the Component-managed authentication alias combo box.
 - f. Enter the URL with the connection string to the database.

General Properties

* Scope
cells:LGS5178Node01Cell:nodes:LGS5178Node01

* Name
RPM DataSource

JNDI name
jdbc/RPMDATASOURCE

Use this Data Source in container managed persistence (CMP)

Description
RPM Datasource

Category

Data store helper class name

Select a data store helper class
Data store helper classes provided by WebSphere Application Server

Oracle9i and prior data store helper (com.ibm.websphere.rsadapter.OracleDataStoreHelper)
Oracle10g data store helper (com.ibm.websphere.rsadapter.Oracle10gDataStoreHelper)

Specify a user-defined data store helper
Enter a package-qualified data store helper class name

Component-managed authentication alias
Component-managed authentication alias
LGS5178Node01/RPMPredentials

Container-managed authentication
Container-managed authentication alias (deprecated in V6.0, use resource reference authentication settings instead)
(none)

Mapping-configuration alias (deprecated in V6.0, use resource reference authentication settings instead)
(none)

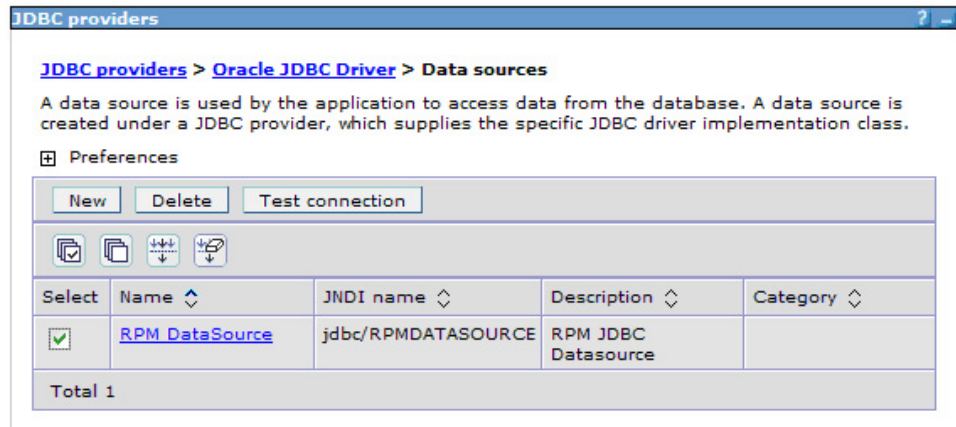
Oracle data source properties

* URL
jdbc:oracle:thin:@rpmdevdb.ibm.com:1521/IBMRPM

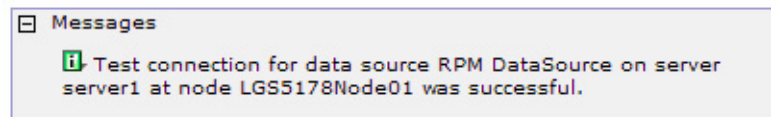
Apply OK Reset Cancel

- g. Click **Apply**.
- h. At the top of the page in the message box, click the **Save URL**.
- i. To save your workspace changes to the master configuration, click **Save**.

- To test your connection to the Oracle database, select the new connection and click **Test Connection**.



- If your installation is successful, you will see a confirmation message at the top of the page as shown:



- If your installation has failed, verify that the following information you provided throughout the installation is accurate.
 - RPMCredentials
 - JDBC Driver path
 - Datasource

Test the connection again. If the connection continues to fail, verify with your database administrator that the database values are correct.
- Continue with the next step, "Deploying the rpm-middleware-x.x.x.x.war file."

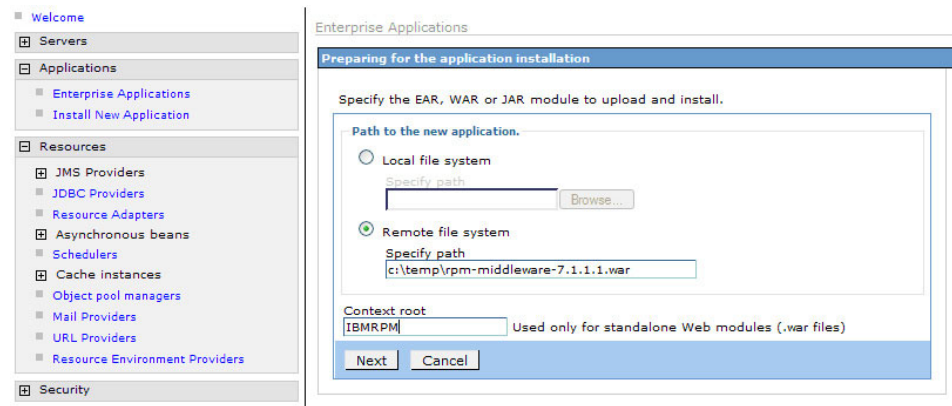
Deploying the rpm-middleware-x.x.x.x.war file

These steps describe how to deploy the Rational Portfolio Manager middleware Enterprise Application.

- Before you begin, upload the rpm-middleware-x.x.x.x.war file to a temporary directory on the server where WebSphere is installed, you can use an ftp utility, or any other method appropriate for you platform. Take note of the full path where you uploaded the file. In the following examples we will use c:\tempfolder.
- In the **WebSphere Administrative Console** window, click **Applications > Install New Application**.
- Select the **Remote File System** box and enter the full path and the rpm-middleware_xxxx.war file name you noted in step a (you can also browse to the file).

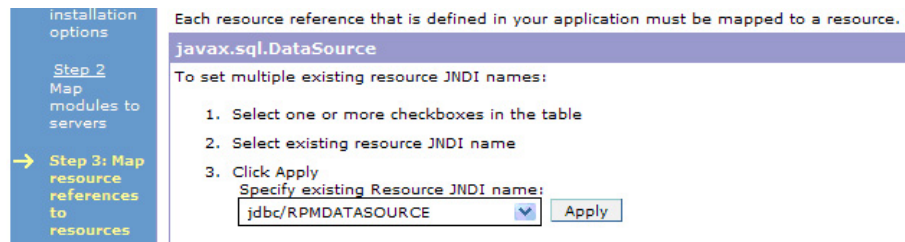
Note: Do not use the **Local File System** radio button option. Selecting this option causes the Administrative console to timeout.
- In the **Context root** field enter: IBMRPM

Note: The context root name must be unique and cannot start with /.



Attention: If you have previously configured the optional runtime parameters or previously deployed the rpm-middleware_xxxx.war file, you will be presented with a page prompting you to choose not to override existing bindings or to override existing bindings, select the **Override existing bindings** radio button and click **Next**.

5. If you see a security warning, ignore it and click **Continue**.
6. Click **Next** until you reach the **Step 3: Map resource references to resources** panel.
7. The mapping is done in two steps; selecting the datasource and selecting an authentication method:
 - a. Select the JNDI name of the Rational Portfolio Manager Datasource that was created earlier.



- b. Scroll down and select the rpm middleware module check box.

Select	Module	EJB	URI	Reference binding	JNDI name	Login configuration
<input checked="" type="checkbox"/>	rpm-middleware		rpm-middleware-7.1.1.1.war;WEB-INF/web.xml	jdbc/RPMDATASOURCE	<input type="text"/>	Resource authorization: Container Authentication method: none

8. Click **Apply** near the Resource JNDI name combo box.
9. In the Specify authentication method section;
 - a. Select the use default method radio button.
 - b. In the Select authentication data entry menu, select RPMCredentials.
 - c. Select the rpm-middleware module check box.
 - d. Click **Apply** near the authentication method selection area.

Specify authentication method:

none

Use default method

Select authentication data entry
 LGS5178Node01/RPMCredentials

Use custom login configuration

Select application login configuration
 Select...

Apply

Select	Module	EJB	URI	Reference binding	JNDI name	Login configuration
<input checked="" type="checkbox"/>	rpm-middleware		rpm-middleware-7.1.1.1.war,WEB-INF/web.xml	jdbc/RPMDATASOURCE	jdbc/RPMDATASOURCE	Resource authorization: Container Authentication method: none

After the these steps have been completed, the panel should look like this:

Select	Module	EJB	URI	Reference binding	JNDI name	Login configuration
<input type="checkbox"/>	rpm-middleware		rpm-middleware-7.1.1.1.war,WEB-INF/web.xml	jdbc/RPMDATASOURCE	jdbc/RPMDATASOURCE	Resource authorization: Container Authentication method: DefaultPrincipalMapping LGS5178Node01/RPMCredentials

e. Click **Next**.

- Verify that each of the references are properly mapped to the JNDI name of the corresponding resource environment variable. You can update the JNDI mappings, manually or by selecting the reference checkbox. Select the JNDI name in the combo box and click **Apply** near the combo box as shown on the following screen capture.

Apply Multiple Mappings

To apply multiple mappings, follow the steps below.

1. Select one or more check boxes in the table.
2. Complete mappings and click the "Apply" button.

Specify existing Resource Env Entry JNDI name:

com/ibm/rpm/PjC_ALLOW_HTTP

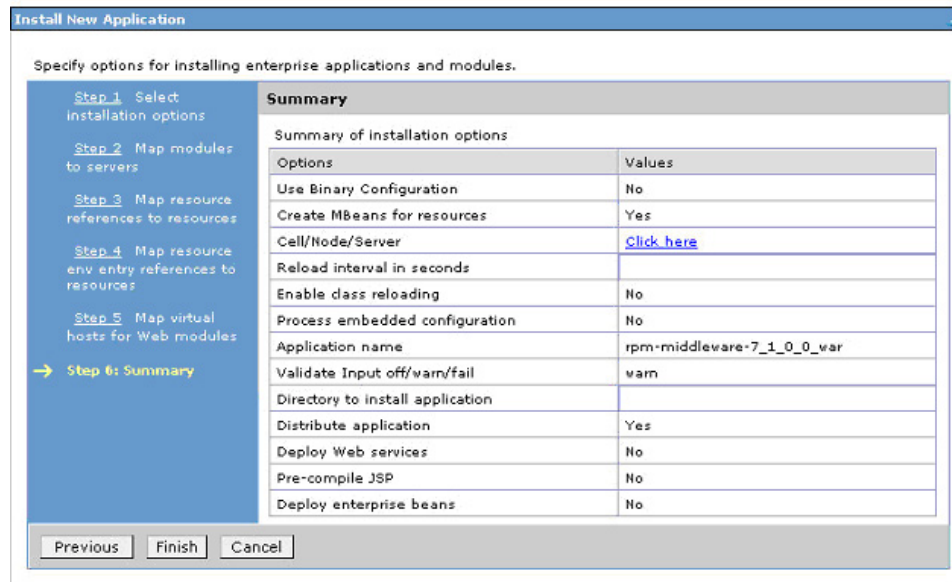
Apply

Select	Module	EJB	URI	Reference binding	JNDI name
<input type="checkbox"/>	PMOServlet		rpm-mid-7.1.2-stripped.war,WEB-INF/web.xml	KeepAliveCount	com/ibm/rpm/KeepAliveCoun
<input type="checkbox"/>	PMOServlet		rpm-mid-7.1.2-stripped.war,WEB-INF/web.xml	KeepAliveInterval	com/ibm/rpm/KeepAliveInter
<input type="checkbox"/>	PMOServlet		rpm-mid-7.1.2-stripped.war,WEB-INF/web.xml	PjCProtocol	com/ibm/rpm/PjCProtocol
<input type="checkbox"/>	PMOServlet		rpm-mid-7.1.2-stripped.war,WEB-INF/web.xml	PjCHostName	com/ibm/rpm/PjCHostName
<input type="checkbox"/>	PMOServlet		rpm-mid-7.1.2-stripped.war,WEB-INF/web.xml	PjCPort	com/ibm/rpm/PjCPort
<input type="checkbox"/>	PMOServlet		rpm-mid-7.1.2-stripped.war,WEB-INF/web.xml	PjCUsername	com/ibm/rpm/PjCUsername
<input type="checkbox"/>	PMOServlet		rpm-mid-7.1.2-stripped.war,WEB-INF/web.xml	PjCPassword	com/ibm/rpm/PjCPassword
<input checked="" type="checkbox"/>	PMOServlet		rpm-mid-7.1.2-stripped.war,WEB-INF/web.xml	PjC_ALLOW_HTTP	com/ibm/rpm/PjC_ALLOW_H
<input type="checkbox"/>	PMOServlet		rpm-mid-7.1.2-stripped.war,WEB-INF/web.xml	AlertsOn	com/ibm/rpm/AlertsOn
<input type="checkbox"/>	PMOServlet		rpm-mid-7.1.2-stripped.war,WEB-INF/web.xml	Subject	com/ibm/rpm/Subject
<input type="checkbox"/>	PMOServlet		rpm-mid-7.1.2-stripped.war,WEB-INF/web.xml	sendIterationTimes	com/ibm/rpm/sendIterationTi
<input type="checkbox"/>	PMOServlet		rpm-mid-7.1.2-stripped.war,WEB-INF/web.xml	Sender	com/ibm/rpm/Sender
<input type="checkbox"/>	PMOServlet		rpm-mid-7.1.2-stripped.war,WEB-INF/web.xml	EmailHost	com/ibm/rpm/broker/email/h
<input type="checkbox"/>	PMOServlet		rpm-mid-7.1.2-stripped.war,WEB-INF/web.xml	SendInterval	com/ibm/rpm/broker/email/s
<input type="checkbox"/>	PMOServlet		rpm-mid-7.1.2-stripped.war,WEB-INF/web.xml	ServerName	com/ibm/rpm/ServerName
<input type="checkbox"/>	PMOServlet		rpm-mid-7.1.2-stripped.war,WEB-INF/web.xml	ConType	com/ibm/rpm/ConType
<input type="checkbox"/>	PMOServlet		rpm-mid-7.1.2-stripped.war,WEB-INF/web.xml	ExternalActionTimeout	com/ibm/rpm/ExternalAction
<input type="checkbox"/>	PMOServlet		rpm-mid-7.1.2-stripped.war,WEB-INF/web.xml	WorkflowPollingInterval	com/ibm/rpm/WorkflowPollin
<input type="checkbox"/>	PMOServlet		rpm-mid-7.1.2-stripped.war,WEB-INF/web.xml	WFSchedPollingInterval	com/ibm/rpm/WFSchedPollin

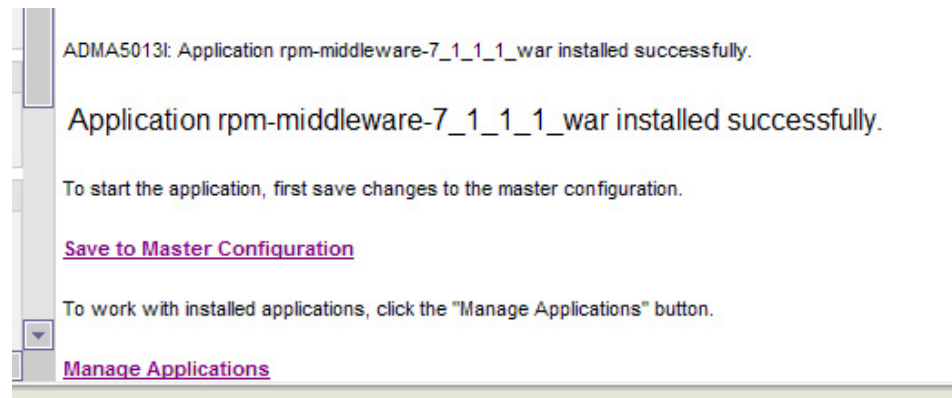
ext Cancel

11. Click **Next** on the next panels until you reach the last panel with the option to **Finish**. Click **Finish** and wait for the deployment to complete.

Note: Deployment may take a long time.

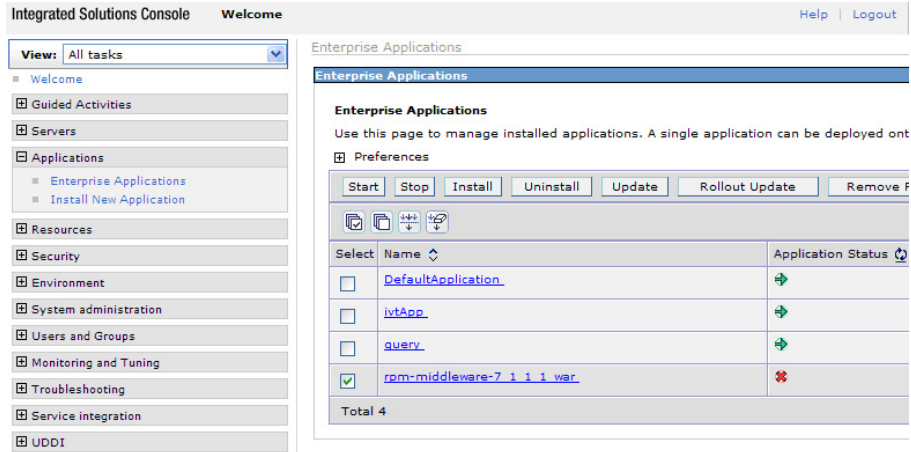


12. If the Rational Portfolio Manager middleware is installed successfully, the following message is displayed:

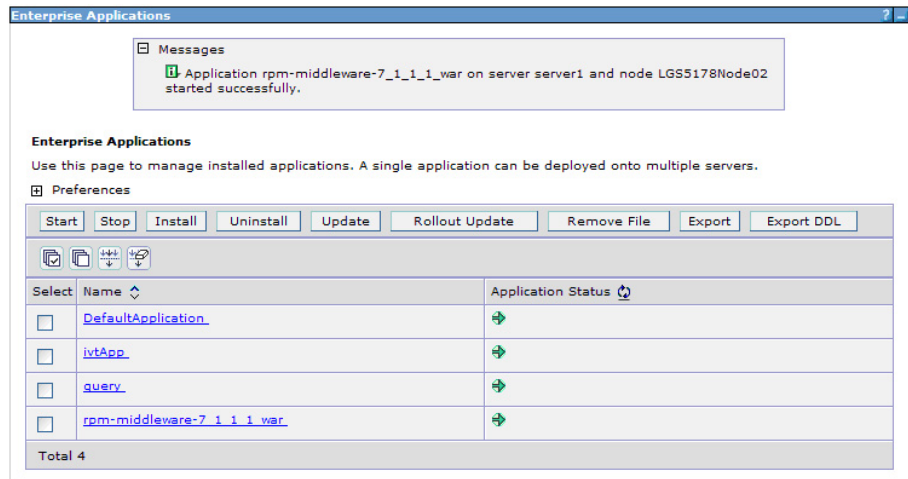


Note: If there are any warning, this means that the corresponding variables have not been bound successfully. Verify that each environment variable name and its JNDI names are correct.

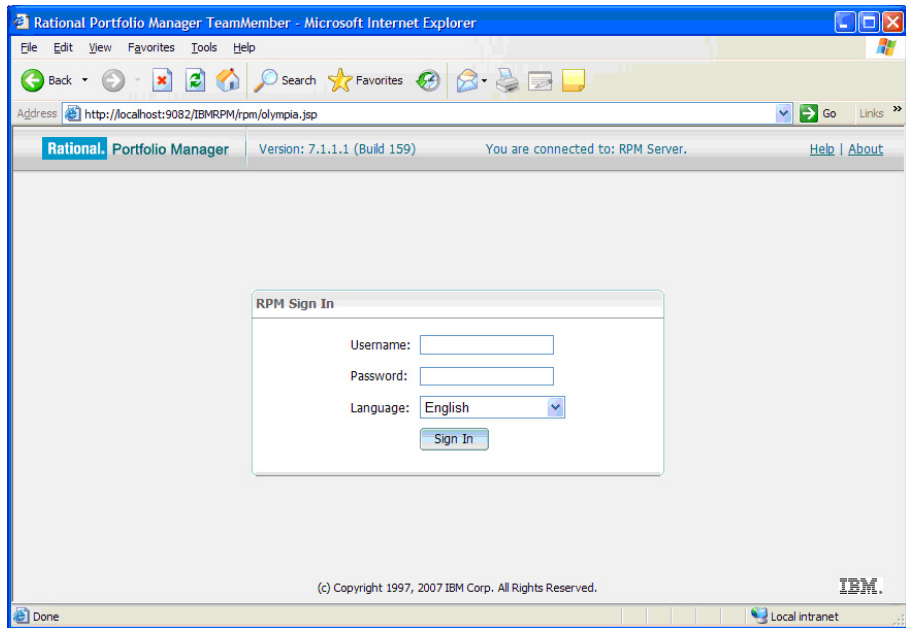
13. Save your settings:
- Click the **Save to Master Configuration** URL.
 - Click **Save**.
14. Start the Rational Portfolio Manager middleware Enterprise Application.
- In the left menu, click **Applications > Enterprise Applications**.
 - Make sure that the **rpm-middleware** box is selected.



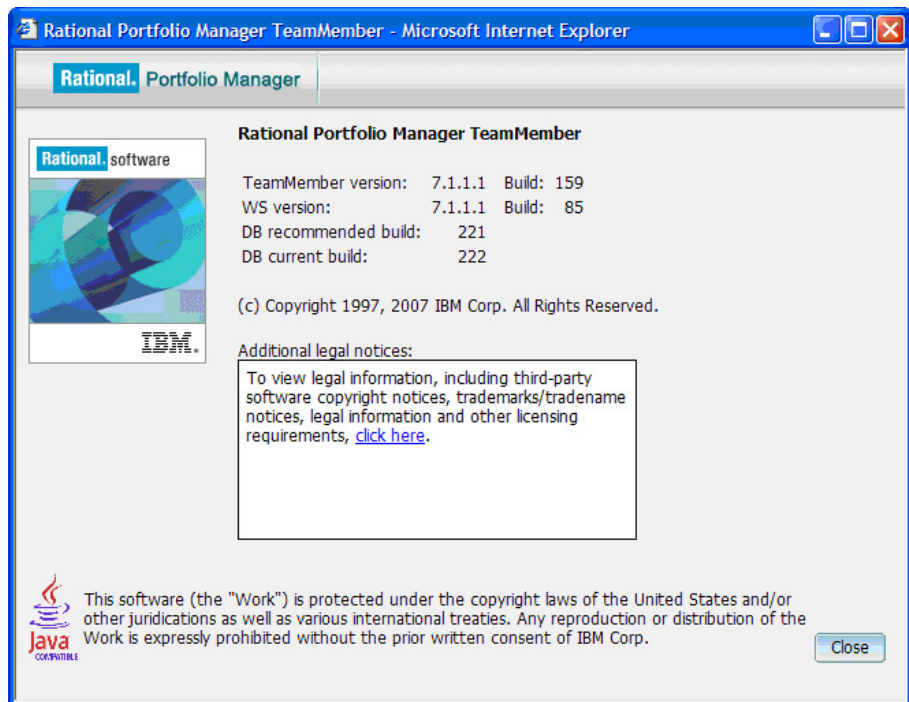
- c. To start the application that you deployed, click **Start**.



15. Test the connection to the application.
- Open a browser and go to: `http://hostname:portnumber/IBMRPM/rpm/olympia.jsp`.
 - On the page that is presented, click **About** in the top right corner.



- c. A page similar to the following should be displayed. If the DB recommended build and DB current build appear, the connection is working and the middleware is ready to use.



The Rational Portfolio Manager middleware is now enabled and ready to use.

Deploying IBM Rational Portfolio Manager Middleware on WebSphere Application Server 6.1

To deploy Rational Portfolio Manager Middleware on WebSphere Application Server 6.1, use the procedure in sequence. The Rational Portfolio Manager middleware deployment is done in the WebSphere Administration Console.

Starting the application server

1. To start the application server, click **Start Menu > Programs > IBM WebSphere > Application Server v6.1 > Profiles > AppSrv01 > Start the server.**
2. To log in to the Administration Console, click **Start Menu > Programs > IBM WebSphere > Application Server v6.1 > Profiles > AppSrv01 > Administrative console.** When prompted, enter your user ID and click **Log in.**

Note: The WebSphere administrator user credentials are defined when WebSphere is installed. Ask your WebSphere administrator for the correct user credentials. The User ID is not mandatory. If user credentials were not defined when WebSphere was installed, this field can also be left in blank.

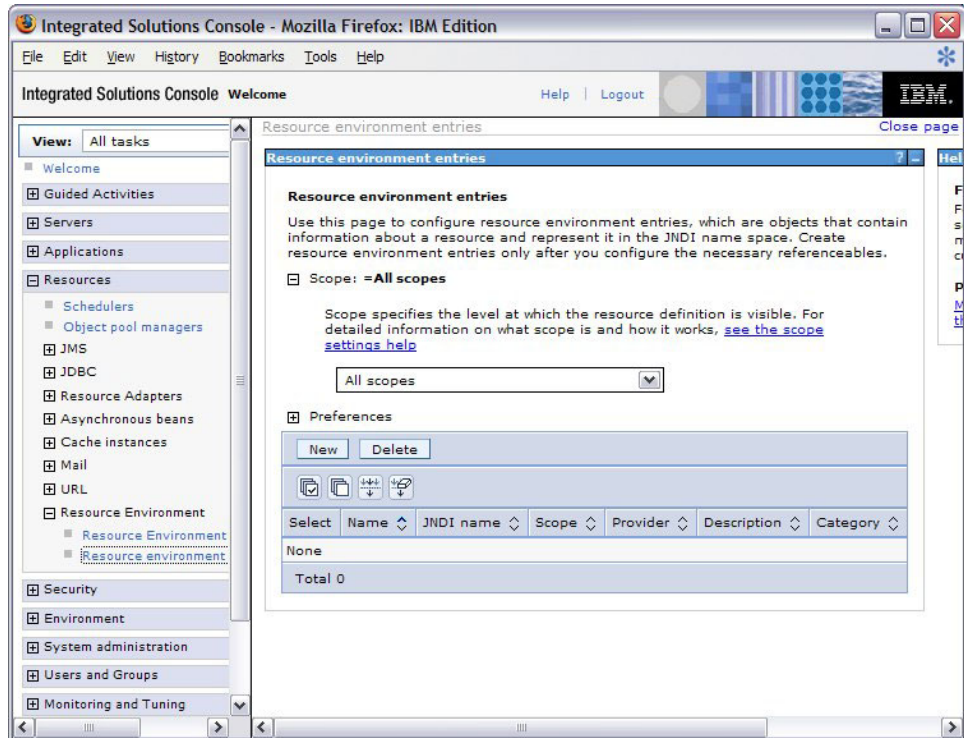
Configuring the Middleware Runtime Options

To install Rational Portfolio Manager middleware, the first step is to configure the runtime parameters. This is done by creating a set of resource environment variables. This section describes how to configure the optional parameters used by the Rational Portfolio Manager middleware at run time. These parameters have default working values. For the list of available runtime parameters, their default values, and JNDI mappings, see Chapter 7, “Middleware environment variables reference,” on page 103. The example used in this section, changes the environment variable `webServicesUseSessionTimeout` from its default value of `true` to `false`; the effect is to disable the session timeout feature. To override any other variable, start with step 6 on page 74 through 6h on page 53. For each variable that you configure, make sure that the JNDI name, the variable name, and value are consistent with the list of runtime parameters from Chapter 7, “Middleware environment variables reference,” on page 103.

Note: All environment variables in Chapter 7, “Middleware environment variables reference,” on page 103 must be manually configured with the available values or set to the default. Environment variable values are case sensitive.

To configure the Rational Portfolio Manager Middleware runtime parameters:

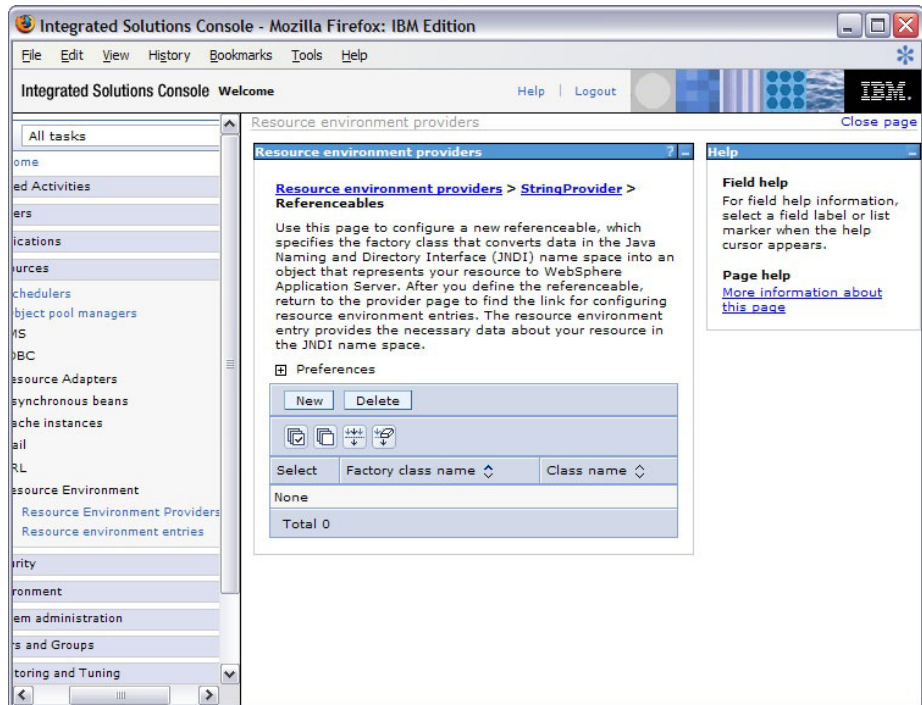
1. In the left navigation tree, click **Resources > Resource Environment > Resource Environment providers.**



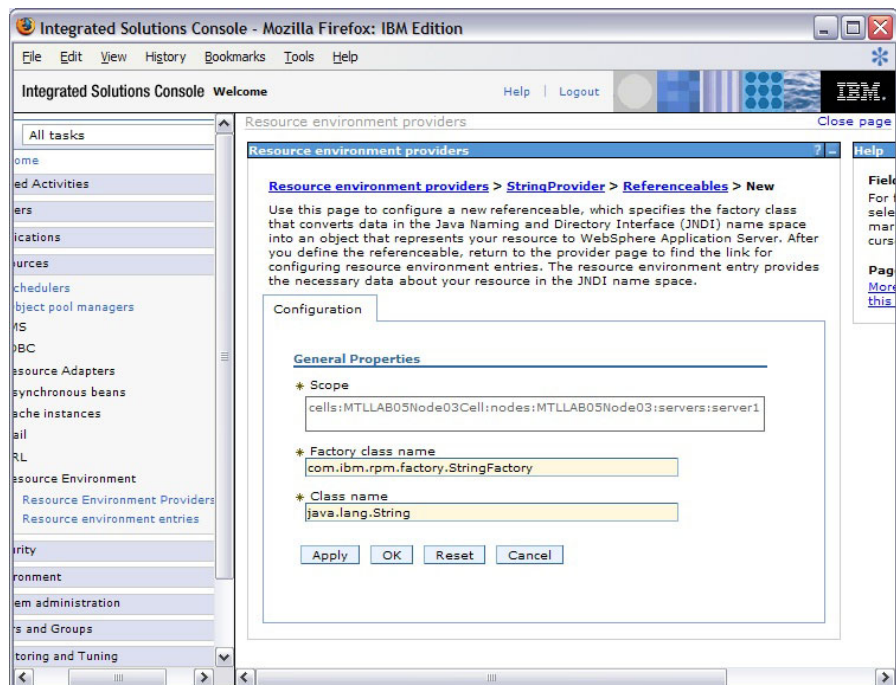
2. On the right side of the window, from the scope list, select the appropriate scope: cell, node, or server.

Note: The scope that you choose in this step must be used throughout the installation.

3. Click **New**.
4. In the field **Name**, type the name of the container that will contain all the WebSphere environment variables, `RPMStringProvider`, and click **Apply**.
5. Create a new Referenceable to access the environment variable container:
 - To create a new Referenceable:
 - a. On the right side of the window, in **Additional Properties**, click **Referenceables**.
 - b. Click **New**.

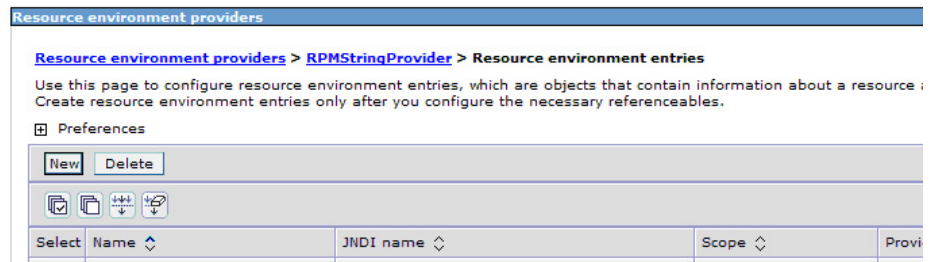


- c. In the required fields, enter the **Factory class name** and the **Class Name**:
- Factory class name: `com.ibm.rpm.factory.StringFactory`
 - Class name: `java.lang.String`

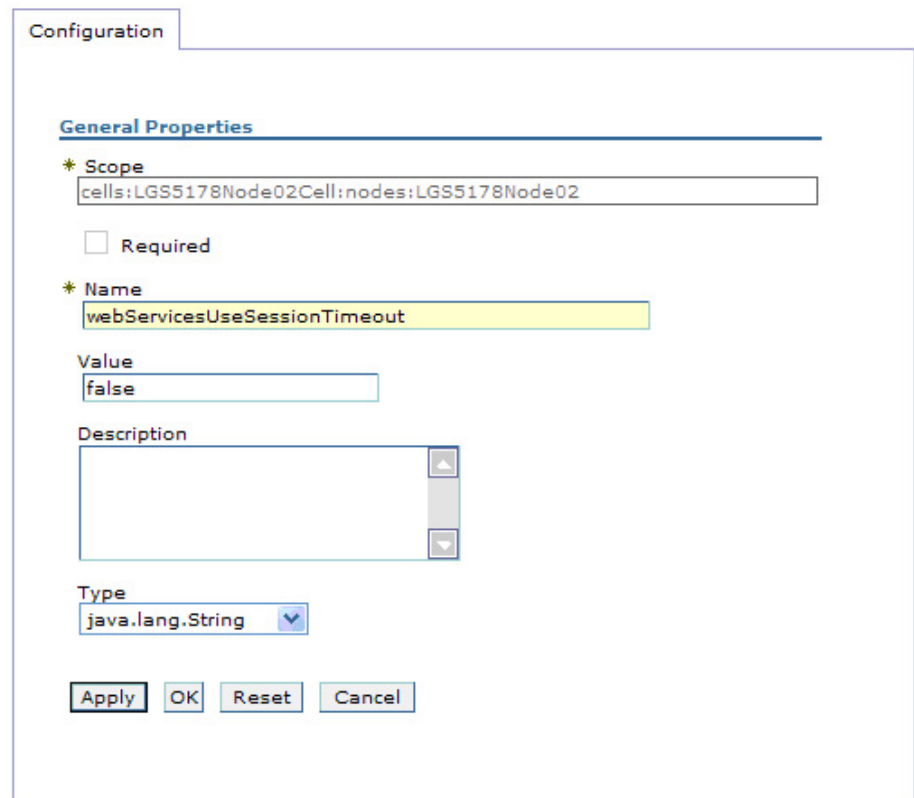


- d. Click **OK**.
6. Create and configure the new resource environment variable (webServicesUseSessionTimeout is used in this example):
- a. At the top of the window, click the blue link **RPMStringProvider**. This action returns you to the screen in step 5. On the right side of the window, click **Resource environment entries**. You should see something similar to the

following graphic:



- b. Click **New** on the next screen and provide the name of the environment variable and the JNDI name associated to the variable.
 - Name: webServicesUseSessionTimeout
 - JNDI name: com/ibm/rpm/webServicesUseSessionTimeout
- c. Click **Referenceable** (com.ibm.rpm.factory.StringFactory).
- d. Click **Apply**.
- e. On the right side of the window, under Additional Properties, the Custom Properties link is now enabled. Click **Custom Properties > New**. Something similar to the following graphic should be displayed:



- f. Set the following fields to suit your configuration.
 - Name: webServicesUseSessionTimeout
 - Value: false
 - Type: java.lang.String
- g. Click **OK**.

