Sun Role Manager 4.1

Manual Installation Guide

Sun Microsystems, Inc.
4150 Network Circle
Santa Clara, CA 95054
U.S.A.

Part No: 820-5794
September 2008

©2008 Sun Microsystems, Inc. 4150 Network Circle Santa Clara, CA 95054 U.S.A.

Sun Microsystems, Inc. has intellectual property rights relating to technology embodied in the product that is described in this document. In particular, and without limitation, these intellectual property rights may include one or more U.S. patents or pending patent applications in the U.S. and in other countries.

U.S. Government Rights – Commercial software. Government users are subject to the Sun Microsystems, Inc. standard license agreement and applicable provisions of the FAR and its supplements.

This distribution may include materials developed by third parties.

Parts of the product may be derived from Berkeley BSD systems, licensed from the University of California. UNIX is a registered trademark in the U.S. and other countries, exclusively licensed through X/Open Company, Ltd.

Sun, Sun Microsystems, the Sun logo, the Solaris logo, the Java Coffee Cup logo, docs.sun.com, Java, Solaris, J2EE, JDBC, JDE and JVM are trademarks or registered trademarks of Sun Microsystems, Inc. in the U.S. and other countries. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. in the U.S. and other countries. Products bearing SPARC trademarks are based upon an architecture developed by Sun Microsystems, Inc. ORACLE is a registered trademark of ORACLE CORPORATION.

The OPEN LOOK and SunTM Graphical User Interface was developed by Sun Microsystems, Inc. for its users and licensees. Sun acknowledges the pioneering efforts of Xerox in researching and developing the concept of visual or graphical user interfaces for the computer industry. Sun holds a non-exclusive license from Xerox to the Xerox Graphical User Interface, which license also covers Sun's licensees who implement OPEN LOOK GUIs and otherwise comply with Sun's written license agreements.

Products covered by and information contained in this publication are controlled by U.S. Export Control laws and may be subject to the export or import laws in other countries. Nuclear, missile, chemical or biological weapons or nuclear maritime end uses or end users, whether direct or indirect, are strictly prohibited. Export or reexport to countries subject to U.S. embargo or to entities identified on U.S. export exclusion lists, including, but not limited to, the denied persons and specially designated nationals lists is strictly prohibited.

DOCUMENTATION IS PROVIDED “AS IS” AND ALL EXPRESS OR IMPLIED CONDITIONS, REPRESENTATIONS AND WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT, ARE DISCLAIMED, EXCEPT TO THE EXTENT THAT SUCH DISCLAIMERS ARE HELD TO BE LEGALLY INVALID.

Sun Microsystems, Inc. détient les droits de propriété intellectuelle relatifs à la technologie incorporée dans le produit qui est décrit dans ce document. En particulier, et ce sans limitation, ces droits de propriété intellectuelle peuvent inclure un ou plusieurs brevets américains ou des applications de brevet en attente aux Etats-Unis et dans d'autres pays.

Cette distribution peut comprendre des composants développés par des tierces personnes.

Certaines composants de ce produit peuvent être dérivées du logiciel Berkeley BSD, licenciés par l'Université de Californie. UNIX est une marque déposée aux Etats-Unis et dans d'autres pays; elle est licenciée exclusivement par X/Open Company, Ltd.

Sun, Sun Microsystems, le logo Sun, le logo Solaris, le logo Java Coffee Cup, docs.sun.com, Java, Solaris, J2EE, JDBC, JDE, and JVM sont des marques de fabrique ou des marques déposées de Sun Microsystems, Inc. aux Etats-Unis et dans d'autres pays. Toutes les marques SPARC sont utilisées sous licence et sont des marques de fabrique ou des marques déposées de SPARC International, Inc. aux Etats-Unis et dans d'autres pays. Les produits portant les marques SPARC sont basés sur une architecture développée par Sun Microsystems, Inc. ORACLE est une marque d'pos'e registre de ORACLE CORPORATION.

L'interface d'utilisation graphique OPEN LOOK et Sun a été développée par Sun Microsystems, Inc. pour ses utilisateurs et licenciés. Sun reconnaît les efforts de pionniers de Xerox pour la recherche et le développement du concept des interfaces d'utilisation visuelle ou graphique pour l'industrie de l'informatique. Sun détient une licence non exclusive de Xerox sur l'interface d'utilisation graphique Xerox, cette licence couvrant également les licenciés de Sun qui mettent en place l'interface d'utilisation graphique OPEN LOOK et qui, en outre, se conforment aux licences écrites de Sun.

Les produits qui font l'objet de cette publication et les informations qu'il contient sont régis par la legislation américaine en matière de contrôle des exportations et peuvent être soumis au droit d'autres pays dans le domaine des exportations et importations. Les utilisations finales, ou utilisateurs finaux, pour des armes nucléaires, des missiles, des armes chimiques ou biologiques ou pour le nucléaire maritime, directement ou indirectement, sont strictement interdites. Les exportations ou réexportations vers des pays sous embargo des Etats-Unis, ou vers des entités figurant sur les listes d'exclusion d'exportation américaines, y compris, mais de manière non exclusive, la liste de personnes qui font objet d'un ordre de ne pas participer, d'une façon directe ou indirecte, aux exportations des produits ou des services qui sont régis par la legislation américaine en matière de contrôle des exportations et la liste de ressortissants spécifiquement designés, sont rigoureusement interdites.

