

Oracle® Enterprise Governance, Risk and Compliance
Installation Guide
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Oracle Enterprise 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 Enterprise 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) forms a documentary record of a company's strategy for addressing risk and complying with regulatory requirements.
- Oracle Advanced Controls enables users to create "models" and "continuous controls." Two Advanced Controls applications run from within the GRC platform:
 - In Oracle Enterprise Transaction Controls Governor (ETCG), models and controls specify circumstances under which individual transactions display evidence of error, fraud, or other risk.
 - In Oracle Application Access Controls Governor (AACG), models and controls define conflicts among duties that can be assigned in a company's applications, and identify users who have access to those conflicting duties.
AACG can also implement "preventive analysis" — it can evaluate controls as duties are assigned to users of the company's applications, preventing them from gaining risky access.
- Oracle Fusion Applications Access Controls Governor (FAACG) is a specialized installation of GRC that applies access models and controls in Oracle Fusion Applications. If you intend to run FAACG, see the most recent edition of the *Oracle Governance, Risk and Compliance Certifications Document* to determine whether version 8.6.4.7000 is certified for use with Fusion. If not, revert to the most recently certified version until version 8.6.4.7000 is ready.
- Oracle Fusion GRC Intelligence (GRCI) extracts data from GRC for display in dashboards and reports.

You can install GRC on its own, or to be integrated with an OID LDAP server that manages GRC users. (OID stands for Oracle Internet Directory; LDAP for Light-weight Directory Access Protocol.)

You can embed a GRCI instance within GRC. To use GRCI, install GRC first (see chapter 2). Then integrate GRCI with GRC (see chapter 3).

You can install GRC on a server that you maintain (a "conventional" installation), or you can use Oracle VM Server to deploy an image of GRC configured by Oracle.

Prerequisites

You can install GRC 8.6.4.7000 only as an upgrade to GRC 8.6.4.6000 (specifically, build 6169). Therefore, the first prerequisite is that you have installed GRC 8.6.4.6000.

Any GRC installation runs on a 64-bit Linux server and requires:

- An Oracle 11g Release 2 database (in which, optionally, Real Application Clusters may be enabled). In it, a GRC schema must be created. If you intend to implement GRCI, a Data Analytics (DA) schema must be created as well.
- Java — Oracle JDK 1.7 or higher, or JRockit JDK R28.2.5 for Java SE 6 with JRockit Mission Control 4.1.0 for Linux x86-64.
- Middleware — WebLogic Server 10.3.6 or Tomcat Application Server 6.0.24.

As an option, an OID LDAP server can manage GRC users.

It is assumed that you have already installed and configured these components for GRC 8.6.4.6000 (and GRC 8.6.4.5000 before it), and will reuse them for your GRC 8.6.4.7000 instance. Note, however, that if you use WebLogic, your installation may incorporate Application Development Runtime (ADR), Repository Creation Utility (RCU), or Service Oriented Architecture (SOA). You must upgrade from version 11.1.1.6 to 11.1.1.7 for any of these components that you use. If you require any information about the installation or configuration of these components for GRC, see the *Installation Guide* for GRC 8.6.4.5000.

If you implement AACG preventive analysis, a preventive enforcement agent (PEA) must be installed in each business application subject to AACG controls. Reinstall these for GRC 8.6.4.6000; see chapter 7.

On the server or a client system, either of the following web browsers can display the GRC interface: Microsoft Internet Explorer 8.x or 9.x, with the Adobe SVG plugin (available from <http://www.adobe.com/svg/viewer/install/mainframed.html>) or FireFox 17.

For details about supported components, see the *Oracle Governance, Risk and Compliance Certifications Document*.

Recording Configuration Values

Before proceeding with the installation, make a note of certain configuration values for version 8.6.4.5000, as you will need to re-enter them for version 8.6.4.6000. All these values are displayed in the GRC Manage Application Configurations page.

(Start GRC 8.6.4.5000, then select Navigator → Setup and Administration → Setup → Manage Application Configurations).

- In all cases, select a Properties tab and note values you will need to enter in a ConfigUI page during 8.6.4.6000 installation.
- If you run GRC with WebLogic and use Service Oriented Architecture (SOA), select the Worklist tab and note values entered there.
- If you have set up GRC to work with an OID LDAP repository, select a User Integration tab and note values entered there.
- If you use GRCI (see chapter 3), select an Analytics tab and note the values entered there.

Installing GRC

In broad terms, a conventional installation of GRC 8.6.4.7000 involves these steps:

1. Download files to the GRC server and prepare them for use. Ensure that two directories, for the storage of GRC report and ETL data, are ready for use.
2. Remove some files installed for GRC 8.6.4.6000.
3. Restart the WebLogic or Tomcat application server, then perform configuration steps in a GRC ConfigUI page.
4. Restart your application server to complete the installation.

No matter whether you use WebLogic or Tomcat, you will (as noted in chapter 1) reuse middleware components installed for GRC 8.6.4.6000, although in a WebLogic environment you must upgrade ADR, RCU, and SOA (if you use them) to version 11.1.1.7.

Back up your database, schema, middleware components, and report and transaction ETL repositories.

Downloading Files

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

To install GRC, download a file called `grc864_7181.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 have not embedded GRCI in your GRC 8.6.4.6000 instance, but wish to do so for 8.6.4.7000, also download files called `grc864_7181_obiee_1of3.tar.gz`, `grc864_7181_obiee_2of3.tar.gz`, and `grc864_7181_obiee_3of3.tar.gz` to `<grc_stage>`.

(To embed GRCI in GRC, your instance must run with WebLogic. If you use Tomcat, you can run GRCI only as a standalone application. You do not need the three `grc864_7181_OBIEE` files for standalone GRCI, or if you have already embedded GRCI in your GRC 8.6.4.6000 instance.)

GRCA Repositories

For your earlier versions of GRC, you should have created two “repositories” — directories that store data generated by GRC. A report repository stores copies of GRC reports that users schedule to be run. A second repository stores synchronization data used for transaction analysis.

Reuse these repositories for GRC 8.6.4.7000. Retain the contents of the transaction synchronization repository. Note the paths to the repositories, as you will need to supply them later as configuration values.

GRCA with WebLogic

If you installed GRC 8.6.4.6000 to run with WebLogic Server, complete the following steps:

1. Stop the WebLogic Administration Server and (if any exist in your installation) managed servers.
2. During installation of GRC 8.6.4.6000, a directory called `grc864` was created, typically as a subdirectory of your middleware home directory (represented in this document as `<MW_HOME>`). Delete the contents of this directory.
3. Navigate to `<grc_stage>/dist`, and locate a `grc.ear` file.
4. Extract the contents of `grc.ear` into the `grc864` directory.
5. Restart the WebLogic servers.

GRCA with Tomcat

If you installed GRC 8.6.4.6000 to run with Tomcat Application Server, complete the following steps:

1. Shut down the Tomcat application server.
2. Remove the directory `<TomcatHome>/webapps/grc` and all its contents.
3. Remove the Catalina directory from the Tomcat work area (`<TomcatHome>/work/Catalina`). Delete the contents of `<TomcatHome>/temp`. Also delete Tomcat logs, located at `<TomcatHome>/logs`. (You may want to save them to another location first.)
4. Navigate to `<TomcatHome>/webapps` and delete the `grc.war` file.
5. Navigate to `<grc_stage>/dist`. From there, run the file `grc_tomcat_setup.sh`. Supply the paths to `<grc_stage>/dist` subdirectory, `<TomcatHome>`, and the full path to your Java home as parameters:
`cmd> ./grc_tomcat_setup.sh <grc_stage>/dist <TomcatHome> JavaHomePath`
6. Start the Tomcat application server.

Installing a Driver for RAC

If your GRC database is one in which Real Application Clusters (RAC) is enabled, you need to set up a jdbc-oci driver, which is used for the connection between GRC and the RAC database. (If you do not use RAC, this section does not apply to you; skip ahead to the next section, “GRC Configuration.”)

1. Shut down your web application server (WebLogic administration server and, if installed, managed server; or Tomcat application server).
2. In a web browser, go to <http://www.oracle.com/technetwork/database/features/instant-client/index-097480.html>. Select the Instant Client link for the platform on which you are installing, then find the Basic download for 11.2.0.3.0.
3. Download and unzip the package into a single directory, such as “instantclient.”
4. Set the library loading path in your environment to this directory before starting the application. On many Linux platforms, LD_LIBRARY_PATH is the appropriate environment variable.
5. Copy the file ojdbc6.jar from the instant client to <TomcatHome>/webapps/grc/WEB-INF/lib if you installed GRC to run with Tomcat, or to grc864/grc/WEB-INF/lib if you installed GRC to run with WebLogic. (In the latter case, grc864 is the home directory for your GRC installation. See “GRC with WebLogic,” page 2-2.)
6. Restart your web application server.

GRC Configuration

Regardless of whether you use WebLogic or Tomcat, open a ConfigUI page to perform GRC-specific configuration:

1. Access GRC at

`http://host:port/grc`

In this URL, replace *host* with the fully qualified domain name (FQDN) of your GRC server. Select one of the following values for *port*:

- If you use WebLogic and have installed GRC to run FAACG, enter the port number chosen for the GRC managed server. (This was created as an element of your WebLogic domain during installation of GRC 8.6.4.5000.)
- If you use WebLogic but don’t run FAACG, enter the port number chosen for the Administration Server.
- If you use Tomcat, replace *port* with 8080 (if you accepted the default value when you installed Tomcat) or your configured value (if you changed the default during Tomcat installation).

2. A ConfigUI page appears. 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. Or, if your GRC database supports RAC, enter the RAC service name configured for your RAC database.
- Server Name: Supply the FQDN of the database server. Or, if your GRC database supports RAC, enter RAC@<SCAN_NAME>, where <SCAN_NAME> is the IP address/host name of the SCAN address configured for your RAC database.
- Maximum DB Connections: Default is 50. You can edit this value.
- Report Repository Path: Supply the full path to the Report Repository directory discussed in “GRC Repositories” 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*.
- Transaction ETL Path: Enter the full path to the directory that holds ETL data used by Enterprise Transaction Controls Governor (see “GRC Repositories” on page 2-2).
- App Server Library Path: Enter the full path to the library subdirectory of your web application server (for use in the upload of custom connectors for AACG). If you are installing GRC to run FAACG, set this value to <grc864>/grc/WEB-INF/lib.

3. In the Language Preferences section of the ConfigUI page, select check boxes for up to twelve languages in which you want GRC to be able to display information to its users. “English (U.S.)” should be selected by default; do not deselect it.
4. In the Performance Configuration section of the ConfigUI page, select or clear check boxes:
 - Optimize Distributed Operation: Select the check box to increase the speed at which GRC performs distributed operations such as data synchronization.
 - Optimize Appliance-Based Operation: Select the check box to optimize performance if the GRC application and GRC schema reside on the same machine. Do not select this check box if the GRC application and schema do not reside on the same machine. When you select this check box, an ORACLE_HOME Path field appears. In it, enter the full, absolute path to your Oracle Home — the directory in which you have installed the Oracle database that houses the GRC schema.
 - Enable Graph Synchronization Date Limit: “Data synchronization” enables GRC to recognize data changes in each business application subject to models and controls. The process works differently for AACG and ETCG. Either application recognizes “business objects,” each of which is a set of related fields from a “datasource” (business application). ETCG distinguishes among three categories of business object — Transaction (in which records are created or updated frequently), and Operational and Configuration (consisting of master-data or setup records that change infrequently).

