Rational. Portfolio Manager

IBM

Version 7.1
UNIX

Installation and Upgrade Guide

SC23-6196-02

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Note

Before using this information and the product it supports, read the information in “Notices” on page 207.

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This edition replaces SC23-6196-00

Contents

About this book

The installation portion of this document provide installation instructions and prerequisites for the complete default installation of the IBM® Rational® Portfolio Manager solution with DB2® and Oracle databases.

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.

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
- Oracle Database Management System
- DB2 Universal Database™ Management System Enterprise Edition
- IBM HTTP Server
- Web application servers

How to use this book

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

Table 1. How to use this book

Task	Document section
Planning the installation	Chapter 1, "Introduction," on page 1 and Chapter 2, "Planning your installation," on page 3
Installing the database component	• Chapter 4, "Installing and configuring the IBM Rational Portfolio Manager database for DB2 using the installation wizard," on page 15 • Chapter 3, "Installing and configuring the IBM Rational Portfolio Manager database for DB2 ," on page 7 • Chapter 5, "Installing the IBM Rational Portfolio Manager database for Oracle," on page 21

Table 1. How to use this book (continued)

Task	Document section
Installing and configuring the middleware component	One of the following chapters on installing and configuring Rational Portfolio Manager middleware: • Chapter 6, "Installing middleware: Using the installation wizard," on page 35 • Chapter 7, "Installing middleware: WebSphere Application Servers," on page 43 • Chapter 8, "Installing middleware: Tomcat 5.5 application server," on page 109 • Refer to this section to set middleware environment variables:Chapter 9, "Middleware environment variables reference," on page 117
Installing the client	Chapter 10, "Setting up the Rational Portfolio Manager client," on page 127

Before reading this book, be sure you have read the *IBM Rational Portfolio Manager Release Notes*® for version 7.1

Proprietary notice

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)

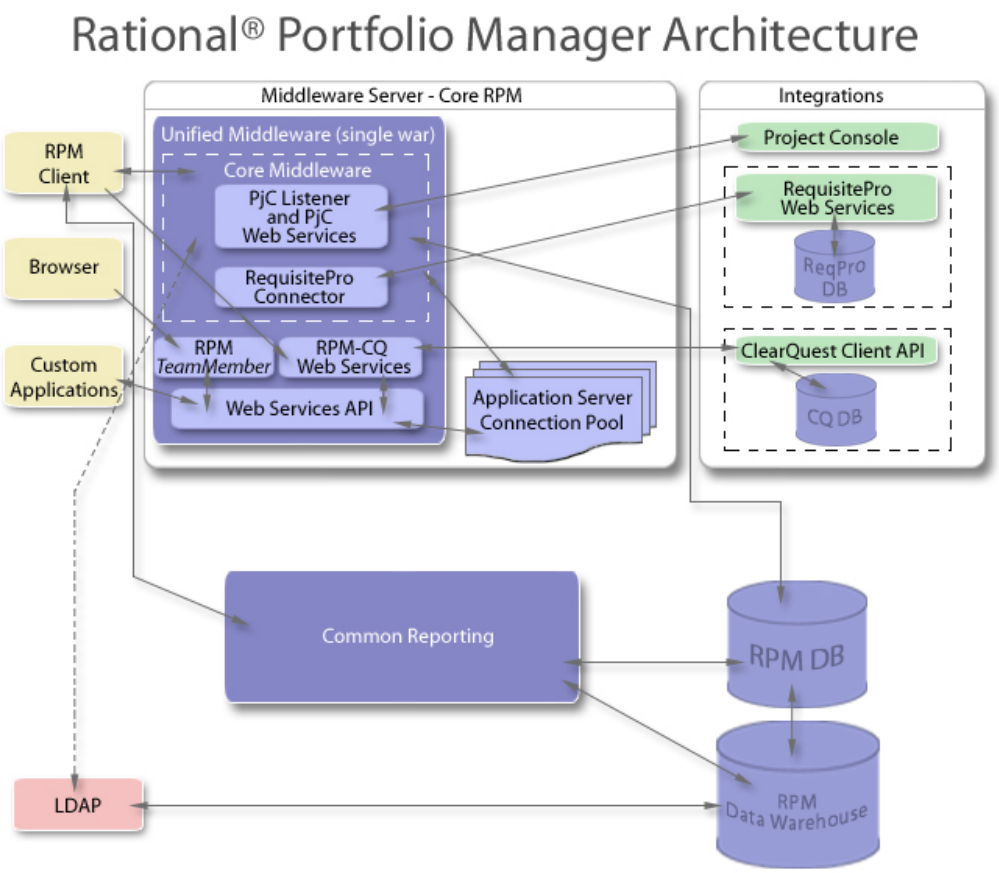
Chapter 1. Introduction

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 7.1.1.1Release 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
- 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. The database, where the data for the application is stored.

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 DBMS options for the repository.

Application layer

The middle tier, the application layer, handles most data processing issues. It is the interface between the user interfaces and the Rational Portfolio Manager database. It is implemented using HTTP or HTTPS protocols with servlets. It receives the request from the user interfaces or from other custom implementations, process 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.

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 requirements are met.

Table 2. 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 raided Level 5
Solaris	Sun Fire V880 four-way Quad CPU - 4 GB RAM Min of 40 GB HDD raided 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 small production environment (51-300 named users).

Latest supported operating environments

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

Table 3. Rational Portfolio Manager latest supported databases

Database	Version	Operating system	Hardware architecture
DB2	8.2*	AIX 5.2 (32-bit)	P5
DB2	8.2	AIX 5.2 (64-bit)	P5
DB2	8.2	AIX 5.3 (32-bit)	P5
DB2	8.2	AIX 5.3 (64-bit)	P5
DB2	8.2	Red Hat Linux AS Version 3 (32-bit)	Xeon™
DB2	8.2	Red Hat Linux AS Version 4 (64-bit)	Xeon
DB2	8.2	SuSE Linux 9.2 (32-bit)	Xeon
DB2	8.2	SuSE Linux 9.2 (64-bit)	Xeon
DB2	8.2	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
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 4. Rational Portfolio Manager supported application servers

Application Server	Version
WebSphere	5.1, 6.0 and 6.1
Apache Tomcat	5.5

Table 5. Rational Portfolio Manager client requirements

Software	Version
Microsoft® Windows XP Server Edition	• Professional SP1 • Professional SP2 • Vista: Enterprise
Microsoft Windows 2000 Server Edition	• Professional (96 DPI®) • Server • Advanced Server (latest service pack)
Internet Explorer	• 6 or higher (with ActiveX installed) • 7 or higher (with ActiveX installed) only on Windows XP SP2, Vista, and Windows 2000 Server SP1.
Microsoft Project	• 2002 • 2003 with MDAC* 2.6 or higher for export capabilities
TAM* WebSeal	v6
Citrix	• 3 • 4

* Microsoft Data Access Component (MDAC)

* Tivoli® Access Manager (TAM)

Table 6. Installation wizard application server prerequisites

Application Server	Operational System
WebSphere 6.0	AIX 5.3 (32-bit and 64-bit)
WebSphere 6.1	AIX 5.3 (32-bit and 64-bit)
Tomcat 5.5	AIX 5.3 (32-bit and 64-bit)

Table 7. Installation wizard database prerequisites

Database	Operational System
DB2 8.2*	AIX 5.3 (32-bit and 64-bit)

* Also known as 8.1 FP 14.

Table 8 lists the integrations that Rational Portfolio Manager supports.

Table 8. Rational Portfolio Manager integrations support

Application	Version
Rational ClearQuest®	7.0, 2003.06.15, and 2003.06.16

Table 8. Rational Portfolio Manager integrations support (continued)

Application	Version
Microsoft Project	2002 and 2003 (with MDAC 2.6 or higher)
Rational Method Composer	7.1
Rational ProjectConsole™	7.0.0.1 and 7.0.1
Rational RequisitePro®	7.0.1

Table 9. TeamMember support

Software	Version
FireFox	• 1.5 on Red Hat Linux AS Version 4 and Version 5 • 2.0 on Red Hat Linux AS Version 4 and Version 5
Internet Explorer	• 6.x • 7.0 only on Windows XP Server Edition SP2, Vista, and 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.

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. 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 connect 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.

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 13 or contact IBM technical support, see "Contacting IBM Client Support for Rational software products" on page viii.

Setting file permissions

Before starting the installation, add execute permissions to all files in Table 10 that will be used by the installation script. Failure to add these permissions on any of these files causes the installation to fail.

Table 10. Permission files

Path	File
${PACKAGE_ROOT}/Database/DB2/Unix	`install, install_func`
${PACKAGE_ROOT}/Database/DB2/Unix/ddl	`alias, createdb, db2_set, db2_set64,db_cfg,db_cfg64, dbm_cfg, dbm_cfg64, drop_triggers, grants, reorgstats, alter_tbspace`
${PACKAGE_ROOT}/Database/DB2/Unix/csp_{OS} where {OS} is your operating system. Possible values are: • `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 11 on page 9contain the creation of table spaces for the IBM Rational Portfolio Manager database. Each .sql file corresponds to a database size.

Table 11. 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

Depending on the size of the database that you want to install, you must edit the corresponding file to the path where your tablespaces are located as shown below:

Note: By default, the tablespaces are located on /home/ .

```
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 BPTEMP32K;
```

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.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 12 on page 10. During the installation, the installation script queries this file to run the steps with predefined information entered. The script then records and updates any success and failures, and creates a 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 this file. Failure to do so causes the installation to fail.

Note: When setting values, remove the % notation.

Table 12. Settings for the execution plan

Setting	Notes
%OS_TYPE%	Set this value by replacing %OS_TYPE% with your operating system. Possible values are: • Linux • AIX • Sun OS **Note:** Values are case sensitive. Set this value by replacing the variable %OS_TYPE% with `Windows`.
%PKG_DIR%	Set this value by replacing %PKG_DIR% with the path to the directory where the install script is located. For example, ${PACKAGE_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	• 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%	Set this value by replacing %DB_SIZE% with the value corresponding to the size of the database you are installing: • D • S • M • L
%DB_USER%	Set this value by replacing %DB_USER% with the instance owner username.

Creating the Rational Portfolio Manager database

To begin the installation, copy 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
     ```

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. On your screen DB_CHECK.log file will display information about each step performed by the installation and any error status if any.

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

   - SQLSTATE=02000L: result set of the query is an empty table
   - SQLSTATE=42704: undefined name

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 8.
6. Creates tables and indexes for Rational Portfolio Manager database and internal staging area. The internal staging area is used for internal projects that will be 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 13.

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.

Troubleshooting the installation

At each execution step, the output is written to a log file. You can use these files to help troubleshoot any problems with installation. The output files are described in "Installation and configuration procedure" on page 15.

If the installation halted anywhere, note the error and message returned by the installation script. Save these files and keep them in case technical support needs them. You can go through each of these files and make sure that there were no errors. If you have questions or concerns call 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 do so, from the DB2 command line, connect to the Rational Portfolio Manager database based on the scenario you have used.

- Scenario 1: `db2 connect to DB_NAME DB_USER DB_USER_PWD`
- Scenario 2: `db2 connect to DB_NAME CON_USER CON_USER_PWD`

At the prompt type:

```
db2 "values(get_unique_id())"
```

The output should be an alphanumeric string with length 32.

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)"
```

A result set is returned.

For first time installations, when logging into Rational Portfolio Manager with the default password, the expected result set value will be "200011", which states that the logon date has expired and the user must change the password. This is an indication of a successful installation.

For other scenarios, the successful calls are an indication of a successful installation.

Possible result set values for SP_LOGON:

```
200005 --> USER_DOES_NOT_EXIST
200103 --> INCORRECT_PASSWORD
200026 --> INCOMPATIBLE_VERSION
200019 --> RESOURCE_NOT_ACTIVE
200011 --> PASSWORD_EXPIRED
```

Chapter 4. Installing and configuring the IBM Rational Portfolio Manager database for DB2 using the installation wizard

This chapter explains how to use the installation wizard to install and configure and IBM Rational Portfolio Manager database for sites that use the DB2 database management system. This installation wizard guides you through the steps to install and configure the database by collecting all required information and then running the same installation scripts that are used for the manual installation. For details about the steps that the installation scripts perform, see "Steps performed by the installation" on page 11. Throughout this installation, you can click **Help** at any time to obtain details about the context of the panel that you are currently viewing.

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.

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

Note: This version of the installation wizard does not support remote installations.

Installation and configuration procedure

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 which 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

Creating the Rational Portfolio Manager database

Before you begin

Before starting the installation, make sure that the PATH environment variables contains '.'

You can do this by typing the following command at the command prompt:

```
echo $PATH
```

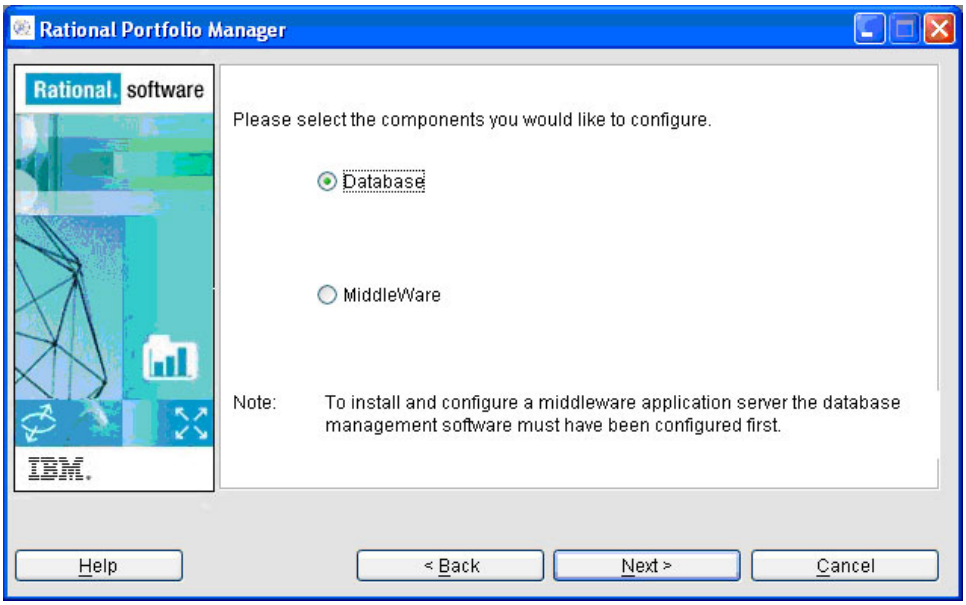
If it does not contain the '.' run the following command before you run the installation wizard:

```
export PATH=.:$PATH
```

Procedure

To install and configure the DB2 database for Rational Portfolio Manager by using the installation wizard:

1. Start the installation wizard program by starting the corresponding binary file.
2. The Installation/Configuration Tool for Rational Portfolio Manager version 7.1 welcome page opens. Click **Next**.
3. Review and accept the IBM Rational Portfolio Manager License Agreement information.
4. In the next page of the wizard, you must select a database or middleware installation. Click **Database**.

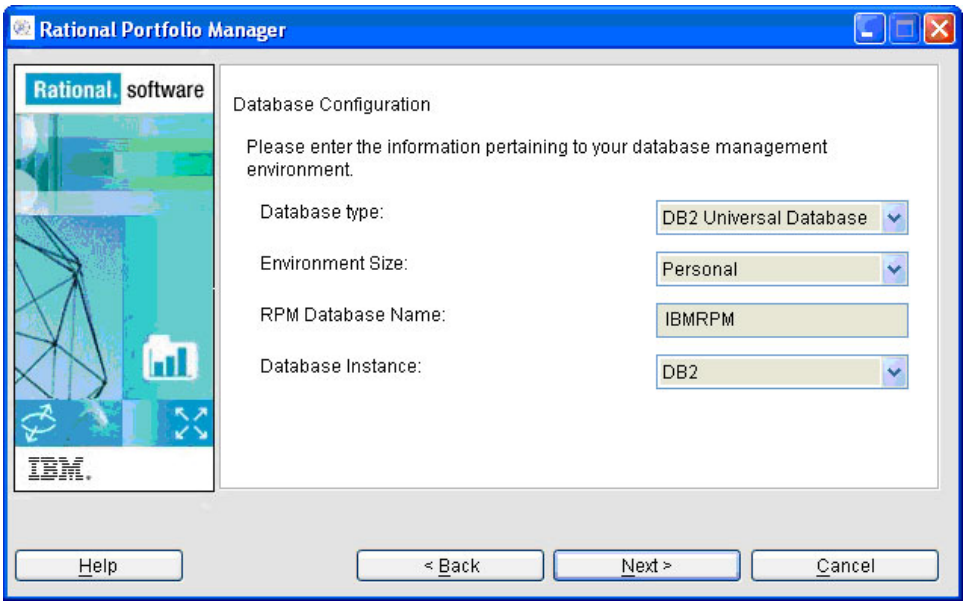


5. In the next window, you must enter the following information about your database management environment. After all database management environment information is entered, click **Next** to continue.
   - **Database type:** Select DB2 Universal Database.
   - **Environment Size:** Select the size of your database from the following possible values:
     - Personal: 25 or less users (this size is also referred to as Demo size)
     - Small: 100 to 200 users
     - Medium: 200 to 1500 users

– Large: 1500 and more users

- **RPM Database Name:** The name of the database to be created
- **Database Instance:** The instance name under which the database will be created

Note: The installer will not proceed if the credentials are not valid.



6. On the next page of the wizard, enter the user credentials to connect to the database. Because no remote installation is supported for this release, this information refers to the machine on which the installation wizard is running.

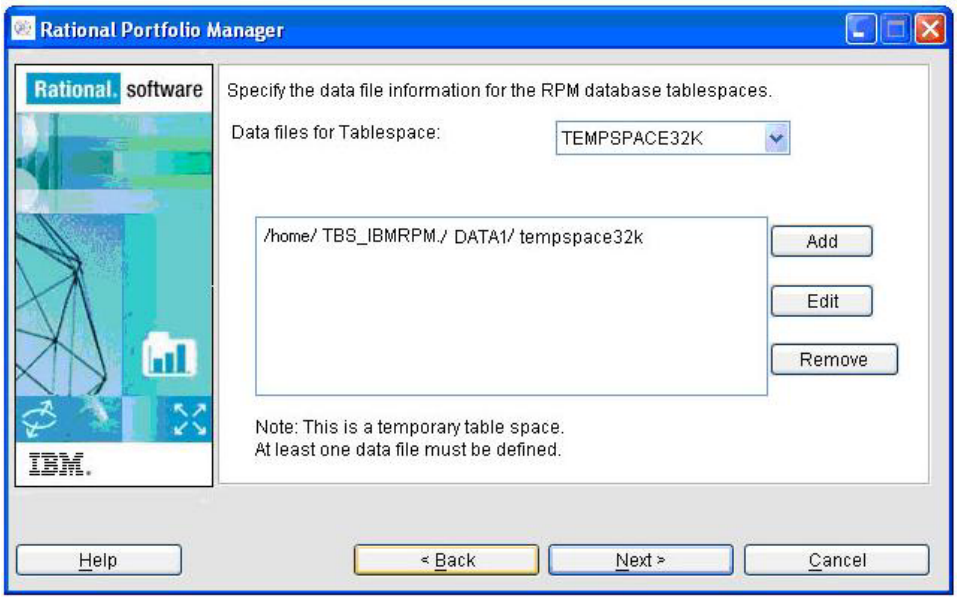
   User credentials:

   a. **Instance Owner Name:** The name of the instance owner to be used for the database
   b. **Instance Owner Password:** The password for the instance owner
   c. **Confirm Password:** The password for the instance owner
   d. **Enable Connected User:**
      - If you are using scenario 1, leave the **Enable** check box clear, and click **Next** to continue to step .

- If you are using scenario 2, select the **Enable** check box to enable a connected user to be configured for the Rational Portfolio Manager database. After you click **Enable Connected User**, you are prompted to enter user credentials for that connected user. When you are finished, click **Next** and provide the information for the next page:
  1) **Connected User Name:** The name of the connected user to be used for the database
  2) **Connected User Password:** The password for the connected user
  3) **Confirm Password:** The password for the connected user

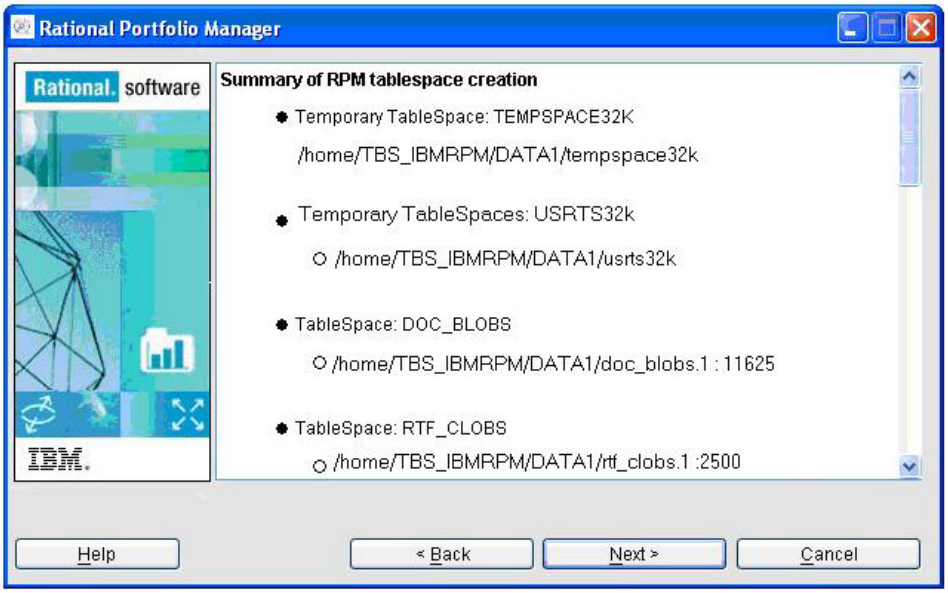
7. Configure all tablespaces and distribute them accordingly in your local file system. For environments that will handle a large volume of data, distribution of tablespaces improves performance.

   Note: A minimum of 12 GB is need for all the tables spaces.
   Consult your database administrator about the best way to configure the tablespaces in your system. By default, the paths for the tablespaces are set to /opt/. To change this path, click **Edit**; to add a datafile, click **Add**.

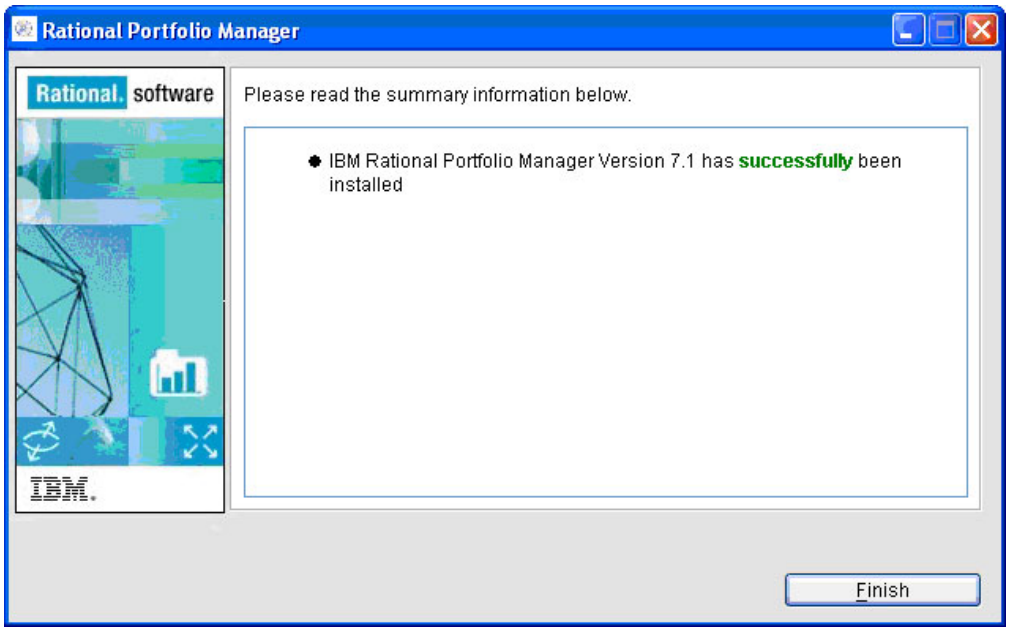


Click **Next** when you are finished.

8. Review the summary panel. If the tablespaces are in order, click **Next** to run the installation. To make any corrections, click **Back** to return to the previous page and make changes.



When the installation is complete, the result is displayed.



You also see this message in the result panel:

```
ERROR_CODE_400042=WARNING: 'Error occured during the deletion of RPM store
procedures and/or UDFs.'.
```

This message is displayed at each installation, and you can ignore it.

If you get any other error messages, see section on Appendix B, “Error messages,” on page 203 of this guide or the log files located in ${PACKAGE_ROOT}\logs, for a list of their descriptions.

Chapter 5. 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:

- Edit the PreInstall.cfg file
- Run the Preinstall file
- Run the createdb_*dbName* file
- Run the createObj_*dbName* file
- Test the installation
- Enabling Earned Value
- Shared Library configuration
- Run install_staging.sh
- Run install_comrpt.sh
- 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 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 23 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={Enterthe 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
utl_file_dir={Enter the path for database parameter called utl_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 that any sections not mentioned are not in the scope of this document.

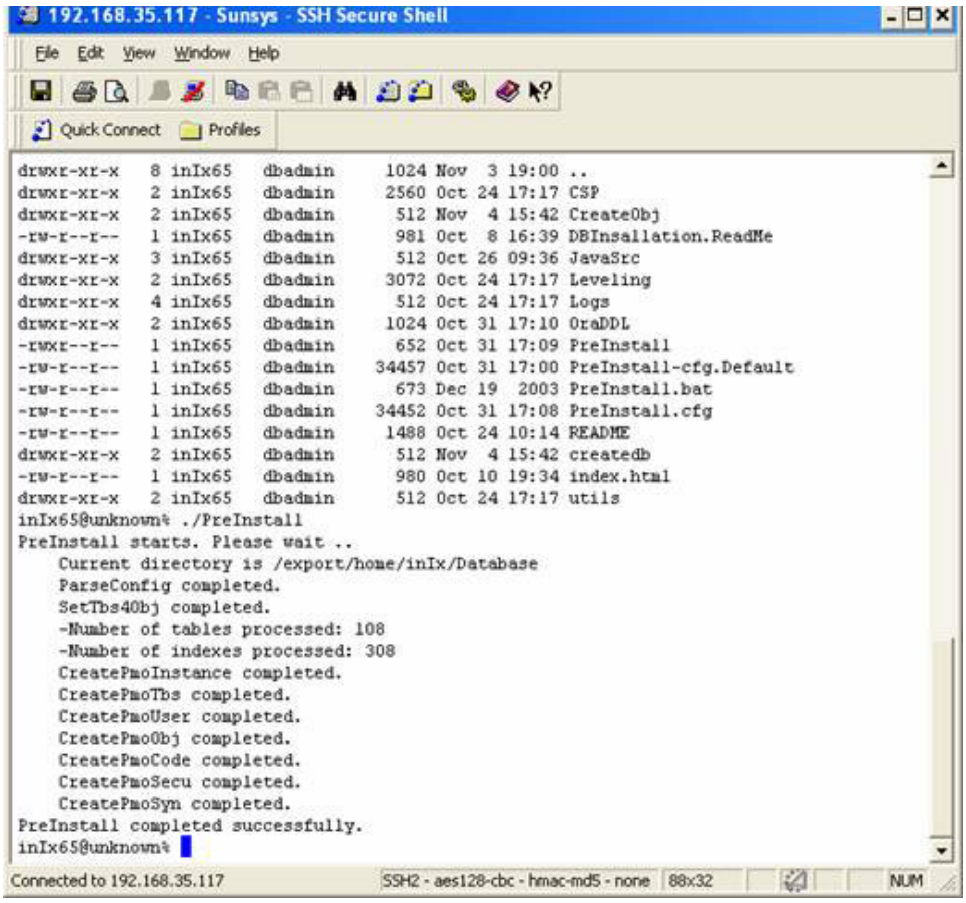
Running the PreInstall file

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:



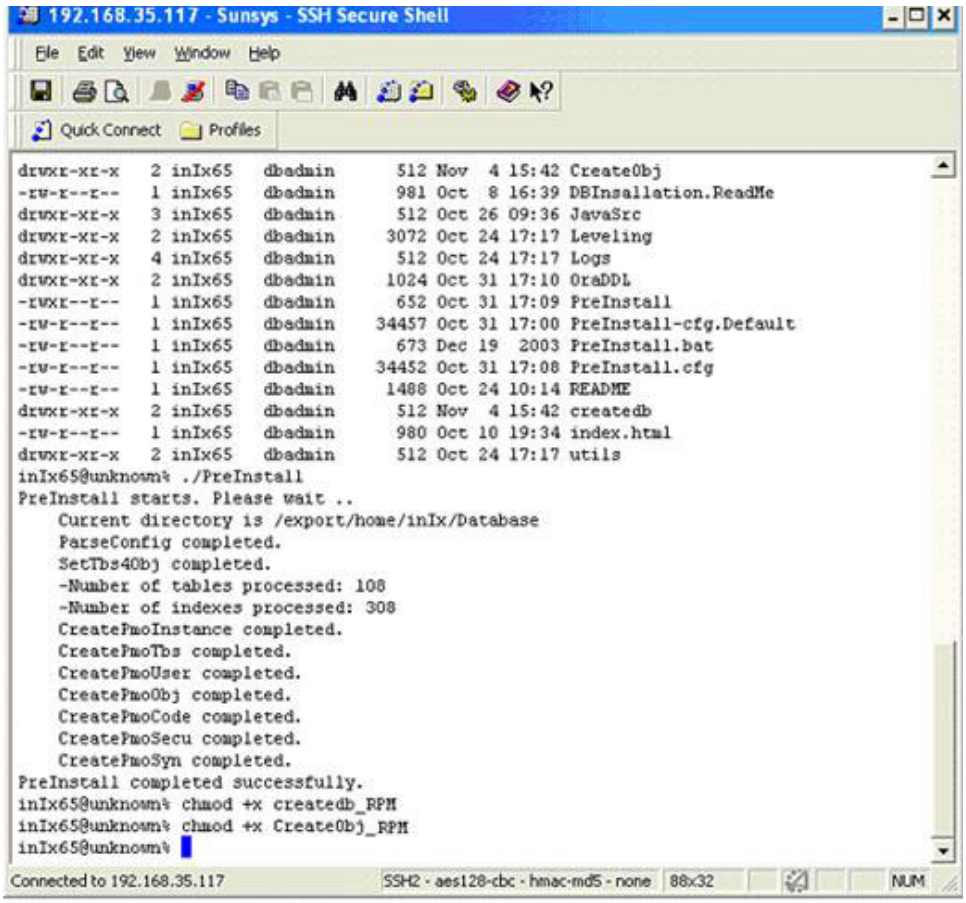
Running the Preinstall file generates two new files under the same directory. These files are createdb_<*dbName*> and CreateObj_<*dbName*>; where *dbName* refers to the name of the database instance defined in the PreInstall.cfg file. The next two sections describes how to run these files.

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
```

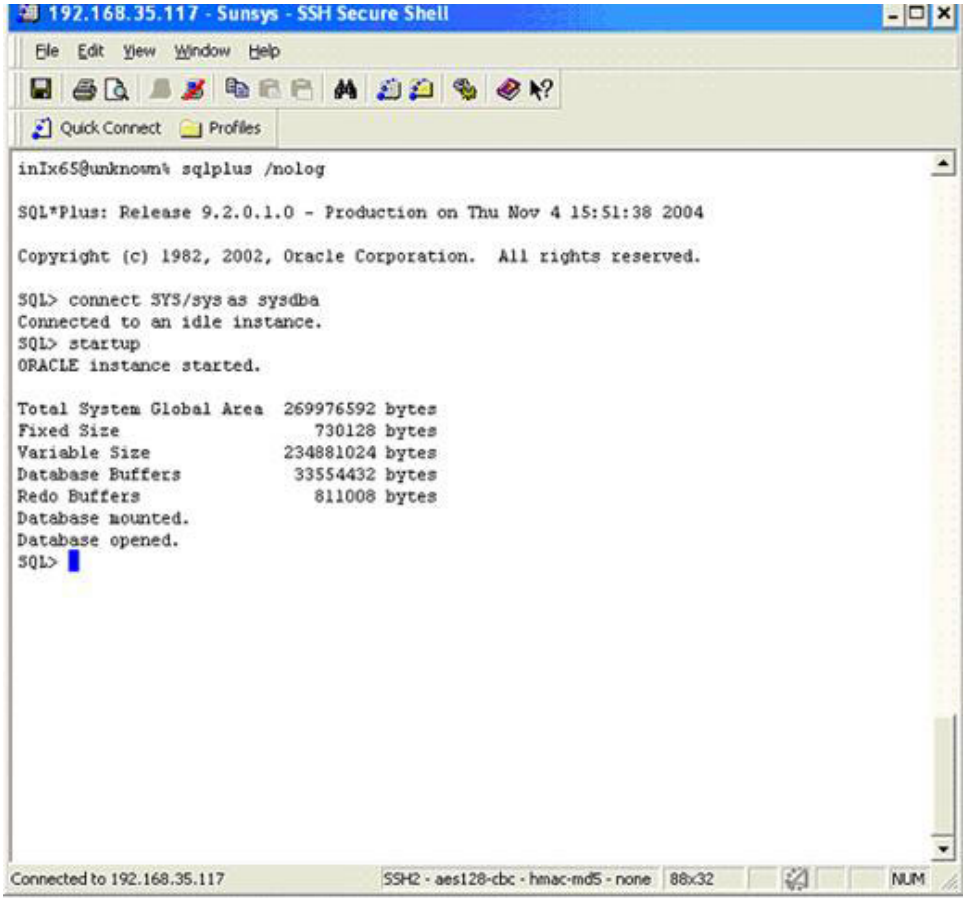


2. At the shell prompt, type the following, where <dbName> is your database name:

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

   Note: 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`.

3. Verify that the instance creation is successful by starting the database using the startup command.

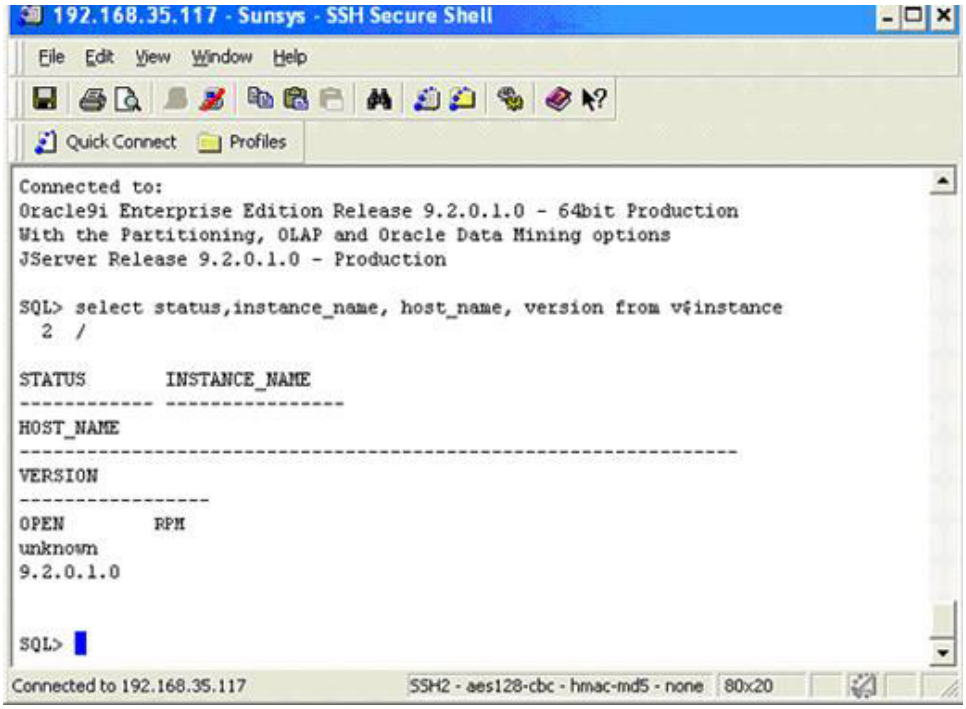


4. Next, display the Oracle SID Database name by typing this command:
   ```
   echo $ORACLE_SID
   ```

   Note: The instance name should be equal to the dbname property of the PreInstall.cfg file.
5. Login to the instance as the database administrator. The installer will find the password in the PreInstall.cfg file at the sys_password property, type:
   ```
   sqlplus "sys/sys as sysdba"
   ```

   Note: Be sure to include the double quotes. If the SQL> prompt is displayed, this is a successful login.
6. Then 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 screen shot.

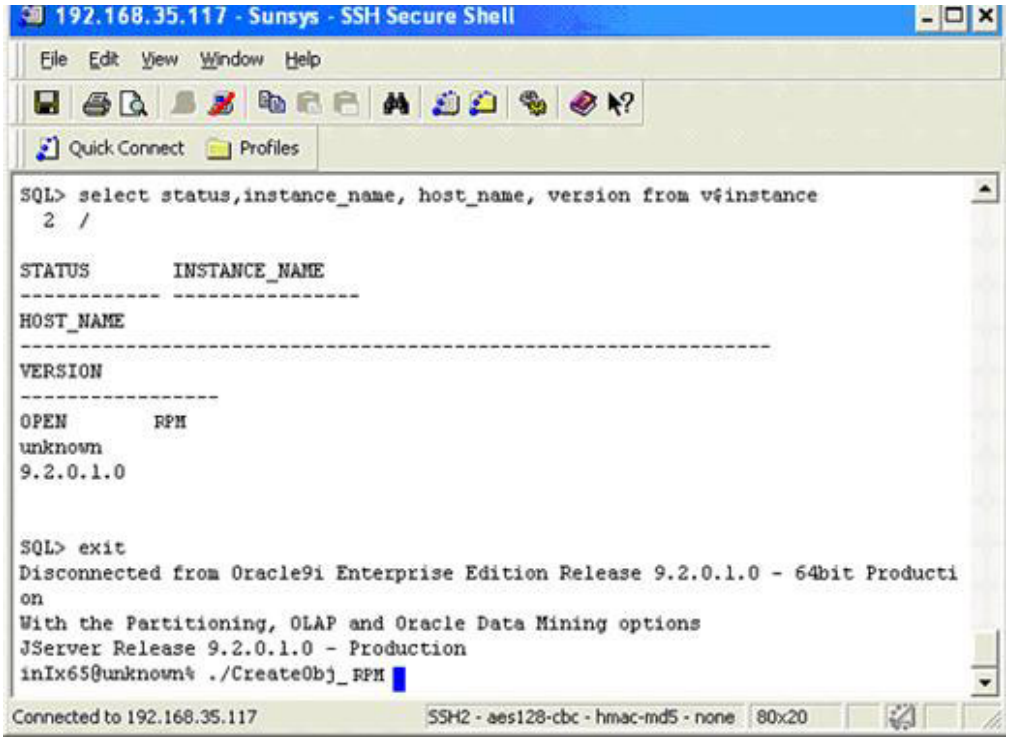


7. Exit the SQL Plus window.

Running the CreateOBJ_<dbName> file

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

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



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
   ```

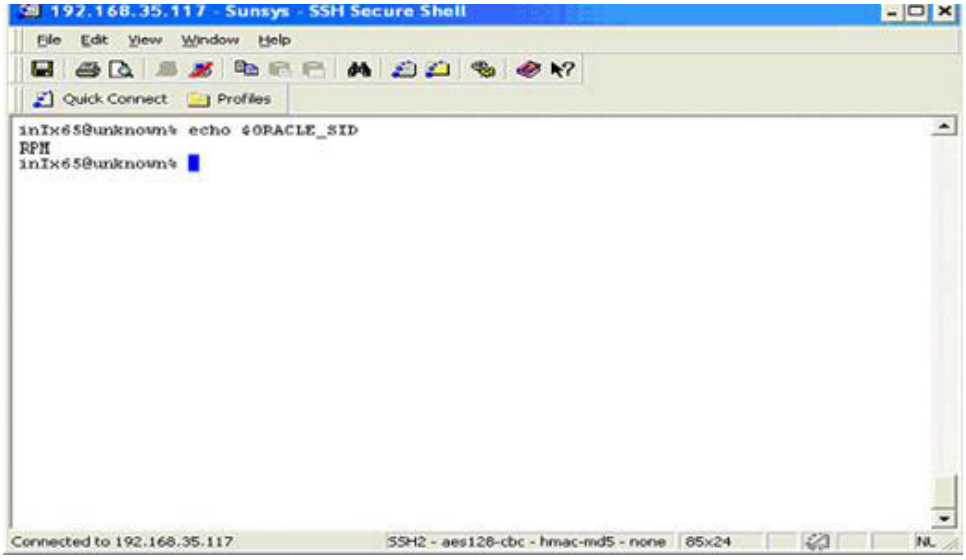
   The returned value should match the setting for the ORACLE_HOME property of the PreInstall.cfg file.

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.

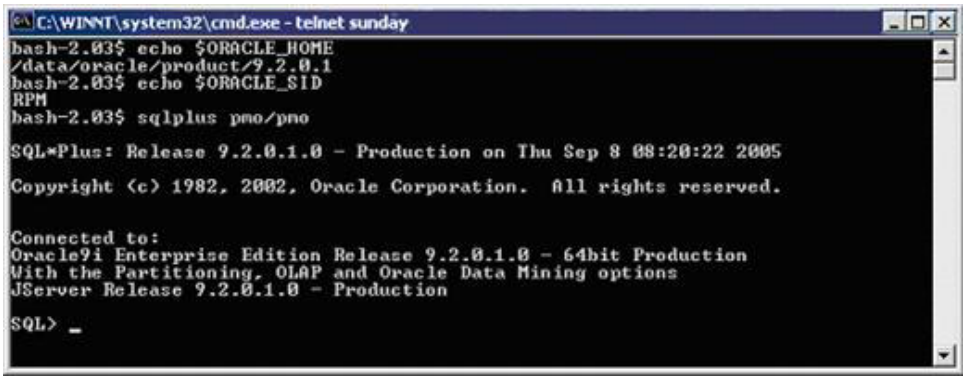
   Note: If the two environment variables are not set to the correct values, then you need to reset them prior to logon.



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.



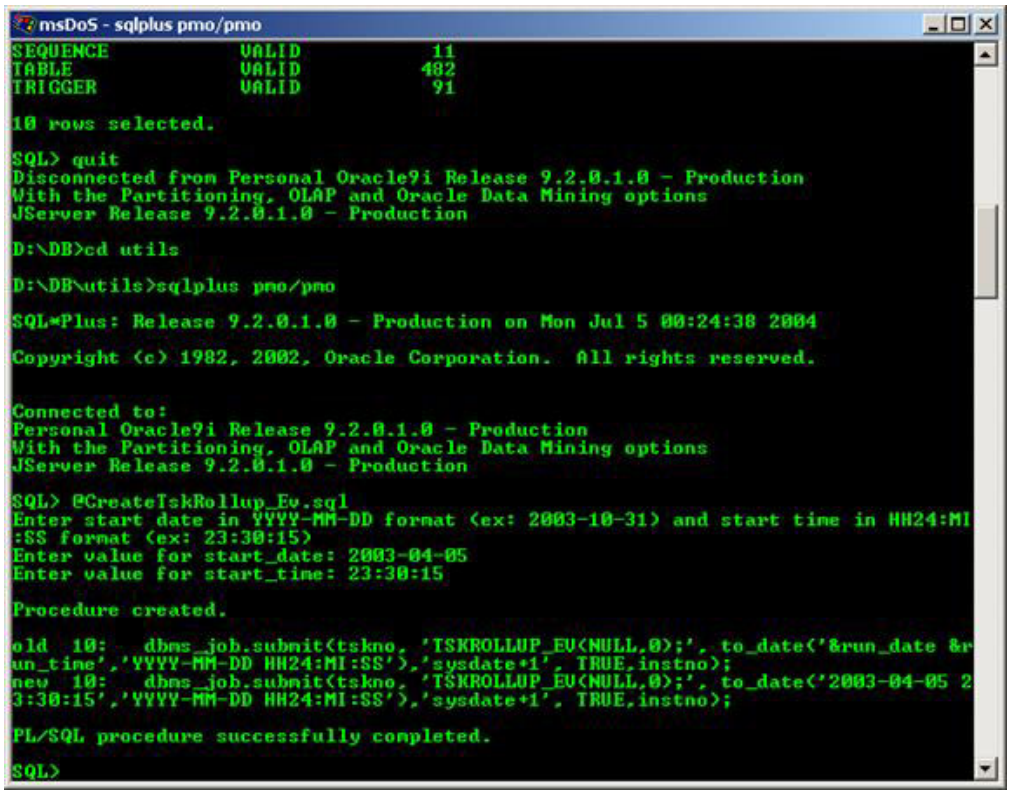
4. Verify that all the objects in the database are valid by issuing the following query from the SQL prompt:

```
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

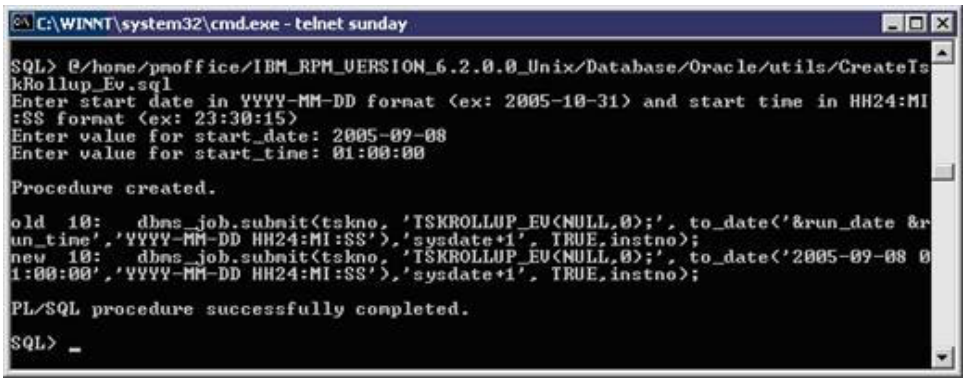


1. While still in sqlplus, go to ${package_root}/Database/Oracle/utils, and run the CreateTskRollup_Ev.sql file.

   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.



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 in Rational Portfolio Manager 7.1 installation, it is done by running the install_staging.sh file. This script creates 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 `${INSTALLATION_HOME}/Database/Oracle/OraDDL` folder by updating the default path to the path where you want the tablespaces to be created.
2. Open a shell window and navigate to `${INSTALLATION_HOME}/Database/Oracle` directory and run the script.

   Migration 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 no installation is performed and edit staging_tb_spaces.sql and run the installation again.
4. The script uses the `$ORACLE_HOME` environment variable of the machine which you are running the script from. Enter the required information when prompted.
5. Is your Rational Portfolio Manager database installed on this machine?
   - If you answer `n`, you will be prompted to enter:
     - TNS string
     - IBMRPM schema owner
     - IBMRPM schema owner password
     - SYS password
   - If you answer `y`, you will be prompted to enter:
     - ORACLE_SID value
     - IBMRPM schema owner
     - IBMRPM schema owner password
     - SYS password
6. `Are you sure you want to start the install now?` Answer `y` to start the installation.
7. Log files will be created in the `${INSTALLATION_HOME}/Database/Oracle/Logs` folder. It is always recommended to look at the log files to see if scripts were run successfully.

