

**Oracle® Governance, Risk and Compliance**

Installation Guide

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Oracle Governance, Risk and Compliance Installation Guide

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## Preface

This Preface introduces the guides and other information sources available to help you more effectively use Oracle Fusion Applications.

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- Publishing other technical information such as reusable components, policies, architecture diagrams, and topology diagrams.

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## Introduction

Oracle Governance, Risk and Compliance (GRC) is a set of products that regulate activity in business-management applications. This document provides instructions for the installation (or upgrade) of the following GRC products:

- Oracle Enterprise Governance, Risk and Compliance Manager (EGRCM) consists of loosely coupled functional modules that collectively manage an organization's governance, risk, and compliance objectives.
- Oracle Fusion GRC Intelligence (GRCI) extracts data from EGRCM for display in dashboards and reports.

You can install EGRCM on its own, or to be integrated with an OID LDAP server that manages EGRCM users. (OID stands for Oracle Internet Directory; LDAP for Lightweight Directory Access Protocol.) In either case, you can embed a GRCI instance within EGRCM. (You would not install GRCI on its own, because its purpose is to provide dashboard and reporting capability to EGRCM.) If you intend to use GRCI, complete the installation of EGRCM first (see Chapter 2). Then integrate GRCI with EGRCM (see Chapter 3).

As you implement GRC, keep the following in mind:

- You cannot use GRC release 8.6.4 to install a third GRC product — Enterprise Governance, Risk and Compliance Controls (EGRCC). If you wish to install EGRCC, use GRC release 8.6.3.
- You can install GRC on a server that you own and maintain (a “conventional” installation), or you can use Oracle VM Server to deploy an image of GRC initially configured by Oracle.

### Prerequisites

If you intend to deploy a VM image of GRC, you need to install Oracle VM Manager and Oracle VM Server 2.2, and the remaining prerequisites do not apply to you.

If you intend to perform a conventional GRC installation, then EGRCM and GRCI run on a 64-bit Linux server. For an installation on Linux, be sure the following lines exist in the `/etc/security/limits.conf` file:

```
* soft nproc 8192
* hard nproc 32768
* soft nofile 65536
* hard nofile 131072
```

If you are installing on Solaris, set the following configuration parameter in `/etc/system` to protect against exploitation of buffer overflow attacks. (There is no need to do this for OEL or other Linux variations.)

```
noexec_user_stack = 1
```

The installation of Governance, Risk and Compliance requires that the following also be installed:

- Oracle database 11g Release 2. See “Creating GRC and DA Schemas,” below.
- Java: Sun Java Development Kit 1.6 or higher. JRockit JDK R28.1.3 for Java SE 6 with JRockit Mission Control 4.0.1 for Linux x86-64 is also supported.  
GRC must have its own dedicated Java container. It was not designed to coexist in a container with other web applications.
- Middleware: EGRCM requires WebLogic Server (WLS) and related components — some combination of Service Oriented Architecture (SOA), Repository Creation Utility (RCU), and Application Development Runtime (ADR).

Install EGRCM with SOA if you intend to integrate with other applications and want them to consume SOA worklists. In this case, you need WLS 10.3.5, SOA 11.1.1.5, and RCU 11.1.1.5.

Otherwise, install EGRCM without SOA. In this case, you need WLS 10.3.5 and ADR 11.1.1.5. (You can use EGRCM with a SOA instance you’ve already installed for other purposes. In that case, install the same middleware components you would if you were installing EGRCM without SOA.)

If you intend to run GRCI as well as EGRCM, use middleware components already installed for EGRCM. In this case, however, you need RCU 11.1.1.5 even if you’ve installed EGRCM without SOA (or to run with a pre-existing SOA instance).

Subsequent chapters cover download, installation, and configuration of middleware components.

- An OID LDAP server, if you intend to install EGRCM so that its users are managed by such a server.

On the server or a client system, either of the following web browsers can display the EGRCM interface:

- FireFox 3.6.1
- Microsoft Internet Explorer 8, with the Adobe SVG plugin available from <http://www.adobe.com/svg/viewer/install/mainframed.html>.

For details about supported components, see the *Oracle Governance, Risk and Compliance Applications Support Matrix*.

## Creating GRC and DA Schemas

In the Oracle database, create a GRC schema for use by EGRCM. If you intend also to install GRCI, create a second schema, known as the Data Analytics (DA) schema.

The following is a sample script that serves for the creation of either schema. You are assumed to have created tablespaces; each schema requires its own. The values you choose for tablespace name, user (schema) name, and password would be distinct for each schema, and are represented here by *TablespaceName*, *UserName*, and *UserPassword*, respectively.

```
create user UserName identified by UserPassword default
    tablespace TablespaceName quota unlimited on TablespaceName
    quota 0k on system;
grant connect, resource to UserName;
grant create any view to UserName;
grant create any table to UserName;
grant drop any table to UserName;
```

Run the following commands as the system user:

```
ALTER SYSTEM SET open_cursors=5000;
ALTER SYSTEM SET processes=3000 scope=spfile;
ALTER SYSTEM SET sessions=3000 scope=spfile;
ALTER SYSTEM SET deferred_segment_creation=FALSE;
```

After running these commands, bounce the database.

GRC may display information in any of twelve languages. To use the multilingual capabilities of GRC, be sure the database that hosts the GRC schema is set up for UTF-8 encoding. To do so, execute this command:

```
SELECT value$ FROM sys.props$ WHERE name = 'NLS_CHARACTERSET' ;
```

The return value should be AL32UTF8.



---

## Installing EGRCM

To perform a conventional GRC installation, use procedures in this chapter. If you intend to deploy a VM image of GRC, ignore this chapter and skip to Chapter 4.

For a conventional installation, decide if you are installing EGRCM with SOA (yes if you are integrating with other applications that will consume SOA worklists, and have no existing SOA installation; otherwise, no).

Then complete the appropriate one of the following procedures. (Summary procedures appear here, with details given in later sections of this chapter.)

If you are installing **EGRCM with SOA**:

1. Download files to the GRC server and prepare them for use, and create a directory for the storage of EGRCM report data.
2. Install WebLogic Server and other components — Repository Creation Utility (RCU) and Service Oriented Architecture (SOA).
3. Create a WebLogic domain. This entails setting up an Administration Server and a “managed server” for SOA. Within the domain, install “SOA composites” and “keystores,” set up security credentials, enable “embedded LDAP,” and create a soadmin user.
4. If you intend to install EGRCM so that an OID LDAP repository manages its users, configure that repository.
5. Perform configuration steps in a WebLogic Server Administration Console, and modify memory and other settings to conform to GRC requirements.
6. Perform configuration steps in a GRC Manage Application Configurations page.
7. Run WebLogic to complete the installation.

If you are installing **EGRCM** to be used **without SOA**, or to be used with an **already existing SOA instance**:

1. Download files to the GRC server and prepare them for use, and create a directory for the storage of EGRCM report data.
2. Install WebLogic Server and Application Development Runtime.
3. Create a WebLogic domain. This entails setting up an Administration Server (but no managed server).

4. If you intend to install EGRM so that an OID LDAP repository manages its users, configure that repository.
5. For EGRM with a pre-existing SOA Server, configure “SOA composites” and “keystores,” set up security credentials, enable “embedded LDAP,” and create a soadmin user for that server. (For EGRM without SOA, skip this step.)
6. Perform configuration steps in a WebLogic Server Administration Console, and modify memory and other settings to conform to GRC requirements.
7. Perform configuration steps in a GRC Manage Application Configurations page.
8. Run WebLogic to complete the installation.

## Downloading Files

Create a staging directory on your GRC server. (Throughout this document, `<grc_stage>` represents the full path to this directory.)

To install EGRM, download a file called `grc_864.zip` to `<grc_stage>`, and extract its contents there. To validate your download, generate a checksum and compare it with a checksum value published in *Release Notes* for the instance you are installing. To generate a checksum, run the command `md5sum grc.ear`.

If you expect to use GRCI within EGRM, download a second file called `grc864_obiee.zip` to `<grc_stage>`. See Chapter 3 for instructions on the use of this file.