Note: Ignore the Required column in the WebSphere Application Server GUI.

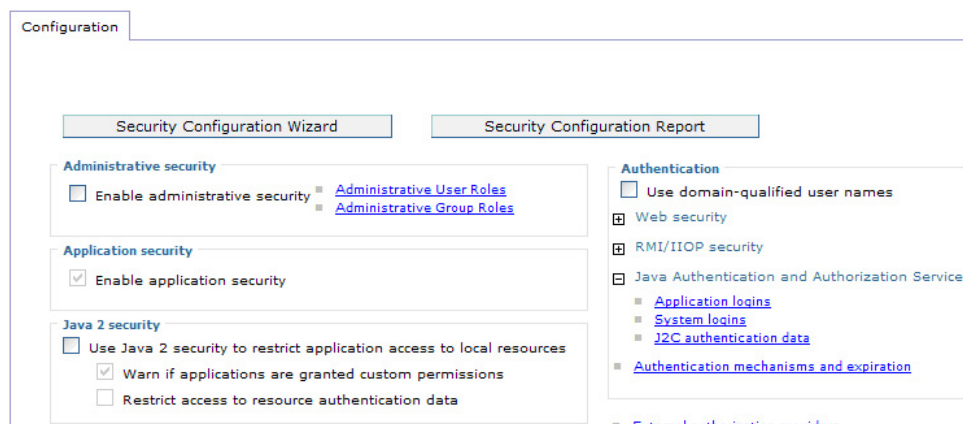
7. Repeat step 6 on page 74 for each variable described in Chapter 7, “Middleware environment variables reference,” on page 103.
8. To commit your changes, click **Save**.
9. Continue to the next step to Create the RPMCredentials authentication aliases.

Restart WebSphere or the Rational Portfolio Manager middleware application for the new parameters to be taken into account.

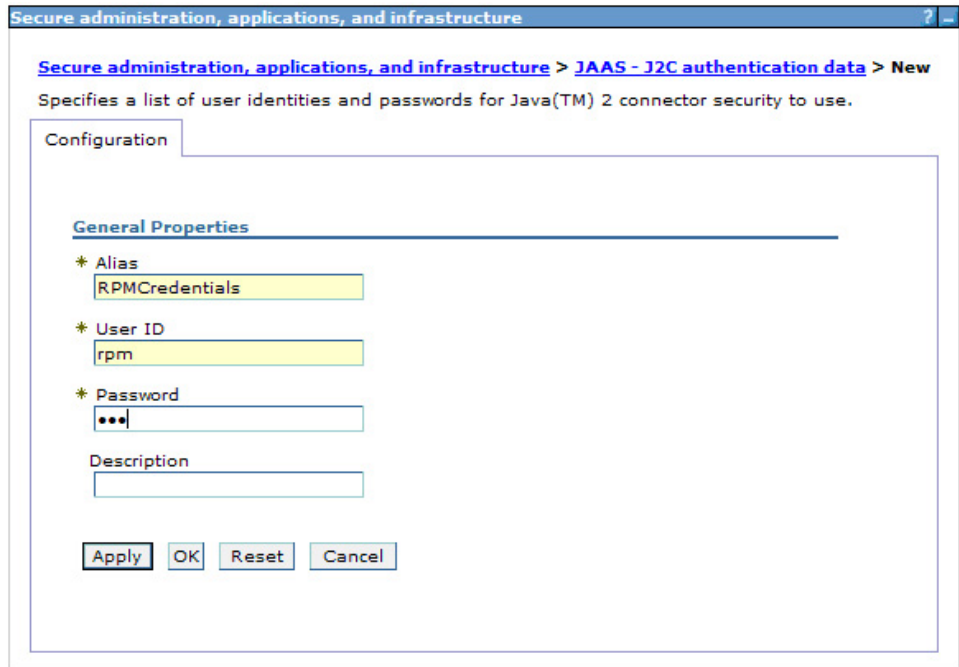
Create the RPMCredentials authentication aliases

To create the **RPMCredentials** Authentication alias:

1. From the WebSphere Administrative Console tree, click **Security**.
2. Click **Secure administration, applications, and infrastructure**.



3. From the **Authentication** menu, click **Java Authentication and Authorization Service > J2C Authentication Data**.
4. Click **New**.
5. Create the **RPMCredentials** alias by entering values for the following General Properties mandatory fields:
 - **Alias:** RPMCredentials
 - **User ID:** The user ID used to connect to your Rational Portfolio Manager database.
 - **Password:** The password for this user ID



6. Click **OK**.
7. To save your workspace changes to the master configuration, at the top of the page in the message box, click the **Save** URL.
8. Continue to the next step to Modify the path value of the DB2UNIVERSAL_JDBC_DRIVER_PATH variable.
 - a. If you are using a DB2 database, continue with the next section “Modify the path value of the DB2UNIVERSAL_JDBC_DRIVER_PATH variable.”
 - b. If you are using an Oracle database, skip to section “Modify the path value of the ORACLE_JDBC_DRIVER_PATH variable” on page 83.

Modify the path value of the DB2UNIVERSAL_JDBC_DRIVER_PATH variable

To modify the path value of the DB2UNIVERSAL_JDBC_DRIVER_PATH variable:

1. From the WebSphere Administrative Console window, click **Environment > WebSphere Variables**. The **Node** radio button is selected; do not clear this selection
2. To modify the variables DB2UNIVERSAL_JDBC_DRIVER_PATH:
 - a. From the Administration Console navigation, select **Environment > WebSphere Variables**. The **Node** radio button is selected; do not clear this selection.
 - b. To modify the variable DB2UNIVERSAL_JDBC_DRIVER_PATH:
 - 1) Click the variable DB2UNIVERSAL_JDBC_DRIVER_PATH URL.
 - 2) In General Properties, set the field **Value** to /opt/IBM/SQLLIB/java or to the folder path where the DB2 driver files (db2jcc.jar and db2jcc_license_cisuz.jar) are installed.

Note: This file must be in the lib folder of the WebSphere installation directory.

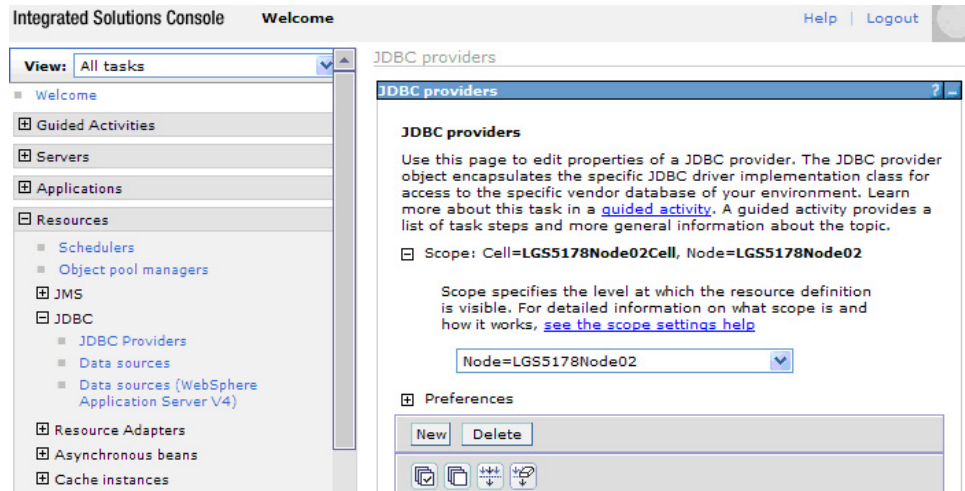
- 3) Click **OK**.

- 4) To save your changes to the master configuration, at the top of the page in the message box, click the **Save URL**.

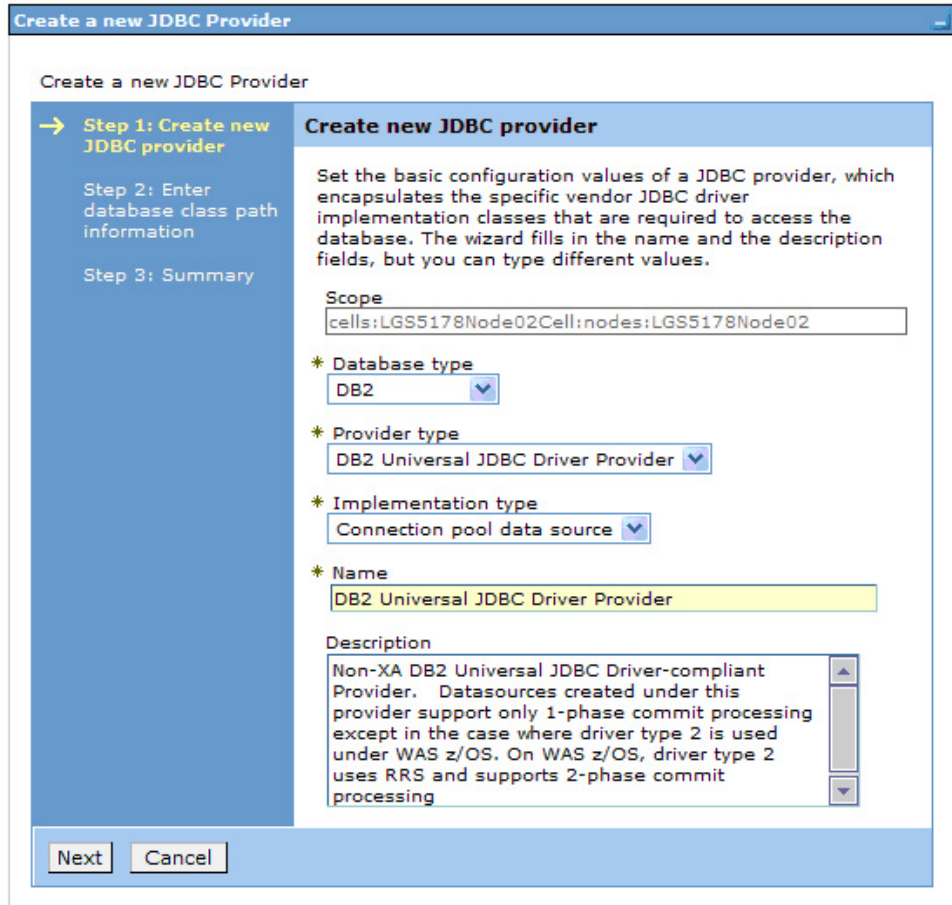
Create the JDBC Providers for DB2

To create the JDBC Providers for DB2:

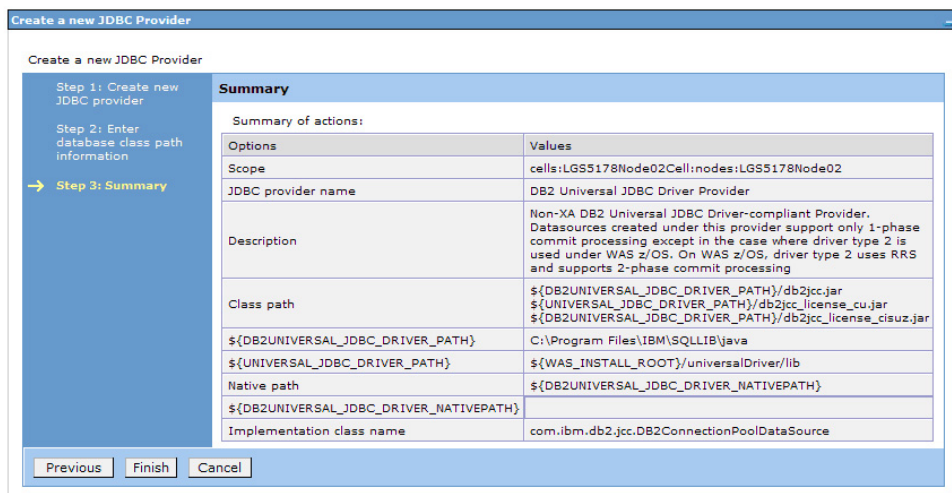
1. From the WebSphere Administrative Console window, click **Resources > JDBC Providers**. If DB2 Universal JDBC Driver Provider has already been created, continue to step 8 on page 79.
2. To add a new provider, click **New**.



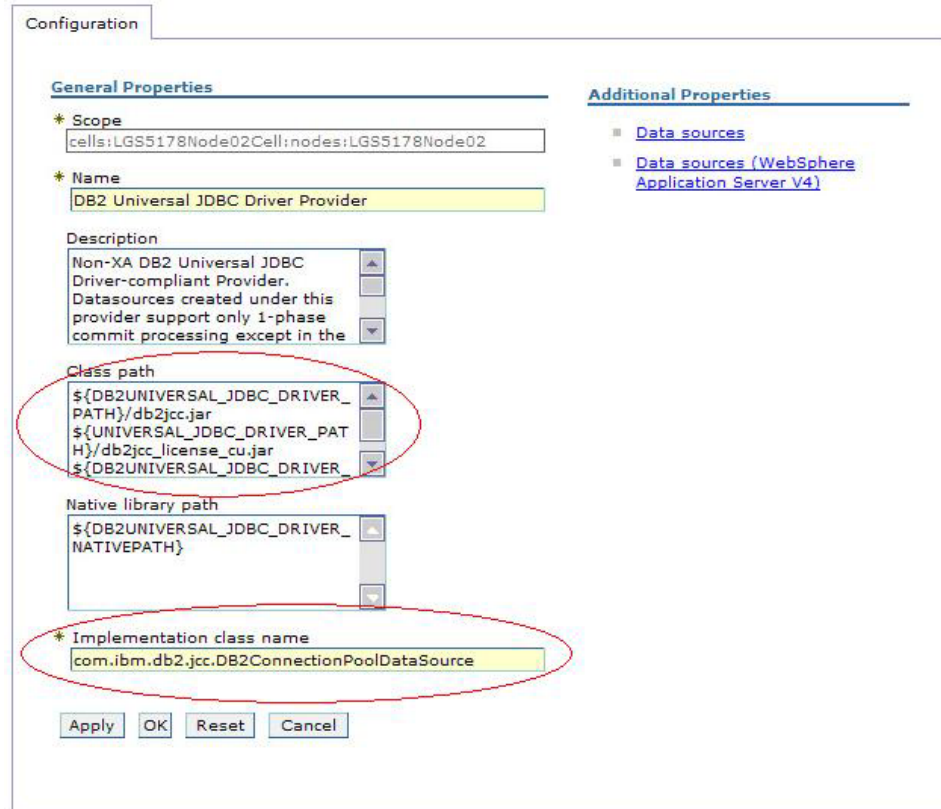
3. To complete the information about the provider, select the following options from drop-down menu for each of the following fields:
 - **Database type:** DB2
 - **Provider type:** DB2 Universal JDBC Driver Provider
 - **Implementation type:** Connection pool data source



4. Click **Next** through the two subsequent screens; then click **Finish**.
5. Click **Next**.



6. Click **Finish**.
7. To save your workspace changes to the master configuration, click **Save**. You are returned to the JDBC Providers window.
8. Click the DB2 Universal JDBC Driver Provider link and verify that the scope is set to the node. Also verify that the classpath and the implementation class name are as shown in the following figure:



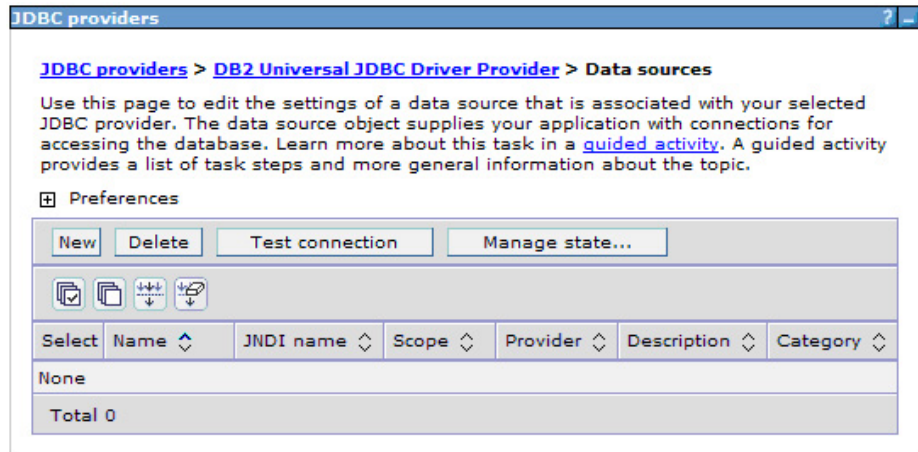
- The Class path should be:
`${DB2UNIVERSAL_JDBC_DRIVER_PATH}/db2jcc.jar`
`${UNIVERSAL_JDBC_DRIVER_PATH}/db2jcc_license_cu.jar`
`${DB2UNIVERSAL_JDBC_DRIVER_PATH}/db2jcc_license_cisuz.jar`
- The Implementation class name should be:
`com.ibm.db2.jcc.DB2ConnectionPoolDataSource`

Create the data sources and test the connection for DB2.

To save information to the Rational Portfolio Manager repository, the data source information or Data Source Name (DSN) must be set correctly. The information specified in the DSN allows the Rational Portfolio Manager to connect to the repository database.

To create the Data Sources, you need the following data source information that is used by the client to log in to the server:

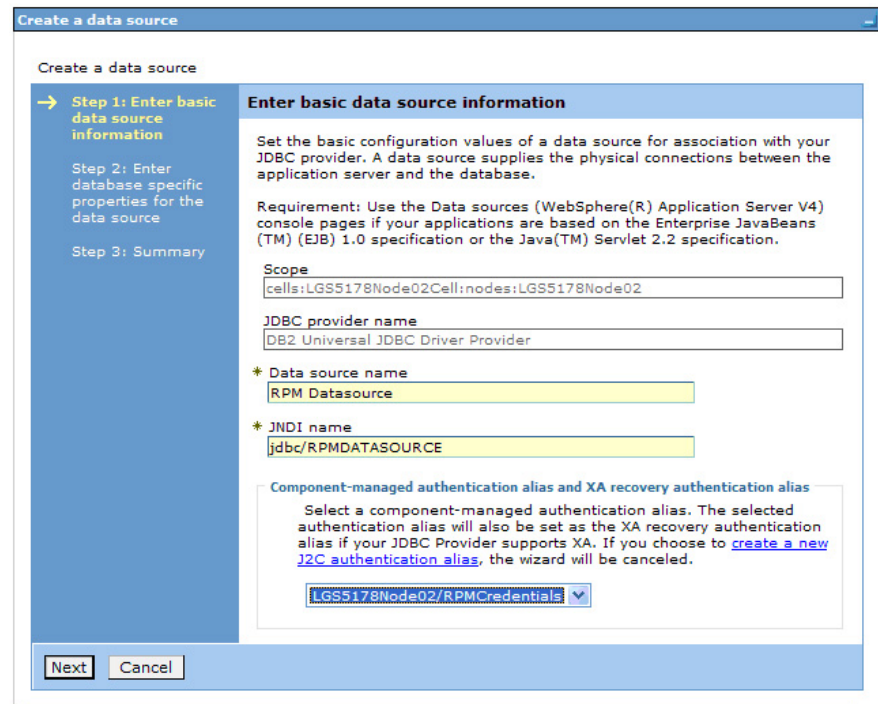
- The database host
 - The database name
 - The user name and password for this database
1. To create the `jdbc/RPMDATASOURCE`:
 - a. Click **Data sources > New**.



b. Follow the steps in the "Create a data source" wizard:

1) **Step 1: Enter basic data source information:**

- a) Enter the data source name: RPM Datasource
- b) Enter the JNDI name: jdbc/RPMDATASOURCE
- c) Select the J2C authentication alias: <your_node>/RPMCredentials
- d) Click **Next**.



2) **Step 2: Enter database specific properties for the data source:**

- a) Enter the database name.
- b) Select the driver type (should be type 4).
- c) Enter server name.
- d) Enter the port number.
- e) Click **Next**.

Create a data source

Create a data source

Step 1: Enter basic data source information

→ Step 2: Enter database specific properties for the data source

Step 3: Summary

Enter database specific properties for the data source

Set these database-specific properties, which are required by the database vendor JDBC driver to support the connections that are managed through this data source.

* Database name
IBMRPM

* Driver type
4

* Server name
rpmdev09.mtllab.ibm.com

* Port number
60001

Use this data source in container managed persistence (CMP)

Previous Next Cancel

3) Step 3: Summary

a) Click **Finish**.

Create a data source

Create a data source

Step 1: Enter basic data source information

Step 2: Enter database specific properties for the data source

→ Step 3: Summary

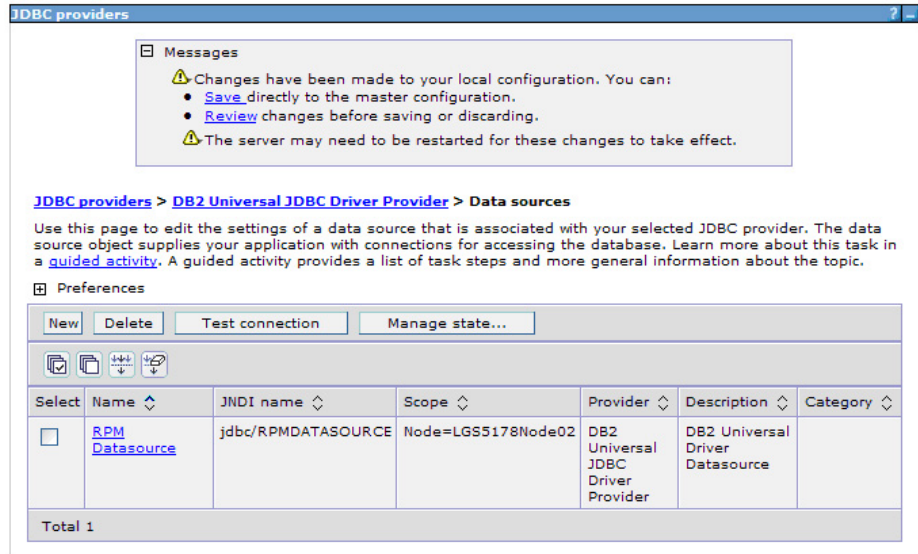
Summary

Summary of actions:

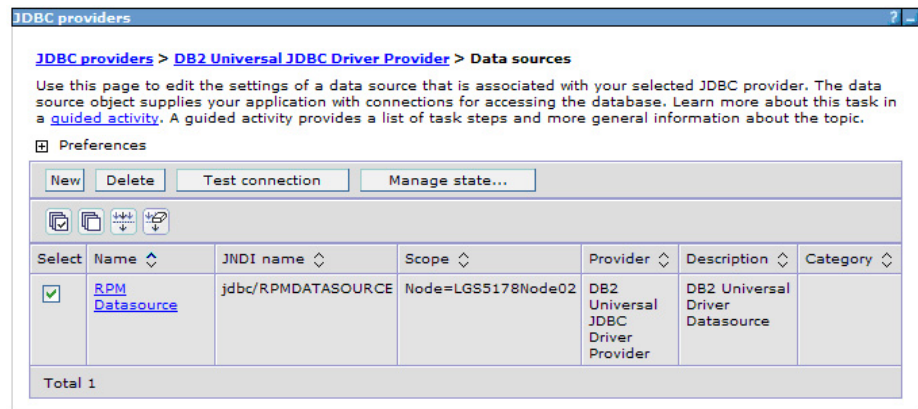
Options	Values
Scope	cells:LGS5178Node02Cell:nodes:LGS5178Node02
Data source name	RPM Datasource
JNDI name	jdbc/RPMDATASOURCE
Component-managed authentication alias	LGS5178Node02/RPMcredentials
Select an existing JDBC provider	DB2 Universal JDBC Driver Provider
Implementation class name	com.ibm.db2.jcc.DB2ConnectionPoolDataSource
Database name	IBMRPM
Driver type	4
Server name	rpmdev09.mtllab.ibm.com
Port number	60001
Use this data source in container managed persistence (CMP)	true

Previous Finish Cancel

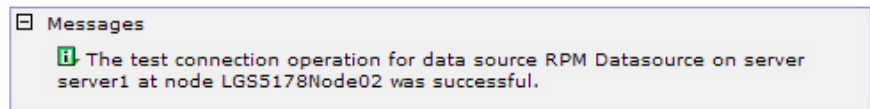
c. To save your changes to the master configuration, click **Save**.



d. Select the new connection and click **Test Connection**.



1) If your installation is successful, you will see a confirmation message at the top of the page as shown:



2) If your installation failed, verify that the following information that you provided throughout the installation is accurate.

- a) RPM Credentials
- b) JDBC Driver path
- c) Datasource

Test the connection again. If the connection continues to fail, verify with your database administrator that the database values are correct.

2. Continue with the next step, "Deploying the rpm-middleware-x.x.x.x.war file" on page 89.

Modify the path value of the ORACLE_JDBC_DRIVER_PATH variable

To modify the path value of the ORACLE_JDBC_DRIVER_PATH variable:

1. From the WebSphere Administration Console navigation, click **Environment > WebSphere Variables**. The **Node** radio button is selected; do not clear this selection.
2. To modify the variable ORACLE_JDBC_DRIVER_PATH:
 - a. Click the URL variable ORACLE_JDBC_DRIVER_PATH:
 - b. In General Properties, set the field **Value** to /opt/oracle/product/10.2.0/jdbc/lib or to the folder path where the Oracle driver file (ojdbc14.jar) is installed.

Note: If you are running the application server with JDK 1.4 or later versions, use the Oracle driver file `ojdbc14.jar`. If you are running the application server with JDK 1.2 or JDK 1.3, use the Oracle driver file `classes12.jar`.

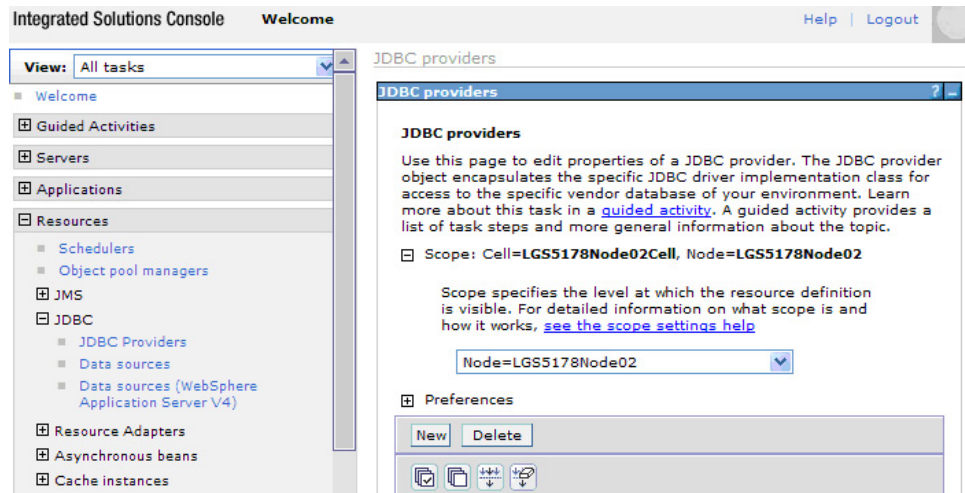
- c. Click **OK**.
- d. To apply changes to the master configuration, at the top of the page in the message box, click the **Save URL**.

The Rational Portfolio Manager middleware is enabled and ready to use.

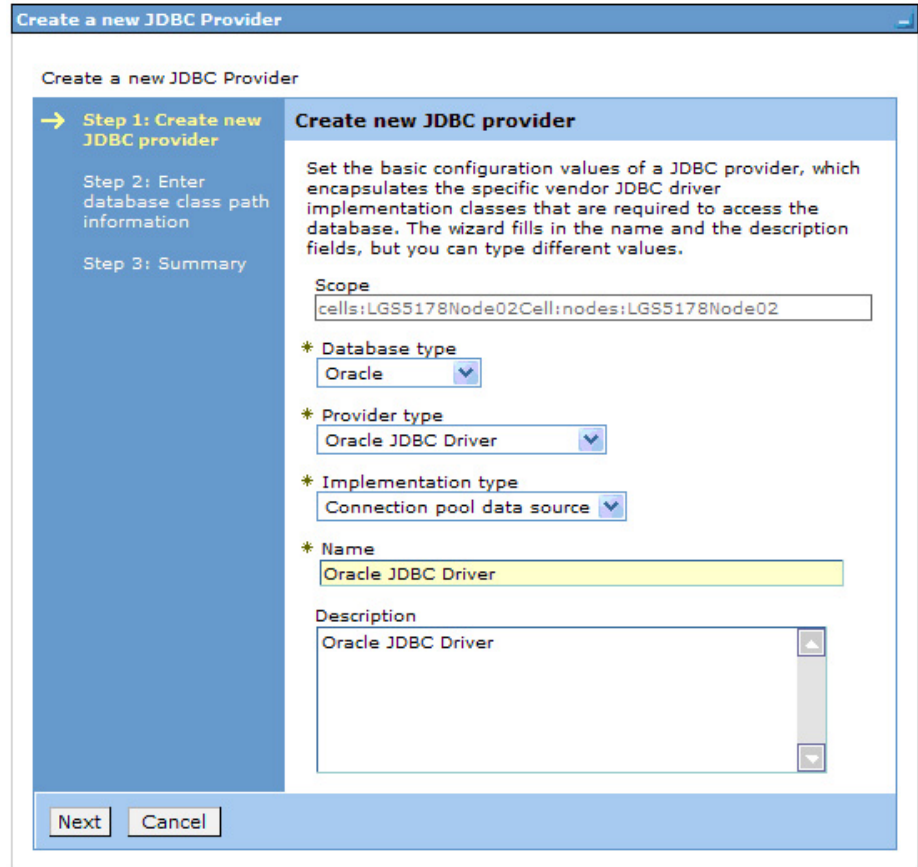
Create the JDBC provider for Oracle

To add a new provider:

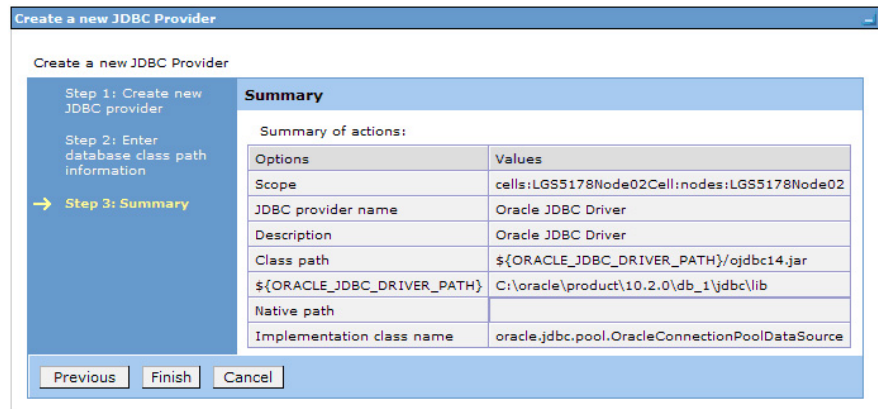
1. From the Administration Console, click **Resources > JDBC providers > New**.



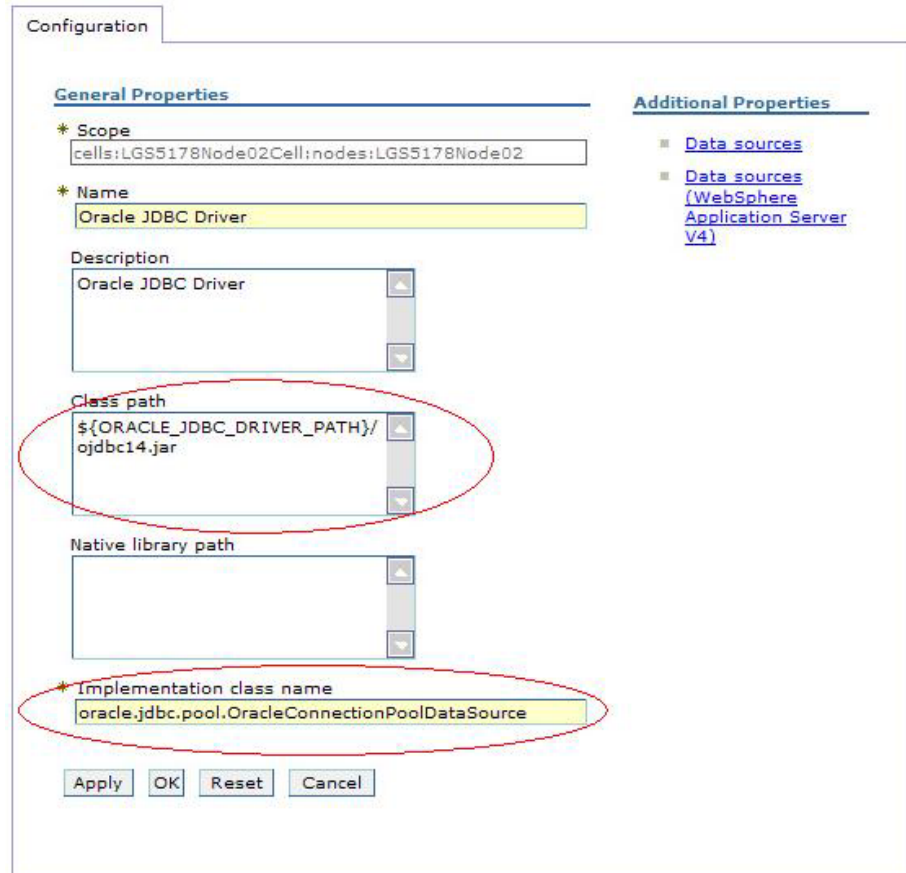
2. To complete the information about the provider, select the following options in the pop-up menu for each of the following fields and click **Next**.
 - a. In the **Step 1: Create new JDBC provider** window:
 - 1) Select the database type **database type**: Oracle
 - 2) Select the provider type **provider type**: Oracle JDBC Driver Provider
 - 3) Select the implementation type **implementation type**: Connection pool data source
 - 4) Click **Next**.



- b. In the **Step 2: Enter database class path information** window:
 - 1) Click **Next**.
- c. In the **Step 3: Summary** window:
 - 1) Click **Finish**.