Running the install_comrpt.sh file

Creating the common reporting user is a mandatory step 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 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 these tablespaces have already been created in your database. If you are following the chronological order of this installation, the tablespaces have already been created in the previous step "Running the install_staging.sh file" on page 31 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` 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 you specify for tablespaces must be a valid path on your machine.

1. Open a shell window and navigate to `${INSTALLATIN_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 `$ORACLE_HOME` environment variable of the machine which you are running the script from. Enter the required information when prompted.
3. `Is your RPM database installed on this machine? (y/n)`
   - If you answer `n`, you will be prompted to enter:
     - TNS string
     - IBMRPM schema owner
     - IBMRPM schema owner password
     - SYS password
   - If you answer `y`, you will be prompted to enter:
     - ORACLE_SID value
     - IBMRPM schema owner
     - IBMRPM schema owner password
     - SYS password
4. Are you sure you want to start installation now? Answer `y` to start the installation
5. Log files will be created in the `${INSTALLATION_HOME}/Database/Oracle/Logs` folder. It is always recommended to look at the log files to see if scripts were run successfully.

Running the mig_con_user.sh file

Because staging and comrpt users have been created, the connected user must be updated to be able to connect to these two users, this can be done by running mig_con_user.sh. 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.

   The script will run and ask you a series of questions.
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 will be prompted to enter:
   - TNS string
   - IBMRPM schema owner
   - IBMRPM schema owner password

   If you answer `y`, you will be prompted to enter:
   - Verify the ORACLE_SID value
   - Enter IBMRPM schema owner
   - 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
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)`Answer `y` to start the migration
10. The log files will be created under `${INSTALLATION_HOME}/Database/Oracle/Logs` folder. It is always recommended to look at the log files to see if the script ran successfully.

Chapter 6. Installing middleware: Using the installation wizard

This chapter describes how to install the Rational Portfolio Manager middleware using the installation wizard that automatically sets up and deploys the middleware in the application server of your choice. The Rational Portfolio Manager installation wizard must be run on the machine where the application server is running. It will only deploy on the local server. Remote setup and installation are not supported in this release.

When necessary, click the Help for more detailed information about each panel.

Starting the installer

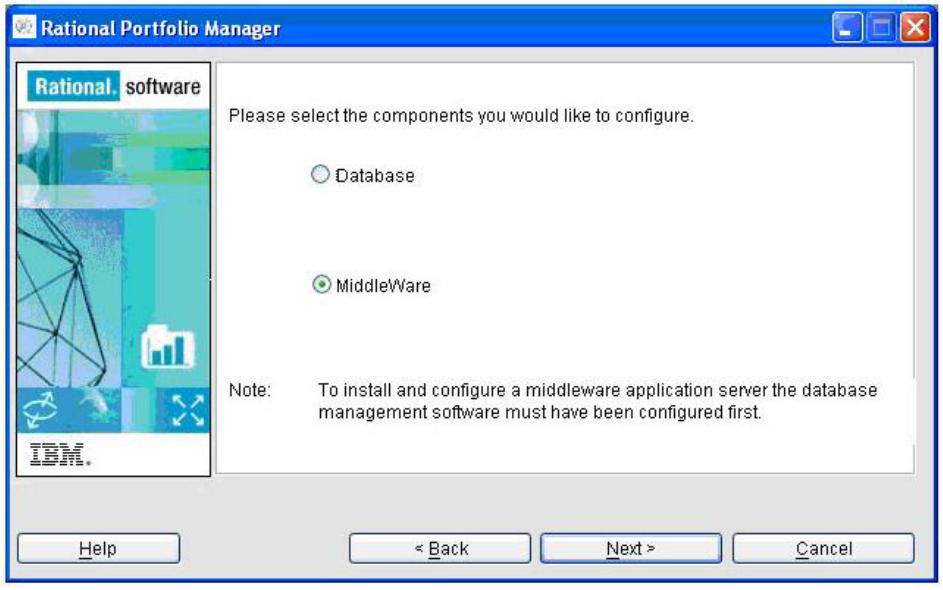
For a UNIX type and Linux environment, start the corresponding binary file. For example, for AIX, use the installRPMaix; for Linux, use installRPMlinux.bin.

Procedure

To install the middleware:

1. After starting the Installation/Configuration Tool for Rational Portfolio Manager version 7.1, the welcome page opens. Click **Next**
2. Review and accept the IBM Rational Portfolio Manager License Agreement information.
3. In the next page of the wizard, select the **MiddleWare** radio button to install the middleware, and click **Next**.

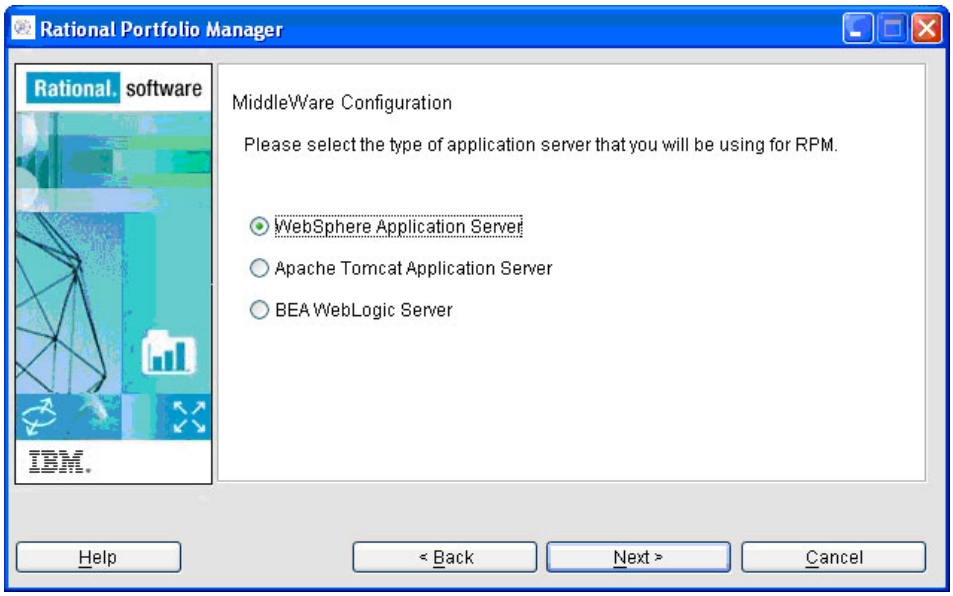
   Note: To install and configure a middleware application server, the database management must have been configured first.



4. The first panels are the same as the database installation wizard. On this window, select the application server that the middleware will be installed on and click **Next**. The installer will find the selected application server. If it

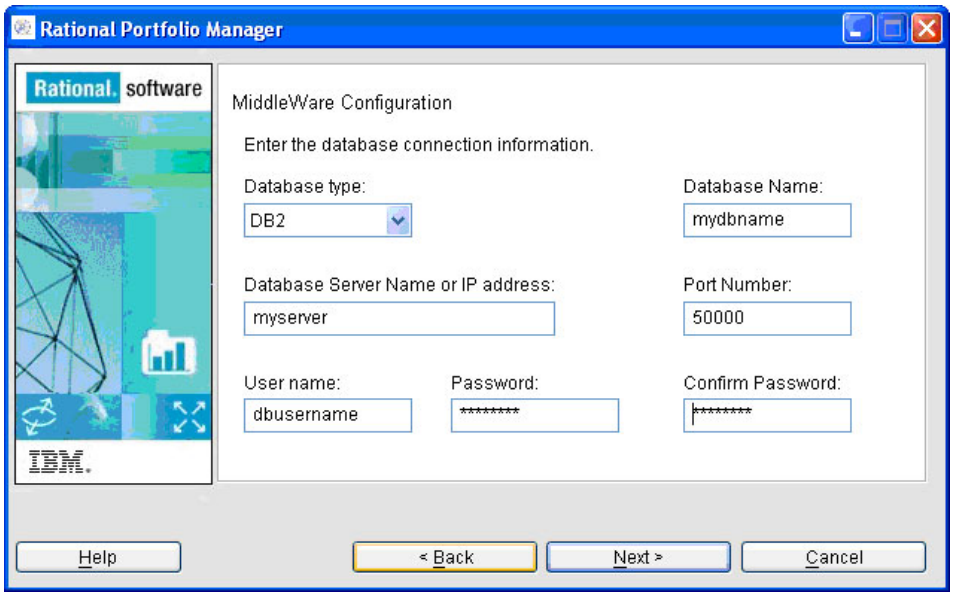
cannot find the selected application server, the installer will prompt you for the directory where the application server is installed.

Note: Oracle Application Server and BEA WebLogic Application Server are not certified with this release of Rational Portfolio Manager. If you select the **BEA WebLogic Server**, your installation will fail.

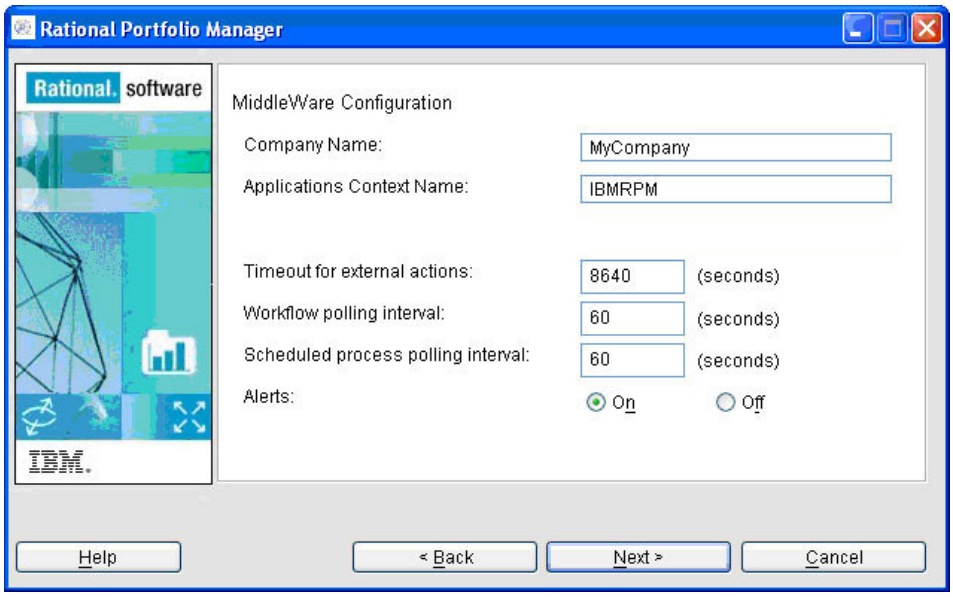


5. Set the database connection configuration settings. In this panel, enter all necessary information to establish the middleware connection to the Rational Portfolio Manager database. After all database connection configuration information is entered, click **Next**.
   - **Database type:** Select from the drop-down menu the database type that the middleware will establish a connection to.
   - **Database server name or IP address:** Enter the Database server name or the IP Address that the middleware will connect to.
   - **Database name:** Enter the name of your database.
   - **Port number:** Enter the port number for the newly installed database instance.

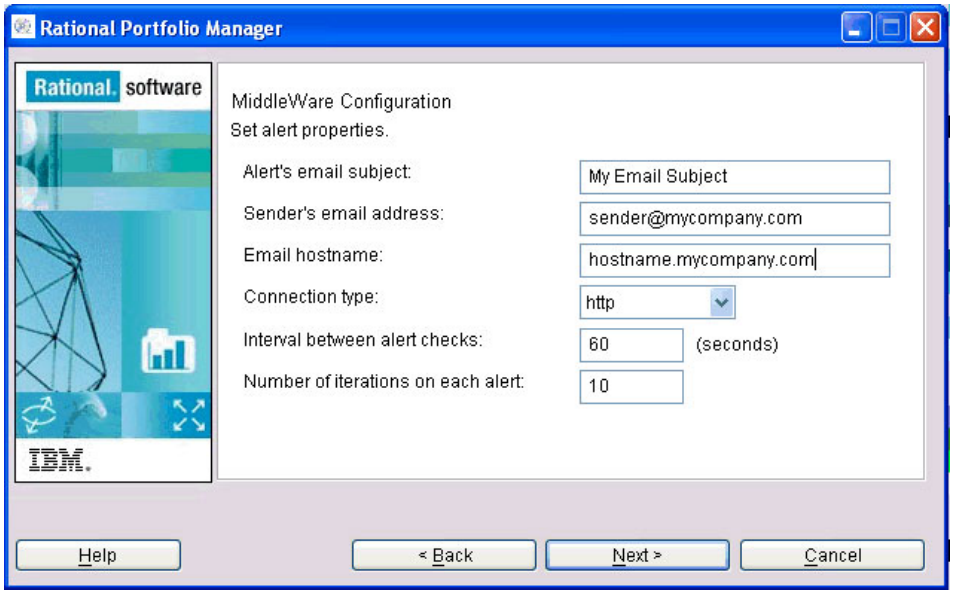
     Note: If you do not know the port number for the database instance, locate the service file that contains user and port information for the instance, and find the port that was created for your database.
   - **User name:** Enter the Database user name that you will use to access the database server.
   - **Password:** Enter the password for the above user name.
   - **Confirm password:** Retype the password entered above to confirm the password.



6. On the next page of the wizard, enter general configuration information. The application context name is the context to be used by the application server to construct the path to the application.
   - **Company Name:** Enter your company name.
   - **Applications Context Name:** Enter the context name of your application.
   - **Timeout for external actions:** Enter the maximum duration, in milliseconds, that the Rational Portfolio Manager will wait for external actions to be completed. If no value is entered, the wizard sets the value to the default. Default is 60000 (1 minute).
   - **Workflow polling interval:** Enter the polling interval, in milliseconds, in which the Rational Portfolio Manager will verify new external actions to be started. If no value is entered, the wizard sets the value to the default. Default is 60000 (1 minute).
   - **Scheduled process polling interval:** Enter the polling interval, in milliseconds, in which the Rational Portfolio Manager will verify scheduled processes to be started. If no value is entered, the wizard sets the value to the default. Default is 60000 (1 minute).
   - **Alerts:** Specifies whether the alert server is on or off. Select the radio button of your choice.



7. If you activated alerts in the previous window, enter alerts related information in this panel. If you chose not to turn them on, continue to the next step.
   - **Alert's email subject:** Enter the subject to be used on the message.
   - **Sender's email address:** Enter the sender to be used on the messages.
   - **Email hostname:** Enter the host to be used while sending messages.
   - **Connection type:** Enter the connection type to http.
   - **Interval between alert checks:** Enter the time between each iteration (in seconds).
   - **Number of iterations on each alert:** Enter the number of batches of messages to be fetched. Default value is 100.



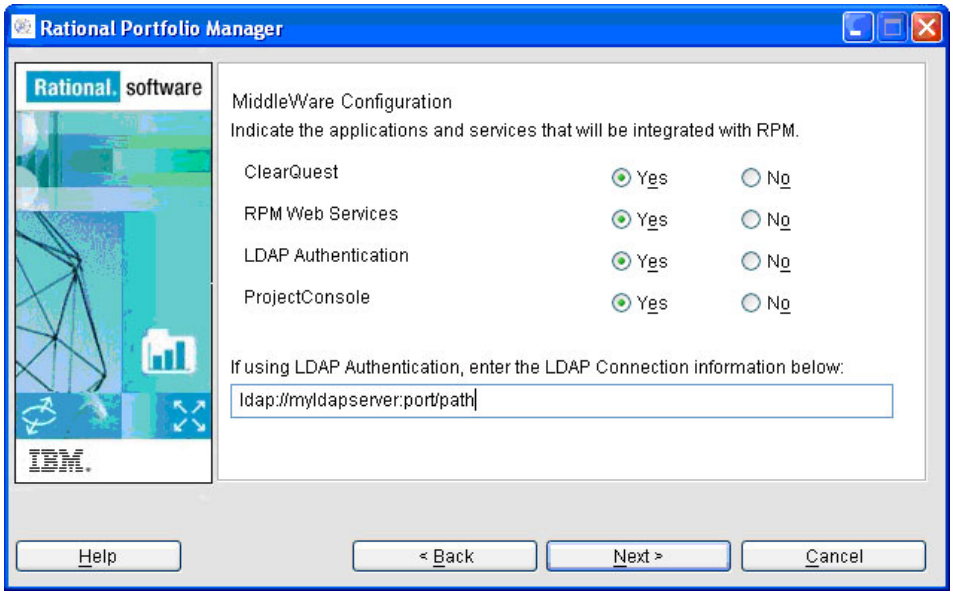
8. The next page of the wizard is the page where you can choose to integrate Rational Portfolio Manager with other Rational products by selecting the corresponding radio button (this step requires middleware configuration). In

addition to these integrations, you can set Rational Portfolio Manager to use LDAP authentication. After you finish selecting and entering information on this page, click **Next**.

If you select to use LDAP Authentication, an LDAP Connection information field is displayed in the lower part of the page. Enter the LDAP configuration in this field, for example,

```
java.naming.provider.url="ldaps:
//myldapserver.com:636"
java.naming.factory.initial=
"com.sun.jndi.ldap.LdapCtxFactory"
java.naming.ldap.version="3"
java.naming.security.protocol="simple"
ldapsearchcontext="o=mycompany.com"
ldapuseridattr="email"
ldapuserauthdn="distinguishedName"
```

Note: The LDAP configuration must be a single line of text.

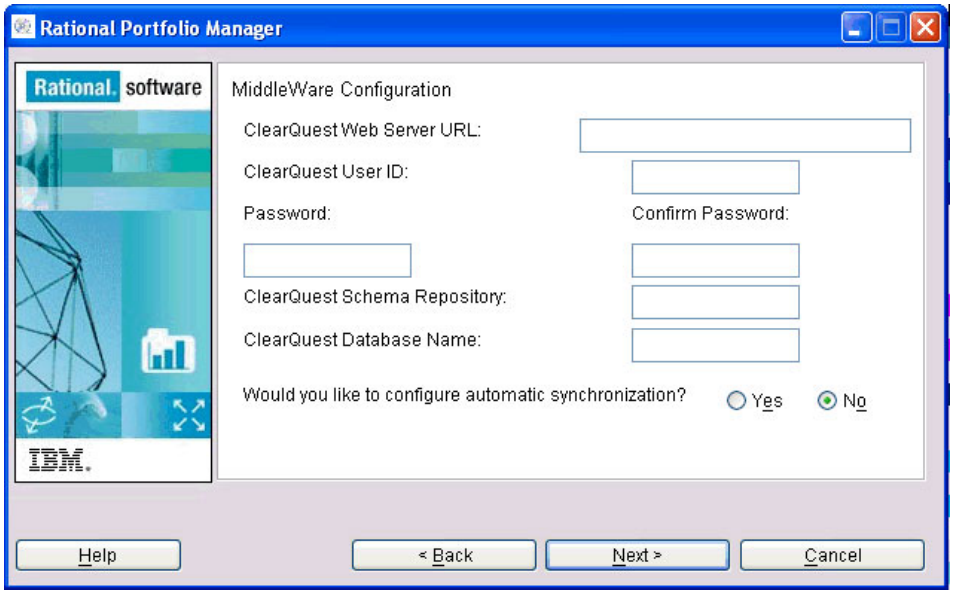


If an integration is selected in this page, the installation wizard prompts you for specific configuration information regarding each product integration in subsequent pages.

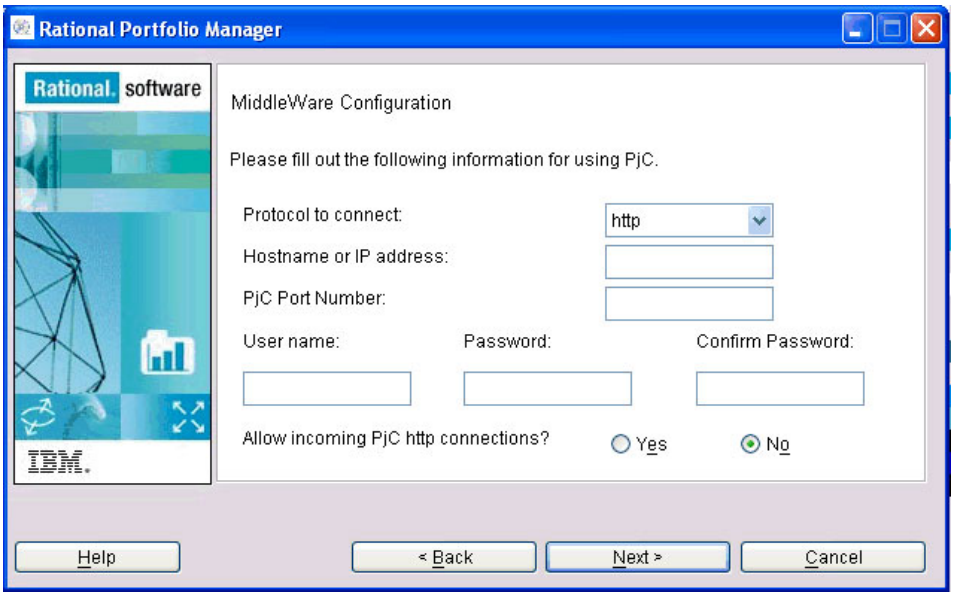
- If you have chosen not to integrate Rational Portfolio Manager with other Rational products or to use LDAP Authentication, click **Next** and continue to step 12 on page 41.
- If you have selected to integrate Rational Portfolio Manager with all of the above Rational products, click **Next** and continue to the next step.
- If you have selected to integrate Rational Portfolio Manager with Rational ClearQuest, click **Next** and continue to step 9.
- If you have selected to integrate Rational Portfolio Manager with Rational Portfolio Manager Web Services, click **Next** and continue to step 10 on page 40.
- If you have selected to integrate Rational Portfolio Manager with Rational ProjectConsole (PjC), click **Next** and continue to step 11 on page 40.

9. ClearQuest Configuration page:

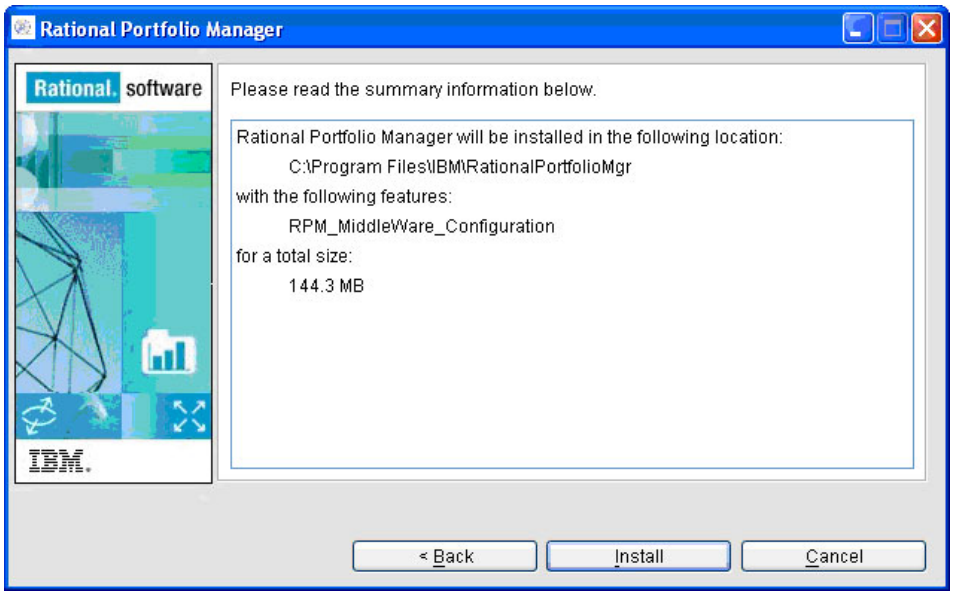
- **ClearQuest Web Server URL:** Enter the URL to be used for the export task scenario from the Rational Portfolio Manager client. For example, http://localhost/cqweb/main.
- **ClearQuest User ID:** Enter the ClearQuest super user name that is used for logging in to Rational ClearQuest.
- **Password:** Enter the ClearQuest super user password in encrypted format.
- **Confirm Password:** Confirm the ClearQuest super user password.
- **ClearQuest Schema Repository:** Enter the ClearQuest database set to be used.
- **ClearQuest Database Name:** Enter the database name used in the schema.
- **Would you like to configure automatic synchronization?** Select the corresponding radio button to enable or leave disabled for the Rational Portfolio Manager and ClearQuest automatic synchronization.



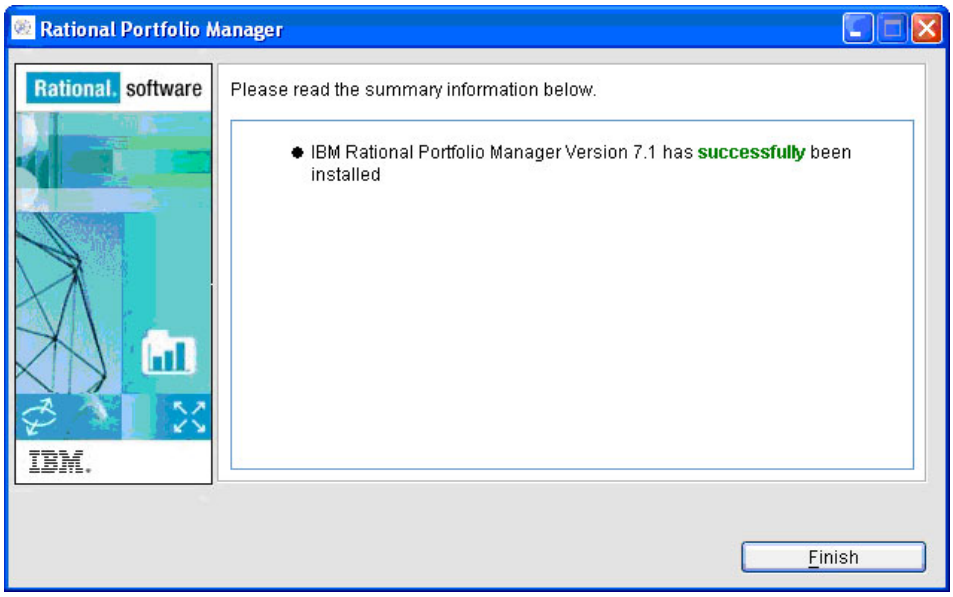
10. Rational Portfolio Manager Web Services configuration: There is no configuration page for Rational Portfolio Manager Web Services integration. If you selected the **Yes** radio button, this integration is now enabled.
11. PjC Configuration page:
    - **Protocol to connect:** Enter the Rational Project Console protocol.
    - **Hostname or IP address:** Enter the Rational Project Console host name or IP address.
    - **PjC Port Number:** Enter the Rational Project Console server port number.
    - **User name:** Enter the Rational Project Console username.
    - **Password:** Enter the password for Rational Project Console username
    - **Confirm password:** Confirm the password for Rational Project Console username
    - **Allow incoming PjC http connections?** Select the **Yes** or **No** corresponding radio button specifying if you want to accept http connections or not.



12. As the last step before the middleware deployment, the wizard will give you a summary of the installation as shown below. The installation directory will contain the files used during the deployment and log files of the deployment process. The final destination of the deployed application will depend on how each application server works.



13. At the end of the installation, the results are displayed on the final page.


Rational Portfolio Manager
Rational. software
Please read the summary information below.
IBM Rational Portfolio Manager Version 7.1 has successfully been installed
IBM.
Finish

Chapter 7. 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 the IBM Rational Portfolio Manager middleware on WebSphere Application Server 5.1

To deploy Rational Portfolio Manager:

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 9, “Middleware environment variables reference,” on page 117. 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 through 6h on page 65. 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 9, “Middleware environment variables reference,” on page 117.

Note: All environment variables in Chapter 9, “Middleware environment variables reference,” on page 117 must be manually configured with the available values or set to the default.

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 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. In **Additional Properties**, on the right side of the window, click **Referenceables**.

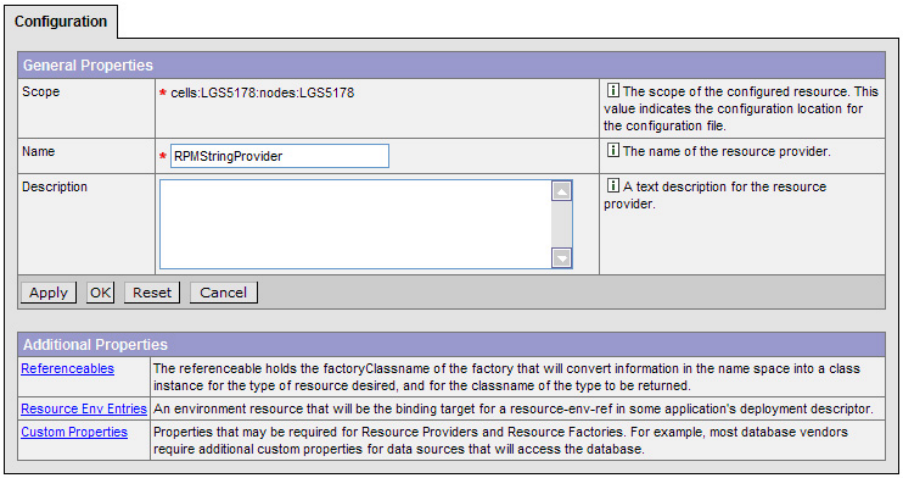
   b. ,click **New**.

   c. Type the **Factory class name** and the **Class Name** in the required fields as follows:

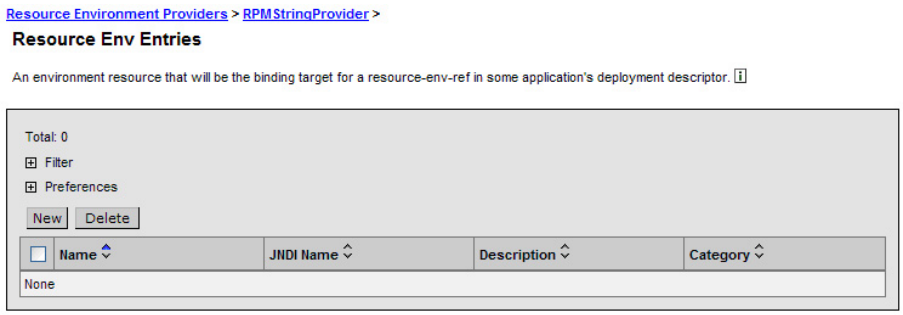
      - Factory Classname: `com.ibm.rpm.factory.StringFactory`
      - Class name: `java.lang.Stringello`

   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 brings you back to the screen in step 5. Click **Resource environment entries** in the Additional Properties section.



   You will see following window:



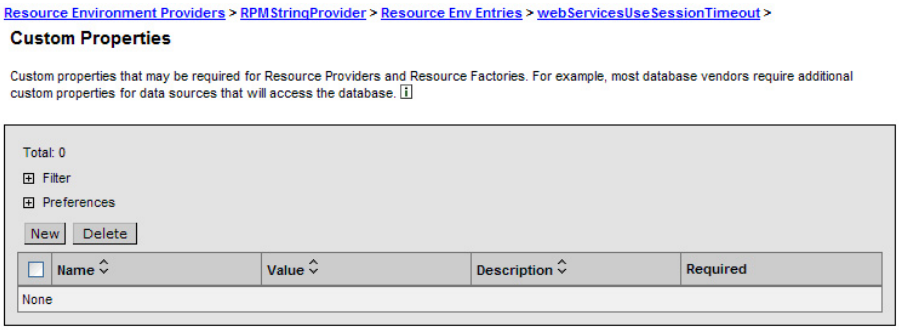
   b. Click **New** on the next screen and provide the name of the environment variable and the JNDI name associated to the variable.

      - Name: `webServicesUseSessionTimeout`
      - JNDI name: `com/ibm/rpm/webServicesUseSessionTimeout`

   c. Click **Referenceable** (com.ibm.rpm.factory.StringFactory).

d. Click **Apply**.

e. The **Custom Properties** link under Additional Properties on the right side of the window is now enabled. Click **Custom Properties**. The following should be displayed:

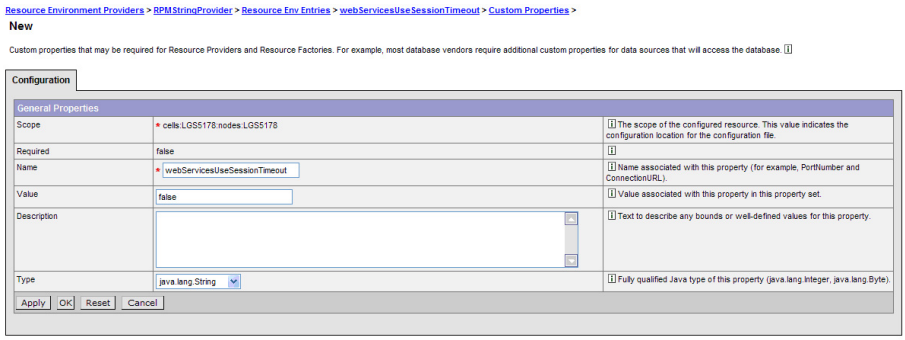


f. Click **New**.

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**.

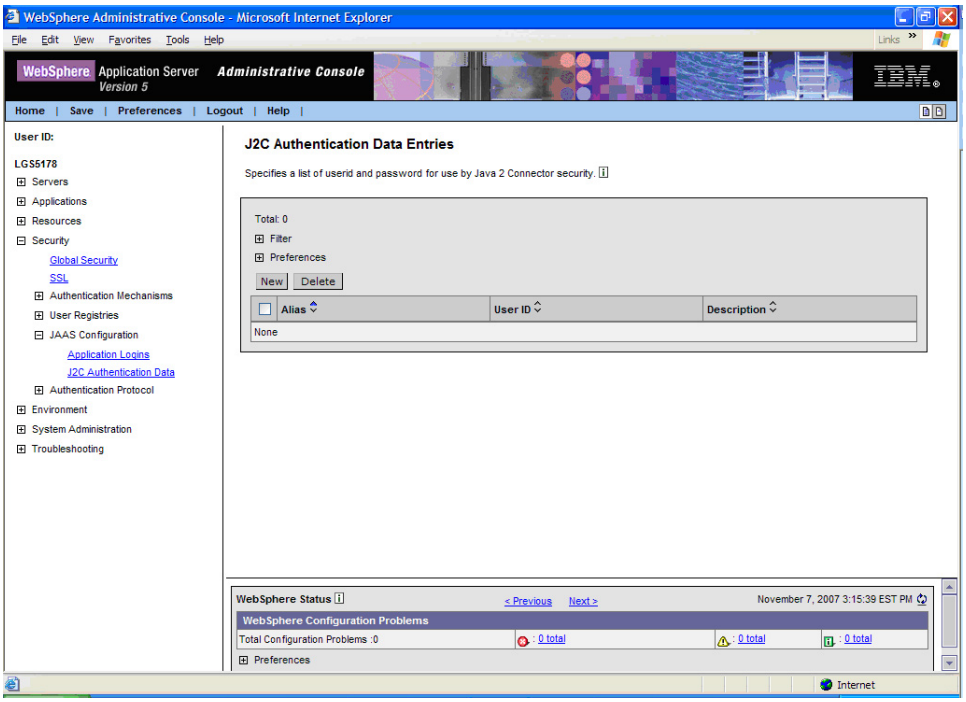
7. Repeat step 6 on page 44 for each variable described in Chapter 9, "Middleware environment variables reference," on page 117.
8. To commit your changes, click **Save**.
9. To save workspace changes to the master configuration, click **Save**.
10. Restart WebSphere or the Rational Portfolio Manager 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

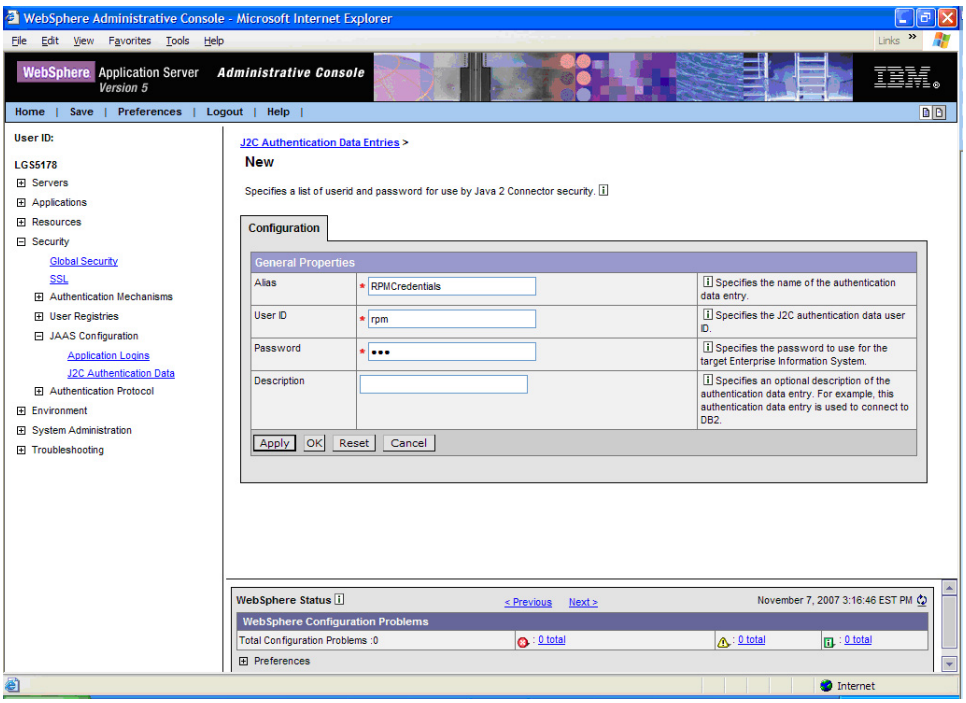
To create the **RPMCredentials** Authentication alias:

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



2. Click **New**.
3. 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: Note: The Description field is optional.



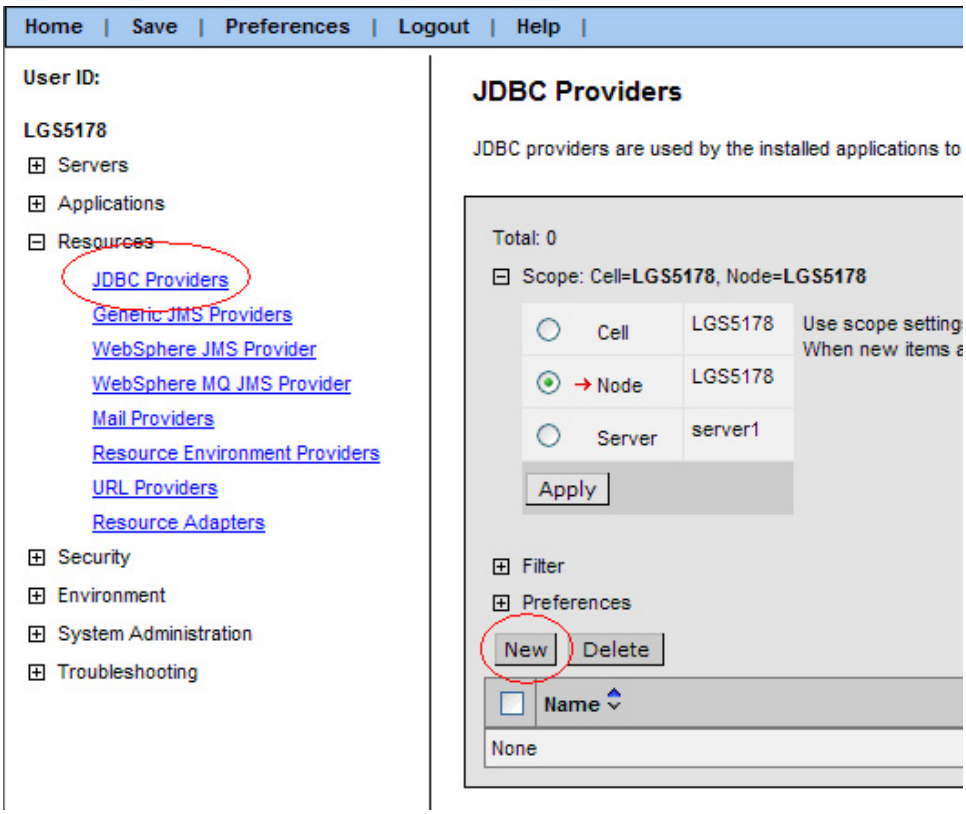
4. Click **OK**.
5. To apply your workspace changes to the master configuration, click the **Save** URL in the message box at the top of the page.
6. To save your changes to the master configuration, click **Save**.
7. You will now continue to configure the Rational Portfolio Manager.
   a. If you are 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 52.

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

Create the JDBC Providers for DB2

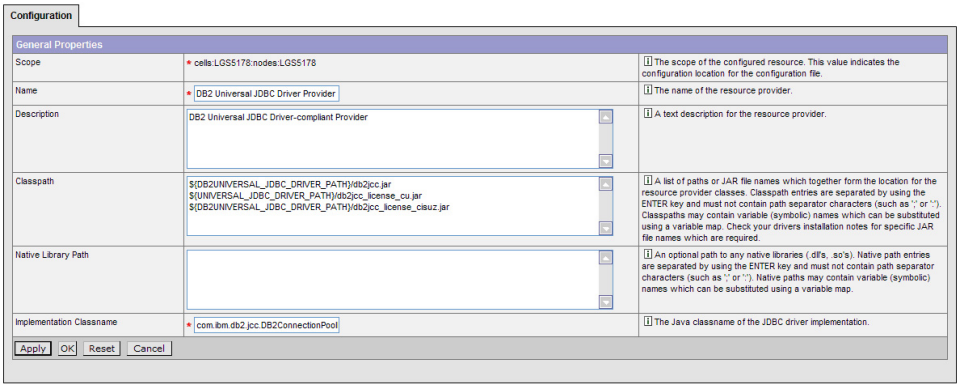
1. From the WebSphere Administrative Console window, click **Resources > JDBC Providers**. If DB2 Universal JDBC Driver Provider has already been created, continue to step 5 on page 48.
2. To add a new provider, click **New**.