For ETCG only, select the Enable Graph Synchronization Date Limit check box to cause the synchronization of Transaction business objects to operate only on records created or updated in datasources on or after a specified date. Older Transaction records remain as they were in the GRC database.

The setting of this check box has no effect on ETCG Operational and Configuration business objects, for which a synchronization run encompasses all records, no matter when they were created or updated. Moreover, AACG does not distinguish among business-object categories, and the setting of this check box has no effect on AACG synchronization runs.

When you select the check box, a Transactions Created As Of field appears. In it, enter the cutoff date for the synchronization of ETCG Transaction business objects. When you click in the field, a pop-up calendar appears. Click left- or right-pointing arrows to select earlier or later months (and years), and then click on a date in a selected month.

- Externalize Report Engine: Select the check box to enable the reporting engine to run in its own java process, so that the generation of large reports does not affect the performance of other functionality. However, select the check box only if you have installed GRC on hardware identified as “certified” in the *Oracle Governance, Risk and Compliance Certifications Document*; clear the check box if you use hardware identified as “supported.”
- Enable Parallel Processing: Select this check box to enable multiple models and controls to be processed simultaneously. However, this feature requires, at minimum, 16 GB of RAM; 24 GB is preferred.

When you select the Enable Parallel Processing check box, two fields appear. In a Number of Cores Available for Processing field, enter the number of processor cores you wish to devote to parallel processing; one core is devoted to each model or control selected for analysis, until as many cores as you select are in use. In a Maximum Megabytes of Physical RAM Available field, specify an amount of memory for use in parallel processing. As a rule of thumb, enter total RAM minus 8 GB; you may need to adjust this value if other processes run slowly.

- Enforce Allocated Analysis Time Per Filter: Select this check box, and enter a number in the Minutes field, to limit the time that transaction models and controls can run.

A model or control consists of filters, each of which defines some aspect of a risk and selects transactions that meet its definition. When the Allocated Analysis Time feature is enabled, each filter runs no longer than the number of minutes you specify. If time expires, the filter passes records it has selected to the next filter for analysis, but ignores records it has not yet examined. So a filter may not capture every record that meets its definition, and the model or control results are labeled “partial” in GRC job-management pages.

Once enabled here, this feature may be disabled for individual models (and for the controls developed from those models). This feature applies only to transaction models and controls, not to access models and controls, and not to EGRCM objects.

5. In the ConfigUI 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.)
6. Exit the ConfigUI page.

Completing the Installation

With components in place and properly configured, complete the installation, in effect by running your web application server.

1. Shut down your server — the Administration Server if you're using WebLogic, or the Tomcat application server if you're using Tomcat. Then restart the server.
2. In a web browser, enter the GRC URL (see step 1 of “GRC Configuration” on page 2-3).
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. You can use the *admin* user ID, with a password established for that user ID during installation of version 8.6.4.6000.

If you are installing GRC without SOA and have not set up an external OID LDAP repository to manage users, basic GRC installation is complete. (You may, however, choose to embed GRCI or complete other procedures described later.)

If you have installed GRC with SOA (or to run with a pre-existing SOA), or if you have set up an OID LDAP repository, complete some additional steps:

1. If you use SOA, ensure that the SOA Server is up and running. (This is either a managed server created as an element of your WebLogic domain during installation of GRC 8.6.4.5000, or a server created for a pre-existing SOA instance.)
2. In GRC, select Navigator → Setup and Administration → Setup → Manage Application Configurations.
3. If you need to configure SOA, select the Worklist tab and enter values you noted earlier (see “Recording Configuration Values,” page 1-2):
 - Worklist Server User Name: Keep the default value, *soaadmin*.
 - Worklist Server Password. Enter the password you created for the *soaadmin* user (during installation of GRC 8.6.4.5000).
 - 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 — SOAP or RMI — used by the GRC application to send and receive SOA requests.
4. If you need to configure external OID LDAP, select the User Integration tab and enter values you noted earlier (see “Recording Configuration Values,” page 1-2):
 - Enable Single Sign On: Select the check box to make use of Single Sign On, which establishes a single set of log-on credentials for each user in

varying applications. (Or, clear the check box if you do not wish to use Single Sign On.)

- Enable Integration: Select the check box to permit integration with LDAP to occur.
- User Name: Supply the user name (common name) to log in to the LDAP server. This user should have admin privileges.
- Password: Enter the password for the user identified in the User Name field.
- Confirm Password: Re-enter the password for the user identified in the User Name field.
- Port Number: Enter the port number at which the LDAP server communicates with other applications.
- Server Name: Enter the host name of the LDAP server.
- Bind DN Suffix: Enter the “User Base DN.”
- Enable SSL Authentication: Select the check box to allow GRC to access the LDAP server through SSL. The LDAP server must be configured to support SSL.
- Perform LDAP Recursive Search: Select the check box to search recursively for users in subfolders along with those in the base path specified in the Bind DN Suffix field.
- Unique User Identifier: uid

5. In the Manage Application Configurations page, click on Actions → Save. Then log off of GRC.
6. 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.
 - 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.
7. 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.

Integrating GRCI

If you license Oracle Fusion GRC Intelligence (GRCI) for use with GRC, you are assumed (for the purposes of this chapter) to be upgrading an instance of GRCI already installed for GRC 8.6.4.6000.

You may set up GRCI for use with GRC 8.6.4.7000 even if you did not do so for an earlier GRC version. To do so, obtain version 8.6.4.5000 of the *GRC Installation Guide* and follow its instructions for performing a complete GRCI integration. (Those instructions refer to files called `grc864_5259_obiee_1of3.tar.gz`, `grc864_5259_obiee_2of3.tar.gz`, and `grc864_5259_obiee_3of3.tar.gz`; substitute `7181` for `5259`. Also substitute the file name `grc-reportservices-8.6.4.7-SNAPSHOT-obiee-artifacts.zip` for `grc-reportservices-8.6.4.5-SNAPSHOT-obiee-artifacts.zip`.)

Preparing for the Upgrade

GRCI makes use of Oracle Business Intelligence Enterprise Edition (OBIEE), which in turn is supported by WebLogic middleware components.

- If your GRC instance runs with WebLogic, you completed an “embedded” GRCI installation for 8.6.4.6000. In this case, OBIEE and GRCI are supported by the WebLogic middleware that also supports GRC.
- If your GRC instance runs with Tomcat, you completed a “standalone” GRCI installation for 8.6.4.6000. In this case, OBIEE and GRCI are supported by WebLogic middleware that exists independently of the Tomcat components that support GRC.

As you upgrade to 8.6.4.7000, you will reuse these components. To complete the upgrade procedure, identify the following:

- `<MW_HOME>`: The complete path to the middleware home — the highest-level directory that contains WebLogic middleware components. If you run GRC with WebLogic, this is also the middleware home for your GRC instance. If you run GRC with Tomcat, this is the middleware home for the WebLogic components that exist independently of the Tomcat components that support GRC.
- If you run GRC with WebLogic, the host name and port number of the GRC server. (This is typically the WebLogic Administration server, although if you run FAACG it is a managed server. See step 1 of “GRC Configuration” on page 2-3).

- If you run GRC with Tomcat, the Oracle Enterprise Manager URL and the Business Intelligence Enterprise Edition URL; the host name and port number for the WebLogic Administration server that supports OBIEE and GRCI; the fully qualified domain name for the machine on which OBIEE is installed. (These values were set, and reported in an “Installation Completed” screen, during installation of middleware components that support standalone OBIEE and GRCI. Ideally, they were noted as your earlier GRC version was installed.)
- The service identifier (SID) and schema name for the Data Analytics (DA) database schema that supports GRCI.

Beginning the Upgrade

To begin the upgrade from GRCI 8.6.4.6000 to 8.6.4.7000:

1. Stop OBIEE components.
2. Create a temporary directory. (Throughout this document, <obiee_temp> represents the full path to this directory.)
3. Locate the file grc-reportservices-8.6.4.7-SNAPSHOT-obiee-artifacts.zip in your <grc_stage>/dist directory. Extract its contents in <obiee_temp>.
4. Back up your GRCDWebcat folder, which is a subdirectory of <MW_HOME>/instances/instance1/bifoundation/OracleBIPresentationServicesComponent/coreapplication_obips1/catalog. Rename it or move it to another folder.
5. Copy <obiee_temp>/Webcat/GRCDWebcat to <MW_HOME>/instances/instance1/bifoundation/OracleBIPresentationServicesComponent/coreapplication_obips1/catalog.

Repository Configuration

When GRCI was set up for your earlier GRC version, an OBIEE client was installed on a Windows system. Use that system to complete the following steps:

1. Using ftp, transfer <obiee_temp>/repository/GRCDiagnostic.rpd to the Windows system.
2. On the Windows system, open the Oracle BI Administration Tool: From the Start menu, navigate to Oracle Business Intelligence Enterprise Edition Plus Client → Administration.
3. Navigate to File → Open → Offline. Select the GRCDiagnostic.rpd file you transferred in step 1. Enter *Admin123* as the Repository Password.
4. Navigate to Manage → Variables.
 - Double-click on GRI_DSN. Under Default Initializer, enter the SID for the Oracle database that hosts your DA schema, inside single quotation marks. Press OK.
 - Double-click on GRI_USER_ID. Under Default Initializer, enter the schema name used by your DA schema, inside single quotation marks. Press OK.
 - Close the Variable Manager.

5. In the main window under the Physical section, right-click on GRC 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 DA schema.
 - Press OK, re-enter the schema password in the confirmation pop-up, and then press OK again.
6. Navigate to File → Save and answer No to “Do you wish to check global consistency?”
7. Exit the Oracle BI Administration Tool.

Deploying GRCDiagnostic.rpd and Updating Scheduler Credentials

Deploy the new GRCDiagnostic.rpd:

1. Start the Administration Server, BI Server, and BI components.
2. Still on the Windows machine
 - If your GRC installation uses WebLogic, go to `http://host:port/em`. Log in to the host with your WebLogic Administration username and password.
 - If your GRC installation uses Tomcat, go to your Oracle Enterprise Manager URL. Log in with your WebLogic Administration username and password.
3. From the left menu, expand Business Intelligence and double-click on “coreapplication.”
4. Select the Deployment tab.
5. Press *Lock and Edit Configuration*.
6. Select the Repository tab.
7. Under *Upload BI Server Repository*, click the Browse button and select the GRCDiagnostic.rpd that you modified and saved on your Windows machine in “Repository Configuration” (page 3-2). Enter *Admin123* in both of the Repository Password and Confirm Password fields.
8. Under *BI Presentation Catalog*, enter the following as the *Catalog Location*:
`<MW_HOME>/instances/instance1/bifoundation/OracleBIPresentationServicesComponent/coreapplication_obips1/catalog/GRCDWebcat`
9. Click on the Apply button.
10. Click on the Activate Changes button on top.
11. Click on Close after the changes are activated.
12. Press the *Restart to apply recent changes* button on top.
13. Click on the Restart button.
14. Select Yes.
15. Click on Close after the restart completes.

