Installation Guide
Oracle Enterprise Manager Grid Control 11g on RHEL 5.5 x86-32

This document contains a step-by-step guide on how to install Oracle Enterprise Manager Grid Control. It starts with Installation of RHEL, Weblogic Server, Repository Database and finally the Enterprise Manager Installation itself. The installation takes around 60-120 minutes and can be accomplished on a system with 2 GB RAM.

For production systems, I recommend 8 GB of memory and at least 4 CPU Cores.

1) Installation RHEL OS 5.5 default software packages

Install RHEL (or CentOS for testing purposes). Do not modify the package list, just take the default packages.

2) Upgrade with yum

After OS installation, upgrade to the latest patches.

   yum upgrade

3) OS requirements

The next step is to install the necessary RHEL packages, which are required for Weblogic / Oracle RDBMS / Oracle Enterprise Manager.

It is easiest with yum:

   yum install binutils compat-libstdc++ elfutils-libelf glibc-2.5-12 glibc-2.5-24 ksh libaio libgcc libstdc++ make elfutils-libelf-devel elfutils-libelf-devel-static kernel-headers glibc-headers glibc-devel libstdc++-devel libgomp gcc gcc-c++ libaio-devel sysstat unixODBC unixODBC-devel rng-utils setarch compat-db pdksh compat-libstdc++-33 compat-libstdc++-296 lsof strace wget system-config-lvm

4) Installation Oracle WebLogic Server 11gR1 (10.3.2)

We continue with the installation of WebLogic Server 11gR1 (i.e. 10.3.2) It can be downloaded from OTN. Before installing, we create OS users and group.
groupadd dba
useradd -g dba -G oinstall oraoem
mkdir /u01/app/oraoem/Middleware
chown -R oraoem:dba /u01/app/oraoem/Middleware
./wls1032_linux32.bin
Register for Security Updates

Provide your email address to be informed of security issues, install the product, and initiate configuration manager. [http://www.oracle.com/support/policies.html](http://www.oracle.com/support/policies.html)

Email: 

Easier for you if you use your My Oracle Support email address/username.

- [ ] I wish to receive security updates via My Oracle Support

My Oracle Support Password: 

Choose Install Type

Select the type of installation you wish to perform.

- [ ] Typical
  - Install the following product(s) and component(s):
    - WebLogic Server

- [ ] Custom
  - Choose software products and components to install and perform optional configuration.
You can either deselect "Run Quickstart" or cancel it. We don’t need that step.

5) Install Repository Database 11gR2

We proceed with the installation of the Repository Oracle Database 11gR2. (11.2.0.1)
Additionally, we patch the database to the most current recommended patches.

The following requirements are necessary:

```
/etc/sysctl.conf:

  kernel.shmni = 4096
  kernel.sem = 250 32000 100 128
  fs.file-max = 6815744
  fs.aio-max-nr = 1048576
  net.ipv4.ip_local_port_range = 9000 65500
  net.core.rmem_defaul = 262144
  net.core.rmem_max = 4194304
  net.core.wmem_defaul = 262144
  net.core.wmem_max = 1048576
```
/etc/security/limits.conf:
ora11gr2 soft nproc 2047
ora11gr2 hard nproc 16384
ora11gr2 soft nofile 1024
ora11gr2 hard nofile 65536

oraoem soft nproc 2047
oraoem hard nproc 16384
oraoem soft nofile 1024
oraoem hard nofile 65536

/etc/profile:
if [ $USER = "ora11gr2" ]; then
  if [ $SHELL = "/bin/ksh" ]; then
    ulimit -u 16384
    ulimit -n 65536
  else
    ulimit -u 16384 -n 65536
  fi
fi

if [ $USER = "oraoem" ]; then
  if [ $SHELL = "/bin/ksh" ]; then
    ulimit -u 16384
    ulimit -n 65536
  else
    ulimit -u 16384 -n 65536
  fi
fi

useradd -g dba ora11gr2
mkdir -p /u01/app/ora11gr2
chown -R ora11gr2:dba /u01/app/ora11gr2
unzip linux_11gR2_database_1of2.zip
unzip linux_11gR2_database_2of2.zip
export ORACLE_BASE=/u01/app/ora11gr2
./runInstaller
At this point, we are installing Oracle Binaries only, without creating a database.
Select Database Edition

Which database edition do you want to install?

- **Enterprise Edition (3.95GB)**
  Oracle Database 11g Enterprise Edition is a self-managing database that has the scalability, performance, high availability, and security features required to run the most demanding, mission-critical applications.

- **Standard Edition (3.88GB)**
  Oracle Database 11g Standard Edition is ideal for work groups, departments, and small to medium-sized businesses looking for lower-cost solutions.

Choose Components

- Oracle Partitioning
- Oracle OLAP
- Oracle Label Security
- **Oracle Data Mining ROBOTS files**
- Oracle Database Vault option
- Oracle Real Application Testing

Specify Installation Location

Specify an Oracle base path to place all Oracle software and configuration-related files. This location is the Oracle base directory.