3. Select **DB2 Universal JDBC Driver Provider** from the JDBC Provider menu.
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 as shown in the following figure: Classpath should be as follows:

   ```
   ${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**. WebSphere will bring you back to the JDBC Providers window.

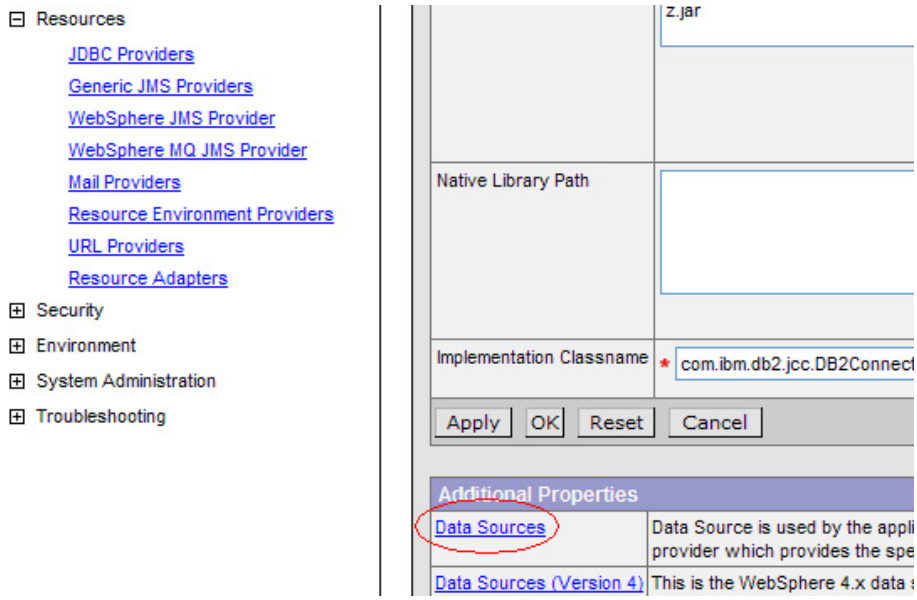
Create the data sources and test the connection for DB2

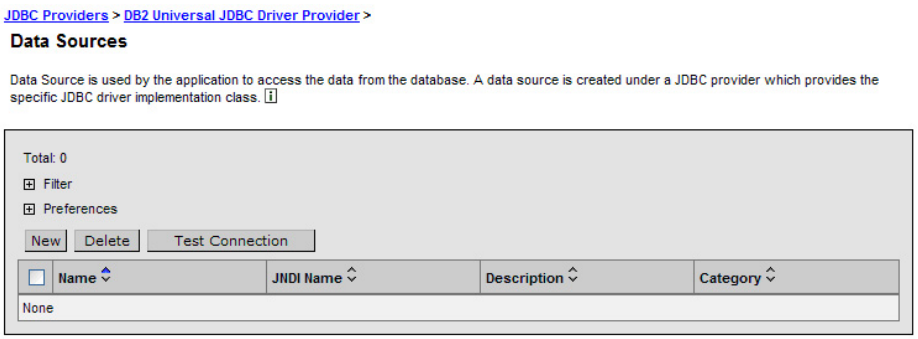
To access information to the Rational Portfolio Manager repository, the data source information or Data Source Name (DSN) must be set correctly. The information specified in the DSN allows the Rational Portfolio Manager to connect to the repository database.

You will need the following data source information to create the Data Sources; it 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

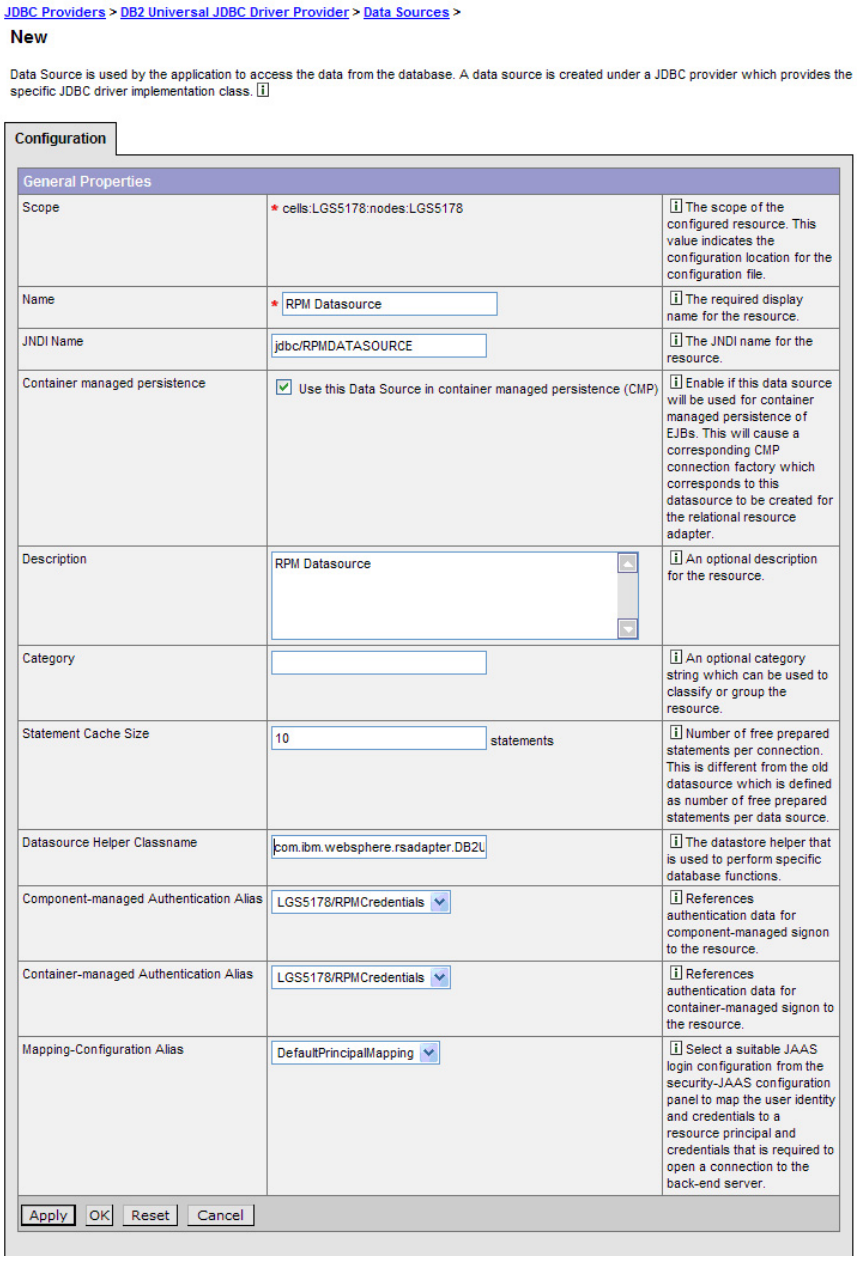
1. To create the **jdbc/RPMDATASOURCE**:
   a. From the Administration Console, click **Resources > JDBC providers**
   b. Click **DB2 Universal JDBC Driver Provider**.
   c. In the Additional Properties area, click **Data Sources > New**.
   d. Click **New**.





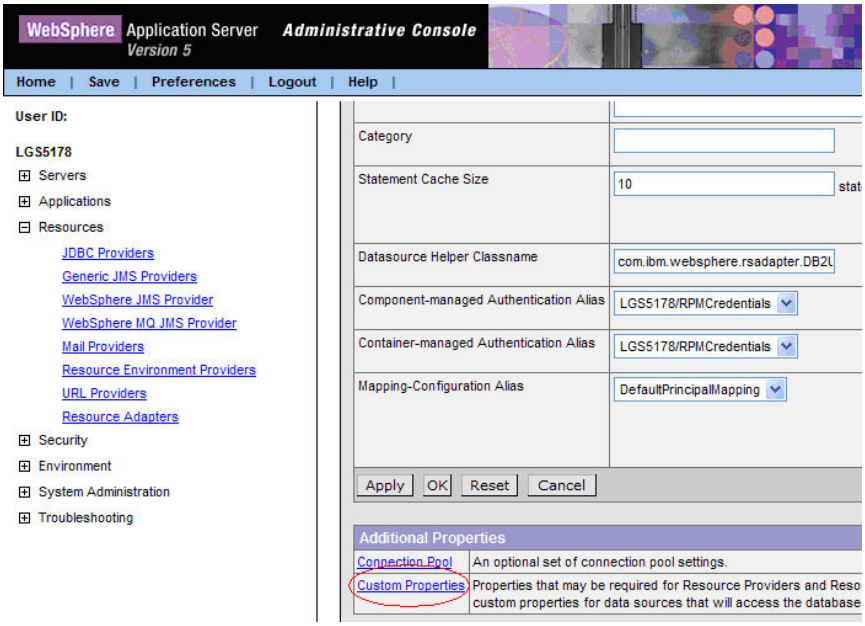
   e. On the General Properties panel:
      1) Verify the Scope (should be a node).
      2) Enter a name of the Rational Portfolio Manager data source.
      3) Enter the JNDI name (must be jdbc/RPMDATASOURCE).

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 section **Component-managed authentication alias** and in **Container-managed Authentication Alias**, select the Rational Portfolio Manager credentials previously created.
7) In the Mapping-Configuration Alias drop-down menu, select **DefaultPrincipalMapping**.

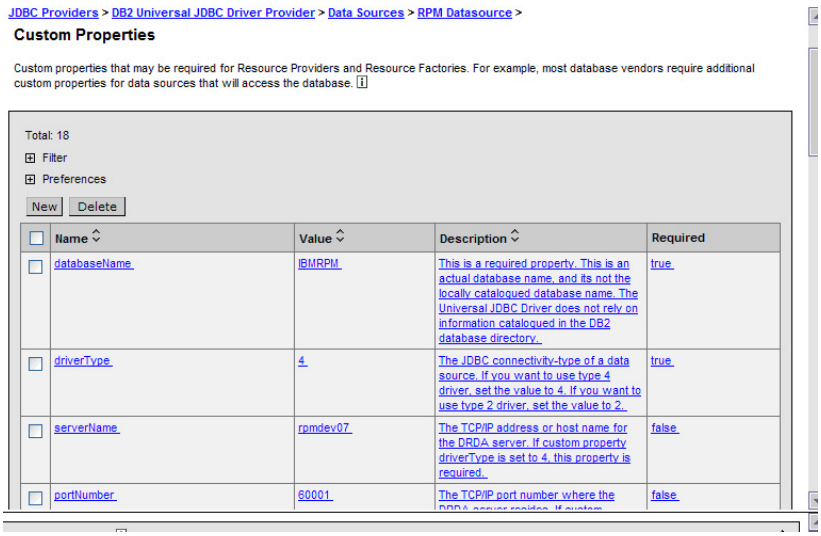


8) Click **Apply**.
9) Click the **Save** URL in the message box at the top of the page.
10) To save your workspace changes to the master configuration, click **Save**.
11) In the left navigation tree, under Resources, click **JDBC Providers**.

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).



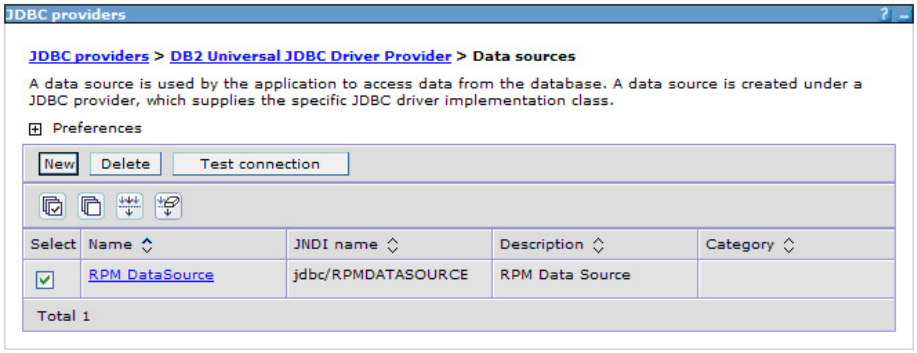
16) Set the properties for this connection.
    a) Enter the database name
    b) Select the driver type (should be type 4),
    c) Enter server name
    d) Enter the port number, ask your DB2 Database Administrator for the appropriate number.



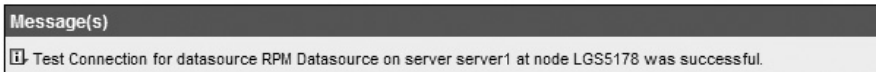
    e) Click the **Save** URL in the message box at the top of the page.
    f) To save your workspace changes to the master configuration, click **Save**.

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 newly created connection and then click **Test Connection**.



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



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

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

3. Contrinue with next step, “Deploying the rpm-middleware.war file” on page 59.

Modify the path value of the ORACLE_JDBC_DRIVER_PATH variable

1. From the WebSphere Administration Console navigation, select **Environment > WebSphere Variables**. The **Node** radio button is selected; do not clear this selection.
2. 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: The Oracle driver file dojdbc14.jar, is used if you are running the application server with JDK 1.4 or later versions. 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 ${WAS_INSTALL_ROOT}/logs/server1 %WAS_INSTALL_ROOT%\logs\server1 folder.

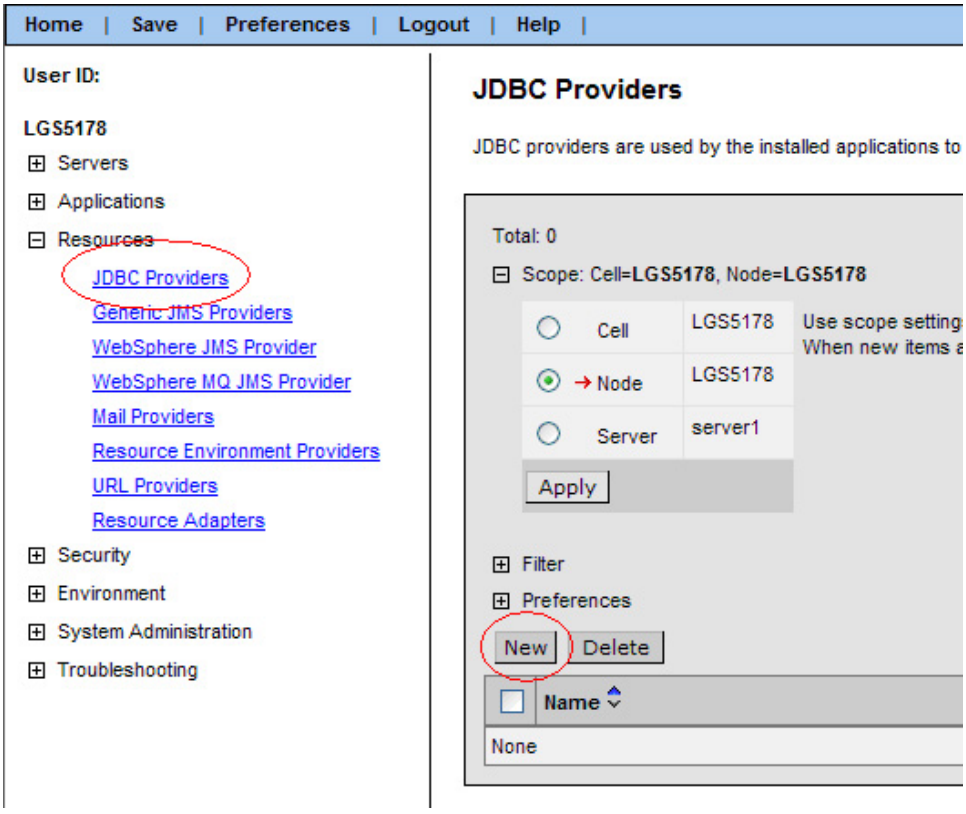
   c. Click **Apply** or **OK**.
   d. To apply changes to the master configuration, click the **Save** URL in the message box at the top of the page.

e. Click **Save** to save your workspace changes to the master configuration.

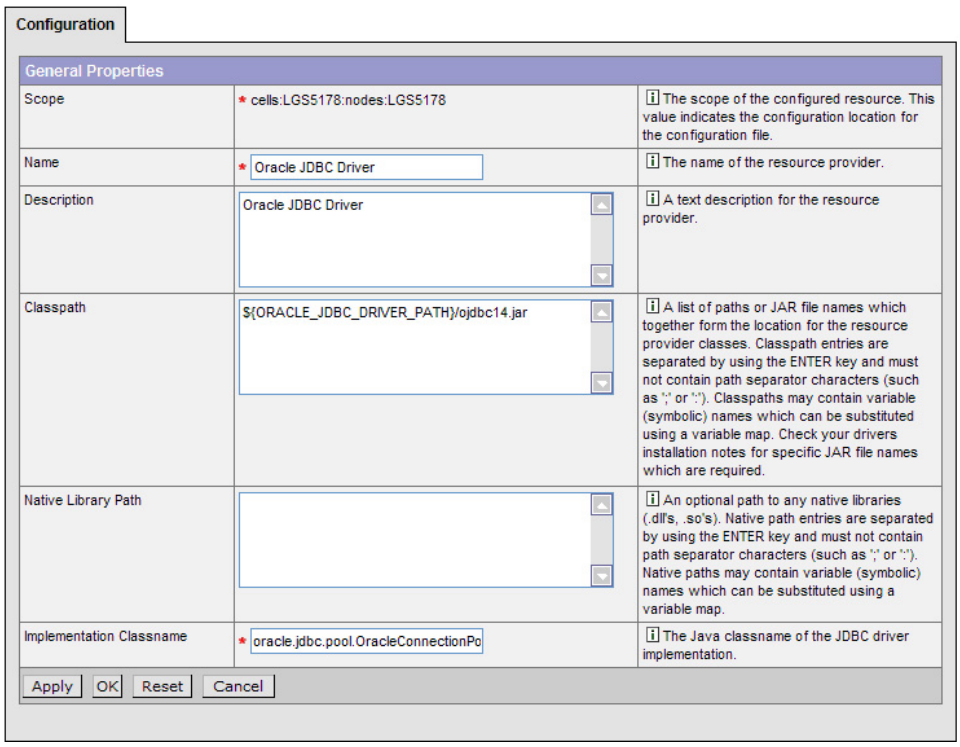
3. Continue with next step, "Create the JDBC provider for Oracle."

Create the JDBC provider for Oracle

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



2. 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, select **Oracle JDBC Driver** and click **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 should be: ${ORACLE_JDBC_DRIVER_PATH}/ojdbc14.jar for JDK 1.4 or later or ${ORACLE_JDBC_DRIVER_PATH}/classes12.jar for JDK 1.3 or earlier%ORACLE_JDBC_DRIVER_PATH%\ojdbc14.jar for JDK 1.4 or later or %ORACLE_JDBC_DRIVER_PATH%\classes12.jar for JDK 1.3 or earlier.
      2) The implementation class name should be: oracle.jdbc.pool.OracleConnectionPoolDataSource



3. Click **OK**.
4. To save your workspace changes to the master configuration, click the **Save** URL. WebSphere will bring you back 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

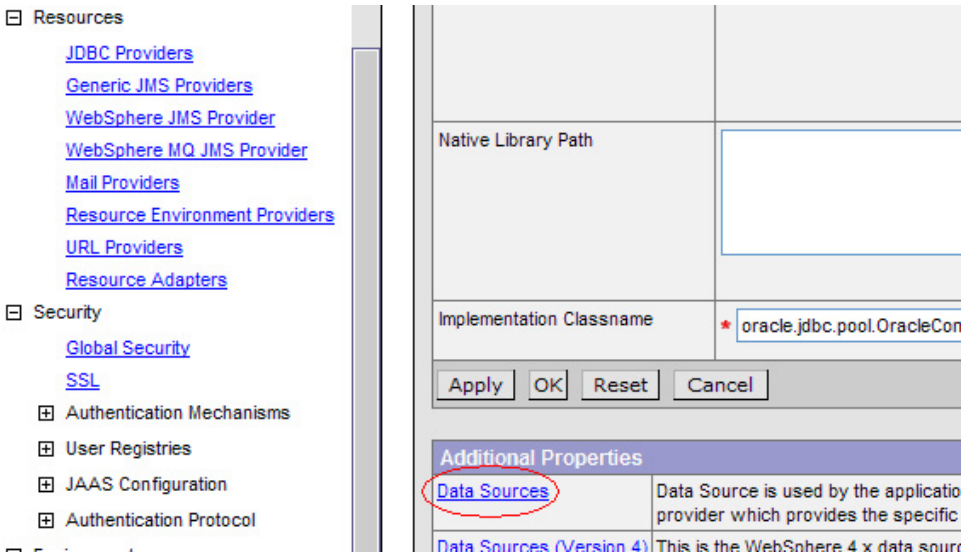
To access information from the Rational Portfolio Manager repository when using the Rational Portfolio Manager Middleware, the data source information or Data Source Name (DSN) must be set correctly. The information specified in the DSN allows the Rational Portfolio Manager Middleware to connect to the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

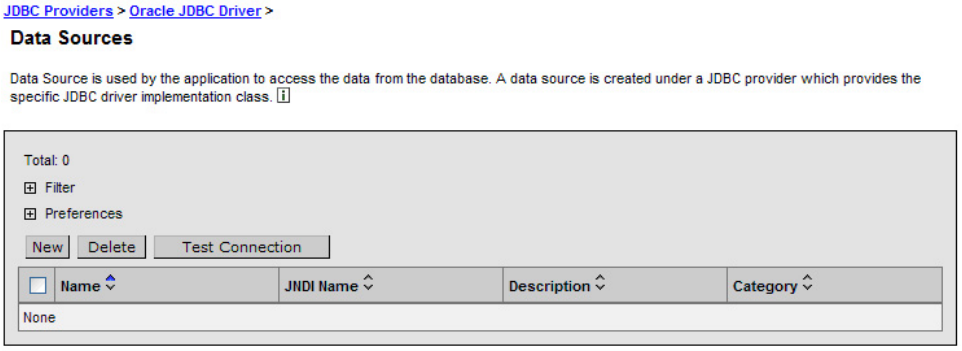
You will need the following data source information to create the data sources; it is used by the client to log in to the server.

- 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**.

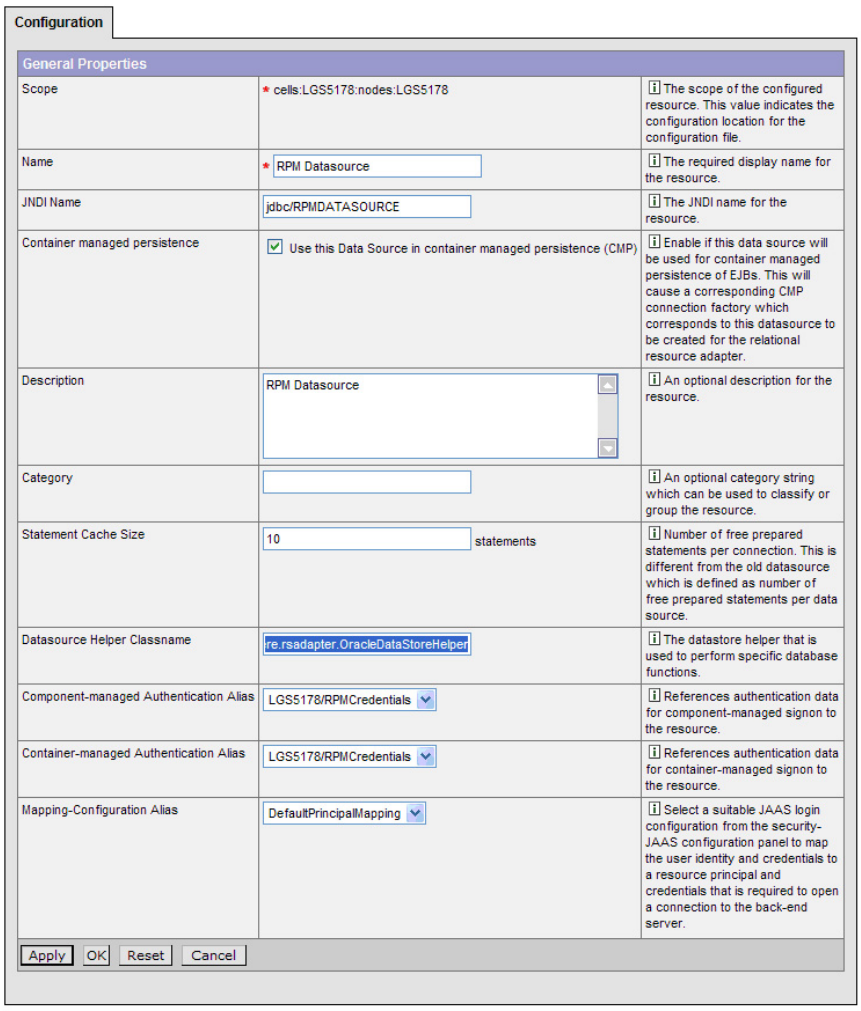




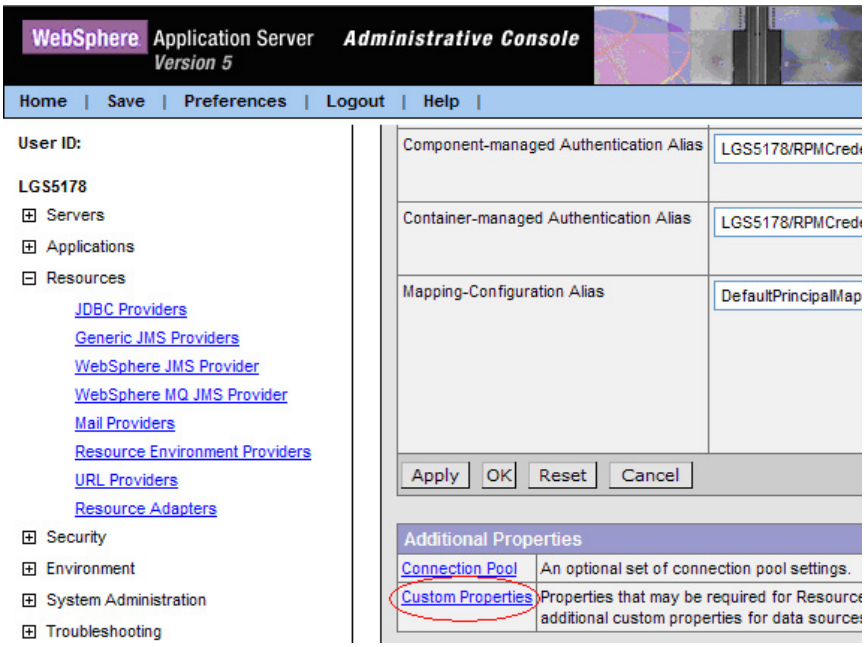
3. On the General Properties panel:

   a.

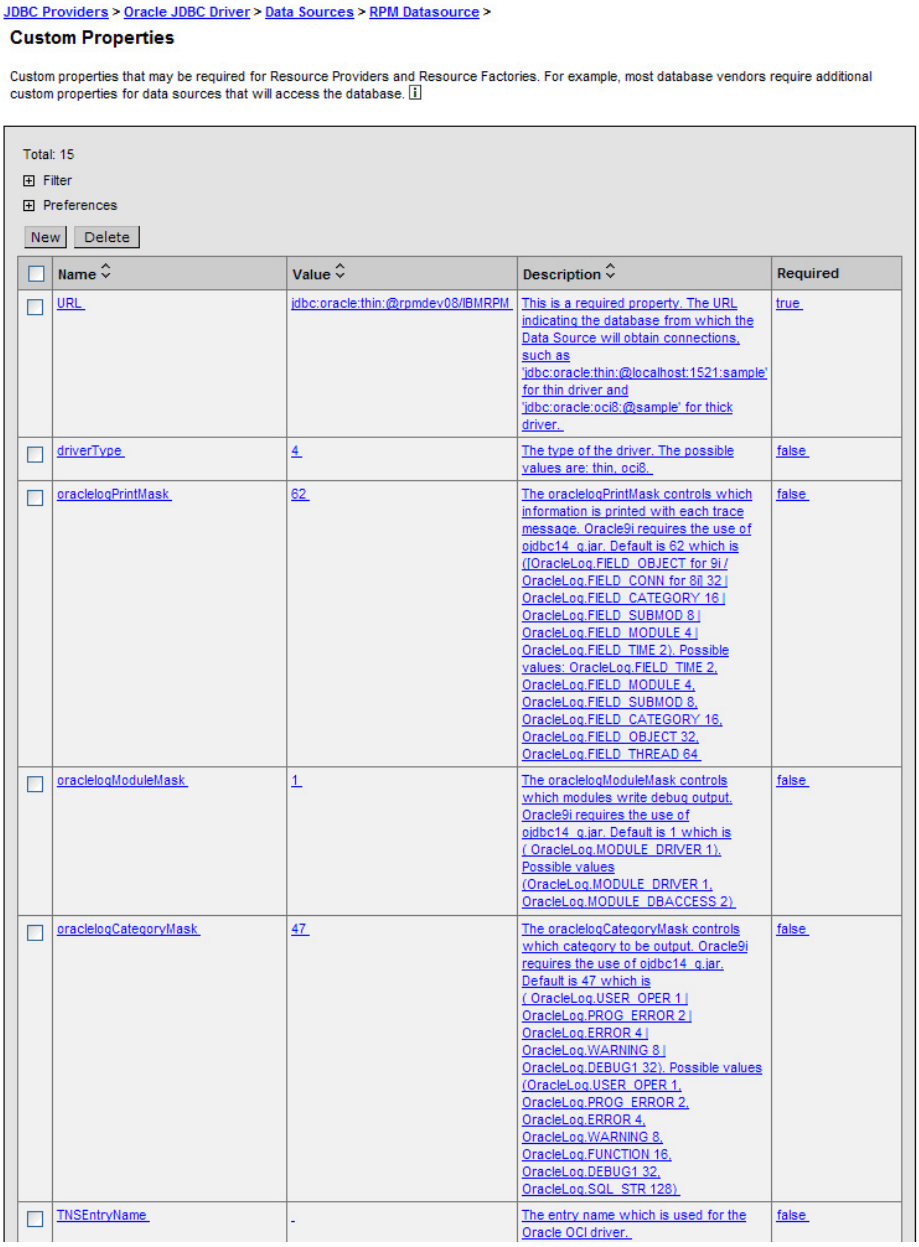
      1) Enter the Data source name: `RPM Datasource`
      2) Enter a name and the JNDI name: `jdbc/RPMDATASOURCE`
      3) Select Use this Data Source in container managed persistence (CMP) check box.
      4) Verify that Datasource Helper Classname is set to com.ibm.websphere.rsadapter.OracleDataStoreHelper.
      5) Select the RPMCredentials previously created in the **Component-managed authentication alias** and **Container-managed Authentication Alias** drop-down menu.
      6) In the M**apping-Configuration Alias** drop-down menu, select **DefaultPrincipalMapping**.



7) Click **Apply**.
8) Click the **Save** URL in the message box at the top of the page.
9) To save your workspace changes to the master configuration, click **Save**.
10) In the left navigation tree, click **Resources > JDBC Providers**.
11) Click **DB2 Universal JDBC Driver Provider**.
12) Click **Data Sources**.
13) Click **RPMDATASOURCE**.
14) 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 you Oracle Database administrator for the appropriate number.



d. Click the **Save** URL in the message box at the top of the page.

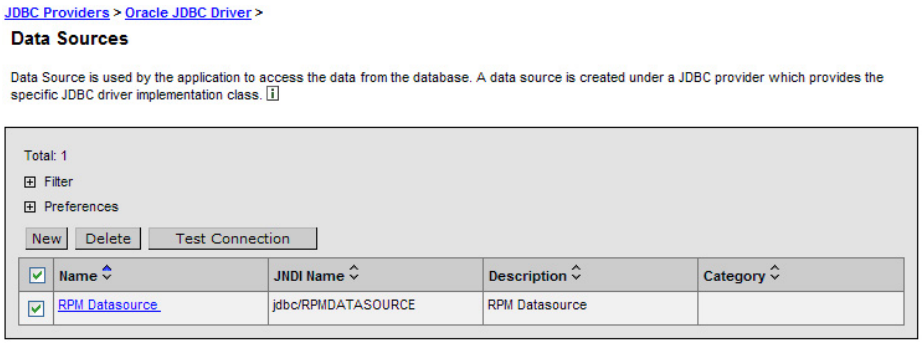
e. To save your workspace changes to the master configuration, click **Save**.

5. Test the connection:

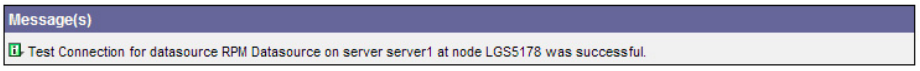
a. To test your connection to the Oracle database, click **Resources > JDBC providers** and click on the Oracle JDBC Driver.

b. Click **Data Sources**.

c. Select the newly created connection and click **Test Connection**.



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



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

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

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

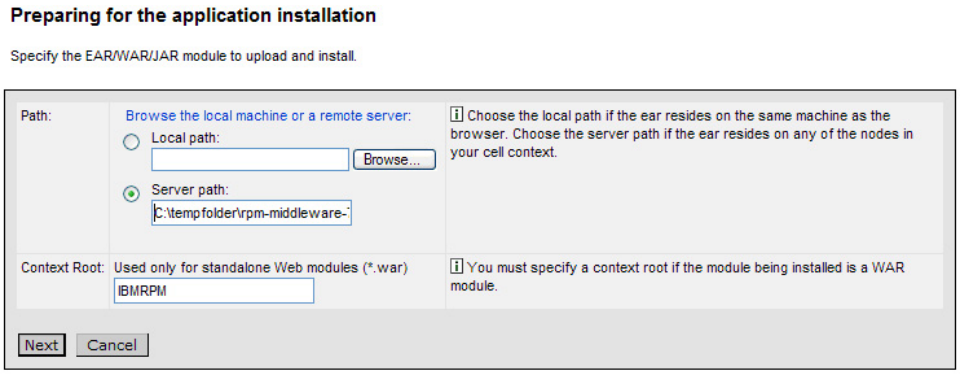
Deploying the rpm-middleware.war file

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

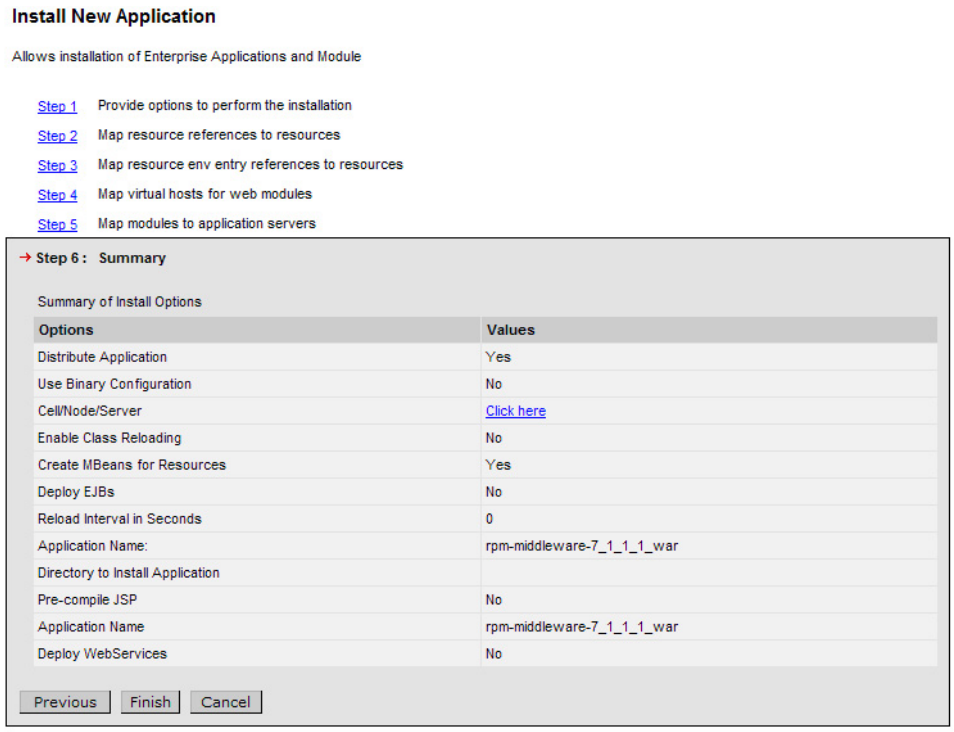
1. Before you begin, upload the rpm-middleware.war file to a temporary directory on the server where WebSphere is installed, you can use an ftp utility, or any other method appropriate for you platform. Take note of the full path where you uploaded the file. In the following examples we will use c:\tempfolder.
2. In the **WebSphere Administrative Console** window, click **Applications > Install New Application**.
3. Select the **Server path** radio button and enter the full path to the rpm-middleware.war file 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 will cause the Administrative console to timeout.
4. In the **Context root** field enter: `rpm`

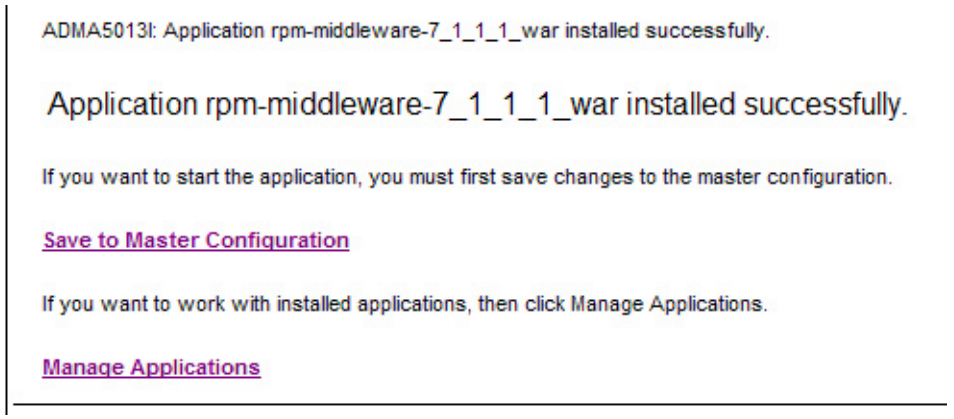
Note: The context root name must be unique and cannot start with /..



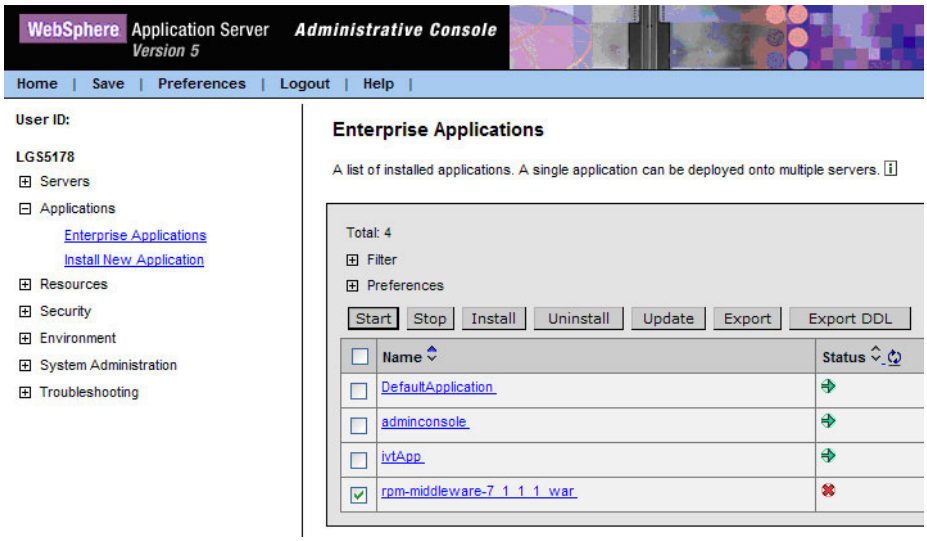
5. Click **Next** until you reach the panel with the option to **Finish**, click **Finish**, then wait for the deployment to complete.



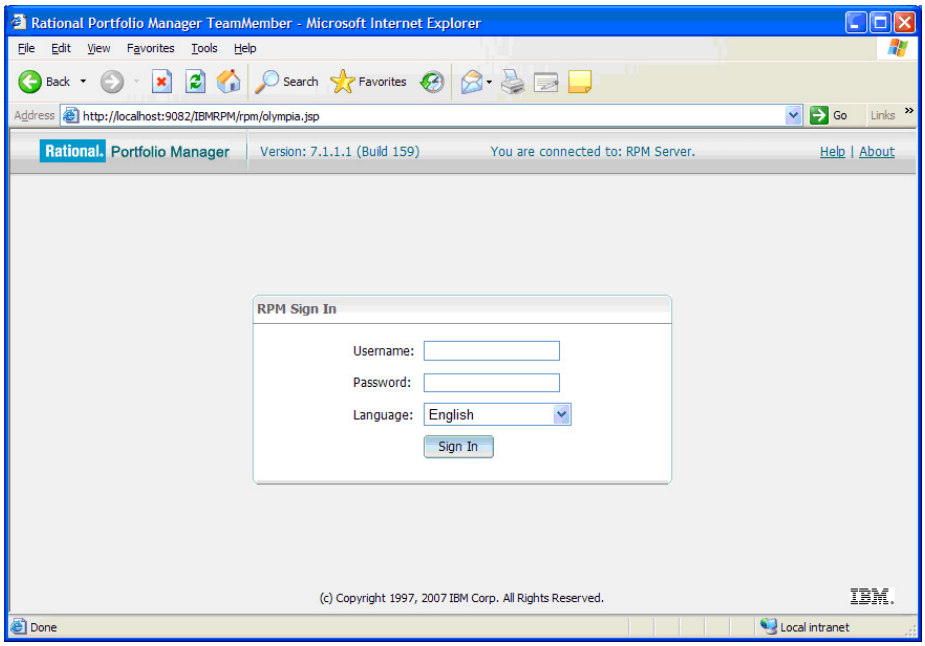
If the RPM Middleware is installed successfully the status page displayed will look like this:



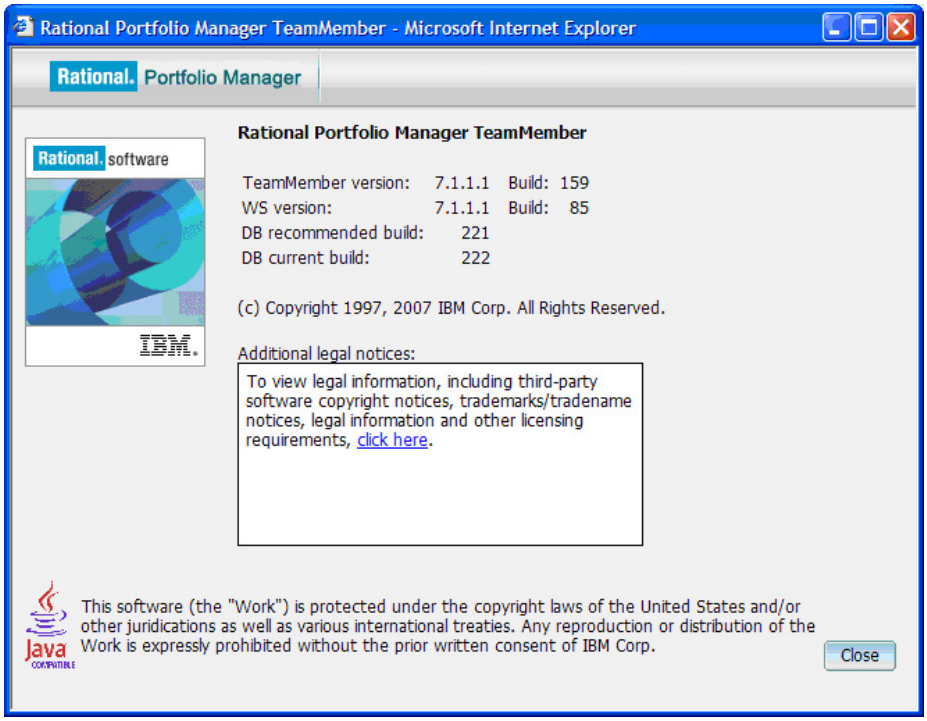
6. Save your settings:
   a. Click the **Save to Master Configuration** URL.
   b. Click **Save**.
7. Start the Rational Portfolio Manager middleware Enterprise Application.
   a. In the left menu, click **Applications > Enterprise Applications**.
   b. Make sure that the **rpm-middleware** box is selected.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



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 is presented, click **About** in the top right corner.



   c. A page similar to the following should appear. If the database recommended build and database current build appear, the connection is working and the middleware is ready for use.



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

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

To deploy Rational Portfolio Manager:

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. Consult your WebSphere administrator for the correct user credentials. The User ID is not mandatory, if no user credentials have been defined when WebSphere was installed, this field can also be left in blank.

Configuring the Middleware Runtime Options

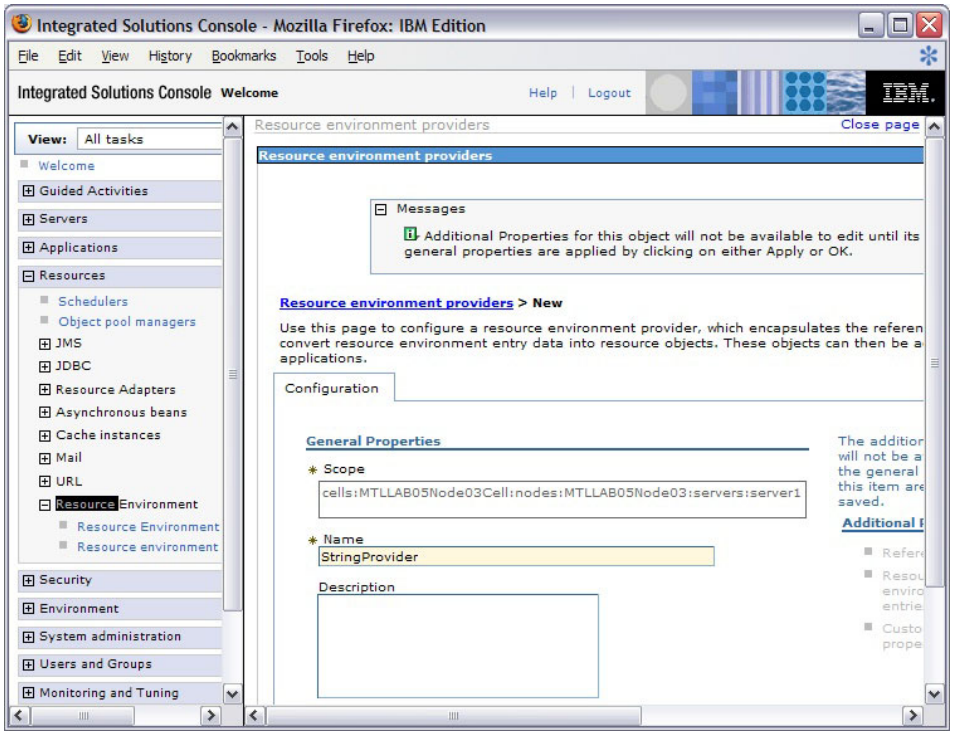
To install Rational Portfolio Manager middleware, the first step is to configure the runtime parameters. This is done by creating a set of resource environment variables. This section describes how to configure the optional parameters used by the Rational Portfolio Manager middleware at run time. These parameters have default working values, for the list of available runtime parameters, their default values, and JNDI mappings, see Chapter 9, “Middleware environment variables reference,” on page 117. 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 63. 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 9, “Middleware environment variables reference,” on page 117.

Note: All environment variables in Chapter 9, “Middleware environment variables reference,” on page 117 must be manually configured with the available values or set to the default.

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 the WebSphere environment variables `RPMStringProvider` and click **Apply**.

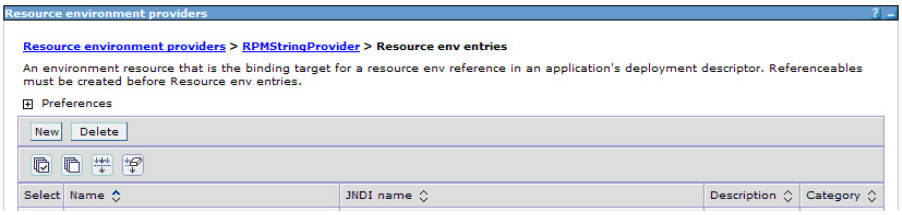


5. Create a new Referenceable to access the environment variable container:

   To created a new Referenceable:

   a. In **Additional Properties**, on the right side of the window, click **Referenceables**.
   b. ,click **New**.
   c. Type the **Factory class name** and the **Class Name** in the required fields as follows:
      - Factory class name: `com.ibm.rpm.factory.StringFactory`
      - Class name: `java.lang.Stringello`
   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 brings you back to the screen in step 5. Click **Resource**

environment entries on the right side of the window. You should see the following:

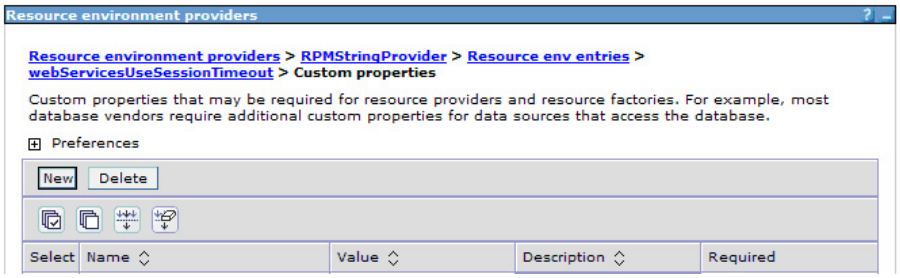


b. Click **New** on the next screen and provide the name of the environment variable and the JNDI name associated to the variable.
   - Name: `webServicesUseSessionTimeout`
   - JNDI name: `com/ibm/rpm/webServicesUseSessionTimeout`

c. Click **Referenceable** (com.ibm.rpm.factory.StringFactory).

d. Click **Apply**.

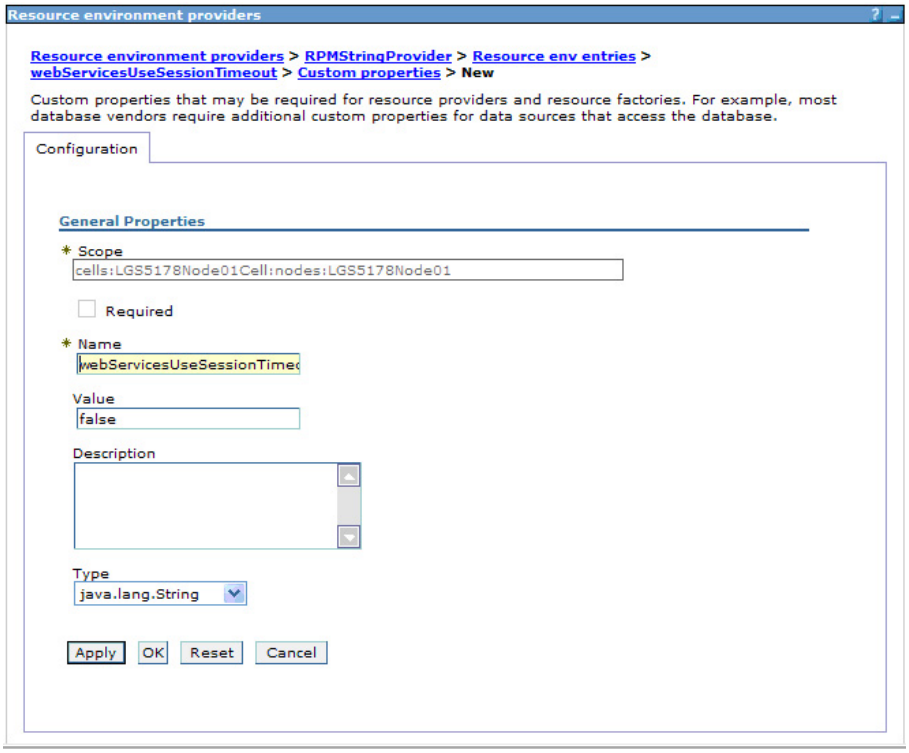
e. The **Custom Properties** link under Additional Properties on the right side of the window is now enabled. Click **Custom Properties**. The following should be displayed:



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**.

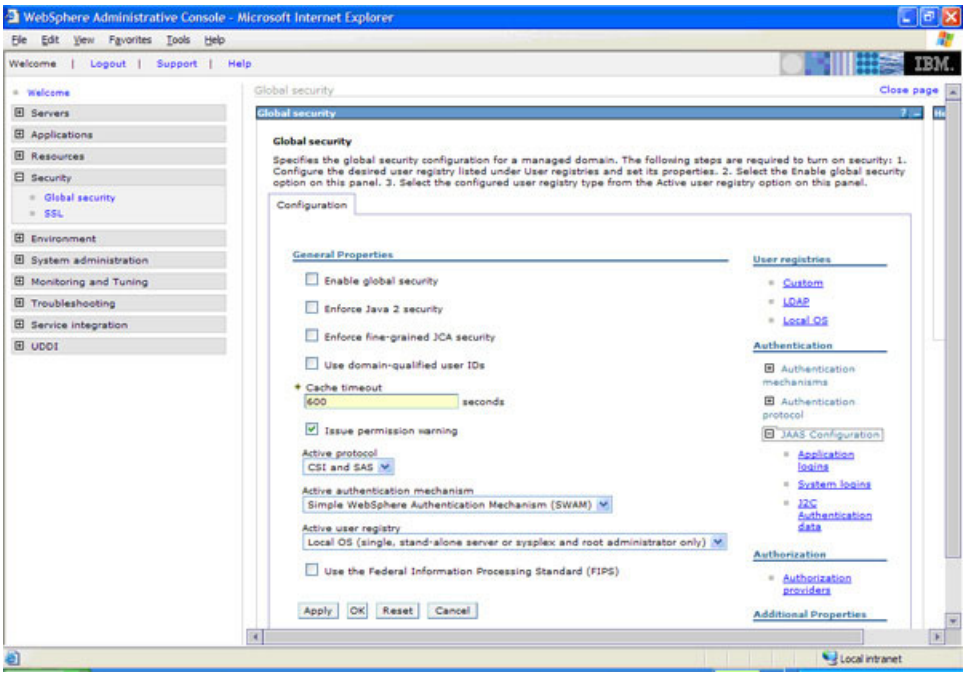
7. Repeat step 6 on page 63 for each variable described in Chapter 9, "Middleware environment variables reference," on page 117.
8. To commit your changes, click **Save**.
9. To save workspace changes to the master configuration, click **Save**.
10. Restart WebSphere or the Rational Portfolio Manager middleware application for the new parameters to be taken into account.
11. Continue to the next step "Create the RPMCredentials authentication aliases."

:

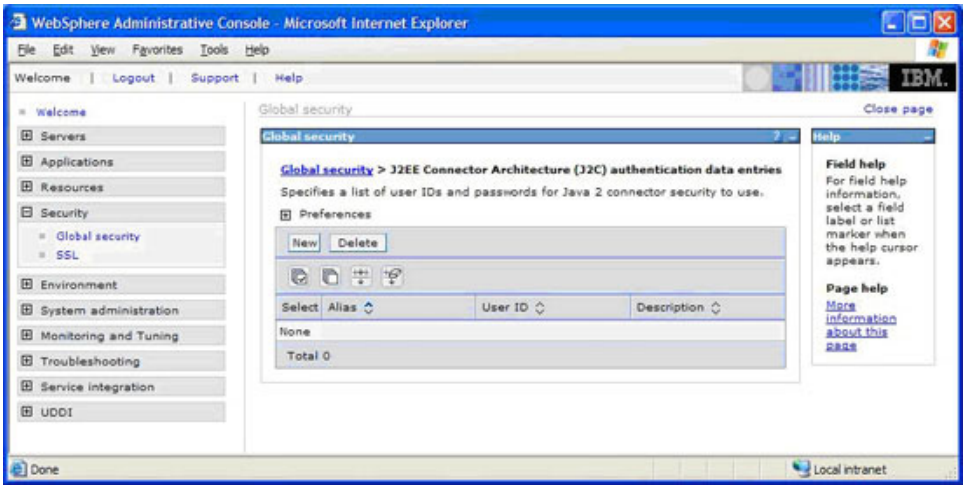
Create the RPMCredentials authentication aliases

To create the **RPMCredentials** Authentication alias:

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

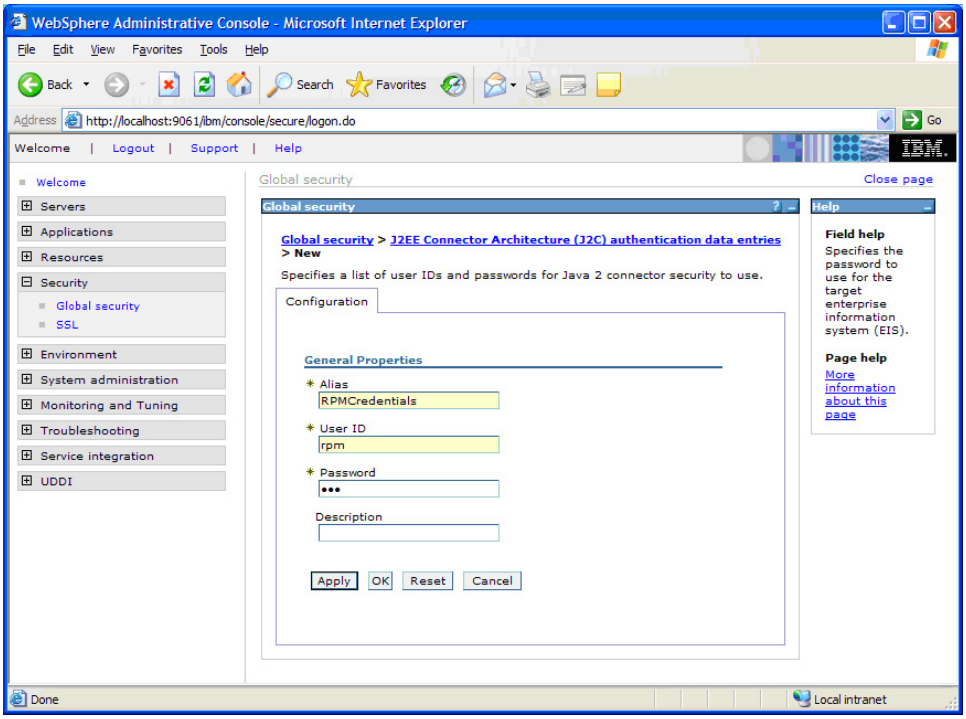


2. From the **Authentication** menu, click **JAAS Configuration > J2C Authentication Data**.



3. Click **New**.
4. 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: Note: The Description field is optional.



5. Click **OK**.
6. To save your workspace changes to the master configuration, click the **Save** URL in the message box at the top of the page.
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 72.

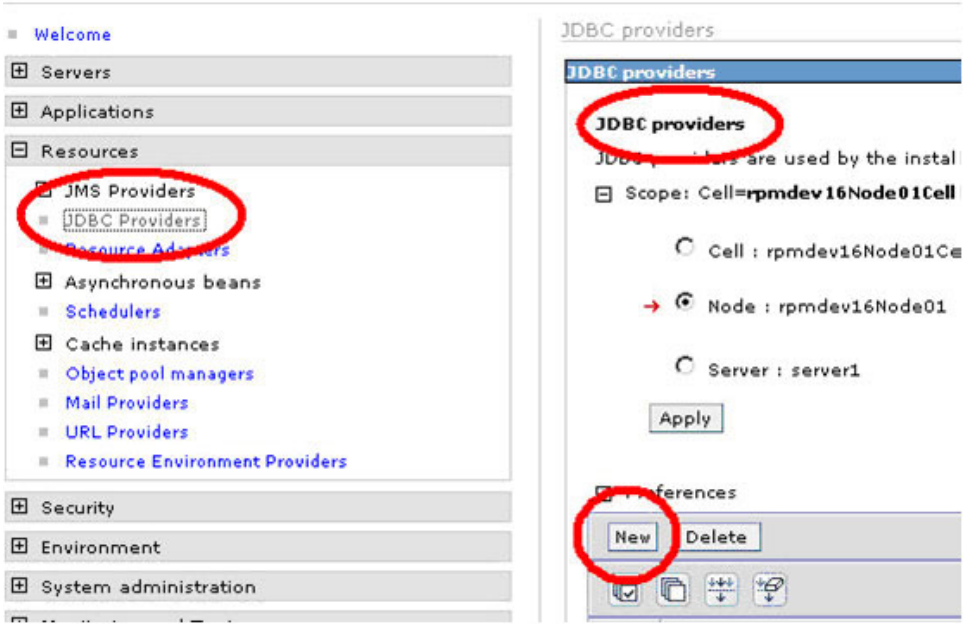
Modify the path value of the DB2UNIVERSAL_JDBC_DRIVER_PATH variable

1. From the WebSphere Administrative Console window, click **Environment > WebSphere Variables**. The Node radio button is selected; do not clear this selection
2. 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. 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, click the **Save** URL in the message box at the top of the page.

Create the JDBC Providers for DB2

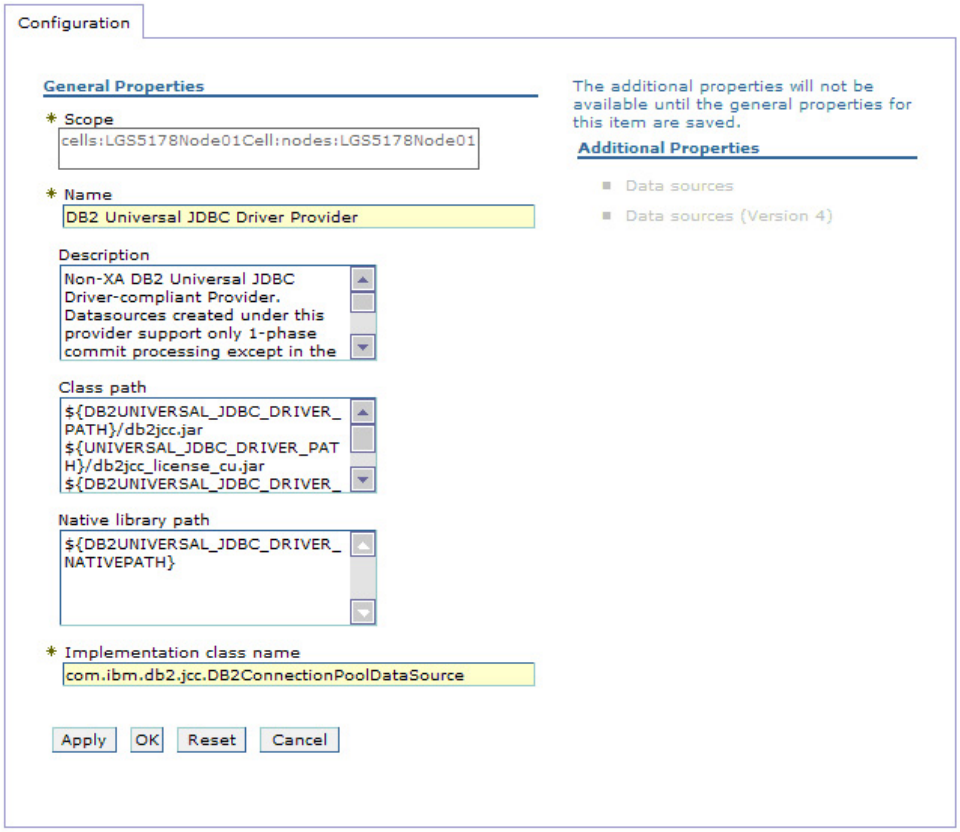
1. From the WebSphere Administrative Console window, click **Resources > JDBC Providers**. If DB2 Universal JDBC Driver Provider has already been created, continue to step 9 on page 93.
2. To add a new provider, click **New**.



3. Complete the information about the provider by selecting 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 in the following figure: Classpath should be as follows:

```
${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**. WebSphere will bring you back to the JDBC Providers window.

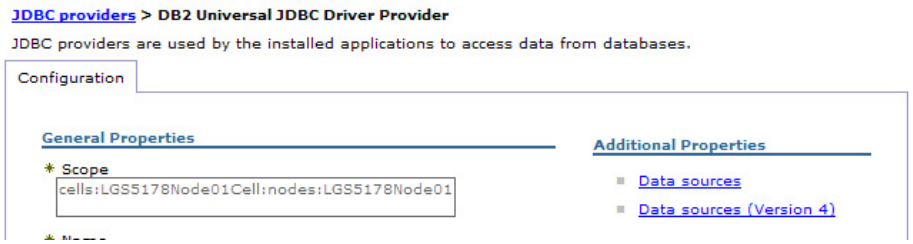
Create the data sources and test the connection for DB2.

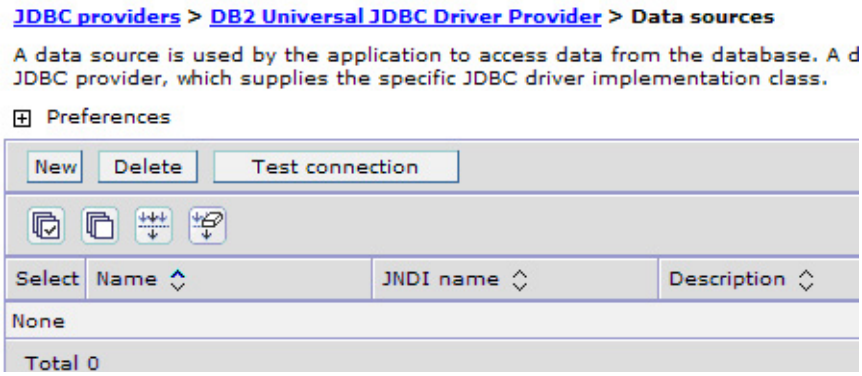
To access information to the Rational Portfolio Manager repository, the data source information or Data Source Name (DSN) must be set correctly. The information specified in the DSN allows the Rational Portfolio Manager to connect to the repository database.

You will need the following data source information to create the Data Sources; it is used by the client to log in to the server:

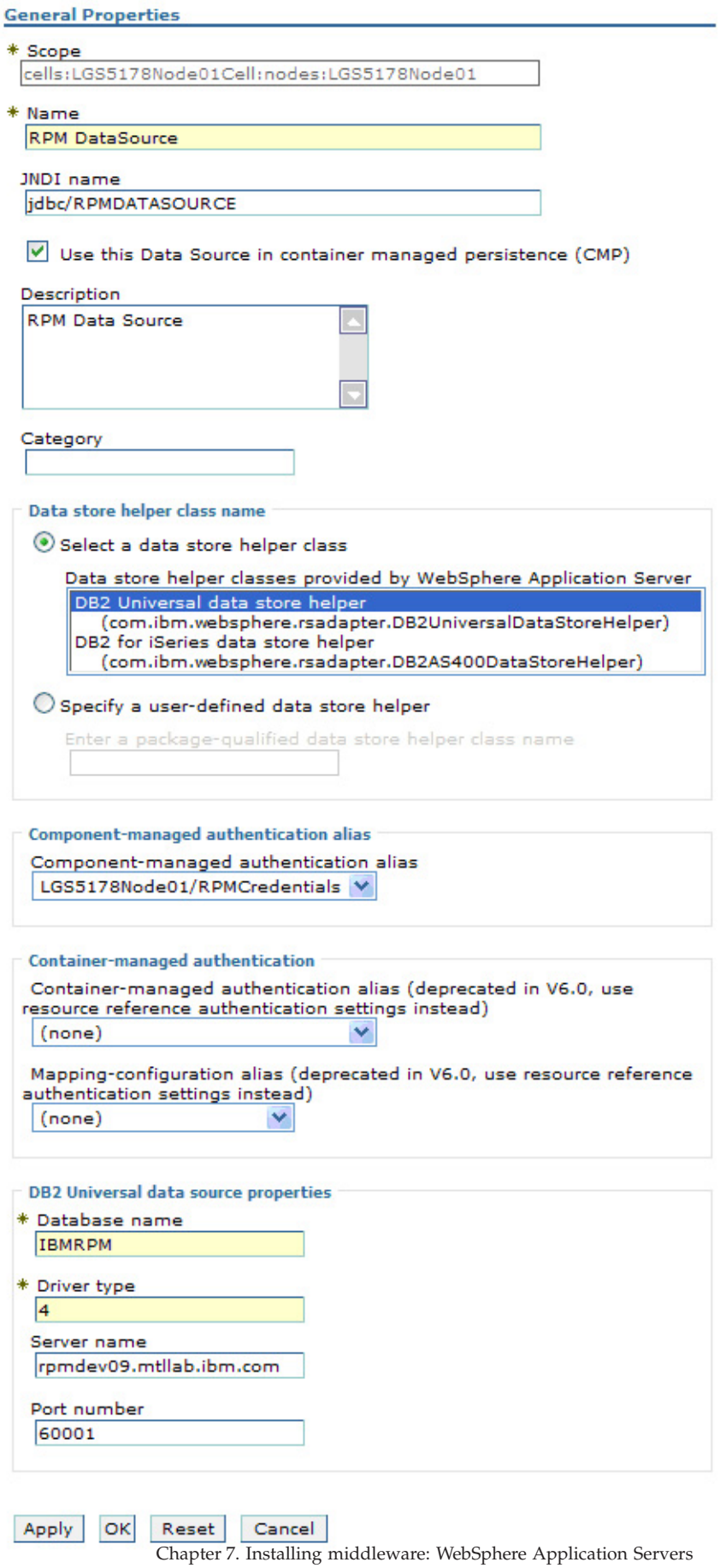
- The database host
- The database name
- The user name and password for this database

1. To create the **jdbc/RPMDATASOURCE**:
   a. Select the DB2 Universal JDBC Driver Provider and click **New**.





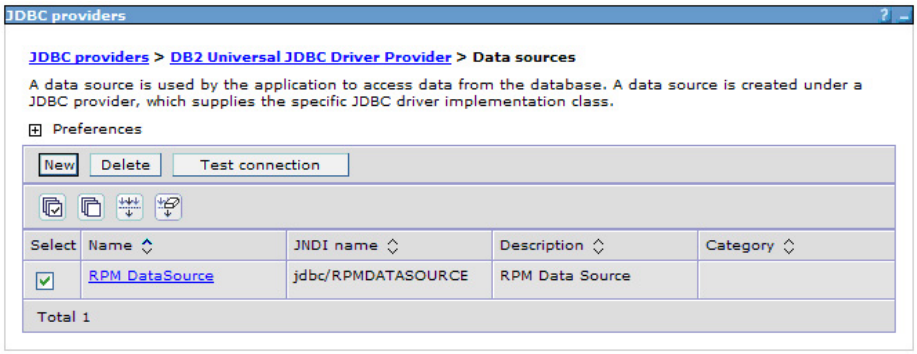
b. On the General Properties panel:
   1) Verify the Scope (should be a node).
   2) Enter a name of the Rational Portfolio Manager data source.
   3) Enter the JNDI name (must be jdbc/RPMDATASOURCE).
   4) Select the check box **Use this Data source in container managed persistence (CMP)**.
   5) In 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

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

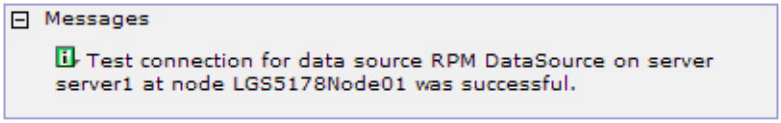
d. To save your workspace changes to the master configuration, click **Save**.

e. Select the newly created connection and then click **Test Connection**



.

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



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

   a) RPMCeredentials

   b) JDBC Driver path

   c) datasource

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

2. Continue with next step, "Deploying the rpm-middleware.war file" on page 77.

Modify the path value of the ORACLE_JDBC_DRIVER_PATH variable

1. From the WebSphere Administration Console navigation, select **Environment** > **WebSphere Variables**. The **Node** radio button is selected; do not clear this selection.
2. 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: The Oracle driver file dojdbc14.jar, is used if you are running the application server with JDK 1.4 or later versions. If you are running the application server with JDK 1.2 or JDK 1.3, use the Oracle driver file classes12.jar.

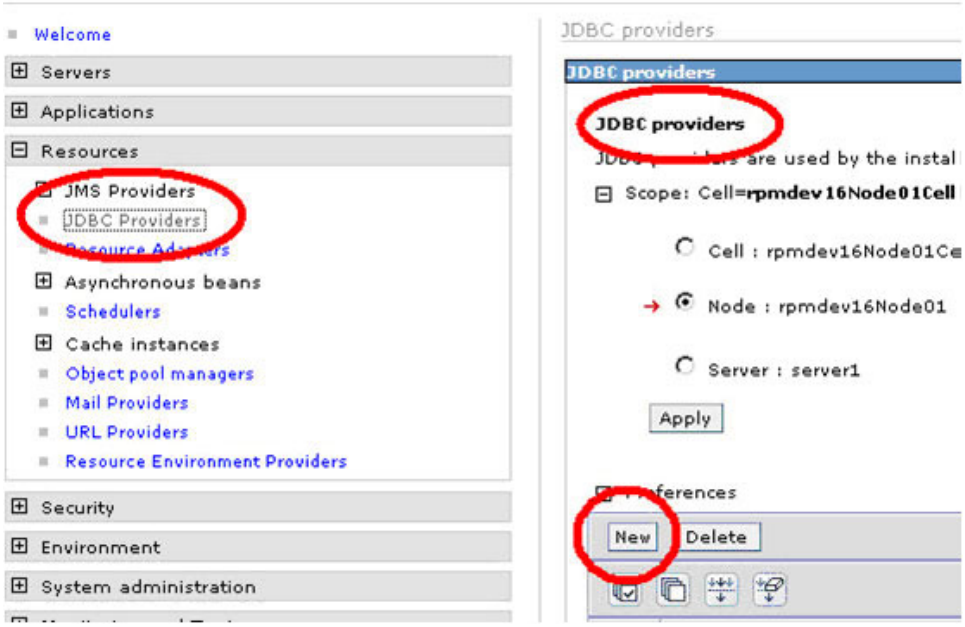
   c. Click **Apply** or **OK**.

d. To apply changes to the master configuration, click the **Save** URL in the message box at the top of the page.
e. Click **Save** to save your workspace changes to the master configuration.

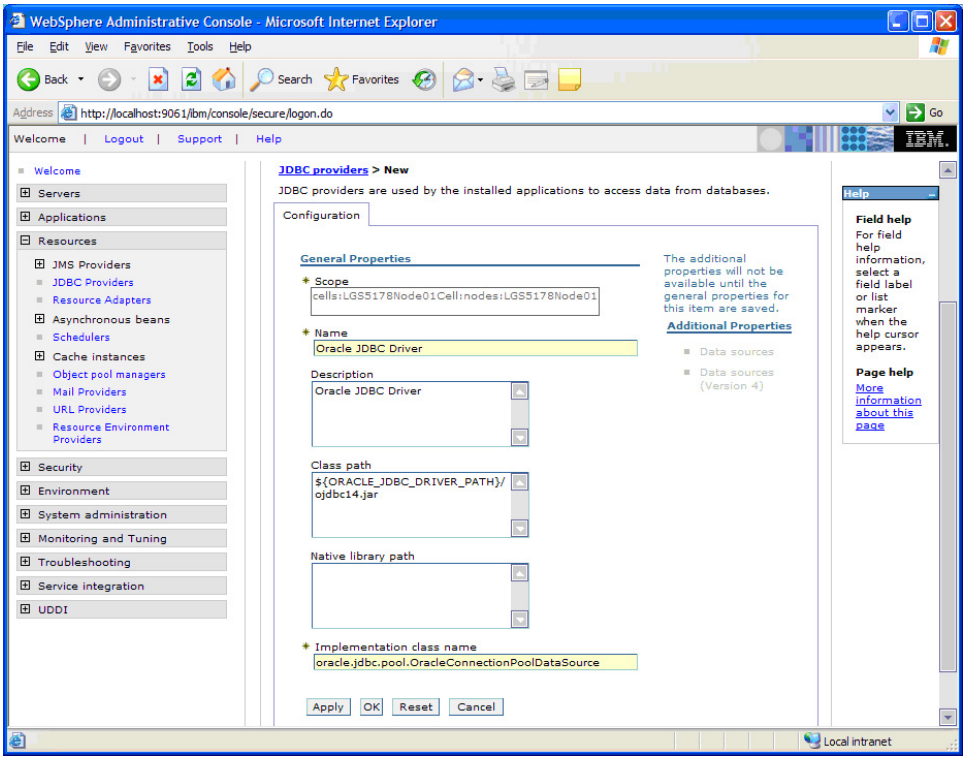
3. Continue with next step, "Create the JDBC provider for Oracle."

Create the JDBC provider for Oracle

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



2. 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. **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**. WebSphere will bring you back 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

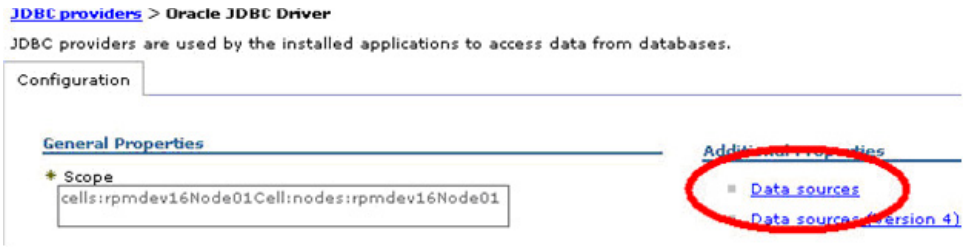
To access information from the Rational Portfolio Manager repository when using the Rational Portfolio Manager Middleware, the data source information or Data Source Name (DSN) must be set correctly. The information specified in the DSN allows the Rational Portfolio Manager Middleware to connect to the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

You will need the following data source information to create the data sources; it is used by the client to log in to the server.

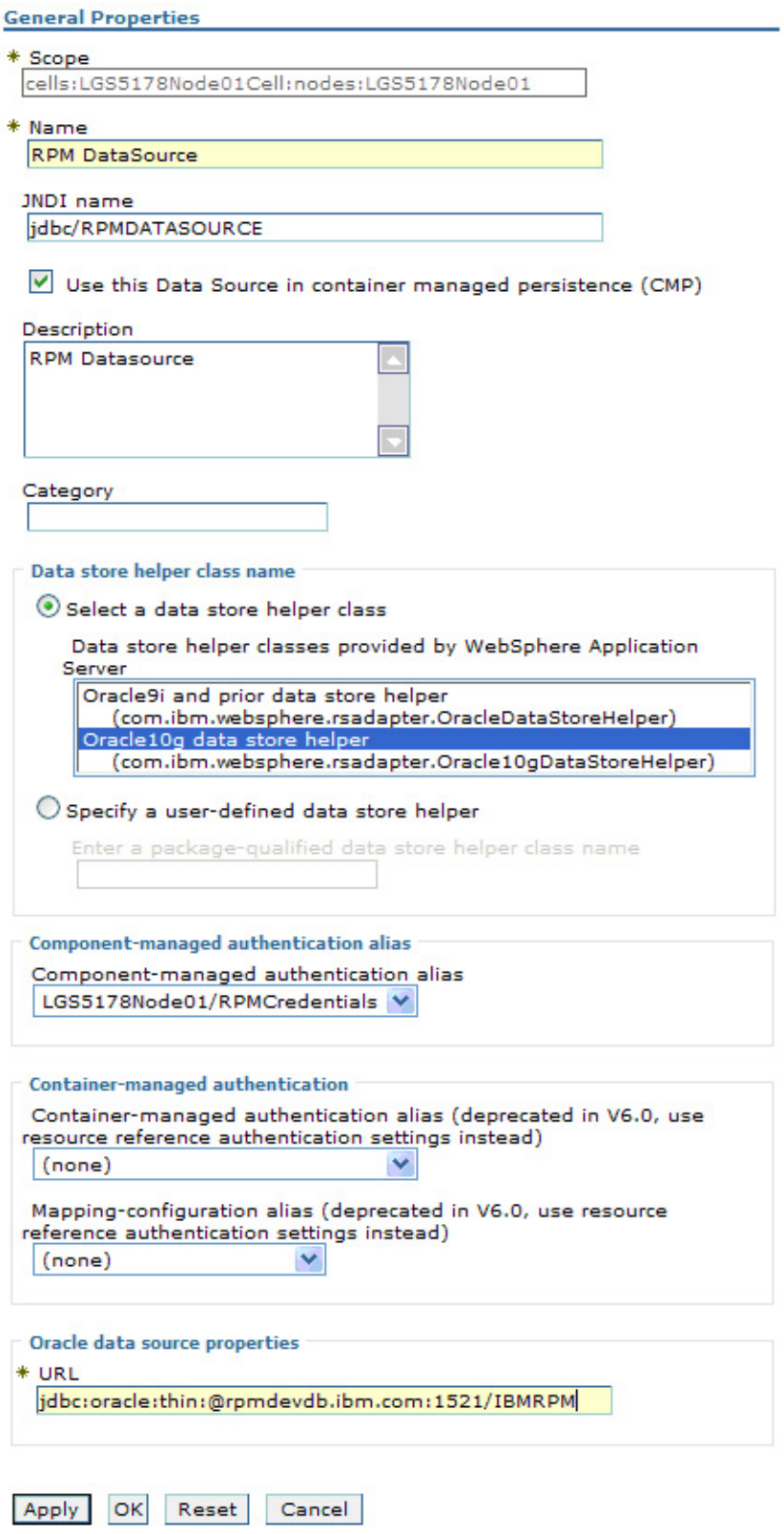
- The database host
- The database name
- The user name and password for this database

To create the jdbc/RPMDATASOURCE:

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

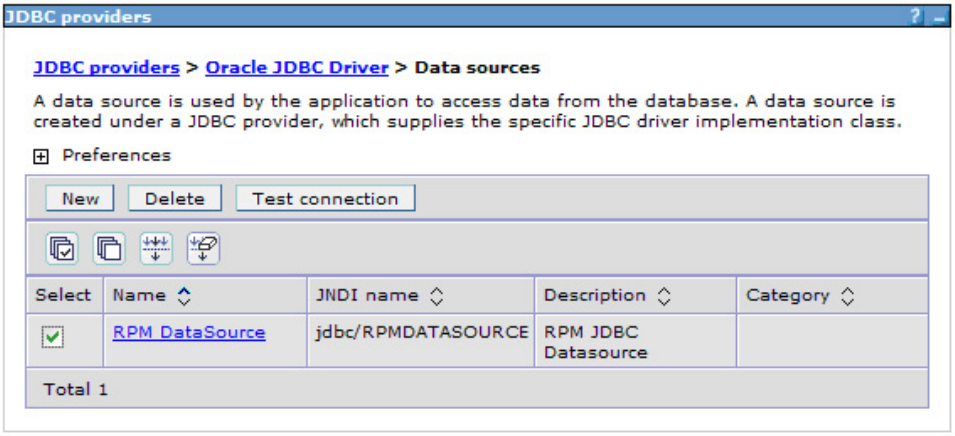


2. On the General Properties panel:
   a.
      1) Enter the Data source name: `RPM Datasource`
      2) Enter a name and the JNDI name: `jdbc/RPMDATASOURCE`
      3) Select Use this Data Source in container managed persistence (CMP) check box.
      4) In the section Data store helper class name, select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



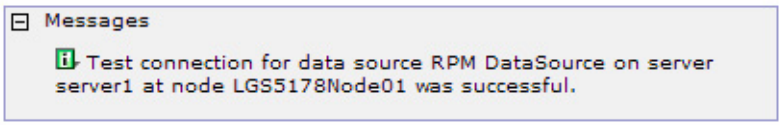
7) Click **Apply**.
8) Click the **Save** URL in the message box at the top of the page.
9) To save your workspace changes to the master configuration, click **Save**.

3. To test your connection to the Oracle database, select the newly created connection and click **Test Connection**



.

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



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

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

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

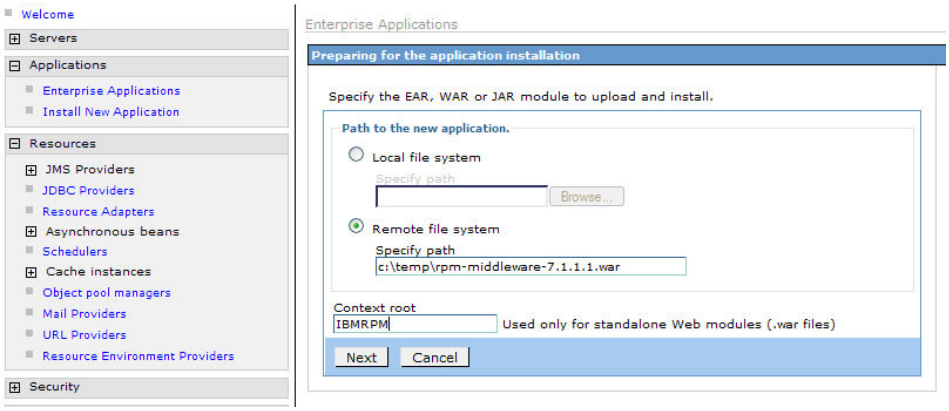
Deploying the rpm-middleware.war file

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

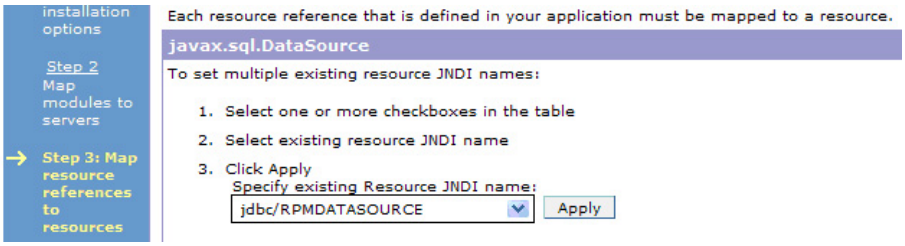
1. Before you begin, upload the rpm-middleware.war file to a temporary directory on the server where WebSphere is installed, you can use an ftp utility, or any other method appropriate for you platform. Take note of the full path where you uploaded the file. In the following examples we will use c:\tempfolder.
2. In the **WebSphere Administrative Console** window, click **Applications > Install New Application**.
3. Select the **Remote File System** box and enter the full path 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 will cause the Administrative console to timeout.
4. In the **Context root** field enter: `rpm`

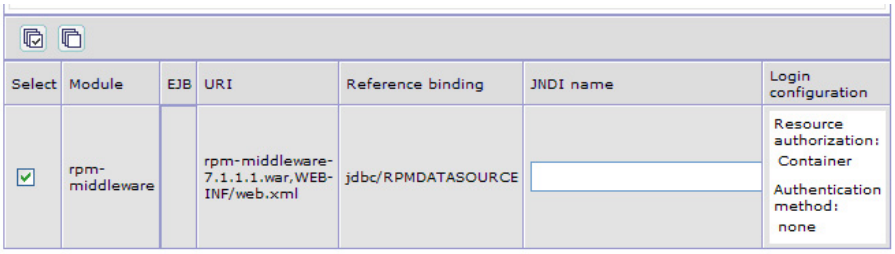
Note: The context root name must be unique and cannot start with /..



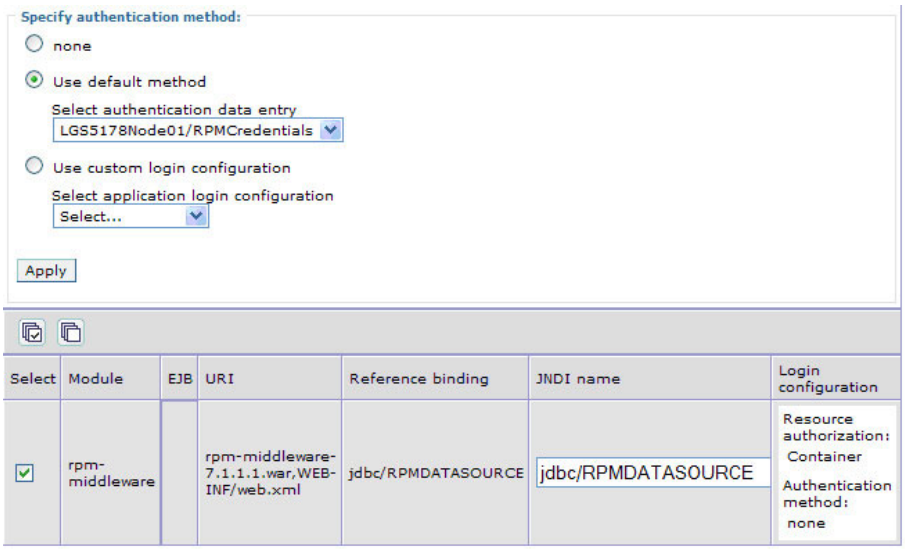
5. Click **Next** until you reach the **Step 3: Map resource references to resources** panel.
6. The mapping is done in two steps; selecting the datasource and selecting an authentication method:
   a. Select the JNDI name of the RPM Datasource that was created earlier.



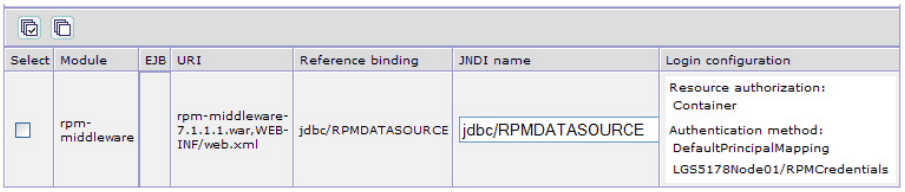
   b. Scroll down and select the rpm middleware module.



7. Click **Apply** near the Resource JNDI name combo box.
8. 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.

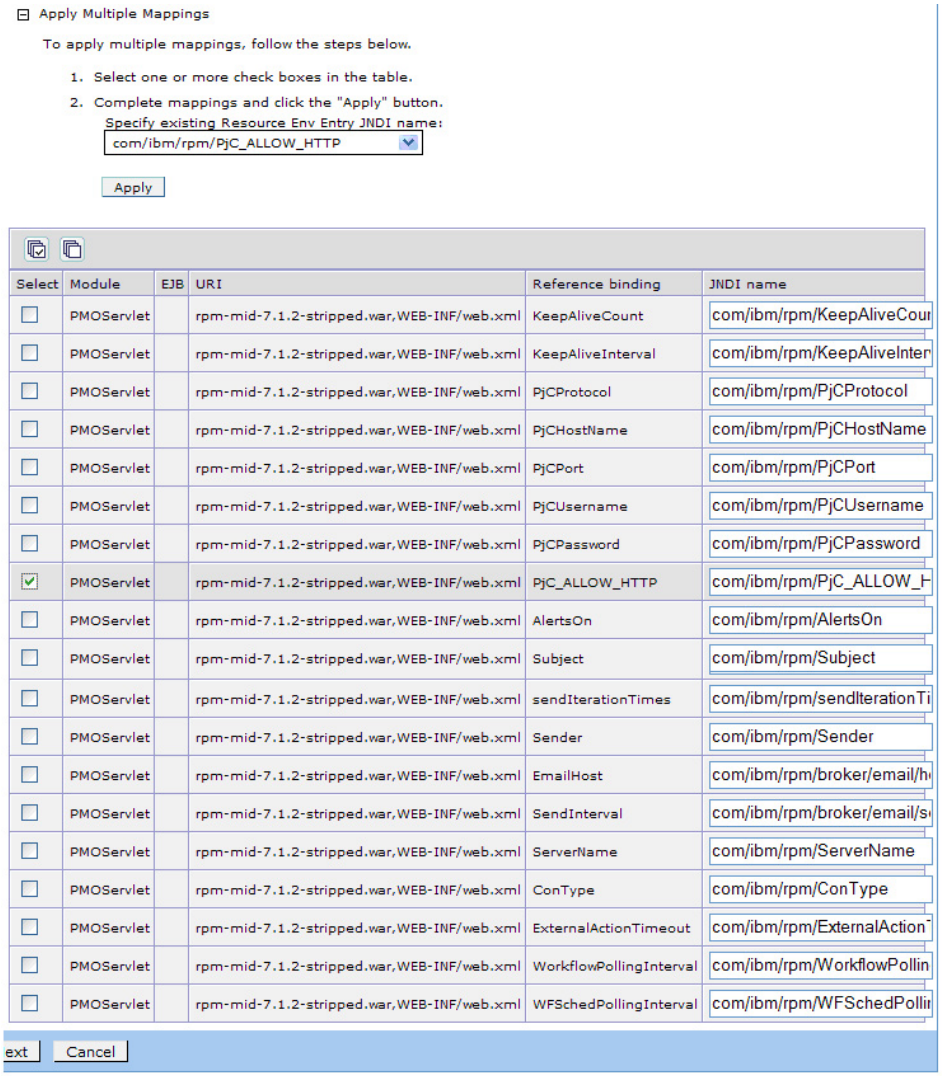


After the these steps have been completed, the panel should look like this:

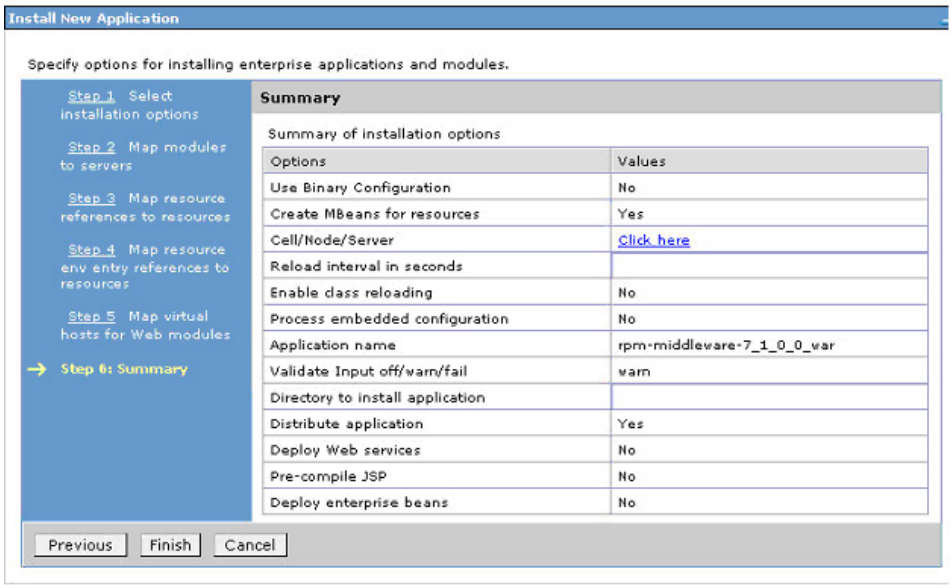


e. Click **Next**.

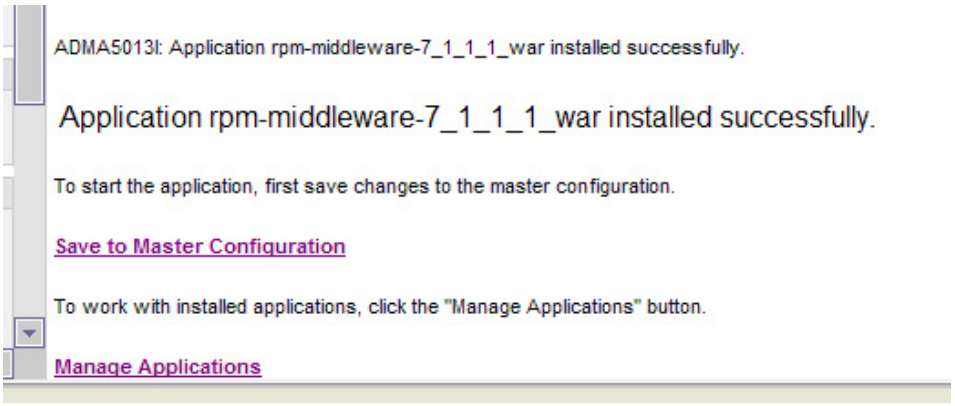
9. Verify that each of the references are properly mapped to the JNDI name of the corresponding resource environment variable. You can updates the JNDI mappings, manually or by selecting the reference checkbox. Selecting the JNDI name in the combo box and clicking on **Apply** near the combo box as shown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



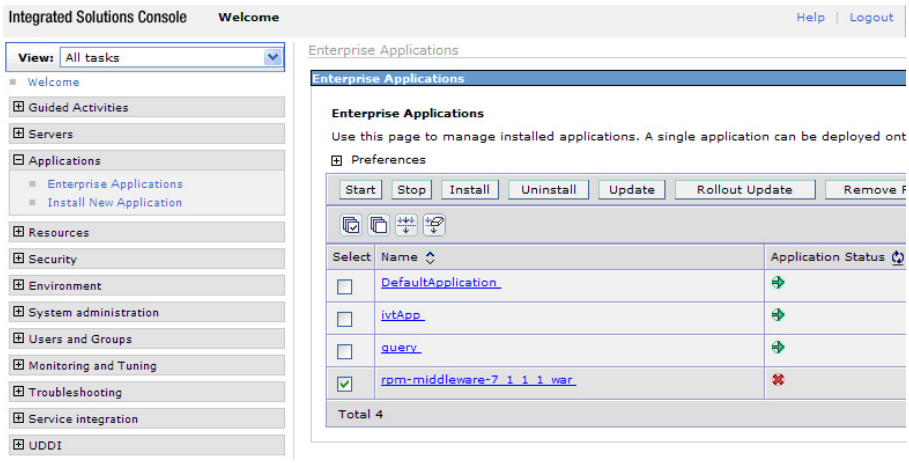
10. Click **Next** on the next panels until you reach the last panel with the option to **Finish**, click **Finish**, then wait for the deployment to complete.