It is ok if all the BI system components are up and running, but there are warnings or errors.

Connecting to the DA Schema

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

1. Log on to GRC (see step 1 of “GRC Configuration” on page 2-3). Select Navigator → Tools → Setup and Administration → Setup → Manage Application Configurations → Analytics.
2. In the Data Analytics Configuration section, enter values that identify the DA schema. (These are values you noted earlier; see “Recording Configuration Values” on page 1-2.)
 - 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.
3. 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.)
4. Look for the prompt, “Successfully saved configuration values.”

After that message appears, a one-time process runs in the background. It upgrades the DA schema to version 8.6.4.7000. Do not stop your WebLogic or Tomcat server during this period.

Once you have connected to the DA schema, set a schedule on which the schema is refreshed — on which the DA schema reads from the GRC schema. No data exists in the schema until the first scheduled refresh occurs. You can modify a schedule at any time. (A refresh can take up to 90 minutes to finish.) To create the schedule:

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.

To view the status of a scheduled refresh, go to Tools → Setup and Administration → Manage Jobs. To view the Data Analytics schedule, go to Tools → Setup and Administration → Manage Scheduling.

Configuring Intelligence in GRC

Within the GRC application, you need to enter values than enable GRC to connect to OBIEE, and you need to select “dashboards” in which GRC displays reports.

1. Log on to GRC (see step 1 of “GRC Configuration” on page 2-3). Select Navigator → Tools → Setup and Administration → Setup → Manage Application Configurations → Analytics.
2. In the GRC Intelligence Configuration section, supply the following values. (Again, these are values you noted earlier; see “Recording Configuration Values” on page 1-2.)
 - OBIEE Server Username: The user name configured for the WebLogic Administration Server.
 - OBIEE Server Password: The password for the OBIEE Server Username (the password configured for the WebLogic Administration Server).
 - OBIEE Server Port: If you use WebLogic, 9704. If you use Tomcat, the port number used by the WebLogic Administration Server.
 - OBIEE Server Host: If you use WebLogic, the fully qualified domain name for the GRC host — the machine on which you installed GRC in Chapter 2. If you use Tomcat, the fully qualified domain name for the machine on which you installed OBIEE.
 - Root Context: *analytics*
3. Leave the Enable SSL Authentication check box unchecked.
4. An Intelligence Page Configuration section displays a row for each dashboard you can display for GRC. (Each is identified as a “subtab” of an Intelligence tab that appears in, or in reference to, a major GRC page, such as the home page or an overview page for an object such as risk or continuous control.)
 - To enable a dashboard, click in its field in the Enable column until a check mark appears. To disable it, click until the check mark disappears.
 - To modify the display name of a dashboard, click in its field in the Display Label column. The field becomes write-enabled; enter the name you want to use.
5. When you finish entering values, click on Action → Save. If you’ve modified settings in the GRC Intelligence Configuration section, 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.”

Testing the Installation

To test a GRC installation that uses WebLogic, 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.

To test a GRC installation that uses Tomcat, open a browser and go to your Business Intelligence Enterprise Edition URL. Log in with your WebLogic Administration username and password.

If you can get in, the installation has been successful. (If, however, the first scheduled run of the DA schema refresh has not finished, no data appears. See page 3-4.)

Deploying a VM Image of GRC

Rather than perform a conventional GRC installation, you can deploy a GRC image configured in advance by Oracle. To do so, you use a template file provided by Oracle, named `grc864_xxxx.tar.gz` (in which `xxxx` represents the precise build number of the GRC version you are deploying).

The image is an instance of GRC running with WebLogic. 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 in enhanced reporting).

Setting Up the GRC Image

To deploy an Oracle GRC image, obtain and install Oracle VM Manager 3.1.1 and Oracle VM Server 3.1.1. Place the `grc864_xxxx.tar.gz` template file on an FTP server. Also ensure that TightVNC is installed on the machine on which VM Manager is installed. (TightVNC is an open-source application that permits one computer to control another computer's screen remotely.)

Then log on to Oracle VM Manager and complete the following procedures.

Discover servers:

1. In VM Manager, select the Servers and VM tab, then click on the Discover Servers icon. A Discover Servers pop-up window opens.
2. The installation of VM Server involved the creation of a VM Agent, for which a port and a password were designated. In the appropriate fields, enter the VM Agent port and password, and the IP address of the machine on which VM Server is installed.
3. The server is detected and added under Unassigned Servers in the tree listing to the left of the screen. Click on it. In the grid to the right of the screen, select Physical Disks in the Perspectives list box, and note the name of the server's physical disk.

Create a server pool and add the server to it:

1. Still on the Servers and VM tab, click on the Create Server Pool icon.
2. A window titled Create a Server Pool opens. In its Create Server Pool panel, enter a name of your choice in the Server Pool Name field.
3. In the Virtual IP Address for the Pool field, designate an IP address that, in principle, VM Manager users to communicate with a server specified as master in the server pool. In this case, the pool includes only one server (your instance of VM Server), and you can use the IP address of the machine on which it is installed.
4. Accept default values for other fields and click the Next button. An Add Servers panel opens; in a field on the left, click on the unassigned server from the “discover servers” procedure. Then click on the > button to move it to the field on the right.
5. Click the OK button. The server pool is created and listed under Server Pools in the tree listing to the left of the Servers and VMs tab.

Create a storage repository:

1. Select the Repositories tab and click the Create New Repository icon. A window titled Create a Data Repository opens. In its Repository Information panel, enter these values:
 - In a Repository Name field, enter a name of your choice.
 - In a Repository Location field, select the Physical Disk button.
 - In the Server Pool field, select the server pool you created in the previous procedure.
 - In the Physical Disk field, select the physical disk whose name you noted in step 3 of the “discover servers” procedure.
2. Click the Next button, and a Present to Servers panel opens. In its Servers field (on the left), click on the server you added to your server pool in the previous procedure. Click the > button to move it to the Present to Servers field.
3. Click the Finish button, and the repository is created.

Create virtual network interface cards (VNICs):

1. Select the Networking tab, and then select the Virtual NICs button.
2. In a Create Virtual NICs panel, click on the Auto Fill button, and then on the Create button. VNICs are created.

Create a network:

1. Still in the Networking tab, select the Networks button.
2. In a Networks grid, select the row that displays the IP address of the machine on which VM Server is installed. Click the Edit icon.
3. An Edit Network window opens. In its Edit Network panel click the Virtual Machine checkbox, accept other default values, and click the Next button.
4. In a Select Servers panel, click on your VM Server in the Available Servers field (on the left). Click the > button to move it to the Selected Servers field (on the right). Click the Next button.

5. In a Select Ports panel, select the port for your Oracle VM Server in the Available Ports field (on the left). Click the **>** button to move it to the Selected Ports field (on the right). Click the Next button.
6. In a Select VLAN Segment panel, accept default values (“None” for both fields), and click the Next button.
7. In the Ports tab of a Configure IP addresses panel, set the IP configuration for the port you selected in step 5 — IP address, netmask, and gateway.
8. Click the Finish button.

Import the template:

1. Select the Repositories tab.
2. In the tree listing on the left of the screen, expand the storage repository you created earlier. Beneath it, click on VM Templates.
3. In the grid on the right of the screen, click the Import Template icon. An Import VM Template window opens. Enter these values:
 - In the Server field, select the your instance of VM Server.
 - In the VM Template URLs field, enter the URL for the FTP location in which you have placed the grc864_xxxx.tar.gz template file.
4. Click the OK button, and the template is imported. Note: The import may take some time.

Use the template to create a virtual machine:

1. Still in the Repositories tab, click on the row representing the imported template. Click the Edit icon.
2. An Edit VM Template window opens. Select its Networks tab.
 - Remove the default network: In the Selected Ethernet Networks field, click on the default value. Then click on the **<** button to move this value to the Available Ethernet Networks field.
 - In the Available Ethernet Networks field, click on network you created in the “create a network” procedure. Click on the **>** button to move it to the Selected Ethernet Networks field.
3. Click the OK button. The Edit VM Template window closes, and focus reverts to the Repositories tab of VM Manager.
4. Select the Servers and VMs tab. In the tree listing to the left of the screen, expand the Server Pools entry; beneath it, expand the server pool you created earlier; beneath it, select your server.
5. Click on the Create Virtual Machine icon. A Create Virtual Machine window opens. In it:
 - Select the “Clone from an existing VM Template” radio button.
 - In the Clone Count field, enter the number of VM instances you want to create.
 - In the Repository field, select the name of the repository you created earlier in the “create a storage repository” procedure.

- In the VM Template field, select the template you imported earlier in this procedure.
- In the VM Name field, create a name for the virtual machine.
- In the Serve Pool field, select the server pool field you created earlier in the “create a server pool” procedure.

6. Click the Finish button.

Assign the network and start the VM:

1. Still in the Servers and VMs tab, select Virtual Machines in the Perspectives list box. Then select the row representing your VM and click the Edit icon.
2. A window titled Edit Virtual Machine opens. Select its Networks tab. Select these values:
 - In the Unassigned VNICs field, select a VNIC from the “create virtual network interface cards” procedure.
 - In the Network field, select the network from the “create a network” procedure.
3. Click the Add VNIC button, and then click the OK button. Focus reverts to the Servers and VMs tab of VM Manager.
4. Select the row representing your VM, and click the Start icon.

Configuring the GRC Image

After deploying the GRC image, configure it. You may consider the following configuration procedures to be a continuation of the setup procedures you’ve just completed. To begin, launch the VM console:

1. Start VM Manager (if it is not already running).
2. In the Servers and VMs tab of VM Manager, select the row representing your VM and click on the Launch Console icon.
3. Log on to the machine’s Linux operating system as its root user. The username is “root” and the password is “welcome.”
4. Change the network configuration of the VM to values appropriate for your machine in the following files. Values to change include IP address, hostname, DNS server, and gateway.

/etc/hosts/
/etc/resolv.conf
/etc/sysconfig/network
/etc/sysconfig/network-scripts/ifcfg-eth0

5. Restart the VM and log on to its Linux operating system as its oracle user. The username is “oracle” and the password is “welcome.”
6. Change the hostname of the database 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

7. Start the listener and database.
8. In the /u01/app/grc/grc864/grc/WEB-INF/conf/grc.properties file, update the IP address or hostname to values appropriate for your network. Modify values in both the grc.connection.server and da.connection.server lines.