- d. To save your changes to the master configuration, click **Save**. You are returned to the JDBC Providers window.
- e. Click the **Oracle JDBC Driver Provider** link and verify that the scope is set to the node. Verify that the class path and the implementation class name are as shown in the following figure:



- The Class path should be:
`${ORACLE_JDBC_DRIVER_PATH}/ojdbc14.jar`
 - The Implementation class name should be:
`oracle.jdbc.pool.OracleConnectionPoolDataSource`
3. Continue with the next step to create the data sources and test the connection to the Oracle database.

Create the data sources and test the connection to the Oracle database

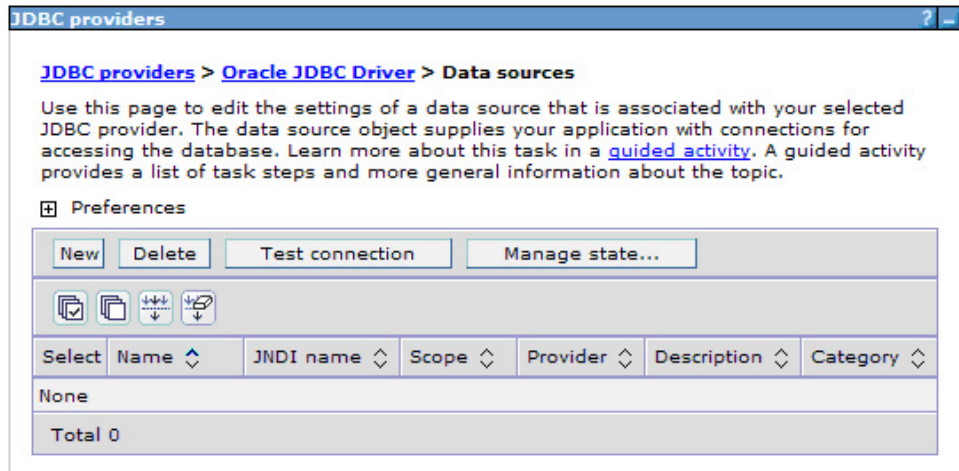
To access information from the Rational Portfolio Manager repository when using the Rational Portfolio Manager Middleware, the data source information or Data Source Name (DSN) must be set correctly. The information specified in the DSN allows the Rational Portfolio Manager Middleware to connect to the Rational Portfolio Manager repository database.

To create the data sources, you need the following data source information that is used by the client to log in to the server.

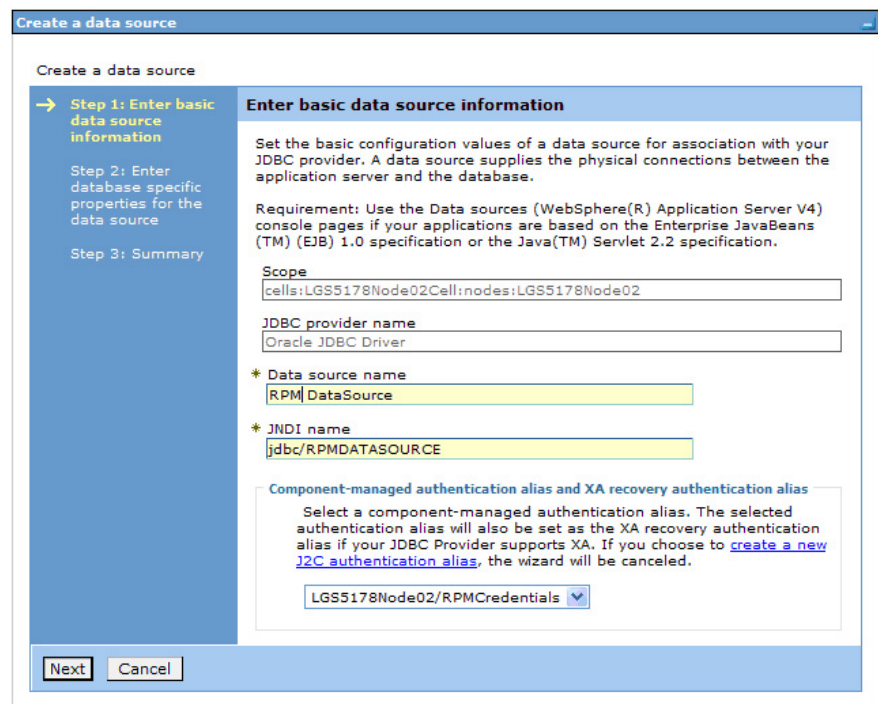
- The database host
- The database name
- The user name and password for this database

To create the jdbc/RPMDATASOURCE:

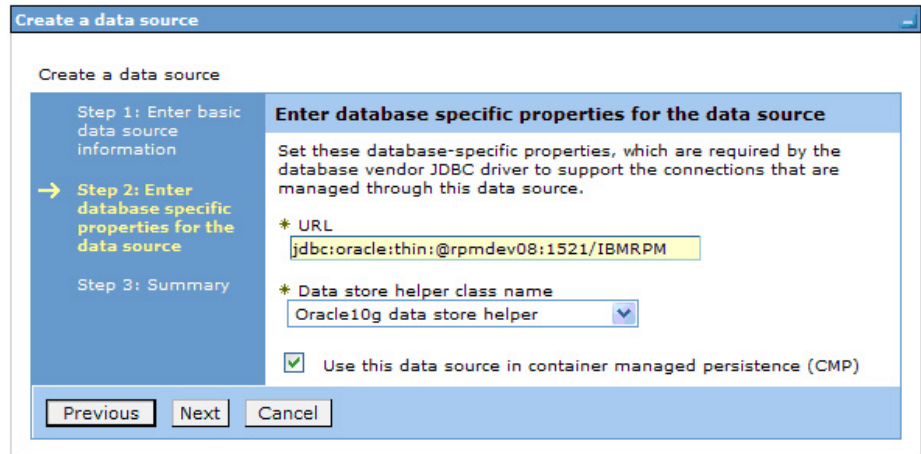
1. Click **Data Sources > New**.



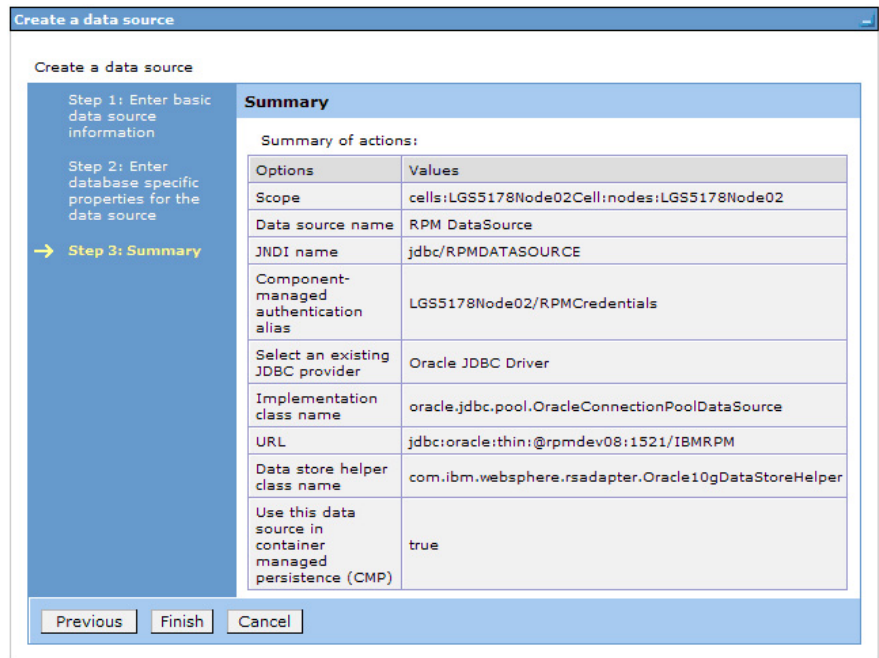
2. Follow the steps provided by the Create a data source wizard:
 - a. **Step 1: Enter basic data source information:**
 - 1) Enter the Data source name: RPM Datasource
 - 2) Enter a name and the JNDI name: jdbc/RPMDATASOURCE
 - 3) Select the J2C authentication alias: *yournode/RPMPredentials*
 - 4) Click Next.



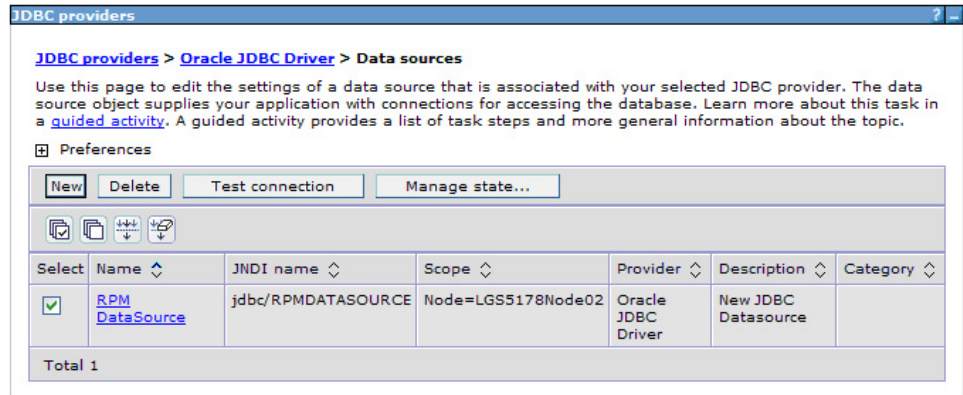
- b. **Step 2: Enter database specific properties for the data source**
 - 1) Enter the connection URL (jdbc:oracle:thin:@yourserver:portnumber/databasename)
 - 2) Select the Data store helper class appropriate for the Oracle database version.
 - 3) Click Next.



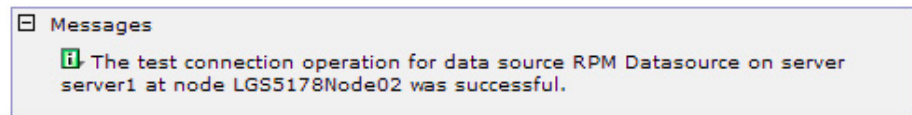
- c. **Step 3: Summary**
 - 1) Click **Finish**.



- d. To save your workspace changes to the master configuration, click the **Save URL**.
- 3. To test your connection to the Oracle database, select the new connection and click **Test Connection**.



- a. If your installation is successful, you will see a confirmation message at the top of the page as shown:



- b. If your installation failed, verify that the following information that you provided throughout the installation is accurate.
- 1) RPMCredentials
 - 2) JDBC Driver path
 - 3) Datasource

Test the connection again. If the connection continues to fail, verify with your database administrator that the database values are correct.

4. Continue with the next step, "Deploying the rpm-middleware-x.x.x.x.war file."

Deploying the rpm-middleware-x.x.x.x.war file

To deploy the Rational Portfolio Manager middleware Enterprise Application:

1. Before you begin, upload the rpm-middleware-x.x.x.x.war file to a temporary directory on the server where WebSphere is installed. You can use an ftp utility, or any other method appropriate for your platform. Take note of the full path where you uploaded the file. In the following examples we will use c:\tempfolder.
2. In the **WebSphere Administrative Console** window, click **Applications > Install New Application**.
3. Select the **Remote File System** box and enter the full path and rpm-middleware_xxxx.war file name you noted in step a (you can also browse to the file).

Note: Do not use the **Local File System** radio button option. Selecting this option causes the Administrative console to timeout.

4. In the **Context root** field enter: IBMRPM

Note: The context root name must be unique and cannot start with /.

Preparing for the application installation

Specify the EAR, WAR, JAR, or SAR module to upload and install.

Path to the new application

Local file system

Full path

Remote file system

Full path

Context root

Used only for standalone Web modules (.war files) and SIP modules (.sar files)

How do you want to install the application?

Prompt me only when additional information is required.

Show me all installation options and parameters.

Attention: If you have previously configured the optional runtime parameters or previously deployed the rpm-middleware_XXX.war file, you will be presented with a window prompting you to choose not to override the existing bindings or to override existing bindings, select the **Override existing bindings** radio button and click **Next**.

5. If you see a security warning, ignore it and click **Continue**.
6. Click **Next** until you reach the last panel with the option to Finish, click **Finish**, and wait for the deployment to complete.

Note: Deployment may take a long time.

Install New Application

Specify options for installing enterprise applications and modules.

Step 1 Select installation options
Step 2 Map modules to servers
→ Step 3: Summary

Summary

Summary of installation options

Options	Values
Precompile JavaServer Pages files	No
Directory to install application	
Distribute application	Yes
Use Binary Configuration	No
Deploy enterprise beans	No
Application name	rpm-middleware-7_1_1_1_war
Create MBeans for resources	Yes
Enable class reloading	No
Reload interval in seconds	
Deploy Web services	No
Validate Input off/warn/fail	warn
Process embedded configuration	No
File Permission	.*\,dll=755#.*\,so=755#.*\,a=755#.*\,sl=755
Application Build ID	Unknown
Allow dispatching includes to remote resources	No
Allow servicing includes from remote resources	No

Previous Finish Cancel

Note: If there are any warning, this means that the corresponding variables have not been bound successfully. Verify that each environment variable name and its JNDI names are correct.

7. To save the modifications to the master configuration, click **Save**.

ADMA5013: Application rpm-middleware-7_1_1_1_war installed successfully.

Application rpm-middleware-7_1_1_1_war installed successfully.

To start the application, first save changes to the master configuration.

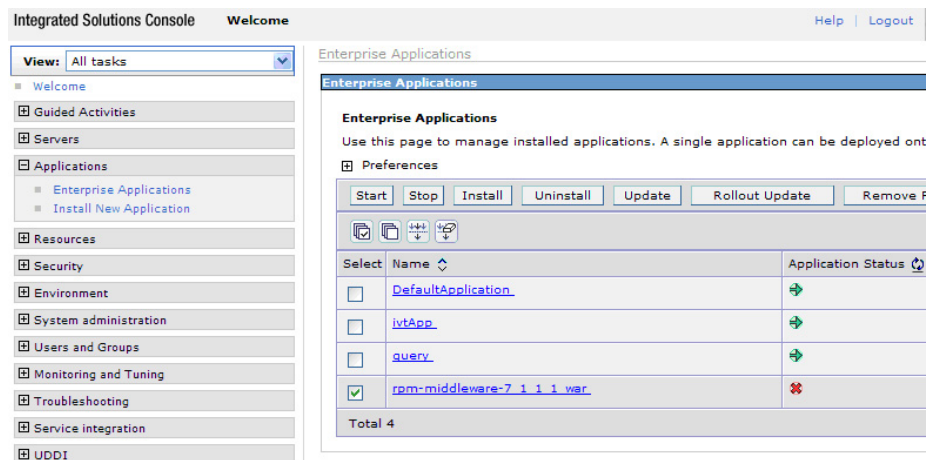
Changes have been made to your local configuration. You can:

- [Save](#) directly to the master configuration.
- [Review](#) changes before saving or discarding.

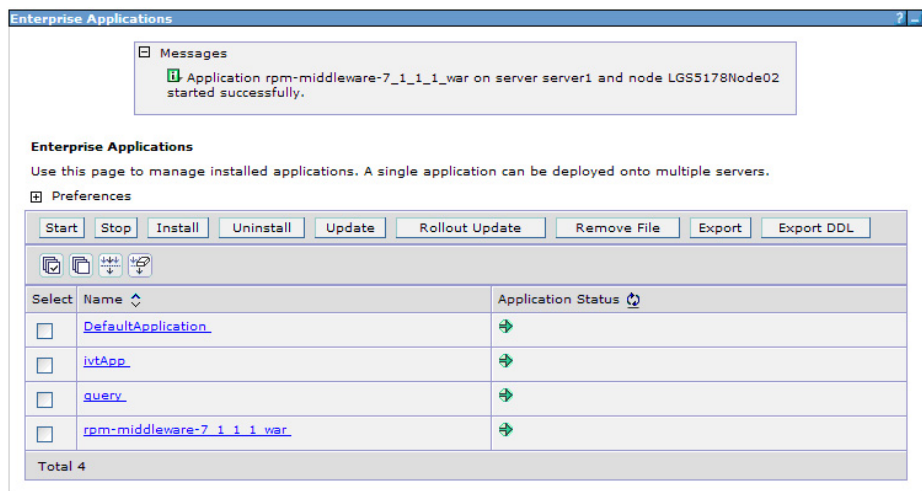
To work with installed applications, click the "Manage Applications" button.

[Manage Applications](#)

8. Start the Rational Portfolio Manager War Enterprise Application.
 - a. In the left menu, click **Applications > Enterprise Applications**.
 - b. Make sure that the **rpm-middleware** box is selected.

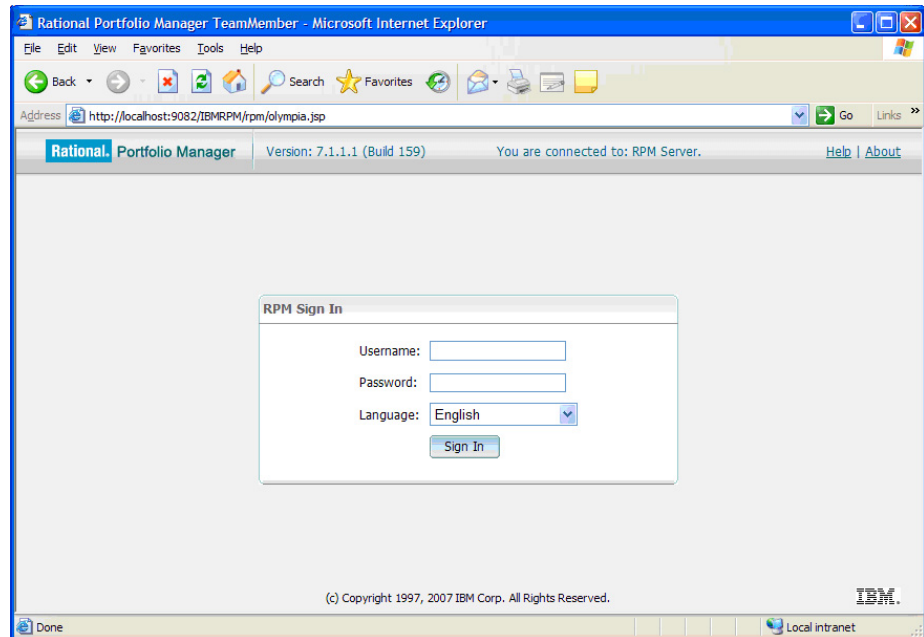


- c. To start the application that you deployed, click **Start**.

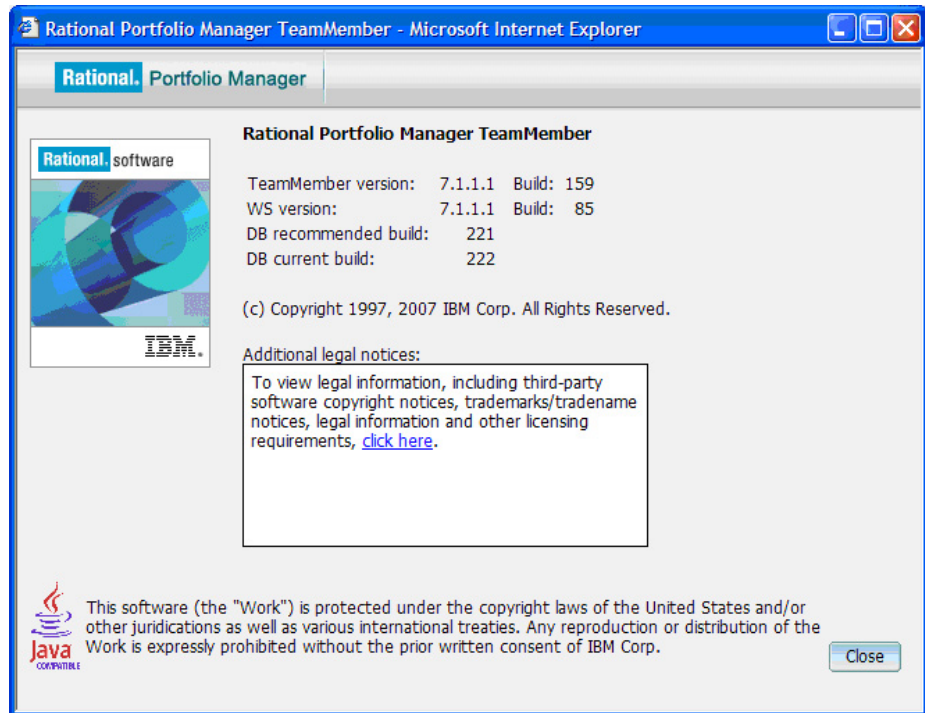


9. Test the connection to the application.

- a. Open a browser and go to: `http://hostname:portnumber/IBMRPM/rpm/olympia.jsp`.
- b. On the page that opens, in the top right corner, click **About**.



- c. A page similar to the following should open. If the DB recommended build and DB current build are displayed, the connection is working and the middleware is ready to use.



The Rational Portfolio Manager middleware is now enabled and ready to use.

Chapter 6. Installing middleware: Tomcat 5.5 application server

Before you begin, Tomcat 5.5 and a J2SE 5 JRE (or J2SE 1.4) must also be installed on the target machine. A Java Development Kit (JDK) or an unzip executable file must also be installed on the target machine. The Tomcat installer installs the manager Web application by default. The administration Web application is not required for the installation of the middleware, but is useful to validate the middleware configuration. It can be downloaded from the Apache site: <http://tomcat.apache.org/download-55.cgi>.

Deploying the middleware

To install the middleware:

1. Configure Apache Tomcat to deploy the middleware:
 - a. Configure the Tomcat user database (tomcat-users.xml) as follows to run the administration and manager applications. The file is stored in the TomcatBaseDirectory/conf directory and does not usually need to be modified.

```
<?xml version="1.0" encoding="utf-8"?>
<tomcat-users>
  <role rolename="tomcat"/>
  <role rolename="role1"/>
  <role rolename="manager"/>
  <role rolename="admin"/>
  <user username="tomcat" password="tomcat" roles="tomcat"/>
  <user username="role1" password="tomcat" roles="role1"/>
  <user username="both" password="tomcat" roles="tomcat,role1"/>
  <user username="admin" password="admin" roles="admin,manager"/>
</tomcat-users>
```

- b. If your Rational Portfolio Manager database is hosted on:
 - DB2, copy the IBM DB2 Universal JDBC Driver files in the TomcatBaseDirectory/common/lib directory. The required files are db2jcc.jar and db2jcc_license_cu.jar. The DB2 JDBC Driver files are included with IBM DB2. Rather than copying the files to the common/lib directory, add them to the Tomcat classpath. Refer to Tomcat documentation for instructions.
 - Oracle, copy the Oracle JDBC driver files in the TomcatBaseDirectory/common/lib directory. The required file is ojdbc14.jar. Rather than copying the files to the common/lib directory, add them to the Tomcat classpath. Refer to the Tomcat documentation for instructions.
 - c. Download the open source xalan-2.7.0.jar file to the TomcatBaseDirectory/common/endorsed directory from: <http://www.ibiblio.org/maven/xalan/jars/>
 - d. Download the open source file mail-1.4.1.jar to the TomcatBaseDirectory/common/lib directory from: <https://maven-repository.dev.java.net/nonav/repository/javax.mail/jars/>
 - e. Download the royalty-free jaf-1_1_1.zip (JavaBeans Activation Framework standard extension) and extract activation.jar in the TomcatBaseDirectory/common/lib directory. The jaf-1_1_1.zip file can be downloaded from Sun Microsystems: <http://java.sun.com/products/javabeans/jaf/downloads/index.html>

2. Editing the deployment file IBMRPM.xml:

To view an example of this file, see the IBMRPM.xml sample in the `${PACKAGE_ROOT}/WebServer` directory of the Rational Portfolio Manager Installation CD along with the IBMRPM.war file.

- a. Copy the rpm-middleware-x.x.x.x.war file and the sample IBMRPM.xml file to a directory on the same computer as the Tomcat Server.

Note: The name of the rpm-middleware-x.x.x.x.war file may vary from different versions of the Rational Portfolio Manager installation CD packages.

- b. Rename the rpm-middleware-x.x.x.x.war file to IBMRPM.war.

Note: The xml file and the war file must have the same name.

- c. Open the IBMRPM.xml file with a text editor.
- d. Edit the Context docBase tag to state the location of the IBMRPM.war file where you copied the two files. If you are using Tomcat V5.5, a path attribute cannot be in the Context element. The context path will be the name of the xml and war file.
- e. Edit the Rational Portfolio Manager data source parameters to the actual value required by your Rational Portfolio Manager database. The Resource name parameter must be jdbc/RPMDATASOURCE. Make sure you do not change this parameter.
 - 1) For DB2, the driverClassName is "com.ibm.db2.jcc.DB2Driver" and the format of the URL is jdbc:db2://host:port/dbname.
 - 2) For Oracle, the driverClassName is "oracle.jdbc.OracleDriver" and the format of the URL is jdbc:oracle:thin:@//host:port/sid.
- f. Edit the values of the environment variables. Default values are provided but these may not be appropriate for your configuration. For a list of all available runtime parameters, in addition to their default values, see Chapter 7, "Middleware environment variables reference," on page 103.
- g. After having set each environment variable described in Chapter 7, "Middleware environment variables reference," on page 103, save and close the IBMRPM.xml file.
- h. Verify the structure of the IBMRPM.xml file by opening the file in Web browser.
 - 1) If the structure of the file is valid, you will get a similar result:

```

<?xml version="1.0" encoding="UTF-8" ?>
- <Context docBase="c:/change/this/to/the/full/path/to/IBMRPM.war" reloadable="true">
  <!-- Database configuration -->
  <!-- Oracle sample -->
  <!-- Only one datasource must be defined and it's name must be jdbc/RPMDATASOURCE
  <Resource
    name="jdbc/RPMDATASOURCE"
    type="javax.sql.DataSource"
    auth="Container"
    driverClassName="oracle.jdbc.driver.OracleDriver"
    maxActive="10" maxIdle="3" maxWait="5000"
    username=""
    password=""
    url="jdbc:oracle:thin:@//server:port/dbname"
    validationQuery="select 1 from dual"/>
  <!-- DB2 sample -->
  <Resource name="jdbc/RPMDATASOURCE" type="javax.sql.DataSource" auth="Container"
    driverClassName="com.ibm.db2.jcc.DB2Driver" maxActive="10" maxIdle="3" maxWait="5000"
    username="" password="" url="jdbc:db2://server:port/dbname" validationQuery="values(1)" />
  <!-- RPM configuration -->
  <Environment description="Configuration of middleware. environment or files. files is deprecated
    and shouldn't be used.." name="ConfigurationSource" type="java.lang.String"
    value="environment" />
  <!-- Alerts parameters -->
  <Environment description="Set to true if alerts are enabled. Set to false otherwise."
    name="AlertsOn" type="java.lang.Boolean" value="true" />
  <Environment description="Subject to be used on the messages." name="Subject"
    value="Subject" />
  <!-- ... -->
  </Context>

```

2) If the structure of the file is invalid, you will get a similar result:

The XML page cannot be displayed

Cannot view XML input using XSL style sheet. Please correct the error and then click the [Refresh](#) button, or try again later.

Required white space was missing. Error processing resource 'file:///C:/tempfolder/IBMRPM.xml'. Line 22, Position 11

```

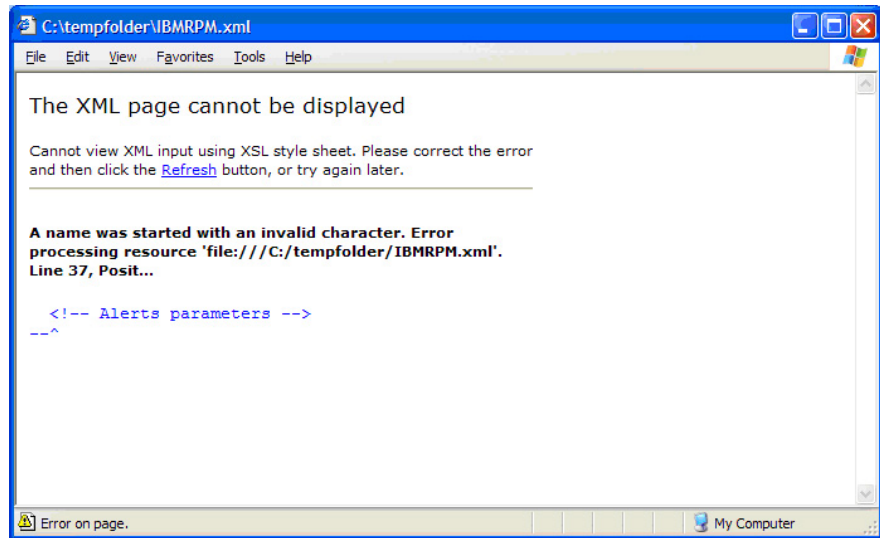
auth="Container"
-----^

```

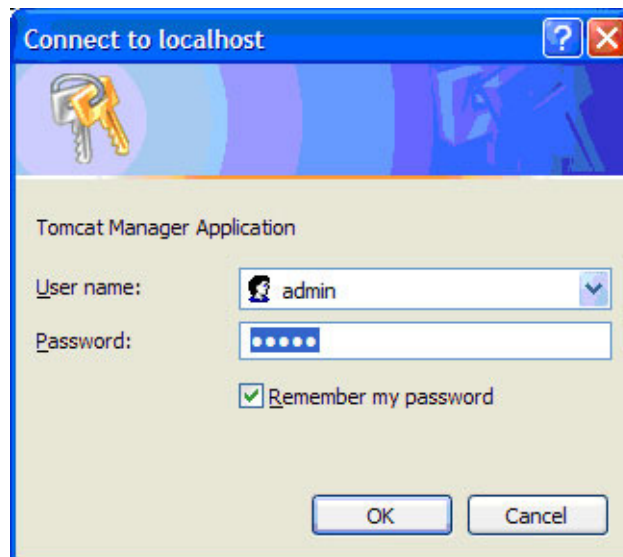
The following list contains possible errors you should look for:

- a) Missing end xml tags
- b) Strings that start with a double (or single) quote but do not end with a corresponding double (or single) quote.

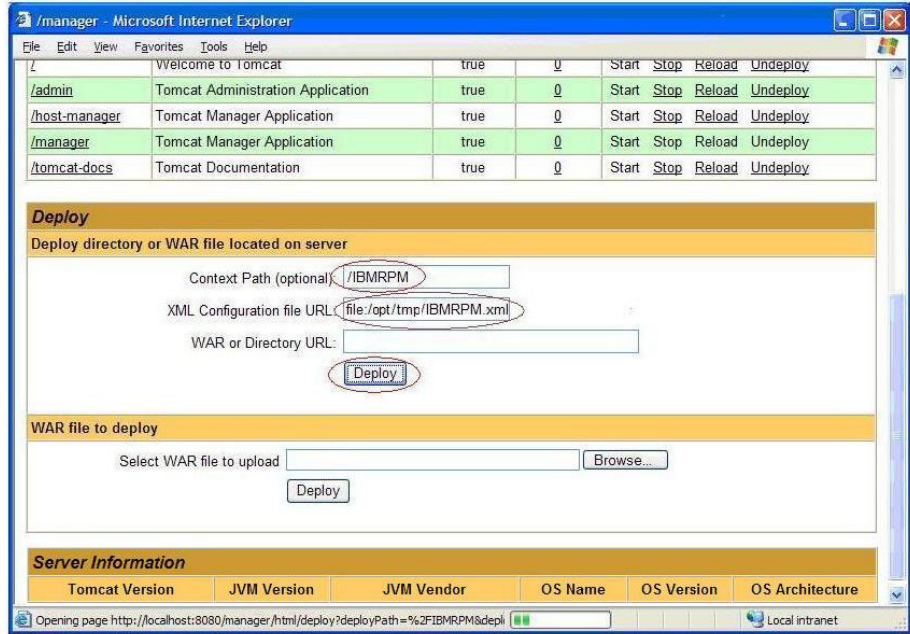
Internet Explorer provides some hints about the location of the error, but it does not report the exact location. In the above example, an end double quote is missing. In the following example, an end xml tag is missing:



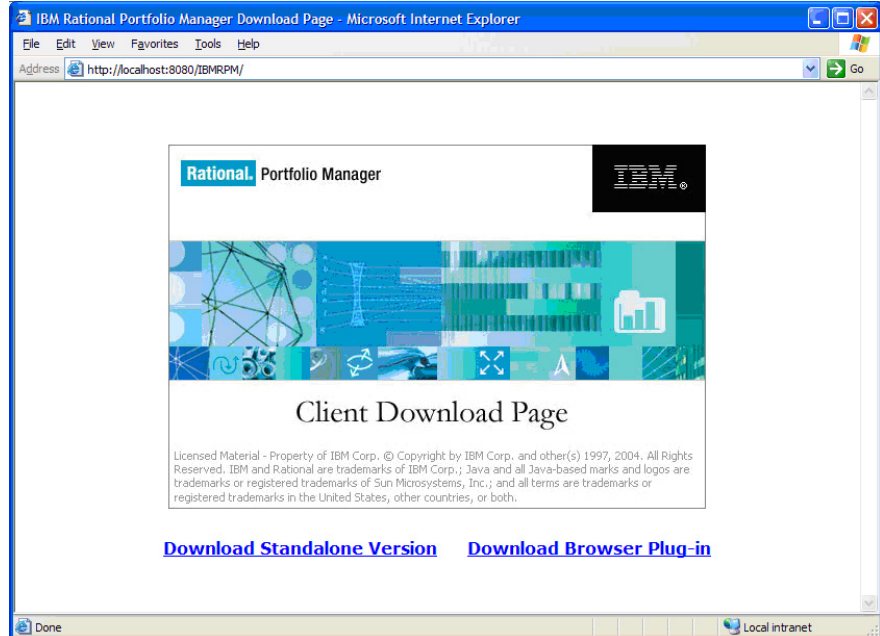
3. To deploy the Rational Portfolio Manager middleware using the Tomcat Manager:
 - a. To start the Apache Tomcat server, run the `./startup.sh` script located in the `TomcatBaseDirectory/bin` directory.
 - b. Open a Web browser and run the Tomcat Manager: `http://localhost:8080/manager/html`. This URL may be different depending on your Tomcat installation (server name or port may be different).
 - c. Enter the manager name and password and click **OK**.