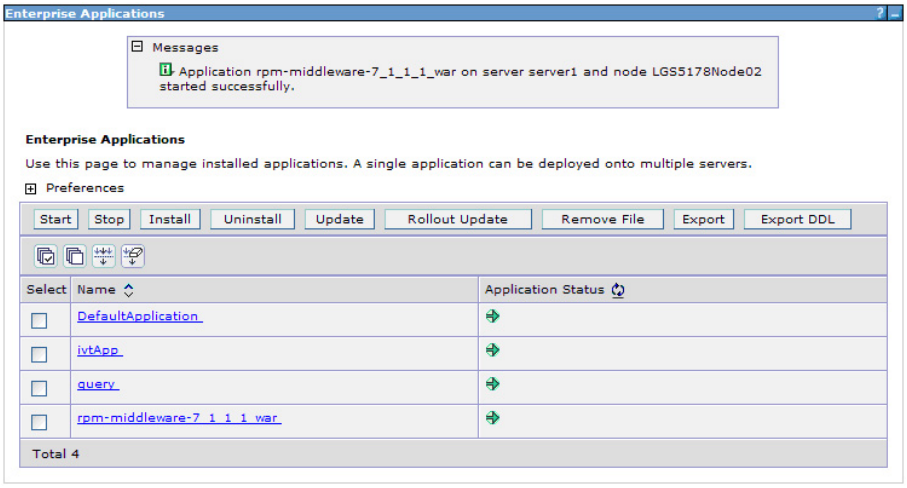
11. If the Rational Portfolio Manager middleware is installed successfully, the following message will be displayed:



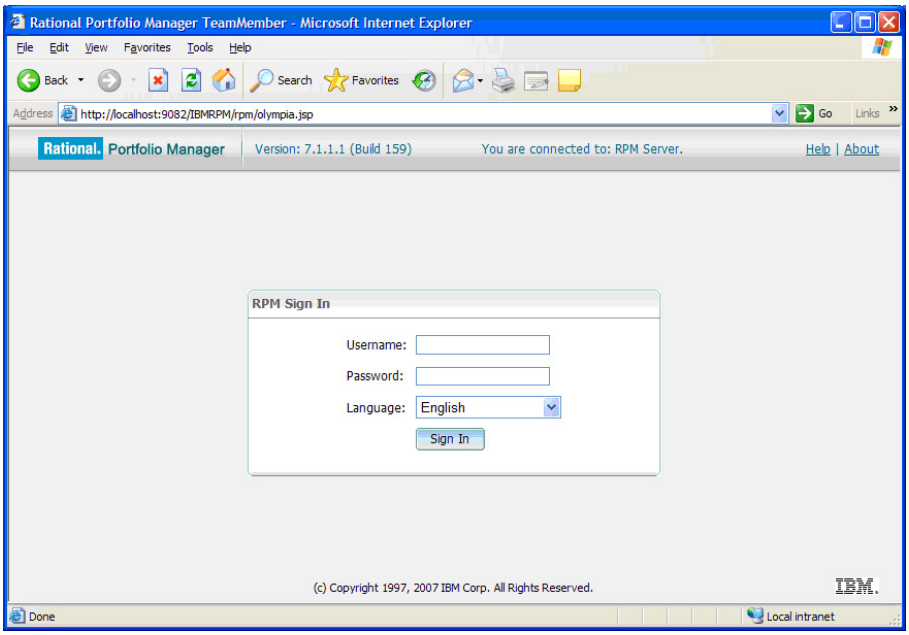
12. Save your settings:
    a. Click the **Save to Master Configuration** URL.
    b. Click the **Save** button.
13. Start the Rational Portfolio Manager middleware Enterprise Application.
    a. In the left menu, click **Applications > Enterprise Applications**.
    b. Make sure that the **rpm-middleware**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



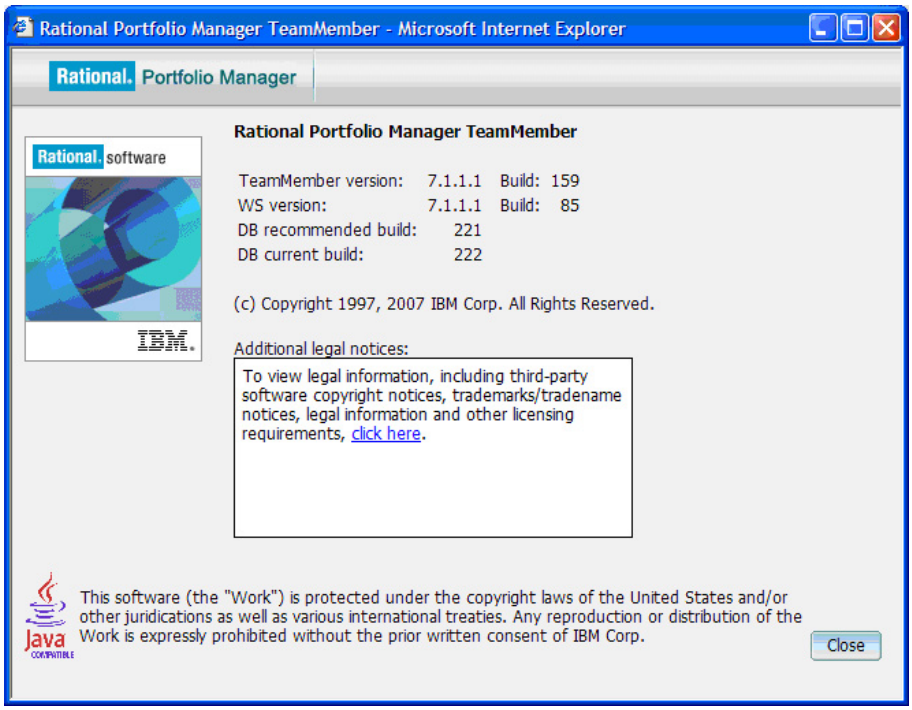
c. To start the application that you deployed, click **Start**.



14. 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 is presented, click **About** in the top right corner.



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



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

Deploying IBM Rational Portfolio Manager Middleware on WebSphere Application Server 6.1

To deploy Rational Portfolio Manager:

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. Consult your WebSphere administrator for the correct user credentials. The User ID is not mandatory, if no user credentials have been defined when WebSphere was installed, this field can also be left in blank.

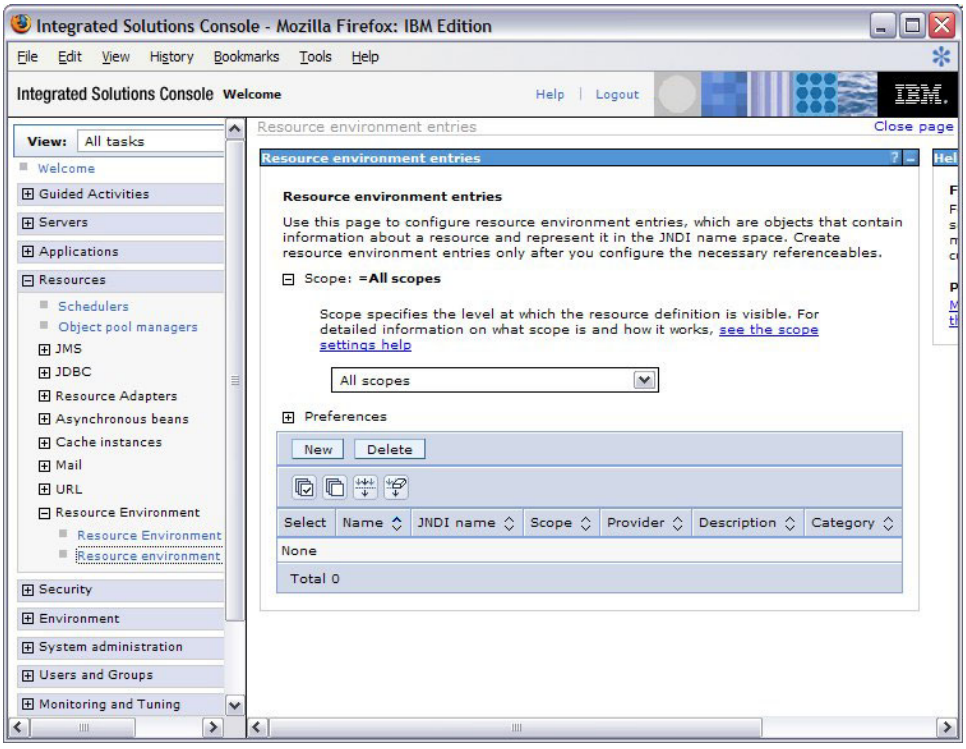
Configuring the Middleware Runtime Options

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 9, “Middleware environment variables reference,” on page 117. 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 through 6h on page 65. 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 9, “Middleware environment variables reference,” on page 117.

Note: All environment variables in Chapter 9, “Middleware environment variables reference,” on page 117 must be manually configured with the available values or set to the default.

To configure the Rational Portfolio Manager Middleware runtime parameters

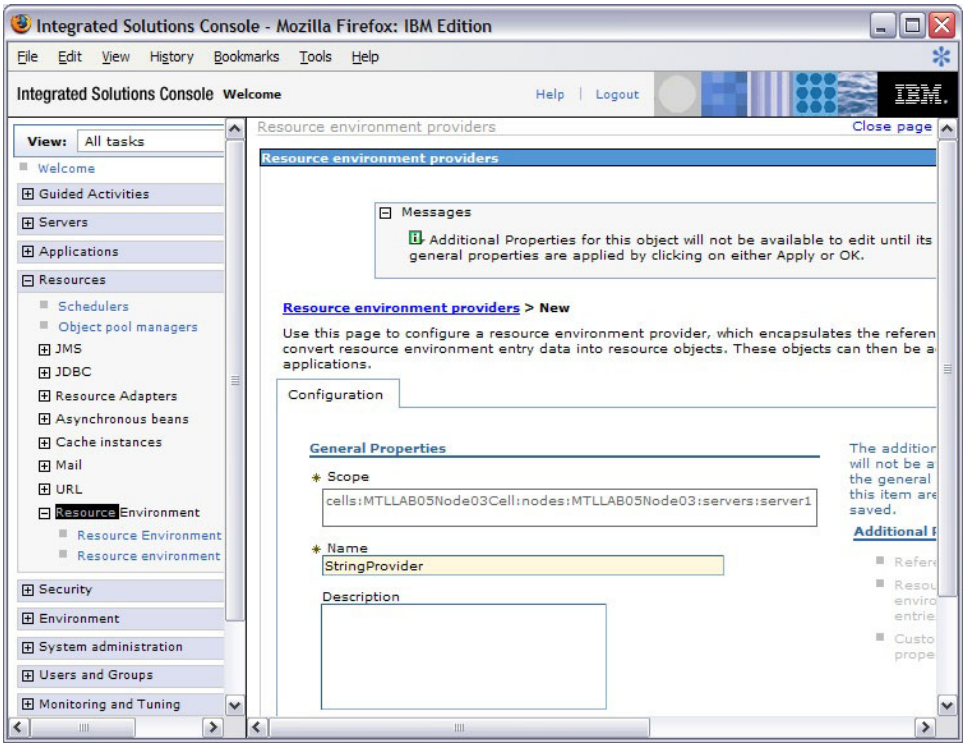
1. In the left navigation tree, click **Resources > Resource Environment > Resource Environment providers**.



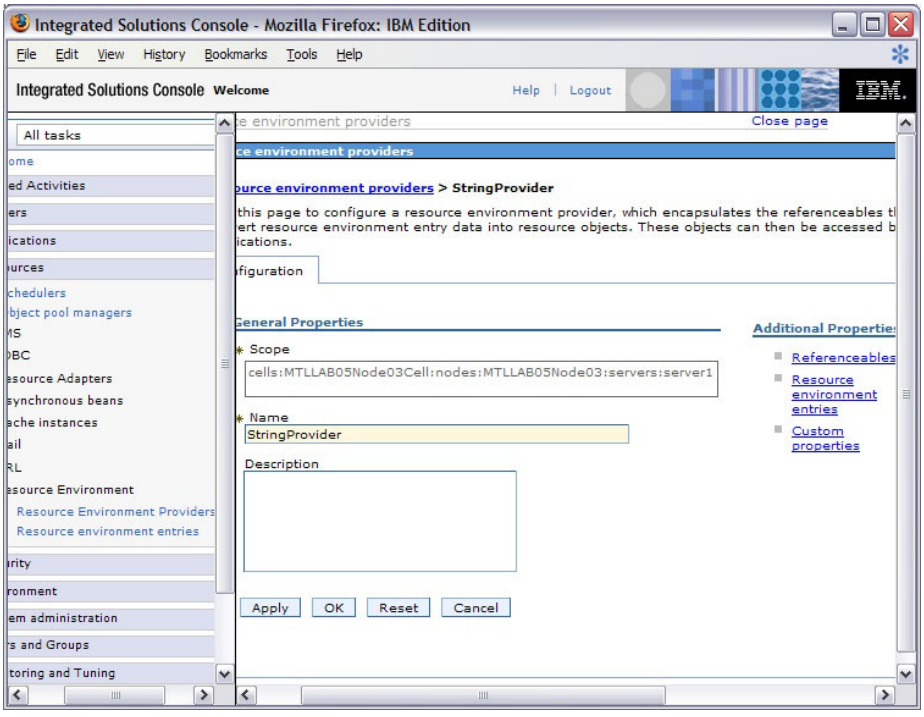
2. On the right side of the window, from the scope list, select the appropriate scope; cell, node, or server.

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

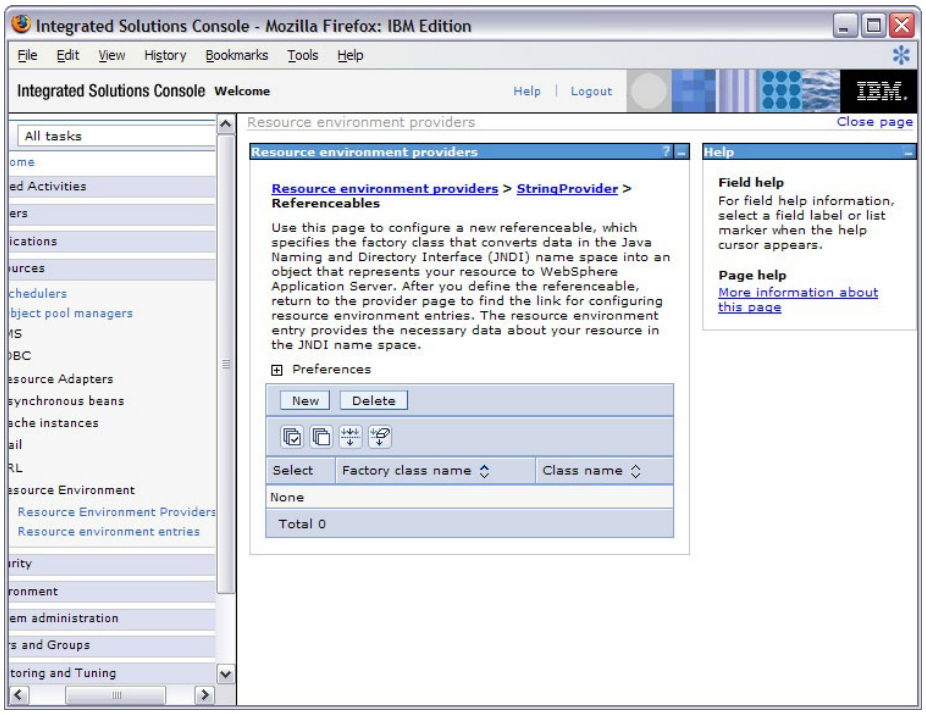
3. Click **New**.
4. In the field **Name**, type the name of the container that will contain all the WebSphere environment variables `RPMStringProvider` and click **Apply**.



5. Create a new Referenceable to access the environment variable container:
   To created a new Referenceable:
   a. In **Additional Properties**, on the right side of the window, click **Referenceables**.

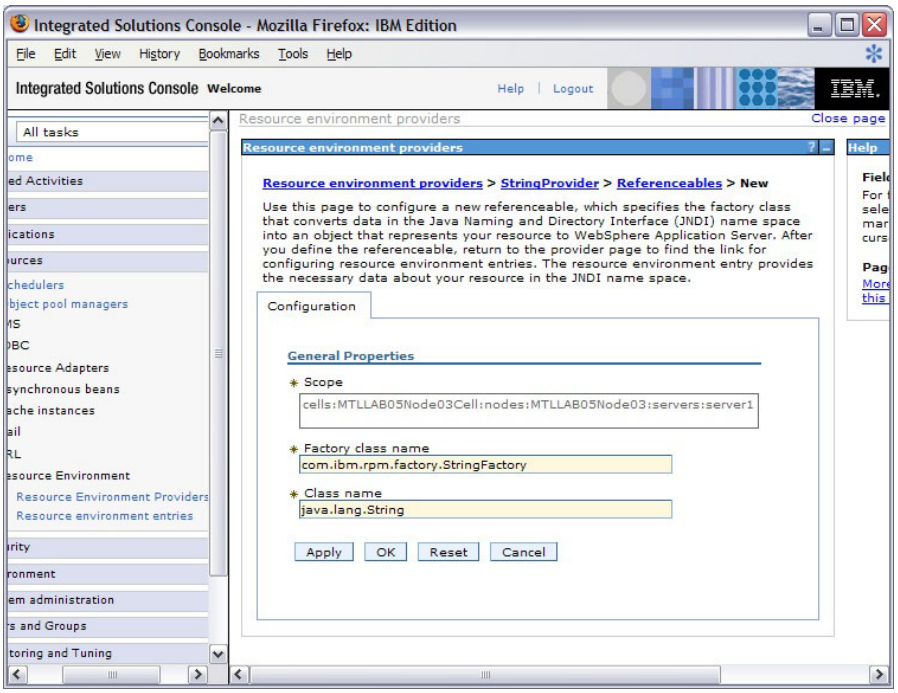


   b. ‚click **New**.



c. Enter the **Factory class name** and the **Class Name** in the required fields as follows:

- Factory class name: `com.ibm.rpm.factory.StringFactory`
- Class name: `java.lang.String`

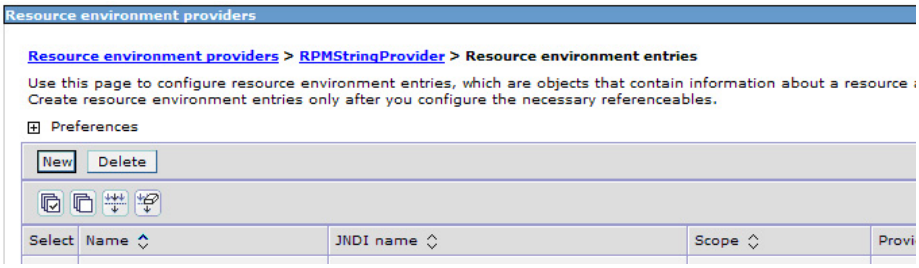


d. Click **OK**.

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 brings you back to the screen in step 5. Click **Resource environment**

entries on the right side of the window. You should see the following:

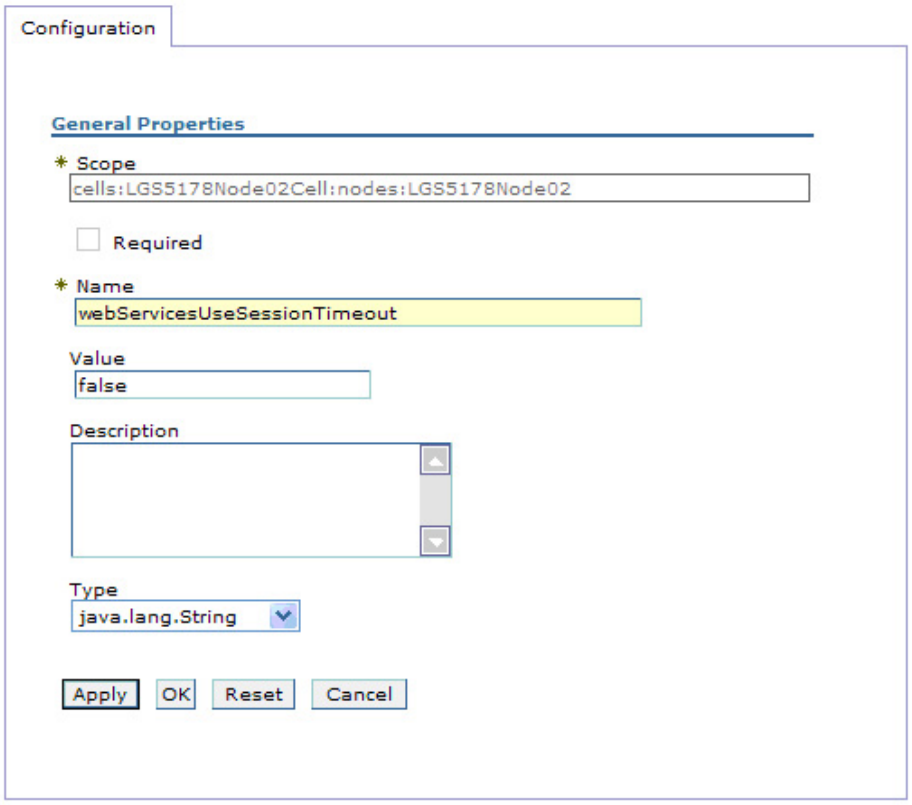


b. Click **New** on the next screen and provide the name of the environment variable and the JNDI name associated to the variable.
   - Name: `webServicesUseSessionTimeout`
   - JNDI name: `com/ibm/rpm/webServicesUseSessionTimeout`

c. Click **Referenceable** (com.ibm.rpm.factory.StringFactory).

d. Click **Apply**.

e. The Custom Properties link under Additional Properties on the right side of the window is now enabled. Click **Custom Properties** and then **New**. The following should be displayed:



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

g. Click **OK**.

7. Repeat step 6 on page 87 for each variable described in Chapter 9, "Middleware environment variables reference," on page 117.

8. To commit your changes, click **Save**.
9. Continue to the next step to Create the RPMCredentials authentication aliases.

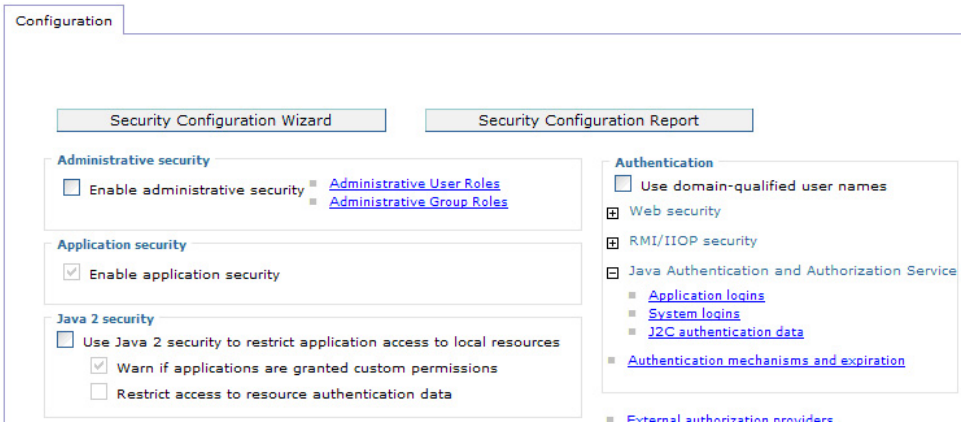
:

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

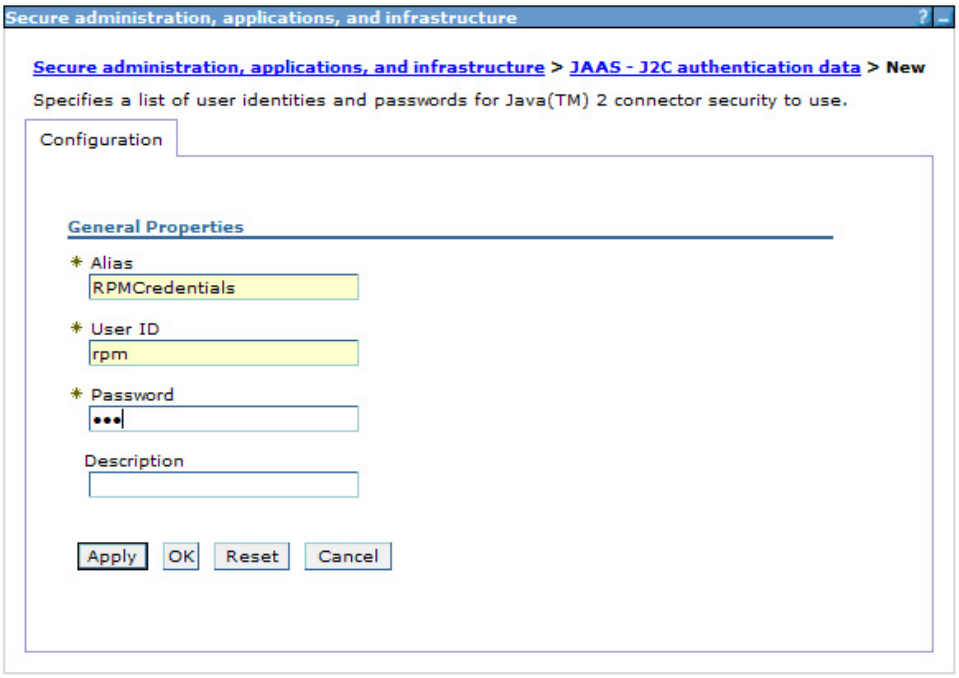
Create the RPMCredentials authentication aliases

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, click the **Save** URL in the message box at the top of the page.
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 98.

Modify the path value of the DB2UNIVERSAL_JDBC_DRIVER_PATH variable

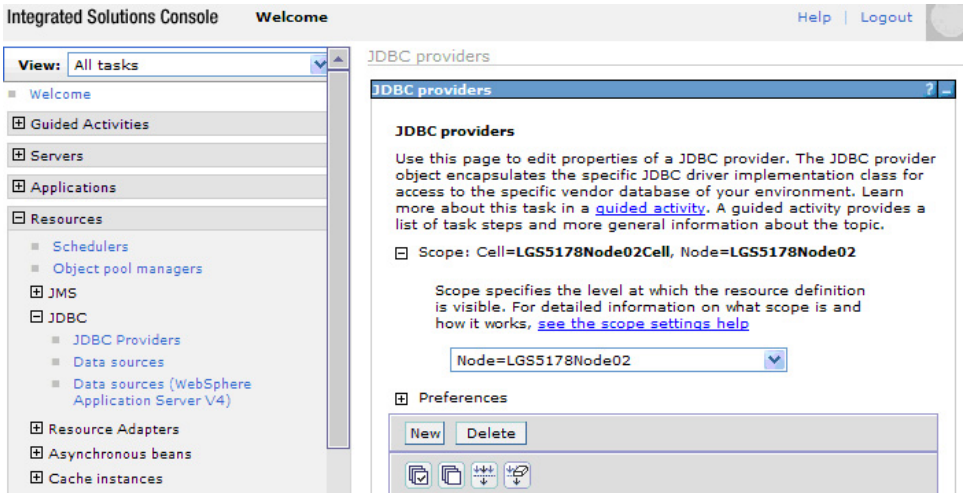
1. From the WebSphere Administrative Console window, click **Environment > WebSphere Variables**. The Node radio button is selected; do not clear this selection
2. Modify the variables DB2UNIVERSAL_JDBC_DRIVER_PATH:
   a. From the Administration Console navigation, select **Environment > WebSphere Variables**. The **Node** radio button is selected; do not clear this selection.
   b. 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 placed inside the lib folder of the WebSphere installation directory. For example, .
      3) Click **OK**.

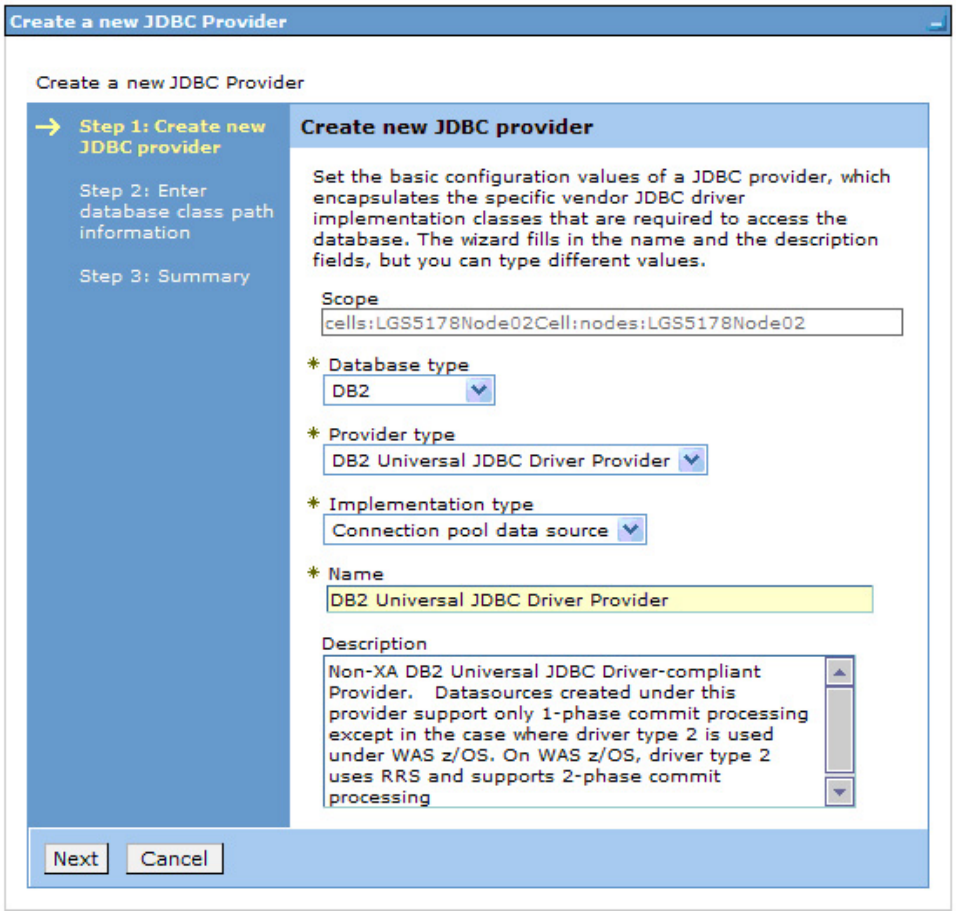
4) To save your changes to the master configuration, click the **Save** URL in the message box at the top of the page.

Create the JDBC Providers for DB2

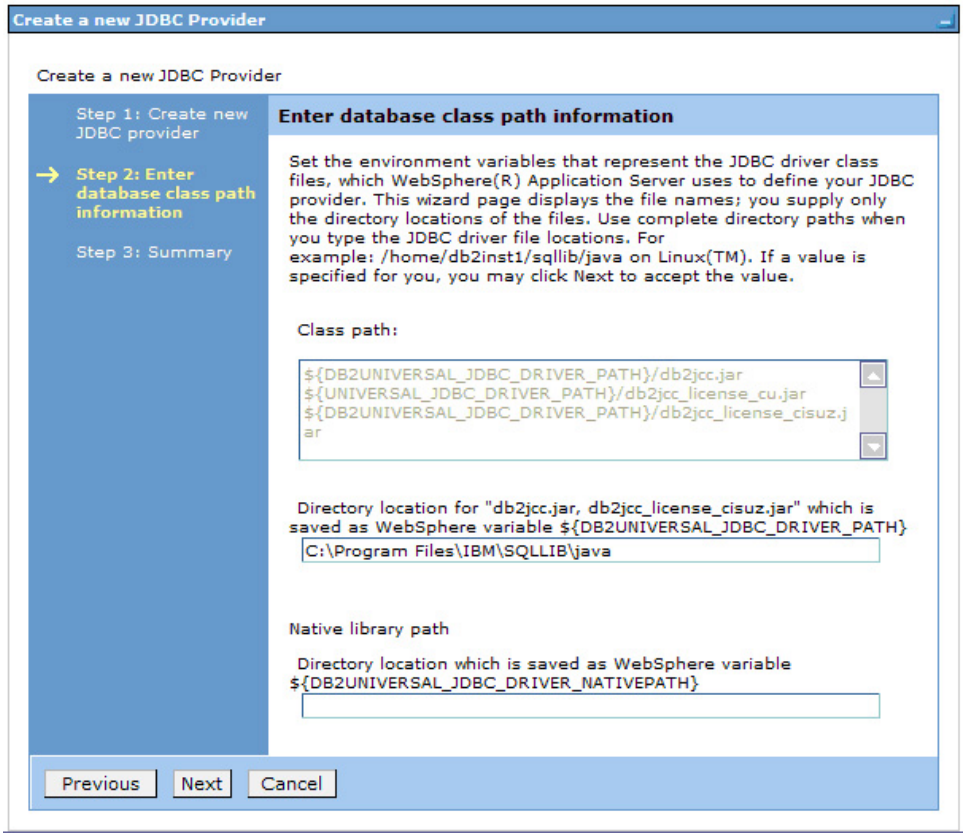
1. From the WebSphere Administrative Console window, click **Resources > JDBC Providers**. If DB2 Universal JDBC Driver Provider has already been created, continue to step 9 on page 93.
2. To add a new provider, click **New**.



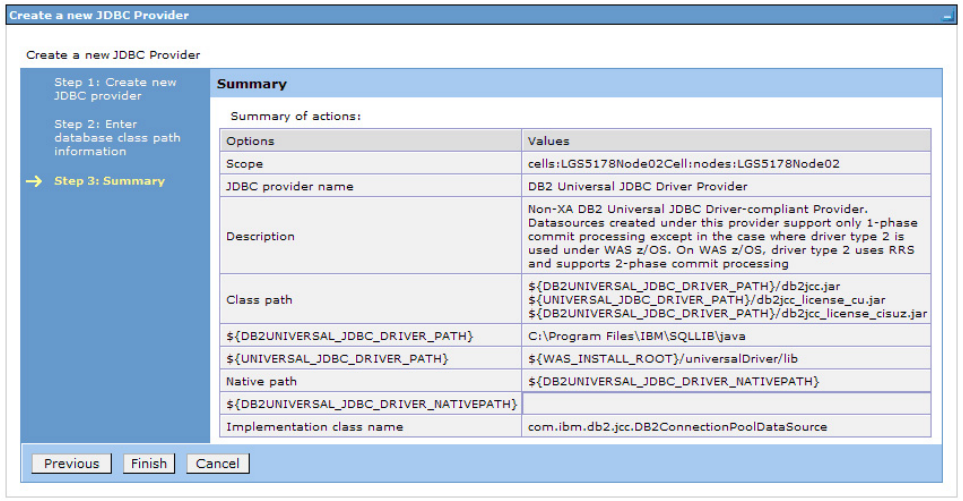
3. Complete the information about the provider by selecting the following options from drop-down menu for each of the following fields:
   - **Database type**: DB2
   - **Provider type**: DB2 Universal JDBC Driver Provider
   - **Implementation type**: Connection pool data source



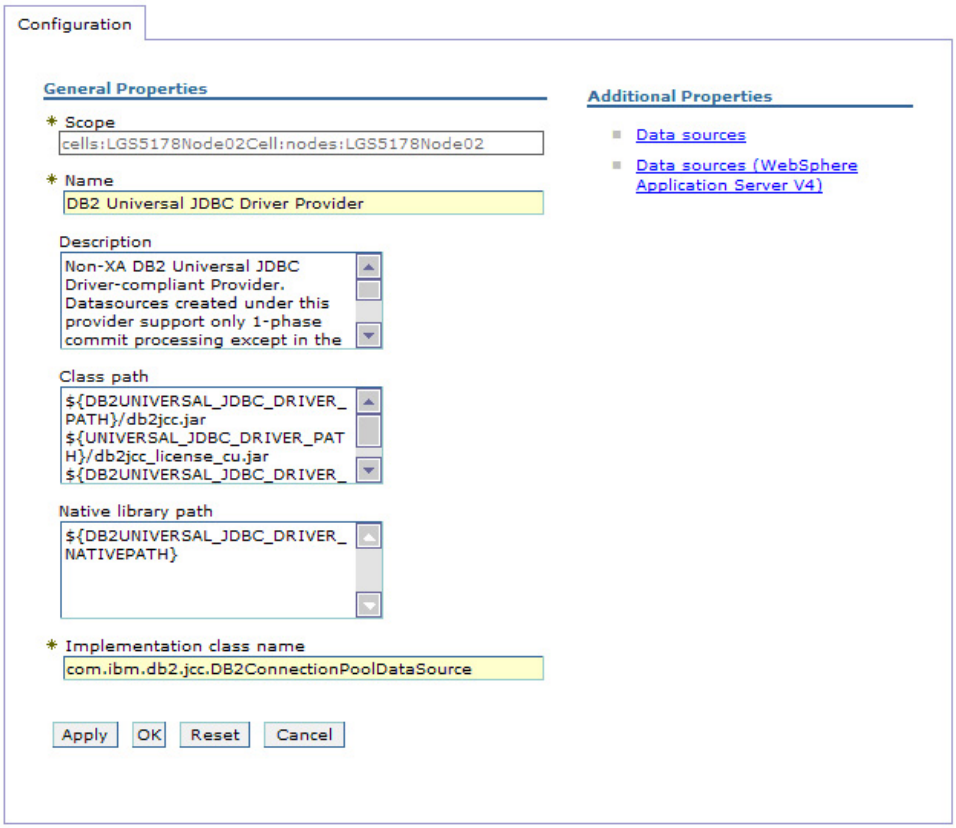
4. Click **Next** through the two subsequent screens; then click **Finish**.
5. Enter database class path information:



6. Click **Next**.



7. Click **Finish**.
8. To save your workspace changes to the master configuration, click **Save**. WebSphere returns to the JDBC Providers window.
9. Click on 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:



Classpath should be as follows:

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

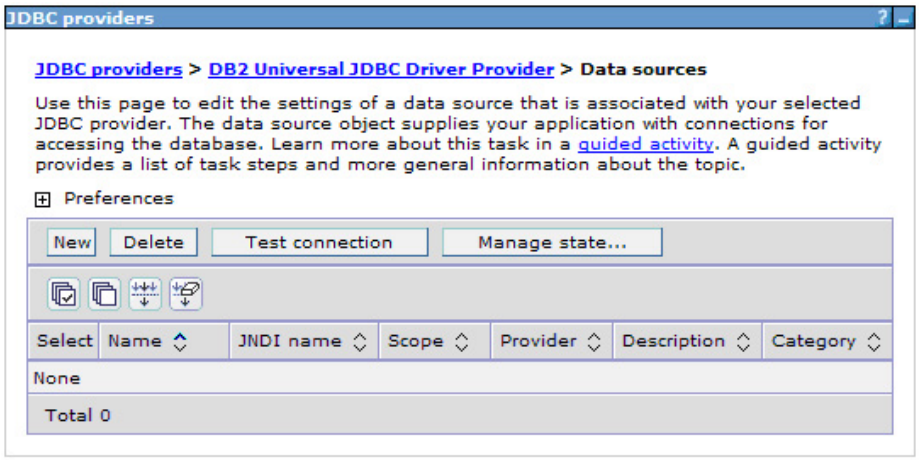
Create the data sources and test the connection for DB2.

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.

You will need the following data source information to create the Data Sources; it 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 provided by the "Create a data source" wizard:

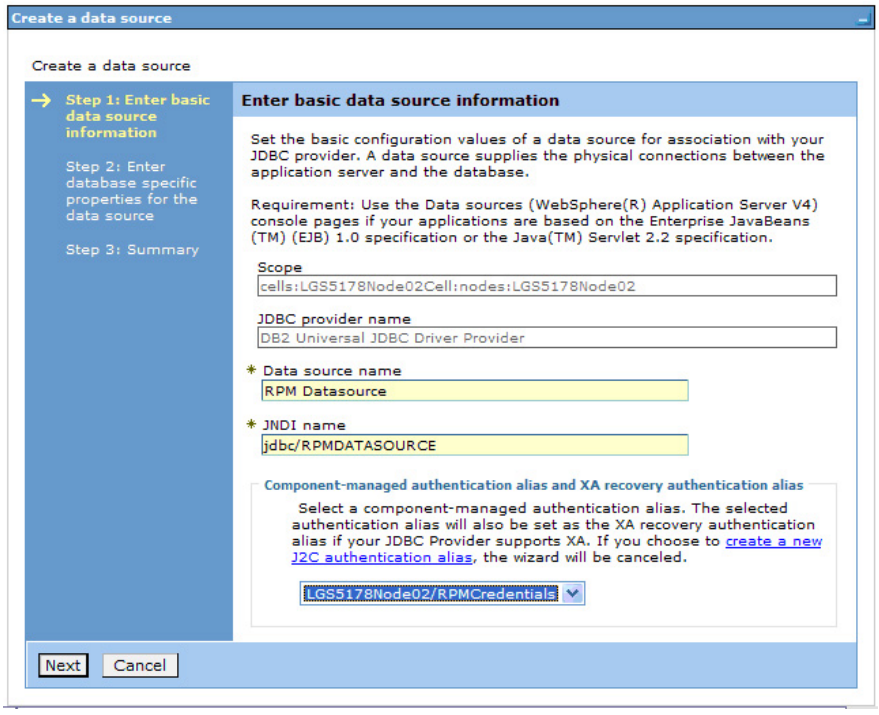
1) **Step1: Enter basic data source information**:

a) Enter the Data source name: RPM Datasource

b) Enter the JNDI name: jdbc/RPMDATASOURCE

c) Select the J2C authentication alias: yournode/RPMCredentials

d) Click **Next**.



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

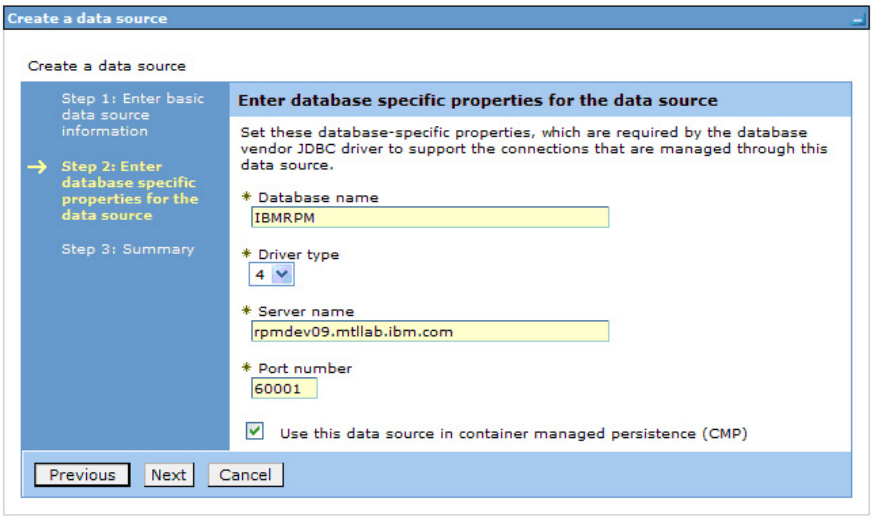
a) Enter the database name

b) Select the driver type (should be type 4),

c) Enter server name

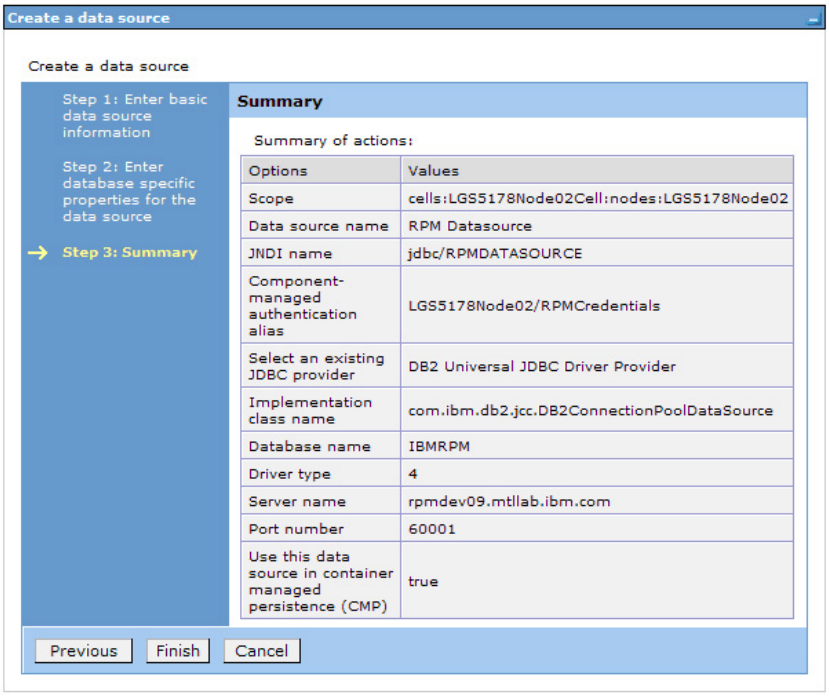
d) Enter the port number

e) Click **Next**.

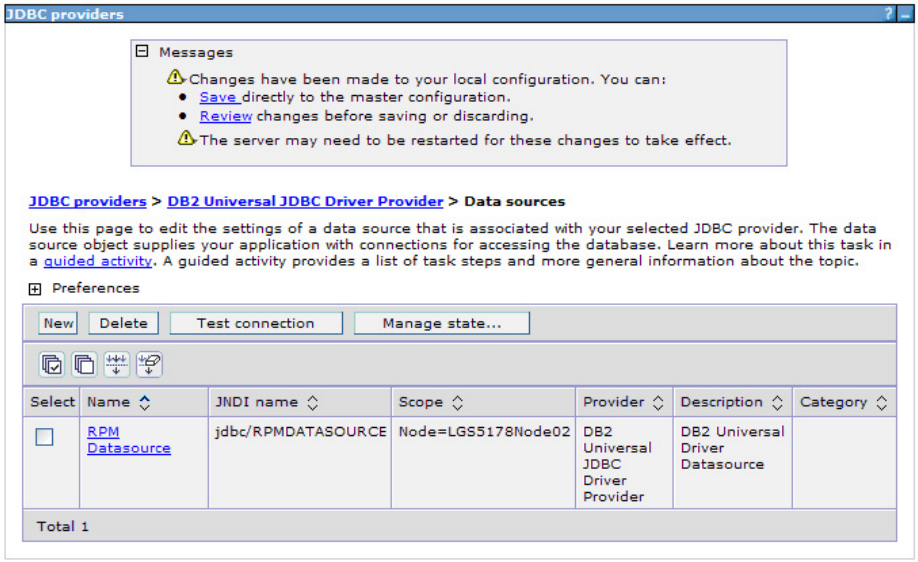


3) **Step 3: Summary**

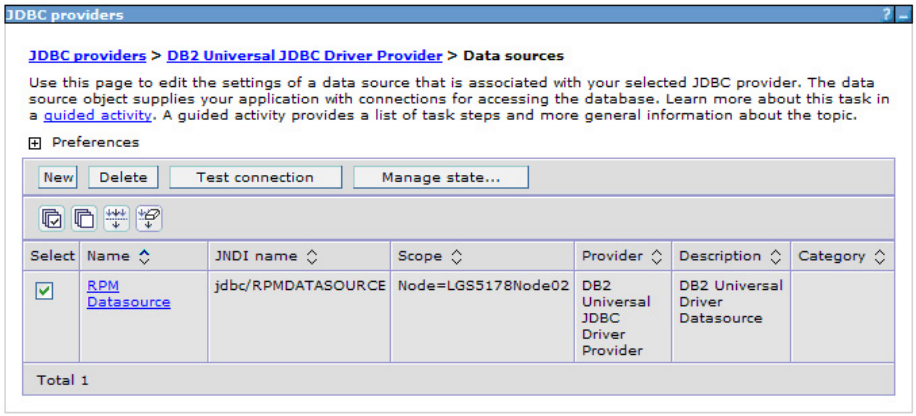
a) Click **Finish**.



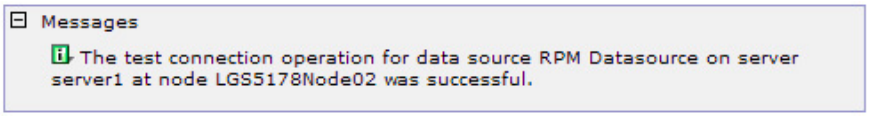
c. To save your changes to the master configuration, click **Save**.



d. Select the newly created connection and then click **Test Connection**.



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



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

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

2. Continue with next step, “Deploying the rpm-middleware.war file” on page 104.

Modify the path value of the ORACLE_JDBC_DRIVER_PATH variable

1. From the WebSphere Administration Console navigation, select **Environment > WebSphere Variables**. The **Node** radio button is selected; do not clear this selection.
2. 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.