9. Update the hostname in the following files under the /u01/app/Oracle/Middleware/user_projects/domains/grc_domain/bin directory:

stopWebLogic.sh
startManagedWebLogic.sh
stopManagedWebLogic.sh

10. Start the WebLogic Administration Server.

11. Log in to the WebLogic Console at

`http://host:7001/console`

The username is “weblogic” and the password is “welcome1.”

12. From the Domain Structure menu, select Services > Messaging > Data Sources. In the Data Sources page, select the Configuration tab and update the IP address for all the datasources. Save and activate the changes.

13. Restart the WebLogic Administration Server. Launch GRC at

`http://host:7001/grc`

The username is “admin,” and “GRCv864*” is the password.

This completes the setup of Enterprise Governance, Risk and Compliance itself. Complete the following steps to configure Fusion GRC Intelligence:

1. In GRC, select Navigator → Setup and Administration → Setup → Manage Application Configurations. Click on the Analytics tab. Change the value in the OBIEE Server Host field to the IP address or hostname for your machine. Select Save from the Actions menu.
2. Log off of GRC and stop the WebLogic Administration Server.
3. Run the following commands from the middleware home — /u01/app/Oracle/Middleware. In each command, replace `$HOST_IP` with the IP address of the new host:

```
echo -e "\n#####-----GRC_HOST_IP
REPLACEMENTS-----###"
find . -iname 'opmnctl' -type f -exec sed -i
's/10.143.91.31/'"$HOST_IP"'/g' {} \; >/dev/null
find . -iname 'odbc.ini' -type f -exec sed -i
's/10.143.91.31/'"$HOST_IP"'/g' {} \; >/dev/null
find . -iname 'instanceconfig.xml' -type f -exec sed -i
's/10.143.91.31/'"$HOST_IP"'/g' {} \; >/dev/null
find . -iname 'NQSConfig.INI' -type f -exec sed -i
's/10.143.91.31/'"$HOST_IP"'/g' {} \; >/dev/null
find . -iname 'instance.properties' -type f -exec sed -i
's/10.143.91.31/'"$HOST_IP"'/g' {} \; >/dev/null
```

```

find . -iname 'ClusterConfig.xml' -type f -exec sed -i
's/10.143.91.31/""$HOST_IP""/g' {} \; >/dev/null
find . -iname 'runcat.sh' -type f -exec sed -i
's/10.143.91.31/""$HOST_IP""/g' {} \; >/dev/null
find . -iname 'bi-init.sh' -type f -exec sed -
's/10.143.91.31/""$HOST_IP""/g' {} \; >/dev/null
find . -iname 'essfoenv.properties' -type f -exec sed -i
's/10.143.91.31/""$HOST_IP""/g' {} \; >/dev/null
find . -iname 'opmn.xml' -type f -exec sed -i
's/10.143.91.31/""$HOST_IP""/g' {} \; >/dev/null
find . -iname 'security.xml' -type f -exec sed -i
's/10.143.91.31/""$HOST_IP""/g' {} \; >/dev/null
find . -iname 'epmsys_registry.sh' -type f -exec sed -i
's/10.143.91.31/""$HOST_IP""/g' {} \; >/dev/null
find . -iname 'system-jazn-data.xml' -type f -exec sed -i
's/10.143.91.31/""$HOST_IP""/g' {} \; >/dev/null
find . -iname 'biee-domain.xml' -type f -exec sed -i
's/10.143.91.31/""$HOST_IP""/g' {} \; >/dev/null

```

4. Run the following commands from the middleware home. In each command, replace *\$HOST_PORT* with the port number of the new host:

```

echo -e "\n#####-----GRC_HOST_PORT
REPLACEMENTS-----#####"
find . -iname 'opmnctl' -type f -exec sed -i
's/7001/""$HOST_PORT""/g' {} \; >/dev/null
find . -iname 'odbc.ini' -type f -exec sed -i
's/7001/""$HOST_PORT""/g' {} \; >/dev/null
find . -iname 'instanceconfig.xml' -type f -exec sed -i
's/7001/""$HOST_PORT""/g' {} \; >/dev/null
find . -iname 'NQSConfig.INI' -type f -exec sed -i
's/7001/""$HOST_PORT""/g' {} \; >/dev/null
find . -iname 'instance.properties' -type f -exec sed -i
's/7001/""$HOST_PORT""/g' {} \; >/dev/null
find . -iname 'ClusterConfig.xml' -type f -exec sed -i
's/7001/""$HOST_PORT""/g' {} \; >/dev/null
find . -iname 'runcat.sh' -type f -exec sed -i
's/7001/""$HOST_PORT""/g' {} \; >/dev/null
find . -iname 'bi-init.sh' -type f -exec sed -i
's/7001/""$HOST_PORT""/g' {} \; >/dev/null
find . -iname 'essfoenv.properties' -type f -exec sed -i
's/7001/""$HOST_PORT""/g' {} \; >/dev/null
find . -iname 'opmn.xml' -type f -exec sed -i
's/7001/""$HOST_PORT""/g' {} \; >/dev/null
find . -iname 'security.xml' -type f -exec sed -i
's/7001/""$HOST_PORT""/g' {} \; >/dev/null

```

```
find . -iname 'epmsys_registry.sh' -type f -exec sed -i  
's/7001/"$HOST_PORT"/g' {} \; >/dev/null
```

```
find . -iname 'system-jazn-data.xml' -type f -exec sed -i  
's/7001/"$HOST_PORT"/g' {} \; >/dev/null
```

```
find . -iname 'biee-domain.xml' -type f -exec sed -i  
's/7001/"$HOST_PORT"/g' {} \; >/dev/null
```

5. Run the following commands from the middleware home. In each command, replace *\$HOST* with the fully qualified domain name of the new host:

```
echo -e "\n#####-----GRC_HOST  
REPLACEMENTS-----#####"
```

```
find . -iname 'opmnctl' -type f -exec sed -i 's/rome-  
whq.us.oracle.com/"$HOST"/g' {} \; >/dev/null
```

```
find . -iname 'odbc.ini' -type f -exec sed -i 's/rome-  
whq.us.oracle.com/"$HOST"/g' {} \; >/dev/null
```

```
find . -iname 'instanceconfig.xml' -type f -exec sed -i  
's/rome-whq.us.oracle.com/"$HOST"/g' {} \; >/dev/null
```

```
find . -iname 'NQSConfig.INI' -type f -exec sed -i 's/rome-  
whq.us.oracle.com/"$HOST"/g' {} \; >/dev/null
```

```
find . -iname 'instance.properties' -type f -exec sed -i  
's/rome-whq.us.oracle.com/"$HOST"/g' {} \; >/dev/null
```

```
find . -iname 'ClusterConfig.xml' -type f -exec sed -i  
's/rome-whq.us.oracle.com/"$HOST"/g' {} \; >/dev/null
```

```
find . -iname 'runcat.sh' -type f -exec sed -i 's/rome-  
whq.us.oracle.com/"$HOST"/g' {} \; >/dev/null
```

```
find . -iname 'bi-init.sh' -type f -exec sed -i 's/rome-  
whq.us.oracle.com/"$HOST"/g' {} \; >/dev/null
```

```
find . -iname 'essfoenv.properties' -type f -exec sed -i  
's/rome-whq.us.oracle.com/"$HOST"/g' {} \; >/dev/null
```

```
find . -iname 'opmn.xml' -type f -exec sed -i 's/rome-  
whq.us.oracle.com/"$HOST"/g' {} \; >/dev/null
```

```
find . -iname 'security.xml' -type f -exec sed -i 's/rome-  
whq.us.oracle.com/"$HOST"/g' {} \; >/dev/null
```

```
find . -iname 'epmsys_registry.sh' -type f -exec sed -i  
's/rome-whq.us.oracle.com/"$HOST"/g' {} \; >/dev/null
```

```
find . -iname 'system-jazn-data.xml' -type f -exec sed -i  
's/rome-whq.us.oracle.com/"$HOST"/g' {} \; >/dev/null
```

```
find . -iname 'biee-domain.xml' -type f -exec sed -i  
's/rome-whq.us.oracle.com/"$HOST"/g' {} \; >/dev/null
```

6. Run the following commands from the middleware home. In each command, replace *\$DB_HOST* with the fully qualified domain name of the new host:

```
echo -e "\n#####-----DATABASE  
REPLACEMENTS-----#####"
```

```
find . -iname 'tnsnames.ora' -type f -exec sed -i 's/rome-  
whq.us.oracle.com/"$DB_HOST"/g' {} \; >/dev/null
```

```

find . -iname 'rcu_createOBIEE.sh' -type f -exec sed -i
's/rome-whq.us.oracle.com/'"$DB_HOST "'/g' {} \; >/dev/null
find . -iname 'rcu_dropOBIEE.sh' -type f -exec sed -i
's/rome-whq.us.oracle.com/'"$DB_HOST "'/g' {} \; >/dev/null
find . -iname 'instanceconfig.xml' -type f -exec sed -i
's/rome-whq.us.oracle.com/'"$DB_HOST "'/g' {} \; >/dev/null
find . -iname 'biee-domain.xml' -type f -exec sed -i
's/rome-whq.us.oracle.com/'"$DB_HOST "'/g' {} \; >/dev/null
find . -iname 'reg.properties' -type f -exec sed -i
's/rome-whq.us.oracle.com/'"$DB_HOST "'/g' {} \; >/dev/null

```

7. Start the WebLogic Administration Server, bi_server1, and opmn:

```

/u01/app/Oracle/Middleware/user_projects/domains/grc_domain
/bin
./startWebLogic.sh

/u01/app/Oracle/Middleware/user_projects/domains/grc_domain
/bin
./startManagedWebLogic.sh bi_server1

/u01/app/Oracle/Middleware/instances/instance1/bin
./opmnctl startall

```

8. Launch OBIEE at

<http://host:9704/analytics>

The username is “weblogic,” and “welcome1” is the password.

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: admin/GRCv864*
- 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/Admin Server/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/Admin Server/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). This step applies to EGRCM only.

```
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.

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

11. Verify that the GRC application (grc863) is available by connecting to the Oracle WebLogic Server Console.

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

12. Logon to the GRC application.

```
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. This step applies to EGRCM only.

```
./stopManagedWeblogic.sh soa_server1
```

7. Stop the WebLogic Administration Server:

```
./stopWeblogic.sh
```

8. Stop the Oracle Database Listener

```
lsnrctl stop
```

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

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

Additional Advanced Controls Configuration

Once you've installed GRC, complete additional configuration procedures as needed if you intend to use AACG or ETCG:

- Define information with which GRC creates "global users." Business applications subject to AACG models and controls may have user-account information that varies from one application to the next. GRC maps each person's business-application IDs to a global-user ID. You can determine what information GRC uses to do so.

However, version 8.6.4.7000 inherits the global-user definition from 8.6.4.6000. If you are satisfied with your configuration for the earlier version, you need not redefine it for version 8.6.4.7000.