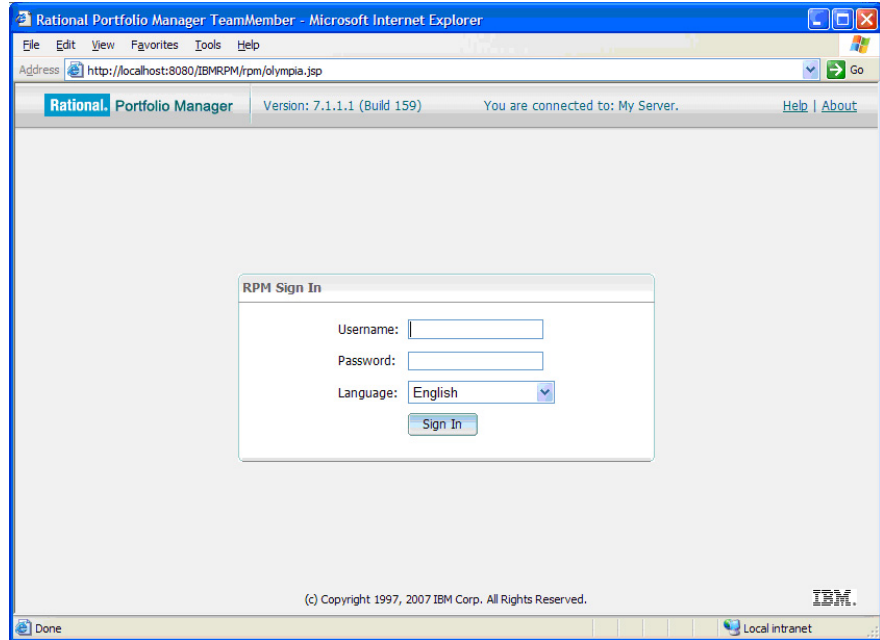
- d. To deploy the `IBMRPM.war` file located on the server, scroll to the XML Configuration file URL field and enter the location of the `IBMRPM.xml` file. For example, `file:/opt/tmp/IBMRPM.xml`
- e. Type the context path in the Context Path field (must start with a forward slash). For example, `/IBMRPM`.



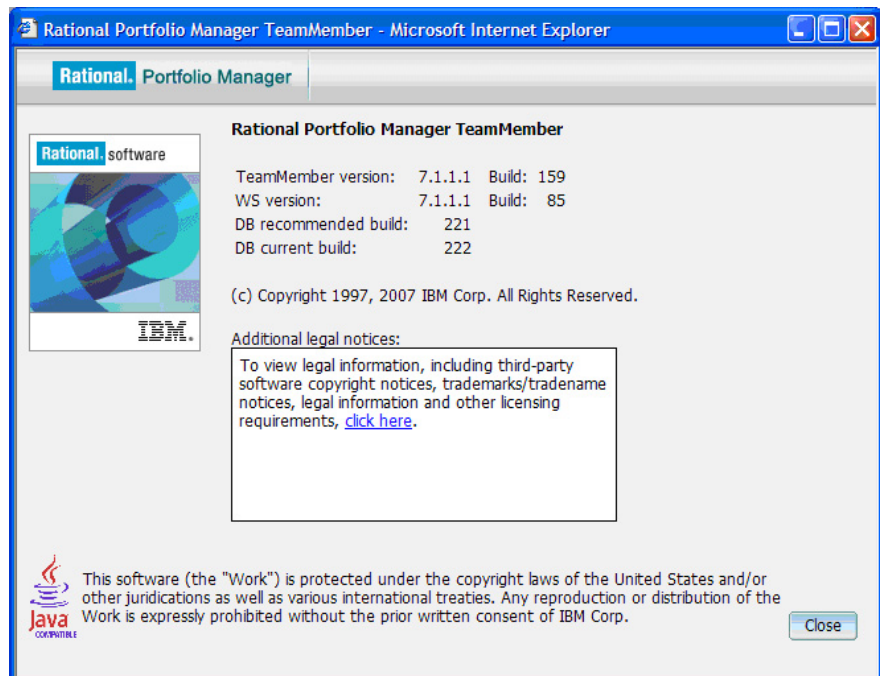
- f. Click **Deploy**. You can see that the Rational Portfolio Manager Middleware is running from the "/IBMRPM" path.
- g. To verify that the middleware is working.
 - 1) Click the /IBMRPM URL. You should see something similar to the following:



- 2) In the Web browser address bar, add rpm/Olympia.jsp to the URL (http://localhost:8080/IBMRPM/rpm/olympia.jsp) and click Go. You should see something similar to the following screen:



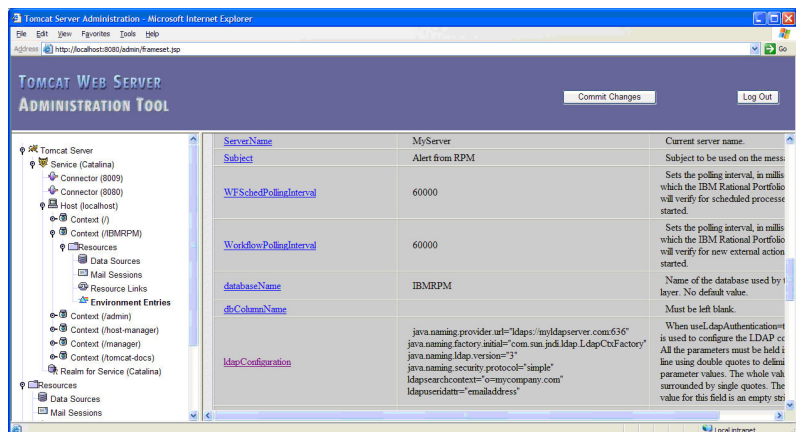
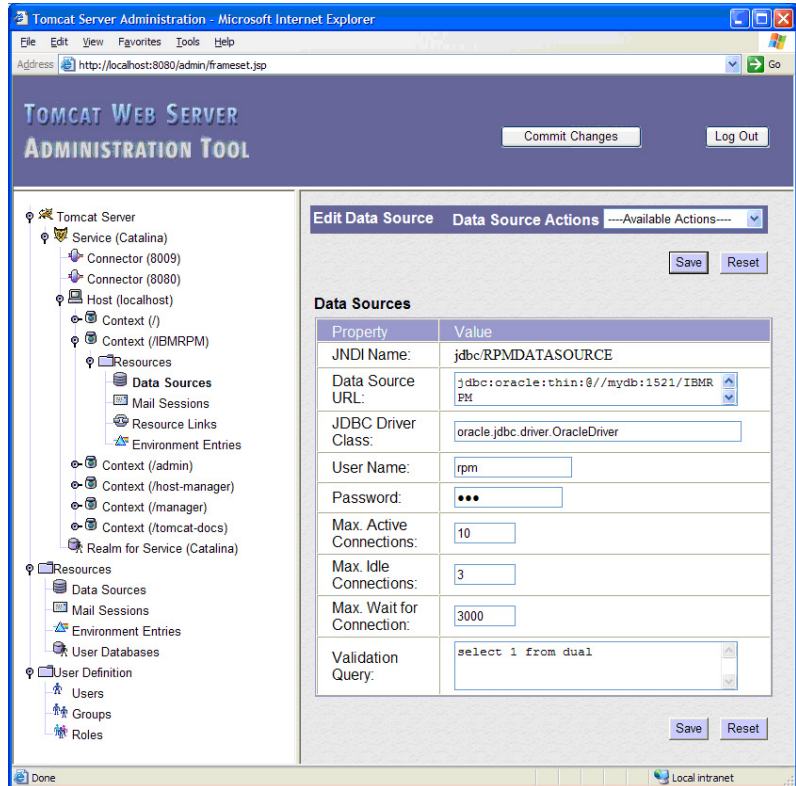
3) Click **About**, you should see something similar to the following screen:



- a) If you get the above screen showing the Rational Portfolio Manager version number and build number your middleware installation is successful, you can now start using the Rational Portfolio Manager Middleware.
- b) If a version number or build number is missing, the Rational Portfolio Manager middleware configuration is incorrect. Verify that all the values in the IBMRPM.xml file are configured correctly.

Note: If the database current build is missing, your Rational Portfolio Manager datasource resource is not configured properly or the database is offline.

- i. To determine the cause of the problem, look inside the Tomcat log files in `${TOMCAT_ROOT}\logs`.
- ii. You can also use the Tomcat Administration Web application (if you have installed it) and see the configuration of the server and of the IBMRPM application. The following are sample screen captures from the application:



- iii. After you have corrected the Rational Portfolio Manager middleware configuration, you can start using the Rational Portfolio Manager Middleware.

Chapter 7. Middleware environment variables reference

The Rational Portfolio Manager Middleware is configured using Web application resource environment references.

The following list is a breakdown of the configuration variables by section:

- Lightweight Directory Access Protocol (LDAP) authentication
- Rational Portfolio Manager Web Services
- Rational Portfolio Manager *TeamMember*
- Representational State Transfer (REST) Interface
- Rational Portfolio Manager Client Broker
- Rational Portfolio Manager integration with Rational ProjectConsole (PjC)
- E-Mail Notifications
- Workflow and External Actions

For procedures on how to set these variables, see the supported application server related sections:

- WebSphere Application Server 5.1: “Configuring the Middleware Runtime Options” on page 31
- WebSphere Application Server 6.0: “Configuring the Middleware Runtime Options” on page 51
- WebSphere Application Server 6.1: “Configuring the Middleware Runtime Options” on page 72
- Apache Tomcat Application Server 5.5: Chapter 6, “Installing middleware: Tomcat 5.5 application server,” on page 95

Lightweight Directory Access Protocol (LDAP) authentication

Using Rational Portfolio Manager middleware, users can authenticate themselves against an LDAP server to the Rational Portfolio Manager Database. In order to enable the LDAP authentication, the following properties are required:

Table 14. LDAP variables

Variables	Description
useLdapAuthentication	<ul style="list-style-type: none">• Type: Boolean• Default value: False• Default WebSphere JNDI Mapping: com/ibm/rpm/useLdapAuthentication• Description: This flag indicates if the Rational Portfolio Manager Middleware will use LDAP authentication to validate the username and passwords during login. If this flag is set to <i>true</i>, then a valid LDAP configuration must be included in the <code>ldapConfiguration</code> parameter.

Table 14. LDAP variables (continued)

Variables	Description
ldapConfiguration	<ul style="list-style-type: none"> • Type: String • Default value: (Empty) • Default WebSphere JNDI Mapping: com/ibm/rpm/ldapConfiguration • Description: When the useLdapAuthentication variable is set to <i>true</i>, this field is used to configure the LDAP connection. <p>Note: It is mandatory that all the parameters must be on a single line using quotes to delimit the parameter values. Text between double quotes cannot contain any white spaces.</p> <p>To view a sample of an LDAP configuration see the ldapConfiguration_sample.txt sample file provided with this release in the \${INSTALLATION_HOME}/WebServer/ directory, or if you are using the migration package, in the \${MIGRATION_HOME}/WebServer/ directory.</p>

Rational Portfolio Manager Web Services

The Rational Portfolio Manager middleware has a set of Web Service based APIs so that customers can execute their custom integrations with Rational Portfolio Manager. The following variables are used to configure the behavior of the Web Services API.

Table 15. Web Services variables

Variables	Description
webServicesEnabled	<ul style="list-style-type: none"> • Type: Boolean • Default value: True • Default WebSphere JNDI Mapping: com/ibm/rpm/webServicesEnabled • Description: This flag enables the Web Services.
webServicesUseSessionTimeout	<ul style="list-style-type: none"> • Type: Boolean • Default value: True • Default WebSphere JNDI Mapping: com/ibm/rpm/webServicesUseSessionTimeout • Description: If this value is set to <i>true</i>, the Rational Portfolio Manager Web Services disables sessions that have remained inactive for a period of time greater than is specified in the parameter webServicesSessionTimeoutDelayInSeconds

Table 15. Web Services variables (continued)

Variables	Description
webServicesSessionTimeoutDelayInSeconds	<ul style="list-style-type: none"> • Type: Integer • Default value: 3600 (1 hour) • Default WebSphere JNDI Mapping: com/ibm/rpm/webServicesSessionTimeoutDelayInSeconds • Description: This value specifies the lapse of time in seconds during which a session can remain inactive before it times out. This parameter is not used if the webServicesUseSessionTimeout parameter is set to <i>false</i>. The value range of this parameter is 1 to 2147483647. If an invalid value is detected, the default value is applied.
webServicesUseApiSecurityFlagOnLogin	<ul style="list-style-type: none"> • Type: Boolean • Default value: True • Default WebSphere JNDI Mapping: com/ibm/rpm/webServicesUseApiSecurityFlagOnLogin • Description: If the value is set to <i>true</i>, only users who have the security right to use the Web Services API can log in when Rational Portfolio Manager Web services' client calls the authentication login method.
webServicesSecurityEnabled	<ul style="list-style-type: none"> • Type: Boolean • Default value: True • Default WebSphere JNDI Mapping: com/ibm/rpm/webServicesSecurityEnabled • Description: This flag indicates if the Rational Portfolio Manager Security model will be applied on calls to the Web Services API. If this flag is set to <i>false</i>, users of the Web Services API will have rights to read and modify anything in the application. For more information about the security model and its restrictions, see the <i>IBM Rational Portfolio Manager Web Services API Guide</i>.

Rational Portfolio Manager *TeamMember*

The following variables are used to configure the behavior of the *TeamMember* interface.

Table 16. *TeamMember* Interface variables

Variables	Description
serverDisplayName	<ul style="list-style-type: none">• Type: String• Default value: (Empty)• Default WebSphere JNDI Mapping: com/ibm/rpm/serverDisplayName• Description: Server display name used by the Web Based User Interface.
showDebugConsole	<ul style="list-style-type: none">• Type: Boolean• Default value: False• Default WebSphere JNDI Mapping: com/ibm/rpm/showDebugConsole• Description: Used by the <i>TeamMember</i> interface to display a debug console.

Representational State Transfer (REST) Interface

The REST interface is used by the *TeamMember* user interface to access information from the Rational Portfolio Manager database. The following variables are used to configure the REST interface.

Table 17. REST Interface variables

Variables	Description
databaseName	<ul style="list-style-type: none">• Type: String• Default value: (Empty)• Default WebSphere JNDI Mapping: com/ibm/rpm/databaseName• Description: The name of the database used by the REST layer. This parameter is required for proper functioning of the <i>TeamMember</i> user interface. If your datasource configuration uses the following URL: jdbc:db2://myserver.com:50000/IBMRPM, then this parameter should contain the value: IBMRPM

Rational Portfolio Manager Client Broker

The following variables are used to configure the behavior of the Rational Portfolio Manager Client Broker.

Table 18. Rational Portfolio Manager Client Broker variables

Variables	Description
KeepAliveCount	<ul style="list-style-type: none">• Type: Integer• Default value: 10• Default WebSphere JNDI Mapping: com/ibm/rpm/KeepAliveCount• Description: Maximum number of messages to be kept alive to be sent to the client.
KeepAliveInterval	<ul style="list-style-type: none">• Type: Integer• Default value: 15• Default WebSphere JNDI Mapping: com/ibm/rpm/KeepAliveInterval• Description: Interval between each message kept alive in minutes. If enabled, ideal time is 15.
ConfigurationSource	<ul style="list-style-type: none">• Type: String• Default value: Environment• Default WebSphere JNDI Mapping: com/ibm/rpm/ConfigurationSource• Description: Configure where the database configuration will be read from. This setting affects the database connection used by the Rational Portfolio Manager Client only. This variable can contain either "files" or "environment" without the double quotes. If "files" is selected, then the Rational Portfolio Manager database configuration is read from the connectionmanager.ini file and the various connectionpool.ini files located in the deployed application. If "environment" is selected, then the datasource defined as "jdbc/RPMDATASOURCE" is used.

Rational Portfolio Manager integration with Rational ProjectConsole (PjC)

Rational ProjectConsole (PjC) is used to store information about the status of Rational Portfolio Manager in a data warehouse. The following settings are used by Rational Portfolio Manager to connect to the Rational ProjectConsole warehouse to extract information and produce reports on the Rational Portfolio Manager Client.

Table 19. ProjectConsole (PjC) Variables

Variables	Description
PjCHostName	<ul style="list-style-type: none"> • Type: String • Default value: (Empty) • Default WebSphere JNDI Mapping: com/ibm/rpm/PjCHostName • Description: Rational ProjectConsole host name address.
PjCPassword	<ul style="list-style-type: none"> • Type: String • Default value: (Empty) • Default WebSphere JNDI Mapping: com/ibm/rpm/PjCPassword • Description: Password for Rational ProjectConsole
PjCPort	<ul style="list-style-type: none"> • Type: String • Default value: (Empty) • Default WebSphere JNDI Mapping: com/ibm/rpm/PjCPort • Description: The Rational ProjectConsole server port number.
PjCProtocol	<ul style="list-style-type: none"> • Type: String • Default value: (Empty) • Default WebSphere JNDI Mapping: com/ibm/rpm/PjCProtocol • Description: The Rational ProjectConsole protocol to be used.
PjCUsername	<ul style="list-style-type: none"> • Type: String • Default value: (Empty) • Default WebSphere JNDI Mapping: com/ibm/rpm/PjCUsername • Description: Rational ProjectConsole username.
PjC_ALLOW_HTTP	<ul style="list-style-type: none"> • Type: String • Default value: (Empty) • Default WebSphere JNDI Mapping: com/ibm/rpm/PjC_ALLOW_HTTP • Description: Set to <i>true</i> if you want to accept http connections. If set to <i>false</i>, only https is accepted.

Rational Portfolio Manager E-Mail notifications

The Rational Portfolio Manager middleware can send e-mail notifications to Rational Portfolio Manager users. The following variables are used to configure how those e-mails are sent.

Table 20. E-Mail notifications variables

Variables	Description
AlertsOn	<ul style="list-style-type: none">Type: BooleanDefault value: TrueDefault WebSphere JNDI Mapping: com/ibm/rpm/AlertsOnDescription: Set to <i>true</i> if alerts are enabled, otherwise set to <i>false</i>.
Subject	<ul style="list-style-type: none">Type: StringDefault value: (Empty)Default WebSphere JNDI Mapping: com/ibm/rpm/SubjectDescription: Subject to be used in the messages.
sendIterationTimes	<ul style="list-style-type: none">Type: IntegerDefault value: 100Default WebSphere JNDI Mapping: com/ibm/rpm/sendIterationTimesDescription: Number of batches of messages to be fetched.
Sender	<ul style="list-style-type: none">Type: StringDefault value: (Empty)Default WebSphere JNDI Mapping: com/ibm/rpm/SenderDescription: Sender to be used in the messages.
EmailHost	<ul style="list-style-type: none">Type: StringDefault value: (Empty)Default WebSphere JNDI Mapping: com/ibm/rpm/EmailHostDescription: Host to be used while sending messages.
SendInterval	<ul style="list-style-type: none">Type: IntegerDefault value: (Empty)Default WebSphere JNDI Mapping: com/ibm/rpm/SendIntervalDescription: Time (in milliseconds) between each iteration.

Table 20. E-Mail notifications variables (continued)

Variables	Description
ServerName	<ul style="list-style-type: none"> Type: String Default value: (Empty) Default WebSphere JNDI Mapping: com/ibm/rpm/ServerName Description: The ServerName to the IP address of the Web server or the IBM Rational Portfolio Web context.
ConType	<ul style="list-style-type: none"> Type: String Default value: http Default WebSphere JNDI Mapping: com/ibm/rpm/ConType Description: The connection type set to http.

Rational Portfolio Manager Workflow and External Actions

The following variables are used to configure how the Rational Portfolio Manager middleware is used to poll the Rational Portfolio Manager database to execute the required Workflows and External actions.

Table 21. Workflow and External Actions variables

Variables	Description
ExternalActionTimeout	<ul style="list-style-type: none"> Type: Integer Default value: 60000 (1 minute) Default WebSphere JNDI Mapping: com/ibm/rpm/ExternalActionTimeout Description: Sets the maximum duration, in milliseconds, that the Rational Portfolio Manager will wait for external actions to be completed.
WorkflowPollingInterval	<ul style="list-style-type: none"> Type: Integer Default value: 60000 (1 minute) Default WebSphere JNDI Mapping: com/ibm/rpm/WorkflowPollingInterval Description: Sets the polling interval, in milliseconds, in which the Rational Portfolio Manager will verify for new external actions to be started.
WFSchedPollingInterval	<ul style="list-style-type: none"> Type: Integer Default value: 60000 (1 minute) Default WebSphere JNDI Mapping: com/ibm/rpm/WFSchedPollingInterval Description: Sets the polling interval, in milliseconds, in which the Rational Portfolio Manager will verify for scheduled processes to be started.

Rational Portfolio Manager integration with Rational ClearQuest

Table 22. Rational ClearQuest variables

Variables	Description
CQWebURL	<ul style="list-style-type: none"> Type: String Default value: http://localhost/cqweb/main Default WebSphere JNDI Mapping: com/ibm/rpm/cq/CQWebURL Description: ClearQuest Web server URL. This URL is used for the export task scenario from the Rational Portfolio Manager client. For example, http://localhost/cqweb/main.
CQUserName	<ul style="list-style-type: none"> Type: String Default value: Admin Default WebSphere JNDI Mapping: com/ibm/rpm/cq/CQUserName Description: ClearQuest super user name that is used for logging in to Rational ClearQuest.
CQPassword	<ul style="list-style-type: none"> Type: String Default value: /rLZt9RkL8s= (encrypted value of "" string) Default WebSphere JNDI Mapping: com/ibm/rpm/cq/CQPassword Description: ClearQuest super user password in encrypted format.
CQDBSet	<ul style="list-style-type: none"> Type: String Default value: (empty) Default WebSphere JNDI Mapping: com/ibm/rpm/cq/CQDBSet Description: Identifies the ClearQuest database set being used.
CQDatabase	<ul style="list-style-type: none"> Type: String Default value: SAMPL Default WebSphere JNDI Mapping: com/ibm/rpm/cq/CQDatabase Description: Identifies the Database used in the schema. <p>Note: The default value is only indicative and should be replaced by the actual Database used in the schema before deployment of the RPM CQ Web Services.</p>

Table 22. Rational ClearQuest variables (continued)

Variables	Description
CQSchedulerAutoStart	<ul style="list-style-type: none"> • Type: Boolean • Default value: True • Default WebSphere JNDI Mapping: com/ibm/rpm/cq/CQSchedulerAutoStart • Description: Used to set schedule synchronizer to auto start. If this value is set to <i>true</i>, the Rational Portfolio Manager ClearQuest Web Services will start the Schedule Synchronizer which would have remained inactive for a period of time greater than is specified in the parameter CQSchedulerInterval. Set this value to <i>false</i> to eliminate unnecessary logs in the case where the Rational ClearQuest integration is not installed.
CQSchedulerInterval	<ul style="list-style-type: none"> • Type: Integer • Default value: 60 • Default WebSphere JNDI Mapping: com/ibm/rpm/cq/CQSchedulerInterval • Description: Sets the schedule synchronizer interval frequency in minutes. It specifies the lapse of time in minutes during which the automatic scheduler remains inactive before it executes again. This parameter is not used if the CQSchedulerAutoStart parameter is set to <i>false</i>. If an invalid value is detected, the default value (60 minutes) is applied.
CQDocURLName	<ul style="list-style-type: none"> • Type: String • Default value: ClearQuest Web link • Default WebSphere JNDI Mapping: com/ibm/rpm/cq/CQDocURLName • Description: It is the URL name that is displayed in the Document portlet of the linked Scope Element. It contains the Web address of the linked ClearQuest records.

Chapter 8. Setting up the Rational Portfolio Manager client

After you create and configure the server, you can connect to the Rational Portfolio Manager client. The client runs on Windows platforms, only. You can install the Rational Portfolio Manager client using the Rational Portfolio Manager Installer file.

This chapter describes how to perform the following tasks:

- Downloading and installing the Rational Portfolio Manager client
- Configuring the client
- Starting the client

Downloading and installing the client

There are two ways to install the client: by using the `clients.html` page or by installing with the `.exe` or `.msi` version of the clients from the `\rpm_install_directory\Client_Installer` directory.

Installing from the client download page

To install the client from the client download page:

1. Open a browser and go to `http://hostname:portnumber/IBMRPM/clients.html`.
2. Select the standalone version or the browser plug-in version of the client.
3. Click **Run** to start the installation.
4. Follow the on-screen prompts to complete the installation.

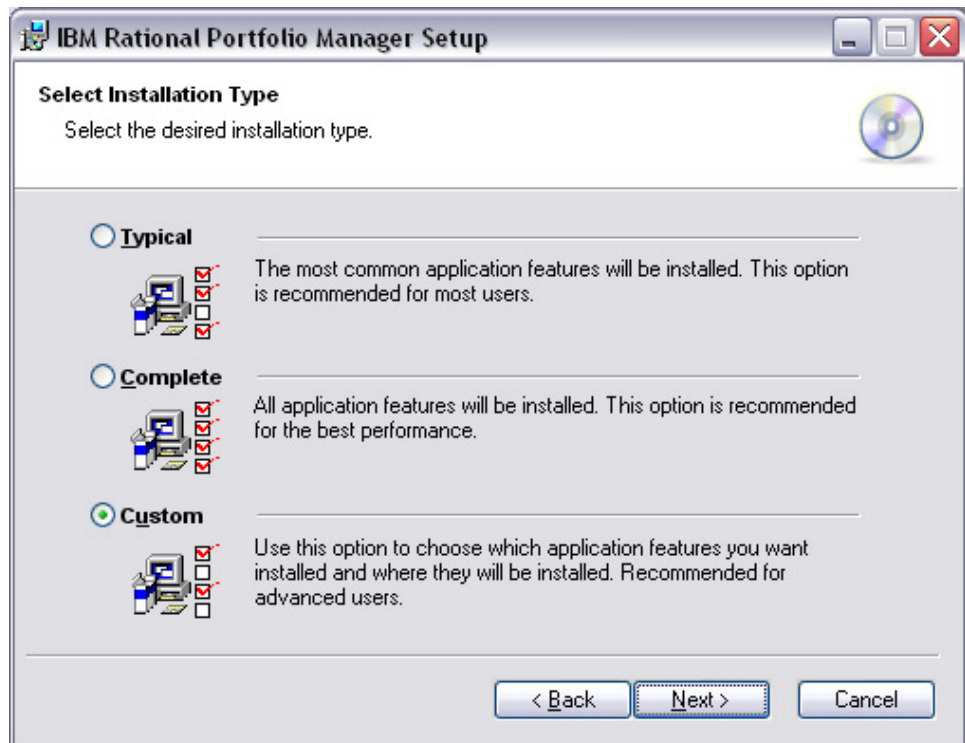
Installing from the client_installer directory

To install the client from the `client_installer` directory:

1. Navigate to the `\rpm_install_dir\Client_Installer` directory.
2. To install, run the standalone version of the client, **InstallIBMRPMStdIn** (.exe or .msi), or the plug-in version, **InstallIBMRPMPlugIn** (.exe or .msi) by double-clicking the file name. This will launch the Rational Portfolio Manager welcome page.



3. Make sure that all other applications are closed, then click **Next** to begin the installation.
4. Review the Rational Portfolio Manager License Agreement, click **I accept the license agreement**, and click **Next**.
5. The next screen displays the default destination folder for this installation. Click **Next** to continue.



6. Select **Custom** to install the essential Rational Portfolio Manager_ITray feature, and click **Next**. This feature is included in the client installation but is not selected by default. The Rational Portfolio Manager Tray is a background application providing automatic notifications of Rational Portfolio Manager workflow processes to your workstation desktop, whether you are logged on to Rational Portfolio Manager or not. The only prerequisite is that your workstation be connected to your corporate Local Area Network (LAN) or the Internet.
7. In the Select Features window, click on the drive icon located next to IBM Rational Portfolio Manager and make sure that **Entire features will be installed...** is selected, and click **Next**.
8. From this point forward, pay attention to the on screen prompts until the installation is complete.

Starting the client

You can start the Rational Portfolio Manager client from the Desktop or from the **Start** menu.

- To start the client from the Desktop, double-click the **Rational Portfolio Manager** icon on your desktop.
- To start the IBM Rational Portfolio Manager standalone client, from the **Start** menu, click **Start > All Programs > IBM Rational > IBM Rational Portfolio Manager > Rational Portfolio Manager**.
- To start the IBM Rational Portfolio Manager client for the plug-in version, click **Start > All Programs > IBM Rational > IBM Rational Portfolio Manager > Rational Portfolio Manager Plug-in**.

Configuring the client

You must configure your client before you can begin using IBM Rational Portfolio Manager.

1. Double-click the **IBM Rational Portfolio Manager** icon on your desktop. The IBM Rational Portfolio Manager client logon window opens.
2. Click **Configuration** to open the Profile Configuration window.

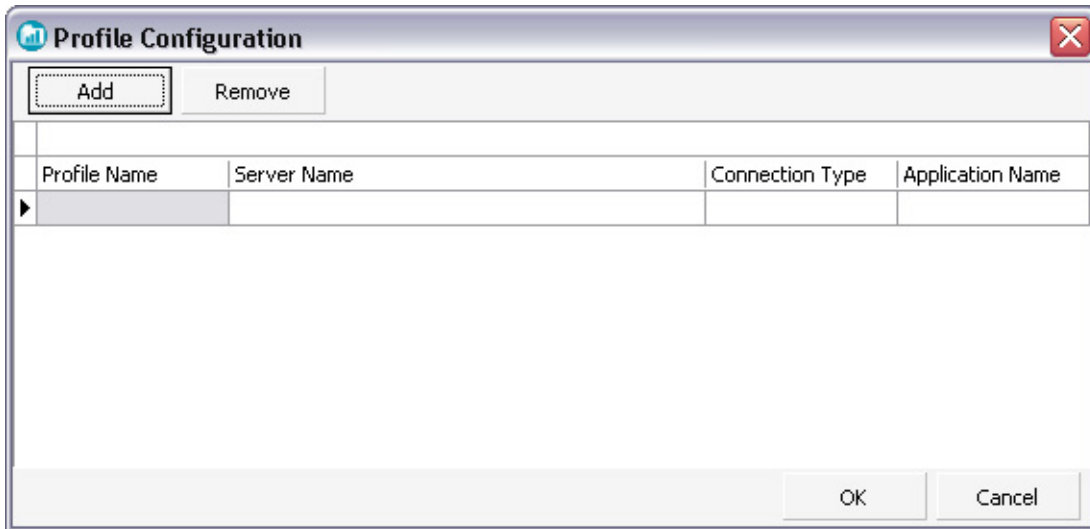


Figure 2. Client configuration fields

3. You will need to provide values for each field.
 - a. In the **Profile Name** field, enter any name that will help you to identify the server that you want to log in to.
 - b. In the **Server Name** field, enter *application_server_host_name:port_number/context_root*. For example, *rpmhost.mycompany.com:7080/IBMRPM*
 - c. The default connection type is HTTP. If the Web server has been configured to use HTTPS, you can specify this in the **Connection Type** field.
 - d. Enter IBMRPM in the **Application Name** field.
 - e. Click **OK** to save the settings. This will take you back to the logon window as shown in the next figure.

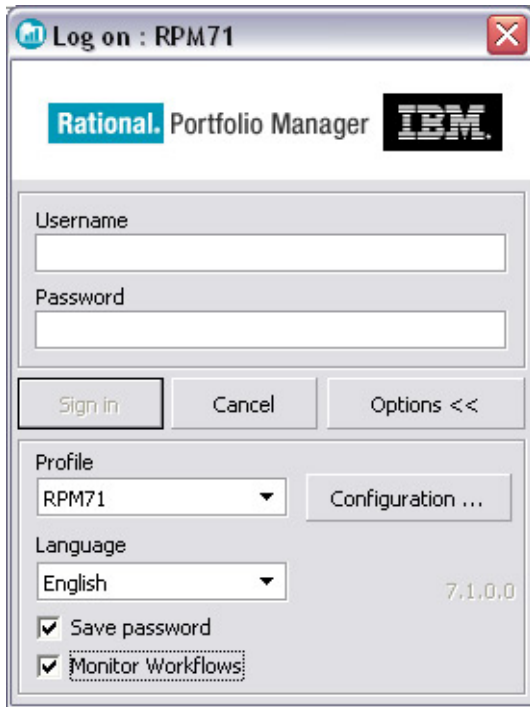


Figure 3. Logon screen for the IBM Rational Portfolio Manager client

4. In the **Profile** field, click the drop-down menu and select the server profile you want that corresponds to an entry in the configuration window above.
5. For new setups, there are no configured users for this repository. You must log in as administrator using the password `ibmrpm`. Click the **Save password** check box if you want. Then click **Sign in**.

Uploading RUP 2006 HTML contents to the Web Server

On the Quick Start CD, locate the RUP2006.zip file which contains static contents (html) that can be extracted and deployed on any Web Server.

To define the RUP2006 home address:

1. Select **Application Administration** from the navigation bars.
2. Select the **General** tab.
3. From the **Process Integration**, click the **Ellipsis** icon for **RUP[®] 2006 Home Address**.
4. Enter the absolute URL address where you deployed RUP2006 on your Web Server. For example:

`http://HostName or IP:Port Number/webapp/IBMRPM/RUP2006`

Note: Rational Unified Process[®] links can be attached to tasks or projects as URL links. When the link is executed, Rational Portfolio Manager concatenates the URL address from the attachment properties and the root from the Application Administration to point to the proper URL address.

Chapter 9. Rational Portfolio Manager migration

Before you proceed with the migration, you must back up the Rational Portfolio Manager database. Make sure that total recovery of the database is possible from this backup. All database migration instructions listed must be done by the instance owner and the user who connects to the database from the Web server based on the scenario that you will use for your current Rational Portfolio Manager installation.

Note: If your migration was unsuccessful, you will need to restore your old database, check the log files that require troubleshooting, and restart the migration steps.

Migrating IBM Rational Portfolio Manager database from version 6.2.x.x or 7.0.x.x to version 7.1.0.0 on DB2

This chapter describes how to migrate the Rational Portfolio Manager database from version 6.2.x.x or 7.0.x.x to version 7.1.0.0 on DB2.

Prerequisites for migration

- A successful Rational Portfolio Manager version 6.2.x.x or 7.0.x.x installation.
- Rational Portfolio Manager version 7.1.0.0 migration package.
- DB2 version 8.1 FP 14 (Rational Portfolio Manager 7.1 does not support DB2 version 7.2 and 9.1)
- Valid supported platform, for a list see “Latest supported operating environments” on page 4.

Definitions of terms used in this chapter and installation scenarios

Have the following information available before beginning the installation:

DBNAME

The name of the Rational Portfolio Manager database

DB_USER

The instance owner. The instance owner is the DB2 Instance that is defined as logical database server environment.

DB_USER_PWD

Password for the instance owner

CON_USER

The username of the user who is connecting to Rational Portfolio Manager from the Web application. This is the user who connects to the database from the Web application and has been granted rights to update, insert, delete, select on database tables. A Connected User can also be the instance owner.

CON_USER_PWD

The password for the connected user

You can migrate the database using the schema of your choice:

- **Scenario 1:** The instance owner name is used to connect to the database from the IBM Rational Portfolio Manager Web application.

All tables are created using the user name of the instance owner as schema. Table aliases are equivalent to the instance owner name and do not need to be created. Schema names are also equivalent to the instance owner.

- **Scenario 2:** The connected user is the operating system user who will connect to the database from the Rational Portfolio Manager Web application.

All tables are created using the user name of the instance owner as schema. Therefore, aliases are created for database tables, where the alias name is the same as the user name for the connected user. Schema names are equivalent to the instance owner name.

Note: You should use the scenario that you are using with your current Rational Portfolio Manager database.

The migration process uses a Korn shell script that supplies all corresponding values for parameters. A log file is created for each step. You need to look at the log file if the migration is not successful. There is one main log file, called DB_CHECK.log, that contains a result report that is displayed at the end of the migration. Check the log file to verify that the migration was successful or if any steps failed.

The log files are in the location specified in the execution plan. There is one mainscript called migration_7100 that performs all steps.

Setting file permissions

Before starting the migration, add execute permissions to all files shown in the table below that will be used by the migration script. If you do not add execute permission on any of these files, the migration will fail.