You need middleware components appropriate for the installation you will perform. These are available on E-Delivery. Middleware components include some combination of the following (see “Prerequisites” on page 1-1):

- Oracle Weblogic Server 11gR1 (10.3.5) Generic and Coherence
- Oracle SOA Suite 11gR1 (11.1.1.5.0)
- Oracle Repository Creation Utility (11.1.1.5.0) for Linux x86
- Oracle Application Development Runtime (11.1.1.5.0).

## Creating a Report Repository

Create a “Report Repository” — a directory that stores copies of GRC reports that users schedule to be run. Note the path to the Report Repository, as you will need to supply it later as a configuration value. The Repository can reside on an NFS mount or any valid directory to which the user running WebLogic has full permissions.

## Setting Up WebLogic

Install WebLogic Server (WLS) and related components generally as their documentation instructs you to do. You will need to make choices that support their use with GRC. Complete procedures, documented from here to page 2-12, that are appropriate to the installation you are performing (EGRM with or without SOA). Then continue at “EGRM Configuration” on page 2-13.

## Initial WebLogic Installation

Ensure that Sun JDK 1.6 is in the path to install and run WebLogic Server. Then install WLS as a Standard Default Deployment.

Next, if you are **installing EGRCM with SOA**, complete these procedures:

1. Install Repository Creation Utility (RCU). These RCU components are required:
  - Metadata Services (MDS schema)
  - SOA Infrastructure (SOAINFRA schema)
  - Business Activity Monitoring (ORABAM schema)
  - User Messaging Service (ORASDPM schema)

2. Once RCU is installed, run it to install SOA schemas:

- a. Set an XEDB environment variable to provide connection information for your EGRCM database. Enter the following:

```
export XEDB=Dbhost:Dbport:SID
```

Replace *Dbhost* with the fully qualified domain name (FQDN) of your EGRCM database server, *Dbport* with the port number at which the database communicates with other applications, and *SID* with the service identifier value configured for the database in the tnsnames.ora file.

- b. Use the createRepository option in RCU to create repositories. Navigate to <RCU\_HOME>/bin (in which <RCU\_HOME> represents the highest-level directory in which RCU components exist). Then execute this command:

```
./rcu -silent -createRepository -connectString $XEDB  
-dbUser sys -dbRole sysdba -lockSchemas false  
-schemaPrefix EGRCM -component SOAINFRA -component MDS  
-component ORASDPM -component BAM
```

As you run the script, you will be prompted to create passwords for each of SOAINFRA, MDS, ORASDPM, and BAM.

3. Install Oracle SOA Suite. Enter the value “soa” as the Oracle Home Directory on the Specify Installation Location screen.

If you are installing **EGRCM without SOA** install ADR. Do not install either RCU or SOA.

## Creating a WebLogic Domain

For any installation, create a new WebLogic domain. To do so, execute the following command:

```
<MW_HOME>\wlserver_10.3\common\bin\config.sh
```

**Note:** <MW\_HOME> represents the full path to the home directory of your middleware installation — the highest-level directory in which Fusion Middleware components exist, including WebLogic.

The `config.sh` script runs a Fusion Middleware Configuration Wizard, which prompts you to complete several steps:

**1. Select templates.**

For any installation, one template is selected automatically: “Base WebLogic Server Domain — 10.3.5.0.” Also select “Oracle Enterprise Manager — 11.1.1.0.” When you do, a third template, “Oracle JRF — 11.1.1.0,” is selected with it.

Only if you are installing EGRCM with SOA, select three more templates: “Oracle SOA Suite — 11.1.1.0,” “Oracle WSM Policy Manager — 11.1.1.0,” and “Oracle JRF Webservices Asynchronous Services — 11.1.1.0.”

- 2. Create a name for your WebLogic domain.** Use any name you wish. (Throughout this document, the value `<grc_domain>` represents the name you configure here.) In two other fields — Domain Location and Application Location — accept default values.
- 3. At a Configure Administrator Username Password prompt,** create a WebLogic Server username and password.
- 4. At a Configure Server Start Mode and JDK prompt,** select “Production Mode.” In the JDK Selection area, ensure that the correct JDK is selected. (This is the JDK instance you confirmed to be in the path to install and run WebLogic under “Initial WebLogic Installation” on page 2-3.) If necessary, use the “Other JDK” option to browse.
- 5. For EGRCM with SOA only,** respond to a Configure JDBC Component Schema prompt. Enter details you’ve already established as you used RCU to create repositories (see step 2b of “Initial WebLogic Installation” on page 2-3). When you complete this step, you should see the value “Test Successful” at a Test Component Schema prompt.
- 6. For any installation,** select “Administration Server” at a Select Optional Configuration prompt. Also select “Managed Servers, Clusters and Machines” if you are installing EGRCM with SOA, but not if you are installing EGRCM to run with a pre-existing SOA or without SOA.
- 7. At a Configure the Administration Server prompt,** enter the IP address of the machine running the WebLogic Server. Also select an unused port for it.
- 8. If you are installing EGRCM with SOA,** a Configure Managed Servers prompt appears. Confirm that the Configure Managed Servers prompt displays a row for a SOA Server. This row appears as a result of EGRCM-specific configuration you’ve already completed. Note the IP address and port, which you’ll need to enter later in an EGRCM Worklist page. Continue at step 9.
- If you are installing EGRCM without SOA, or to run with a pre-existing SOA, you need not create a managed server. The Configure Managed Servers page and several other Configuration Wizard pages do not appear. Skip ahead to step 12.
- 9. Skip the Configure Clusters page.**
- 10. In a Configure Machines page,** select the Unix Machine tab. Click Add. Assign any name, and accept defaults for all other fields.

11. In the Assign Servers to Machines page, select the servers listed in the left box. Move them to machine you created in step 10, which is listed in the right box.
12. In the Summary page, select Create.

## Preparing Additional Files

Complete these additional steps when the config.sh script finishes running:

1. Copy the following files from <MW\_HOME>\oracle\_common\modules\oracle.adf.model\_11.1.1, to <MW\_HOME>\user\_projects\domains\<grc\_domain>\lib:
  - adfm.jar
  - adfdt\_common.jar
  - adfmweb.jar
2. Copy the following files from <grc\_stage>/lib to <MW\_HOME>\user-projects\domains\<grc\_domain>\lib:
  - groovy-all-1.6.3.jar
  - xdoparser-10.1.3.4.jar
3. Copy the file ojdbc6dms.jar from <grc\_stage>/lib to <MW\_HOME>/oracle\_common/modules/oracle.jdbc\_11.1.1. (This copy operation will overwrite an existing file.)
4. Create a directory called grc864 (for example, <MW\_HOME>/grc864). This directory should be entirely distinct from the <grc\_stage> directory you created as you downloaded GRC files.
5. Navigate to <grc\_stage>/dist, and locate the file grc.ear. Copy it to the grc864 directory, and extract its contents there.
6. Look in the directory grc864\WEB-INF\lib to see if the files bicmn-10.1.3.4.jar, geronimo-stax-api\_1.0\_spec-1.0.1.jar, and xdoparser-10.1.3.4.jar exist there. If so, delete them.

## Configuring External OID LDAP

This section applies to you only if you intend to install EGRCM so that an external OID LDAP repository manages its users. If you do not, ignore this section and skip ahead to “Installing SOA Composites” on page 2-8. If you do, complete these steps:

1. Log in to the WebLogic Server Administration Console:

```
http://host:port/console
```

In this URL, replace *host* with the FQDN of your GRC server, and *port* with the number you selected for the WebLogic Administration Server. (See step 7 of “Creating a WebLogic Domain” on page 2-4.)

2. Click on the “Security Realms” link in your application’s Security Settings.
3. Click on the “myrealm” link in the table.
4. Click on the “Providers” tab.