TABLE OF CONTENTS

Preface

Role Manager Overview.....**Iv**

Document Conventions.....Iv

Chapter 1 – Before The Install

Supported Software and Environments

Operating System.....8

Application Server.....8

Database Server.....8

Memory Requirement 8

Setup Task Flow.....9

Chapter 2 – Creating Role Manager Folder Structure & Schema

Before you Begin.....7

Installation Steps

Creating Role Manager Folders & Schema

Installing on Windows.....7

Installing on UNIX.....9

Chapter 3 – Configuring *rbacx.war* For Deployment

Before you Begin....11

Configuration Steps

Configuring Role Manager

Configuration on Windows Systems....11

Configuration on UNIX Systems....13

Chapter 4 – Deploying Role Manager on Sun Java System Application Server 9.1

Deploying Role Manager on Sun Java System Application Server....15

Preface

The Sun Role Manager 4.1 Manual Installation Guide provides detailed information and instructions for installing the Sun™ Role Manager software (formerly Vaau's RBACx product) on various application servers. This guide is designed for deployment engineers and system administrators who are responsible for installing Sun Role Manager (Role Manager) on the target systems.

Role Manager Overview

Role Manager is a Role Engineering, Identity Auditing (IdA) and Identity Certification (IdC) solution that manages the life-cycle of enterprise identities from role definition to regulatory compliance using an automatic and continuous process of auditing user access levels and management certification of user privileges.

Role Manager simplifies the process of creating and managing user roles and provides a mechanism to enforce policies by auditing access violations, requiring managers to certify audit reports, and providing Auditors with evidence that controls have been implemented to comply with regulations.

Documentation Conventions

The following conventions are used in this guide:

Information in ...	Indicates ...
<*Italics_Brackets*>	A variable that you must enter or select
<RBACX_HOME>	A variable whose value is name of the directory where Role Manager is installed
"Bold"	Information that you must type exactly as shown
Bold Italics	An option on the toolbar or Menu that you must select
[Square Brackets]	A button you must click

1

◆ ◆ ◆ CHAPTER 1

Before You Begin

This chapter discusses the procedures to prepare for the installation of the Sun™ Role Manager software (formerly Vaau's RBACx product).

- Required Privileges
- Architecture Overview
- Memory Requirements
- Overview of Task Flow

Required Privileges

You must have administrative privileges on the hardware resources to install some components such as the Application Server, Java™ Runtime Environment, JDK™ etc.

Architecture Overview

Role Manager is a J2EE™ application that resides on an Application Server. A database server is required to store the Sun Role Manager software (Role Manager) database which is the central repository of application data.The following is a list of supported software environments:

Operating Systems

- Microsoft Windows 2000/ SP3
- Microsoft Windows 2003/ SP1
- Solaris™ 8,9,10
- Red Hat Linux
- Novel SuSE Linux Enterprise 9

Application Servers

- Apache Tomcat 5.5
- IBM WebSphere 6.1
- Weblogic 10
- Sun Java System Application Server 9.1

Database Servers

- Microsoft SQL Server 2000 SP4 / 2005
- IBM DB2 8.2
- Oracle® 9i, 10g, 11.x
- MySQL

Memory Requirements

You should determine your memory needs and set values in your application server's Virtual Machine for the Java Platform (JVM™ machine). Do this by adding Maximum and Minimum Heap Size to the java Command line; for example

You can specify these values in Tomcat by setting the JAVA_OPTS environment variable as follows:

- On Windows:

```
set JAVA_OPTS="-Xmx512m -Xms512m"
```

- On UNIX® (assuming *bash* as default shell):

```
export JAVA_OPTS="-Xmx512m -Xms512m"
```

Note – For best performance set these values to the same size

- Depending on your specific implementation, you may need to increase these recommended values if you face performance issues with the Web-interface
- Keeping a low minimum value minimizes garbage collection, whereas keeping a higher value decreases response time in the Web-interface

Overview of Task Flow

Depending on your choice of application server and database, the steps you will follow for setup differ. In general, you will:

- Perform prerequisite tasks: Set up an index database
- Install and configure the Role Manager solution

◆ ◆ ◆ CHAPTER 2

Creating Role Manager Folder Structure & Schema

Use the following information and procedures to create a Role Manager folder structure for deployment on a Windows or UNIX machine. This Chapter contains the following topics

- Before You Begin
- Installation Steps

Before You Begin

During the installation, you will need to know

- The Login and Password for system administrator account on Database Server
- Database Connectivity

A third-party relational database is required to store system data. Based on the type of database implemented, corresponding drivers supporting the JDBC™ API (JDBC drivers) have to be downloaded and setup on target system prior to installation.

The .jar files necessary for establishing a JDBC connection are available on Sun's Support FTP. The files can be downloaded from http:/dlc.sun.com/rolemanager/Database_Drivers/

The following table shows information about on or more .jar files needed to be copied for your database type.