- Set up datasources — connections to business applications in which GRC is to perform analysis. However, version 8.6.4.7000 inherits datasources configured for version 8.6.4.6000. For version 8.6.4.7000, you need to set up only new datasources.
- Synchronize data from every datasource, even those inherited from version 8.6.4.6000. (To synchronize data is to collect information required for AACG or ETCG analysis, and provide that information a format that GRC recognizes.)
- Evaluate all transaction models inherited from version 8.6.4.6000. (See the *Enterprise Transaction Controls Governor User Guide* for information on running transaction models.)

Configuring Global Users

Implement one of the following options to determine the information GRC uses to create global users. Important: Select an option that identifies each person uniquely.

- EMAIL_ONLY: Match the global user to email addresses from distinct datasources (or within one datasource). This is the default.
- EMAIL_AND_USERNAME: Match the global user to email address plus username from distinct datasources (or within one datasource). This option is required if you are implementing FAACG.
- EMAIL_AND_ALL_NAMES: Match the global user to email address, username, given name, and surname from distinct datasources (or within one datasource).

As regular procedures, GRC users synchronize data and analyze controls to produce “incidents” (records of control violations). If no data has been synchronized and if no controls have been analyzed on either your 8.6.4.5000, 8.6.4.6000, or 8.6.4.7000 instance, complete the following three steps to change a global-user configuration:

1. Use SQL*Plus, or any other tool with the ability to execute SQL commands on a database, to connect to the GRC schema.
2. Run the following SQL statement:

```
DELETE FROM GRC_PROPERTIES
WHERE NAME like 'GLOBAL_USER_CONFIG';
COMMIT;
```

3. Run *one* of the following SQL statements, depending on the global-user format you want to implement:

For email and username, run the following statement:

```
Insert into GRC_PROPERTIES (NAME, VALUE, DESCRIPTION, DEFAULT_VALUE,
VISIBLE, CONFIGURABLE, DATA_TYPE_ID)Values ('GLOBAL_USER_CONFIG',
'EMAIL_AND_USERNAME', 'Global User configuration. Possible values:
EMAIL_ONLY, EMAIL_AND_USERNAME, EMAIL_AND_ALL_NAMES', 'EMAIL_ONLY',
0, 0, 0);

COMMIT;
```

For email, username, given name, and surname, run the following statement:

```
Insert into GRC_PROPERTIES (NAME, VALUE, DESCRIPTION, DEFAULT_VALUE,
VISIBLE, CONFIGURABLE, DATA_TYPE_ID) Values ('GLOBAL_USER_CONFIG',
'EMAIL_AND_ALL_NAMES', 'Global User configuration. Possible values:
EMAIL_ONLY, EMAIL_AND_USERNAME, EMAIL_AND_ALL_NAMES', 'EMAIL_ONLY',
0, 0, 0);

COMMIT;
```

For email only, run the following statement. (As already noted, email-only is the default configuration. Run this statement only if you have changed your global-user configuration to one of the other formats, and want to change back.)

```
Insert into GRC_PROPERTIES (NAME, VALUE, DESCRIPTION, DEFAULT_VALUE,
VISIBLE, CONFIGURABLE, DATA_TYPE_ID) Values ('GLOBAL_USER_CONFIG',
'EMAIL_ONLY', 'Global User configuration. Possible values: EMAIL ONLY,
EMAIL_AND_USERNAME, EMAIL_AND_ALL_NAMES', 'EMAIL_ONLY', 0, 0, 0);

COMMIT;
```

A second possibility is that data has been synchronized, but controls have not been analyzed, on your 8.6.4.5000, 8.6.4.6000, or 8.6.4.7000 instance. If so, changing your global-user configuration wipes out all existing global-user data.

1. Complete the steps outlined above for the first global-user-configuration scenario (in which data synchronization and control analysis have not occurred).
2. Still logged on to your SQL tool, also run the following SQL statement:

```
TRUNCATE TABLE GRC_SRC_USER_MAPPING;
TRUNCATE TABLE GRC_GLOBAL_USER;
COMMIT;
```

A third possibility is that data has been synchronized, controls have been analyzed, and incidents have been generated on your 8.6.4.5000, 8.6.4.6000, or 8.6.4.7000 GRC instance. In this case, when you change your global-user configuration, all existing incidents become invalid, and all existing global-user data is wiped out.

1. Log on to GRC (see page 2-3). Select Setup and Administration under Tools in the Navigator, then Manage Application Configurations under Setup. Select the Maintenance tab, and from the Maintenance page, purge *all* existing incidents. (For detailed instructions on purging incidents, see the *Governance, Risk and Compliance User Guide*.)
2. Still logged on to GRC, go to the Manage Results page. (Select Manage Incident Results from the Result Management tasks available under Continuous Control Management in the Navigator.) Select Incident Result in the View By list box, and confirm that no incidents exist.
3. Log off of GRC and shut down the application server.
4. Complete the steps outlined above for the first global-user-configuration scenario (in which data synchronization and control analysis have not occurred).
5. While logged on to your SQL tool, also run the following SQL statement:

```
TRUNCATE TABLE GRC_SUM_CTRL_INC;
TRUNCATE TABLE GRC_SRC_USER_MAPPING;
TRUNCATE TABLE GRC_GLOBAL_USER;
COMMIT;
```

6. Clear the contents of your Transaction ETL Path folder. (This folder is specified as GRC properties are set. See page 2-4).

Configuring Datasources and Synchronizing Data

Connect GRC to datasources (instances of business-management applications that are to be subject to its analysis). Also synchronize data for each datasource — collect information required for AACG or ETCG analysis.

Synchronization and Global Users

The order in which you synchronize access data from datasources determines how GRC creates global-user IDs: It adopts the ID configured for each user in the first datasource to be synchronized. When data from a second datasource is synchronized, GRC matches users who also exist in the first datasource to their already-existing global-user IDs; for each user who did not exist in the first datasource, GRC adopts the user ID from the second datasource as the user's global ID. And so on.

AACG pages display the global user ID for each business-application user. You may prefer to set IDs from a particular datasource as the global user IDs.

However, during an upgrade, GRC inherits the global-user IDs existing on the earlier version. For version 8.6.4.7000, global-user IDs are initially the same as they were for version 8.6.4.6000.

If you modify the global-user configuration (see the previous section), existing global IDs are wiped out. In that case, or as you add new datasources, consider the following:

Configure all datasources in which you expect to apply AACG models and controls before you synchronize data for any of them. Next, choose a datasource from which you want GRC to adopt IDs as global user IDs, and synchronize that datasource first. Establish an order for the remaining datasources, each of which sets global IDs for users who do not exist in the datasources for which synchronization has already been completed. Then synchronize the remaining datasources in that order.

To configure datasources or to synchronize their data, log on to GRC (see page 2-3). Select Setup and Administration under Tools in the Navigator, then Manage Application Datasources under Setup.

A Special Case Involving Tomcat and SQL Server

If your GRC instance runs with Tomcat Application Server, and if you connect to a Microsoft SQL Server datasource, you need to install a JDBC driver before you synchronize data for that datasource. (However, if you've already completed this procedure for your earlier GRC version you need not repeat it.) On the GRC server:

1. Download the UNIX version of the JDBC driver — sqljdbc_*.tar.gz — from <http://msdn.microsoft.com/en-us/data/aa937724.aspx>.
2. From the download file, extract the JDBC driver for SQL Server 2005 and newer — sqljdbc4.jar. (A SQL Server 2000 driver is also included in the download file, but is not supported by GRC.)
3. Copy the sqljdbc4.jar file to <TomcatHome>/webapps/grc/WEB-INF/lib.
4. Restart Tomcat.

How to Configure Datasources

To configure a datasource, complete these steps. Remember, however, that datasources configured for version 8.6.4.6000 are inherited by 8.6.4.7000, and you need not reconfigure them. (To set up a Fusion datasource, see page 6-2.)

1. Click on Actions → Create New. A Create Datasource window opens. Enter the following values:
 - Datasource Name: Create a name for the datasource.
 - Description: Type a brief description of the datasource (optional).
 - Application Type: Select the type of business application to which you are connecting, such as EBS or PeopleSoft.
 - Application Type Version: Select the version number of the business-management application to which you are connecting.
 - Default Datasource: Select the checkbox to make the datasource you are configuring the default for use in transaction models. Only one datasource can have this value selected.
 - Connector Type: For an Oracle EBS or PeopleSoft datasource, select Default. For any other application, you would need to have created and uploaded a custom connector; select it.

- Connector Properties: Enter values required for the connector you specified in Connector Type. Values vary by connector. They may include:
 - ERP Database Type: Select the type of database — Oracle, MS SQL Server, or DB2 — used by the business-management application being configured as a datasource.
 - Hostname: supply the fully qualified domain name (FQDN) for the machine that hosts the database used by the business-management application. Or, if the datasource is RAC-enabled, enter RAC@<SCAN_NAME>, where <SCAN_NAME> is the IP address/host name configured for the RAC database.
 - Password: Enter the password for the business-application database.
 - Port: Enter the port number that the business-application database users to communicate with other applications.
 - Service Name: Supply the SID value configured for the business-application database in the tnsnames.ora file. Or, if the datasource is RAC-enabled, enter the RAC service name configured for the RAC database.
 - Username: Supply the user name for the business-application database. (For an Oracle database, this is the same as Schema Name; for an Oracle EBS instance, this is typically APPS.)
 - Password: Supply the password that authenticates the user name for the business-application database.

2. After entering values, click on the Test Connection button.
3. When the test completes successfully, click the Save or Save and Close button. A row representing the datasource appears in the Manage Application Datasources grid.

How to Synchronize Data

To synchronize data, complete these steps. As you upgrade, you must synchronize data from every datasource, even those inherited from version 8.6.4.6000.

1. In the Manage Application Datasources page, select the row for the datasource with which you want to synchronize data.
2. Do either of the following:
 - Click on Actions → Synchronize Transaction. This causes data for business objects used in existing ETCG models and controls to be synchronized once, immediately. (Before you can synchronize transaction data, at least one transaction model must exist.)
 - Click on Actions → Synchronize Access. This causes all data used by AACG to be synchronized once, immediately. (You can synchronize access data even if no access models or controls exist.) Because you are upgrading from an earlier version, you must run access synchronization for each datasource.

(You may also select another option, Actions → Schedule Synchronize, to establish a schedule on which data synchronization occurs regularly. For more on this, see the *Governance, Risk and Compliance User Guide*.)

Each time a datasource is synchronized, GRC updates fields in the row for that datasource: Last Access Synchronization Date and Last Access Synchronization Status show the date of the most recent access synchronization, and its completion status. Last Transaction Synchronization Date and Last Transaction Synchronization Status do the same for the most recent transaction synchronization.

An ordinary synchronization run is incremental — it creates or updates only records that are new or have changed since the previous synchronization. (An ETCG synchronization also takes a “Graph Synchronization Date” into account; see page 2-4.) For an ETCG datasource, you can instead “rebuild the graph” — delete all data for a given datasource and replace it with a complete set of current data. This typically takes longer than an ordinary synchronization, and it potentially has a significant effect on existing incidents, model results, and worklists. As a result, a graph rebuild should not be performed frequently. To rebuild the graph, select the row for a datasource, select Actions > Rebuild Graph, and click the OK button in a confirmation message that appears.