Table 23. Permission files

Path	File
\${MIGRATION_ROOT}/Database/DB2/Unix	migration_7100, install_func
\${MIGRATION_ROOT}/Database/DB2/Unix/migration	alias, db_cfg, drop_triggers70, grants, reorgstats
\${MIGRATION_ROOT}/Database/DB2/Unix/csp_{OS}	bindall, dropsp

To add execute permission to all files, go to each directory from each path shown in the above table and type:

```
chmod +x *
```

Configuring the database migration execution plan

Modify the settings in the exec_prep.sql file found in \${MIGRATION_ROOT}/Database/DB2/Unix as shown in the table below. During the migration, the migration script queries this file to run the steps with the predefined information, it then records and updates any success and failures, and creates a table called exec_prep that will be used for support purposes. This file contains the following information:

- Steps run during the migration
- Package information

- Location of log files
- Instance owner usernames
- Connected users
- Date the script is executed
- Description of error message

Note: It is mandatory to edit this file. Failure to do so will cause the migration to fail.

Note: Make sure when setting values to remove the % notations.

Table 24. Settings for the execution plan

Setting	Notes
%OS_TYPE%	Set this value by replacing \${OS_TYPE} with your operating system. Possible values are: <ul style="list-style-type: none"> • Linux • AIX • Sun OS Note: Values are case-sensitive.
%PKG_DIR%	Set this value by replacing %PKG_DIR% with the path to the directory where the install script is located. For example, \${MIGRATION_ROOT}/Databases/DB2/Unix. Note: Make sure you have execute rights on all the folders you will be pointing to.
%LOG_DIR%	Set this value by replacing %LOG_DIR% with the location where the log files will be created. Note: Make sure you have execute rights on all the folders you will be pointing to.
%CON_USER	<ul style="list-style-type: none"> • If you are using scenario 1, set this value by replacing %CON_USER% with an empty string, ''. • If you are using scenario 2, set this value by replacing %CON_USER% with the username of the connected user.
%DB_USER%	Set this value by replacing %DB_USER% with the instance owner username.

Migration steps

Before starting the migration, you must edit the file `staging_tb_spaces.sql` file with the path where the tablespaces for the internal staging tables will be created. The file is in the `${MIGRATION_PACKAGE}/Databases/DB2/Unix/migration` directory.

Note: Make sure that you have a backup of your current library files before starting the migration because the file `ibmrpm` will overwrite them based on the scenario that is used.

1. Go to `${MIGRATION_HOME}/Database/DB2/Unix` and run:

- For scenario 1:

```
migration_7100 DBNAME DB_USER_PWD
```

- For scenario 2:
migration_7100 DBNAME DB_USER_PWD CON_USER_PWD

Batch process steps used when migrating from version 6.2.x.x

The following list includes the steps and names of log files created for each step of the migration process:

1. Checks for the version number in the Rational Portfolio Manager database table to decide from which Rational Portfolio Manager version the migration must be done.
2. Stops and starts Rational Portfolio Manager database.
3. Drops aliases for the Rational Portfolio Manager table if using scenario 2 > drop_alias.log
4. Starts the migration process from 6.2.x.x then migrates to 7.0.0.0 then to 7.1.0.0:
 - V6.2.0.0 > migration6200_70.log
 - V6.2.1.1 > migration6211_70.log
 - V6.2.1.2 > migration6212_70.log
 - V6.2.2.3 > migration6223_7100.log
5. Creates buffer pools for internal staging tables > staging_bufpool.log
6. Creates table spaces for internal staging tables > staging_tb_spaces.log
7. Drops the triggers of the Rational Portfolio Manager database > drop_triggers70.log
8. Starts the migration process from 7.0.0.0 to 7.1.0.0:
 - V7.0.0.0 > migration70_7100.log
 - V7.0.1.1 > migration7011_7100.log
 - V7.0.2.2 > migration7022_7100.log
 - V7.0.3.3 > migration7033_7100.log
 - V7.0.4.4 > migration7044_7100.log
 - V7.0.5.5 > migration7055_7100.log
9. Drops temporary tables created during the migration > drop_tmptables.log
10. If you used scenario 2, it creates aliases for Rational Portfolio Manager tables > alias.log
11. If you used scenario 2, it grants the connected user rights to access Rational Portfolio Manager tables > grants.log
12. Inserts default records to internal staging tables > int_staging.log
13. Creates triggers for Rational Portfolio Manager v 7.1.0.0 > triggers.log
14. Runs statistics on tables > reorgstats.log
15. Drops all Rational Portfolio Manager stored procedures > dropsp.log
16. Creates stored procedure for v7.1.0.0 > createsp.log
17. Binds Rational Portfolio Manager v 7.1.0.0 code > bindall.log
18. Runs stored procedure to update ClearQuest attributes > cq_atr_insert.log
19. Runs some stored procedures to insert records into Rational Portfolio Manager database tables > custom_pivot_initdb.log
20. Generates a report that contains migration to Rational Portfolio Manager 7.1.0.0 results > DB_CHECK.log

Note: In the log files generated through the migration, you might see the following SQLSTATE numbers. These can be ignored because they are only warnings:

- SQLSTATE=02000 (...the result set of the query is an empty table)
- SQLSTATE=42704 (...is an undefined name)

Note: In the case that a server error occurs during any of the installation steps, the migration will exit.

Batch process steps used when migrating from version 7.0.x.x

The following list includes the steps and the names of log files created for each step of migration process:

1. Checks for the version number in the Rational Portfolio Manager database table to decide from which Rational Portfolio Manager version the migration must be done.
2. Stops and starts the Rational Portfolio Manager database.
3. If using scenario 2, drops aliases for the Rational Portfolio Manager table > drop_alias.log
4. It starts the migration process from 7.0.x.x to 7.0.1.1, 7.0.2.2, 7.0.3.3, 7.0.4.4, 7.0.5.5, and then to 7.1.0.0:
 - V7.0.0.0 > migration70__7100.log
 - V7.0.1.1 > migration7011_7100.log
 - V7.0.2.2 > migration7022_7100.log
 - V7.0.3.3 > migration7033_7100.log
 - V7.0.4.4 > migration7044_7100.log
 - V7.0.5.5 > migration7055_7100.log
5. Creates buffer pools for internal staging tables > staging_bufpool.log
6. Creates tablespaces for internal staging tables > staging_tb_spaces.log
7. Drops the triggers of the Rational Portfolio Manager database > drop_triggers71.log
8. Migrates to 7.1.0.0 > migration70_7100.log
9. Drops temporary tables created during the migration > drop_tmptables.log
10. If you used scenario 2, it creates aliases for Rational Portfolio Manager tables > alias.log
11. If you used scenario 2, it grants the connected user rights to access the Rational Portfolio Manager tables > grants.log
12. Inserts defaults to internal staging tables > int_staging.log
13. Creates triggers for Rational Portfolio Manager v 7.1.0.0 > triggers.log
14. Runs statistics on tables > reorgstats.log
15. Drops all Rational Portfolio Manager stored procedures > dropsp.log
16. Creates stored procedure for v7.1.0.0 > createsp.log
17. Binds Rational Portfolio Manager v 7.1.0.0 code > bindall.log
18. Runs stored procedure to update ClearQuest attributes > cq_atr_insert.log
19. Runs some stored procedures to insert records into Rational Portfolio Manager database tables > custom_pivot_initdb.log
20. Generates a report that contains migration to Rational Portfolio Manager 7.1.0.0 results > DB_CHECK.log

Note: In the log files generated by the migration script, you might see the following SQLSTATE numbers. These can be ignored because they are only warnings:

- SQLSTATE=02000 (...the result set of the query is an empty table)
- SQLSTATE=42704 (...is an undefined name)

Migrating IBM Rational Portfolio Manager database from version 6.2.x.x or 7.0.x.x to version 7.1.0.0 on Oracle

This section describes how to migrate the Rational Portfolio Manager database from version 6.2.x.x, 7.0.x.x to version 7.1.0.0 on Oracle.

It is also possible to run the migration scripts from a remote machine. In this case, you need to make sure you can connect to the remote database using SQLplus.

Note: Rational Portfolio Manager 7.1.0.0 migration script uses sqlplus located under \${ORACLE_HOME}/bin directory and jar.exe located under \${ORACLE_HOME}/jdk/bin directory and imp.exe located under %ORACLE_HOME%\bin directory. Therefore, you should run the migration scripts on a system that has these utilities.

Prerequisites for migration

- A successful Rational Portfolio Manager version 6.2.x.x, or 7.0.x.x installation
- Rational Portfolio Manager version 7.1.0.0 migration package
- sqlplus, jar, and imp, utilities for running Oracle migration scripts.
- Valid supported platform, for a list see “Latest supported operating environments” on page 4.

Migration steps

The Rational Portfolio Manager migration to version 7.1 consists of the following steps:

1. Migrating Rational Portfolio Manager schema owner
2. Creating staging user
3. Creating common reporting (comrpt) user
4. Migrating Rational Portfolio Manager connected user (if a connected user is used)

Note: The default password for staging user and comrpt users are staging and comrpt. Change these passwords after the migration is complete.

Steps to migrate Rational Portfolio Manager schema owner

To migrate the Rational Portfolio Manager schema owner:

1. Stop the application server associated with the Rational Portfolio Manager database
2. Shut down the Rational Portfolio Manager database
3. Start up the Rational Portfolio Manager database
4. Tablespaces used in the migration scripts are:
 - PMO_DATA_64K for tables
 - PMO_LOB_64K for lobs
 - PMO_IDX_64K for indexes

Note: If the tablespaces in your Rational Portfolio Manager database are different from the above mentioned names, you need to change the name of the tablespaces in the migration scripts in the following files:

```

${MIGRATION_HOME}/Database/Oracle/scripts/migration6200_70.sql
${MIGRATION_HOME}/Database/Oracle/scripts/migration6211_70.sql
${MIGRATION_HOME}/Database/Oracle/scripts/migration6212_70.sql
${MIGRATION_HOME}/Database/Oracle/scripts/migration6223_7100.sql
${MIGRATION_HOME}/Database/Oracle/scripts/migration70_7100.sql
${MIGRATION_HOME}/Database/Oracle/scripts/migration7011_7100.sql
${MIGRATION_HOME}/Database/Oracle/scripts/migration7022_7100.sql
${MIGRATION_HOME}/Database/Oracle/scripts/migration7033_7100.sql
${MIGRATION_HOME}/Database/Oracle/scripts/migration7044_7100.sql
${MIGRATION_HOME}/Database/Oracle/scripts/migration7055_7100.sql

```

5. Open a shell window and navigate to `${MIGRATION_HOME}/Database/Oracle` directory and run the `mig_owner.sh` script.

The migration script will run and prompt you with a series of questions.

6. Have you performed pre_migration steps? (y/n) Before the migration you need to back up your database. If you have a backup, answer y to continue. If you do not have a backup, answer n and no migration will be performed
7. The script uses the `${ORACLE_HOME}` environment variable of the machine that you are running the script from. Enter the required information when prompted.
8. Is your RPM database installed on this machine? (y/n)

If you answer n, you are prompted to enter:

- TNS string
- IBMRPM schema owner
- IBMRPM schema owner password

If you answer y, you are prompted to enter:

- ORACLE_SID value
- IBMRPM schema owner
- IBMRPM schema owner password

9. After entering the previous information, the script checks the version of the Rational Portfolio Manager database that you currently have and prompts you to validate it.
 - If the Rational Portfolio Manager database version is correct, answer y.
 - If you answer n, you will be prompted to enter the correct version of your Rational Portfolio Manager database.

Note: It is important to enter the version number that corresponds to your Rational Portfolio Manager Database in the following format: 6.x.x.x or 7.x.x.x

10. Are you sure you want to migrate your database now? (y/n)
To start the migration, answer y..

11. At the end of migration you will be provided with a migration report. The migration report includes the following information:

- The current version of the database, which at this level must be 7.1.0.0.
- The number of invalid objects in the database; the expected result is 0.
- The number of objects needed for 7.1 and each object type with its status in the migrated Rational Portfolio Manager database.

Note: Comparing the number of objects for each object type in the `YOUR_RPM_DATABASE` and `NUMBER_OF_OBJECTS_MUST_BE`

columns, helps you to verify if the migration was successful. Equal values in both columns indicate a successful migration.

12. Migration log files are created under the `${MIGRATION_HOME}/Database/Oracle/logs` folder. Look at the log files to see if migration was successful.
13. Stop Oracle listener.
`${ORACLE_HOME}/bin/lsnrctl stop`
14. `LevelingLib.so` located under `${MIGRATION_HOME}/Database/Oracle/leveling/oracle/[your OS]/[your Oracle version]` folder (10g folder if your Oracle version is 10g) must be manually copied to the correct location on the database server.
15. Start the Oracle listener.
`${ORACLE_HOME}/bin/lsnrctl start`

Steps to create the staging user

Creating the staging user is a mandatory step in Rational Portfolio Manager 7.1 migration. It is done by running the `install_staging.sh` file. This script creates the staging user and its default password is `staging`. After the installation is finished, you can change the password. Follow the steps below to install staging user:

1. Edit `staging_tb_spaces.sql` file located in the `${MIGRATION_HOME}/Database/Oracle/plbddl` folder by updating the default path to the path where you want the tablespaces to be created.
2. Open a shell window and navigate to the `${MIGRATION_HOME}/Database/Oracle` directory and run the `install_staging.sh` script.
The migration script runs and prompts you with a series of questions:
 3. Have you performed the `pre_install` step and edited `staging_tb_spaces.sql`? (y/n) If yes, type `y` to continue. If no, type `n` so that no installation will be performed, and edit the `staging_tb_spaces.sql` file, and run the `install_staging.sh` script again.
 4. The script uses the `${ORACLE_HOME}` environment variable of the machine that you are running the script from. Enter the required information when prompted.
 5. Is your RPM database installed on this machine? (y/n)
 - If you answer `n`, you are prompted to enter:
 - TNS string
 - IBMRPM schema owner
 - IBMRPM schema owner password
 - SYS password
 - If you answer `y`, you are prompted to enter:
 - ORACLE_SID value
 - IBMRPM schema owner
 - IBMRPM schema owner password
 - SYS password
 6. Are you sure you want to start the install now? (y/n)
To start the installation, answer `y`.
 7. Log files are created in the `${MIGRATION_HOME}/Database/Oracle/logs` folder. Look at the log files to see if scripts ran successfully.

Creating common reporting (comrpt) user

Creating the common reporting user is a mandatory step in Rational Portfolio Manager 7.1 installation, and it is done by running the `install_comrpt.sh` file. This script creates the `comrpt` user and its default password is `comrpt`. After the installation is finished you can change the password.

Common reporting uses the following tablespaces:

- `STG_TEMP`
- `TB_STAG_MAIN`
- `TB_STAG_ADMIN`
- `TB_STAG_RES`
- `TB_STAG_LOBS`
- `TB_STAG_INDEX`
- `TB_STAG_CDOY`

Before starting the `comrpt` installation, make sure that these tablespaces have already been created in your database before executing this script. If you are following the chronological order of this installation, the tablespaces have already been created in “Steps to create the staging user” on page 126 that creates the staging user. If these have not yet been created, edit the `staging_tb_spaces.sql` file located in the `${MIGRATION_HOME}/Database/Oracle/plbddl` folder by changing the default paths to the paths where you want the tablespaces to be created. Login to `sqlplus` as `sys` and run `staging_tb_spaces.sql` script.

Note: There is no specific path required for tablespaces, however, the default path that you specify for tablespaces must be a valid path on your machine.

1. Open a shell window, navigate to `${MIGRATION_HOME}/Database/Oracle` directory, and run the file.

The script runs and prompts you with a series of questions:

2. The script uses the `${ORACLE_HOME}` environment variable of the machine from which you are running the script. Enter the required information when prompted.
3. Is your Rational Portfolio Manager database installed on this machine?
 - If you answer `n`, you are prompted to enter:
 - TNS string
 - IBMRPM schema owner
 - IBMRPM schema owner password
 - SYS password
 - If you answer `y`, you are prompted to enter:
 - `ORACLE_SID` value
 - IBMRPM schema owner
 - IBMRPM schema owner password
 - SYS password
4. Are you sure you want to start the installation now? Answer `y` to start the installation.
5. Log files are created in the `${MIGRATION_HOME}/Database/Oracle/logs` folder. Look at the log files to see if scripts ran successfully.

Steps to migrate Rational Portfolio Manager connected user

Because staging and comrpt users have been created, the connected user must be updated to be able to connect to these two users. This is done by running `mig_con_user.sh`. This step is optional but it must be performed if you are using the connected user. To update the connected user:

1. Open a command prompt window, change the directory to `${MIGRATION_HOME}/Database/Oracle`, and run the `mig_con_user.sh` script.
The migration script runs and prompts you with a series of questions.
2. The script uses your `${ORACLE_HOME}` environment variable of the machine from which you are running the script. Enter the required information when prompted.
3. Is your RPM database installed on this machine? (y/n)
 - a. If you answer n, you are prompted to enter:
 - TNS string
 - IBMRPM schema owner
 - IBMRPM schema owner password
 - b. If you answer y, you are prompted to enter:
 - Verify the ORACLE_SID value
 - IBMRPM schema owner
 - IBMRPM schema owner password
4. Enter the Rational Portfolio Manager connected user name when prompted.
5. Enter the Rational Portfolio Manager connected user password when prompted.
6. Enter the staging password when prompted.
7. Enter comrpt password when prompted, the default password is comrpt if you have not changed it.
8. Enter the password for sys user when prompted.
9. Are you sure you want to migrate your connected user now? (y/n)
To start the migration, answer y.
10. Migration log files are created under `${MIGRATION_HOME}/Database/Oracle/logs` folder. Look at the log files to see if migration was successful.

Migrating IBM Rational Portfolio Manager database from version 7.1.0.0 or 7.1.0.1 to 7.1.1.1

Before you begin

Before you proceed with the migration, you must back up the Rational Portfolio Manager database. Make sure that total recovery of the database is possible from this backup. All database migration instructions listed must be done by the instance owner and the user that connects to the database from the Web server based on the scenario that you will use for your current Rational Portfolio Manager installation.

Note: If your migration was unsuccessful, you need to restore your old database, check the log files that require troubleshooting, and restart the migration steps.

Migrating IBM Rational Portfolio Manager on DB2 for the UNIX system

This section describes how to migrate the Rational Portfolio Manager database from version 7.1.0.0 or 7.1.0.1 to version 7.1.1.1 on DB2 for the UNIX system.

Prerequisites for migration

- A successful Rational Portfolio Manager version 7.1.0.0 or 7.1.0.1 installation
- Rational Portfolio Manager version 7.1.1.1 migration package
- DB2 v 8.2

Definition of terms used in this section

- **DBNAME:** The name of the Rational Portfolio Manager database.
- **DB_USER:** The instance owner. The instance owner is the DB2 Instance that is defined as the logical database server environment.
- **DB_USER_PWD:** Password for the instance owner.
- **CON_USER:** The username of the connected user who is connecting to Rational Portfolio Manager from the Web application. This is the user who connects to the database from the Web application and has been granted rights to update, insert, delete, select on database tables. A Connected User can also be the instance owner.
- **CON_USER_PWD:** The password for the connected user.

You can migrate the database using the schema of your choice:

- **Scenario 1:** The instance owner name is used to connect to the database from the IBM Rational Portfolio Manager Web application. All tables are created using the user name of the instance owner as schema. Table aliases are equivalent to the instance owner name and do not need to be created. Schema names are also equivalent to the instance owner.
- **Scenario 2:** The connected user is the operating system user who will be connecting to the database from the Rational Portfolio Manager Web application. All tables are created using the user name of the instance owner as schema. Therefore aliases are created for database tables, where the alias name is the same as the user name for the connected user. Schema names are equivalent to the instance owner name.

Note: You should use the scenario that you are using with your current Rational Portfolio Manager database.

The migration process uses a Korn shell script to supply all corresponding values for parameters. A log file is created for each step that you might need to look at if the migration is not successful. There is one main log file called `DB_CHECK.log` that contains a result report that is displayed at the end of the migration. Refer to the log file to verify that the migration was successful or if any steps failed.

The log files are located in the location specified in the execution plan. There is one main script called `migration_7111` which carries out all steps.

Setting file permissions

Before starting the migration, add execute permissions to all files shown in the table below that will be used by the migration script. If you do not add execute permission on any of these files the migration will fail.

Table 25. Permission files

Path	File
{MIGRATION_HOME}/Database/DB2/Unix	migration_7111, install_func
{MIGRATION_HOME}/Database/DB2/Unix/migration	alias, drop_triggers70, grants, reorgstats, dw_migration, refnum_update
{MIGRATION_HOME}/Database/DB2/Unix/csp_{OS}	bindall, dropsp

To add execute permission to all files, go to each directory from each path shown in the above table and type:

```
chmod +x *
```

Configuring the database migration execution plan

Modify the settings in the `exec_prep.sql` file found in `{MIGRATION_HOME}/Database/DB2/Unix` as shown in the table below. During the migration, the migration script uses this file to run the steps with predefined information, it then records and updates any success and failures and creates a table called `exec_plan` that will be used for support purposes. This file contains the following information:

- Steps run during the migration
- Package location information
- Location of log files
- Instance owner username
- Connected user
- Date the script is executed
- Description of error messages

Note: It is mandatory to edit this file, failure to do so causes the migration to fail.

Note: Make sure to remove the % notations when setting values.

Table 26. Settings for the execution plan

Setting	Notes
%OS_TYPE%	Set this value by replacing %OS_TYPE% with your operating system. Possible values are: <ul style="list-style-type: none"> • Linux • AIX • SunOS Note: Values are case-sensitive.
%PKG_DIR%	Set this value by replacing %PKG_DIR% with the path to the directory where the <code>migration_7111</code> script is located. For example, <code>{MIGRATION_HOME}/Databases/DB2/Unix</code> . Note: Make sure you have full execute rights on all the folders you will be pointing to.

Table 26. Settings for the execution plan (continued)

Setting	Notes
%LOG_DIR%	Set this value by replacing %LOG_DIR% with the location where the log files will be created. Note: Make sure you have full execute rights on all the folders you will be pointing to.
%CON_USER	<ul style="list-style-type: none"> • If you are using scenario 1, set this value by replacing %CON_USER% with an empty string, for example, ''. • If you are using scenario 2, set this value by replacing %CON_USER% with the username of the connected user.
%DB_USER%	Set this value by replacing %DB_USER% with the instance owner username.

Migration steps

Note: Make sure that you have a backup of your current library file before starting the migration because the file `ibmrpm.so` will be overwritten.

1. Go to `${MIGRATION_HOME}/Database/DB2/Unix` and run:

- For scenario 1:
`./migration_7111 DBNAME DB_USER_PWD`
- For scenario 2:
`./migration_7111 DBNAME DB_USER_PWD CON_USER_PWD`

Steps used when migrating from version 7.1.x.x

The following list includes the steps and the names of log files created for each step of migration process:

1. Checks for the version number in the Rational Portfolio Manager database table to decide from which Rational Portfolio Manager version the migration must be done.
2. Stops and starts the Rational Portfolio Manager database.
3. If using scenario 2, drops aliases for the Rational Portfolio Manager table > `drop_alias.log`
4. Starts the migration process.
5. Drops the triggers of the Rational Portfolio Manager database > `drop_triggers70.log`
6. Migrates to v 7.1.1.1 > `migration7100_7111.log`
7. If you used scenario 2, creates aliases for Rational Portfolio Manager tables > `alias.log`
8. If you used scenario 2, grants the connected user rights to access Rational Portfolio Manager tables > `grants.log`
9. Creates triggers for Rational Portfolio Manager v 7.1.1.1 > `triggers.log`
10. If Rational Portfolio Manager data warehouse has been installed inside Rational Portfolio Manager database, updates data warehouse tables, recreates the staging and data warehouse views.

Note: For information about Rational Portfolio Manager data warehouse installation, refer to *IBM Rational Portfolio Manager Installation and Upgrade Guide*.

11. Runs statistics on tables > reorgstats.log
12. Drops all Rational Portfolio Manager stored procedures > dropsp.log
13. Creates stored procedures for v 7.1.1.1 > createsp.log
14. Binds Rational Portfolio Manager v 7.1.1.1 code > bindall.log
15. Generates a report that contains migration to Rational Portfolio Manager 7.1.1.1 results > DB_CHECK.log

Note: In the log files generated through the migration you might see the following SQLSTATE numbers. These can be ignored because they are only warnings:

- SQLSTATE=02000 (...the result set of the query is an empty table)
- SQLSTATE=42704 (...is an undefined name)

Note: In the case that an error occurs during any of the installation steps, the migration will exit.

Earned Value enablement

If you are using the Earned Value functionality of IBM Rational Portfolio Manager and you want the values to be updated on a regular basis for all projects, you can schedule a job that executes the stored procedure call to update these values. You can use the `rollup_ev.sql` file located in the `${MIGRATION_HOME}/Database/DB2/Unix/migration` directory by editing the file and adding the correct parameters for the database name, username, and password. Username and password can be the username and password of the instance owner or the connected user, depending on the database scenario you are using. This file connects to the Rational Portfolio Manager database specified and calls the earned value stored procedure to update Earned Value for all projects.

Note: It is a good practice to run the scheduled job during off hours when system usage is minimal.

Importing the new default layouts for common reporting reports (optional)

For information about Importing data warehouse common reporting samples into Rational Portfolio Manager, see Chapter 16, "Importing data warehouse common reporting samples into Rational Portfolio Manager," on page 179.

Recommendations to improve the initial load for Data Warehouse

For clients with a large amount of legacy data (more than 1000 projects), the initial load to transfer Rational Portfolio Manager data into the Staging database and further to the Data Warehouse might take a long time. To speed up the initial load, use the following steps to manually load the data from Portfolio Manager to Staging and then to Data Warehouse.

Note: The process uses a Korn shell script to supply all corresponding values for parameters. Make sure that all script files have execute permissions.

Note: All log files generated by the following scripts are located under `${MIGRATION_HOME}/Database/DB2/Unix/migration/RPMDW/logs`. Refer to this directory to check the log files.

Note: To improve the performance of ETL or to improve the initial load of ETL, it is important to apply the correct parameters to the ETL stored procedure which loads data from the Rational Portfolio Manager tables into the staging tables. The stored procedure deletes all data from the staging tables before it starts the loading process. The deleting process might take a long time, depending on the amount of data in the tables, which will result in the DB2 transaction log files getting full. For the same reason, to get a much faster process time, we truncate the data instead of deleting them.

Here is the stored procedure name and its parameters:

`SP_LOAD_STAGING(project_ids, resource_ids, bitflag, rec_user)`

1. The `project_ids` and `resource_ids` parameters are for future use. You can pass NULL for these parameters.
2. The most important parameter is the `bitflag` parameter. It controls how to clear up the data and what will be loaded into the staging tables. The value of this parameter must be an integer and only the first three bits are used:
 - Pass the value 1, to have the stored procedure load all Rational Portfolio Manager data into the staging tables after deleting the old data.
 - Pass the value 2, to have the stored procedure load only the selected or changed Rational Portfolio Manager projects and their related data (including the assigned resources and the system administration data) into the staging tables after deleting the old data.
 - Pass the value 4, to have the stored procedure truncate the staging tables to clear them without loading the Rational Portfolio Manager data into the staging tables. This approach is the fastest way to clear up the staging tables. To use this option, all foreign key constraints must be disabled or removed.
 - Pass the value 5, to have the stored procedure truncate the staging tables to clear them, then load all Rational Portfolio Manager data into the staging tables. To use this option, all foreign key constraints must be disabled or removed.
 - Pass the value 6, to have the stored procedure truncate the staging tables to clear them, then load only the selected or changed Rational Portfolio Manager projects and their related data (including the assigned resources and the system administration data) into the staging tables. To use this option, all foreign key constraints must be disabled or removed.
3. The `rec_user` parameter is the Rational Portfolio Manager user ID who executes the stored procedure. By default, you can pass 'PMO_SUPERVISOR'.

Note: During the initial load improvement steps described below, all foreign key constraints are removed before running the ETL stored procedure. Also, the ETL stored procedure is called with the truncate option. If you want to opt from this option, call the stored procedure with the `bitflag` value of 2 in step 3 and the value of 1 in step 6.

If you are using scenario 1 (connecting to the Rational Portfolio Manager database as the instance owner):

1. From the shell prompt logged as the instance owner, locate the `${MIGRATION_HOME}/Database/DB2/Unix/migration/RPMDW/` folder and execute the following script:

```
./staging DBNAME DB_USER DB_USER_PWD
```
2. Execute the following statement to initialize a small number of projects (for example 100 projects) for a pre-load. If you want to initialize for more than 100

projects, open the `${MIGRATION_HOME}/Database/DB2/Unix/migration/RPMDW/init_projects.sql` file for editing and replace 100 with the required number. Save and close the file, then run:

```
db2 -tvf init_projects.sql -z ${MIGRATION_HOME}/Database/DB2/Unix/migration/RPMDW/logs/init_projects.log
```

Check the log file. If there are no errors, continue to the next step.

3. Call ETL to pre-load the staging area with the following parameters:

```
db2 connect to DBNAME user DB_USER using DB_USER_PWD
```

then run:

```
db2 "CALL SP_LOAD_STAGING (NULL, NULL, 6, 'PMO_SUPERVISOR')"
```

If there are no errors, continue to the next step.

4. Run reorg/runstats for all staging tables and indexes:

```
./reorg_stagingtables
```

5. Rebind all Rational Portfolio Manager packages:

```
db2rbind DBNAME -l db2bind.log all -u DB_USER -p DB_USER_PWD
```

6. Call ETL to load the staging area with the following parameters:

```
db2 "CALL SP_LOAD_STAGING (NULL, NULL, 5, 'PMO_SUPERVISOR')"
```

If there are no errors, continue to the next step.

7. Recreate the ETL stored procedure (sp_etl_dw) with the real body:

```
db2 -td@ -f rpm_staging_dw_etl.sql -z ${MIGRATION_HOME}/Database/DB2/Unix/migration/RPMDW/logs/rpm_staging_dw_etl.log
```

8. Execute the following script to transfer the Data Warehouse version to the appropriate Data Warehouse tables:

```
./dw_etl DBNAME DB_USER DB_USER_PWD
```

If you are using scenario 2 (connecting to the Rational Portfolio Manager database as the connected user):

1. From the shell prompt, locate the `${MIGRATION_HOME}/Database/DB2/Unix/migration/RPMDW/` folder and execute the following script:

```
./staging DBNAME DB_USER DB_USER_PWD CON_USER CON_USER_PWD
```

2. Execute the following statement to initialize a small number of projects (for example 100 projects) for a pre-load. If you want to initialize for more than 100 projects, open the `${MIGRATION_HOME}/Database/DB2/Unix/migration/RPMDW/init_projects.sql` file for editing and replace 100 with the required number. Save and close the file, Connect to database as the instance owner and run:

```
db2 -tvf init_projects.sql -z ${MIGRATION_HOME}/Database/DB2/Unix/migration/RPMDW/logs/init_projects.log
```

Check the log file. If there are no errors, continue to the next step.

3. Call ETL to pre-load the staging area with the following parameters:

```
db2 connect to DBNAME user CON_USER using CON_USER_PWD
```

then run:

```
db2 "CALL SP_LOAD_STAGING (NULL, NULL, 6, 'PMO_SUPERVISOR')"
```

If there are no errors, continue to the next step.

4. Run reorg/runstats for all staging tables and indexes. Connect to Rational Portfolio Manager database as the instance owner:

```
db2 connect to DBNAME user DB_USER using DB_USER_PWD
```

then run:

```
./reorg_stagingtables
```

5. Rebind all Rational Portfolio Manager packages:

```
db2rbind DBNAME -l db2bind.log all -u CON_USER -p CON_USER_PWD
```

6. Call ETL to load the staging area with the following parameters:

```
db2 connect to DBNAME user CON_USER using CON_USER_PWD
```

then run:

```
db2 "CALL SP_LOAD_STAGING (NULL, NULL, 5, 'PMO_SUPERVISOR')"
```

If there are no errors, continue to the next step.

7. Recreate the ETL stored procedure (sp_etl_dw) with the real body:

```
DB2 connect to DBNAME user CON_USER using CON_USER_PWD
```

then run:

```
db2 -td@ -f rpm_staging_dw_etl.sql -z ${MIGRATION_HOME}/Database/DB2/Unix/migration/RPMDW/logs/rpm_staging_dw_etl.log
```

8. Execute the following script to transfer the Data Warehouse version to the appropriate Data Warehouse tables:

```
./dw_etl DBNAME DB_USER DB_USER_PWD CON_USER CON_USER_PWD
```

Migrating IBM Rational Portfolio Manager on Oracle for the UNIX system

This section describes how to migrate the IBM Rational Portfolio Manager database from version 7.1.0.0 or 7.1.0.1 to version 7.1.1.1 on Oracle for the UNIX system.

It is also possible to run the migration scripts from a remote machine. In this case, make sure that you can connect to the remote database using sqlplus.

Note: IBM Rational Portfolio Manager 7.1.1.1 migration script uses SQLplus located under \${ORACLE_HOME}/bin directory. Therefore, you should run the migration scripts on a machine that has this utility.

Prerequisites for migration

- A successful Rational Portfolio Manager version 7.1.0.0 or 7.1.0.1 installation
- Rational Portfolio Manager version 7.1.1.1 migration package
- SQLplus utility for running Oracle migration scripts
- Oracle migration uses shell scripting in bourne shell environments (sh shell)
- Make sure that you have execute rights for mig_owner.sh, mig_con_user.sh, mig_staging.sh, import_comrpt.sh, and mig_dw.sh files

Migration steps

Rational Portfolio Manager migration to version 7.1.1.1 has five steps:

1. Migrating Rational Portfolio Manager schema owner
2. Migrating Staging user
3. Migrating Rational Portfolio Manager connected user (if a connected user is used)
4. Migrating Rational Portfolio Manager Data Warehouse (if installed previously)
5. Importing new default layouts for common reporting reports (optional)

Steps to migrate Rational Portfolio Manager schema owner

1. Tablespaces used in the migration scripts are:

- PMO_IDX_64K for indexes
- PMO_DATA_64K for tables
- PMO_LOB_64K for lobs

Note: If the tablespaces in your Rational Portfolio Manager database are different from the above mentioned names, you must change the name of the tablespaces in the migration scripts in the following file:

```
${MIGRATION_HOME}/Database/Oracle/scripts/step1.sql
```

2. Stop the application server associated with the Rational Portfolio Manager database.

3. Shut down the Rational Portfolio Manager database.

4. Start the Rational Portfolio Manager database.

5. Open a shell window and change the directory to `${MIGRATION_HOME}/Database/Oracle` and run `./mig_owner.sh`.

The migration script runs and prompts you with a series of questions:

6. Do you have a backup of your database? (y/n) If yes, type y to continue. If you do not have a backup, type n to stop the migration, backup your database, and run the `./mig_owner.sh` script again.

7. The script uses the `${ORACLE_HOME}` environment variable of the machine which you are running the script from. Enter the required information when prompted.