Database Type	File Name
Microsoft SQL Server	jtds-1.2.jar
Oracle	ojdbc14.jar
IBM DB2	db2jcc.jar, db2jcc_license_cu.jar
MySQL	mysql-connector-java-5.1.5-bin.jar

- Sufficient system privileges, such as *sudo*, to modify file and/or folder permission/ownership

Installation Steps

Follow these installation and configuration steps

- Creating Role Manager folders
- Creating Role Manager Schema on Database Server
- Verification of configuration steps

Creating Role Manager Folders & Schema

For the installation, we have assumed that the Role Manager application has not yet been installed on the machine. The default Role Manager installation directory, as an example, is set to */opt/Sun/RM_4.1* for a UNIX system and *C:\Sun\RM_4.1* for a Windows. This can be interchanged by the variable *$RBACX_HOME* in the course of the guide.

▼ Installing on Windows

For the installation, we have assumed that there should be an instance of MS SQL Server / Oracle installed either on network machine or local machine.

1. **Unzip 'srm-4.1_folder_structure.zip' to C:**

2. At command prompt, type the following command(s). This will create the necessary folder structure

```
C:\> mkdir Sun
C:\> mkdir Sun\RM_4.1
```

3. Navigate to C:\SRM_Install at command prompt.

```
C:\> cd C:\SRM_Install
```

4. Copy contents of 'SRM_Install' folder to 'RM_4.1'.

```
C:\> Xcopy C:\SRM_Install C:\Sun\RM_4.1 /e /i
```

The above command also copies rbacx.war file from '**SRM_Install**' to '**RM_4.1**'.

5. Role Manager Schema Creation –

- MS SQL Server

Assuming that MS SQL Server is installed locally, Role Manager Database Schema can be created via command prompt or SQL Server Query Analyzer (Management Studio in the case of SQL Server 2005). The following steps discuss both methods –

a. Navigate to 'C:\Sun\RM_$.1\db'. Execute the following lines at command prompt

```
C:\> cd C:\Sun\RM_$.1\db
C:\> isql –i rbacx-<version>_mssql_schema.sql –U sa
```

This will create Role Manager Database Schema and *rbacxservice* user

b. Role Manager Database Schema can also be created using Query Analyzer (or Management Studio in case of SQL Server 2005).

1. Login as *sa* into the Database Server
2. Locate *rbacx-<version>_mssql_schema.sql* via the 'Open Query File menu'
3. Execute SQL file, this will create *rbacx* database on the server

Note – If the MS SQL Server is remote, it is recommended to run the query by following *Step (b)* due to reduced complexity.

- Oracle

The following steps assume that Oracle Database Server is available locally. Role Manager Schema can be created via command prompt or using Oracle iSQL Plus Web Console. Both methods are discussed below –

a. Navigate to 'C:\Sun\RM_4.1\db'. Execute the following lines at command prompt

```
C:\> cd C:\Sun\RM_4.1\db
```

```
C:\> sqlplus / as sysdba @rbacx-<version>_oracle_schema.sql
```

This will create Role Manager Database Schema on Oracle and assign *rbacxservice* user appropriate privileges

b. Role Manager Database Schema can also be created using Oracle's iSQL Plus Web Console. Open the following URL in a web browser. The default port for iSQL Plus Web Console is 5560

```
http://<hostname>:5560/isqlplus
```

1. Select 'Load Script' and browse to *C:\Sun\RM_4.1\db*. Locate the file *rbacx-<version>_oracle_schema.sql*
2. Click '*Load*'. Role Manager Schema creation script would be loaded into Workspace window
3. Click '*Execute*'. This would execute the script and create Role Manager Schema on the system

- DB2

The following steps assume that IBM DB2 Database Server is available locally. One of the following authorization is required to create the database -

- `sysadm`
- `sysctrl`

Role Manager Schema can be created via command prompt as discussed below –

c. As *Windows system administrator*, execute the following step to create '*rbacxservice*' user

```
C:\> net user rbacxservice rbacxservice /add
```

d. As DB2 administrator, execute the following step to create a database named 'rbacx'

```
C:\> db2cmd db2 CREATE DATABASE rbacx
```

e. Navigate to 'C:\Sun\RM_4.1\db'. Execute the following lines at command prompt

```
C:\> cd C:\Sun\RM_4.1\db
C:\> db2cmd db2 -tvf rbacx-<version>_db2_schema.sql
```

- MySQL

The following steps assume that MySQL Database Server is available locally. Role Manager Schema can be created via command prompt as discussed below -

```
C:\> mysql –user={account} --password={password} < rbacx-
<version>_mysql_schema.sql
```

6. Verification of configuration steps –

Assuming that *$RBACX_HOME* points to *C:\Sun\RM_4.1*, the directory structure of *$RBACX_HOME* should consist of the following folders/file(s) -

- .indexes (folder)
- conf (folder)
- db (folder)
- export (folder)
- import (folder)
- logs (folder)
- reports (folder)
- rbacx.war (file)

▼ Installing on UNIX

For the installation, we have assumed that there should be an instance of Oracle/MS SQL Server installed either on network machine or local machine. It is also assumed that the user has sufficient privileges to create/modify folders residing in */opt* directory of the filesystem.