5. Click on the New button and enter the following values:
  - Name: OIDAAuthenticator
  - Type: OracleInternetDirectoryAuthenticator
6. Click on the “OIDAuthenticator” link and then click on the “Provider Specific” tab.
7. Supply values for properties in the “Provider Specific” screen. (Italicized entries are literal values, to be entered as they are shown.)
  - Host: The FQDN of the LDAP provider (your OID instance).
  - Port: The port number at which the host communicates with other applications.
  - Principal: The username for the OID administrative user, preceded by *cn=*.
  - Credentials: The password configured for the OID administrative user.
  - SSLEnabled: Leave this box unchecked.
  - User Base DN: The LDAP path to the store for user information. For example: *cn=FusionUsers,cn=users,dc=us,dc=oracle,dc=com*
  - All User Filter: *(&(cn=\*)(objectclass=person))*
  - User From Name Filter: *(&(cn=%u)(objectclass=person))*
  - User Search Scope: *subtree*
  - User Name Attribute: *cn*
  - User Object Class: *person*
  - Use Retrieved User Name as Principal: Select this checkbox.
  - Group Base DN: The LDAP path to the store for group (enterprise role) information. For example: *cn=FusionGroups,cn=groups,dc=us,dc=oracle,dc=com*
  - All Groups Filter: *(&(cn=\*)(objectclass=groupofUniqueNames)(objectclass=orcldynamicgroup))*
  - Group From Name Filter: *(/(&(cn=%g)(objectclass=groupofUniqueNames))(&(cn=%g)(objectclass=orcldynamicgroup)))*
  - Group Search Scope: *subtree*
  - Group Membership Searching: *unlimited*
  - Static Group Name Attribute: *cn*
  - Static Group Object Class: *groupofuniquenames*
  - Static Member DN Attribute: *uniquemember*
  - Static Group DN from Member DN filter: *(&(uniquemember=%M)(objectclass=groupofuniquenames))*
  - Dynamic Group Name Attribute: *cn*
  - Dynamic Group Object Class: *orcldynamicgroup*

- Dynamic Member URL Attribute: *labeleduri*
  - User Dynamic Group DN Attribute: Leave this field blank.
  - Connection Pool Size: *6*
  - Connect Timeout: *0*
  - Connection Retry Limit: *1*
  - Parallel Connect Delay: *0*
  - Results Time Limit: *0*
  - Keep Alive Enabled: Leave this box unchecked.
  - Follow Referrals: Select this checkbox.
  - Bind Anonymously On Referrals: Leave this box unchecked.
  - Propagate Cause For Login Exception: Leave this box unchecked.
  - Cache Enabled: Select this checkbox.
  - Cache Size: *32*
  - Cache TTL: *60*
  - GUID Attribute: *orclguid*
8. Save your settings, then click on “Activate Changes” on the left, topmost panel.
  9. Click the “OIDAuthenticator” link from the authenticator list, and set the Control Flag to SUFFICIENT.
  10. Click the “DefaultAuthenticator” link from the authenticator list, and set the Control Flag to SUFFICIENT.
  11. Click the Reorder button. Select “OIDAuthenticator” from the available providers, and move it to the top. To do so, click on the arrow on the right side, then click OK.
  12. Click on “Activate Changes” from the Change Center, then log out.
  13. Stop the WebLogic Administration Server and, if one is installed, the SOA Server. (If you are installing EGRCM with SOA, the latter is the managed server discussed in step 8 of “Creating a WebLogic Domain,” page 2-4. If you are installing EGRCM to run with a pre-existing SOA instance, this is the SOA server created for that instance.)
  14. Edit boot.properties files. There are two possibilities:
    - GRC, OID LDAP, and (if applicable to you) SOA components exist on one instance of WebLogic Server (WLS). If so, up to two boot.properties files may exist, one for the Administration Server and (if you use SOA) one for the SOA Server.  
  
In this case, edit each file to set a *username* value equal to your OID administrative user name — the “Principal” in step 7 on page 2-6, without the *cn=* prefix. Set a *password* value equal to that user’s password — the “Credentials” value in step 7 on page 2-6.
    - GRC and OID LDAP exist on distinct instances of WLS. If so, SOA may be installed on either WLS instance (or is not installed at all, if you choose not to use it). In this case, two or three boot.properties files exist, for the GRC

Administration Server on the GRC instance of WLS, for the OID Administration Server on the OID LDAP instance of WLS, and (if you use SOA) the SOA Server on either WLS instance.

In this case, edit `boot.properties` files on the OID LDAP instance of WLS to set the `username` and `password` values equal to those for the OID administrative user (as defined earlier in this step). Edit `boot.properties` files on the GRC instance of WLS to set the `username` and `password` values to those you created in step 3 of “Creating a WebLogic Domain” (page 2-4).

The `boot.properties` files exist in these locations:

- For the Administration Server, navigate to `<MW_HOME>/user_projects_domains/<grc_domain>/servers/AdminServer/security/boot.properties`
- For the SOA Server (if you have installed one), navigate to `<MW_HOME>/user_projects_domains/<grc_domain>/servers/<SoaServerName>/security/boot.properties`

15. Start the Administration Server and SOA Server. Check whether LDAP is configured successfully: Log in to the WebLogic console (see step 1 of “Configuring External OID LDAP” on page 2-5), go to Security Realms → `myRealm`, and click on Users and Groups. You should see your LDAP users and groups.

## Installing SOA Composites

If you are installing EGRCM with SOA, or to run with a pre-existing SOA, create “SOA composites.” (If you are installing EGRCM without SOA, this does not apply; skip ahead to “WebLogic Console Configuration” on page 2-11.)

1. Ensure that the Administration Server and SOA Server are running. (If you are installing EGRCM with SOA, the latter is the managed server discussed in step 8 of “Creating a WebLogic Domain,” page 2-4. If you are installing EGRCM to run with a pre-existing SOA instance, this is the SOA server created for that instance.)
2. Create a temporary folder. (Throughout this section, `<temp>` represents the full path to this folder.)
3. Locate the file `grc-soa-composite-8.6.4-SNAPSHOT-package.zip` in `<grc_stage>/dist`. Extract its contents in `<temp>`.
4. Edit the file `<temp>/grc-soa-composite_cfgplan.xml`: Search for the value `GrcServerHostName` or `<GrcServerHostName>` and replace it with the FQDN of your GRC server. Search for the value `ServerPortNumber` or `<ServerPortNumber>` and replace it with the number you selected for the WebLogic Administration Server. (See step 7 of “Creating a WebLogic Domain” on page 2-4.)
5. Access Enterprise Manager (EM) at:  
`http://host:port/em`  
In this URL, replace `host` with the FQDN of your GRC server, and `port` with the number you selected for the WebLogic Administration Server.
6. Select “Archive on the server where Enterprise Manager is running” under Archive or Exploded Directory. Point it to `<temp>/grc-soa-composite_cfgplan.xml`. Click Next.
7. Click Deploy on the Confirmation page.

8. When you receive confirmation that deployment is successful, hit the following URL, in which *host* is the FQDN of your GRC server and *soa\_port* is the port configured for your SOA Server:

```
http://host:soa_port/soa-infra/services/default/  
GrcSoaComposite/GrcService
```

If you need to deploy composites again at a later point, first undeploy composites, then use the procedure defined above to deploy again. To undeploy composites:

1. Log on to Enterprise Manager (see step 5 above).
2. Under your domain, navigate to SOA → soa\_infra → GrcSoa Composite. Right click SOA Deployment → Undeploy.
3. Click Undeploy.

## Creating Keystores

If you are installing EGRCM with SOA, or to run with a pre-existing SOA, create “keystores” once SOA composites exist. (If you are installing EGRCM without SOA, this does not apply; skip ahead to “WebLogic Console Configuration” on page 2-11.)

1. Stop the (newly created or pre-existing) SOA Server and the Administration Server.

2. Use keytool to set up your keystore. (Keytool is located in <Java\_Home>/bin, where <Java\_Home> represents the highest-level directory in which Java components are installed.) Execute the following command:

```
./keytool -genkeypair -alias orakey -keyalg "RSA" -keystore  
default-keystore.jks -validity 3600
```

3. When prompted, designate a keystore password and a key password. This creates a keystore called default-keystore.jks, and a key pair with the alias orakey within that keystore.
4. Move the new keystore to a directory called fmwconfig. Execute this command:

```
mv default-keystore.jks <MW_HOME>/user_projects/domains/  
<grc_domain>/config/fmwconfig
```

This overwrites a pre-existing default-keystore.jks file.