8. Is your RPM database installed on this machine? (y/n)

If you answer n, you are prompted to enter:

- TNS string
- IBMRPM schema owner
- IBMRPM schema owner password

If you answer y, you are prompted to enter:

- ORACLE_SID value
- IBMRPM schema owner
- IBMRPM schema owner password

9. Are you sure you want to migrate your database now?

To start the migration, answer y.

10. At the end of migration you will be provided with a migration report. The migration report includes the following information:

- The current version of the database (which at this level must be 7.1.1.1)
- The number of invalid objects in the database (which should be 0)
- The number of objects (needed for 7.1.1.1) for each object type and their status in the migrated Rational Portfolio Manager database

Comparing the number of objects for each object type in the **YOUR_RPM_DATABASE** and **NUMBER_OF_OBJECTS_MUST_BE** columns helps you to check if the migration has been successful. These values should be equal.

- The name and type of the missing objects in your database
- The list of error messages generated during DDL migration (if any)

11. Migration log files will be created under `${MIGRATION_HOME}/Database/Oracle/logs` folder. It is a good practice to look at the log files to see if migration was successful.
12. Stop the Oracle listener:
`${ORACLE_HOME}/bin/lsnrctl stop`
13. `LevelingLib.so` located under `${MIGRATION_HOME}/Database/Oracle/leveling/[your OS/your Oracle version]` folder must be manually copied to the correct location on the database server.
14. Start the Oracle listener:
`${ORACLE_HOME}/bin/lsnrctl start`

Steps to migrate the Staging user

Migrating the staging user is a mandatory step in Rational Portfolio Manager 7.1.1.1 migration (whether you have previously installed Data Warehouse or not); it is done by running the `mig_staging.sh` file. Follow the steps below to install staging user:

1. Open a shell window and navigate to `${MIGRATION_HOME}/Database/Oracle` directory and run the `./mig_staging.sh` script.
The migration script runs and prompts you with a series of questions:
2. Do you have a backup of your database? (y/n) If yes, type `y` to continue. If you do not have a backup, type `n` to stop the migration, backup your database, and run the `mig_staging.sh` script again.
3. The script uses the `${ORACLE_HOME}` environment variable of the machine that you are running the script from. Enter the required information when prompted.
4. Is your RPM database installed on this machine? (y/n)
 - a. If you answer `n`, you are prompted to enter:
 - TNS string
 - Staging password
 - b. If you answer `y`, you are prompted to enter:
 - `ORACLE_SID` value
 - Staging password
5. Are you sure you want to start the migration now? (y/n)
To start the migration, answer `y`.
6. Log files are created in the `${MIGRATION_HOME}/Database/Oracle/logs` folder. Look at the log files to see if scripts ran successfully.

Steps to migrate Rational Portfolio Manager connected user

This step is optional in most cases, but it must be performed if you are using a connected user. To update the connected user:

1. Open a shell window and change the directory to `${MIGRATION_HOME}/Database/Oracle` and run `./mig_con_user.sh`.
2. The script uses the `${ORACLE_HOME}` environment variable of the machine from which you are running the script. Enter the required information when prompted.
3. Is your RPM database installed on this machine? (y/n)
If you answer `n`, you are prompted to enter:
 - TNS string
 - IBMRPM schema owner
 - IBMRPM schema owner password

If you answer *y*, you are prompted to enter:

- Verify the ORACLE_SID value
 - IBMRPM schema owner
 - IBMRPM schema owner password
4. Enter the Rational Portfolio Manager connected user name when prompted.
 5. Enter the Rational Portfolio Manager connected user password when prompted.
 6. Enter the staging password when prompted.
 7. Enter comrpt password when prompted, the default password is comrpt if you have not changed it.
 8. Enter the password for sys user when prompted.
 9. Are you sure you want to migrate your connected user now? (y/n)
To start the migration, answer *y*.
 10. Migration log files are created under `${MIGRATION_HOME}/Database/Oracle/logs` folder. It is a good practice to look at the log files to see if the migration was successful.

Steps to migrate Rational Portfolio Manager Data Warehouse

This section describes the steps to migrate Rational Portfolio Manager Data Warehouse using the `mig_dw.sh` script. If you have not installed Data Warehouse, skip this section.

1. Open a shell window and navigate to `${MIGRATION_HOME}/Database/Oracle` and run `./mig_dw.sh`.

The migration script runs and prompts you with a series of questions:

2. Do you have a backup of your Data Warehouse database? (y/n) If yes, type *y* to continue. If you have not, type *n* to stop the migration, backup your database, and run the `mig_dw.sh` script again.
3. The script uses the `${ORACLE_HOME}` environment variable of the machine that you are running the script from. Enter the required information when prompted.
4. Is your RPM Data Warehouse database installed on this machine? (y/n)
 - a. If you answer *n*, you are prompted to enter:
 - TNS string
 - Staging password
 - RPMDW password
 - b. If you answer *y*, you are prompted to enter:
 - ORACLE_SID value
 - Staging password
 - RPMDW password
5. Are you sure you want to start the migration now? (y/n)
To start the migration, answer *y*.
6. Log files are created in the `${MIGRATION_HOME}/Database/Oracle/logs` folder. Look at the log files to see if scripts ran successfully.

Importing the new default layouts for common reporting reports (optional)

There are new default sample layouts for common reporting reports available in Rational Portfolio Manager 7.1.1.1. If you want to have these sample layouts, follow one of the two options described below:

Option 1: Importing the new sample layouts.

If you have not used the common reporting reports in Rational Portfolio Manager 7.1.0.0, or you have not created new report layouts, you can import the new default layouts by running the `import_comrpt.sh` file. This script deletes all previous layouts and imports the new layouts provided with this release. To import the new sample layouts:

1. Open a shell window, navigate to `${MIGRATION_HOME}/Database/Oracle` directory, and run the `import_comrpt.sh` script.
The script will run and ask you a series of questions:
2. The script uses the `$ORACLE_HOME` environment variable of the machine which you are running the script from. Enter the required information when prompted.
3. Is your RPM database installed on this machine? (y/n)
 - If you answer `n`, you are prompted to enter:
 - TNS string
 - `comrpt` schema password
 - If you answer `y`, you are prompted to enter:
 - `ORACLE_SID` value
 - `comrpt` schema password
4. Are you sure you want to start the import now?
To start the import, answer `y`.
5. Log files are created in the `${MIGRATION_HOME}/Database/Oracle/logs` folder. It is recommended to look at the log files to see if scripts ran successfully.

Keeping your current report layouts and importing the new ones

If you have created report layouts with Rational Portfolio Manager 7.1.0.0 and you want to keep those layouts and import the new ones provided with version 7.1.1.1, follow the instructions in “Keeping your current report layouts and importing the new ones” on page 180.

Recommendations to improve the initial load for Staging and Data Warehouse

For clients with a large amount of legacy data (more than 1000 projects), the initial load to transfer Rational Portfolio Manager data into the Staging area and further to the Data Warehouse may take a long time. To speed up the initial loading, use the following steps to manually load the data from Rational Portfolio Manager to Staging and then to Data Warehouse.

Note: The following required files are located under the `${MIGRATION_HOME}/DATABASE/ORACLE/plbddl` directory:

- `drop_staging_foreign_keys.sql`
- `small_pre_load.sql`
- `anatab.sql`
- `drop_dw_foreign_keys.sql`

Loading data to Staging area

Loading data to staging area is performed by calling the `SP_LOAD_STAGING` function. It is important to send the correct parameters when calling this function, because these parameters affect both the performance and the functionality of

SP_LOAD_STAGING. For example, SP_LOAD_STAGING deletes all data from the staging tables before starting the load process. The delete process might take a long time, depending on the amount of data in the tables. If you call SP_LOAD_STAGING with the correct parameters, you can make this function truncate the data rather than deleting them and, therefore, improve the performance.

The description of SP_LOAD_STAGING is:

SP_LOAD_STAGING(project_ids, resource_ids, bitflag, rec_user)

1. The project_ids and resource_ids parameters are for future use. You can pass NULL for these parameters.
2. The most important parameter is the bitflag parameter. It controls how to clear up the data and what will be loaded into the staging tables. The value of this parameter must be an integer and only the first three bits are used:
 - Pass the value 1, to have the stored procedure load all Rational Portfolio Manager data into the staging tables after deleting the old data.
 - Pass the value 2, to have the stored procedure load only the selected or changed Rational Portfolio Manager projects and their related data (including the assigned resources and the system administration data) into the staging tables after deleting the old data.
 - Pass the value 4, to have the stored procedure truncate the staging tables to clear them without loading the Rational Portfolio Manager data into the staging tables. This approach is the fastest way to clear up the staging tables. To use this option, all foreign key constraints must be disabled or removed.
 - Pass the value 5, to have the stored procedure truncate the staging tables to clear them, then load all Rational Portfolio Manager data into the staging tables. To use this option, all foreign key constraints must be disabled or removed.
 - Pass the value 6, to have the stored procedure truncate the staging tables to clear them, then load only the selected or changed Rational Portfolio Manager projects and their related data (including the assigned resources and the system administration data) into the staging tables. To use this option, all foreign key constraints must be disabled or removed.
3. The rec_user parameter is the Rational Portfolio Manager user ID that executes the stored procedure. By default, you can pass 'PMO_SUPERVISOR'.

To load data into the staging area (initial load):

Note: During the initial load improvement steps described below, all foreign key constraints are removed before running the SP_LOAD_STAGING function. Also, the SP_LOAD_STAGING function is called with the truncate option for better performance. If you do not want to use the truncate option, call the SP_LOAD_STAGING function with the bitflag value of 2 in step 4 and the value of 1 in step 6.

1. Using sqlplus, connect as the staging user and run the drop_staging_foreign_keys.sql script.
2. While still connected as the staging user in sqlplus, run the following statement to disable STAGING.VERSION_UPDATE trigger:

```
ALTER TRIGGER STAGING.VERSION_UPDATE DISABLE;
```
3. Using sqlplus, connect as Rational Portfolio Manager schema owner and run the small_pre_load.sql script.
4. Using sqlplus, connect as Rational Portfolio Manager schema owner and run the following script:

```

COLUMN ERROR FORMAT 9999999999
EXEC SET_DATEFORMAT;
VAR R REFCURSOR;
EXEC :R:=SP_LOAD_STAGING('','6','PMO_SUPERVISOR');
COMMIT;
PRINT R;

```

5. Analyze the tables in staging schema. To do so, you can connect as the staging user in sqlplus and run the anatab.sql script.
6. Using sqlplus, connect as Rational Portfolio Manager schema owner and run the following script:

```

COLUMN ERROR FORMAT 9999999999
EXEC SET_DATEFORMAT;
VAR R REFCURSOR;
EXEC :R:=SP_LOAD_STAGING('','5','PMO_SUPERVISOR');
COMMIT;
PRINT R;

```

7. Using sqlplus connect as staging user and run the following statement to enable STAGING.VERSION_UPDATE trigger:


```
ALTER TRIGGER STAGING.VERSION_UPDATE ENABLE;
```

Loading data to data warehouse

To load the data in data warehouse (initial load):

1. Using sqlplus, connect as rpmdw user and run drop_dw_foreign_keys.sql to drop foreign keys.
2. Using sqlplus connect as staging user and run the following insert statement to create a new version for data warehouse:

```

EXEC SET_DATEFORMAT;
INSERT INTO RPMDW.VERSION_DIM (VERSION_ID, DATE_ACQUIRED, SERVER_VERSION, SERVER_NAME)
SELECT VERSION_ID, DATE_AQUIRED, SERVER_VERSION, SERVER_NAME FROM STAGING.VERSION_VW;
COMMIT;
SELECT COALESCE(MAX(VERSION_KEY),1) AS VERSION_KEY, COUNT(*) AS VERSION_NUMBER FROM
RPMDW.VERSION_DIM;

```

Note: When running the above select statement, you will see two columns. The first column is the version_key. When running the following steps, you must replace the <version_key> with the number in the version_key column.

3. Using sqlplus, connect as staging user and run the following script. Remember t to replace the <version_key> with the appropriate value:

```

EXEC SET_DATEFORMAT;
EXEC SP_ETL_DIMENSION(<version_key>,0);
COMMIT;

```

4. Analyze the tables in rpmdw schema. To do so, you can connect as rpmdw user in sqlplus and run the anatab.sql script.
5. Using sqlplus, connect as staging user and run the following script. Remember to replace the <version_key> with the appropriate value:

```

EXEC SET_DATEFORMAT;
EXEC SP_ETL_DIMENSION2(<version_key>,0);
COMMIT;

```

6. Analyze the tables in rpmdw schema. To do so, you can connect as rpmdw user in sqlplus and run the anatab.sql script.
7. Using sqlplus connect as staging user and run the following script. Remember to replace the <version_key> with the appropriate value:

```
EXEC SET_DATEFORMAT;  
EXEC SP_ETL_DIMENSION3(<version_key>,0);  
COMMIT;
```

8. Analyze the tables in rpmdw schema. To do so, you can connect as rpmdw user in sqlplus and run the anatab.sql script.

9. Using sqlplus, connect as staging user and run the following script. Remember to replace the <version_key> with the appropriate value:

```
EXEC SET_DATEFORMAT;  
EXEC SP_ETL_FACTS(<version_key>,0);  
COMMIT;
```

10. Analyze the tables in rpmdw schema. To do so, you can connect as rpmdw user in sqlplus and run the anatab.sql script.

Deploying Rational Portfolio Manager middleware

After you have successfully migrated your Rational Portfolio Manager database from a previous version to 7.1.1.1, you must proceed with the middleware deployment.

Before proceeding with the middleware deployment:

- Make sure that you back up the rpm-middleware-7.1.1.1.war directory located under `${IBMRPM_WAR_HOME}`.
- If you have previously deployed the rpm-middleware_7.1.0.0.war file, after the database migration to 7.1.1.1 is complete, proceed to uninstall the 7.1.0.0 application before proceeding to deploying the rpm-middleware-7.1.1.1.war located under `${IBMRPM_WAR_HOME}`.

Attention: When entering resource environment entries, make sure to verify that all JNDI mapping are consistent with the JNDI mappings described in Chapter 7, “Middleware environment variables reference,” on page 103. Failure to do so, will cause variable bindings to fail.

- If you have not previously deployed the rpm-middleware_7.1.0.0.war file, after the database migration to 7.1.1.1 is complete, proceed to deploying the rpm-middleware-7.1.1.1.war located under `${IBMRPM_WAR_HOME}`.

For information on deploying the Rational Portfolio manager middleware, see one of the following sections on deploying the middleware supported with this release that corresponds to your application server. The rpm-middleware-7.1.1.1.war file is located under `${MIGRATION_HOME}/WebServer` directory.

- Deploying IBM Rational Portfolio Manager middleware on WebSphere Application Server 5.1
- Deploying the IBM Rational Portfolio Manager middleware on WebSphere Application Server 6.0
- Deploying IBM Rational Portfolio Manager Middleware on WebSphere Application Server 6.1
- Data warehouse middleware installation: Tomcat 5.5 Application Server

Chapter 10. Data warehouse Single instance installation on DB2

This chapter describes the requirements and steps for building the Rational Portfolio Manager data warehouse, and the replication between Internal and External staging for DB2 databases.

Rational Portfolio Manager data warehouse DB2 set up and configuration

In Rational Portfolio Manager 7.1.0.0, the data warehouse is created in the same database instance as the Rational Portfolio Manager database. All items related to data warehouse are deployed on the same database instance as Rational Portfolio Manager database. To set up the Rational Portfolio Manager data warehouse, there are two sets of tables that must be created: The Internal Staging and the data warehouse tables. The internal staging tables must be created inside the Rational Portfolio Manager database, this is created automatically by the standard Rational Portfolio Manager installation scripts. The data will be transferred from the Rational Portfolio Manager database to the internal staging area by a set of ETLs that can be executed on a daily basis by the DB2 scheduler.

Creating a single-instance data warehouse with DB2

Requirements

Rational Portfolio Manager OLTP/OLAP

The following information is the minimum disk space and memory requirements for the node. These are the minimum requirements; more space may be required for the staging and data warehouse tables depending on the amount of data in the Rational Portfolio Manager database.

- Staging tables: ~9 GB disk space, ~500 MB memory for buffer pools
- Data warehouse tables: ~8 GB disk space, ~1.5 GB memory for buffer pool

Required software:

- DB2 8.2
- IBM Rational Portfolio Manager 7.1

Procedure

This procedure describes how to create the Rational Portfolio Manager data warehouse inside the Rational Portfolio Manager database (database and single instance). All files for the Rational Portfolio Manager data warehouse set up are located inside `$(PACKAGE_HOME)/Database/DB2/Unix/ddl/RPMDW` folder. The log files are created in the directory where the script is run from.

Note: Before running any scripts, make sure that any script you run has execute rights, otherwise the script will not run.

1. From the shell prompt, login as the Rational Portfolio Manager instance owner and connect to the Rational Portfolio Manager database as the instance owner by typing the following command. When the connection is successful, continue to the next step:

```
db2 connect to DB_NAME user DB_USER using DB_USER_PWD
```

2. Go to `${PACKAGE_HOME}/Database/DB2/Unix/ddl/RPMDW` directory and edit the `rpm_dw_tb_spaces.sql` script to specify the path for the data warehouse tablespace creation. This script creates the required buffer pools and tablespaces for Rational Portfolio Manager data warehouse tables.

Run the `rpm_dw_tb_spaces.sql` script by typing the following command from the shell prompt:

```
db2 -tvf rpm_dw_tb_spaces.sql -z rpm_dw_tb_spaces.log
```

Check the `rpm_dw_tb_spaces.log` file for errors before continuing to the next step. The script creates the directory for the log files where you run the command from. If there are errors, see “Contacting IBM Client Support for Rational software products” on page x.

3. If the connection to Rational Portfolio Manager database from step 1 has been closed, connect to the Rational Portfolio Manager database as the instance owner by typing the following command, if your connection is still valid, then continue to the next step.

```
db2 connect to DB_NAME user DB_USER using DB_USER_PWD
```

When the connection is successful, continue to the next step.

4. Create staging views by running the `staging_views.ddl` script.

From the shell prompt type the following command:

```
db2 -tvf staging_views.ddl -z staging_views.log
```

Check `staging_views.log` for errors before continuing with the next step. If there are errors, see “Contacting IBM Client Support for Rational software products” on page x.

If you are using scenario 1, skip to step 8 to create the data warehouse tables and indexes.

5. If you have used scenario 2 when initially installing the Rational Portfolio Manager database, create aliases for the connected user for staging views as follows:

- a. Connect to the Rational Portfolio Manager database as the connected user by typing the following command from the shell prompt:

```
db2 connect to DBNAME user CON_USER using CON_USER_PWD
```

When the connection is successful, continue to the next step.

- b. Run the `alias_stagviews` script by typing the following command:

Note: Before running the script, make sure that the script has execute rights, otherwise the script will not run.

```
./alias_stagviews CON_USER DB_USER > alias_stagviews.log
```

Check the log file for errors. If there are no errors, continue to the next step. If there are errors, see “Contacting IBM Client Support for Rational software products” on page x

6. If you have used scenario 2 when initially installing the Rational Portfolio Manager database, grant rights to the connected user to use Rational Portfolio Manager staging views as follows:

- a. Connect to Rational Portfolio Manager database as the Rational Portfolio Manager instance owner by typing the following command:

```
db2 connect to DB_NAME user DB_USER using DB_USER_PWD
```

When the connection is successful, continue to the next step.

- b. Run the grants_stagviews script by typing the following command:

```
./grants_stagviews CON_USER DB_USER > grants_stagviews.log
```

Check the log file for errors. If there are no errors, continue to the next step. If there are errors, see “Contacting IBM Client Support for Rational software products” on page x.

7. Create the data warehouse tables and indexes as follows:

- a. Connect to the Rational Portfolio Manager database by typing the following command:

```
db2 connect to DB_NAME user DB_USER using DB_USER_PWD
```

- b. Then run the rpm_dw_model.ddl script by typing the following command:

Note: Before running the script, make sure that the script has execute rights, otherwise the script will not run.

```
db2 -tvf rpm_dw_model.ddl -z rpm_dw_model.log
```

Check the log file for errors. If there are no errors, continue to the next step. If there are errors, see “Contacting IBM Client Support for Rational software products” on page x.

8. If you have used scenario 2 when initially installing the Rational Portfolio Manager database, run the following to create aliases for the connected user for Rational Portfolio Manager data warehouse tables:

- a. Connect to the Rational Portfolio Manager database as the connected user by typing the following command:

```
db2 connect to DBNAME user CON_USER using CON_USER_PWD
```

When the connection is successful, go to the following step

- b. Run the alias_dw script by typing the following command:

Note: Before running the script, make sure that the script has execute rights, otherwise the script will not run.

```
./alias_dw CON_USER DB_USER > alias_dw.log
```

Check the log file for errors. If there are no errors, continue to the next steps. If there are errors, see “Contacting IBM Client Support for Rational software products” on page x.

9. If you have used scenario 2 when initially installing the Rational Portfolio Manager database, grant rights to the connected user to use Rational Portfolio Manager data warehouse objects as follows:

- a. Connect to the Rational Portfolio Manager database as the instance owner by typing the following command:

```
db2 connect to DB_NAME user DB_USER using DB_USER_PWD
```

When the connection is successful, continue to the following step.

- b. Run the grants_dw script by typing the following command:

Note: Before running the script, make sure that the script has execute rights, otherwise the script will not run.

```
./grants_dw CON_USER DB_USER > grants.log
```

Check the log file for errors. If there are no errors, continue to the next steps. If there are errors, see “Contacting IBM Client Support for Rational software products” on page x.

10. Create the store procedure (ETL) to transfer the data from staging to data warehouse tables as follows:
- If you have used scenario 1 when initially installing the Rational Portfolio Manager database to connect to the Rational Portfolio Manager database as the instance owner, type the following command to connect to the database:
db2 connect to DB_NAME user DB_USER using DB_USER_PWD
 - If you have used scenario 2 when initially installing the Rational Portfolio Manager database to connect as the connected user, type the following command to create the stored procedure:
db2 connect to DBNAME user CON_USER using CON_USER_PWD

11. Create the store procedure for ETL from staging to Rational Portfolio Manager data warehouse by typing the following command:

```
db2 -td@ -f rpm_staging_dw_etl.sql > rpm_staging_dw_etl.log
```

Running this script may take some times. You may see the following error:

```
DB21034E The command was processed as an SQL statement because it was not a valid SQL Command L
```

This error can be safely ignored and you can proceed.

Note:

Check the log file for errors. If there are no errors, continue to the next step. If you encounter errors, see “Contacting IBM Client Support for Rational software products” on page x.

12. Reorganize the Rational Portfolio Manager data warehouse tables by running the reorg_dwttables script as follows:

Note: Before running the script, make sure that the script has execute rights, otherwise the script will not run.

- Connect to the Rational Portfolio Manager database as the instance owner by typing the following command:
db2 connect to DB_NAME user DB_USER using DB_USER_PWD
- Run the dwttables script by typing the following command:
./reorg_dwttables

13. Reorganize Rational Portfolio Manager staging tables as follows:

Note: Before running the script, make sure that the script has execute rights, otherwise the script will not run.

- Reconnect to the Rational Portfolio Manager database as the instance owner by typing the following command:
db2 connect to DB_NAME user DB_USER using DB_USER_PWD
- Run the reorg_stagingtables script by typing the following command.
./reorg_stagingtables

When the above steps are completed successfully, you can run ETL to transfer the data from Rational Portfolio Manager to the data warehouse. See section “Seeding the Staging area.” For this scenario deployment, you do not need to set up replication between staging tables and data warehouse as they are both created in Rational Portfolio Manager database.

Seeding the Staging area

In order to reduce the amount of time it will take to do the initial replication load, run the stored procedure that loads the staging in Rational Portfolio Manager OLTP, the stored procedure is called `sp_load_staging`. You can also schedule a job that will run the store procedure based on your business needs.

Run the stored procedure using the following syntax:

1. Connect to the Rational Portfolio Manager database:
 - If you are using scenario 1, connect to Rational Portfolio Manager database as the instance owner by typing the following command:
`db2 connect to DBNAME user DB_USER using DB_USER_PWD`
 - If you are using scenario 2, connect to Rational Portfolio Manager database as the connected user by typing the following command:
`db2 connect to DBNAME user CON_USER using CON_USER_PWD`
2. The first time that you transfer data, call the store procedure with the following parameters:
`db2 "call sp_load_staging(null, null, 1, 'PMO_SUPERVISOR')"`
3. The following consecutive calls can be made to transfer only the changes (delta), and you can run the store procedure with the following parameters:
`db2 "call sp_load_staging(null, null, 2, 'PMO_SUPERVISOR')"`

For information about the different parameters that can be used for the initial load for the data warehouse, see section “Recommendations to improve the initial load for Data Warehouse” on page 132.

After this is setup, you are ready to set up replication.

Setting up a Staging task

Before starting this step, make sure that the DB2 data center has already been setup.

To set up a staging task, DB2 will need a tools database setup. For more information about how to set up a tools database, see the DB2 documentation. Open the DB2 Task Center and create a new task with the desired schedule. This schedule will dictate how often the staging area is populated with changed project data (the "deltas"). Because the stored procedure will exit for more than one instance being executed at a time, this can be set to occur at a fairly high frequency. However, it is recommended that you use common sense when implementing your reporting requirements (nightly, off-times, and so on). For more information about how often the schedule should be setup, see the latest version of the *Rational Portfolio Manager Data Warehouse Guide*. Use the following command script.

- If you are using scenario 1:
`db2 connect to DB_NAME user DB_USER using DB_USER_PWD`
`db2 "call SP_LOAD_STAGING(NULL,NULL,2,'PMO_SUPERVISOR')"`
`db2 commit`
`db2 connect reset`

- If you are using scenario 2:
db2 connect to DB_NAME user CON_USER using CON_USER_PWD
db2 "call SP_LOAD_STAGING(NULL,NULL,2,'PMO_SUPERVISOR')"
db2 commit
db2 connect reset

Chapter 11. Data warehouse single instance installation on Oracle

This chapter describes the requirements and steps for building, Rational Portfolio Manager data warehouse on the same instance as Rational Portfolio Manager database.

Rational Portfolio Manager data warehouse set up and configuration on Oracle

In Rational Portfolio Manager 7.1.0.0, data warehouse is created in the same database instance as the Rational Portfolio Manager database. All items related to data warehouse are deployed on the same database instance as Rational Portfolio Manager, using different schemas. For this purpose, two other schemas will be created on the same instance as Rational Portfolio Manager database: staging schema (called staging) and data warehouse schema (called rpmdw).

The data will be transferred from the Rational Portfolio Manager database to the staging area by running a stored procedure (sp_load_staging) which can be scheduled to be executed by an Oracle job on a nightly basis or as it is needed. After the data is transferred to the staging area, the trigger version_update is fired in the staging area and this trigger executes a set of ETLs (sp_etl_dw) to transfer the data from staging to data warehouse schema.

Creating a single-instance Warehouse with Oracle

Data warehouse installation can be done either manually or through a batch file. This chapter describes the requirements and steps for these two methods.

Requirements

- A successful Rational Portfolio Manager version 7.1 installation
- The sqlplus utility for running Oracle data warehouse installation scripts.
- Required Oracle Software, for a list of supported versions see section “Latest supported operating environments” on page 4.
- Rational Portfolio Manager OLTP/OLAP

Node minimum disk space and memory requirements: These are the minimum requirements; more space may be required for the staging and data warehouse tables depending on the amount of data in the Rational Portfolio Manager database.

- Staging tables: ~9 GB disk space, ~500 MB memory for buffer pools
- Data warehouse tables: ~8 GB disk space, ~1.5 GB memory for buffer pool

Location of files

This section provides the path location of the files that you will use in the following section that correspond to the package from which you are working.

Table 27. Location of files

Path	File
<ul style="list-style-type: none"> • If you are using the installation package: <code>\${INSTALLATION_HOME}/Database/Oracle/OraDDL</code> • If you are using the migration package: <code>\${MIGRATION_HOME}/Database/Oracle/plbddl</code> 	<ul style="list-style-type: none"> • <code>dw_to_staging_grants.sql</code> • <code>staging_dw_pmo_orastd.spc</code> • <code>staging_dw_pmo_orastd.bdy</code> • <code>rpm_dw_model.ddl</code> • <code>dw_sequences.sql</code> • <code>staging_to_dw_grants.sql</code> • <code>staging_model.ddl</code> • <code>staging_temptable.ddl</code> • <code>staging_views.ddl</code> • <code>rpm_staging_dw_etl.sql</code> • <code>staging_job.sql</code>
<ul style="list-style-type: none"> • If you are using the installation package: <code>\${INSTALLATION_HOME}/Database/Oracle/utlils</code> • If you are using the migration package: <code>\${MIGRATION_HOME}/Database/Oracle/utlils</code> 	<ul style="list-style-type: none"> • <code>recompile.sql</code>
<ul style="list-style-type: none"> • If you are using the installation package: <code>\${INSTALLATION_HOME}/Database/Oracle</code> • If you are using the migration package: <code>\${MIGRATION_HOME}/Database/Oracle</code> 	<ul style="list-style-type: none"> • <code>install_dw.sh</code>

Creating a single instance data warehouse using the shell script

To create a data warehouse in the same instance as the Rational Portfolio Manager database using the batch file:

1. Edit the `rpm_dw_tb_spaces.sql` script by updating the default path to the path where you want the tablespaces to be created.
2. Open a shell window and navigate to `install_dw.sh` and run the script. The script will ask you a series of questions:
3. Have you performed pre_install step and edited `staging_tb_spaces.sql` and `rpm_dw_tb_spaces.sql`? (y/n). Edit `rpm_dw_tb_spaces.sql` file (and not `staging_tb_spaces.sql`), if you have edited `rpm_dw_tb_spaces.sql`, type y to continue. If you have not, type n so that no installation will be performed and edit the `rpm_dw_tb_spaces.sql` script and run `install_dw.sh` again.
4. Do you want to install data warehouse on the same instance as RPM database? (y/n)
Answer y to this question.
5. The script uses the `${ORACLE_HOME}` environment variable of the machine from which you are running the script. Enter the required information when prompted.
6. Is the database on which you want to install the data warehouse installed on this machine? (y/n)
 - If you answer n, you will be prompted to enter:
 - TNS string
 - STAGING password

- SYS password
 - If you answer *y*, you will be prompted to enter:
 - ORACLE_SID value
 - STAGING password
 - SYS password
7. Are you sure you want to start the install now? (y/n)
To start the installation, answer *y*.
8. Log files will be created in the `${INSTALLATION_HOME}/Database/Oracle/Logs` or if you are using the migration package `${MIGRATION_HOME}/Database/Oracle/logs` folder. Look at the log files to see if scripts ran successfully.

Creating a single instance data warehouse manually

This section describes the steps to manually create a data warehouse in the same instance as the Rational Portfolio Manager database. This procedure consists of the following:

1. Creating rpmdw user
2. Creating rpmdw objects
3. Creating staging objects

Note: The Staging user is created during IBM Rational Portfolio Manager 7.1 installation or migration.

Procedure

To create the rpmdw user:

1. Edit `rpmdw_tb_spaces.sql` file and modify the path where the tablespaces will be created.
2. Logon to sqlplus as sys and run the following scripts:

```
rpmdw_tb_spaces.sql
create_dw_user.sql
```

3. Logon to sqlplus as rpmdw user (its default password is rpmdw) and run the following files:

```
dw_to_staging_grants.sql
staging_dw_pmo_orastd.spc
staging_dw_pmo_orastd.bdy
rpm_dw_model.ddl
dw_sequences.sql
recompile.sql
recompile.sql
recompile.sql
```

4. To check if all objects are valid, run the following query:
`select count(*) from user_objects where status <> 'VALID';`

The expected result count is zero.

The staging schema is created by the Rational Portfolio Manager 7.1 installation or migration script, therefore, the schema already exists; now you need to create the necessary objects.

To create the necessary objects in the staging schema:

1. Logon to sqlplus as staging, the default password is staging, (if you have not already changed it) and run the following scripts:


```
staging_to_dw_grants.sql
staging_temptable.ddl
staging_views.ddl
rpm_staging_dw_etl.sql
recompile.sql
recompile.sql
recompile.sql
```

2. To check that all objects are valid, run the following the query:

```
select count(*) from user_objects where status <> 'VALID';
```

The expected result count is zero.

Transferring data to staging the first time

After the data warehouse is set up, load the data into the staging schema by calling the `sp_load_staging` function. Before transferring data to the staging area for the first time, the staging area is empty, therefore, you must pass 1 as the third parameter to the calling function to load all the related data to all the projects.

To populate the staging area for the first time, log on to sqlplus as Rational Portfolio Manager owner, and run the following:

```
var r refcursor;
exec set_dateformat;
exec :r:=SP_LOAD_STAGING(NULL,NULL,1,'PMO_SUPERVISOR');
commit;
```

Setting up a Staging job

After the staging area is populated with the data for all projects, you only need to update the delta of projects. Set the third parameter of the `sp_load_staging` function to 2 to populate the staging area only with the changed project data (delta).

Create an Oracle job for the Rational Portfolio Manager owner that calls the `sp_load_staging` function with parameter 2 that will run the stored procedure based on your business needs (for example, nightly). The created Oracle job should execute the following:

```
var r refcursor;
exec set_dateformat;
exec :r:=SP_LOAD_STAGING(NULL,NULL,2,'PMO_SUPERVISOR');
commit;
```

There is a sample file called `staging_job.sql` that creates a job to run this function on a daily basis. You can login to sqlplus as Rational Portfolio Manager owner and run this script to create the job.

Chapter 12. Data warehouse common reporting middleware installation: WebSphere Application Server 6.0

Deploying data warehouse common reporting middleware

This section describes how to set up the Rational Portfolio Manager WebSphere edition of the data warehouse common reporting middleware.

Deployment of the data warehouse middleware consists of deploying Rational Portfolio Manager Common Reporting which is a reporting abstraction layer included with your installation. The common reporting package provides a repository to store reports, a browser-based interface to execute reports, a generic interface to multiple third-party reporting tools, and a report administration interface. The warehouse is the repository supporting it.