1. Unzip 'SRM_Install.zip'. Assume that SRM_Install folder is created under /temp directory

2. Create the Role Manager installation folder using the following command

```
$ mkdir /opt/Sun
$ mkdir /opt/Sun/RM_4.1
```

3. Copy contents of 'SRM_Install' folder to 'RM_4.1' folder

```
$ cp –R /temp/SRM_Install/* /opt/Sun/RM_4.1
```

The above command also copies rbacx.war file from '**SRM_Install**' to '**RM_4.1**'.

4. Role Manager Schema Creation –

- Oracle

The following steps assume that Oracle Database Server is available locally. Role Manager Schema can be created via command prompt or using Oracle iSQL Plus Web Console. Both methods are discussed below. It's assumed that Oracle is installed under */opt* folder –

a. $ su - oracle

b. $ export ORACLE_HOME=/opt /oracle/product/10.2.0

c. $ cd /opt/Sun/RM_4.1/db

d. $ sqlplus / as sysdba @rbacx-<*version*>_oracle_schema.sql

This will create Role Manager Database Schema on Oracle and assign *rbacxservice* user appropriate privileges

e. Role Manager Database Schema can also be created using Oracle's iSQL Plus Web Console. Open the following URL in a web browser. The default port for iSQL Plus Web Console is 5560

```
http://<hostname>:5560/isqlplus
```

1. Select 'Load Script' and browse to */opt/Sun/RM_4.1/db*. Locate the file *rbacx-<version>_oracle_schema.sql*
2. Click '*Load*'. Role Manager Schema creation script would be loaded into Workspace window
3. Click '*Execute*'. This would execute the script and create Role Manager Schema on the system

Note – If the Oracle Database Server is remote, it's recommended to use *Step (b).*

- MS SQL Server

For MS SQL Server it is assumed that the server exists remotely. It's suggested that *rbacx-<version>_mssql.sql* file is copied from */opt/Sun/RM_4.1/db* folder to the remote server. Assume that the schema creation script is copied onto *C:\RBACx_DB* folder. The script then can be executed via command line or using Query Analyzer (or Management Studio in the case of MS SQL Server 2005)–

a. Navigate to 'C:\RBACx_DB'. Execute the following lines at command prompt

```
C:\> cd C:\RBACx_DB
C:\> isql –i rbacx-<version>_mssql_schema.sql –U sa
```

This will create Role Manager Database Schema and *rbacxservice* user

b. Role Manager Database Schema can also be created using Query Analyzer (or Management Studio in case of SQL Server 2005).

1. Login as *sa* into the Database Server
2. Locate *rbacx-<version>_mssql_schema.sql* via the 'Open Query File menu'
3. Execute SQL file, this will create *rbacx* database on the server

- DB2

The following steps assume that IBM DB2 Database Server is available locally. One of the following authorization is required to create the database -

- sysadm
- sysctrl

Role Manager Schema can be created via a terminal session as discussed below –

c. As *root* or *super user*, execute the following step to create '*rbacxservice*' user

```
$ useradd rbacxservice
$ passwd rbacxservice
<Enter password as 'rbacxservice' when prompted>
```

d. As *DB2 system administrator*, execute the following step to create a database named '*rbacx*'

```
$ db2 CREATE DATABASE rbacx
```

f. Navigate to '/opt/Sun/RM_4.1/db'. Execute the following lines at command prompt

```
$ db2 -tvf rbacx-<version>_db2_schema.sql
```

- MySQL

The following steps assume that MySQL Database Server is available locally. Role Manager Schema can be created via a terminal session as discussed below -

```
$ mysql –user={account} --password={password} < rbacx-
<version>_mysql_schema.sql
```

5. Verification of configuration steps –

Assuming that *$RBACX_HOME* points to */opt/Sun/RM_4.1*, the directory structure of *$RBACX_HOME* should consist of the following folders/file(s) –

- .indexes (folder)
- conf (folder)
- db (folder)
- export (folder)
- import (folder)
- logs (folder)
- reports (folder)
- rbacx.war (file)

3

◆ ◆ ◆ CHAPTER 3

Configuring *rbacx.war* For Deployment

Use the following information and procedure to configure *rbacx.war* file for deployment on an application server. This Chapter contains the following topics

- Before You Begin
- Installation Steps

Before You Begin

During the configuration steps, the following are required

- At least the JDK™ 1.5 release set up on the system

Configuration Steps

Follow these configuration steps

- Creation of *staging* folder
- Extract *rbacx.war* into *staging* folder
- Edit configuration files
- Repack *rbacx.war* file
- Clean-up of *staging* folder
- Configure JDBC™ connectivity

Configuring Role Manager

▼ Configuration on Windows Systems

For the configuration steps, we have assumed that *rbacx.war* file is available under *$RBACX_HOME* directory.