Determining Datasource IDs

When you configure a datasource, GRC assigns an ID number to it. If you intend to implement preventive analysis for an Oracle EBS or PeopleSoft datasource, you need to know its datasource ID. To determine the number, configure the datasource, then complete the following steps:

1. In the Manage Application Datasources page, right-click on the header row in the grid that displays configured datasources.
2. A list of available columns appears. In it, select the check box for the Datasource ID column (click on it so that a check mark appears).
3. Left-click anywhere outside of the list of columns to close it.
4. The Manage Application Datasources page now displays a Datasource ID column. In it, note the ID number assigned to the datasource you've configured.

If, having determined the datasource IDs for your datasources, you wish to remove the Datasource ID column from view, repeat this procedure but clear the Datasource ID check box (click on it so that the check mark disappears).

6

Setting Up FAACG

If you have installed GRC so that you can use AACG to perform segregation-of-duties analysis in Oracle Fusion Applications, complete the procedures in this chapter. (If not, then this chapter does not apply to you.)

As prerequisites, Fusion Human Capital Management (HCM) and Oracle Identity Management (OIM) must be installed, through the Fusion Applications provisioning process. In conjunction with this, Oracle Internet Directory (OID) must be set up as the LDAP repository whose identity store is managed by OIM. In addition, you must have installed GRC to run with WebLogic (see chapter 2 of this document).

Then, to set up Fusion Application Access Controls Governor (FAACG), change the GRC “global user” configuration to EMAIL_AND_USERNAME (see page 5-1). Then install a “connector” within your GRC instance. (The connector collects data from a Fusion instance and provides it in a format that GRC recognizes.) Finally, use Fusion Setup Manager to perform GRC setup.

Installing the Connector

To install a connector, you use a Manage Application Libraries page available in GRC. It is assumed that you have already completed preliminary steps during installation of your earlier GRC instance — associating the GRC domain with OID, creating an OIDAuthenticator, and granting permission to the GRC code base. You need not repeat these steps for GRC 8.6.4.7000. (For detailed information about these steps, see the *Installation Guide* for GRC 8.6.4.5000.)

The Fusion connector is provided in a file called grc-connector-fusion-8.6.4.7-SNAPSHOT-connectorsetup.zip. To upload it to GRC:

1. Log on to GRC. In a web browser, enter the following URL, in which *host* is the FQDN of your GRC server, and *port* is the number you chose for the GRC managed server as you created a WebLogic domain.
`http://host:port/grc`
2. In the Navigator, select Setup and Administration → Setup → Manage Application Libraries. Click the Connectors tab.
3. Click on Actions → Import.
4. A Import File pop-up window opens. Click on its Browse button.

5. A file-upload dialog opens. In it, navigate to, and select, `grc-connector-fusion-8.6.4.7-SNAPSHOT-connectorsetup.zip`, which is among the files in `<grc_stage>` directory (see “[Downloading Files](#)” on page 2-1). The path and name of the file then populate the field next to the **Browse** button in the Import File window.
6. Click on the **Upload File** button. A pop-up message reports the status of the upload operation. Click on its **OK** button to clear it, and then click on the **Close** button in the Import File window.
7. Log off of GRC and restart both the Administration Server and the GRC managed server. (Before doing so, be sure that the file `tika-app-0.9.jar` does not exist in the library subdirectory of your web application server).

Create and Synchronize a Datasource

Having uploaded the connector, you will need to configure a datasource that associates your Fusion instance with the connector:

1. Log on to GRC once again.
2. Navigator → Setup and Administration → Setup → Manage Application Datasources.
3. Click on Actions → Create New. A Create Datasource window opens. Enter the following values:
 - Datasource Name: Create a name for the datasource.
 - Description: Type a brief description of the datasource (optional).
 - Application Type: Select the type of business application to which you are connecting — in this case, Fusion.
 - Application Type Version: Select the version number of the Fusion instance to which you are connecting.
 - Default Datasource: Clear this check box.
 - Connector Type: For Fusion, select the Fusion connector you installed prior to working in this Manage Application Datasources page; the correct value is *FusionConnector*.
4. Click the Save or Save and Close button. A row representing the datasource appears in the Manage Application Datasources grid.

Finally, perform a data synchronization. In the Manage Application Datasources page, select the row you’ve just created for the Fusion datasource. Then either click on Actions → Synchronize Access, or click on the Synchronize button in the tool bar, then on a Run Now option, and then on an Access option.

Performing GRC Setup in Fusion Setup Manager

Once the Fusion connector is installed, create an implementation project for GRC in Fusion Setup Manager (FSM).

It’s assumed you are familiar with use of the Fusion Setup Manager, and with terms such as *offerings*, *activities*, *tasks*, and *tasklists*. If not, see the *Oracle Fusion Application Installation Guide* and the *Fusion Setup Manager Administrator’s Guide*.

Portlet Registration

Begin by ensuring that GRC is registered successfully in FSM. With FSM open, select Manage Portlet Registration under Implementations in the Tasks list (along the left of the interface). If the Manage Portlet Registration page does not show that GRC is registered, search for the “GRC Setup” Enterprise-Application and perform the portlet registration. Refer to the *FSM Administrator’s Guide* for instruction on how to perform portlet registration.

Configure Offerings

Because seeded offerings are not GRC-enabled by default, use a Configure Offerings page to enable GRC for the desired offering.

1. Open the page: Select Configure Offerings under Implementations in the Tasks list.
2. Click on the Select Feature Choices icon for the selected offering. For example, selecting the icon for the Customer Data Management offering displays a screen in which Governance, Risk and Compliance is listed.
3. Select the Governance, Risk and Compliance entry — click on it so that a check mark appears in its check box.
4. Click Save and Close.

Implementation Project

To display a GRC-Setup screen within FSM, create one or more implementation projects. You can base a project on the offerings enabled for GRC, or you can directly add GRC-Setup tasks (and tasklists). In either case, expanding a node will display a “Go to Task” icon for the selected task within the node, and clicking on it will render the GRC-Setup screen.

Create a GRC Setup Master Record

When you select a Go-to-Task icon, a Manage Setup Configurations screen enables you to create new GRC setup records or to search for, update, or delete existing records. Click the Create New icon to open a Configuration screen, in which you can create or register a new GRC Setup configuration master record.

In this page, supply the following values:

- Code: A code that uniquely identifies the master record being created, for example GRC_HCM.
- Name: Short name to describe the code, for example “GRC Setup Data for Human Capital Management.”
- Description: Full description, for example, “This is the master record to define GRC Setup data to enforce separation of duties mandate for HCM.”

Click the Save and Continue button to save the date prior to creating detail records. (Clicking on Save and Close returns you to the Manage Setup Configurations screen.)

Create a GRC Setup Detail Record

In the Configuration (master-record) screen, locate the Configuration Details panel and click on its Create New icon. A Configuration Details screen opens, in which you can create detail records for the master record.

In this page, enter the following values:

- Detail Name: Code that uniquely identifies the detail record being created.
- Name: Short name to describe the code.
- Description: Full description.
- Status: Nonmandatory field to specify the status of the detail record. It typically contains Active or Inactive.
- Services URL: `http://host:port/grc/Services/GrcService`, in which *host* is the FQDN of your GRC server, and *port* is the number you chose for the Administration Server as a WebLogic domain was created during GRC 8.6.4.5000 installation.
- User Name: The user name for a user granted the Admin role defined in the GRC UI.
- Password: The password for the user granted the Admin role.
- Confirm Password: The same password, entered for verification.
- GRC Data Source: The name of the datasource configured under “Create and Synchronize a Datasource” on page 6-2.

Click on Save and Close to return to the Configuration screen.

Publish Configuration

When detail records are complete, they must be published to Oracle Identity Management. From the Configuration (master-record) screen, select (click on) a detail record in the Configuration Details panel. Then select the Publish to OIM icon (it looks like an arrow pointing upwards).

A Publish Configuration to OIM pop-up window opens. In it, enter these values:

- Protocol: The protocol used for communication with the OIM managed server. Either https or t3s is recommended, but you may use any protocol the OIM managed server accepts.
- OIM Hostname: The name of the host of the OIM managed server.
- Port Number: The port of the OIM managed server.
- OIM User Name: The name of the user with admin role on the OIM managed server. (This user must be able to invoke MBean operations.)
- OIM Password: The password of the OIM user.

Installing PEAs

In support of the AACG preventive analysis feature, install a Preventive Enforcement Agent (PEA) on each instance of Oracle E-Business Suite or PeopleSoft that is to be subject to AACG analysis.

There are distinct PEAs (and installation procedures) for EBS and PeopleSoft. See the *Oracle Enterprise Governance, Risk and Compliance Certifications Document* for supported versions of Oracle EBS and PeopleSoft. Even if you have installed a PEA for an earlier version of GRC, reinstall it for version 8.6.4.7000.

PEAs and SSL

If you set up your earlier GRC versions to support Secure Sockets Layer (SSL), the 8.6.4.7000 installation inherited that setup. In that case only, you can install a PEA (on Oracle EBS or PeopleSoft) so that it supports Secure Sockets Layer (SSL). In the instance on which you are installing a PEA, run the following command (if you have not already done for an earlier version of GRC):

```
keytool -import -alias <host name> -file <certificate file>  
-keystore <name of truststore>
```

In this command:

- Replace <host name> with the host name of the GRC server.
- Replace <certificate file> with the SSL certificate file from the GRC server.
- Replace <name of truststore> with the name of a truststore on the EBS or PeopleSoft server. Supply the name of an existing truststore, or supply an unused name to create a new truststore.

As you run this command, you are prompted to supply a password for an existing truststore, or to create a password for a new one. Move the file created by the keytool command to the \$ORACLE_HOME directory for the EBS or PeopleSoft server database.

Installing the Oracle PEA

On each EBS instance for which you want to enable preventive analysis, you must install version 7.3.3 of Preventive Controls Governor (PCG) before installing version 8.6.4.7000 of the PEA.

Keep the following in mind:

- You can install GRC 8.6.4.7000 on its server without first having installed PCG on any EBS instance. If so, however, AACG would not be able to apply preventive analysis to Oracle EBS instances. You can implement preventive analysis subsequently; to do so, you would first install PCG, then the PEA, on each EBS instance for which you want to enable preventive analysis.
- Even after preventive analysis is enabled, you may choose to reinstall PCG on an EBS instance. If so, you must also reinstall the PEA on that instance.
- A single instance of GRC can connect to multiple EBS instances (once PEAs are installed on those instances). However, a given EBS instance cannot connect to multiple GRC instances.

There are both an automated PEA installer and a manual PEA installation process. If the Oracle EBS concurrent manager server and forms server reside on the same instance, attempt automated installation first, as it's simpler. If not, or if the automated installer fails, use the manual process. In either case, first complete some preliminary steps that apply to both automated and manual installations.