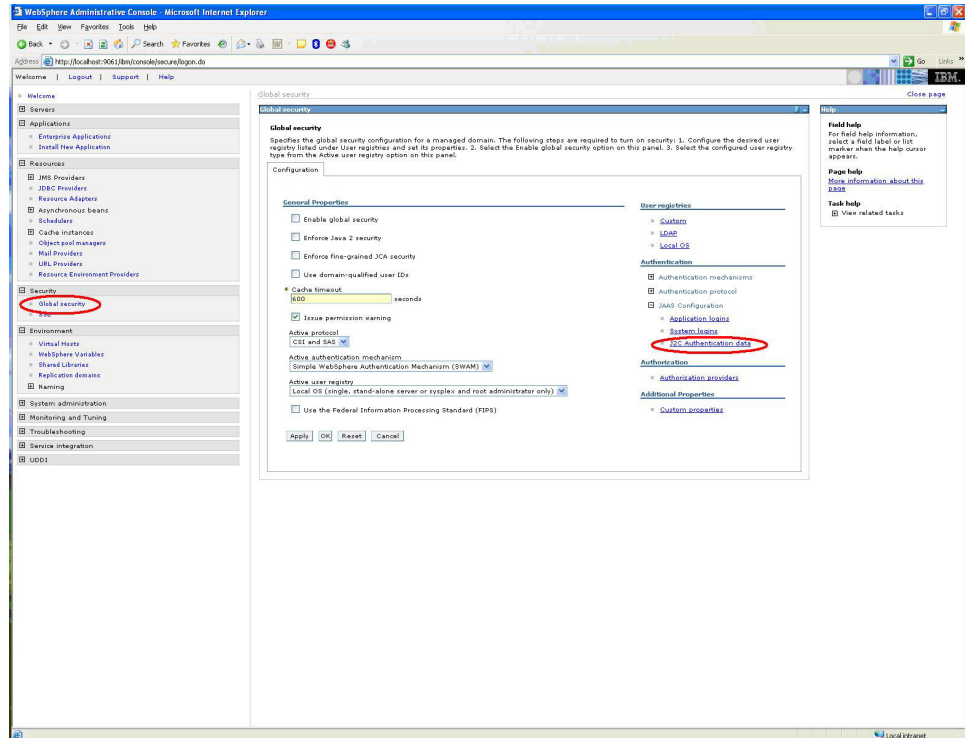
To deploy Rational Portfolio Manager Common Reporting, the following four major steps must be carried out in sequence:

1. Creation of the Global Security Authentication
2. Creation of the JDBC provider
3. Creation of a resource environment provider
4. Common reporting application deployment (rpm-cr.war file)

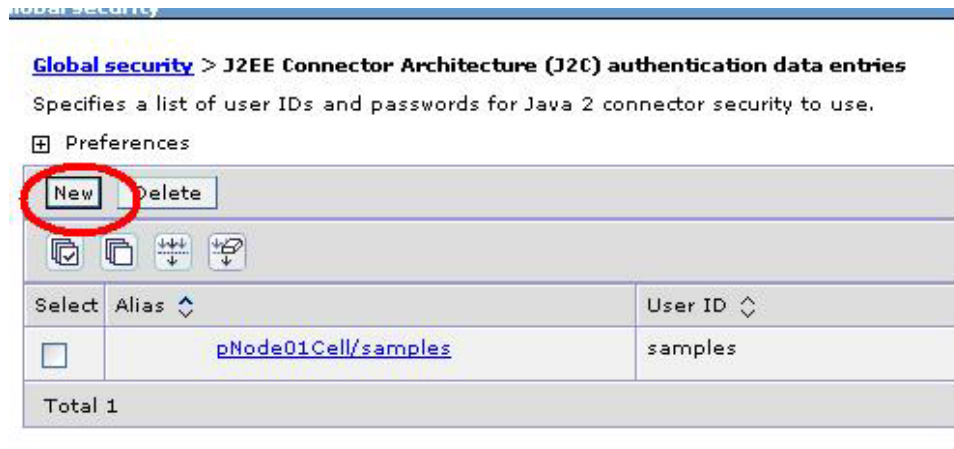
Note: If the Rational Portfolio Manager middleware is already installed on the same application server, go to step 3 — Creation of a resource environment provider.

Step One — Creation of the Global Security Authentication containing the username and password to be used by the database connection pool.

1. Log on to the localhost and click **Security > Global Security >JAAS Configuration > Select the J2C Authentication data.**



2. Click New.



3. Type a name under **Alias** (use a name you can remember). Also enter your **User ID** and **Password**.

Global security > J2EE Connector Architecture (J2C) authentication data

Specifies a list of user IDs and passwords for Java 2 connector security

Configuration

General Properties

* Alias
rpmDBCredentials

* User ID
dbuser

* Password

Description

Apply OK Reset Cancel

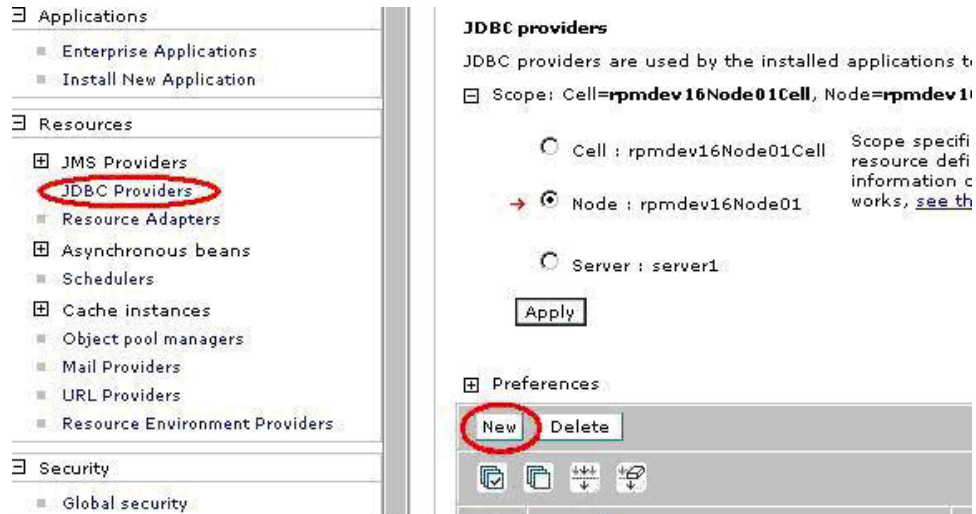
4. Click **Apply** and **OK**. Click the **Save** hyperlink in the next screen.

The screenshot shows the WebSphere Administration Console interface. On the left is a navigation tree with categories like Applications, Resources, and Security. The main area displays the configuration page for 'Global security > J2EE Connector Architecture (J2C) authentication data entries'. A message box at the top right contains the text: 'Changes have been made to your local configuration. Click **Save** to apply changes to the configuration. The server may need to be restarted for these changes to take effect.' The word 'Save' is circled in red. Below the message box, there are 'New' and 'Delete' buttons, and a table with columns for 'Alias' and 'User ID'. The table contains two entries: 'pNode01/MvDBCredentials' with user ID 'db2admin', and 'pNode01/Cell/samples' with user ID 'samples'. A 'Total 2' row is at the bottom of the table.

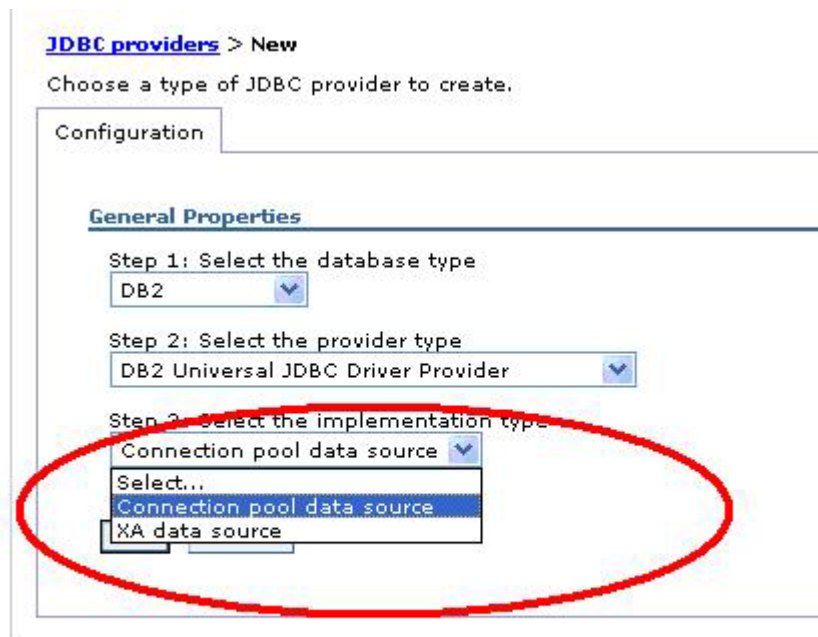
After your authentication credentials are created, go to the next step.

Step Two — Creation of the JDBC provider

1. In the localhost screen, click **JDBC Provider > New**.



2. Select the properties of your database (for example, DB2 and **Universal Driver**). Then select the **Connection Pool** data source from the drop-down list and click Next.



3. Click **Apply**.

Configuration

General Properties

* Scope
cells:rpmdev16Node01Cell:nodes:rpmdev16Node01

* Name
DB2 Universal JDBC Driver Provider

Description
Non-XA DB2 Universal JDBC Driver-compliant Provider. Datasources created under this provider support only 1-phase commit processing except in the

Class path
\${DB2UNIVERSAL_JDBC_DRIVER_PATH}/db2jcc.jar
\${UNIVERSAL_JDBC_DRIVER_PATH}/db2jcc_license_cu.jar
\${DB2UNIVERSAL_JDBC_DRIVER_

Native library path
\${DB2UNIVERSAL_JDBC_DRIVER_NATIVEPATH}

* Implementation class name
com.ibm.db2.jcc.DB2ConnectionPoolDataSource

Apply OK Reset Cancel

4. Point to the Additional Properties area and click **Data Sources**.

General Properties

* Scope

* Name

Description

Class path

Native library path

* Implementation class name

Apply OK Reset Cancel

Additional Properties

Data sources

- Data sources (Version 4)

5. Click New.

JDBC providers > DB2 Universal JDBC Driver Provi

A data source is used by the application to access d JDBC driver implementation class.

⊕ Preferences

New Delete Test connection

☑ ☐ ⬆ ⬇

Select	Name	JNDI n
None		
Total 0		

6. Fill in the form. Be sure you fill all important fields accordingly. Click **Apply** when complete.

* Scope

* Name

JNDI name

Use this Data Source in container managed persistence (CMP)

Description

Category

Data store helper classes provided by WebSphere Application Server

- DB2 Universal data store helper**
 (com.ibm.websphere.rsadapter.DB2UniversalDataStoreHelper)
- DB2 for iSeries data store helper
 (com.ibm.websphere.rsadapter.DB2AS400DataStoreHelper)

Specify a user-defined data store helper
 Enter a package-qualified data store helper class name

Component-managed authentication alias

Component-managed authentication alias

Container-managed authentication

Container-managed authentication alias (deprecated in V6.0, use resource reference authentication settings instead)

Mapping-configuration alias (deprecated in V6.0, use resource reference authentication settings instead)

DB2 Universal data source properties

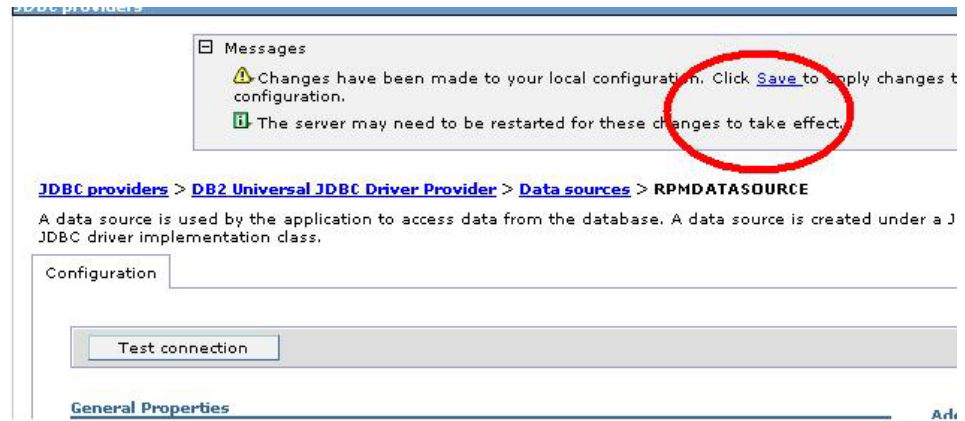
* Database name

* Driver type

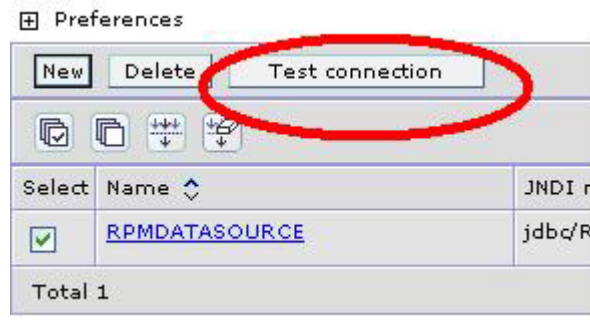
Server name

Port number

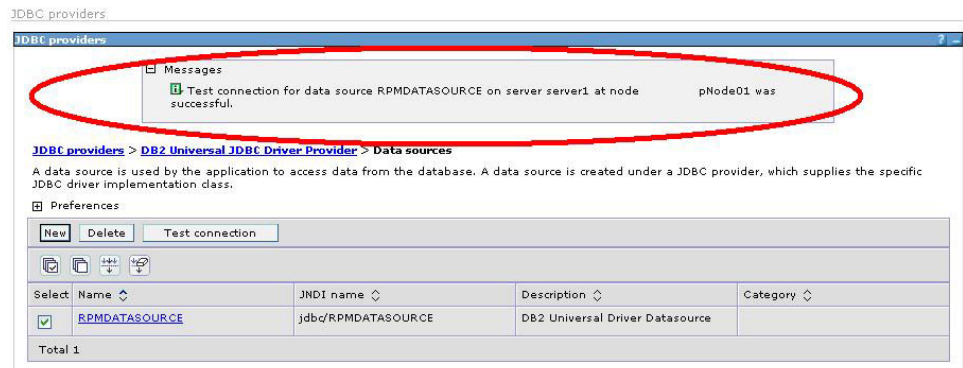
- Click the **Save** hyperlink in the next screen.



- Test your connection. Select the connection and click **Test Connection**.



- Wait for the following message to be displayed. It indicates that your connection is properly set.



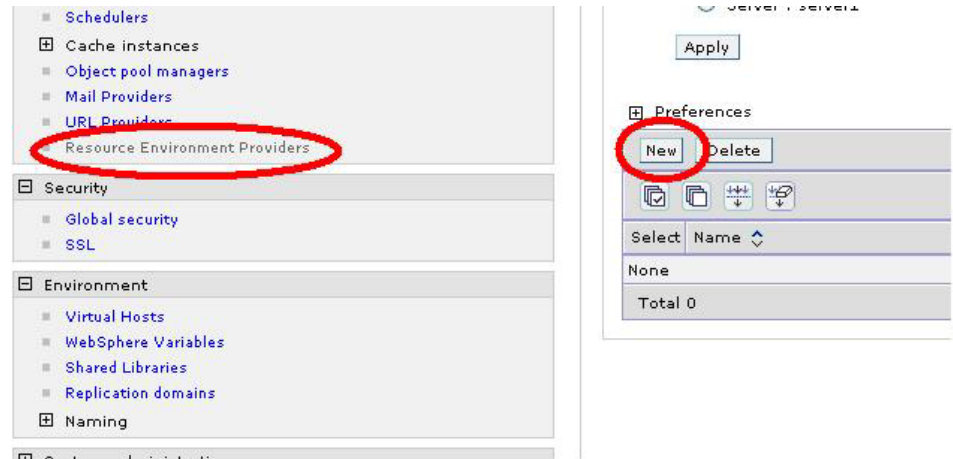
Step Three — Creation of a resource environment provider

Note: This provider contains all environment variables.

- To start the application server, click **Start Menu > Programs > IBM WebSphere > Application Server v6 > Profiles > default > Start the server.**
- To log in to the Administration Console, click **Start Menu > Programs > IBM WebSphere > Application Server v6 > Profiles > default > Administrative console.** When prompted, enter your login user ID and click **Log in.**

Note: The WebSphere administrator user credentials are defined when WebSphere is installed. Ask your WebSphere administrator for the correct user credentials. The User ID is not mandatory. If user credentials were not defined when WebSphere was installed, this field can also be left in blank.

3. Click **Resources > Resource Environment Provider** followed by **New**.



4. Enter the name for your provider and click **Apply**. Then select **Referenceables** and click **New** as shown below.

Resource environment providers > ibmrpmdwprovider

A resource environment provider used to create resource env entries.

Configuration

General Properties

* Scope
cells:rpmdev16Node01:Cell:nodes:rpmdev16Node01

* Name
ibmrpmdwprovider

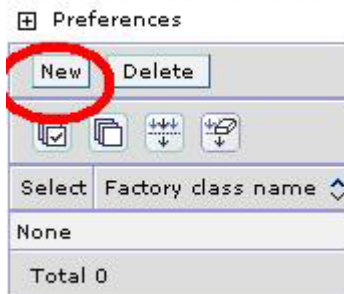
Description

Additional Properties

- Referenceables**
- Resource env entries
- Custom properties

Apply OK Reset Cancel

for the type of resource desired



5. Enter `com.ibm.rpm.servutil.StringFactory` in the **Factory class name** field. Also, enter `java.lang.String` in the **Class name** field.

General Properties

* Scope
cells:rpmdev16Node01Cell:nodes:rpmdev16Node01

* Factory class name
com.ibm.rpm.servutil.StringF

* Class name
java.lang.String

Apply OK Reset Cancel

6. Click **Apply**; then **OK**. Click the **Save** hyperlink in the next screen.
7. Select **Resource Environment Providers** one more time. Then click the new provider you created in step 4 and select **Resource env entries**.
8. Click **New**. Enter `dwDriverClass` variable name and `com/ibm/rational/commonreporting/web/rpm/dwDriverClass` JNDI name as described in Chapter 14, "Data warehouse common reporting middleware environment variable references," on page 175.

* Name
dwDriverClass

* JNDI name
com/ibm/rational/commonreportin

Description

Category

* Referenceables
com.ibm.rpm.servutil.StringFactory

Apply OK Reset Cancel

9. Click **Apply**, and click **Custom properties**.

Configuration

General Properties

* Scope
cells:rpmdev16Node01Cell:nodes:rpmdev16Node01

* Name
dwDriverClass

* JNDI name
com/ibm/rational/commonreportin

Description

Category

* Referenceables
com.ibm.rpm.servutil.StringFactory

Apply OK Reset Cancel

Additional Properties

[Custom properties](#)

10. Click **New** and fill in the required parameters as shown in the next screen capture.

* Name
dwDriverClass

Value
com.ibm.db2.jcc.DB2Driver

Description

Type
java.lang.String

Apply OK Reset Cancel

11. Click **Apply** and **OK**. Click the **Save** hyperlink in the next screen.
12. Repeat steps 7 through 11 for each of the following environment variables listed in chapter Chapter 14, "Data warehouse common reporting middleware environment variable references," on page 175.
 - dwDriverClass
 - dwDriverURL
 - adminUSR
 - adminPWD
13. Click **Save**.

Step Four — Common reporting application deployment (rpm-cr.war file)

1. Click **Applications** and **Install New Application**. Browse to the location of your rpm-cr.war file and click **Next**.

Path to the new application.

Local file system

Specify path

Remote file system

Specify path

Context root

Used only for standalone Web modules (.war)

2. In the next screen, keep the default selections and click **Next**.

Enterprise Applications

Preparing for the application installation

Choose to generate default bindings and mappings.

Generate Default Bindings

Override:

Do not override existing bindings

Override existing bindings

Virtual Host

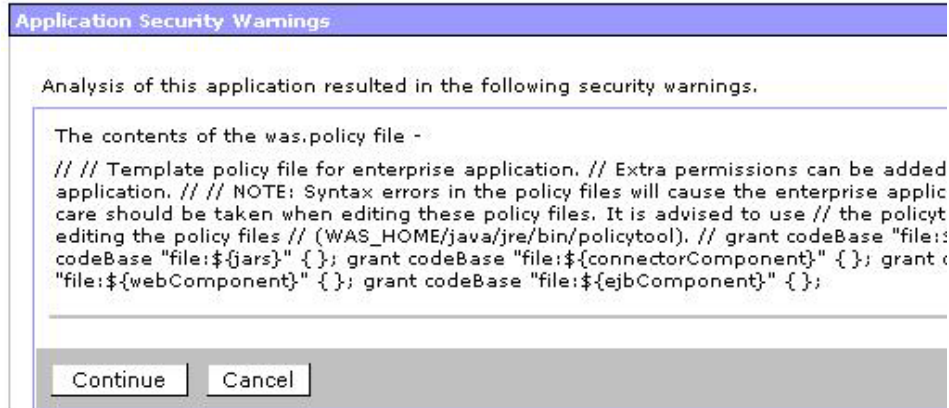
Do not use default virtual host name for Web modules

Use default virtual host name for Web modules:

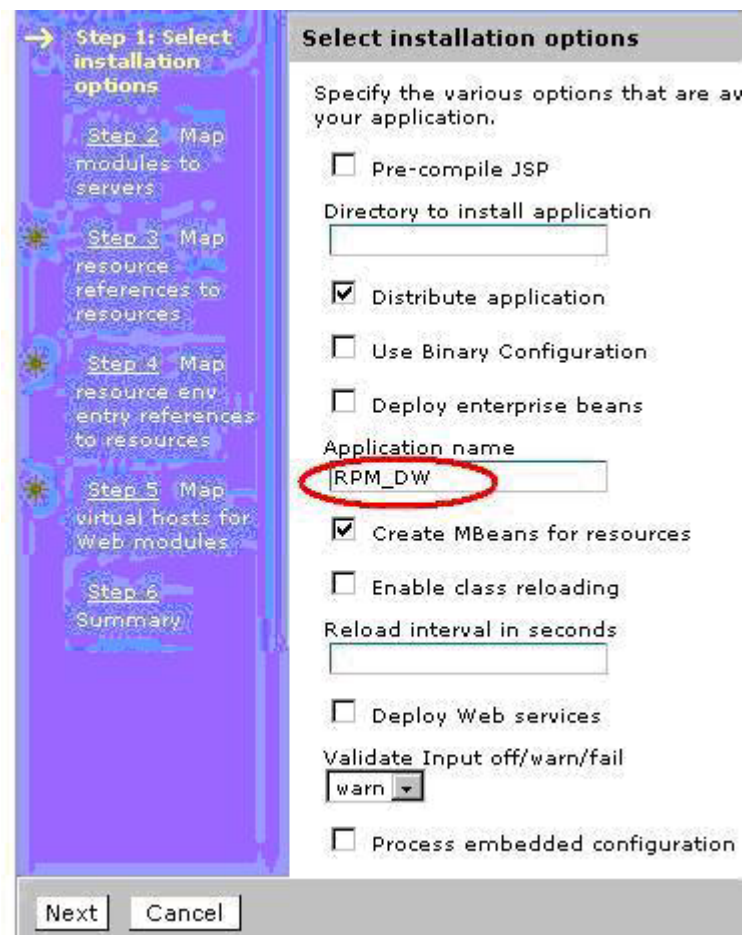
Host name

Specific bindings file

3. Click **Continue**.



4. Then, enter the Application name and click Next.



5. In the next screen, keep the default selections and click Next.

- Step 2: Map modules to servers
- ★ Step 3: Map resource references to resources
- ★ Step 4: Map resource

requests to this application. The plug-in is based on the applications which are route

Clusters and Servers:

WebSphere:cell=rpmdev16Node01Cell,r

Select	Module	URI	Server
<input type="checkbox"/>	rpm-cr	rpm-cr.war,WEB-INF/web.xml	WebSphere

6. Select the datasource from the drop-down list and click **Apply**.

javax.sql.DataSource

To set multiple existing resource JNDI names:

1. Select one or more checkboxes in the table
2. Select existing resource JNDI name
3. Click Apply

Specify existing Resource JNDI name:

Select...

Select...
 jdbc/RPMDATASOURCE
 jdbc/DefaultEJBTimerDataSource
 jdbc/PlantsByWebSphereDataSource
 DefaultDataSource

To modify... (authorization type is 'container'):

1. Select one or more checkboxes in the table
2. Select either 'none', 'default', or 'custom login configuration'
 - if 'none' is selected:
 - a. Select one or more checkboxes in the table
 - if 'default' is selected:
 - a. select an authentication data entry from the dropdown menu
 - b. Click Apply
 - if 'custom login configuration' is selected:
 - a. select a custom login configuration from the dropdown menu
 - b. Click Apply
 - c. To edit the properties of the custom login configuration, click Mapping Properties

7. Select the **rpm-cr** module check box.

Select	Module	EJB	URI	Reference binding	JNDI na
<input checked="" type="checkbox"/>	rpm-cr		rpm-cr.war,WEB-INF/web.xml	jdbc/RPMDATASOURCE	jdbc/R

8. Click **Apply** next to the datasource selections.

1. Select one or more checkboxes in the table
2. Select existing resource JNDI name
3. Click Apply

Specify existing Resource JNDI name:

To modify Resource Authentication method (if Authorization type is 'container'):

9. Select the **rpm-cr** module, followed by the authentication method.

Note: If the Rational Portfolio Manager middleware is already installed on the same application server, use

Specify authentication method:

none

Use default method

Select authentication data entry

Select application login configuration

10. Click **Apply**. The next screen should look like this.

Select	Module	EJB	URI	Reference binding	JNDI name	Login configuration
<input type="checkbox"/>	rpm-cr		rpm-cr.war,WEB-INF/web.xml	jdbc/RPMDATASOURCE	jdbc/RPMDATASOURCE	Resource authorization: container Authentication method: DefaultPrincipalMapping rpmdev16Node01/rpmDBCredentials

11. Click **Next**, verify that the JNDI environment variable names match the ones in section .

Select	Module	EJB	URI	Reference binding	JNDI name
<input type="checkbox"/>	rpm-cr		rpm-cr.war,WEB-INF/web.xml	adminUSR	com/ibm/rational/commonre
<input type="checkbox"/>	rpm-cr		rpm-cr.war,WEB-INF/web.xml	adminPWD	com/ibm/rational/commonre
<input type="checkbox"/>	rpm-cr		rpm-cr.war,WEB-INF/web.xml	dwDriverClass	com/ibm/rational/commonre
<input type="checkbox"/>	rpm-cr		rpm-cr.war,WEB-INF/web.xml	dwDriverURL	com/ibm/rational/commonre

12. Click **Next**. Keep the next screen at its default settings and click **Next**.

⊕ Apply Multiple Mappings

Select	Web module	Virtual host
<input type="checkbox"/>	rpm-cr	default_host ▾

- Keep the default values and settings and click **Finish** to display the deployment summary screen.

[Step 1](#) Select installation options

[Step 2](#) Map modules to servers

[Step 3](#) Map resource references to resources

[Step 4](#) Map resource env entry references to resources

[Step 5](#) Map virtual hosts for Web modules

→ **Step 6: Summary**

Summary

Summary of installation options

Options	Values
Use Binary Configuration	No
Create MBeans for resources	Yes
Cell/Node/Server	Click here
Reload interval in seconds	
Enable class reloading	No
Process embedded configuration	No
Application name	RPM_DW
Validate Input off/warn/fail	warn
Directory to install application	
Distribute application	Yes
Deploy Web services	No
Pre-compile JSP	No
Deploy enterprise beans	No

- The application deployment will now start. Upon successful completion, your screen should display the following information.

Check the SystemOut.log on the Deployment Manager or server where the application is deployed for process as it occurs.

ADMA5016: Installation of RPM_DW started.

ADMA5067: Resource validation for application RPM_DW completed successfully.

ADMA5058: Application and module versions validated with versions of deployment targets.

ADMA5005: The application RPM_DW is configured in the WebSphere Application Server repository

ADMA5053: The library references for the installed optional package are created.

ADMA5005: The application RPM_DW is configured in the WebSphere Application Server repository

ADMA5001: The application binaries are saved in d:\Program Files\IBM\WebSphere\AppServer\prof\workspace\cells\rpmdev16Node01Cell\applications\RPM_DW.ear\RPM_DW.ear

ADMA5005: The application RPM_DW is configured in the WebSphere Application Server repository

SECJ0400: Successfully updated the application RPM_DW with the appContextIDForSecurity inform:

ADMA5011: The cleanup of the temp directory for application RPM_DW is complete.

ADMA5013: Application RPM_DW installed successfully.

Application RPM_DW installed successfully.

To start the application, first save changes to the master configuration.

Save to Master Configuration

Click the **Save to Master Configuration** hyperlink, and click **Save**.

15. From the WebSphere Administrative Console tree, click **Applications > Enterprise Applications**
16. Click the **rpm-cr.war** application URL (the example used in this document is RPM_DW).
17. From the **Class Loading and File Update Detection** section on the page, select **Parent Last** from the **Class loader mode** drop-down menu.
18. Select **Module** from the **WAR class loader policy** drop-down menu and click **Apply**.
19. Select **Application** from the **WAR class loader policy** drop-down menu and click **Apply**.

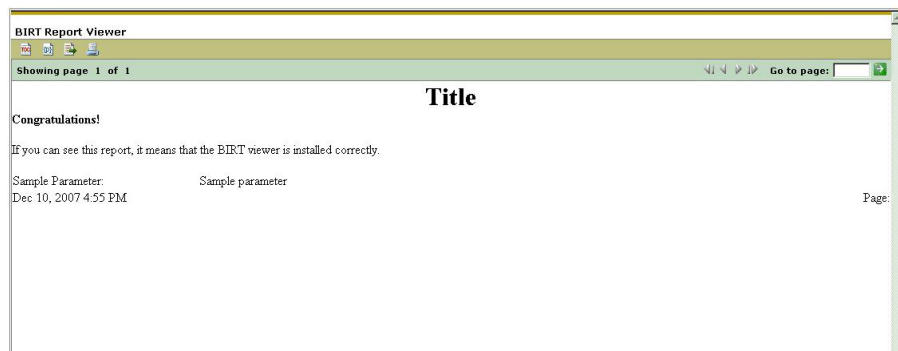
Note: Keep all other default values.

20. From the Related Items section of the page, select the **Web modules** hyper link.
21. Click the rpm-cr.war hyperlink.
22. From the Class Loader Mode drop-down menu, select Parent Last.
23. Click **Apply** and **OK**.
24. Click the **Save** URL.

25. Click **Save**.
26. Restart the application server.
27. Verify that the connection is successful.
 - a. To test the common reporting component, log on to the common reporting interface by entering the common reporting URL in a Web browser. For example, `http://<host_name>:<port_number>/rpm-cr`, where the host name is the hostname or IP address of the server where the common reporting component middleware application has been installed.
 - b. Authenticate using the default user credentials. The default user ID is *Admin* and the default password is *password*. You should see the following screen:



- c. Verify that the common reporting links are working. In this example, click the **Test Embedded BIRT Viewer** hyperlink. You should see the following screen:



- If you can see the above page, your connection to the Web application server is valid.
- If you cannot, verify that steps 15 to 26 have been completed properly.

For information about the data warehouse post-installation, see the *Rational Portfolio Manager Data Warehouse User Guide* latest version.

Chapter 13. Data warehouse common reporting middleware installation: Tomcat 5.5 Application Server

Requirements

The installation described in this section requires a Java™ Development Kit (JDK). An unzipped executable should be installed on the target machine.

Deploying the data warehouse common reporting middleware

This section describes how to set up the Rational Portfolio Manager Tomcat edition of the data warehouse common reporting middleware.

Deployment of the data warehouse middleware consists of deploying Rational Portfolio Manager Common Reporting which is a reporting abstraction layer included with your installation. The common reporting package provides a repository to store reports, a browser-based interface to execute reports, a generic interface to multiple third-party reporting tools, and a report administration interface. The warehouse is the repository supporting it.

Deploying the data warehouse middleware requires that the following four steps be carried out sequentially:

1. Install the data warehouse common reporting middleware
2. Install Apache Tomcat
3. Edit the rpm-cr.xml deployment file
4. Run the Tomcat Manager

Step One — Installing the data warehouse common reporting middleware:

1. Download and install the Sun Java SDK 5.0 or later (Sun Java SDK is required by Tomcat, the Sun Java JRE must not be used) from the following URL:

http://java.sun.com/javase/downloads/index_jdk5.jsp

Step Two — Installing Apache Tomcat:

1. Download and install the Sun Java SDK 5.0 or later (Sun Java SDK is required by Tomcat, the Sun Java JRE must not be used) from the following URL:

http://java.sun.com/javase/downloads/index_jdk5.jsp

2. Download and install Apache Tomcat 5.5 using the default settings or the settings required by the customer from the following URL:

http://jakarta.apache.org/site/downloads/downloads_tomcat-5.cgi

3. Configure the Tomcat user database (tomcat-users.xml), defining users and roles, to run the administration and manager applications. The file is stored in the TomcatBaseDirectory/conf directory.

Example of tomcat-users.xml configuration:

```
<?xml version="1.0" encoding="utf-8"?>
<tomcat-users>
  <role rolename="tomcat"/>
  <role rolename="role1"/>
  <role rolename="manager"/>
  <role rolename="admin"/>
</tomcat-users>
```



```

    <user username="tomcat" password="tomcat" roles="tomcat,admin,manager"/>
    <user username="role1" password="tomcat" roles="role1"/>
    <user username="both" password="tomcat" roles="tomcat,role1"/>
</tomcat-users>

```

4. If your Rational Portfolio Manager database is hosted on DB2, copy the IBM DB2 Universal JDBC Driver files in the TomcatBaseDirectory/common/lib directory. The required files are db2jcc.jar and db2jcc_license_cu.jar. The DB2 JDBC Driver files are included with IBM DB2. Rather than copying the files to the common/lib directory, they can be added to the Tomcat classpath. For more information about adding files to the classpath, see the Tomcat documentation.
5. If your Rational Portfolio Manager database is hosted on Oracle, copy the Oracle JDBC driver files in the TomcatBaseDirectory/common/lib directory. The required file is ojdbc14.jar.
6. Download the open source xalan- 2.7.0.jar file from the TomcatBaseDirectory/common/endorsed directory. The file can be downloaded from the following address:

<http://www.ibiblio.org/maven/xalan/jars/>

Step Three — Edit the rpm-cr.xml Deployment File (For more information, see “Example of rpm-cr.xml file for Tomcat V5.5”):

1. Select a location and create a blank rpm-cr.xml file.
2. Copy the rpm-cr.xml (created in step 1) and rpm-cr.war files to a directory on the same computer as the Tomcat Server, then open the rpm-cr.xml file with a text editor.
3. Edit the Context docBase tag to state the location of the rpm-cr.war file. It should be set to the directory where you copied the two files, which defines the actual URL that will be used to deploy the data warehouse middleware (for example, <http://mytomcatserver.mycompany.com:8080/rpm-cr>).
4. Edit the jdbc/RPMDATASOURCE parameters to the actual value required by your Rational Portfolio Manager database. If you change the Resource name or the ResourceParams name, make sure that they have the exact same value. This name will be used as the DSN name when calling a Web Service.
5. Save and close the rpm-cr.xml file.

Example of rpm-cr.xml deployment file for Tomcat V5.5:

```

<?xml version="1.0" encoding="UTF-8"?>
<Context reloadable="true">
  <Environment
    description="URL for DataWarehouse Connection"
    name="dwDriverURL"
    type="java.lang.String"
    value="jdbc:db2://datawarehouse_dbserver:50000/PMOFFICE"/>
  <Environment
    description="JDBC Driver Class for DataWarehouse Connection"
    name="dwDriverClass"
    type="java.lang.String"
    value="com.ibm.db2.jcc.DB2Driver"/>
  <Resource
    auth="Container"
    description=""
    name="jdbc/RPMDATASOURCE"
    type="javax.sql.DataSource"
    password="dbpassword"
    driverClassName="com.ibm.db2.jcc.DB2Driver"
    maxIdle="2"
    maxWait="5000"

```



```
username="dbusername"  
url="jdbc:db2://dbserver.com:50000/RPMDATABASE"  
maxActive="4"/>  
</Context>
```

Note: Do not remove or change the validationQuery parameter. This parameter is an SQL statement that enables Tomcat to know if a connection is still valid.