1. **Navigate to *C:\Sun\RM_4.1* via command prompt**
2. **Create a backup of original *rbacx.war* file**

```
C:\> cd C:\Sun\RM_4.1
C:\> mkdir rbacx_original
C:\> copy rbacx.war rbacx_original
```

This creates a copy of *rbacx.war* file under *C:\Sun\RM_4.1\rbacx_original*

3. **Create *rbacx_staging* folder under *$RBACX_HOME***
4. **Using the command prompt, navigate to *rbacx_staging* folder**

```
C:\> mkdir rbacx_staging
C:\> cd rbacx_staging
```

5. **Extract *rbacx.war* file to *rbacx_staging* for configuration changes using the following command**

```
C:\> jar –xvf ../rbacx.war
```

6. **Navigate to *rbacx_staging/WEB-INF* folder using Windows Explorer**

7. **Locate *conf-context.xml* in */WEB-INF* folder**

8. **Replace all occurrences of *$RBACX_HOME* with *C:\Sun\RM_4.1* in *conf-context.xml* using a text editor and save modified file**

9. **Locate *reporting-context.xml* in */WEB-INF* folder**

10. **Replace all occurrences of *$RBACX_HOME* with *C:\Sun\RM_4.1* in *reporting-context.xml* using a text editor and save modified file**

11. **Locate *search-context.xml* in */WEB-INF* folder**

12. **Replace all occurrences of *$RBACX_HOME* with *C:\Sun\RM_4.1* in *search-context.xml* using a text editor and save modified file**

13. **Navigate to *rbacx_staging/WEB-INF/classes* folder**

14. **Locate *workflows.xml* in *classes* folder**

15. **Replace all occurrences of *$RBACX_HOME* with *C:\Sun\RM_4.1* in *workflows.xml* using a text editor and save modified file**

Note – Step 16 is optional. The following step is to be followed if a Role Manager log file is required to be created in any directory other than the default log folder as defined by the application server.

---

16. **log4j.properties file requires editing to enable the Role Manager logging capabilities. Using a text editor, open log4j.properties under WEB-INF folder of the expanded war file.**

Edit the following line under # File Appender with the full-path of the location where the log file is to be generated

```
log4j.appender.file.file=logs/rbacx.log
```

As a result, according to the examples, the line would be modified to

```
log4j.appender.file.file=C:/Sun/RM_4.1/logs/rbacx.log
```

17. **Navigate to *rbacx_staging/WEB-INF/lib* folder**

18. **Copy the JDBC connectivity jar file, downloaded earlier, to *lib* folder. For example, to establish connectivity with MySQL Database Server, copy *mysql-connector-java-5.1.5-bin.jar* to the *lib* folder**

19. **Download *weka3-5-6-5.jar* file from http://dlc.sun.com/rolemanager/Data_Mining/weka/for_rbacx-4.1.x/**

Note – This file is required to carry out any role-mining related functionality of Role Manager

20. **Copy *weka3-5-6-5.jar* to *lib* folder**

21. **Execute the following commands by navigating to *rbacx_staging* folder to repack newly modified *rbacx.war* file**

```
C:\> cd C:\Sun\RM_4.1\rbacx_staging
C:\> jar -cvfM ../rbacx.war .
```

This will repackage the expanded folder structure to a .war file required for deployment on the Application Server. The recreated *rbacx.war* file is placed under *C:\Sun\RM_4.1*

22. **Delete rbacx_staging folder recently created**

```
C:\> rmdir /s rbacx_staging
```

23. Using Windows Explorer, navigate to C:\Sun\RM_4.1\conf and locate jdbc.properties file. Open jdbc.properties using a text editor and modify JDBC URL. This will point Role Manager application to the Database Server. Make the following modifications according to the Database Server.

- Oracle Database Server

```
# JDBC driver URL
jdbc.url=jdbc:oracle:thin:@<hostname>:<port number>:orcl

# JDBC driver name
jdbc.driverClassName=oracle.jdbc.OracleDriver
```

The default port number for JDBC connectivity on Oracle is 1521

- MS SQL Server

```
# JDBC driver URL
jdbc.url=jdbc:jtds:sqlserver://<hostname>:<port
number>/rbacx;tds=8.0;lastupdatecount=true

# JDBC driver name
jdbc.driverClassName=net.sourceforge.jtds.jdbc.Driver
```

The default port number for JDBC connectivity on MS SQL Server is 1433

- DB2

```
# JDBC driver URL
jdbc.url=jdbc:db2://<hostname>:<port number>/rbacx

# JDBC driver name
jdbc.driverClassName=com.ibm.db2.jcc.DB2Driver
```

The default port number for JDBC connectivity on DB2 Server is 50000

- MySQL

```
# JDBC driver URL
jdbc.url=jdbc:mysql://<hostname>:<port>/rbacx

# JDBC driver name
jdbc.driverClassName=com.mysql.jdbc.Driver
```

The default port number for JDBC connectivity on MySQL Server is 3306

▼ Configuration on UNIX Systems

For the configuration steps, we have assumed that *rbacx.war* file is available under *$RBACX_HOME* directory.