Preliminary Steps

If you run your Oracle EBS instance in the Linux operating system, you must set a display option. To do so, execute the following command:

```
export DISPLAY=localhost:1.0
```

As you install the PEA, you must supply the username and password of a GRC user. It's recommended that you create a user called *wsclient*, and specify that user during PEA installation. For information on creating users, see the *Enterprise Governance, Risk, and Compliance User Guide* for version 8.6.4.7000.

When you configure an Oracle EBS instance as a datasource, GRC generates a datasource ID number. You must supply that number as you install the PEA. Thus sequence matters: Install GRC on its server and configure each EBS instance as a datasource (see page 5-3) before you install the PEA on any EBS instance.

In the Oracle EBS instance on which you are installing the PEA, navigate to the custom application TOP (conventionally called *XXLAAPPS_TOP*) created on the Preventive Controls Governor forms server. Execute a directory listing to determine if it has a subdirectory named *mesg*. If not, create the subdirectory:

```
mkdir mesg
```

Downloading and Preparing Files

Create a staging directory on the server that supports Oracle E-Business Suite. When this directory is created, complete the following steps:

1. In <grc_stage> (see page 2-1), locate *grc-peainstallation-8.6.4.7-SNAPSHOT-ebs-package.zip*. Extract its contents. This should produce subdirectories called *db*, *fndload*, *Forms*, and *lib*, each of which contains files. Also, files called *grc-peainstallation-8.6.4.7-SNAPSHOT.jar*, *install.properties*, and *pea.properties* reside in the staging directory.

2. To perform the automated installation, use a text editor to open and edit the `install.properties` file. (For a manual installation, this step is unnecessary.) Provide values for the following properties:
 - `APPS_USER_NAME = APPS`
Supply the username for the database schema that supports your Oracle EBS instance. Typically, this value is `APPS`.
 - `APPS_PASSWORD = apps_schema_password`
Supply the password for the Oracle EBS database schema identified in the previous property.
 - `XXLAAPPS_USER_NAME = XXLAAPPS`
Supply the username for the database schema that supports PCG, installed on your Oracle EBS instance. Typically, this value is `XXLAAPPS`.
 - `XXLAAPPS_PASSWORD = XXLAAPPS_password`
Supply the password for the PCG database schema identified in the previous property.
 - `HOST = hostname`
Supply the host name for the Oracle EBS database server.
 - `PORT = number`
Supply the port number at which the Oracle EBS database server communicates with other applications.
 - `SID = service_identifier`
Supply the service identifier (SID) for the Oracle EBS database server.
 - `FREQUENCY = 30`
Supply a number that sets the interval, in minutes, at which two PEA concurrent programs are to run. GRCC User Provisioning Poll handles the approval or rejection of preventive analysis requests in the Oracle EBS instance. GRCC User Provisioning Request Recovery transmits stored requests to GRC when communications with the EBS instance have been interrupted, then restored. The recommended value for both programs is 30.
3. Execute the environment file, if it is not included in the profile. Run this command:
 . `$APPL_TOP/$APPLFENV`

Automated Installation

Once you have downloaded files and prepared them, execute the following steps to complete an automated installation:

1. Navigate to your staging directory.
2. Run the installation file. Execute the following command:

```
java -jar grc-peainstallation-8.6.4.7-SNAPSHOT.jar -ebs
```

The installation program prompts for property values required by the PEA:

- Enter GRCC user name
If you created a wsclient user on your GRC instance, supply the value *wsclient* here. If not, supply the user name configured for any GRC user.
- Enter GRCC password
Enter the password for the user identified in the previous property.
- Enter GRCC server name
Supply the fully qualified server name of the server on which GRC is installed. To verify, ping the GRC server from the server where the PEA is being installed.
- Enter GRCC port number
Supply the port number at which the GRC server communicates with other applications.
- Enter GRCC web services URL
This property specifies the URL of the webservice where the GRC instance is installed. This URL should be */grc/services/GrcService/*.
- Enter GRCC web services timeout
Enter a timeout, in seconds, for communication with the Oracle EBS server. The default value is 60.
- Enter datasource ID
Supply the datasource ID assigned by GRC to the Oracle EBS instance in which you are installing the PEA. (This value is available in the GRC Manage Application Datasources page; see “Determining Datasource IDs,” page 5-6).

3. After you enter the datasource ID, the installation program presents the prompt, “Connect to GRC server using SSL? (Yes/No).”

- If you select No, PEA installation proceeds without support for SSL.
- If you select Yes, the installation program prompts for an SSL truststore name and an SSL truststore password. Enter the values you created as you ran the keytool command (see “PEAs and SSL” on page 7-1).

4. When the file finishes running, review its log file: In the staging directory, use a text editor to open the file *debugInstall.log*. It notes status for several installation stages (Status of Packages, Status of Concurrent Programs, Status of Load Java, and Status of Forms), as well as for overall installation.

- If the status for each is *Success*, PEA is installed. Ignore the manual installation procedure.
- Otherwise, the *debugInstall.log* file lists errors that have occurred at each stage. Either resolve the errors and retry the automated installation process, or complete the manual installation process (see the next section).

Manual Installation

If your Oracle EBS concurrent manager server and forms server reside on separate instances, or if the automated PEA installation has failed, execute a manual installation instead. Once you have downloaded files and prepared them, complete the following sections.

Forms Installation

First, install forms. The PEA uses forms in twelve languages, for which you will need to know language codes as you perform the installation. These codes include:

D	German	KO	Korean
DK	Danish	NL	Dutch
E	Spanish	PTB	Brazilian Portuguese
F	French	US	American English
I	Italian	ZHS	Simplified Chinese
JA	Japanese	ZHT	Traditional Chinese

Complete the following steps:

1. Navigate to your staging directory.
2. Execute the following command to execute the package (PKS).

(Here and in subsequent steps, *appsSchemaName* and *appsSchemaPassword* are the user name and password for the database schema used by Oracle E-Business Suite.)

```
sqlplus appsSchemaName/appsSchemaPassword
@db/grcc_provdb_pkg.pks
```

3. Execute the following command to execute the package body (PKB).

```
sqlplus appsSchemaName/appsSchemaPassword
@db/grcc_provdb_pkg.pkb
```

4. To set the environment variable, execute one of the following commands, once for each language. As you do, replace the placeholder *CODE* with the appropriate language code (see above).

If you use Oracle E-Business Suite Release 12:

```
export FORMS_PATH=$FORMS_PATH:$AU_TOP/forms/CODE
```

If you use an earlier version of Oracle EBS:

```
export FORMS60_PATH=$FORMS60_PATH:$AU_TOP/forms/CODE
```

5. Execute one of the following commands to compile the library:

For Oracle E-Business Suite Release 12:

```
frmcmp_batch module=Forms/GRCC_PROV.p11 module_type=library
userid=appsSchemaName/appsSchemaPassword
```

For earlier versions of Oracle EBS:

```
f60gen module=Forms/GRCC_PROV.p11 module_type=library
userid=appsSchemaName/appsSchemaPassword
```

6. Execute the following command to copy the compiled library.

```
cp Forms/GRCC_PROV.* $AU_TOP/resource
```
7. To compile the forms, execute one of the following commands, once for each language. Again, as you do, replace the placeholder *CODE* with the appropriate language code (see page 7-5):

For Oracle EBS Release 12:

```
frmcmp_batch module=Forms/CODE/LAASCAUS.fmb  
userid=appsSchemaName/appsSchemaPassword
```

For earlier versions of Oracle EBS:

```
f60gen module=Forms/CODE/LAASCAUS.fmb  
userid=appsSchemaName/appsSchemaPassword
```

8. To back up the compiled forms, execute the following command, once for each language. Again, as you do, replace the placeholder *CODE* with the appropriate language code (see page 7-5):

```
cp $XXLAAPPS_TOP/forms/CODE/LAASCAUS.fmx  
$XXLAAPPS_TOP/forms/CODE/LAASCAUS.fmx.orig
```

(If you followed recommendations as you installed Preventive Controls Governor, you selected XXLAAPPS as the application short name, and the environment variable shown in this command — \$XXLAAPPS_TOP — is correct. If you chose another application short name as you installed Preventive Controls Governor, make sure the environment variable in this command and the next reflects the application short name you created.)

9. To copy the compiled form, execute the following command once for each language. Again, as you do, replace the placeholder *CODE* with the appropriate language code (see page 7-5):

```
cp Forms/LAASCAUS.fmx $XXLAAPPS_TOP/forms/CODE/LAASCAUS.fmx
```

Concurrent Programs Installation

Change to your staging directory and, from it, run the following commands to set up concurrent programs that support preventive analysis. In these commands:

- *appsSchemaName* and *appsSchemaPassword* are the user name and password for the database schema used by Oracle E-Business Suite.
- *XXLAAPPSUserName* is the user name for the database schema that supports Preventive Controls Governor. This value is case-sensitive.
- *frequency* is a number setting the interval, in minutes, between scheduled runs of concurrent programs (see the description of the FREQUENCY option on page 7-3).

Execute the following command to run the User Provisioning Poll concurrent program:

```
sqlplus appsSchemaName/appsSchemaPassword  
@db/grcexecutable.sql XXLAAPPSUserName frequency
```

Execute the following command to run the User Provisioning Request Recovery concurrent program:

```
sqlplus appsSchemaName/appsSchemaPassword  
@db/grcexecrecover.sql XXLAAPPSUserName frequency
```

Once this initial setup is complete, execute the following command once for each of the eleven supported languages, so that concurrent-program messages, parameter names, and descriptions are available in each language. As before:

- Replace the placeholder *CODE* with the appropriate language code (see page 7-5).
- *appsSchemaName* and *appsSchemaPassword* are the user name and password for the database schema used by Oracle E-Business Suite.
- *stagedir* is the path to the staging directory in which you copied and extracted PEA files.

```
FNDLOAD appsSchemaName/appsSchemaPassword 0 Y UPLOAD
$FND_TOP/patch/115/import/afcpprog.lct stagedir/fndload/CODE/
AACG_CONCURRENT_PROGRAMS.ldt
```

Load Java

Complete the following steps:

1. Set the DB environment of APPS (the Oracle EBS database) and execute the installation program, specifying a “manual” argument:

```
Java -jar grc-peainstallation-8.6.4.6-SNAPSHOT.jar -ebs
-manual
```

This prepares the pea.properties file to be loaded into the database (as specified in step 5).