Step Four — Run the Tomcat Manager:

1. To start the Apache Tomcat server, run the startup.bat file located in the TomcatBaseDirectory/bin directory.
2. Open a Web browser and run the Tomcat Manager:

`http://localhost:8080/manager/html`

This URL may be different depending on your Tomcat installation (server name or port may be different).

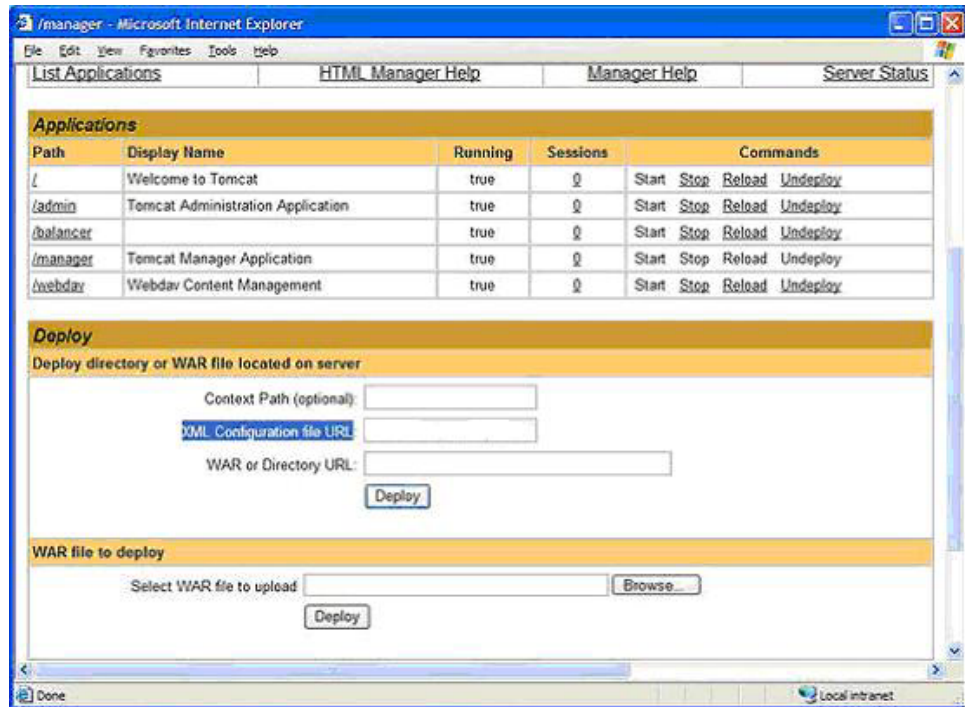
3. Enter the manager name and password as shown in the connection window.



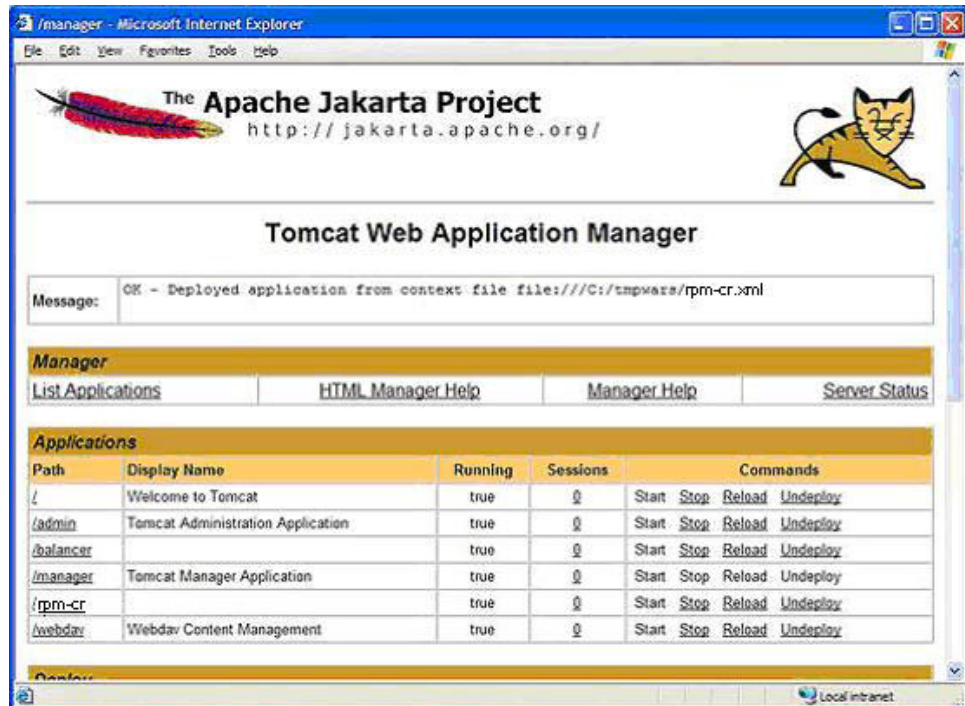
4. Scroll down to the deploy directory or WAR file located on the server, and enter the location of the rpm-cr.xml file in the XML Configuration file URL text box. The format of the following URL is:

`file:///C:/tmpwars/rpm-cr.xml`

where rpm-cr.xml is located in the c:\tmpwars directory. You must type the context path (for example, /rpm-cr) in the Context Path field.:



- Click **Deploy**. You should see that the Rational Portfolio Manager data warehouse Middleware is running at the “/rpm-cr” path.



- Log on to the common reporting interface to verify that the connection is successful by clicking the common reporting URL (/rpm-cr) and then authenticate using the default user credentials. The default user ID is *Admin* and the default password is *password*.
- You can now start using the Rational Portfolio Manager DW Middleware.

Chapter 14. Data warehouse common reporting middleware environment variable references

The Rational Portfolio Manager data warehouse middleware is configured using Web application resource environment references.

For procedures on how to set these variables, see the supported application server related sections:

- WebSphere Application Server 5.1: “Configuring the Middleware Runtime Options” on page 31
- WebSphere Application Server 6.0: “Configuring the Middleware Runtime Options” on page 51
- WebSphere Application Server 6.1: “Configuring the Middleware Runtime Options” on page 72
- Apache Tomcat Application Server 5.5: Chapter 6, “Installing middleware: Tomcat 5.5 application server,” on page 95

The following variables are used to configure the access to the data warehouse.

Table 28. Data warehouse variables

Variables	Description
dwDriverClass	<ul style="list-style-type: none">• Type: String• Default value: com.ibm.db2.jcc.DB2Driver• Default WebSphere JNDI Mapping: com/ibm/rational/commonreporting/web/rpm/dwDriverClass• Description:
dwDriverURL	<ul style="list-style-type: none">• Type: String• Default value: jdbc:db2://<server_name>:50000/• Default WebSphere JNDI Mapping: com/ibm/rational/commonreporting/web/rpm/dwDriverURL• Description:
adminUSR	<ul style="list-style-type: none">• Type: String• Default value: Admin• Default WebSphere JNDI Mapping: com/ibm/rational/commonreporting/web/rpm/adminUSR• Description: This flag defines the admin user.
adminPWD	<ul style="list-style-type: none">• Type: String• Default value: password• Default WebSphere JNDI Mapping: com/ibm/rational/commonreporting/web/rpm/adminPWD• Description: This flag defines the admin password.

Chapter 15. Setting up the Rational Portfolio Manager data warehouse authentication

The database administrator must take the following actions for each Rational Portfolio Manager user who accesses the Rational Portfolio Manager data warehouse database:

Creating a Rational Portfolio Manager database user

- If the database you are using, Oracle or DB2, can accept as valid the same user name and login information as that used for the Rational Portfolio Manager database, you do not need to create a data warehouse user ID. If this is not the case, create a data warehouse user in the RPM DW_username field of your configuration settings.
- Deny read-only rights to all tables
- Grant read-only rights to all views

You can modify the data warehouse User (DW_USER_NAME) and Data Warehouse Password (DW_USER_PASSWORD) fields in the identification portlet of a Resource description view. You must have resource manager rights to do this.

Only Rational Portfolio Manager users with a DW_USER_NAME specified will be able to access the RPM data warehouse. The following rules apply when entering data in the new fields:

- The entered values for DW_USER_NAME and DW_USER_PASSWORD can be the same as the RPM user name and password.
- The entered values must be valid as a user name and password on all databases. Only alpha numeric characters should be accepted in both fields.

Using LDAP authentication

LDAP authentication must be used when Rational Portfolio middleware is also using The alternate ID attribute must be set when the LDAP user name is not a valid database user name. LDAP authentication. LDAP authentication should also be used for DB2 databases.

Chapter 16. Importing data warehouse common reporting samples into Rational Portfolio Manager

This chapter describes how to import common reporting samples into Rational Portfolio Manager.

With the release of Rational Portfolio Manager 7.1.1.1, there are new default sample layouts for common reporting reports available. There are two scenarios under which you can import the sample layouts and each scenario has a separate procedure.

- Follow the instructions for **Importing new sample layouts**, if you have not used the common reporting reports in Rational Portfolio Manager 7.1.0.0, or if you have not created any new report layouts.
- Follow the instructions for **Keeping your current report layouts and importing the new ones**, if you have created report layouts with Rational Portfolio Manager 7.1.0.0 and you want to keep those layouts and import the new ones provided with version 7.1.1.1.

Importing new sample layouts

These steps describe how to import the eleven common reporting samples provided with this release if you have not used the common reporting reports in Rational Portfolio Manager 7.1.0.0, or if you have not created any new report layouts.

All common reporting files are located:

- For installation packages, in `${INSTALLATION_HOME}/Database/DB2/Unix/ddl/CommonReporting/` directory.
- For migration packages, in `${MIGRATION_HOME}/Database/DB2/Unix/migration/CommonReporting/` directory.

Note: This procedure is for DB2 only. To import common reporting samples into Rational Portfolio Manager with Oracle, is done when initially installing or migrating the Rational Portfolio Manager database by running the `install_comrpt.bat` file.

1. Depending on the package you are using go to:
 - `${INSTALLATION_HOME}/Database/DB2/Unix/ddl/CommonReporting/` directory for installation packages.
 - `${MIGRATION_HOME}/Database/DB2/Unix/migration/CommonReporting/` directory for migration packages.
2. Connect to Rational Portfolio Manager database as the instance owner by typing the following command:

```
db2 connect to DBNAME user DB_USER using DB_USER_PWD
```
3. Import common reporting templates into Rational Portfolio Manager by typing the following command:

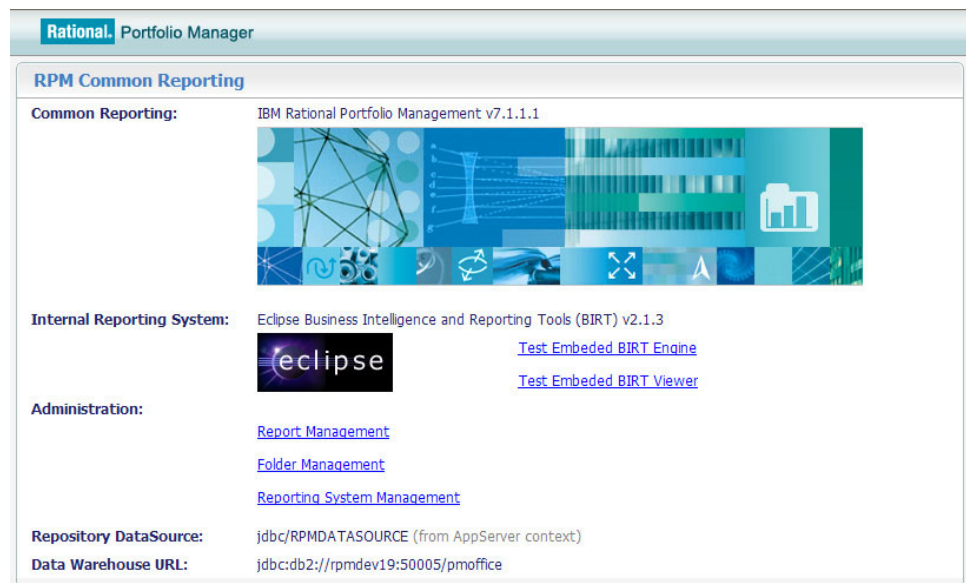
```
db2move DBNAME import -l ./lob -u DB_USER -p DB_USER_PWD > db2move.log
```


Keeping your current report layouts and importing the new ones

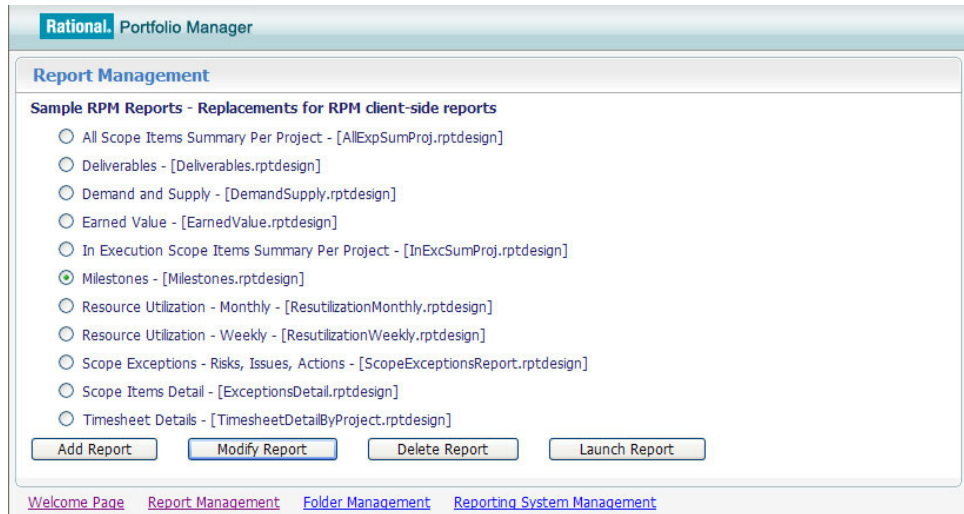
These steps describe the manual import of the eleven common reporting samples provided with this release in the case that you have already created report layouts with Rational Portfolio Manager 7.1.0.0.

The new common reporting sample reports for Rational Portfolio Manager 7.1.1.1 are located in the `${MIGRATION_HOME}/CommonReportingSamples/` directory.

1. Start the administration screen.
 - a. To start the administration screen for Rational Portfolio Manager Common Reporting, in a Web browser, open the common reporting URL that you configured in Chapter 12, “Data warehouse common reporting middleware installation: WebSphere Application Server 6.0,” on page 153 or in Chapter 13, “Data warehouse common reporting middleware installation: Tomcat 5.5 Application Server,” on page 171 depending on the application server you used to deploy the Rational Portfolio Manager data warehouse middleware. If you have deployed the Rational Portfolio Manager data warehouse middleware on Tomcat, you will be prompted to supply a user name and password for authentication. The default user ID is *Admin* and the default password is *password*. If you used WebSphere, you will be presented with the administration screen and prompted to supply the default user name and password for authentication only after clicking on one of the administration options.

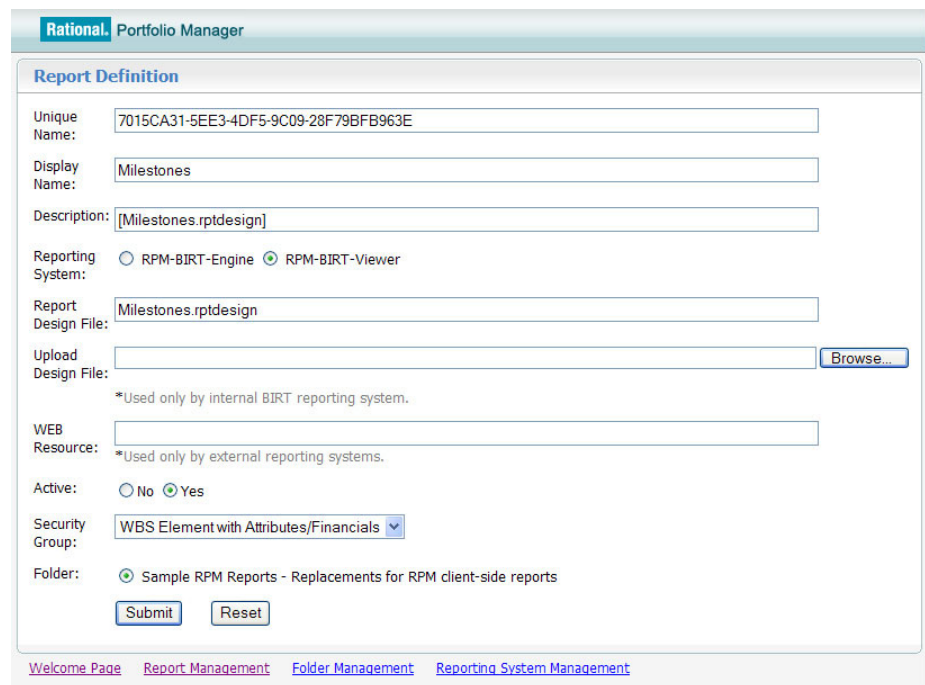


2. To start report management and access the default common reporting sample reports on the server, click the **Report Management** URL from the Welcome window. If you have used WebSphere Application Server to deploy the Rational Portfolio Manager data warehouse middleware, you will be prompted to supply the default user name and password for authentication. The default user ID is *Admin* and the default password is *password*. The Report Management window will open displaying the eleven common reporting sample reports shipped with the previous release.



3. The manual update of common reporting sample reports is done by selecting and updating one report at a time. To update a common reporting sample report, from the Report Management window, select a sample report and click **Modify Report**. The Report Definition window will open.
4. In the Report Definition window:
 - a. Upload the design file by entering the path to the design files in the Upload design file field or by browsing to the report that you want to upload.

Note: The new common reporting sample reports for Rational Portfolio Manager 7.1.1.1 are located in the `$(MIGRATION_HOME)/CommonReportingSamples/` directory.



- b. Leave all other pre-defined values as they are.
 - c. Click **Submit**.
5. Repeat steps 3 and 4 for each common reporting sample that you want to import.

After you have uploaded all the common reporting sample reports, you can start using the sample reports you have uploaded.

Appendix A. Performance tuning solutions

This chapter describes solutions, recommendations, and best practices to fine tune the system for optimized performance.

- DB2
- Oracle
- Application server
- Operating system and environment
- Allocating sufficient swap space
- Paging activities
- Disk I/O activities
- Additional considerations
- Rational Portfolio Manager best practices

DB2

1. Change the page cleaners and prefetchers (NUM_IOCLEANERS & NUM_IOSERVERS).
 - a. To change the NUM_IOCLEANERS:
 - 1) Set the prefetcher to the number of CPU.
 - 2) Decrease its value if $AWP \geq 90\%$, where $AWP = ((Asynchronous\ pool\ data\ page\ writes + Asynchronous\ pool\ index\ page\ writes) * 100) / (Buffer\ pool\ data\ writes + Buffer\ pool\ index\ writes)$
 - b. To change the NUM_IOSERVERS:
 - 1) Set the prefetcher to the number of physical disks where the Rational Portfolio Manager database is located.
 - 2) Increase the number of servers whenever you start seeing Time waited for prefetch reaching seconds

The impact of the cache on the search transaction is very significant, as long as you are searching from the cache and performing minimum simple transactions that impact one or two fields such as Insert Update, Update flag, Open search Tool, and Perform Searches, the Rational Portfolio Manager will have quick response times. On the other hand retrieving data from CPU disk (I/O) may increase the wait time, therefore, for this case look at the Rational Portfolio Manager tablespace layout, and more particularly, at the Rational Portfolio Manager storage configuration. Different benchmarks have shown that file containers outperform raw devices.

2. Continue to monitor the following database parameters attentively:
 - BUFFERPOOLS
 - PCKCACHESZ
 - CATALOGCACHE_SZ
 - DBHEAP

Note: Do not to decrease it excessively, there is a large amount of information that gets stored in the DBHEAP.

- NUM_IOCLEANERS and NUM_IOSERVERS in conjunction with CHNGPGS_THRESH
3. **Power 5 versus p4:** DB2 on AIX power 5 supports Simultaneous Multi-Threading (SMT). Uses the new AIX 5.3 larger virtual memory page option.
 4. **Rational Portfolio Manager 64-bit:** Due to memory constraints on a 32-bit instance, Rational Portfolio Manager has shown better performance and responsiveness on a 64-bit.

Oracle

Consider the following information before engaging in Oracle performance fine tuning:

- **enqueue_resources:** Depending on the number of running sessions, set the value of this parameter to handle the number of resources that can be concurrently locked by the lock manager.

The following formula should be used to determine the minimum optimal value:

- Number of database files + ((SESSIONS - 10) * 2) + 55, if SESSIONS > 10
- Number of database files + ((SESSIONS - 3) * 5) + 20, If 4 <= SESSIONS <= 10

- To help the Oracle optimizer, change the following parameters when the load or usage, or both show a slow response time. These parameters have a tremendous impact on the Oracle optimizer:

Important: You must adjust the optimizer_index_cost_adj / optimizer_index_caching up or down on your system and keep monitoring. Use the following syntax to modify it:

- optimizer_index_caching: should be set to 10 to 50 <= optimizer_index_caching <= 70

- In case of concurrency, monitor the following Target PGAs, change its value if the hit ratio decreases:

```

- check-pga.sql
-- *****
-- Display detailed PGA statistics
--
-- *****
column name format a30

column value format 999,999,999

select
    name,
    value
from
    v$pgastat
;
- pga_advice.sql
-- *****

-- Display pga target advice
-- *****

column c1 heading 'Target(M)'

column c2 heading 'Estimated|Cache Hit %'
column c3 heading 'Estimated|Over-Alloc.'

SELECT
    ROUND(pga_target_for_estimate /(1024*1024)) c1,

```

```

          estd_pga_cache_hit_percentage          c2,
          estd_overalloc_count                  c3
FROM
  v$pga_target_advice;

```

- Besides caching tables, caching indexes can also be helpful for Rational Portfolio Manager, because there are more I/O on index blocks than data blocks.

Note: Ensure all Oracle users and processes are at the same priority order.

Here is an example of `<dbName>init.ora` file:

```

#####
# Copyright (c) 1991, 2001, 2002 by Oracle Corporation
#####
# NLS
#####

nls_date_format='YYYY-MM-DD'
nls_timestamp_format='YYYY-MM-DD hh24:mi:ss.ff6'
nls_numeric_characters = ".,"

#####
# Cache and I/O
#####
db_block_size=8192
#db_cache_size=600M
db_cache_size=800M
db_keep_cache_size=20M
db_recycle_cache_size=40M
db_file_multiblock_read_count=16

#####
# Cursors and Library Cache
#####
open_cursors = 1000
session_cached_cursors=50
cursor_sharing=EXACT

#####
# Database Identification
#####
db_domain=""
db_name=<instName>

#####
# Diagnostics and Statistics
#####
background_dump_dest=/o9i/app/oracle/admin/<instName>/bdump
core_dump_dest=/o9i/app/oracle/admin/<instName>/cdump
timed_statistics=TRUE
user_dump_dest=/o9i/app/oracle/admin/<instName>/udump
#####
# File Configuration
#####
control_files=("/ploffice/pmm01/oradata/<instName>/control01.ctl",
"/ploffice/pms02/oradata/<instName>/control02.ctl")

#####
# Instance Identification
#####
instance_name=<instName>

#####
# Job Queues

```

```

#####
job_queue_processes=10

#####
# MTS
#####
#dispatchers="(PROTOCOL=TCP) (SERVICE=<instName>XDB)"

#####
# Miscellaneous
#####
aq_tm_processes=1
compatible=9.2.0.0
max_enabled_roles=60
enqueue_resources=2000

#####
# Network Registration
#####
##local_listener=<instName>

#####
# Optimizer
#####
hash_join_enabled=TRUE
query_rewrite_enabled=FALSE
star_transformation_enabled=FALSE
optimizer_index_cost_adj=10      # Use an index if there
optimizer_mode=choose

#####
# Pools
#####
java_pool_size=10M
large_pool_size = 100M
shared_pool_size = 600M
shared_pool_reserved_size=32000000

#####
# Processes and Sessions
#####
processes=200

#####
# Redo Log and Recovery
#####
fast_start_mttr_target = 0

#####
# Security and Auditing
#####
remote_login_passwordfile=NONE

#####
# Sort, Hash Joins, Bitmap Indexes
#####
pga_aggregate_target=200M

sort_area_size=4000000

#####
# System Managed Undo and Rollback Segments
#####
undo_management=AUTO
undo_retention=7200
undo_tablespace=UNDOTBS1

```



```

#####
# Archiving settings
#####
log_archive_start=TRUE
log_archive_dest=/o9i/app/oracle/admin/<instName>/arch/<instName>_
log_archive_format=%s.arc
log_checkpoint_interval = 120000
log_checkpoint_timeout = 0
log_checkpoints_to_alert=TRUE

#####
# Miscellaneous Parameters
#####
utl_file_dir=/export/home/oracle9i/log
utl_file_dir=/o9i/app/oracle/admin/<instName>/udump
_trace_files_public=TRUE

#####
# Parallel Query
#####
parallel_max_servers=4*<instName>
parallel_min_servers=<nb Procs>
parallel_automatic_tuning = TRUE

```

Application server

Set the database under constant load (SA) and application servers for an optimal performance throughput as indicated in the following sections.

JVM Tuning

- If the application server is under constant load, set the minimum (Xms) and maximum (Xmx) heap size to 1 GB.

Note: This assumes that a dedicated server is hosting the Rational Portfolio Manager application server. Under normal usage maximum heap size should be set to twice the minimum heap size.

- The Rational Portfolio Manager application server's garbage collection activity must be monitored and its memory allocation increased when GC levels raise an out of memory exception. Key components that require monitoring and JVM or memory definition can be resized accordingly.
- Add, when your JVM allows it, the following switches:
 - -Xquickstart
 - -Xverify:none
 - -Xnoclassgc
 - -Xnocompactgc
- Consider the using the Generational Garbage Collector when possible, for example;

```

-XX:NewSize=256m
-XX:maximumNewSize=256m
-XX:SurvivorRatio=12
-XX:+UseParallelGC

```

The optimal value for NewSize should be equal to $\frac{1}{4} * Xmx$ ($1024/4=256$) and maximumNewSize should also be $\frac{1}{4} * Xmx$.

Operating system and environment

Kernel Parameters

The following parameters must be set in `/etc/system`:

```
set shmsys:shminimumfo_shmmaximum = 4294967295
set shmsys:shminimumfo_shmseg = 1024
set shmminimum:shminimumfo_shmminimum = 1
set shmsys:shminimumfo_shmmni = 1024
set semsys:seminimumfo_semmni = 4096
set semsys:seminimumfo_semaem = 16384
set semsys:seminimumfo_sevmx = 32767
set semsys:seminimumfo_semmap = 1026
set semsys:seminimumfo_semmns = 30640
set semsys:seminimumfo_semmsl = 1010
set semsys:seminimumfo_semopm = 100
set semsys:seminimumfo_semmnu = 2048
set semsys:seminimumfo_semume = 256
set msgsys:msginfo_msgmni = 50
set msgsys:msginfo_msgmap = 1026
set msgsys:msginfo_msgmaximum = 4096
set msgsys:msginfo_msgmnb = 4096
```

Allocating sufficient swap space

Ensure that the free swap is at least equal to half the total available RAM.

Paging activities

Monitoring of paging activities should be particularly re-enforced while Rational Portfolio Manager is in OLTP mode (write transactions). Keep the following constantly low:

- avg pflt/s
- slock/s

Disk I/O activities

Different benchmarks have shown that when Rational Portfolio Manager database is configured to use a SAN environment, its throughput and performance is increased. In this sort of infrastructure, disks spend about 80% of time searching and only 20% reading and writing data back and forth, lowering the disk seek time increases the performance of the disk.

Additional considerations

- Install Rational Portfolio Manager on a dedicated or isolated environment.
- Rational Portfolio Manager should be deployed on one of the following certified application servers: WebSphere or WebLogic.
- Network interfaces between the application server and database server must be set to full-duplex mode.
- Maintenance: statistics must be analyzed and computed for optimal performance.
- Disk defragmentation

Rational Portfolio Manager performance responsiveness is directly related to how you use the product. See the next section on “Rational Portfolio Manager best practices” for more information about how to maximize Rational Portfolio manager performance.

Rational Portfolio Manager best practices

Use the following set of best practices to optimize performance while using the Rational Portfolio Manager:

- The last view you use before you close Rational Portfolio Manager is always saved. When logging in to Rational Portfolio Manager and returning to that view, it displays the previously loaded data, eliminating reloading time.
- Filter data to avoid returning large volumes of unnecessary data in Pivots. Select only what you need before running pivots because large results sets are difficult to read and decrease performance.
- Calculate levelling to avoid slowing down the system. The Levelling feature has direct impact on cycles, consequently, to keep CPU at low levels and avoid slowing down the system, avoid running this feature in a concurrent mode or high concurrent mode.
- Make sure that projects are contained in portfolios; proper grouping decreases the loading time of the main WBS view.
- Use portfolio configuration to filter out unnecessary projects portfolios.
- Break long duration tasks into smaller ones. When entering actuals in timesheets, rescheduling is an expensive operation. For example, 100 days of 8 hours, entering 4 hours on the first day will result in a 101 day of additional 4 hours, even if you try to minimize the operation on day 2 to day 100, the looping will still reduce performance.
- Reduce the number of resources on a task, the higher the number of resources you have assigned to one task the heavier the task will be to update. For example, balancing 5 resources' percentage complete is much quicker than balancing 50 resources' percentage complete.
- Concurrent activities slow all users and can lead to mutual locks (deadlock). These are examples of the type of concurrent activities that should be avoided.
 - Assigning resources while team members are entering their timesheets.
 - Team members submitting their timesheet while project managers are updating task information.
- Disable any unnecessary portlet in the description view of any Rational Portfolio Manager object (WBS, CRI, Document, Client/Asset, Resource, Pool), every portlet adds an extra hit to the server (extra function call).

Appendix B. Error messages

DB2 error codes

- ERROR_CODE_400000=ERROR: 'Error occurred during the database creation.'
- ERROR_CODE_400001=ERROR: 'Error occurred during the creation of execution plan.'
- ERROR_CODE_400002=ERROR: 'The path for the package directory is not updated in execution plan table.'
- ERROR_CODE_400003=ERROR: 'The path for the RPM install log files is not updated in the execution plan table with the correct path.'
- ERROR_CODE_400004=ERROR: 'The value for the username of the instance owner is not updated in the execution plan table.'
- ERROR_CODE_400005=ERROR: 'The password for the instance owner is an empty string.'
- ERROR_CODE_400006=ERROR: 'The password of the connected user is empty when there is a connected user.'
- ERROR_CODE_400007=ERROR: 'Error occurred during the copying the RPM library file into %DB2TEMPDIR%function and %DB2TEMPDIR%function\unfenced\ directories for windows, \$HOME/sqlllib/function directory for Unix OS'
- ERROR_CODE_400008=ERROR: 'The path for the RPM binaries is not updated in the execution plan table with the correct path.'
- ERROR_CODE_400009=ERROR: 'The path for the RPM install scripts is not updated in the execution plan table with the correct path.'
- ERROR_CODE_400010=ERROR: 'Error occurred during buffer pool creation.'
- ERROR_CODE_400011=ERROR: 'Error occurred during table space creation.'
- ERROR_CODE_400012=ERROR: 'Error occurred during RPM table creation.'
- ERROR_CODE_400013=SEVERE WARNING: 'Error occurred during the insert of default records into RPM tables.'
- ERROR_CODE_400014=SEVERE WARNING: 'Error occurred during the creation of RPM triggers.'
- ERROR_CODE_400015=SEVERE WARNING: 'Error occurred while giving rights to the connected, user if any.'
- ERROR_CODE_400016=SEVERE WARNING: 'Error occurred during the creation of RPM indexes.'
- ERROR_CODE_400017=SEVERE WARNING: 'Error occurred during the binding of RPM packages.'
- ERROR_CODE_400018=SEVERE WARNING: 'Error occurred during the update of RPM database manager configuration parameters.'
- ERROR_CODE_400019=SEVERE WARNING: 'Error occurred during the update of RPM database configuration parameters.'
- ERROR_CODE_400020=SEVERE WARNING: 'Error occurred during the creation of RPM store procedures and/or UDFs.'
- ERROR_CODE_400021=SEVERE WARNING: 'Error occurred during the creation of RPM CQ Intergration default attributes.'
- ERROR_CODE_400022=SEVERE WARNING: 'Error occurred during the creation of RPM default records for custom pivots.'

- ERROR_CODE_400023=SEVERE WARNING: 'Error occurred during the update of DB2 configuration parameters.'
- ERROR_CODE_400024=SEVERE WARNING: 'Error occurred during the creation of RPM table aliases.'
- ERROR_CODE_400026=SEVERE WARNING: 'Some buffer pools could not start. The installation may have finished successfully but performance issues may be encountered.'
- ERROR_CODE_400041=WARNING: 'Error occurred during the running statistics and/or reorganizing RPM tables.'
- ERROR_CODE_400042=WARNING: 'Error occurred during the deletion of RPM store procedures and/or UDFs.'
- ERROR_CODE_400061=ERROR: 'Error occurred while connecting to RPM database.'
- ERROR_CODE_400062=ERROR: 'Error occurred while altering RPM table spaces.'
- ERROR_CODE_400065=ERROR: 'Error occurred during the copying of error_return.txt (error log file) into log directory.'
- ERROR_CODE_400066=ERROR: 'Error occurred during the shutdown of RPM database.'
- ERROR_CODE_400067=ERROR: 'The install script has to be run from DB2CLP (Db2 command line environment).'
- ERROR_CODE_400068=ERROR: 'Error occurred during the start-up of RPM database.'
- ERROR_CODE_400069=ERROR: 'Error occurred during the dropping of RPM triggers.'
- ERROR_CODE_400074=ERROR: 'Error occurred while renaming the file for table space creation according to RPM database size.'
- ERROR_CODE_400075=ERROR: 'Error occurred while renaming the file for buffer pool creation according to RPM database size.'
- ERROR_CODE_400076=ERROR: 'Error occurred while renaming one of the database configuration files(db2_set, dbm_cfg, db_cfg).'

Middleware error codes

- 100 successful
- 1 Error when reading the configuration file
- 2 Error when creating security object
- 3 Error when creating JDBC Provider
- 4 Error when creating Data Source
- 5 Error when creating Resource environment provider
- 6 Error when creating Resource variable entries
- 7 Error when installing the EAR application
- 8 Error when creating or writing log file
- 9 Error parameters when running the script

Appendix C. Terms and Glossary

Table 29. Terms and glossary used in this document

Variable	Description	Example
%DB2TEMPDIR%	Your DB2 home directory	D:\IBM\SQLLIB\
%ORACLE_HOME%	Your Oracle home directory	C:\Oracle\ora92
%MIGRATION_HOME%	Path to Rational Portfolio Manager 7.0 migration package	D:\software\RPM7000Mig Pack
%WAS_HOME%	Path to WebSphere home directory	D:\IBM\WebSphere\App Server

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