1. **Navigate to */opt/Sun/RM_4.1* via command prompt**
2. **Create a backup of original *rbacx.war* file**

```
$ cd /opt/Sun/RM_4.1
$ mkdir rbacx_original
$ cp rbacx.war rbacx_original/.
```

This creates a copy of *rbacx.war* file under */opt/Sun/RM_4.1/rbacx_original*

3. **Create *rbacx_staging* folder under *$RBACX_HOME***
4. **Using the command prompt, navigate to *rbacx_staging* folder**

```
$ mkdir rbacx_staging
$ cd rbacx_staging
```

5. **Extract *rbacx.war* file to *rbacx_staging* for configuration changes using the following command**

```
$ jar –xvf ../rbacx.war
```

6. **Navigate to *rbacx_staging/WEB-INF* folder using a File Browser**
7. **Locate *conf-context.xml* in */WEB-INF* folder**
8. **Replace all occurrences of *$RBACX_HOME* with *opt/Sun/RM_4.1* in *conf-context.xml* using a text editor and save modified file**
9. **Locate *reporting-context.xml* in */WEB-INF* folder**
10. **Replace all occurrences of *$RBACX_HOME* with *opt/Sun/RM_4.1* in *reporting-context.xml* using a text editor and save modified file**
11. **Locate *search-context.xml* in /WEB-INF folder**
12. **Replace all occurrences of *$RBACX_HOME* with */opt/Sun/RM_4.1* in *search-context.xml* using a text editor and saved modified file**
13. **Navigate to *rbacx_staging/WEB-INF/classes* folder using a File Browser**
14. **Locate *workflows.xml* in *classes* folder**
15. **Replace all occurrences of *$RBACX_HOME* with */opt/Sun/RM_4.1* in *workflows.xml* using a text editor and save modified file**

Note – Step 16 is optional. The following step is to be followed if a Role Manager log file is required to be created in any directory other than the default log folder as defined by the application server.

16. **log4j.properties file requires editing to enable the Role Manager logging capabilities. Using a text editor, open log4j.properties under WEB-INF folder of the expanded war file.**

Edit the following line under # File Appender with the full-path of the location where the log file is to be generated

```
log4j.appender.file.file=logs/rbacx.log
```

As a result, according to the examples, the line would be modified to

```
log4j.appender.file.file=/opt/Sun/RM_4.1/logs/rbacx.log
```

17. **Navigate to *rbacx_staging/WEB-INF/lib* folder**

18. **Copy the JDBC connectivity jar file, downloaded earlier, to *lib* folder. For example, to establish connectivity with MySQL Database Server, copy *mysql-connector-java-5.1.5-bin.jar* to the *lib* folder**

19. **Download *weka3-5-6-5.jar* file from http://dlc.sun.com/rolemanager/Data_Mining/weka/for_rbacx-4.1.x/**

Note – This file is required to carry out any role-mining related functionality of Role Manager

20. **Copy *weka3-5-6-5.jar* to *lib* folder**

21. **Execute the following commands by navigating to *rbacx_staging* folder to repack newly modified *rbacx.war* file**

```
$ cd /opt/Sun/RM_4.1/rbacx_staging
$ jar –cvfM ../rbacx.war .
```

This will repackage the expanded folder structure to a .war file required for deployment on the Application Server. The recreated *rbacx.war* file is placed under */opt/Sun/RM_4.1*

22. **Execute the following commands by navigating to *rbacx_staging* folder to repack newly modified *rbacx.war* file**

```
$ cd /opt/Sun/RM_4.1/rbacx_staging
$ jar –cvfM ../rbacx.war .
```

This will repackage the expanded folder structure to a .war file required for deployment on the Application Server. The recreated *rbacx.war* file is placed under */opt/Sun/RM_4.1*

23. **Delete rbacx_staging folder recently created**

```
$ /usr/bin/rm –r rbacx_staging
```

24. **Using a File Browser, navigate to /opt/Sun/RM_4.1/conf and locate jdbc.properties file. Open jdbc.properties using a text editor and modify JDBC URL. This will point Role Manager application to the Database Server Make the following modifications according to the Database Server.**

- Oracle Database Server

```
# JDBC driver URL
jdbc.url=jdbc:oracle:thin:@<hostname>:<port number>:orcl

# JDBC driver name
jdbc.driverClassName=oracle.jdbc.OracleDriver
```

The default port number for JDBC connectivity on Oracle is 1521

- MS SQL Server

```
# JDBC driver URL
jdbc.url=jdbc:jtds:sqlserver://<hostname>:<port
number>/rbacx;tds=8.0;lastupdatecount=true

# JDBC driver name
jdbc.driverClassName=net.sourceforge.jtds.jdbc.Driver
```

The default port number for JDBC connectivity on MS SQL Server is 1433

- DB2

```
# JDBC driver URL
jdbc.url=jdbc:db2://<hostname>:<port number>/rbacx

# JDBC driver name
jdbc.driverClassName=com.ibm.db2.jcc.DB2Driver
```

The default port number for JDBC connectivity on DB2 Server is 50000

- MySQL

```
# JDBC driver URL
jdbc.url=jdbc:mysql://<hostname>:<port>/rbacx

# JDBC driver name
jdbc.driverClassName=com.mysql.jdbc.Driver
```

The default port number for JDBC connectivity on MySQL Server is 3306

◆ ◆ ◆ CHAPTER 4

Deploying Role Manager on Sun Java System Application Server 9.1

Here we have assumed that Sun Java System Application Server 9.1 is pre-installed with a user-defined domain defined. The user-defined domain assumed in this guide is called *domain1*.