2. Execute the following commands. These commands should not error out:

```
dropjava
loadjava
```

3. Execute the following commands. In steps 3–5, *appsUserName* and *appsPassword* are the user name and password for the Oracle E-Business Suite database.

```
dropjava -user appsUserName/appsPassword -verbose -resolve
-genmissing lib/grcc-encryption-8.6.4.5-SNAPSHOT.jar
dropjava -user appsUserName/appsPassword -verbose -resolve
-genmissing lib/grcc-peacommon-8.6.4.5-SNAPSHOT.jar
dropjava -user appsUserName/appsPassword -verbose -resolve
-genmissing lib/grcc-peaefs-8.6.4.5-SNAPSHOT.jar
dropjava -user appsUserName/appsPassword -verbose -resolve
-genmissing lib/grcc-encryption-8.6.4.6-SNAPSHOT.jar
dropjava -user appsUserName/appsPassword -verbose -resolve
-genmissing lib/grcc-peacommon-8.6.4.6-SNAPSHOT.jar
dropjava -user appsUserName/appsPassword -verbose -resolve
-genmissing lib/grcc-peaefs-8.6.4.6-SNAPSHOT.jar
dropjava -user appsUserName/appsPassword -verbose -resolve
-genmissing aacg.properties
dropjava -user appsUserName/appsPassword -verbose -resolve
-genmissing pea.properties
```

4. Execute the following commands to load the pea jar into the database.

```
loadjava -user appsUserName/appsPassword -verbose -resolve
lib/grc-encryption-8.6.4.7-SNAPSHOT.jar
loadjava -user appsUserName/appsPassword -verbose -resolve
lib/grc-peacommon-8.6.4.7-SNAPSHOT.jar
```

```
loadjava -user appsUserName/appsPassword -verbose -resolve  
lib/grc-peaeks-8.6.4.7-SNAPSHOT.jar
```

5. Execute the following commands to load the modified pea.properties file into the database:

```
loadjava -user appsUserName/appsPassword -verbose -resolve  
grcc.properties  
loadjava -user appsUserName/appsPassword -verbose -resolve  
pea.properties
```

Postinstallation Steps

Regardless of whether you used the automated or manual installation process, run the Generate Messages concurrent program once for each language.

1. Log in to Oracle E-Business Suite as any user with the Application Developer responsibility.
2. Select the Application Developer responsibility, and select the Requests: Run option in the Application Developer Navigator.
3. The Submit a New Request window appears. In it, select Single Request and click on the OK button.
4. The Submit Request window appears. In its Name field, query for Generate Messages. (Press the F11 key; type the value *Generate Messages* in the Name field; press Ctrl+F11.)
5. A Parameter window appears. In it, enter the following:
 - Language: With each run of the concurrent program, enter one of the language codes shown on page 7-5.
 - Application: GRC Controls Custom
 - Mode: DB_TO_RUNTIMEClick on the OK button.
6. In the Submit Request window, click on the Submit button.
7. A pop-up window informs you of an ID number for the concurrent request. Make a note of the number, and then click on the OK button to close the message.
8. Optionally, verify that the request has been completed successfully:
 - a. Click on View in the menu bar, then on Requests in the View menu.
 - b. A Find Requests form opens. In it, click on the Specific Request radio button. Type the ID number of your concurrent request in the Request ID field, and click on the Find button.
 - c. A Requests form opens. In the row displaying information about your request, ensure that the entry in the Phase field is *Completed* (you may need to click on the Refresh Data button), and the entry in the Status field is *Normal*.
 - d. Close the Request form: Click on the × symbol in its upper right corner.

Installing the PeopleSoft PEA

You can install GRC 8.6.4.7000 on its server without installing the PEA on PeopleSoft instances. If so, however, AACG would not be able to apply preventive analysis to PeopleSoft instances. To implement preventive analysis subsequently, install the PEA on each PeopleSoft instance for which you want to enable preventive analysis. (For PeopleSoft instances, there is no requirement to install an application comparable to Preventive Controls Governor, which is necessary in Oracle EBS instances.)

As you install the PEA, you must supply the username and password of a GRC user. It's recommended that you create a user called *wsclient*, and specify that user during PEA installation. For information on creating GRC users, see the *Enterprise Governance, Risk and Compliance User Guide* for version 8.6.4.7000.

When you configure a PeopleSoft instance as a datasource, GRC generates a data-source ID. You must supply that number as you install the PEA. Thus sequence matters: Install GRC on its server and configure each PeopleSoft instance as a data-source (see page 5-3) before you install the PEA on any PeopleSoft instance.

Downloading and Preparing Files

Create a staging directory on the server that supports a PeopleSoft Financials or HR instance. When this directory is created, complete the following steps:

1. In <grc_stage> (see page 2-1), locate *grc-peainstallation-8.6.4.7-SNAPSHOT-ps-package.zip*. Copy it to the staging directory, and extract its contents into that directory.

The extraction should produce subdirectories of the staging directory called *lib*, *GRCC_AGENT_86_PS_FIN90*, and *GRCC_AGENT_86_PS_HR90*, each of which contains files. Also, files called *grc-peainstallation-8.6.4.6-SNAPSHOT.jar*, *pea.properties*, and *log4j.properties* reside in the staging directory.

2. Execute the installation program to update the *pea.properties* file:

```
java -jar grc-peainstallation-8.6.4.7-SNAPSHOT.jar -psft
```

The installation program prompts for property values required by the PEA:

- Enter GRCC user name
If you created a *wsclient* user on your GRC instance, supply the value *wsclient* here. If not, supply the user name configured for any GRC user.
- Enter GRCC password
Enter the password for the user identified in the previous property.
- Enter GRCC server name
Supply the fully qualified server name of the server on which GRC is installed. To verify, ping the GRC server from the server where the PEA is being installed.
- Enter GRCC port number
Supply the port number at which the GRC server communicates with other applications.

- Enter GRCC web services URL
This property specifies the URL of the webservice where the GRC instance is installed. This URL should be `/grc/services/GrcService/`.
- Enter GRCC web services timeout
Enter a timeout, in seconds, for communication with the Oracle EBS server. The default value is 60.
- Enter datasource ID
Supply the datasource ID assigned by GRC to the PeopleSoft instance in which you are installing the PEA. (This value is available in the GRC Manage Application Datasources page; see “Determining Datasource IDs,” page 5-6).
- Enter PeopleSoft SID
Supply the service identifier (SID) for the PeopleSoft database server.
- Enter PeopleSoft port:
Supply the number for the port at which the PeopleSoft database server communicates with other applications.
- Enter PeopleSoft FQDN
Supply the fully qualified domain name of the PeopleSoft database server.
- Enter PeopleSoft user name
Supply the user name for the PeopleSoft database schema.
- Enter PeopleSoft user password
Supply the password configured for the username identified in the previous property.
- Enable PeopleSoft PEA? (y/n)
Enter the value *y* to enable the PEA, or the value *n* to disable the PEA.
- Enter log4j properties location
Specify the path to a directory in which the log4j.properties file will reside — *PS_HOME/appserv/classes/log4j.properties*, in which *PS_HOME* represents the full path to the highest level directory in which PeopleSoft components are installed.
(In step 5, you’ll edit a copy of this file that’s located in your staging directory. During installation, the file will be copied from the staging directory to a place where it can be used, and this property tells where it should be copied.)
- Enter PEA log location
Set the path an name of a log file that records information about communications between PeopleSoft and GRC. The path is *PS_HOME/appserv/APP/LOGS/grcc-peapsclient.log*, in which *PS_HOME* represents the full path to the highest level directory in which PeopleSoft components are installed, and *APP* is replaced by FIN or HR, depending on whether the PEA is being install on an instance of PeopleSoft Financials or Human Resources.

- Enter interval for PEA poller
Set a time interval, in minutes, at which an “GRCC poller” may be scheduled to run. The poller updates role assignments for PeopleSoft when the assignments have been resolved in the GRC Manage Access Approvals page. In the Roles panel of the PeopleSoft User Profiles page, a user may select a link labeled “Schedule GRCC Poller”; if so, the poller runs at intervals defined by this parameter.

3. The installation program presents the prompt, “Connect to GRC server using SSL? (Yes/No).”
 - If you select No, PEA installation proceeds without support for SSL.
 - If you select Yes, the installation program prompts for an SSL truststore name and an SSL truststore password. Enter the values you created as you ran the keytool command (see “PEAs and SSL” on page 7-1).
4. The installation program generates a temporary folder in the staging directory; it contains grcc-peaps-864.jar for installation of PEA on PeopleSoft.
5. In the staging directory, use a text editor to open and edit the log4j.properties file. Set the following property:

```
log4j.appenders.File = PS_HOME/appserv/APP/LOGS/grcc-peapsagent.log
```

In this value, replace *PS_HOME* with the full path to the highest level directory in which PeopleSoft components are installed, and *APP* with *FIN* or *HR*, depending on whether the PEA is being install on an instance of PeopleSoft Financials or Human Resources.

Do not modify the values of other properties in the log4j.properties file.

Installing the PEA

Once you have downloaded files and prepared them, execute the following steps:

1. Stop the PeopleSoft application server.
To do so, use the psadmin utility: To start it, execute the command *PS_HOME/appserv/psadmin*. In either case, replace *PS_HOME* with the full path to the highest-level directory in which PeopleSoft components are installed. If necessary, see PeopleSoft documentation for information on using the psadmin utility.
2. From the *PS_HOME/appserv/classes* directory, remove any jar files that start with “grcc,” “ag,” or “aacg.”
3. Copy the following files from the *lib* subdirectory of your staging directory to the *PS_HOME/appserv/classes* directory:

```
grcc-peacommon-8.6.4.7-SNAPSHOT.jar
grcc-encryption-8.6.4.7-SNAPSHOT.jar
commons-logging-1.1.jar
log4j-1.2.14.jar
ojdbc14-10.2.0.3.jar
```

4. Copy the following file from the your staging directory to the *PS_HOME/appserv/classes* directory:
`grc-peaps-8.6.4.7-SNAPSHOT.jar`
5. Copy the *log4j.properties* file from your staging directory to the directory you specified for it in the “Enter log4j properties location” property when you ran the *grc-peaps-8.6.4.7-SNAPSHOT.jar* file.
6. Use the *psadmin* utility to restart the PeopleSoft application server. (See step 1 for information on running the *psadmin* utility.)

Importing a Project

To complete the PEA installation, import a PeopleTools project:

1. Open the PeopleTools Application Designer. Log in as a user who has the PeopleSoft administrator role.
2. Navigate to Tools > Copy Project > From File...
3. A Copy From File dialog opens. In a field labeled “Look in:” navigate to your staging directory. This causes subdirectories of the staging directory to appear in the large, unlabeled field below the “Look in:” field, and the names *GRCC_AGENT_86_PS_FIN90* and *GRCC_AGENT_86_PS_HR90* to appear in the a field labeled “Select Project from the List Below.” A Select button also becomes active.
4. For PeopleSoft 9.0 or 9.1 Financials, select *GRCC_AGENT_86_PS_FIN90* in the “Select Project” field, and click on the Select button. For PeopleSoft 9.0 or 9.1 HR, select *GRCC_AGENT_86_PS_HR90* in the “Select Project” field, and click on the Select button.
5. When the Copy from File dialog appears, click on the Copy button. After the Progress dialog disappears, confirm that application objects appear in the Application Designer project window and click on the Save All icon or File > Save All.

It's important to follow instructions in the *PeopleSoft Application Import/Update Installation Guide* when you apply an application import/update project to your database. Failure to do so could corrupt your database and cause you to lose customizations that you have made to your database.