5. Start the Administration Server and the SOA Server.

## Setting Up Credentials

If you are installing EGRCM with SOA, or to run with a pre-existing SOA, use Enterprise Manager (EM) to set up credentials once keystores are created. (If you are installing EGRCM without SOA, this does not apply; skip ahead to “WebLogic Console Configuration” on page 2-11.)

1. Access EM at

```
http://host:port/em
```

In this URL, replace *host* with the FQDN of your GRC server, and *port* with the number you selected for the WebLogic Administration Server. (See step 7 of “Creating a WebLogic Domain” on page 2-4.)

2. Click on Weblogic Domain → <grc\_domain>.
3. Right-click on the <grc\_domain> and select Security → Credentials.
4. On the Credentials page, click on the button labeled + *Create Map*. Enter *oracle.wsm.security* as Map Name, and click OK. A new row, oracle.wsm.security, is created.
5. Add keys to the wallet. For each key, click the button labeled + *Create Key*, then supply the following values in response to prompts:
  - basic.credentials (this contains user authentication)
    - Select Map: oracle.wsm.security
    - Key: basic.credentials
    - Type: Password
    - Username: weblogic
    - Password: weblogic
    - Description: User credentials key
  - keystore-csf-key
    - Select Map: oracle.wsm.security
    - Key: keystore-csf-key
    - Type: Password
    - Username: owsm
    - Password: Enter the keystore password you created in step 3 of “Creating Keystores” (page 2-9).
    - Description: Keystore key
  - enc-csf-key
    - Select Map: oracle.wsm.security
    - Key: enc-csf-key
    - Type: Password
    - Username: orakey
    - Password: Enter the key password you created in step 3 of “Creating Keystores” (page 2-9).
    - Description: Encryption key
  - sign-csf-key
    - Select Map: oracle.wsm.security
    - Key: sign-csf-key
    - Type: Password
    - Username: orakey

- Password: Enter the key password you created in step3 of “Creating Keystores” (page 2-9).
- Description: Signing key

When you finish creating credentials, your domain should be running with at least the Administration Server and SOA Server.

## Creating the SOA Admin User and Enabling Embedded LDAP

If you are installing EGRCM with SOA, or to run with a pre-existing SOA, create a user called *soaadmin* and enable Embedded LDAP. (If you are installing EGRCM without SOA, this does not apply; skip ahead to “WebLogic Console Configuration,” page 2-11.)

1. Shut down the SOA Server. (If you are installing EGRCM with SOA, this is the managed server discussed in step 8 of “Creating a WebLogic Domain,” page 2-4. If you are installing EGRCM to run with a pre-existing SOA instance, this is the SOA server created for that instance.)
2. Log in to the WebLogic Server Administration Console at  
`http://host:port/console`  
 In this URL, replace *host* with the FQDN of your GRC server, and *port* with the number you selected for the WebLogic Administration Server. (See step 7 of “Creating a WebLogic Domain” on page 2-4.)
3. Click on Security Realms, then myrealm. Click Users and Groups. Click New, and enter *soaadmin* in the Name field. Add a description. Accept “Default Authenticator.” Enter a password of your choice in the Password field, and the same value in the Confirm Password field. Click Save.
4. Click on the *soaadmin* user. Click on the Groups tab, and move the value *Administrators* from Available to Chosen. Then save your settings.
5. Click on <grc\_domain>. Click the Security tab, then Embedded LDAP. Enter any value for Credential, and then the same value for Confirm Credential.
6. Stop and start the Administration Server.

## WebLogic Console Configuration

For any installation, use the WebLogic Server Administration Console to complete additional configuration steps:

1. Make sure you are logged in to the WebLogic Console (see step 2 of “Creating the SOA Admin User and Enabling Embedded LDAP,” above).
2. In the Change Center pane, click Lock & Edit.
3. In the Domain Structure pane, click on Deployments.
4. In the Summary of Deployments pane, select the Control tab.
5. In the Summary of Deployments pane, click on the Install button.
6. In the Path field of the Install Application Assistant pane, enter the full path to the grc864 directory you created earlier (see step 4 of “Preparing Additional Files” on page 2-5). Select “grc864 (open directory)” under Current Location.

7. In the Install Application Assistant pane, press next.
8. In the Install Application Assistant pane, choose “Install this deployment as an application” in the “Choose targeting style” section.
9. In the Install Application Assistant pane, press Next. Then:
  - If you are installing EGRCM with SOA, select the Administration Server.
  - If you are installing EGRCM to run without SOA or with a pre-existing SOA, you are not presented with an opportunity to select a server here. Skip to step 10.
10. In the Install Application Assistant pane, choose “I will make this deployment accessible from the following location” in the “Source accessibility” section. Accept all other defaults.
11. In the Install Application Assistant pane, press Next.
12. In the Install Application Assistant pane, choose “Yes, take me to the deployment’s configuration screen” in the “Additional configuration” section.
13. In the Install Application Assistant pane, press Finish.
14. In the Install Application Assistant pane, press Save, then Activate Changes. On the Deployments screen, the state of the grc864 application will be “Prepared.”
15. Select the grc864 application. Click Start, select “Servicing all requests,” and wait until the application status changes to “Active.”

## Modifying Settings

Next, modify settings in a file called `setDomainEnv.sh`, which is located in the `<MW_HOME>/user_projects/domains/<grc_domain>/bin` directory.

1. Stop the SOA Server (if you are installing EGRCM with SOA) and the Administration Server.
2. Navigate to `setDomainEnv.sh` and open it in a text editor.
3. In the file, locate `JAVA_OPTIONS` and edit it to include the following:

```
-Djbo.ampool.maxpoolsize=600000
```

4. In the file, also locate the following lines:

```
# IF USER_MEM_ARGS the environment variable is set, use it
to override ALL MEM_ARGS values
```

```
if [ "${USER_MEM_ARGS}" != "" ] ; then
```

Insert the following line between those two lines:

```
USER_MEM_ARGS="-Xms4096m -Xmx16384m -XX:PermSize=256m
-XX:MaxPermSize=512m -Djava.awt.headless=true"
```

You may use a maximum memory setting (`-Xmx`) larger than 16384m if your server has enough memory to support the larger value.

5. Start the Administration Server and (if appropriate) SOA Server.

## EGRM Configuration

In a Manage Application Configurations page, perform GRC-specific configuration:

1. Access GRC at

`http://host:port/grc`

In this URL, replace *host* with the FQDN of your GRC server. Enter the port number you chose for the Administration Server as you created a WebLogic domain. (See step 7 of “Creating a WebLogic Domain” on page 2-4.)

2. The Manage Application Configurations page appears with a Properties tab selected. In the Installation Configuration section, type or select appropriate property values:

- User Name: Supply the user name for the GRC database.
- Password: Supply the password for the GRC database.
- Confirm Password: Re-enter the password for the GRC database.
- Port Number: Supply the port number at which the GRC database server communicates with other applications.
- Service Identifier: Supply the service identifier (SID) for the GRC database server, as configured in the `tnsnames.ora` file.
- Server Name: Supply the FQDN of the database server.
- Maximum DB Connections: The recommended value is 50.
- Report Repository Path: Supply the full path to the Report Repository directory discussed in “Creating a Report Repository” on page 2-2.
- Log Threshold: Select a value that sets the level of detail in log-file entries. From least to greatest detail, valid entries are *error*, *warn*, *info*, and *debug*.
- App Server Library Path: Enter the full path to the library subdirectory of your web application server.

3. In the Language Preferences section on the Properties tab of the Manage Application Configurations page, select the check boxes for up to twelve languages in which you want GRC to be able to display information to its users.

4. In the Manage Application Configurations page, click on Actions → Save. GRC tests the values you’ve entered and, if they are valid, saves them. (If any are invalid, an error message instructs you to re-enter them.)

5. Exit the Manage Application Configurations page.

## Completing the Installation

No matter what installation you are performing, you complete the installation in effect by running your web application server. If you installed EGRM with SOA (or to run with a pre-existing SOA), or EGRM to integrate with an OID LDAP server, you need to perform additional steps.