1. **Open the Sun Java System Application Server administration console by executing the following URL in a web browser**

```
http://<server name>:<port number>/login.jsf
```

The default port number for admin console is 4848. The admin console can also be accessed via the *Start Menu* in Microsoft Windows environment.

2. **Enter administration Login and Password.**

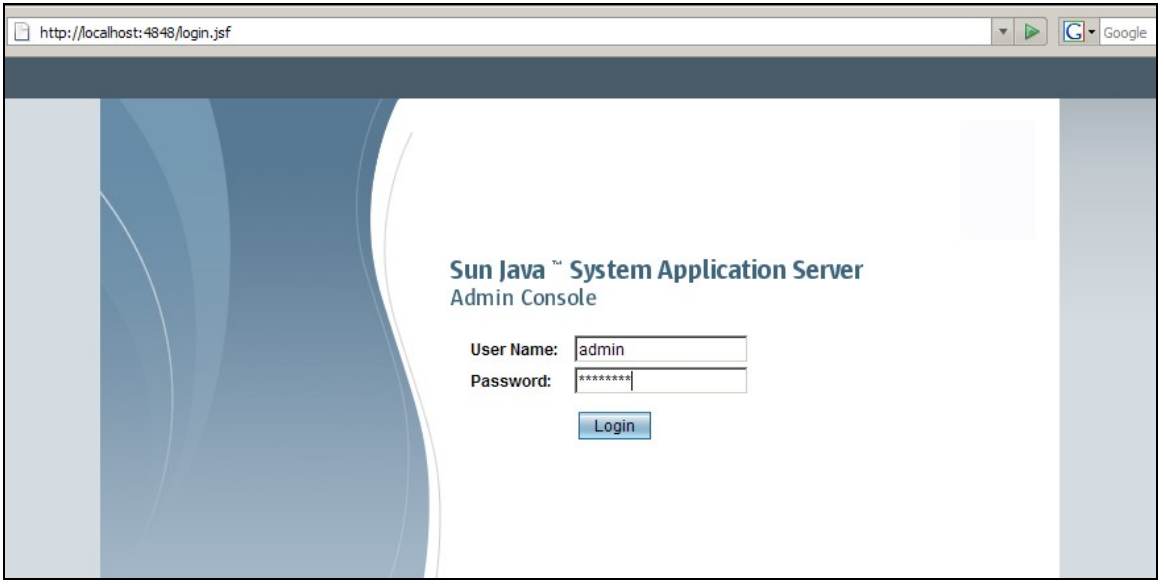
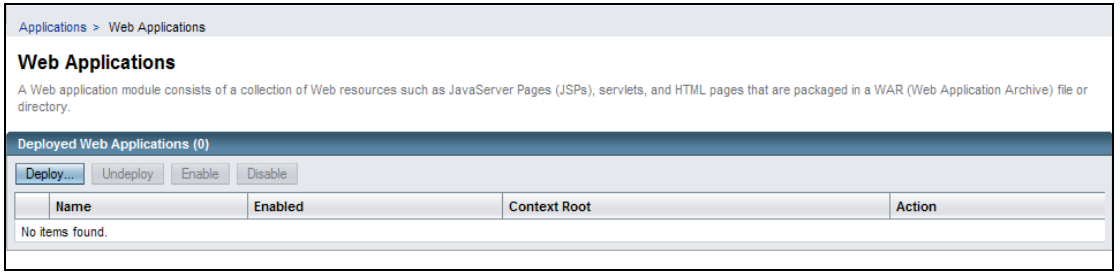


Figure 4-1: Application Server Login

3. **Navigate to Common Tasks > Applications > Web Applications under the admin console and Click Deploy under Web Applications.**

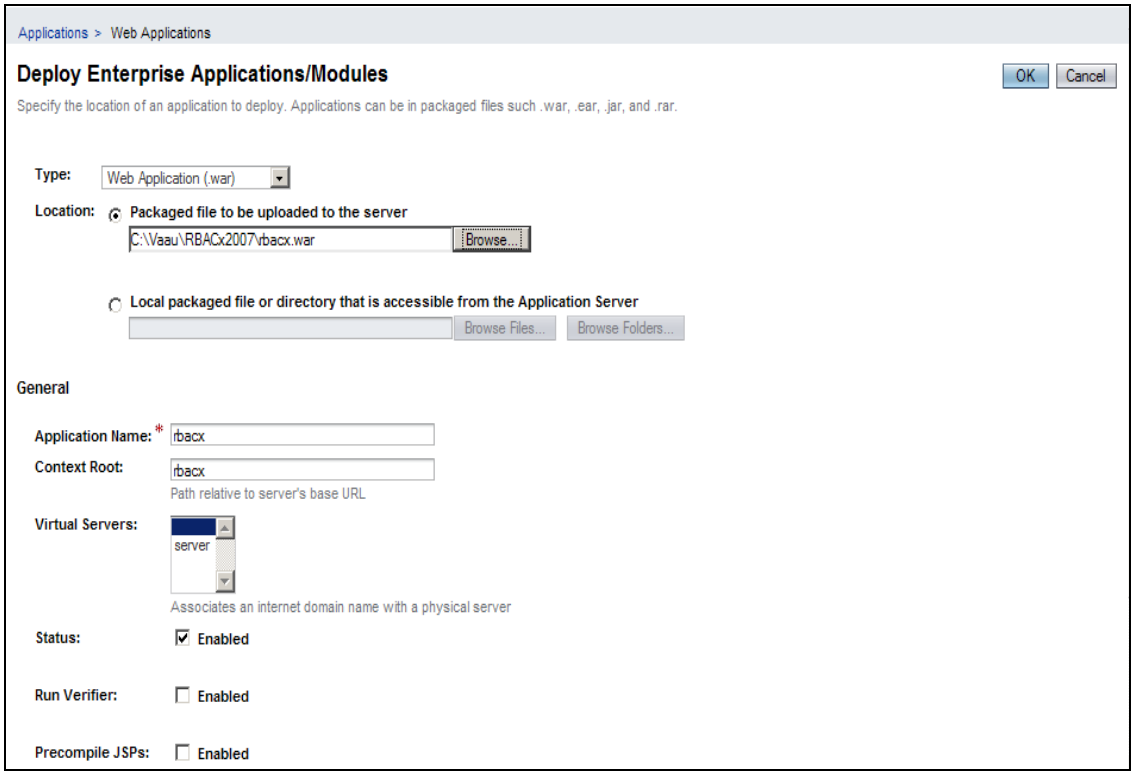
Figure 4-2: Web Applications – Deploy Button