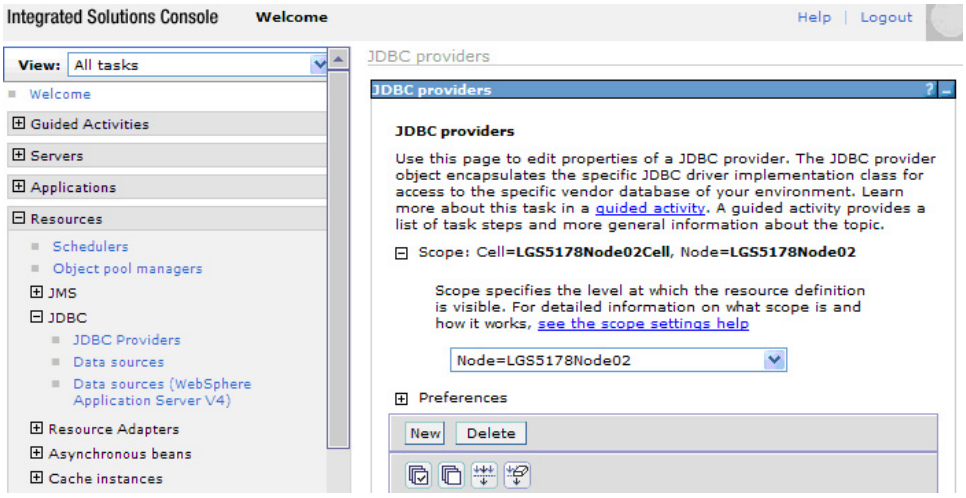
      Note: The Oracle driver file dojdbc14.jar, is used if you are running the application server with JDK 1.4 or later versions. If you are running the application server with JDK 1.2 or JDK 1.3, use the Oracle driver file classes12.jar.

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

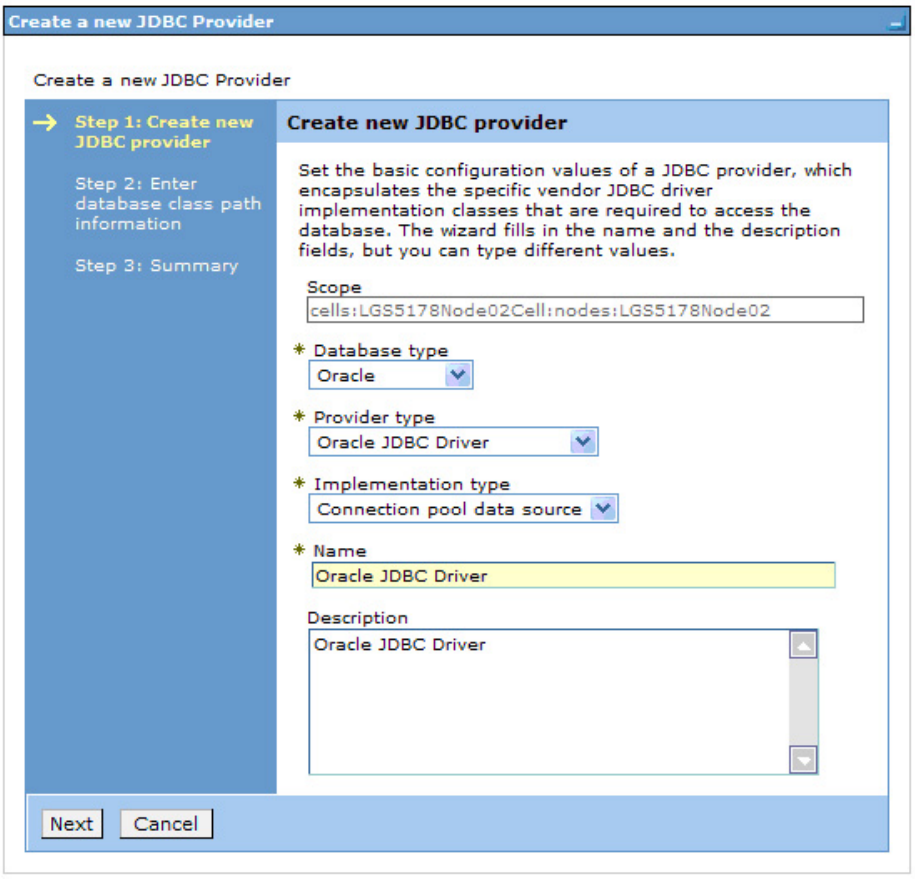
The Rational Portfolio Manager middleware is enabled and ready for use.

Create the JDBC provider for Oracle

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

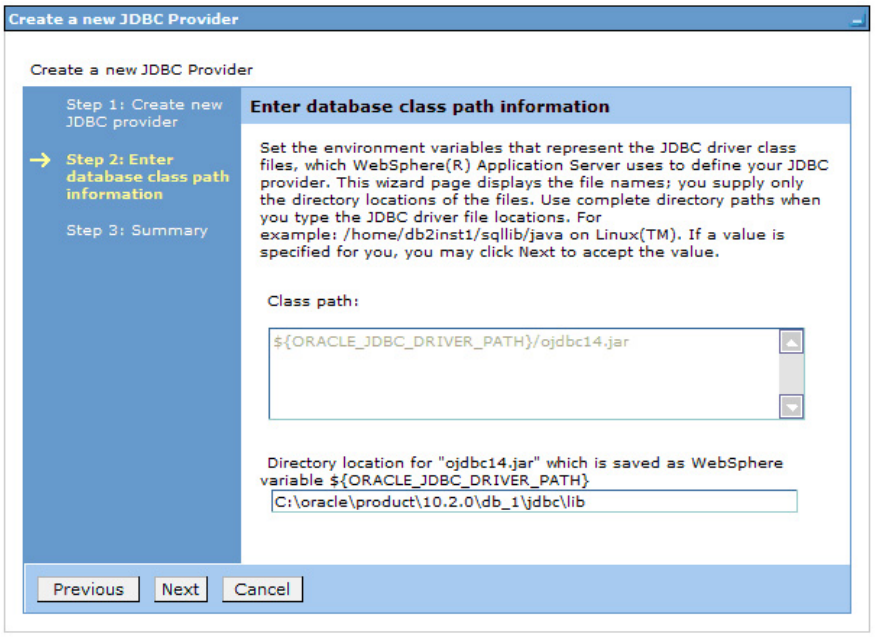


2. Complete the information about the provider by selecting the following options in the pop-up menu for each of the following fields and click **Next**.
   a. **Step 1: Create new JDBC provider**
      1) **Select the database type database type:** Oracle
      2) **Select the provider type provider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



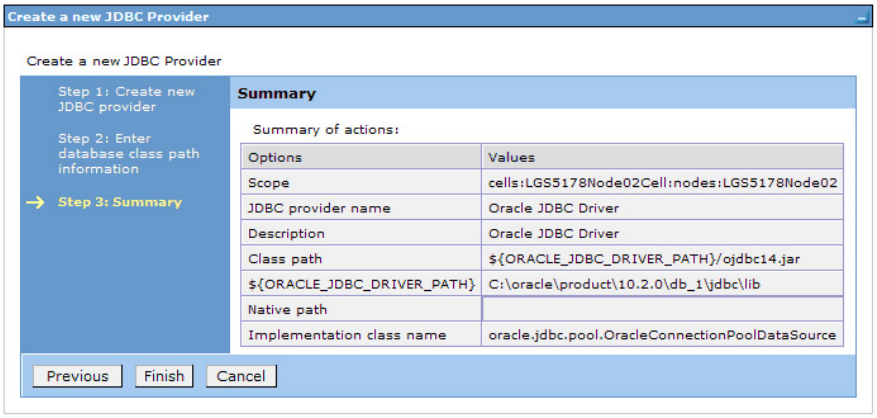
b. **Step 2: Enter database class path information**:

1) Click **Next**.



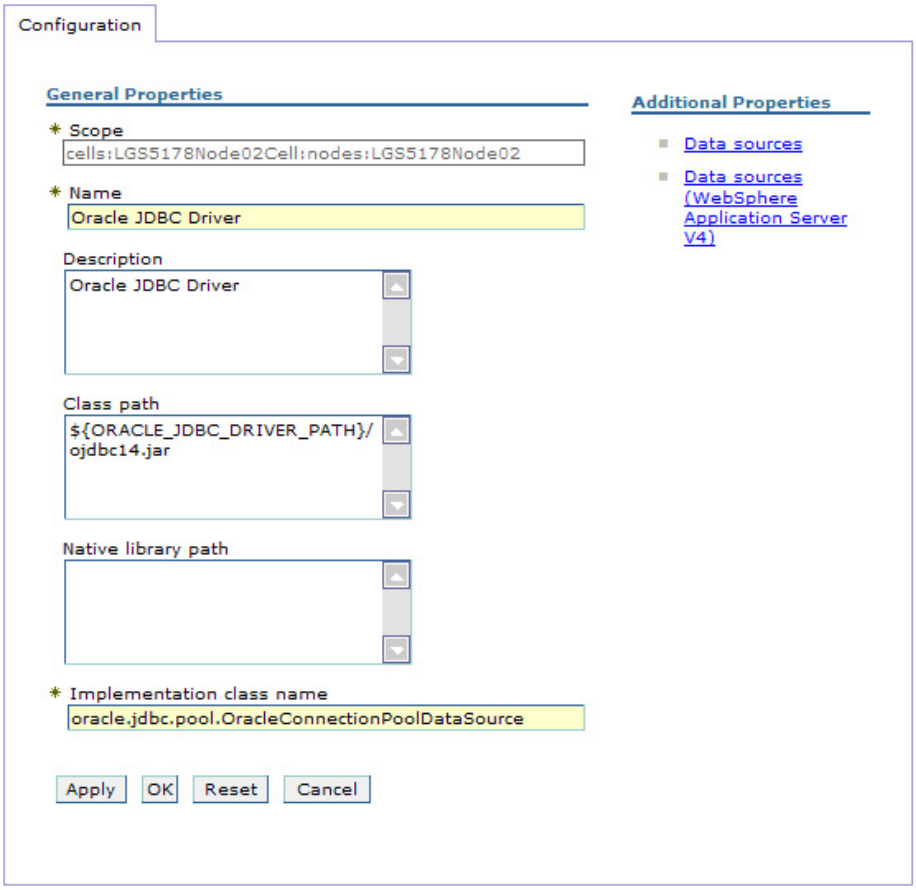
c. **Step 3: Summary**:

1) Click **Finish**.



d. To save your changes to the master configuration, click **Save**. WebSphere will bring you back 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 classpath and the implementation class name are set as follows:



The classpath should be: ${ORACLE_JDBC_DRIVER_PATH}/ojdbc14.jar %ORACLE_JDBC_DRIVER_PATH%\ojdbc14.jar

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

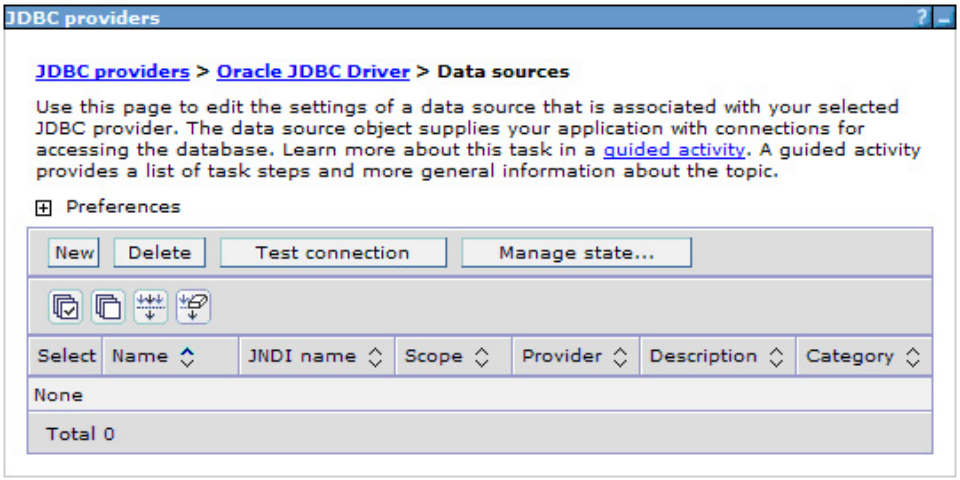
To access information from the Rational Portfolio Manager repository when using the Rational Portfolio Manager Middleware, the data source information or Data Source Name (DSN) must be set correctly. The information specified in the DSN allows the Rational Portfolio Manager Middleware to connect to the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

You will need the following data source information to create the data sources; it is used by the client to log in to the server.

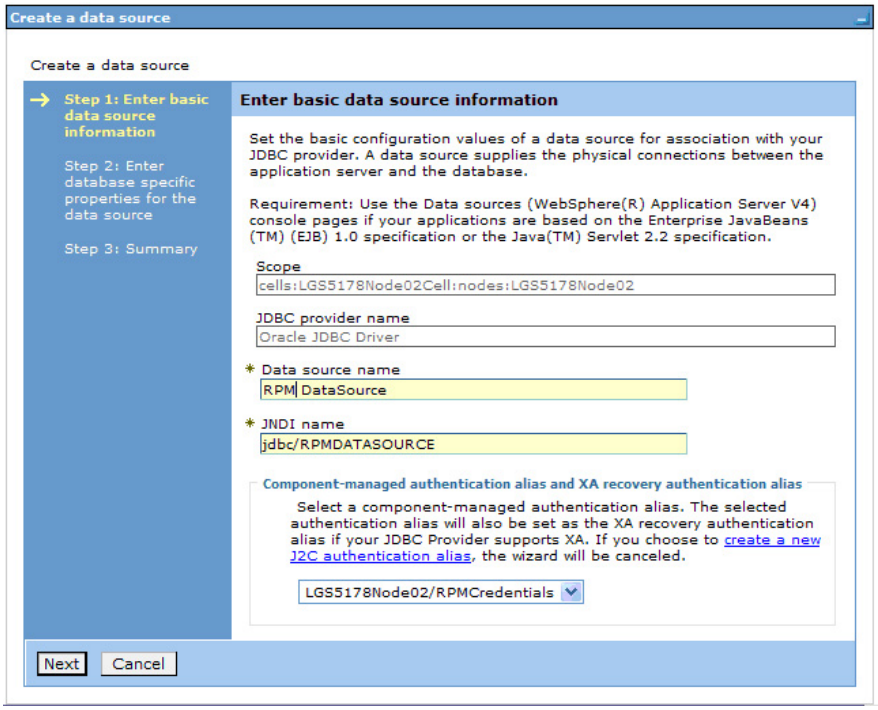
- The database host
- The database name
- The user name and password for this database

To create the jdbc/RPMDATASOURCE:

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

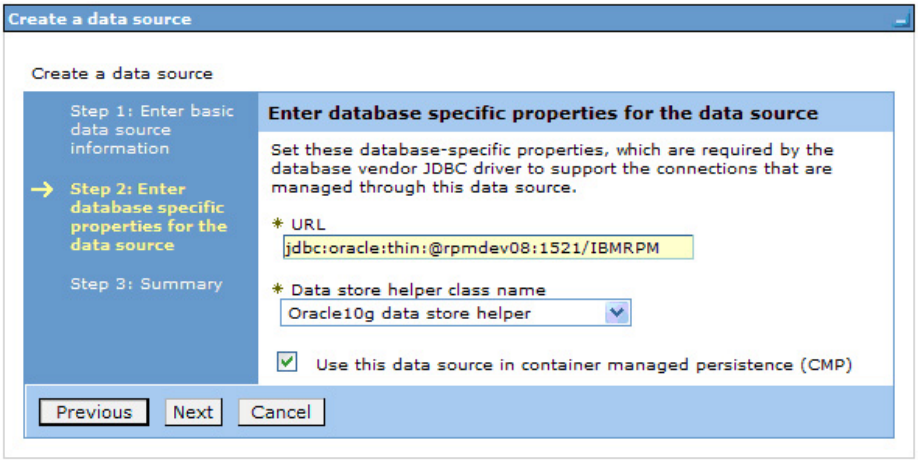


2. Follow the steps provided by the Create a data source wizard:
   a. **Step1: Enter basic data source information:**
      1) Enter the Data source name: `RPM Datasource`
      2) Enter a name and the JNDI name: `jdbc/RPMDATASOURCE`
      3) Select the J2C authentication alias: *yournode*/RPMCredentials
      4) Click **Next**.



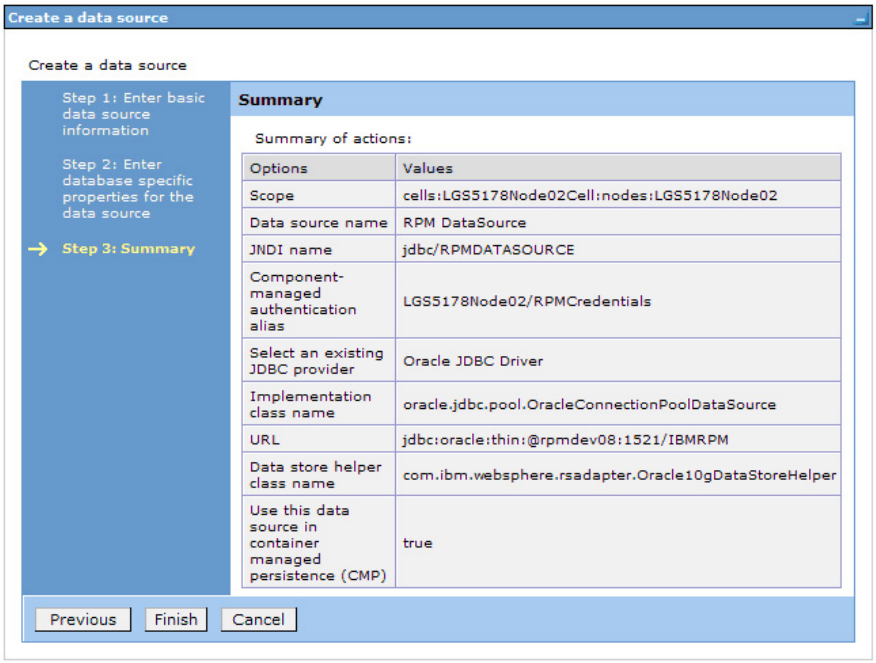
b. **Step 2: Enter database specific properties for the data source**

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**.



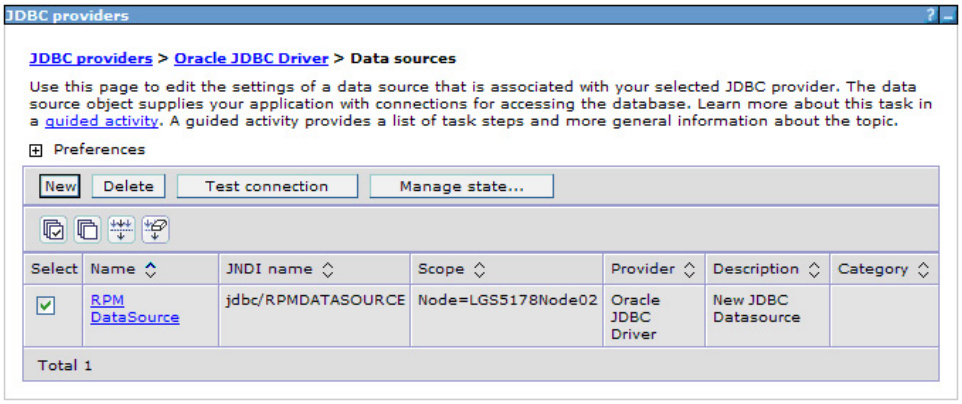
c. **Step 3: Summary**

1) Click **Finish**.

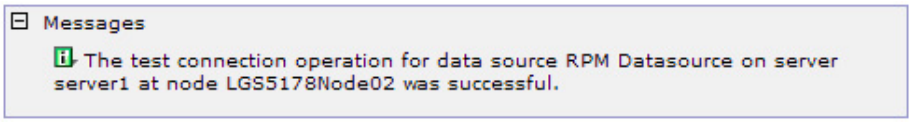


d. To save your workspace changes to the master configuration, click the **Save** URL.

3. To test your connection to the Oracle database, select the newly created connection and click **Test Connection**.



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



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

1) RPMCeredentials
2) JDBC Driver path
3) datasource

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

4. Continue with next step, “Deploying the rpm-middleware.war file.”

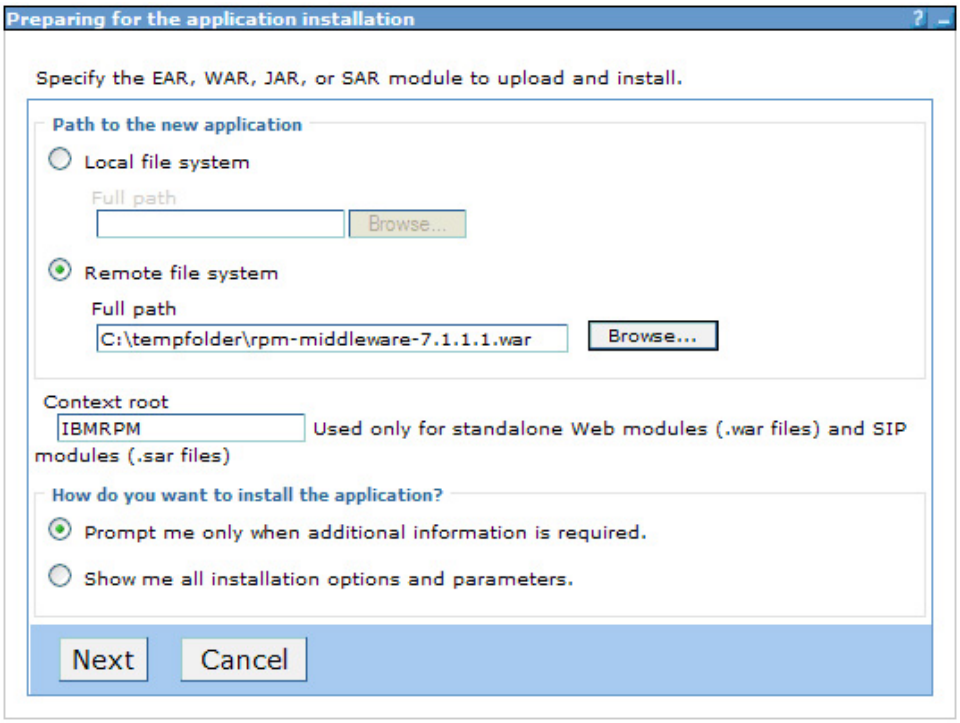
Deploying the rpm-middleware.war file

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

1. Before you begin, upload the rpm-middleware.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.
2. In the **WebSphere Administrative Console** window, click **Applications > Install New Application**.
3. Select the **Remote File System** box and enter the full path you noted in step a (you can also browse to the file).

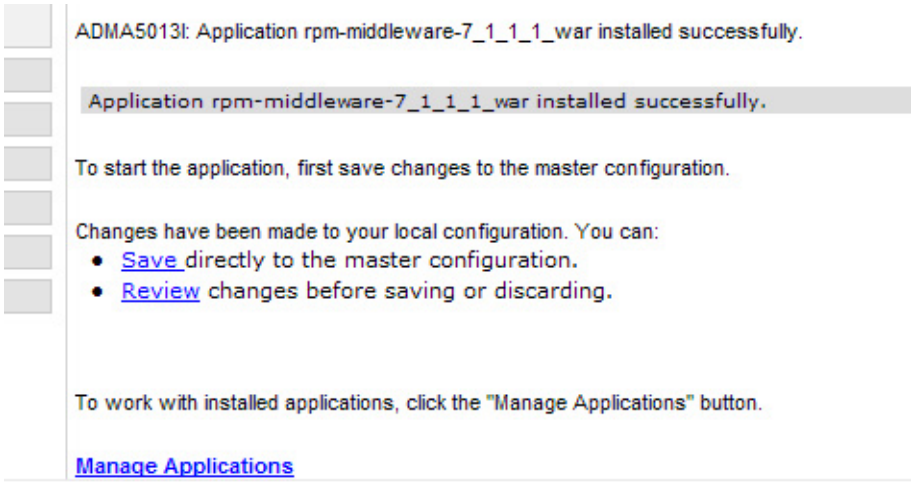
   Note: Do not use the **Local File System** radio button option, selecting this option will cause the Administrative console to timeout.
4. In the **Context root** field enter: `rpm`

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



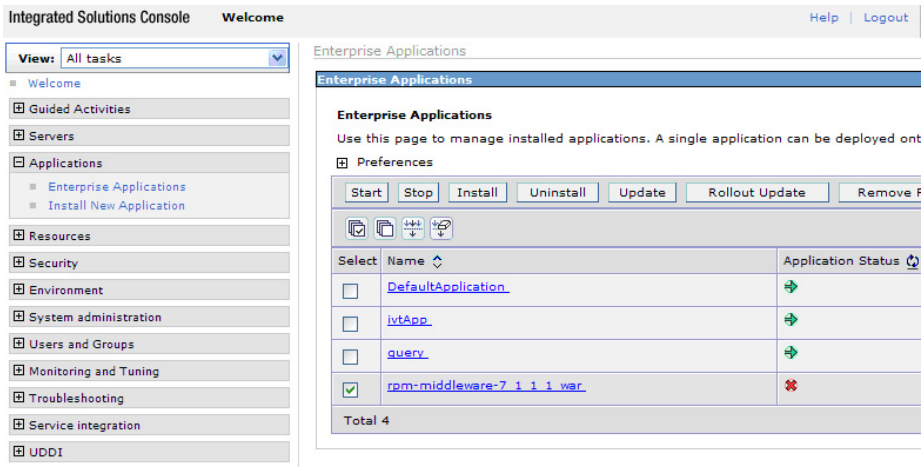
5. Click **Next** until you reach the last panel with the option to Finish, click **Finish**, then wait for the deployment to complete.

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

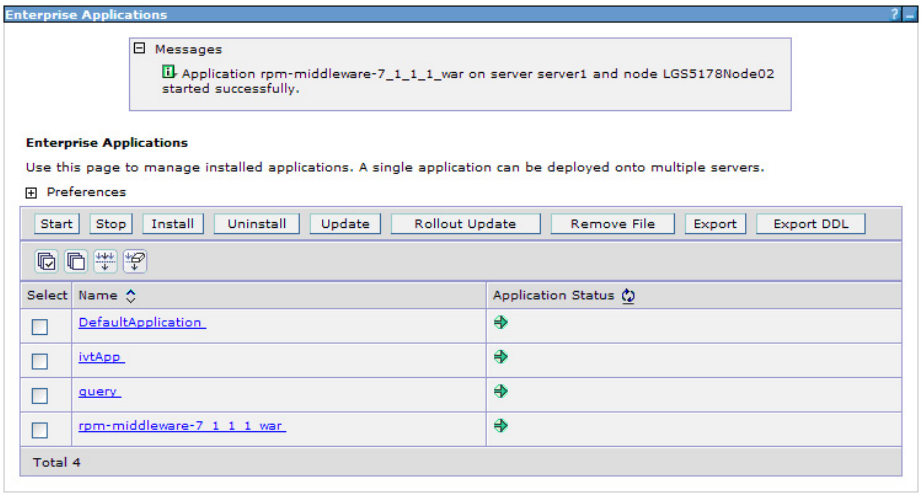


7. Start the Rational Portfolio Manager War Enterprise Application.

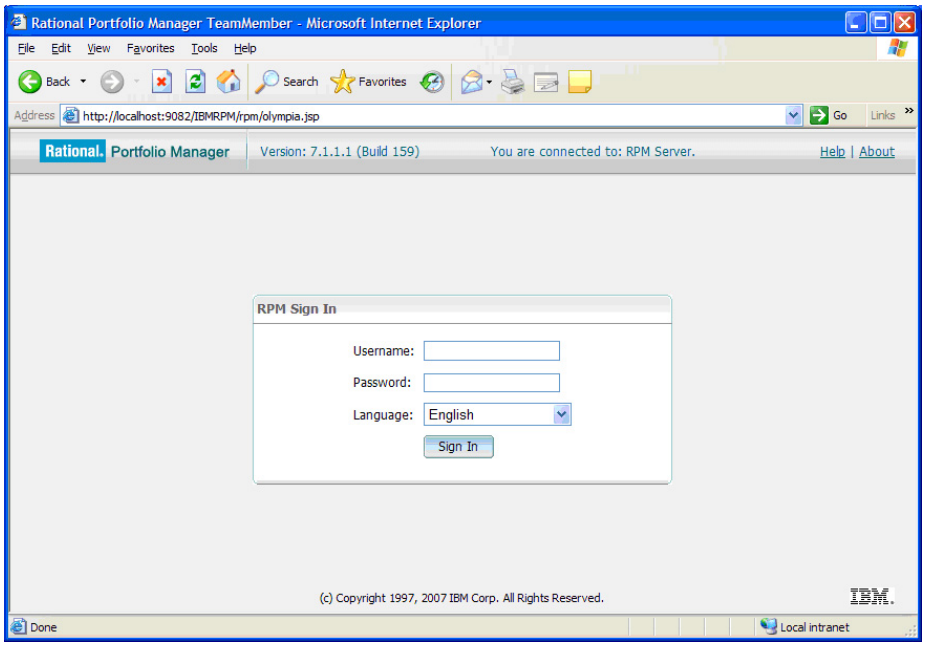
a. In the left menu, click **Applications > Enterprise Applications**.
b. Make sure that the **rpm-middleware** box is selected.



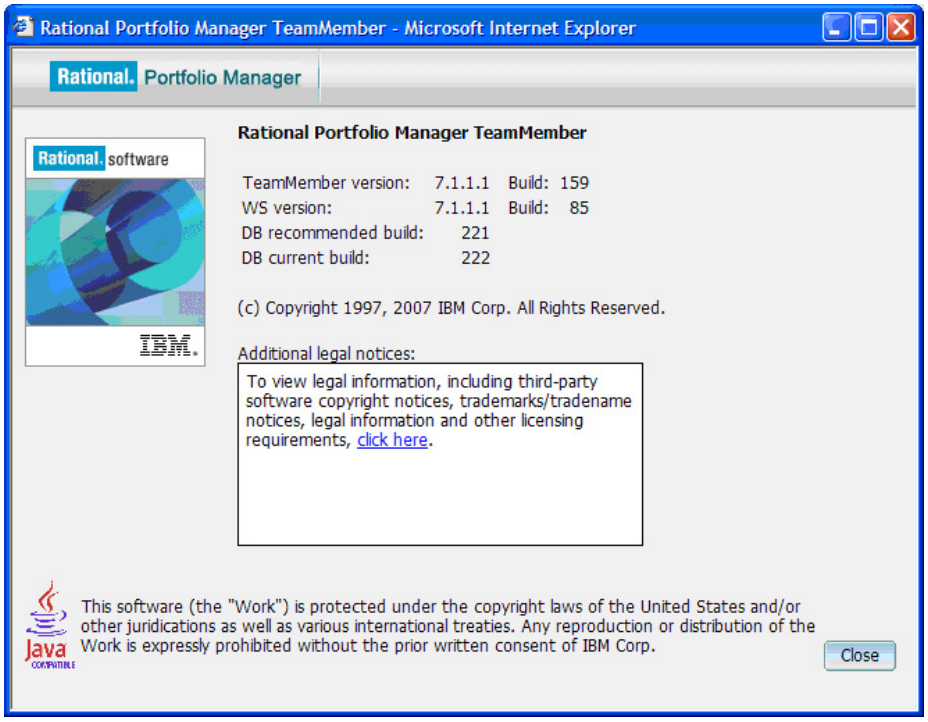
c. To start the application that you deployed, click **Start**.



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 is presented, click **About** in the top right corner.



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



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

Chapter 8. Installing middleware: Tomcat 5.5 application server

Before you begin, Tomcat must already be installed and a Java Development Kit (JDK) or an unzip executable file must also be installed on the target machine. The manager web application of Tomcat is installed by default by the Tomcat installer. 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. Configuring 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. Instead of copying the files to the common/lib directory, add them to the Tomcat classpath. Refer to Tomcat documentation for instructions.
   c. 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. Instead of copying the files to the common/lib directory, add them to the Tomcat classpath. Refer to the Tomcat documentation for instructions.
   d. 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/
   e. Download the open source file mail-1.4.1.jar to the TomcatBaseDirectory/common/lib directory. The file can be downloaded from the following address: https://maven-repository.dev.java.net/nonav/repository/javax.mail/jars/
   f. 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 the

Sun Microsystem site at the following address: 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 found in the ${PACKAGE_ROOT}/WebServer%PACKAGE_ROOT%/WebServer directory of the Rational Portfolio Manager Installation CD along with the IBMRPM.war file.

   a. Copy the rpm-middleware.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.war file may vary from different versions of the Rational Portfolio Manager installation CD packages.

   b. Rename the rpm-middleware.war fle 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 live 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 to use is "com.ibm.db2.jcc.DB2Driver" and the format of the URL is jdbc:db2://host:port/dbname.

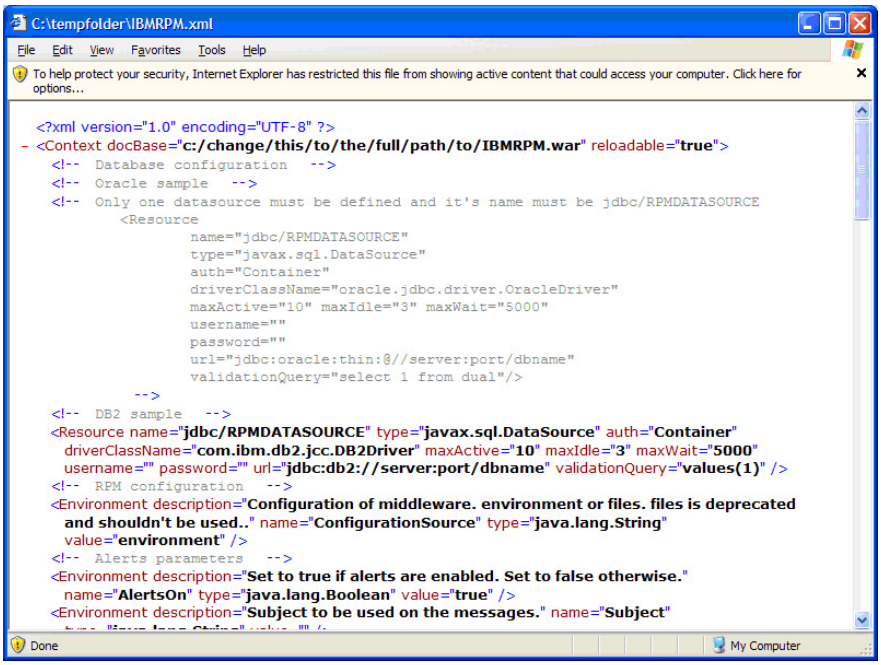
      2) For Oracle, the driverClassName to use is "oracle.jdbc.OracleDriver" and the format of the URL is jdbc:oracle:thin:@//host:port/sid.

   f. Edit the values of the environment variables. Default values are provided but these may not be appropriate for our configuration. For a list of all the runtime parameters available, in addition to their default values, see Chapter 9, “Middleware environment variables reference,” on page 117.

   g. After having set each environment variable described in Chapter 9, “Middleware environment variables reference,” on page 117, 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:



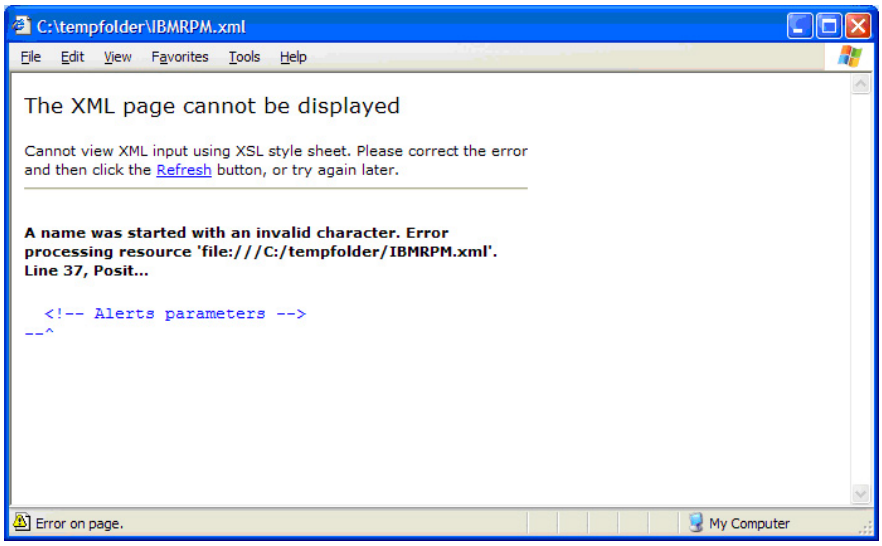
2) If the structure of the file is invalid, you will get a similar result:

List of possible errors you should look for:

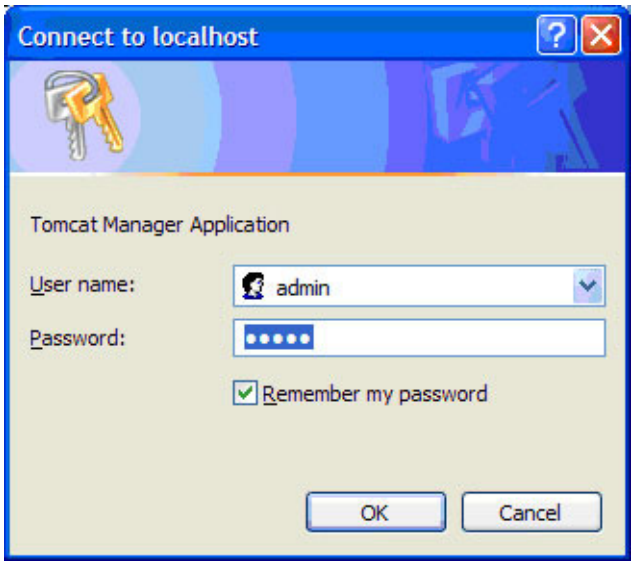
a) Missing ending xml tags

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

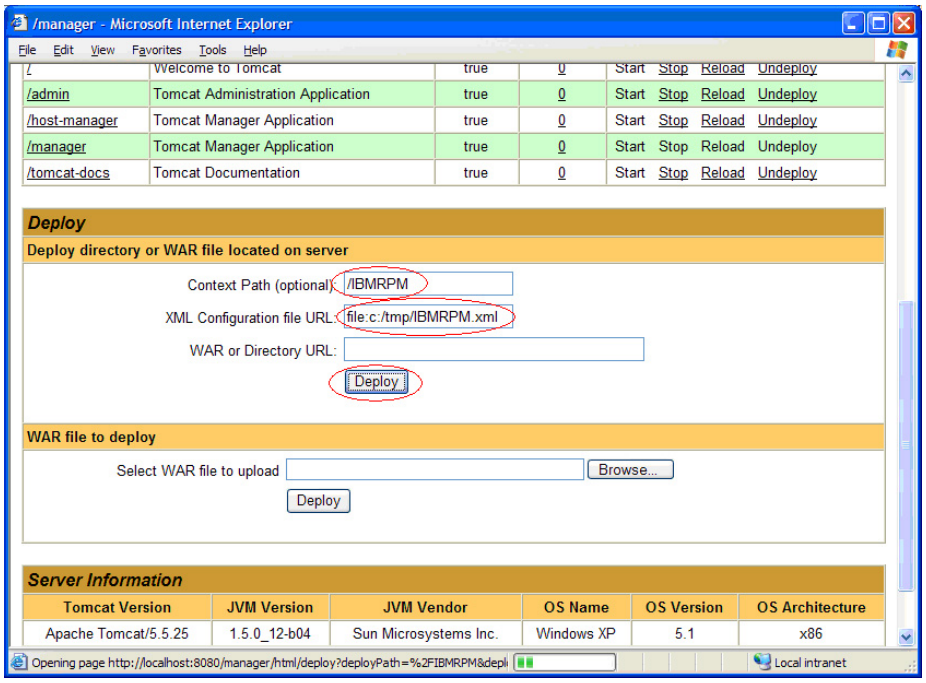
Internet Explorer provides some hints on the location of the error but it does not report the exact location. In the above example, an ending double quote is missing. In the following example, a closing xml tag is missing:



3. Deploying the Rational Portfolio Manager middleware using the Tomcat Manager:
   a. To start the Apache Tomcat server, run the startup.bat file located in the TomcatBaseDirectory/bin directory or click **Start Menu > All Program > Apache Tomcat 5.5 > Configure Tomcat application**.
   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**.



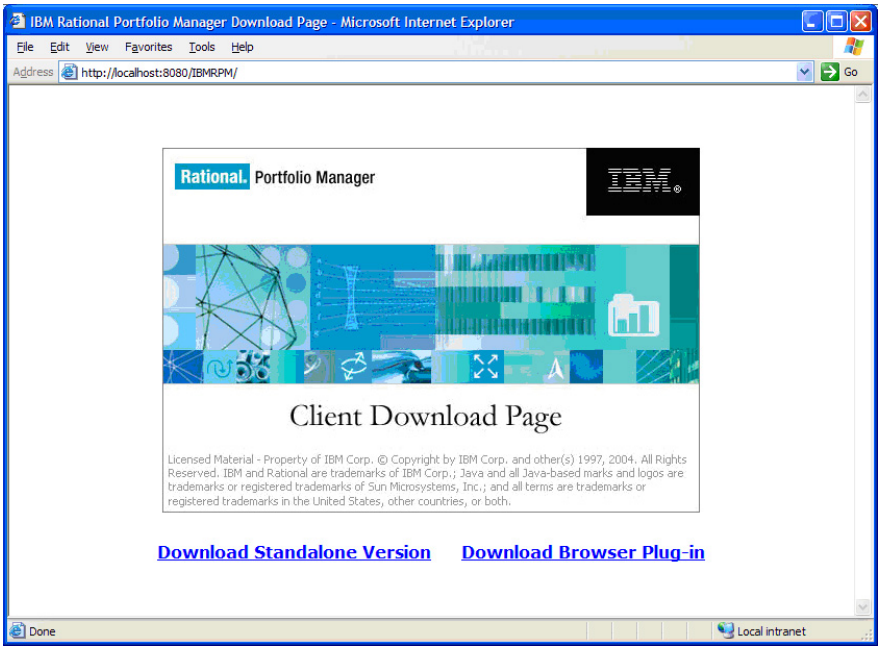
   d. To deploy the IBMRPM.war file located on the server, scroll down to the XML Configuration file URL text box and enter the location of the IBMRPM.xml file. For example, file: C:/tmp/IBMRPM.xml,
   e. Type the context path in the Context Path field (must start with a forward slash). For example, /IBMRPM.



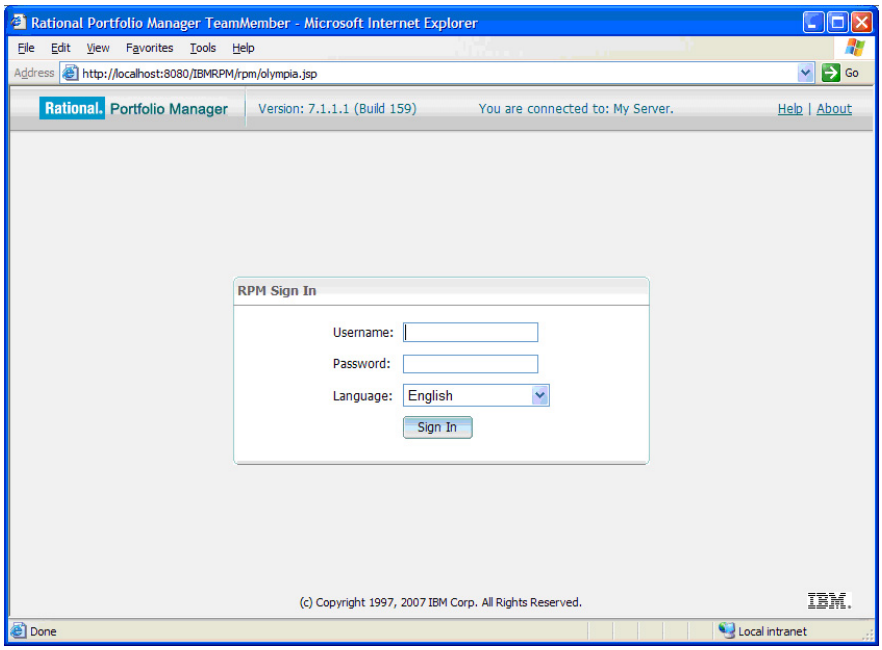
f. Click **Deploy**. You can now see that the Rational Portfolio Manager Middleware is running from the "\IBMRPM" path.

g. Verify that the middleware is working.

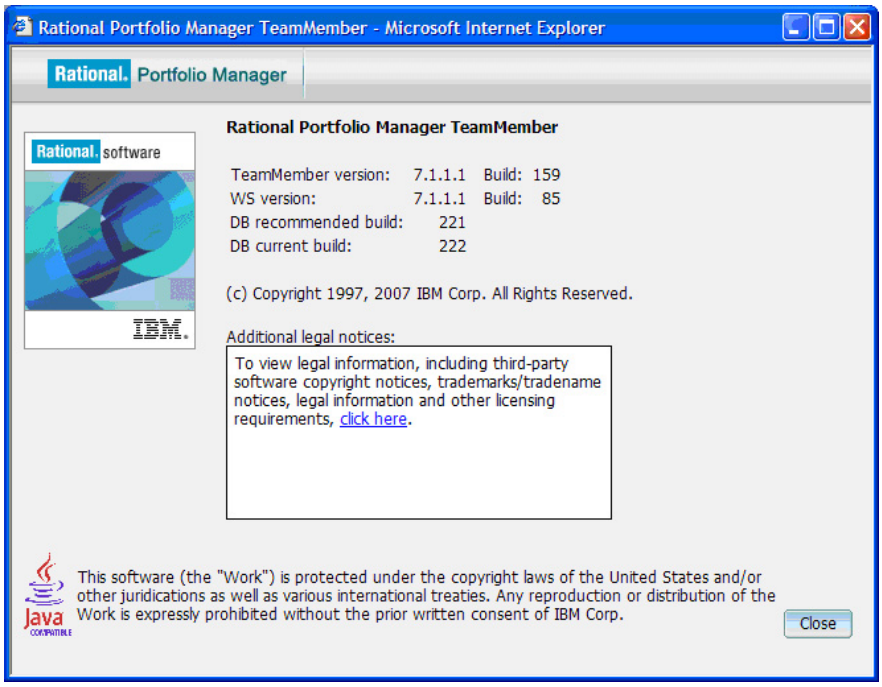
1) Click the **/IBMRPM** URL. You should see the following:



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 the following screen:



3) Click **About**, you should get the following screen:



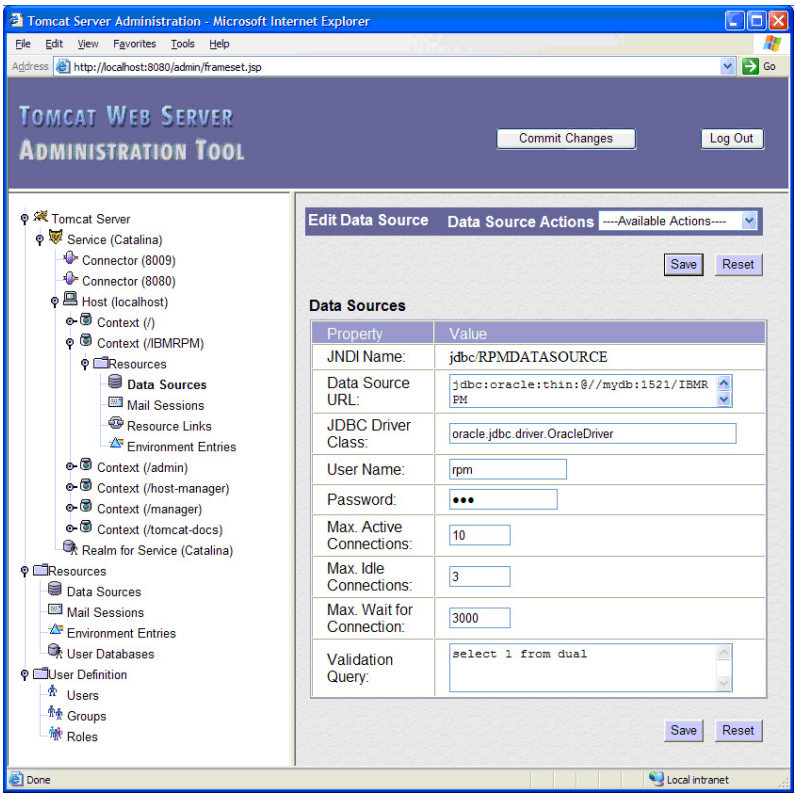
a) If you get the above screen showing the Rational Portfolio Manager version number and build number your middleware installation is successful and you can now start using the Rational Portfolio Manager Middleware.