## All Installations

With components in place and properly configured, complete these steps:

1. Shut down and then restart the Administration Server.
2. In a web browser, enter the GRC URL (see step 1 of “EGRCM Configuration,” page 2-13).
3. Wait for a pop-up message to report, “Database upgrade and initialization process complete.” Click on its OK button.
4. You are redirected to a GRC logon page. Log on to the application, using the default logon values *admin* for user ID and *admin* for password. GRC requires you to change the password the first time you log on.

## EGRCM with SOA

If you installed EGRCM with SOA, or to run with a pre-existing SOA, complete these additional steps:

1. Ensure that the SOA Server is up and running. (If you have installed EGRCM with SOA, the SOA Server is the managed server discussed in step 8 of “Creating a WebLogic Domain,” page 2-4. If you have installed EGRCM to run with a pre-existing SOA instance, this is the SOA server created for that instance.)
2. Log on to EGRCM (see step 1 of “EGRCM Configuration” on page 2-13). Select Navigator → Tools → Setup and Administration → Manage Application Configurations.
3. Select the Worklist tab and enter values. Some of these values depend on whether you’ve installed EGRCM to integrate with an OID LDAP repository to manage users (“LDAP”), or not (“No LDAP”):
  - Worklist Server User Name:
    - No LDAP: Keep the default value, *soadmin*.
    - LDAP: Enter the OID/LDAP administrative user name (see step 14 of “Configuring External OID LDAP” on page 2-7).
  - Worklist Server Password:
    - No LDAP: Enter the password you created for the soadmin user (see step 3 of “Creating the SOA Admin User and Enabling Embedded LDAP” on page 2-11).
    - LDAP: Enter the OID/LDAP administrative user password (see step 14 of “Configuring External OID LDAP” on page 2-7).
  - Worklist Server Confirm Password: Re-enter the Worklist Server Password.
  - Worklist Server URL: *http://host:port*, in which *host* is the IP address of your SOA server, and *port* is its port number.
  - Worklist Server Protocol. Select the communications protocol — either SOAP or RMI — used by EGRCM to send and receive SOA requests.
4. In the Manage Application Configurations page, click on Actions → Save. Then log off of EGRCM.

5. Stop the GRC Deployment in the WebLogic Console:
  - a. Log in to the WebLogic Console at  
`http://host:port/console`  
 Replace *host* with the FQDN of your GRC server, and *port* with the number you selected for the WebLogic Administration Server. (See step 7 of “Creating a WebLogic Domain” on page 2-4.)
  - b. From the Domain Structure menu, select Deployments.
  - c. From the Deployment page, locate the GRC deployment and verify the state is Active.
  - d. Click the checkbox next to the GRC deployment.
  - e. From the toolbar, click Stop → Force Stop Now.
6. Start the GRC Deployment in the WebLogic Console:
  - a. From the Domain Structure menu, select Deployments.
  - b. From the Deployment page, locate the GRC deployment and verify the state is Prepared.
  - c. Click the checkbox next to the GRC deployment.
  - d. From the toolbar, click Start → Servicing All Requests.

## EGRCM with OID LDAP

If you have installed EGRCM to integrate with an OID LDAP server that manages EGRCM users, complete these additional steps:

1. Log on to EGRCM (see step 1 of “EGRCM Configuration” on page 2-13).  
 Select Navigator → Tools → Setup and Administration → Manage Application Configurations.
2. Select the User Integration tab and enter the following values:
  - Enable Integration: Select this check box.
  - User Name: Enter the value you entered for “Principal” in step 7 of “Configuring External OID LDAP” (page 2-6). Include the *cn=* prefix.
  - Password: Enter the value you entered for “Credentials” in step 7 of “Configuring External OID LDAP.”
  - Confirm Password: Re-enter the Password value.
  - Port Number: Enter the value you entered for “Port” in step 7 of “Configuring External OID LDAP.”
  - Server Name: Enter the value you entered for “Host” in step 7 of “Configuring External OID LDAP.”
  - Bind DN Suffix: Enter the value you entered for “User Base DN” in step 7 of “Configuring External OID LDAP.”
  - Perform LDAP Recursive Search: Select this check box.
  - Unique User Identifier: uid
3. In the Manage Application Configurations page, click on Actions → Save.

## Upgrading EGRCM

Rather than directly install EGRCM, you can upgrade to it from EGRCM version 8.6.3.4000 or later. (Upgrade from any earlier EGRCM version is not possible.) To upgrade:

1. Back up the existing EGRCM 8.6.3.4000 deployment.
2. Delete the existing EGRCM 8.6.3.4000 deployment in WLS. This should leave the existing EGRCM schema and data intact.
3. Ensure you have upgraded version 11.1.1.4.0 middleware components to version 11.1.1.5.0.
4. Deploy EGRCM 8.6.4 in WLS. To do so, follow the steps described earlier in this chapter for a new installation. However, in the Properties and (if appropriate) Worklist tabs of the GRC Manage Application Configuration page, reuse the values that had been entered for the 8.6.3.4000 deployment.

---

## Integrating GRCI with EGRCM

If you intend to license GRCI for use with EGRCM, complete the procedures described in this chapter.

In very broad terms, the GRCI integration is a two-step process:

- You are assumed to have created a Data Analytics (DA) schema for use by GRCI (see “Creating GRC and DA Schemas,” page 1-3). Set up connections to the DA schema in an EGRCM Analytics page.
- GRCI makes use of Oracle Business Intelligence Enterprise Edition (OBIEE), so you need to set up OBIEE for use with GRC.

### Connecting to the DA Schema

The GRC schema used by EGRCM supplies data to the DA schema used by GRCI. For this to happen, you need to enter connectivity information in EGRCM.

1. Log on to EGRCM (see step 1 of “EGRCM Configuration” on page 2-13). Select Navigator → Tools → Setup and Administration → Manage Application Configurations.
2. In the Manage Application Configurations page, select the Analytics tab.
3. In the Data Analytics Configuration section, enter values that identify the DA schema you set up in “Creating GRC and DA Schemas” (page 1-3).
  - User Name: Supply the user name for the DA database.
  - Password: Supply the password for the DA database.
  - Confirm Password: Re-enter the password for the DA database.
  - Port Number: Supply the port number at which the database server communicates with other applications.
  - Service Identifier: Supply the service identifier (SID) for the database server.
  - Server Name: Supply the fully qualified domain name of the database server.

4. Select the Update Data Analytics When Analysis Is Run check box to update the data analytics schema each time evaluations take place in EGRCM. (Or, clear the check box to prevent the data analytics schema from being updated.)
5. When you finish entering property values, click on Actions → Save. GRC tests the values you've entered and, if they are valid, saves them. (If any are invalid, an error message instructs you to re-enter them.)
6. Look for the prompt, "Successfully saved configuration values." When you see it, restart the server.

When the Data Analytics schema is created, a period of approximately fifteen minutes needs to pass before it can read data from the GRC schema. This is a one-time issue.

While you are configuring DA schema connectivity values, or at any time afterward, you can set a schedule on which the DA schema is refreshed — on which the DA schema reads data from the GRC schema. To do so:

1. Select the Analytics tab of the Manage Applications Configurations page.
2. Click on the Schedule Data Analytics Update button.
3. A Schedule Parameter dialog opens. Enter values that set the name of the schedule, its start date and time, the regularity with which the DA schema should be refreshed, and an end date (if any). Then click on the Schedule button.
4. Click on Actions → Save.

## Setting Up OBIEE in GRC

Before you begin, ensure that the Administration Server and (if one was created) the managed server for your WebLogic domain are shut down. (See steps 7 and 8 on page 2-4.) Ensure that a VNC server is running, and use a VNC client of your choosing to start a VNC session.

Perform the OBIEE installation on the GRC host — the machine on which you installed EGRCM in Chapter 2.

### Prepare Files

Locate the file `grc864_obiee.zip` in your `<grc_stage>` directory (see "Downloading Files," page 2-2), and extract its contents in `<MW_HOME>` (which, as noted in Chapter 2, represents the full path to the home directory of your middleware installation). This overwrites some files under the `oracle_common` directory.