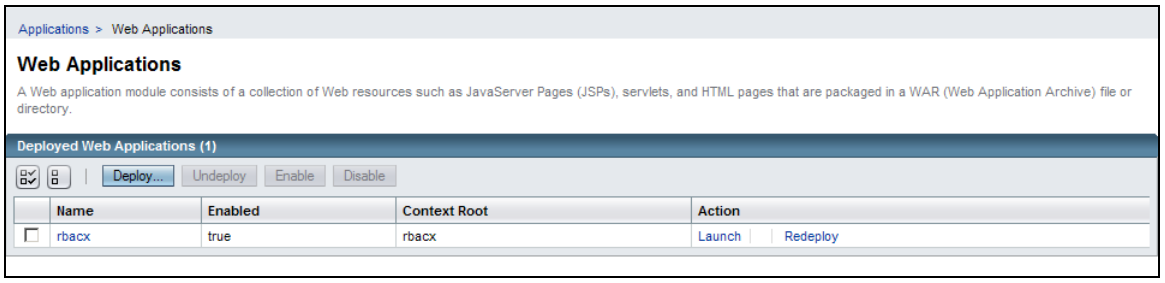
4. **Select [Location] and navigate to the rbacx.war file on the**

Local System under Deploy Enterprise Applicatiopns/Modules

5. **Enter [Application Name] as rbacx**
6. **Enter [Context Root] as rbacx**
7. **Ensure [Status] is checked and [Run Verifier], [Precompile JSPs] are unchecked**

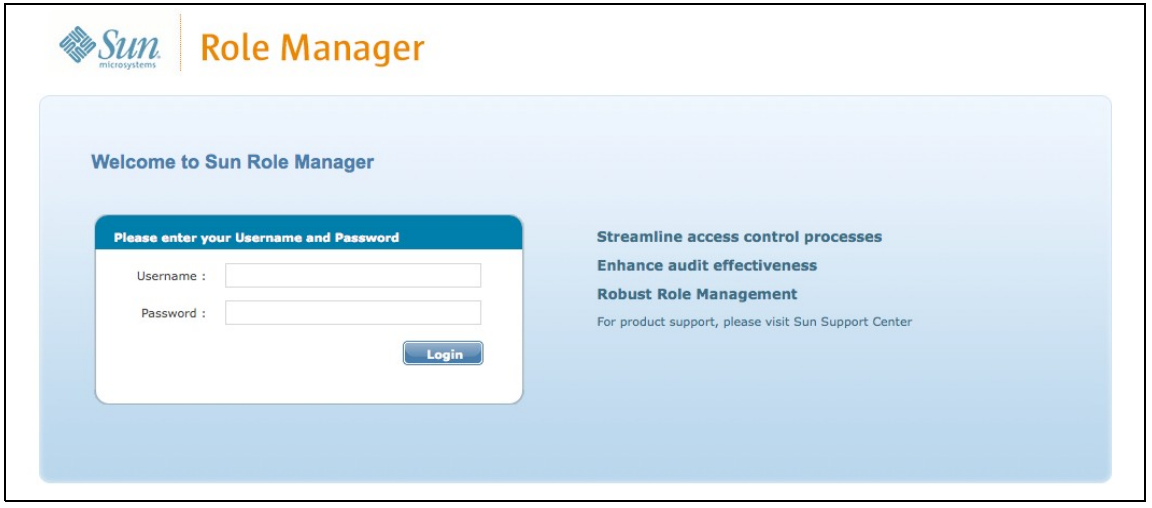


8. **Click [OK]**



9. **The Role Manager application would be listed under Web Applications on successful deployment**

10. **Verify the deployment by either clicking [Launch] or by executing the following URL in a web browser**

`http://<server name>:<port number>/rbacx`

The default deployment port of Sun Java System Application Server 9.1 is 8080