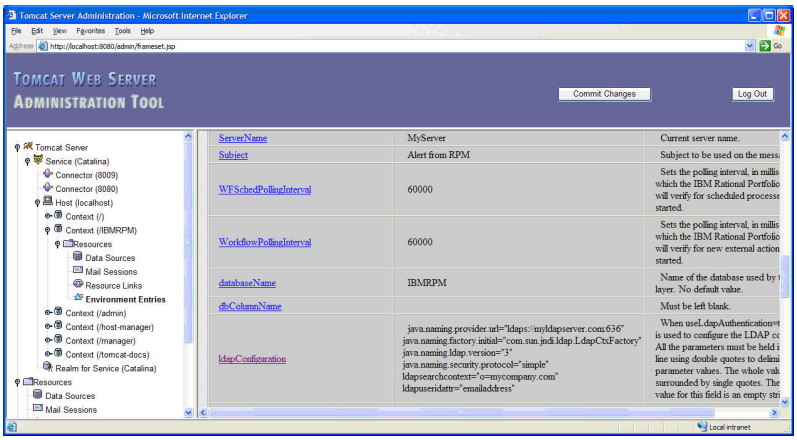
b) If a version number or build number is missing, the Rational Portfolio Manager middleware configuration is incorrect. Verify that all the values in the IBMRPM.xml file are configured correctly.

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 9. 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 43
- WebSphere Application Server 6.0: "Configuring the Middleware Runtime Options" on page 62
- WebSphere Application Server 6.1: "Configuring the Middleware Runtime Options" on page 84
- Apache Tomcat Application Server 5.5: Chapter 8, "Installing middleware: Tomcat 5.5 application server," on page 109

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 13. LDAP variables

Variables	Description
`useLdapAuthentication`	• 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 *true*, then a valid LDAP configuration must be included in the `ldapConfiguration` parameter.

Table 13. LDAP variables (continued)

Variables	Description

ldapConfiguration	• Type: String #
	• Default value: (Empty)
	• Default WebSphere JNDI Mapping: com/ibm/rpm/ldapConfiguration
	• Description: When useLdapAuthentication is set to *true*, this field is used to configure the LDAP connection. 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.
	
	The following is a sample of an LDAP configuration:
	Note: The configuration must be held on a single line of text, line feeds have been inserted in this example to facilitate reading.
	`java.naming.provider.url='daps://myldapserver.com:636"`
	`java.naming.factory.initial="com.sun.jndi.ldap.LdapCtxFact`
	`java.naming.ldap.version="3"`
	`java.naming.security.protocol="simple"`
	`ldapsearchcontext="o=mycompany.com"`
	`ldapuseridattr="emailaddress" '`

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 14. Web Services variables

Variables	Description
webServicesEnabled	• Type: Boolean • Default value: True • Default WebSphere JNDI Mapping: com/ibm/rpm/webServicesEnabled • Description: This flag enables the Web Services.
webServicesUseSessionTimeout	• Type: Boolean • Default value: True • Default WebSphere JNDI Mapping: com/ibm/rpm/ webServicesUseSessionTimeout • Description: If this value is set to *true*, the Rational Portfolio Manager Web Services disables sessions that have remained inactive for a period of time greater than is specified in the parameter webServicesSessionTimeoutDelay InSeconds

Table 14. Web Services variables (continued)

Variables	Description
webServicesSessionTimeoutDelayInSeconds	• Type: Integer • Default value: 3600 (1 hour) • Default WebSphere JNDI Mapping: com/ibm/rpm/ webServicesSessionTimeoutDelay InSeconds • 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 *false*. The value range of this parameter is 1 to 2147483647. If an invalid value is detected, the default value is applied.
webServicesUseApiSecurityFlagOnLogin	• Type: Boolean • Default value: True • Default WebSphere JNDI Mapping: com/ibm/rpm/ webServicesUseApiSecurityFlagOnLogin • Description: If the value is set to *true*, 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	• 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 *false*, 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 *IBM Rational Portfolio Manager Web Services API Guide*.

Rational Portfolio Manager *TeamMember*

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

Table 15. TeamMember Interface variables

Variables	Description
`serverDisplayName`	• 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`	• Type: Boolean • Default value: False • Default WebSphere JNDI Mapping: com/ibm/rpm/showDebugConsole • Description: Used by the *TeamMember* 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 16. REST Interface variables

Variables	Description
`databaseName`	• 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 *TeamMember* user interface. If your datasource configuration uses the following URL: jdbc:db2://myserver.com:50000/IBM, 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 17. Rational Portfolio Manager Client Broker variables

Variables	Description
`KeepAliveCount`	• Type: String • 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`	• Type: String • 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`	• 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 18. ProjectConsole (PjC) Variables

Variables	Description
PjCHostName	• Type: String • Default value: (Empty) • Default WebSphere JNDI Mapping: com/ibm/rpm/PjCHostName • Description: Rational ProjectConsole host name address.
PjCPassword	• Type: String • Default value: (Empty) • Default WebSphere JNDI Mapping: com/ibm/rpm/PjCPassword • Description: Password for Rational ProjectConsole
PjCPort	• Type: String • Default value: (Empty) • Default WebSphere JNDI Mapping: com/ibm/rpm/PjCPort • Description: The Rational ProjectConsole server port number.
PjCProtocol	• Type: String • Default value: (Empty) • Default WebSphere JNDI Mapping: com/ibm/rpm/PjCProtocol • Description: The Rational ProjectConsole protocol to be used.
PjCUsername	• Type: String • Default value: (Empty) • Default WebSphere JNDI Mapping: com/ibm/rpm/PjCUsername • Description: Rational ProjectConsole username.
PjC_ALLOW_HTTP	• Type: String • Default value: (Empty) • Default WebSphere JNDI Mapping: com/ibm/rpm/PjC_ALLOW_HTTP • Description: Set to *true* if you want to accept http connections. If set to *false*, 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 19. E-Mail notifications variables

Variables	Description
`AlertsOn`	• Type: Boolean • Default value: True • Default WebSphere JNDI Mapping: com/ibm/rpm/AlertsOn • Description: Set to *true* if alerts are enabled, otherwise set to *false*.
`Subject`	• Type: String • Default value: (Empty) • Default WebSphere JNDI Mapping: com/ibm/rpm/Subject • Description: Subject to be used in the messages.
`sendIterationTimes`	• Type: Integer • Default value: 100 • Default WebSphere JNDI Mapping: com/ibm/rpm/sendIterationTimes • Description: Number of batches of messages to be fetched.
`Sender`	• Type: String • Default value: (Empty) • Default WebSphere JNDI Mapping: com/ibm/rpm/Sender • Description: Sender to be used in the messages.
`EmailHost`	• Type: String • Default value: (Empty) • Default WebSphere JNDI Mapping: com/ibm/rpm/EmailHost • Description: Host to be used while sending messages.
`SendInterval`	• Type: Integer • Default value: (Empty) • Default WebSphere JNDI Mapping: com/ibm/rpm/SendInterval • Description: Time (in seconds) between each iteration.

Table 19. E-Mail notifications variables (continued)

Variables	Description
ServerName	• 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	• 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 20. Workflow and External Actions variables

Variables	Description
ExternalActionTimeout	• 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	• 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	• 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 21. Rational ClearQuest variables

Variables	Description
CQWebURL	• 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	• 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	• 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	• Type: string • Default value: (empty) • Default WebSphere JNDI Mapping: • Description: Identifies the ClearQuest database set being used.
CQDatabase	• Type: String • Default value: SAMPL • Default WebSphere JNDI Mapping: com/ibm/rpm/cq/CQDatabase • Description: Identifies the Database used in the schema. **Note:** The default value is only indicative and should be replaced by the actual Database used in the schema before deployment of the RPMCQ Web Services.

Table 21. Rational ClearQuest variables (continued)

Variables	Description
`CQSchedulerAutoStart`	• Type: String • 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 *true*, 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 *false* to eliminate unnecessary logs in the case where the Rational ClearQuest integration is not installed.
`CQSchedulerInterval`	• Type: String • 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 *false*. If an invalid value is detected, the default value (60 minutes) is applied.
`CQDocURLName`	• 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 10. 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:

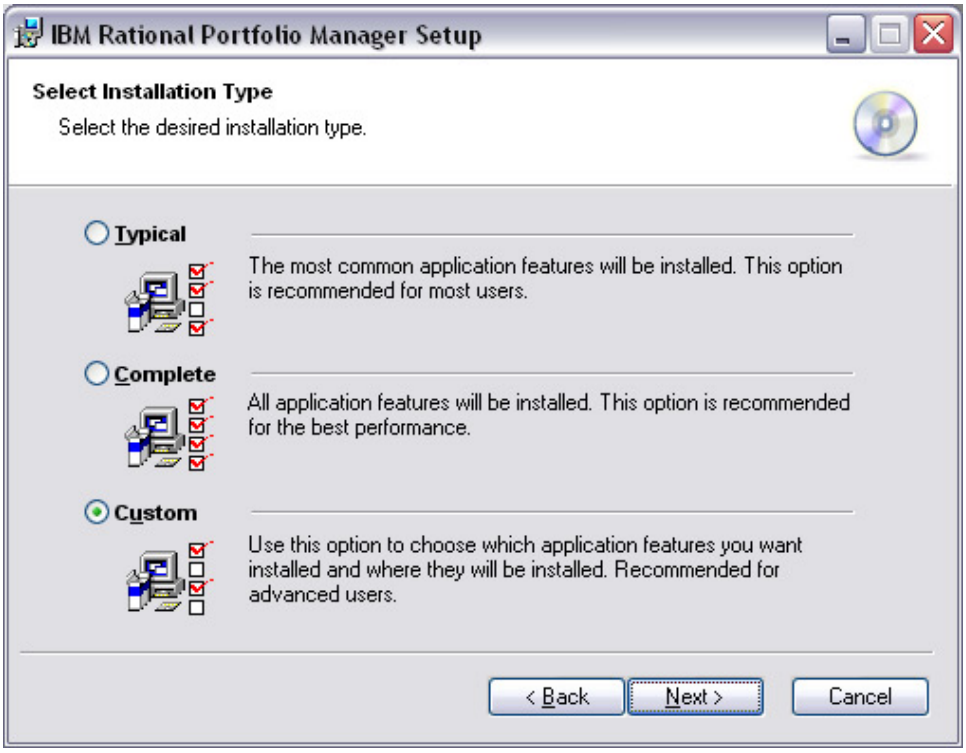
1. Open a browser and go to http://*hostname:portnumber*/IBMRPM/clients.html.
2. Select the standalone version or the browser plug-in version of the client.
3. Click **Run** to start the installation.
4. Follow the on-screen prompts to complete the installation.

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, **InstallIBMRPMStdln** (.exe or .msi), or the plug-in version, **InstallIBMRPMPlgin** (.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.

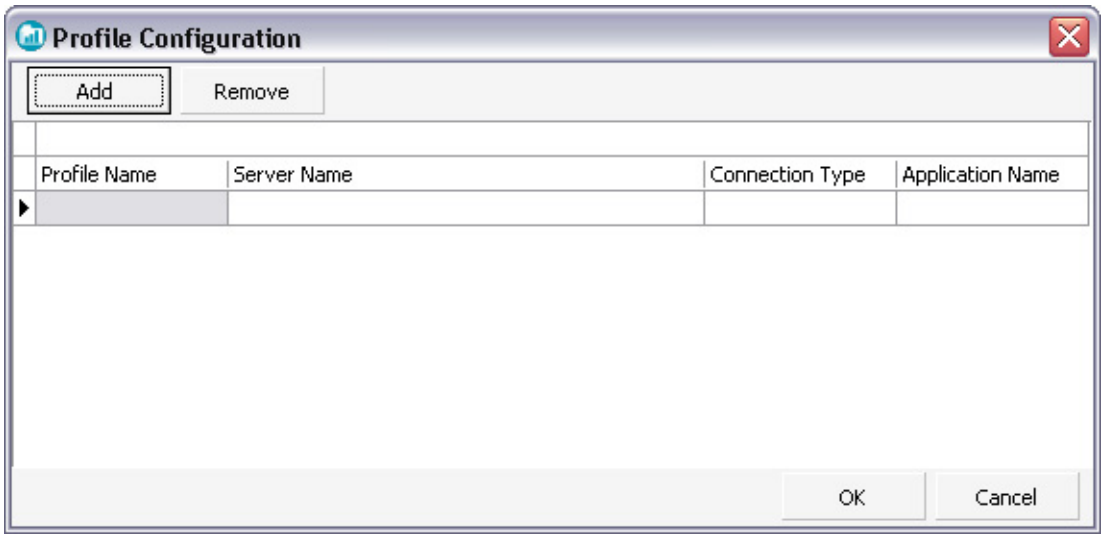


Figure 2. Client configuration fields

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 11. 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 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 will need to restore your old database, check the log files that will 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 of these 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 which is defined as logical database server environment.

DB_USER_PWD
Password for the instance owner

CON_USER
The username of the connected 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 is carried out through Korn shell script by supplying all he corresponding values for parameters. A log file is created for each step that you might need to look at in case of unsuccessful migration. There is one main log file called DB_CHECK.log that contains a result report that will be displayed at the end of the migration. You should check with 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 mainscript called migration_7100 that carries out all the 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. Not adding execute permission on any of these files will cause the migration to fail.

Table 22. 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 predefined information entered, 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 23. Settings for the execution plan

Setting	Notes
%OS_TYPE%	Set this value by replacing ${OS_TYPE} with your operating system. Possible values are: • 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	• If your are using scenario 1, set this value by replacing %CON_USER% with an empty string, for example, ' '. • If your 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 created. The file is located in `${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 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 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 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, 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 chapter 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 machine 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 of these 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 migration you need to back up your database, if you have a backup, answer `y` to continue. If not 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 will be prompted to enter:
   - TNS string
   - IBMRPM schema owner
   - IBMRPM schema owner password

   If you answer `y`, you will be prompted to enter:
   - ORACLE_SID value
   - IBMRPM schema owner
   - IBMRPM schema owner password
9. After entering the previous information, the script will check the version of the Rational Portfolio Manager database that you currently have and prompt you to validate it.
10. 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`
11. `Are you sure you want to migrate your database now? (y/n)` Answer `y` to start the migration.
12. 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, expected result is 0.
    - The number of objects needed for 7.1 and each object type with their 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 check if the migration has been successful. Equal values in both columns indicate a successful migration.

13. Migration log files are created under the ${MIGRATION_HOME}/Database/Oracle/logs folder. Look at the log files to see if migration was successful.
14. Stop Oracle listener.

    ${ORACLE_HOME}/bin/lsnrctl stop
15. 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.
16. 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 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 ${MIGRATION_HOME}/Database/Oracle directory and run the install_staging.sh script.

   The migration script will run and prompt 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 you have not, 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?
   - If you answer n, you will be prompted to enter:
     - TNS string
     - IBMRPM schema owner
     - IBMRPM schema owner password
     - SYS password
   - 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? (y/n) Answer y to start the installation
7. Log files will be created in the ${MIGRATION_HOME}/Database/Oracle/logs folder. Look at the log files to see if scripts were run 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 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 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 140 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 you specify for tablespaces must be a valid path on your machine.

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

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

Steps to migrate Rational Portfolio Manager connected user

Because staging and comrpt users have been created, connected user must be updated to be able to connect to these two user. This is done by running mig_con_user.sh. This step is optional but it must be performed 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 `${MIGRATION_HOME}/Database/Oracle` and run the `mig_con_user.sh` script.

   The migration script will run and prompt 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?`
   a. If you answer `n`, you will be prompted to enter:
      - TNS string
      - IBMRPM schema owner
      - IBMRPM schema owner password

   b. If you answer `y`, you will be 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 is 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? Answer `y` to start the migration
10. Migration log files will be 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 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 will 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 which is defined as 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 RPM 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 in case of unsuccessful migration. There is one main log file called `DB_CHECK.log` that contains a result report that will be 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 the 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. Not adding execute permission on any of these files will cause the migration to fail.

Table 24. 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 entered, 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 will cause the migration to fail.

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

Table 25. Settings for the execution plan

Setting	Notes
%OS_TYPE%	Set this value by replacing %OS_TYPE% with your operating system. Possible values are: • 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 migration_7111 script is located. For example, {MIGRATION_HOME}/Databases/DB2/Unix. **Note:** Make sure you have full execute rights on all the folders you will be pointing to.

Table 25. 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	• If your are using scenario 1, set this value by replacing %CON_USER% with an empty string, for example, ' '. • If your 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 RPM database table to decide from which RPM version the migration must be done.
2. Stops and starts the RPM database.
3. If using scenario 2, drops aliases for the RPM table > `drop_alias.log`
4. Starts the migration process.
5. Drops the triggers of the RPM database > `drop_triggers70.log`
6. Migrates to v 7.1.1.1 > `migration7100_7111.log`
7. If you used scenario 2, creates aliases for RPM tables > `alias.log`
8. If you used scenario 2, grants the connected user rights to access RPM tables > `grants.log`
9. Creates triggers for RPM v 7.1.1.1 > `triggers.log`
10. If RPM data warehouse has been installed inside RPM database, updates data warehouse tables, recreates the staging and data warehouse views.

    Note: For information about RPM data warehouse installation, refer to *IBM Rational Portfolio Manager Installation and Upgrade Guide*.
11. Runs statistics on tables > `reorgstats.log`
12. Drops all RPM stored procedures > `dropsp.log`
13. Creates stored procedures for v 7.1.1.1 > `createsp.log`
14. Binds RPM v 7.1.1.1 code > `bindall.log`

15. Generates a report that contains migration to RPM 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, 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, then you can schedule a job that will execute 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 right 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.

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 RPM to Staging and then to Data Warehouse.

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

Note: All log files generated by the following scripts will be 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 RPM tables into the staging tables. The stored procedure deletes all data from the staging tables before starts the loading process. The deleting process might take a long time depending on the amount of data in the tables which also results 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 it's 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. `bitflag` is the most important parameter. It controls how to clear up the data and what will be loaded into the staging tables. This is an integer and only the first 3 bits are used:
   - If the first bit is ON (value of 1 is passed), the stored procedure will load all of RPM data into the staging tables after deleting the old data.
   - If the second bit is ON (value of 2 is passed), the stored procedure will load only the selected/changed RPM projects and their related data (including the assigned resources and the system administration data) into the staging tables after deleting the old data.
   - If the third bit is ON (value of 4 or higher is passed), the stored procedure will clear the staging tables by truncating them, then load the RPM data into the staging tables. This approach is the fastest way to clear up the staging tables. To use this option, all foreign key constrains must be disabled or removed.
3. The `rec_user` parameter is the RPM 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 constrains 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 RPM 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 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 no errors, continue to the next step.
4. Run reorg/runstats for all staging tables and indexes:
   ```
   ./reorg_stagingtables
   ```
5. Rebind all RPM 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 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 ${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 RPM 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 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 no errors, continue to the next step.

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

   ```
   DB2 connect to DBNAME user DB_USER using DB_USER_PWD
   ```

   then run:

   ```
   ./reorg_stagingtables
   ```

5. Rebind all RPM 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 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 ${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, ensure 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 RPM schema owner
2. Migrating Staging user
3. Migrating RPM connected user (if a connected user is used)
4. Migrating RPM Data Warehouse (if installed previously)
5. Importing new default layouts for common reporting reports (optional)

Steps to migrate RPM 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 RPM database are different from the above mentioned names, you must change the name of the tablespaces in the migration scripts in the following file:

   `${MIGRATION_HOME}/Database/Oracle/scripts/step1.sql`
2. Stop the application server associated with the RPM database.
3. Shut down the RPM database.
4. Start the RPM database.
5. Open a shell window and change the directory to `${MIGRATION_HOME}/Database/Oracle` and run `./mig_owner.sh`.

   The migration script will run and prompt 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 have not, 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? If you answer no, you will be prompted to enter:
   - TNS string
   - IBMRPM schema owner
   - IBMRPM schema owner password

   If you answer yes, you will be prompted to enter:
   - ORACLE_SID value
   - IBMRPM schema owner
   - IBMRPM schema owner password
9. Are you sure you want to migrate your database now? Answer yes to start the migration.
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 RPM 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 always 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 right 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 RPM 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 will run and prompt 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 have not, 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?
   a. If you answer n, you will be prompted to enter:
      - TNS string
      - Staging password
   b. If you answer y, you will prompted to enter:
      - ORACLE_SID value
      - Staging password
5. Are you sure you want to start the migration now? (y/n) Answer y to start the migration.
6. Log files will be created in the ${MIGRATION_HOME}/Database/Oracle/logs folder. Look at the log files to see if scripts were run successfully.

Steps to migrate RPM connected user

This step is optional and it must be performed if you are using a connected user. To update the connected user follow the steps below:

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? If you answer no, you will be prompted to enter:
   - TNS string
   - IBMRPM schema owner
   - IBMRPM schema owner password

   If you answer yes, you will be prompted to enter:
   - Verify the ORACLE_SID value
   - IBMRPM schema owner
   - IBMRPM schema owner password
4. Enter the RPM connected user name when prompted.
5. Enter the RPM 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? Answer yes to start the migration.
10. Migration log files will be created under ${MIGRATION_HOME}/Database/Oracle/logs folder. It is always a good practice to look at the log files to see if the migration was successful.

Steps to migrate RPM Data Warehouse

This section describes the steps to migrate RPM 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 will run and prompt 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?
   a. If you answer n, you will be prompted to enter:
      - TNS string
      - Staging password
      - RPMDW password
   b. If you answer y, you will prompted to enter:
      - ORACLE_SID value
      - Staging password
      - RPMDW password
5. Are you sure you want to start the migration now? (y/n) Answer y to start the migration.
6. Log files will be created in the ${MIGRATION_HOME}/Database/Oracle/logs folder. Look at the log files to see if scripts were run 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 any new report layouts, you can import the new default layouts by running the import_comrpt.sh file. This script will delete all previous layouts and import the new layouts provided with this release. To import the new sample layouts follow these steps.

1. Open a shell window and navigate to ${MIGRATION_HOME}/Database/Oracle directory and run the import_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 will be prompted to enter:
     - TNS string
     - IBMRPM schema owner
     - IBMRPM schema owner password
   - If you answer y, you will be prompted to enter:
     - ORACLE_SID value
     - IBMRPM schema owner
     - IBMRPM schema owner password

4. Are you sure you want to start installation now? Answer y to start the installation.
5. Log files will be created in the ${MIGRATION_HOME}/Database/Oracle/logs folder. It is always recommended to look at the log files to see if scripts were run successfully.

Option 2: 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 instruction in "Option 2: Keeping your current report layouts and importing the new ones" on page 191.

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 load, use the following steps to manually load the data from RPM to Staging and then to Data Warehouse.

Note: The following required files are located under ${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 really important to send the correct parameters when calling this function, since these parameters affect both performance and the functionality of the 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 we call SP_LOAD_STAGING with the correct parameters, we can make this function truncate the data instead of deleting them and therefor improve the performance.

Here is the description of SP_LOAD_STAGING:

```
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. bitflag is the most important parameter. It controls how to clear up the data and what will be loaded into the staging tables. This is an integer and only the first 3 bits are used:
   - If the first bit is ON (value of 1 is passed), the stored procedure will load all of RPM data into the staging tables after deleting the old data.
   - If the second bit is ON (value of 2 is passed), the stored procedure will load only the selected/changed RPM projects and their related data (including the assigned resources and the system administration data) into the staging tables after deleting the old data.

- If the third bit is ON (value of 4 or higher is passed), the stored procedure will clear the staging tables by truncating them, then load the RPM data into the staging tables. This approach is the fastest way to clear up the staging tables. To use this option, all foreign key constrains must be disabled or removed from the staging tables.

3. The `rec_user` parameter is the RPM user ID who executes the stored procedure. By default, you can pass `'PMO_SUPERVISOR'`.

To load data into the staging area (initial load), follow the steps below:

Note: During the initial load improvement steps described below, all foreign key constrains 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 RPM schema owner and run the `small_pre_load.sql` script.
4. Using sqlplus, connect as RPM 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;
   ```

   Note:

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 RPM 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), follow the steps below:

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 be presented with two columns, the first column is the version_key. When running the following steps, you must replace the <version_key> with this number.

3. Using sqlplus connect as staging user and run the following script. Don't forget 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. Don't forget 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. Don't forget 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. Don't forget 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 Application Server

Note: Before proceeding with middleware deployment, make sure that you back up the `rpm-middleware.war` directory located under `${IBMRPM_WAR_HOME}`.

See the section on deploying the middleware that corresponds to your application server to deploy `rpm-middleware.war` file located under `${MIGRATION_HOME}/WebServer` directory.

Post installation activities

For post installation steps refer to `Administration_Guide.pdf` document. The post installation files are located under `${MIGRATION_HOME}/Post-Install` directory.

Chapter 12. 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.

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:

Note: Before running the script, make sure that the script has execute rights, otherwise the script will not run.

```
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. If there are errors, see "Contacting IBM Client Support for Rational software products" on page viii.

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.

   Note: Before running the script, make sure that the script has execute rights, otherwise the script will not run.

   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 viii.
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 steps. If there are errors, see "Contacting IBM Client Support for Rational software products" on page viii
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:

Note: Before running the script, make sure that the script has execute rights, otherwise the script will not run.

```
./grants_stagviews CON_USER DB_USER > grants_stagviews.log
```

Check the log file for errors. If there are no errors, continue to the next step7. If there are errors, see "Contacting IBM Client Support for Rational software products" on page viii.

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 viii.

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 viii.

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 viii.

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
    ```

    Check the log file for errors. If there are no errors, continue to the next steps. If you encounter errors, see "Contacting IBM Client Support for Rational software products" on page viii.
12. Reorganize the Rational Portfolio Manager data warehouse tables by running the reorg_dwtables 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 dwtables script by typing the following command:
      ```
      ./reorg_dwtables
      ```
13. Reorganize Rational Portfolio Manager staging tables as follows:
    - 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 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')"
   ```

After this is setup, you are ready to set up replication.

Setting up a Staging task

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). Use the following command script.

```
connect to DB_NAME  username DB_USER  using DB_USER_PWD
call SP_LOAD_STAGING(NULL,NULL,2,'PMO_SUPERVISOR');
commit;
connect reset;
```

Chapter 13. 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 26. Location of files

Path	File
• If you are using the installation package: `${INSTALLATION_HOME}/Database/Oracle/OraDDL` • If you are using the migration package: `${MIGRATION_HOME}/Database/Oracle/plbddl`	• `dw_to_staging_grants.sql` • `staging_dw_pmo_orastd.spc` • `staging_dw_pmo_orastd.bdy` • `rpm_dw_model.ddl` • `dw_sequences.sql` • `staging_to_dw_grants.sql` • `staging_model.ddl` • `staging_temptable.ddl` • `staging_views.ddl` • `rpm_staging_dw_etl.sql` • `staging_job.sql`
• If you are using the installation package: `${INSTALLATION_HOME}/Database/Oracle/utils` • If you are using the migration package: `${MIGRATION_HOME}/Database/Oracle/utils`	• `recompile.sql`
• If you are using the installation package: `${INSTALLATION_HOME}/Database/Oracle` • If you are using the migration package: `${MIGRATION_HOME}/Database/Oracle`	• `install_dw.sh`

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 rpmdw_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 rpmdw_tb_spaces.sql? (y/n)`. Edit rpmdw_tb_spaces.sql file (and not staging_tb_spaces.sql), if you have edited rpmdw_tb_spaces.sql, type `y` to continue. If you have not, type `n` so that no installation will be performed and edit the rpmdw_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) Answer y to start the installation.
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 14. WebSphere data warehouse Middleware installation

Deploying data warehouse middleware

This section describes how to set up the Rational Portfolio Manager WebSphere edition of the data warehouse middleware.

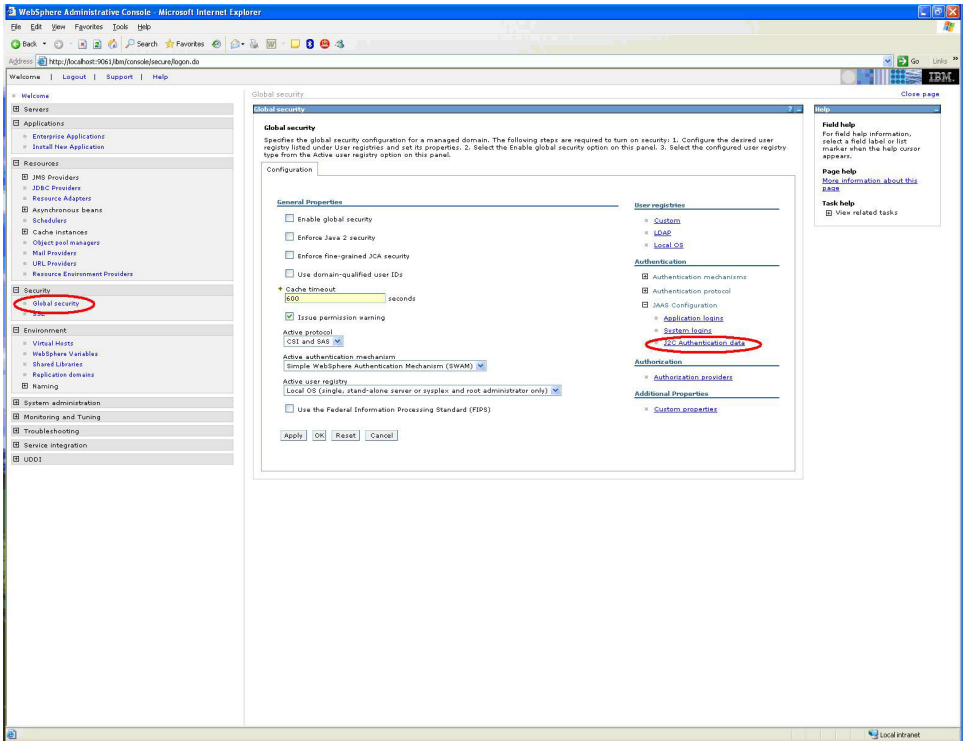
Deployment of the data warehouse middleware consists of the following four major steps that must be carried out in sequence:

1. Creation of the Global Security Authentication
2. Creation of the JDBC provider
3. Creation of a resource environment provider
4. Application deployment

Note: If the Rational Portfolio Manager middleware is already installed on the same application server, go to step 3.

Step One — Creation of the Global Security Authentication containing the username and password to be used by the database connection pool.

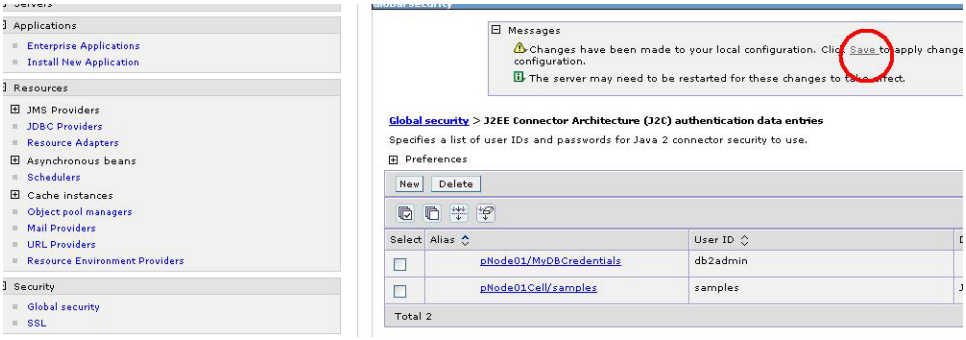
1. Log on to the localhost and click **Security** > **Global Security** >**JAAS Configuration** > **Select the J2C Authentication data**.



2. Click **New**.

3. Type a name under **Alias** (use a name you can remember). Also enter your **User ID** and **Password**.

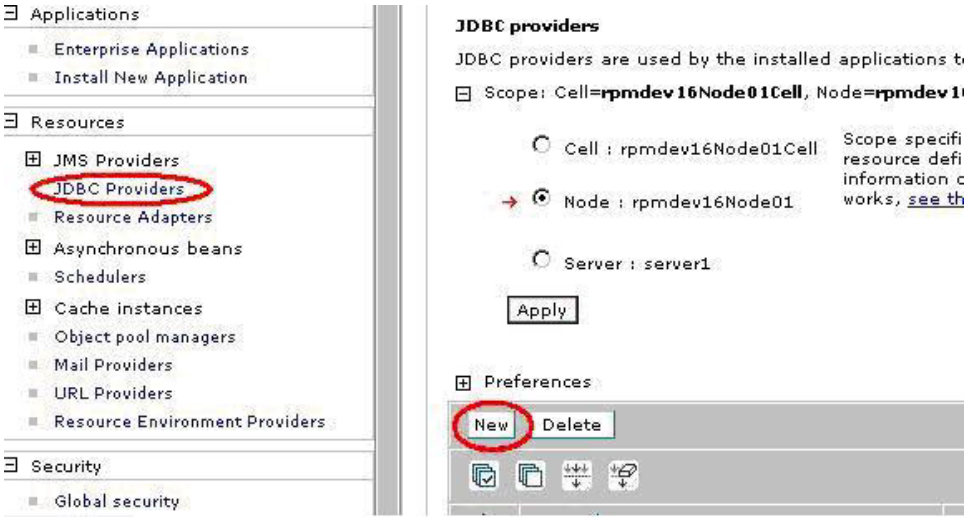
4. Click **Apply** and **OK**. Click the **Save** hyperlink in the next screen.



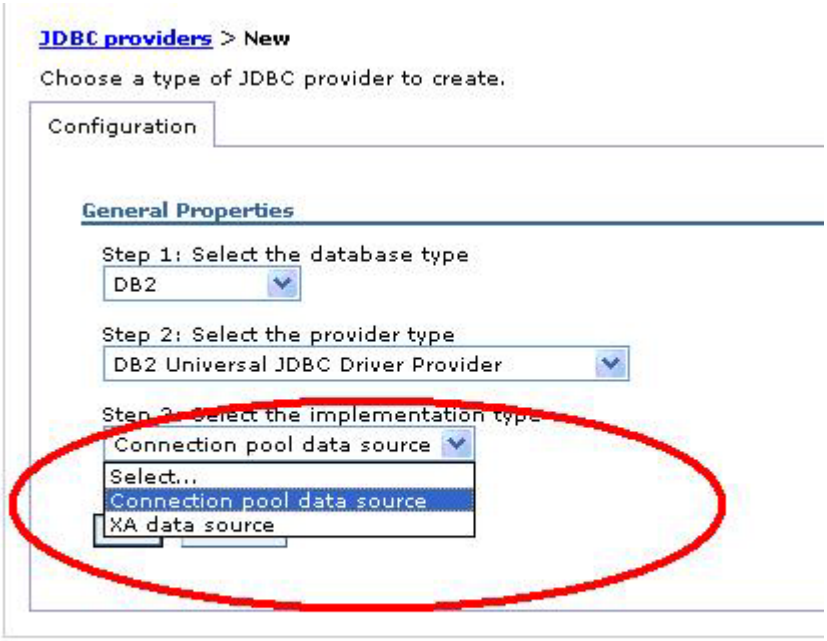
After your authentication credentials are created, go to the next step.

Step Two — Creation of the JDBC provider

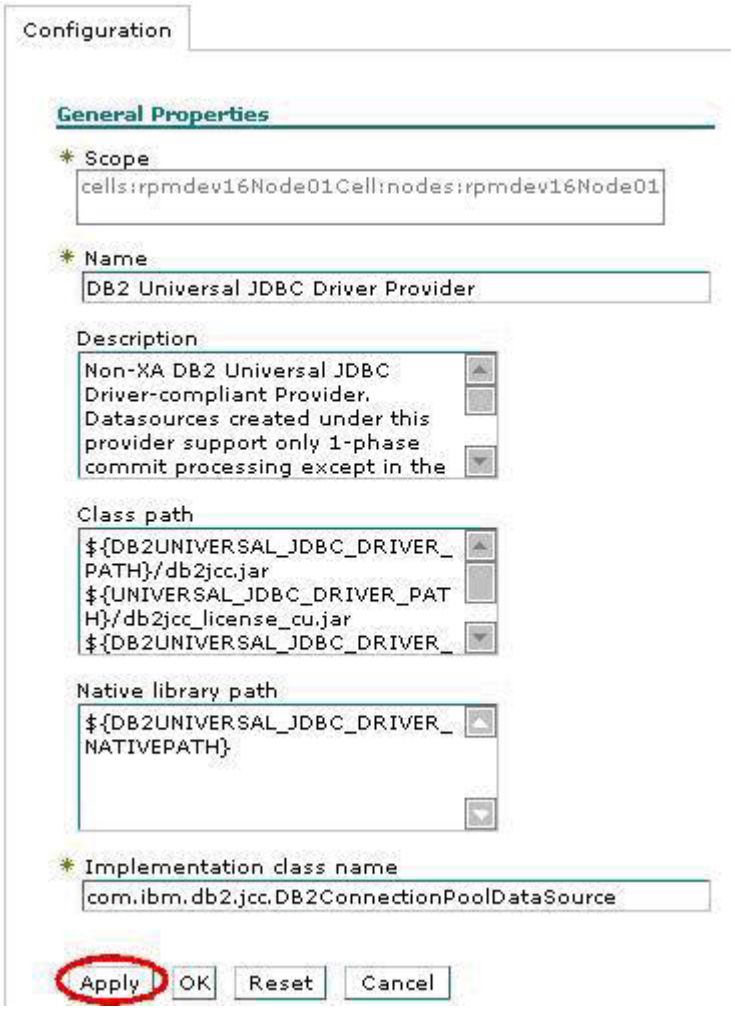
1. In the localhost screen, click **JDBC Provider** > **New**.



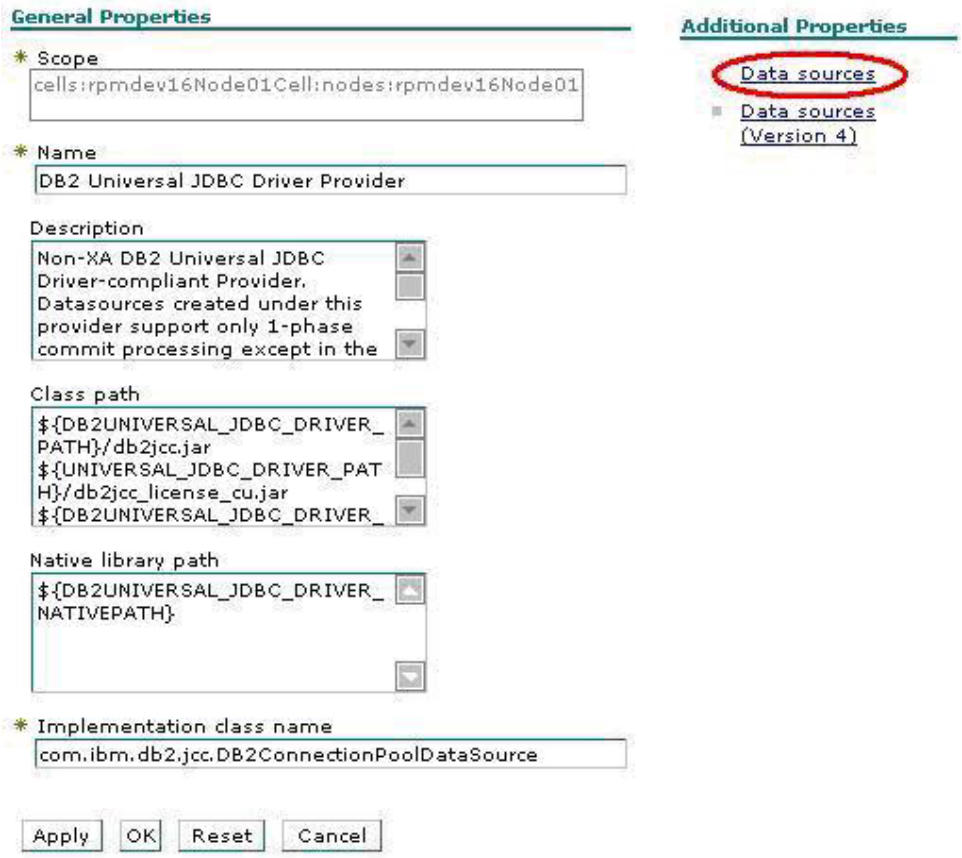
2. Select the properties of your database (for example, **DB2** and **Universal Driver**). Then select the **Connection Pool data source** from the drop-down list and click **Next**.



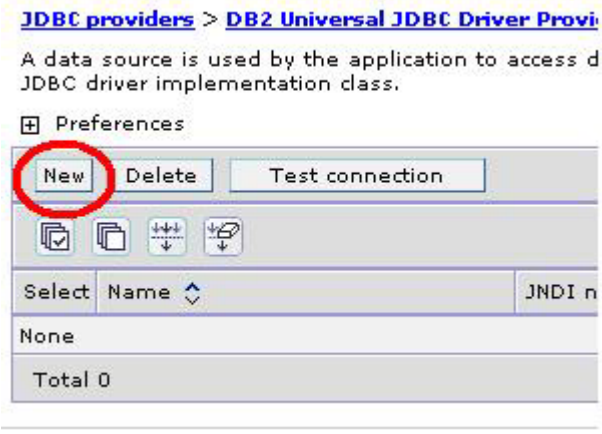
3. Click **Apply**.



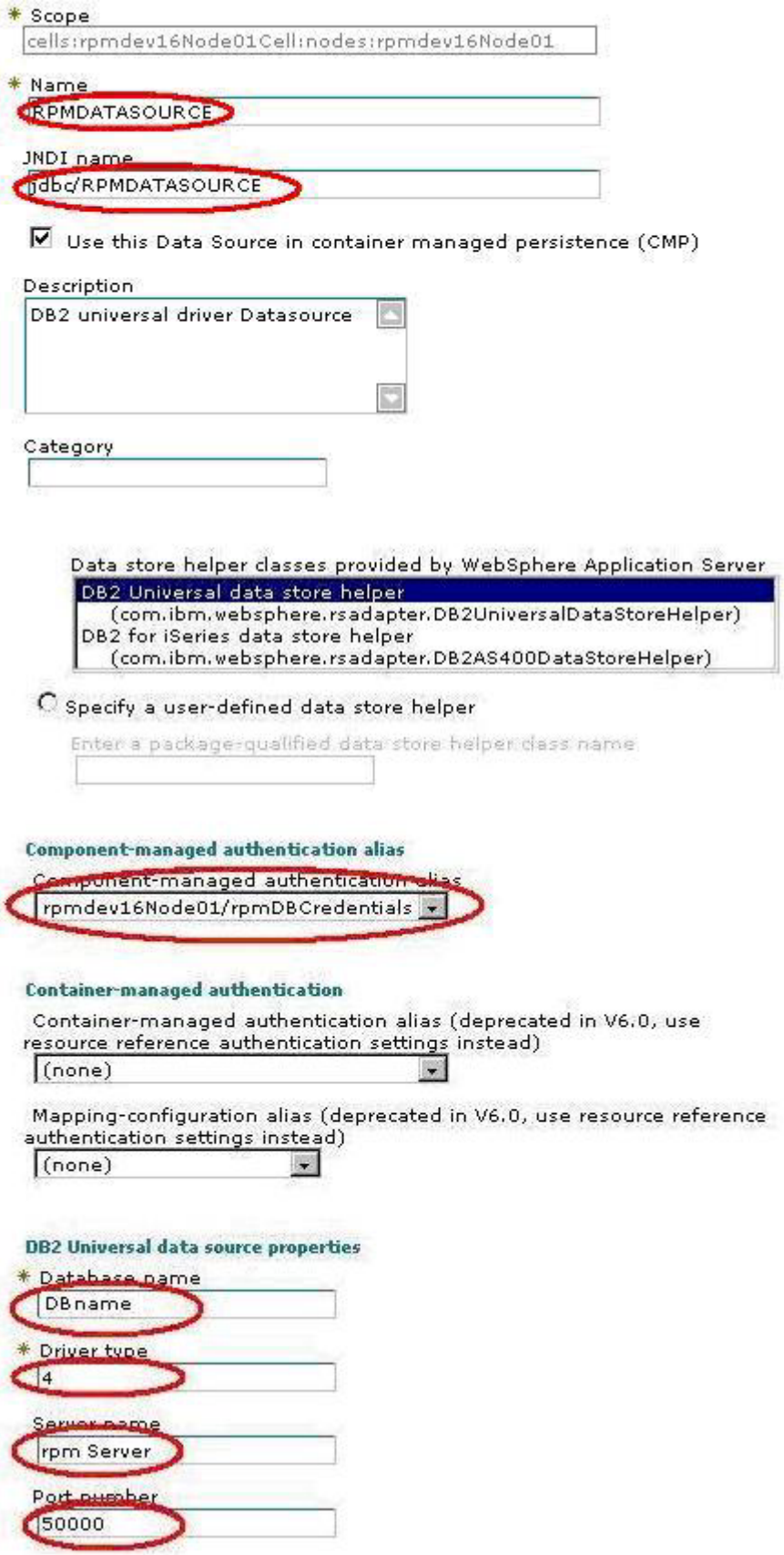
4. Point to the Additional Properties area and click **Data Sources**.



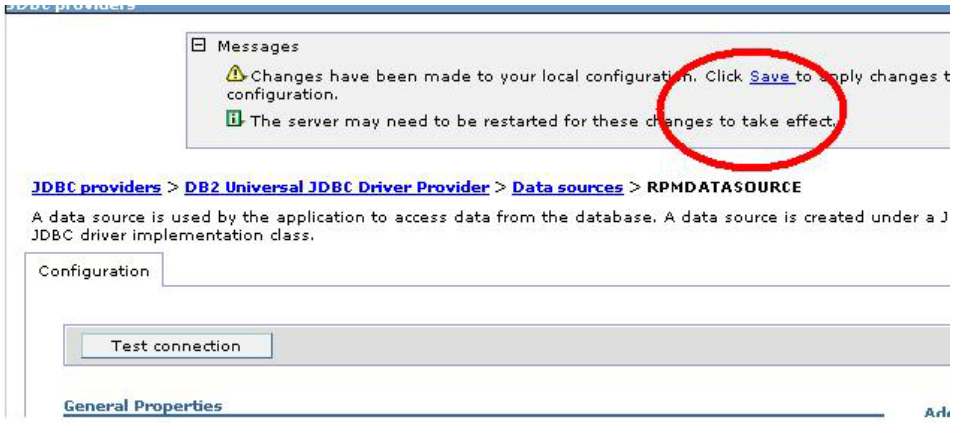
5. Click **New**.