Then, in `<MW_HOME>` execute a script extracted from `grc864_obiee.zip`:

```
./grc_obiee_update.sh <MW_HOME> <HOST> <HOST_IP> <HOST_PORT>
<JAVA_HOME> <DB_HOST> <DB_PORT> <DB_NAME> <SID> <DOMAIN>
```

In addition to `<MW_HOME>`, parameters include the following:

- `<HOST>`: The fully qualified domain name for the GRC host — the machine on which you installed EGRCM in Chapter 2.
- `<HOST_IP>`: The IP address of `<HOST>`.
- `<HOST_PORT>`: the port number configured for your Administration Server (see step 7 on page 2-4.)

- `<JAVA_HOME>`: The full path to the Java deployment used for the middleware installation (the JDK instance you confirmed to be in the path to install and run WebLogic under “Initial WebLogic Installation” on page 2-3.)
- `<DB_HOST>`: The fully qualified domain name for the machine that hosts the GRC database.
- `<DB_PORT>`: The port number at which the GRC database communicates with other applications.
- `<DB_NAME>`: The fully qualified service name for the GRC database.
- `<SID>`: The service identifier for the GRC database server, as configured in the `tnsnames.ora` file.
- `<DOMAIN>`: The full path to the WebLogic domain you created for EGRCM: `<MW_HOME>/user_projects/domains/<grc_domain>` (in which `<grc_domain>` represents the WebLogic domain name; see step 2 on page 2-4.)

## Create a BI Schema

Navigate to `<RCU_HOME>/bin` (in which `<RCU_HOME>` represents the highest-level directory in which RCU components exist). Then execute the following script:

```
<MW_HOME>/rcu_createOBIEE.sh
```

As you run the script, respond to a prompt for the SYS user password. Respond also to prompts to create passwords for BIPLATFORM and MDS; for each of these, use the value `grc`.

## Copy Additional Files

Your `<grc_stage>` directory contains the file `grc-reportservices-8.6.4-SNAPSHOT-obiee.artifacts.zip`. (It was included in `grc_864.zip`; see “Downloading Files” on page 2-2). Create a temp directory, and extract the contents of `grc-reportservices-8.6.4-SNAPSHOT-obiee.artifacts.zip` into the temp directory. Then:

- Copy `temp/repository/*` to `<MW_HOME>/instances/instance1/bifoundation/OracleBIServerComponent/coreapplication_obis1/repository`.
- Copy `temp/Webcat/*` to `<MW_HOME>/instances/instance1/bifoundation/OracleBIPresentationServicesComponent/coreapplication_obips1/catalog`. Be sure to use the `-R` option of the copy command.

(When you finish these copy operations, don’t delete the temp directory; you’ll need one of its files later.)

## Extend Domain

Navigate to `<MW_HOME>/Oracle_BII/common/bin`, and run `config.sh`. As you do:

1. Select *Extend an existing WebLogic domain*.
2. Click Next.
3. Select to extend the `<MW_HOME>/user_projects/domains/<grc_domain>` directory.

4. Click Next.
5. Select *Oracle BI Enterprise Edition*.
6. Click Next.
7. Select *OWSM MDS Schema* and enter the following values:
  - Vender: Oracle
  - DBMS/Service: The fully qualified service name for the GRC database.
  - Driver: Accept the default value.
  - Host Name: The fully qualified domain name for the machine that hosts the GRC database.
  - Schema Owner: EGRCM\_MDS
  - Schema Password: grc
  - Port: The port number at which the GRC database communicates with other applications.
8. Unselect *OWSM MDS Schema* and select *EPM Schema*. Enter the following values:
  - Vender: Oracle
  - DBMS/Service: The fully qualified service name for the GRC database.
  - Driver: Accept the default value.
  - Host Name: The fully qualified domain name for the machine that hosts the GRC database.
  - Schema Owner: EGRCM\_BIPLATFORM
  - Schema Password: grc
  - Port: The port number at which the GRC database communicates with other applications.
9. Click Next.
10. If the connection tests for both schemas succeed, click Next. Otherwise, click Previous and enter correct values.
11. Select *Managed Servers, Clusters and Machines*.
12. Click Next.
13. Modify the Listen address field to the IP address of the machine on which you installed EGRCM.
14. Click Next.
15. Click Next.
16. Click Next.
17. Click Extend.
18. Click Done.

## Update More Files

Complete five procedures to update files:

First, edit the file `<MW_HOME>/user_projects/domains/<grc_domain>/config/fmwconfig/system-jazn-data.xml`:

1. Copy the contents of the file `<MW_HOME>/Oracle_BI1/AddToPolicy.txt`.
2. In `system-jazn-data.xml`, locate the `<policy-store>` and `</policy-store>` tags. Paste the copied `AddToPolicy` contents between the tags.
3. Copy the contents of the file `<MW_HOME>/Oracle_BI1/AddToJaznPolicy.txt`.
4. In `system-jazn-data.xml`, locate the `</jazn-policy>` tag at the end of the file. Paste the copied `AddToJaznPolicy` contents before the `</jazn-policy>` tag.
5. Save and exit `system-jazn-data.xml`.

Second, copy `<MW_HOME>/Oracle_BI1/cwallet.sso` to `<MW_HOME>/user_projects/domains/<grc_domain>/config/fmwconfig`.

Third, if you have not already done so, edit `boot.properties` files. (You have already edited these files if you installed EGRCM to integrate with OID LDAP; see step 14 on page 2-7. If so, use these files as you edited them earlier.)

If you have not edited these files yet, there are up to two of them, one for the GRC Administration Server and (if you use SOA) one for the SOA Server. If they do not already exist in these locations, create either the one for the Administration Server (if you do not use SOA) or both (if you use SOA):

- For the Administration Server, `<MW_HOME>/user_projects_domains/<grc_domain>/servers/AdminServer/security/boot.properties`
- For the SOA Server, `<MW_HOME>/user_projects_domains/<grc_domain>/servers/<SoaServerName>/security/boot.properties`

The same edits apply to both: Set a *username* value equal to the administrator user name for your WebLogic installation, and a *password* value equal to that user's password. (You specified these as you created a WebLogic domain; see step 3 on page 2-4.)

Fourth, replace an existing `biee-domain.xml` file with a new one:

1. Make a backup copy of `<MW_HOME>/user_projects/domains/<grc_domain>/config/fmwconfig/biee-domain.xml`.
2. Copy `<MW_HOME>/Oracle_BI1/biee-domain.xml` to `<MW_HOME>/user_projects/domains/<grc_domain>/config/fmwconfig`. This overwrites the existing `xml` file, which you backed up in step 1.

Fifth, edit an `instanceconfig.xml` file:

1. Navigate to `<MW_HOME>/instances/instance1/config/OracleBIPresentationServicesComponent/coreapplication_obips1/instanceconfig.xml`. Open the file in a text editor.
2. Insert the following immediately after the `< Security>` tag:  
`<InIFrameRenderingMode>allow</InIFrameRenderingMode>`
3. Save the file and quit it.

## Configure the WebLogic Server

Complete the following steps to perform WebLogic Server configuration:

1. Go to <MW\_HOME>/user-projects/domains/<grc\_domain>/bin.
2. Enter this command:

```
nohup ./startWebLogic.sh > wls.log &
```

3. Watch (tail -f) wls.log.
4. When the log indicates the server is in RUNNING MODE, open a browser and log in to the WebLogic Server Administration Console at

```
http://host:port/console
```

In this URL, replace *host* with the FQDN of your GRC server, and *port* with the number you selected for the WebLogic Administration Server. (See step 7 of “Creating a WebLogic Domain” on page 2-4.)

Log in with your WebLogic Administration username and password. (See step 3 on page 2-4.)