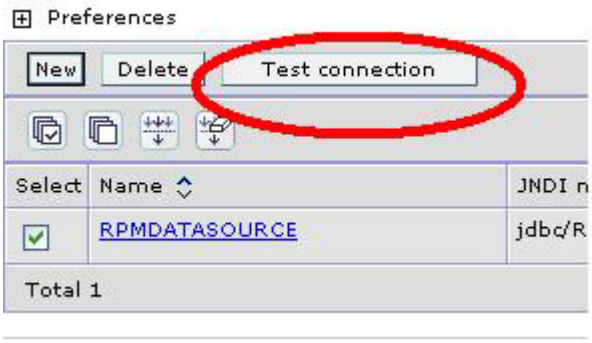
6. Fill in the form. Be sure you fill all important fields accordingly. Click **Apply** when complete.


* Scope
cells:rpmdev16Node01Cell:nodes:rpmdev16Node01
* Name
RPMDATASOURCE
JNDI name
jdbc/RPMDATASOURCE
Use this Data Source in container managed persistence (CMP)
Description
DB2 universal driver Datasource
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
rpmdev16Node01/rpmDBCredentials
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
DBname
* Driver type
4
Server name
rpm Server
Port number
50000

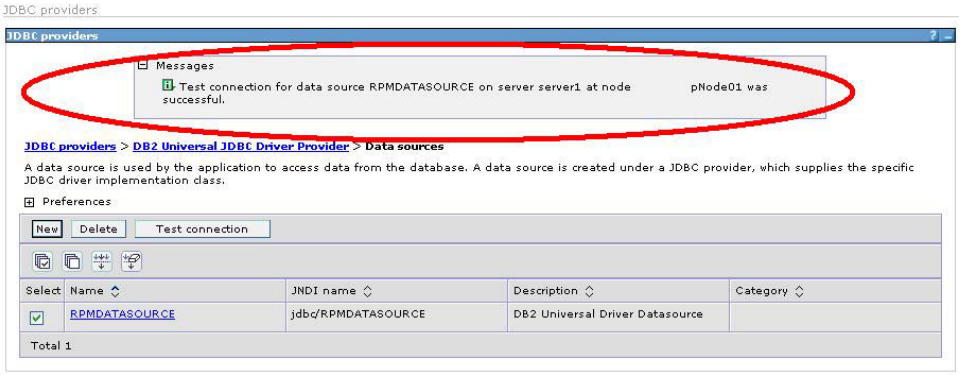
7. Click the **Save** hyperlink in the next screen.



8. Test your connection. Select the connection and click **Test Connection**.



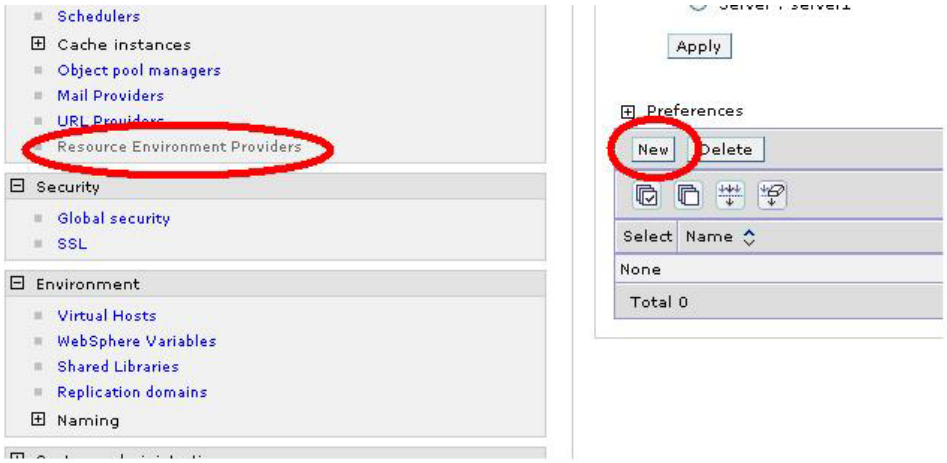
9. Wait for the following message to be displayed. It indicates that your connection is properly set.



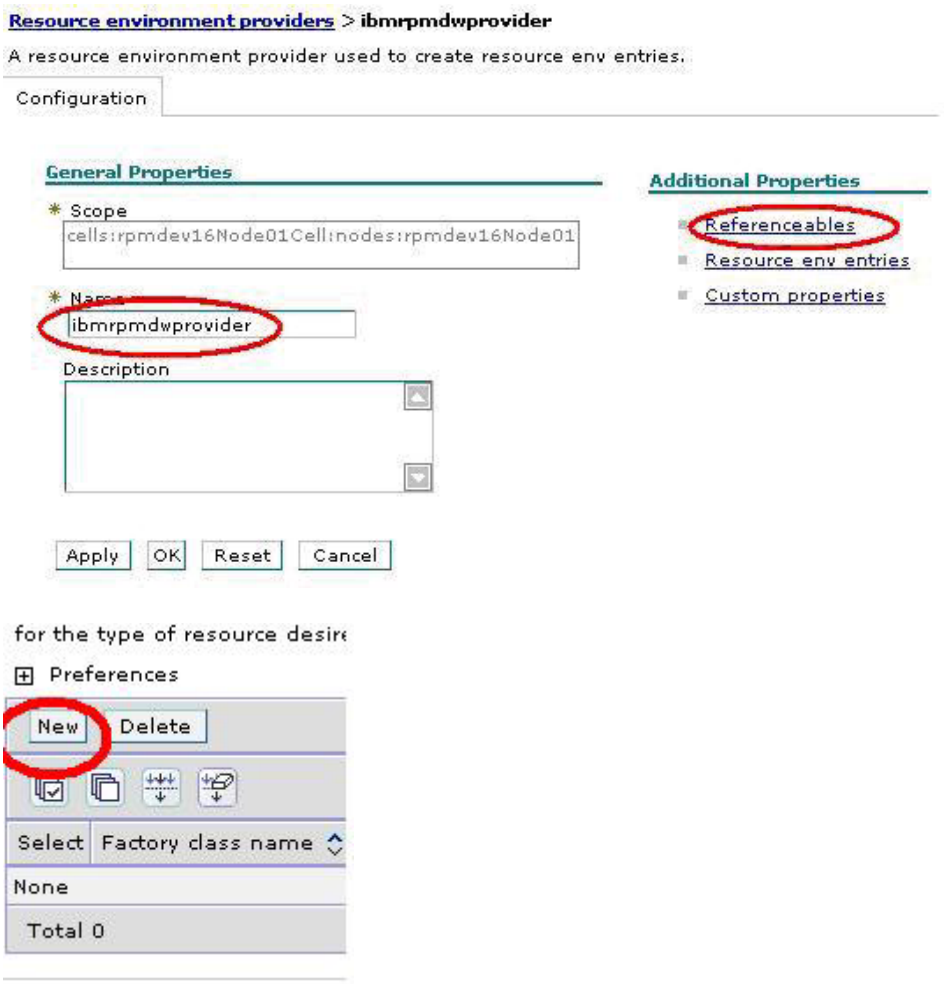
Step Three — Creation of a resource environment provider

Note: This provider contains all environment variables.

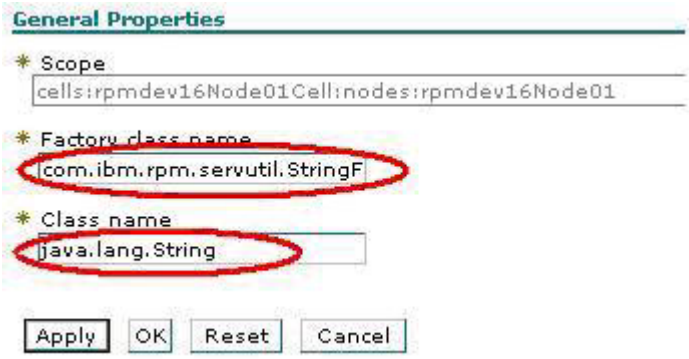
1. Click **Resource Environment Provider** followed by **New**.



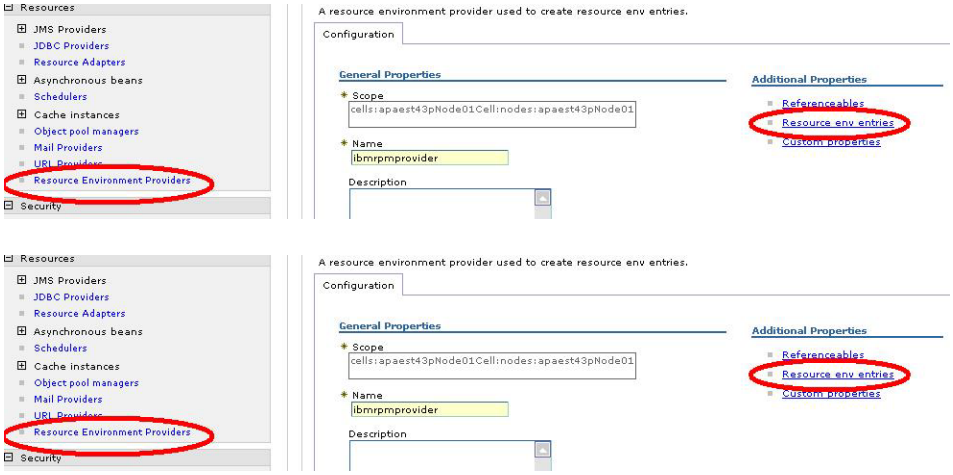
2. Identify your Provider and click **Apply**. Then select **Referenceables** and click **New**.



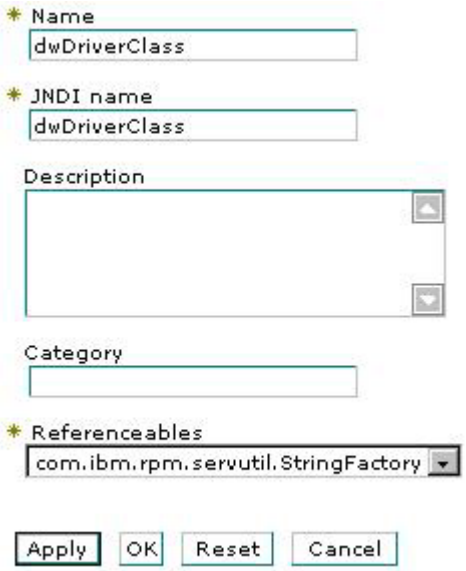
3. Enter **com.ibm.rpm.servutil.StringFactory** in the **Factory class name** field. Also, enter **java.lang.String** in the **Class name** field.



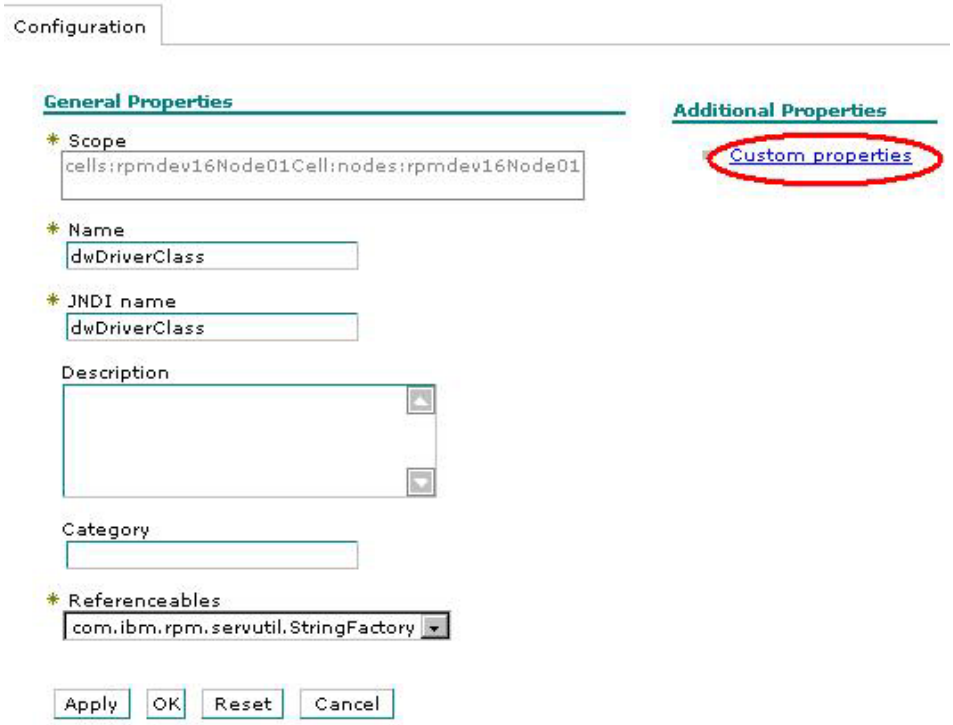
4. Click **Apply**; then **OK**. Click the **Save** hyperlink in the next screen.
5. Select **Resource Environment Providers** one more time. Then select **Resource env** entries.



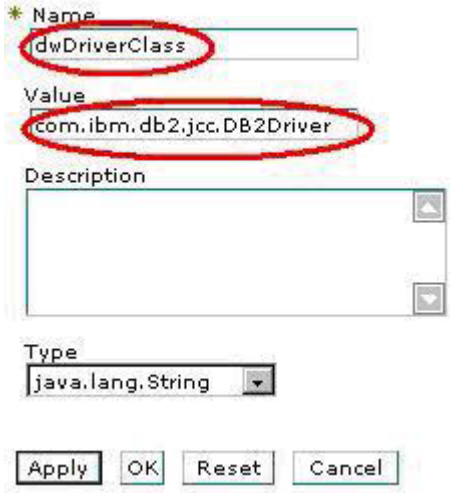
6. Click **New**. Add the dwDriverClass variable dwDriverClass name and the jndi name.



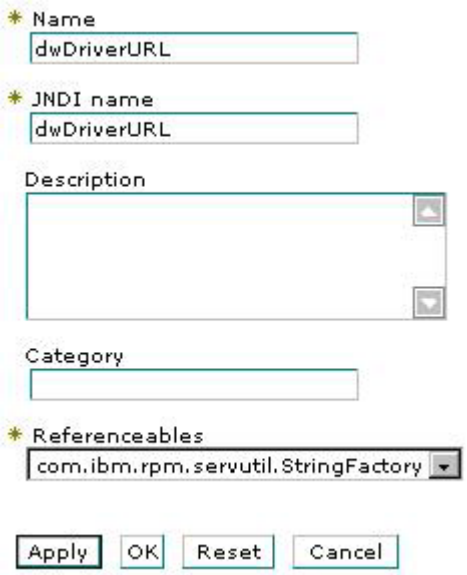
7. Click **Apply**, and click **Custom properties**.



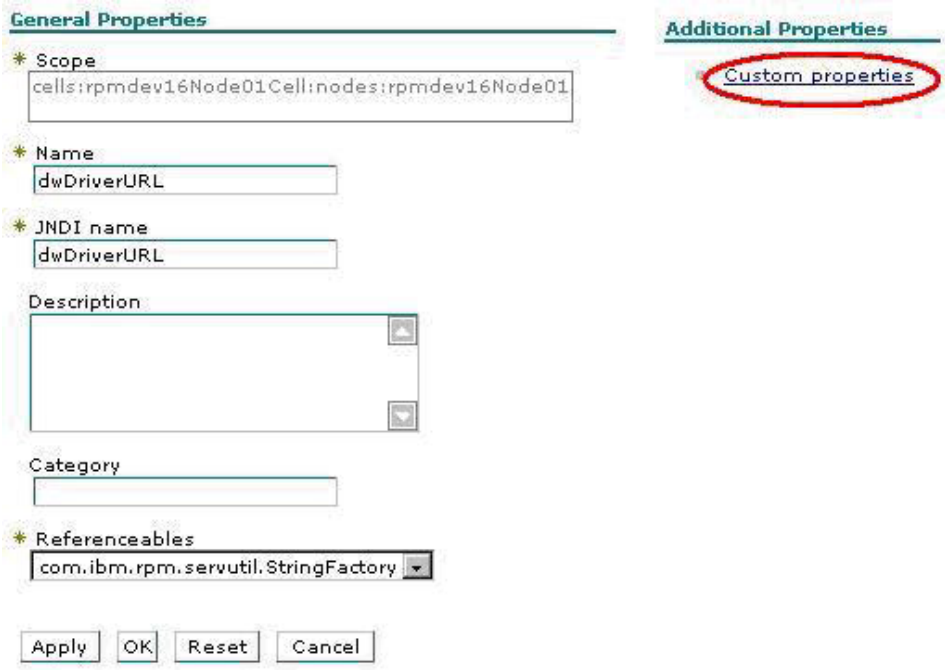
8. Click **New** and fill in the required parameters.



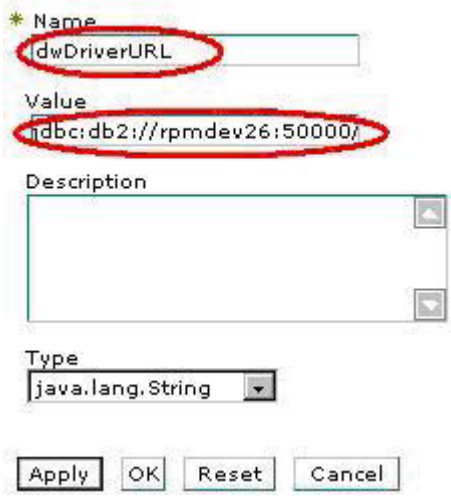
9. Click **Apply** and **OK**. Click the **Save** hyperlink in the next screen.
10. Select **Resource Environment Providers** one more time. Select **Resource env** entries.
11. Click **New**. Add the **dwDriverURL** variable name and the **dwDriverURL** jndi name.



12. Click **Apply** and click the **Custom properties** hyperlink.



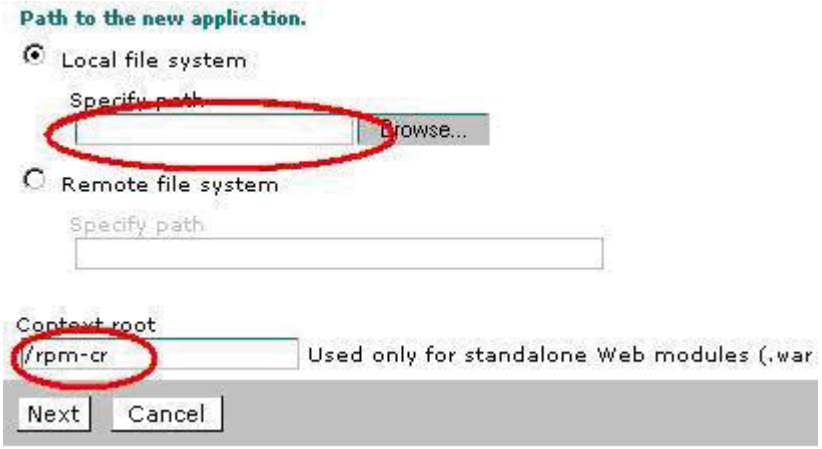
13. Click **New** and fill in the **Name** and **Value** fields as indicated.



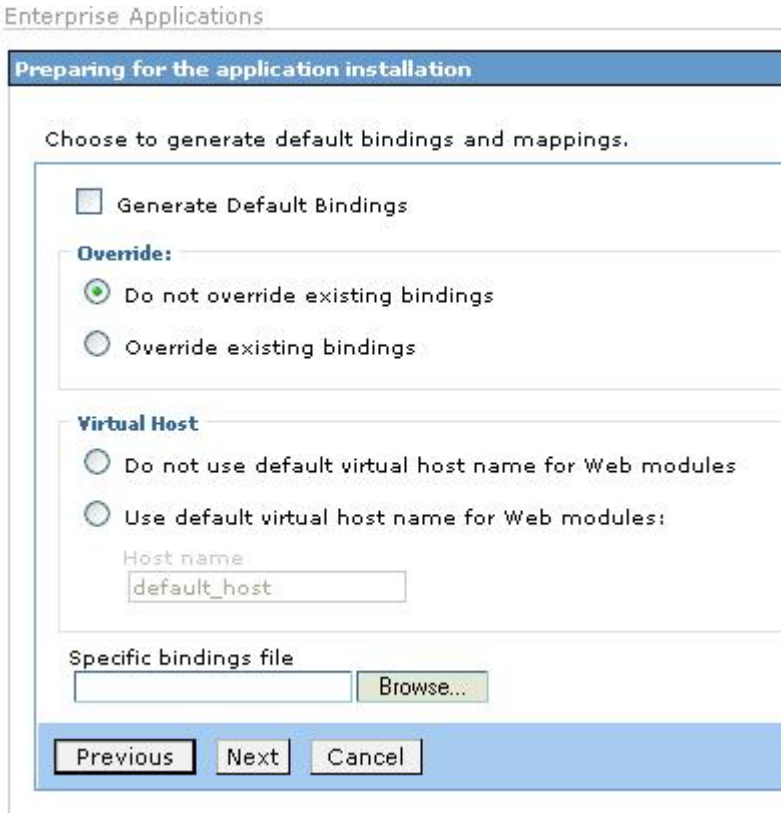
14. Click **Apply** and **OK**. Click the **Save** hyperlink in the next screen.

Step Four — Application deployment

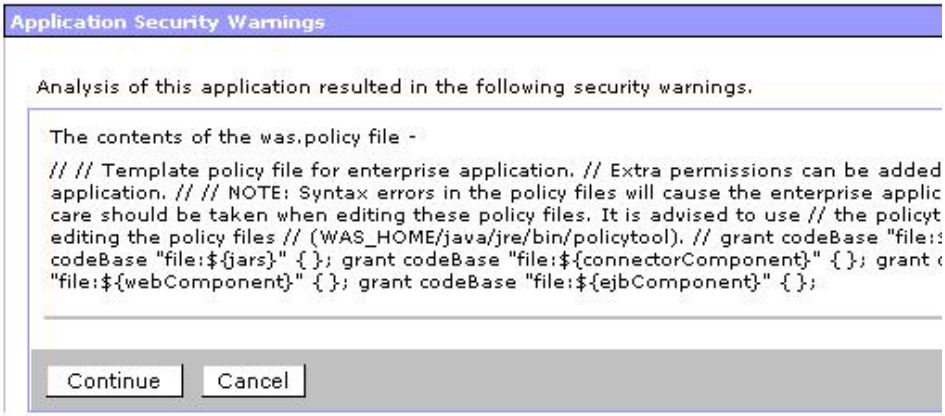
1. Click **Applications** and **Install New Application**. Select the location of your DWWAR file and click **Next**.



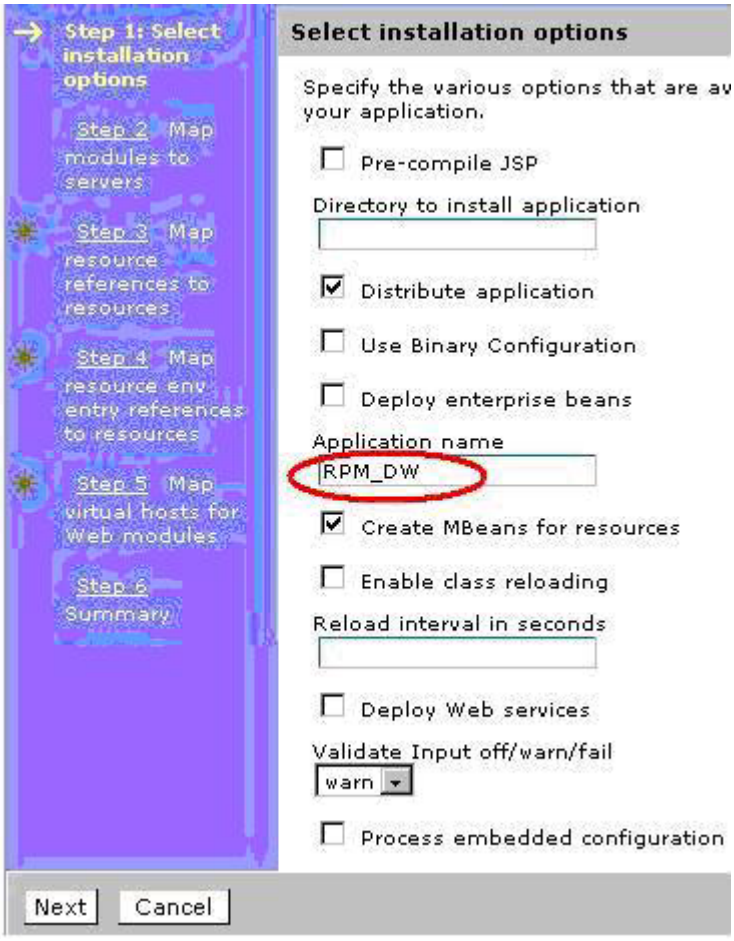
2. In the next screen, keep the default selections and click **Next**.



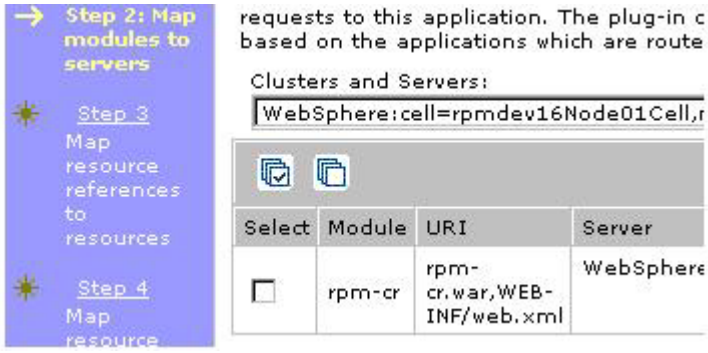
3. Click **Continue**.



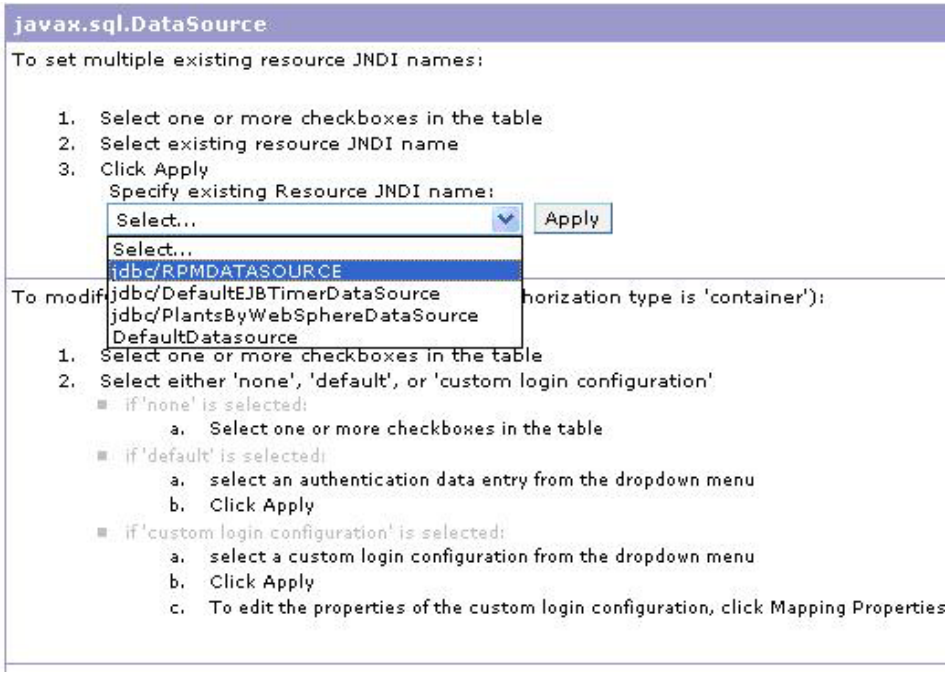
4. Then, enter the application name and click **Next**.



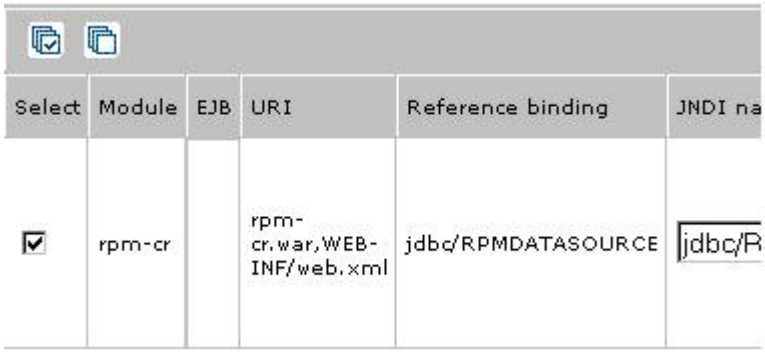
5. In the next screen, keep the default selections and click **Next**.



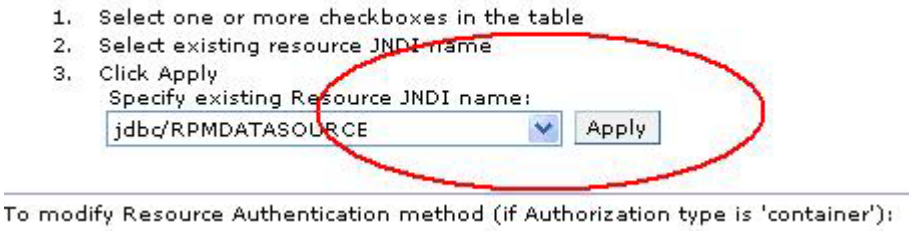
6. Select the datasource from the drop-down list.



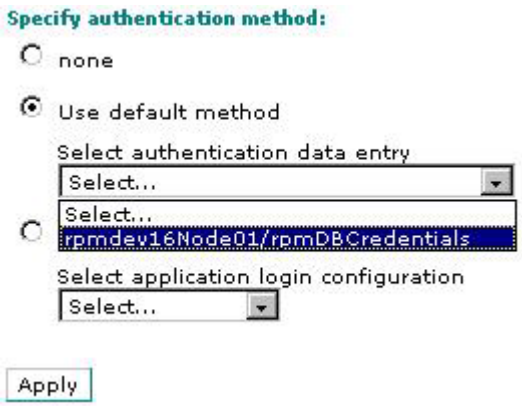
7. Click **Apply** and select the **rpm-cr module**.



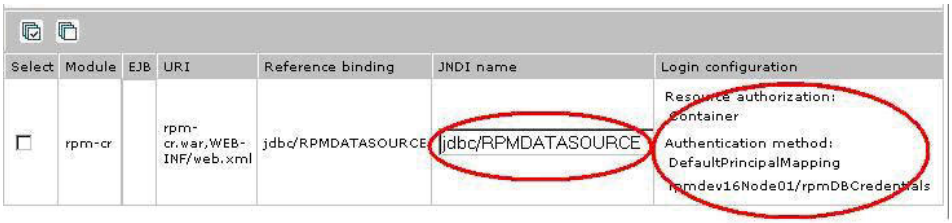
8. Click **Apply** at the top of the screen.



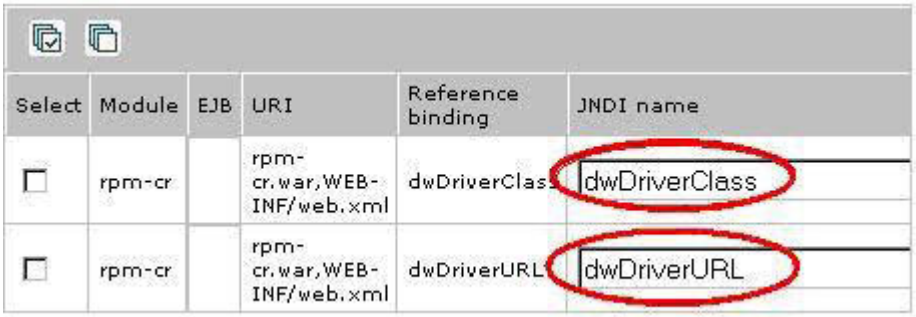
9. Select the **rpm-cr** module, followed by the authentication method, and click **Apply**.



10. Click **Apply**. The next screen should look like this.

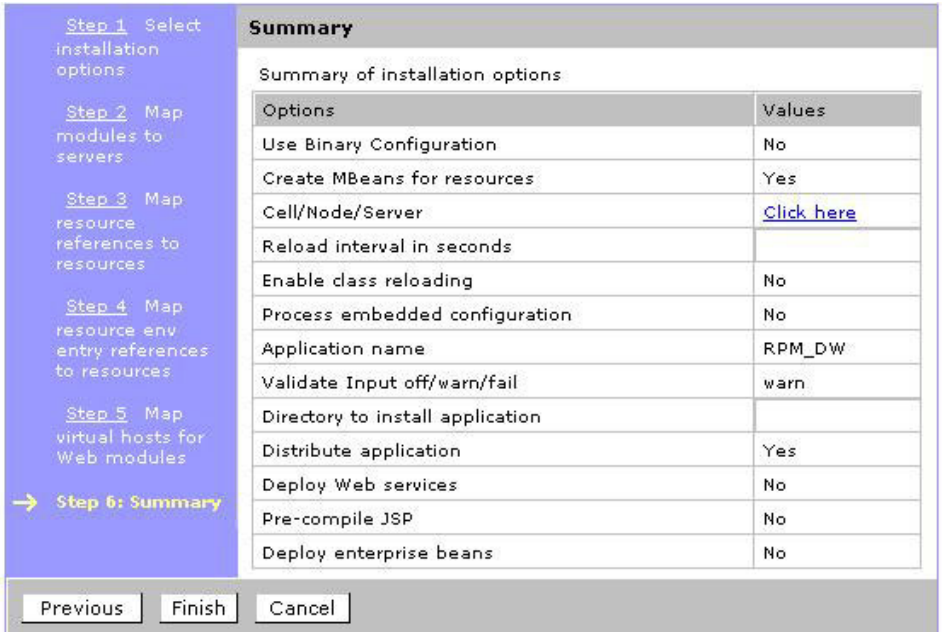


11. Click **Next**, then enter the jndi variable names in the next screen.



12. Click **Next**. Keep the next screen at its default settings and click **Next**.

13. Keep the default values and settings and click **Finish** to display the deployment summary screen.



14. The application deployment will now start. Upon successful completion, your screen should display the following information.

Click the **Save to Master Configuration** hyperlink, and click **Save**.

15. Go to **Applications > Enterprise Applications**
16. Click the **RPM_DW** application URL
17. From the **Class Loading and File Update Detection** section on the page, select **Parent Last** from the **Class loader mode** menu.
18. Select **Module** from the **WAR class loader policy** menu and click **Apply**.
19. Select **Application** from the **WAR class loader policy** menu and click **Apply**.

    Note: Keep all other default values.
20. Click the **Save** URL.
21. Stop and restart the application server
22. Log on to the common reporting interface to verify that the connection is successful by clicking the common reporting URL and then authenticate using the default user credentials. The default user ID is *Admin* and the default password is *password*.

Chapter 15. Installing data warehouse middleware on Tomcat application servers

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 middleware

Deploying the data warehouse middleware requires that the following four steps be carried out sequentially:

1. Install the data warehouse middleware
2. Install Apache Tomcat
3. Edit the rpm-cr.xml deployment file
4. Run the Tomcat Manager

Step One — Installing the data warehouse middleware:

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"/>
     <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/RPMDBNAME"
  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:

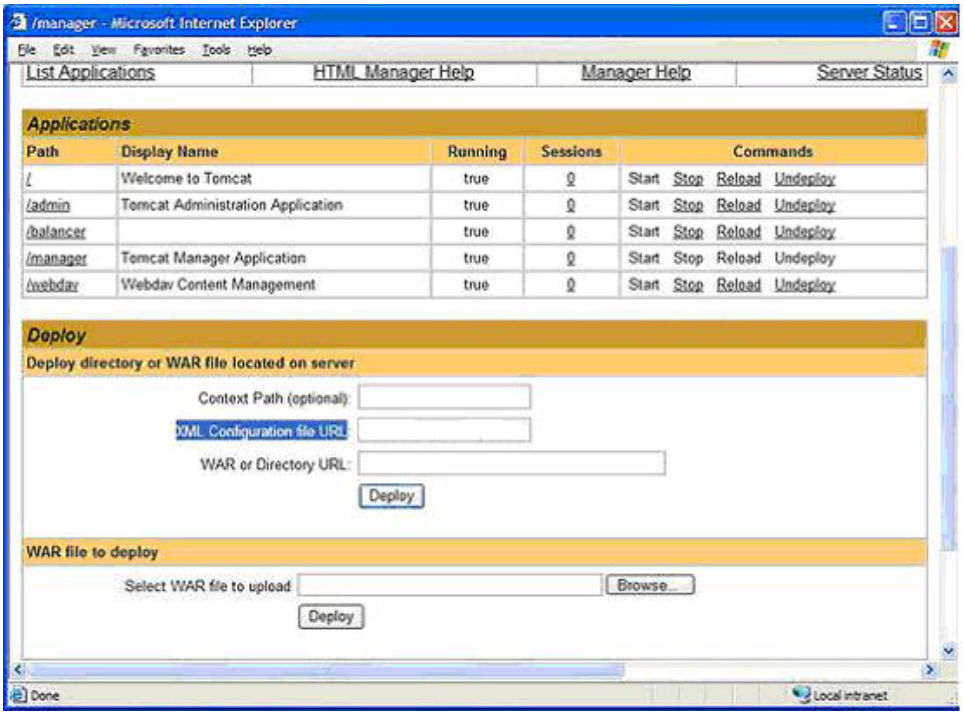
   http://localhost:8080/manager/html

   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.

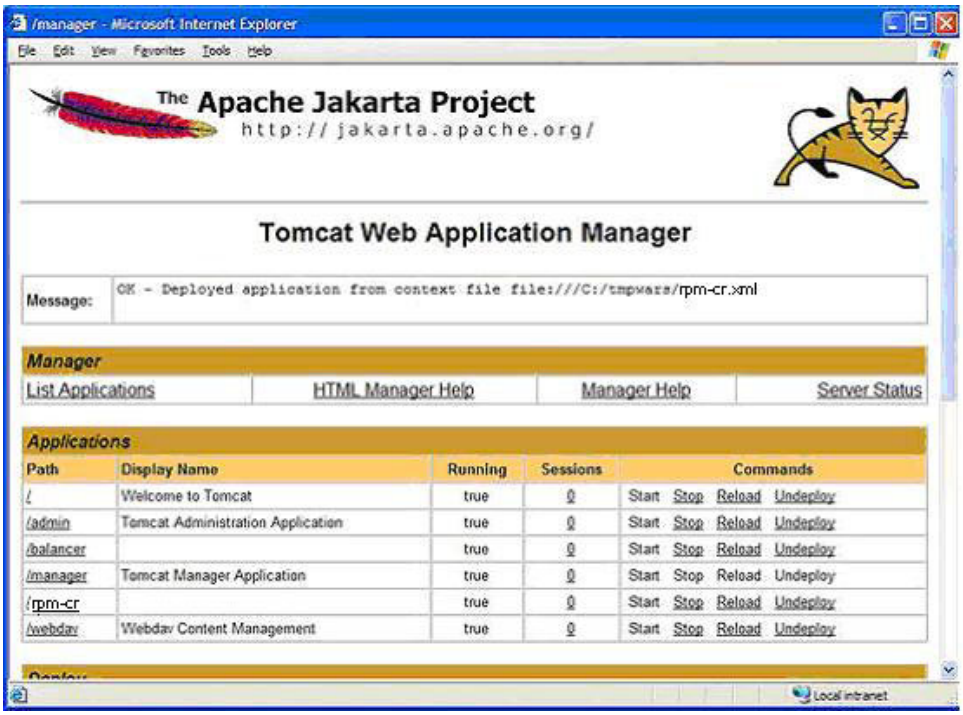
4. Scroll down to the deploy directory or WAR file located on the server, and enter the location of the rpm-cr.xml file in the XML Configuration file URL text box. The format of the following URL is:

   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.:



5. Click **Deploy**. You should see that the Rational Portfolio Manager data warehouse Middleware is running at the "/rpm-cr" path.



6. 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*. For security reasons, change the default user credentials after you have verified that the connection is valid.
7. You can now start using the Rational Portfolio Manager DW Middleware.

Chapter 16. 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 17. Importing common reporting samples into Rational Portfolio Manager

This section describes the procedure on how to import common reporting samples into Rational Portfolio Manager. 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.

- Use **Option 1** if you have not used the common reporting reports in Rational Portfolio Manager 7.1.0.0, or you if have not created any new report layouts.

  Note: **Option 1** is only described for DB2 in this section. If you have chosen **Option 1** for importing common reporting samples into Rational Portfolio Manager with Oracle, this is done when initially installing or migrating the Rational Portfolio Manager database by running the running the install_comrpt.bat file.
- Use **Option 2** 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.

Option 1: Importing the new sample layouts

All common reporting files are located in the ${PACKAGE_ROOT}/Database/DB2/Unix/ddl/CommonReporting/ directory for installation packages, and in the ${PACKAGE_HOME}/Database/DB2/Unix/migration/CommonReporting/ directory for migration packages.

- Go to ${PACKAGE_ROOT}/Database/db2/Unix/ddl/CommonReporting/ or ${PACKAGE_HOME}/Database/DB2/Unix/migration/CommonReporting/ directory depending on the package you are using.
- 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
  ```
- Import common reporting templates into Rational Portfolio Manager by typing the following command:

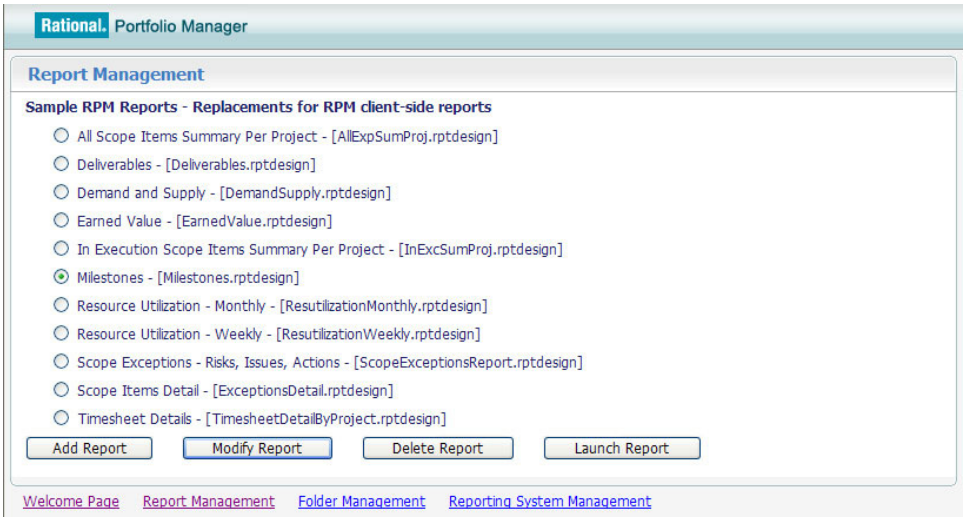
  ```
  db2move DBNAME import -l ./lob -u DB_USER -p DB_USER_PWD > db2move.log
  ```

Option 2: Keeping your current report layouts and importing the new ones

The common reporting sample reports for Rational Portfolio Manager 7.1.1.1 are located in the directory.

1. Start the administration screen.
   a. To start the administration screen for Rational Portfolio Manager Common Reporting, select the Application Administration icon from the left-hand tool bar.
   b. From the Application Administration window, select the General tab and locate the **Common Reporting Server URL** field.
   c. Copy the URL into a browser address field to display the Rational Portfolio Manager Common Reporting administration screen.

2. To start report management and access the default common reporting reports on the server, click the **Report Management** URL from the Welcome window. You will be prompted to supply a user name and password for authentication. See your system administrator if you need this information.



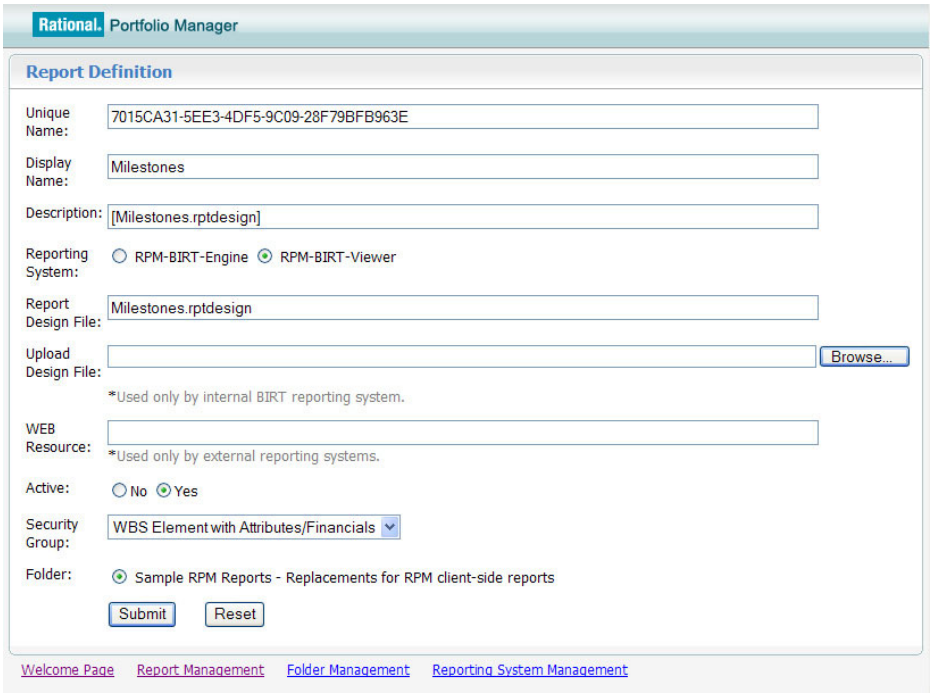
3. To add the new common reporting sample reports, from the Report Management window, select the default common reporting reports that you want to add and click **Add Reports**. The Report Definition window will open.
4. In the Report Definition window, provide information for the following fields:
   a. Unique name: By default, there will be unique name displayed in the field. To make sure the name is unique, do not change the default name provided.
   b. Display name: Enter a display name of your choice.
   c. Description: Enter a description that will identify your report.
   d. Reporting System: Select the RPM-BIRT-Viewer radio button.
   e. Report Design file: Enter the Report Design File.
   f. Upload Design File: To upload the design file, browse to the report you want to upload.

g. Web Resource: ?

h. Active: ?

i. Security Group: Select a pre-defined Security Group.

j. Folder: Select the pre-defined folder you want to upload the sample report to.



k. Click **Submit**.

You can now use the new common reporting sample reports.

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_IO SERVERS).
   a. To change the NUM_IOCLEANERS:
      1) Set the prefetcher to the number of CPU.
      2) Decrease its value if AWP >= 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=("/pmoffice/pmm01/oradata/<instName>/control01.ctl",
 "/pmoffice/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=9.2.0.0.0
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 ¼ * Xmx (1024/4=256) and maximumNewSize should also be ¼*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_semvmx = 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/sqllib/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 occured 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 occured during the copying of error_return.txt (error log file) into log directory.'
- ERROR_CODE_400066=ERROR: 'Error occured 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 occured during the start-up of RPM database.'
- ERROR_CODE_400069=ERROR: 'Error occured during the dropping of RPM triggers.'
- ERROR_CODE_400074=ERROR: 'Error occured while renaming the file for table space creation according to RPM database size.'
- ERROR_CODE_400075=ERROR: 'Error occured while renaming the file for buffer pool creation according to RPM database size.'
- ERROR_CODE_400076=ERROR: 'Error occured 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 27. 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

Notices

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