5. From the left menu, select *Security Realms*.
6. Click on *myrealm*.
7. Click on the *Users and Groups* tab on top.
8. From the left side, click on the *Lock & Edit* button.
9. Click New to create a new user. Name the user *BISystemUser*. Enter any password, but make note of it because you will need it later. Click OK to save the user.
10. Click on the user you just created, and select the Groups tab from the top.
11. Add the Administrators parent group to this user and select Save.
12. From the top breadcrumb, click on *Users and Groups*.
13. Click on the *Groups* tab.
14. Click New to create a new group. Name the group *BIAdministrators*. Click on OK to save the group.
15. Use the process described in step 14 to create two more groups, named *BIAuthors* and *BICongsumers*.
16. When all three groups are created and you are on the *Groups* tab, click on the *BIAuthors* group.
17. Click on the *Membership* tab.
18. Add the *BICongsumers* group as the parent group and select Save.
19. From the top breadcrumb, click on *Users and Groups*.
20. In a similar way, add *BIAuthors* as the parent group of *BIAdministrators*.
21. From the top breadcrumb, click on *Users and Groups*.
22. Click on the *Users* tab.

23. Click on the *weblogic* user.
24. Click on the Groups tab and add the BIAdministrators group as one of the parent groups. Click Save.
25. From the left menu click on *Services* and then *Data Sources*.
26. Click on the New button and choose *Generic Data Sources*.
27. Name the data source *bip\_datasource*. Then, for JNDI name, enter *jdbc/bip\_datasource*.
28. Click Next.
29. Click Next.
30. Click Next.
31. Enter the following values:
  - Database Name: The service identifier (SID) for the GRC database server, as configured in the tnsnames.ora file.
  - Host Name: The fully qualified domain name for the machine that hosts the GRC database.
  - Port: The port number at which the GRC database communicates with other applications.
  - Database User Name: EGRCM\_BIPLATFORM
  - Password: grc
  - Confirm Password: grc
32. Click Next.
33. Click *Test Configuration*; click Next if the test succeeds.
34. Select *bi\_cluster* as Target.
35. Click Finish.
36. From the *Change Center* on the left, click *Activate Changes*.
37. Click *Lock & Edit*.
38. Click on the New button and choose *Generic Data Sources*.
39. Name the data source *rtd\_datasource*. Then, for JNDI name, enter *jdbc/rtd\_datasource*.
40. Click Next.
41. Click Next.
42. Click Next.
43. Enter the following values:
  - Database Name: The service identifier (SID) for the GRC database server, as configured in the tnsnames.ora file.
  - Host Name: The fully qualified domain name for the machine that hosts the GRC database.

- Port: The port number at which the GRC database communicates with other applications.
  - Database User Name: EGRCM\_BIPLATFORM
  - Password: grc
  - Confirm Password: grc
44. Click Next.
  45. Click *Test Configuration*; click Next if the test succeeds.
  46. Select `bi_cluster` as Target.
  47. Click Finish.
  48. From the *Change Center* on the left, click *Activate Changes*.
  49. Navigate to `http://host:port/em`, in which (once again), *host* is the FQDN of your GRC server, and *port* is the number you selected for the WebLogic Administration Server. (See step 7 of “Creating a WebLogic Domain” on page 2-4.) Log in with your WebLogic Administration username and password. (See step 3 on page 2-4.)
  50. From the left menu, expand `Farm_<grc_domain>` → WebLogic Domain, and right click on your `<grc_domain>`.
  51. Select Security → Credentials.
  52. Expand `oracle.bi.system`.
  53. Select `system.user` and click on the Edit button.
  54. Update the password to the value you chose in step 9 (page 3-6) and click OK.

## OPMN Configuration

Complete these steps to perform OPMN configuration:

1. Go to `<MW_HOME>/user_projects/domains/<grc_domain>/bin`.
2. Enter these commands:
 

```
.stopWebLogic.sh
nohup ./startWebLogic.sh > wls.log &
```
3. Watch (`tail -f`) `wls.log`.
4. When the log indicates the server is in RUNNING MODE, press Ctrl+C. Then run:
 

```
nohup ./startManagedWebLogic.sh bi_server1
```

 Enter your WebLogic Administration username and password. (See step 3 on page 2-4.)
5. When the Managed Server is in RUNNING MODE, open another terminal window and go to `<MW_HOME>/instances/instance1/bin`.
6. Execute `opmnctl registerinstance`. When prompted, enter your WebLogic password.
7. Go to `<MW_HOME>/user_projects/domains/<grc_domain>/bin`.

8. Enter these commands:

```
./stopManagedWebLogic.sh bi_server1  
./stopWebLogic.sh
```

9. When the Administration Server has finished shutting down, run:

```
nohup ./startWebLogic.sh > wls.log &
```

10. Watch (tail -f) wls.log.

11. When the Administration Server is in RUNNING MODE, press Ctrl+C. Then run:

```
./startManagedWebLogic.sh bi_server1
```

Enter your WebLogic Administration username and password.

12. When the Managed Server is in RUNNING MODE, open another terminal window and go to <MW\_HOME>/instances/instance1/bin.

13. Enter this command:

```
./opmnctl startall
```

If all is as it should be, you will see *4 of 5 processes started*. If you don't see this status, you can further verify this by running *opmnctl status*.

## GRC Intelligence Configuration

Complete these steps to configure your GRC Intelligence instance:

1. Log on to EGRCM (see step 1 of “EGRCM Configuration” on page 2-13).
2. In the Navigation pane, select Manage Application Configurations from the Administration list of tasks.
3. In the Manage Application Configuration page, select the Analytics tab.
4. In the GRC Intelligence section, supply the following values:
  - OBIEE Server Username: The username value configured for the Weblogic Administration Server (see step 3 on page 2-4).
  - OBIEE Server Password: The password value configured for the Weblogic Administration Server (see step 3 on page 2-4).
  - OBIEE Server Port: *9704*
  - OBIEE Server Host: The fully qualified domain name for the GRC host — the machine on which you installed EGRCM in Chapter 2.
  - Root Context: *analytics*

Leave the Enable SSL Authentication check box unchecked.

5. Select Actions > Save, then exit the configuration page.

## Repository Configuration

Modify a file called GRCDiagnostic.rpd, and then use it to configure repositories. To do so, you must use a tool that runs only on a Windows-based computer.

Throughout this section (as before), *host* is the FQDN of your GRC server, and *port* is the number you selected for the WebLogic Administration Server. (See step 7 of “Creating a WebLogic Domain” on page 2-4.)

1. On a Windows machine, open an FTP client and connect to *host*. Navigate to <MW\_HOME>/instances/instance1/bifoundation/OracleBIServerComponent/coreapplication\_obis1/repository. From that directory, download the file GRCDiagnostic.rpd to your Windows machine. Then close the FTD client.
2. On the Windows machine, go to <http://www.oracle.com/technetwork/middleware/bi-enterprise-edition/downloads/bus-intelligence-11g-165436.html>. From that site, download and install Oracle Business Intelligence Developer Client Tools Installer (11.1.1.5.0).
3. When the installation is complete, ODBC Data Source Administrator opens. Press Cancel to close it (it is not needed for this procedure.)
4. Open the Oracle BI Administration Tool: From the Start menu, navigate to Oracle Business Intelligence Enterprise Edition Plus Client → Administration.
5. Navigate to File → Open → Offline. Select the GRCDiagnostic.rpd file you downloaded in step 1. Enter *Admin123* as the Repository Password.
6. Navigate to Manage → Variables.
  - Double-click on GRI\_DSN. Under Default Initializer, enter the service identifier (SID) for the database server, inside the single quotation marks. Press OK.
  - Double-click on GRI\_USER\_ID. Under Default Initializer, enter the schema name used by your DA schema, inside the single quotation marks. Press OK.
  - Close the Variable Manager.
7. In the main window under the Physical section, right-click on GRD Diagnostics and select Properties.
  - Click on the Connection Pools tab and double-click on GRCI Connection Pool.
  - Under the Shared Logon section, enter the schema password used by your GRC deployment.
  - Press OK, then press OK again.
8. Navigate to File → Save and answer No to “Do you wish to check global consistency?”
9. Exit the Oracle BI Administration Tool.
10. Still on the Windows machine, go to <http://host:port/em>. Log in to the host with your WebLogic Administration username and password. (See step 3 on page 2-4.)
11. From the left menu, expand Farm\_<grc\_domain> → Business Intelligence and double-click on *coreapplication*.
12. Select the *Deployment* tab.
13. Select the *Repository* tab.
14. Press *Lock and Edit Configuration*.

15. Press Close.
16. Under *Upload BI Server Repository*, click the Browse button and select the GRCDiagnostic.rpd that you modified in steps 2 through 8. Enter *Admin123* in both of the Repository Password and Confirm Password fields.
17. Under *BI Presentation Catalog*, enter the following as the *Catalog Location*:  
<MW\_HOME>/instances/instance1/bifoundation/OracleBIPresentationServices  
Component/coreapplication\_obips1/catalog/GRCDWebcat
18. Click on the Apply button.
19. Click on the Activate Changes button on top.
20. Click on Close after the changes are activated.
21. Press the *Restart to apply recent changes* button on top.
22. Click on the Restart button.
23. Select Yes.
24. Click on Close after the restart completes.

## Test the Installation

To test the installation, open a browser and go to <http://host:9704/analytics> (in which *host* is the FQDN of your GRC server). Log in with your WebLogic Administration username and password. (See step 3 on page 2-4.) If you can get in, the installation has been successful.



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## Deploying a VM Image of GRC

Rather than perform a conventional GRC installation, you can deploy a GRC image configured in advance by Oracle. Use Oracle VM Server to deploy the image.

The image is an instance of either EGRCM running with WebLogic. For EGRCM, the image is initially configured to run without SOA; however, a SOA instance is included, and once deployment is complete you can configure the image to use SOA worklists. All other required elements, such as operating system and database, are included in the image. The database includes both a GRC schema (which serves the application itself) and a Data Analytics schema (for use with GRCI).

### Deploying a GRC Distribution

To deploy an Oracle GRC distribution for Oracle VM Server:

1. Obtain and install Oracle VM Manager and Oracle VM Server 2.2.
2. Add the hostname of the machine hosting Oracle VM Server to the “server pool” in Oracle VM Manager.
3. Extract an Oracle GRC Distribution into the “running\_pool” directory on the Oracle VM Server. Use `gcm.tar.gz` if you want to run Enterprise Governance, Risk and Compliance Manager
4. Open the file `vm.cfg` in a text editor. (It’s located in the directory extracted from the Oracle GRC Distribution.) In it, locate the “disk” line. Edit this line to contain the path to `system.img` (which resides in the same directory as `vm.cfg`, extracted from the Oracle GRC Distribution).
5. Log in to Oracle VM Manager. On the Resources tab, select Virtual Machine Images.
6. Click on the Import button.
7. Select the second option, “Select from Server Pool (Discover and register).” Then click Next.

8. Ensure your VM is selected in a Virtual Machine Image Name drop-down field. (Your VM is stored in a subdirectory of the “running\_pool” directory, and its name is the same as the name of this subdirectory.) Then select and fill in other fields. (Note: For operating system, select Oracle Enterprise Linux 5 64-bit.) Click the Next button.
9. A confirmation page appears. Review it and (assuming values are correct) click on the Confirm button. The Virtual Machine Images entry page reappears.
10. Click on the Approve button. Another confirmation page appears. Review it and (assuming values are correct) click on the Confirm button.
11. You should now see the VM in a powered off state. Click the Power On button and enter “OS in Single User Mode.”
12. Once in Single User Mode, change the “root” user password and edit the network configurations to make the VM accessible on your network.  
  
Change the hostname and IP of the VM in the following files:  
/etc/hosts/  
/etc/resolv.conf  
/etc/sysconfig/network  
/etc/sysconfig/network-scripts/ifcfg-eth0  
  
Change the hostname and IP of the DB in the following files:  
/u01/app/oracle/product/11.2.0/db/network/admin/listener.ora  
/u01/app/oracle/product/11.2.0/db/network/admin/tnsnames.ora  
  
When all updates are completed, restart the instance.
13. Once the startup is completed, you should be able to log into the instance as the “root” user or the “oracle” user. All applications are owned by the oracle user.

## Users and Passwords

Default usernames and passwords within a GRC image include the following:

- Oracle Database: sys/manager
- Oracle Database: system/manager
- OS (root user): root/welcome
- OS (oracle user): oracle/welcome
- WebLogic Administration Server: weblogic/welcome1
- SOA (soa\_server1) Managed Server: weblogic/welcome1
- Oracle WebLogic Server Console: weblogic/welcome1
- Oracle WebLogic Server Enterprise Manager: weblogic/welcome1
- GRC Schema: grc\_user/grc\_password
- GRC Data Analytics Schema: grc\_user\_da/grc\_password

## Log File Locations

Default locations of log files within a GRC image include the following:

- Oracle Weblogic Server - AdminServer (nohup):  
/u01/app/Oracle/Middleware/user\_projects/domains/grc\_domain/bin/wls.log
- Oracle Weblogic Server - SOA (soa\_server1) Managed Server (nohup):  
/u01/app/Oracle/Middleware/user\_projects/domains/grc\_domain/bin/soa.log
- Oracle Weblogic Server - AdminServer:  
/u01/app/Oracle/Middleware/user\_projects/domains/grc\_domain/servers/AdminServer/logs
- Oracle Weblogic Server - SOA (soa\_server1) Managed Server:  
/u01/app/Oracle/Middleware/user\_projects/domains/grc\_domain/servers/soa\_server1/logs
- GRC Log:  
/u01/app/Oracle/Middleware/user\_projects/domains/grc\_domain/servers/AdminServer/stage/grc864/grc864/grc/log/grc.log

## Starting a GRC Distribution

To start an Oracle GRC distribution for Oracle VM Server:

1. Log into the instance as the oracle user.
2. Set the ORACLE\_HOME environment variable:  

```
export ORACLE_HOME=/u01/app/oracle/product/11.2.0/db
```
3. Set the ORACLE\_SID environment variable:  

```
export ORACLE_SID=orcl
```
4. Add ORACLE\_HOME/bin to the PATH:  

```
export PATH=$ORACLE_HOME/bin:$PATH
```
5. Use SqlPlus to start the Oracle database. For example:  

```
sqlplus /nolog
SQL> connect / as sysdba
SQL> startup
SQL> exit
```
6. Start the Oracle Database Listener:  

```
lsnrctl start
```
7. Set your path to the following:  
/u01/app/Oracle/Middleware/user\_projects/domains/grc\_domain/bin
8. Start the WebLogic Administration Server:  

```
nohup ./startWeblogic.sh > wls.log &
```
9. Optionally, start the WebLogic SOA Managed Server (soa\_server1).  

```
nohup ./startManagedWeblogic.sh soa_server1 > soa.log &
```

10. Verify that WebLogic and (if applicable) SOA are available by connecting to the Oracle WebLogic Server Enterprise Manager. (Replace <hostname> with the value you created in step 12 of “Deploying a GRC Distribution,” page 4-2.)  

```
http://<hostname>:7001/em
```
11. Verify that the GRC application (grc864) is available by connecting to the Oracle WebLogic Server Console. (Replace <hostname> with the value you created in step 12 of “Deploying a GRC Distribution,” page 4-2.)  

```
http://<hostname>:7001/console
```
12. Logon to the GRC application. (Replace <hostname> with the value you created in step 12 of “Deploying a GRC Distribution,” page 4-2.)  

```
http://<hostname>:7001/grc
```

## Stopping a GRC Distribution

To stop an Oracle GRC distribution for Oracle VM Server:

1. Log into the instance as the oracle user.
2. Set the ORACLE\_HOME environment variable:  

```
export ORACLE_HOME=/u01/app/oracle/product/11.2.0/db
```
3. Set the ORACLE\_SID environment variable:  

```
export ORACLE_SID=orcl
```
4. Add ORACLE\_HOME/bin to the PATH:  

```
export PATH=$ORACLE_HOME/bin:$PATH
```
5. Set your path to the following:  

```
/u01/app/Oracle/Middleware/user_projects/domains/grc_domain/  
bin
```
6. If the WebLogic SOA Managed Server (soa\_server1) is running, stop it.  

```
./stopManagedWeblogic.sh soa_server1
```
7. Stop the WebLogic Administration Server:  

```
./stopWeblogic.sh
```
8. Stop the Oracle Database Listener  

```
lsnrctl stop
```
9. Use SqlPlus to start the Oracle database. For example:  

```
sqlplus /nolog  
SQL> connect / as sysdba  
SQL> shutdown immediate  
SQL> exit
```