**Oracle Base:** /u01/app/oracle11g

Specify a location for storing Oracle software files. This location is the Oracle home directory.

**Software Location:** /u01/app/oracle11g2/product/11.2.0
Create Inventory

You are starting your first installation on this host. Specify a directory for installation files. This directory is called the "inventory directory." The installer automatically sets up subdirectories for each product to contain inventory data. The subdirectory for each product typically requires 150 kilobytes of disk space.

Inventory Directory: /u01/app/ora/inventory

Specify an operating system group whose members have write permission to the inventory directory (or/installed):

oraInventory Group Name: dbs

Privileged Operating System Groups

SYSDBA and SYSDBA privileges are required to create a database using operating system (OS) authentication. Membership in OSDBA grants the SYSDBA privilege, and membership in OSOPER grants the SYSUSER privilege, which is a subset of SYSDBA privileges. Select the name of the OSDBA group to grant the SYSDBA privilege. You must be a member of this group.

Database Administrator (OSDBA) Group: dbs

Database Operator (OSOPER) Group: dbs
Perform Prerequisite Checks

Some of the minimum requirements for installation are not completed. Review and fix the issues listed in the following table, and recheck the system.

<table>
<thead>
<tr>
<th>Checks</th>
<th>Status</th>
<th>Flexible</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Memory</td>
<td>Ignored</td>
<td></td>
</tr>
<tr>
<td>Swap Size</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This is a prerequisite condition to test whether the system has at least 2GB (2046576.0KB) of total physical memory.

**Expected Value:** 2GB (2046576.0KB)

**Actual Value:** 3018.85MB (3033108.8KB)

Execute Configuration Scripts

The following configuration scripts need to be executed as the "root" user.

Scripts to be executed:

<table>
<thead>
<tr>
<th>No.</th>
<th>Script Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>/u01/app/orainventory/crainstRoot.sh</td>
</tr>
<tr>
<td>2</td>
<td>/u01/app/orainstgr/product/11.2.0/root.sh</td>
</tr>
</tbody>
</table>

To execute the configuration scripts:

1. Open a terminal window
2. Log in as "root"
3. Run the scripts
4. Return to this window and click "OK" to continue
Installation of RDBMS patches:

I recommend to download and install these patches:

OPatch p6880880_112000_LINUX.zip
p6880880_112000_LINUX.zip
p9165206_112010_LINUX.zip
p9352237_112010_LINUX.zip
6) DBCA Repository Database

Now, we are ready to create the EMREP database.

Welcome to Database Configuration Assistant for Oracle database.

The Database Configuration Assistant enables you to create a database, configure database options in an existing database, delete a database, and manage database templates.

Select the operation that you want to perform:

- Create a Database
- Configure Database Options
- Delete a Database
- Manage Templates

ASM configuration operations must be performed using Automatic Storage Management Configuration Assistant (ASMCA) from Oracle Grid Infrastructure home.
Templates that include datafiles contain pre-created databases. They allow you to create a new database in minutes, as opposed to an hour or more. Use templates without datafiles only when necessary, such as when you need to change attributes like block size, which cannot be altered after database creation.

<table>
<thead>
<tr>
<th>Select</th>
<th>Template</th>
<th>Includes Datafiles</th>
</tr>
</thead>
<tbody>
<tr>
<td>☑</td>
<td>General Purpose or Transaction Processing</td>
<td>Yes</td>
</tr>
<tr>
<td>☐</td>
<td>Custom Database</td>
<td>No</td>
</tr>
<tr>
<td>☐</td>
<td>Data Warehouse</td>
<td>Yes</td>
</tr>
</tbody>
</table>

An Oracle database is uniquely identified by a Global Database Name, typically of the form "name:domain".

Global Database Name: EMREP.00.00.00.00

A database is referenced by at least one Oracle instance which is uniquely identified from any other instance on this computer by an Oracle System Identifier (SID).

SID: EMREP
Database Configuration Assistant, Step 6 of 12: Database File Locations

Specify storage type and locations for database files:

Storage Type: 
File System

Storage Locations:
- Use Database File Locations from Template
- Use Common Location for All Database Files
  Database File Location:  
  Browse...
- Use Oracle-Managed Files
  Database Area:  
  Browse...

Multiplex Redo Logs and Control Files...

If you want to specify different locations for any database files, pick any of the above options except Oracle-Managed Files and use the Storage page later to customize each file location. If you use Oracle-Managed Files, Oracle automatically generates the names for database files, which cannot be changed on the Storage page.

File Location Variables...

Cancel  Help  Back  Next  Finish

Database Configuration Assistant, Step 7 of 12: Recovery Configuration

Choose the recovery options for the database:

- Specify Flash Recovery Area
  This is used as the default for all disk-based backup and recovery operations, and is also required for automatic disk-based backup using Enterprise Manager. Oracle recommends that the database files and recovery files be located on physically different disks for data protection and performance.

  Flash Recovery Area:  
  (ORACLE_BASE)/flash.recovery  
  Browse...

  Flash Recovery Area Size:  
  512  
  M Bytes

- Enable Archiving  
  Edit Archive Mode Parameters...

File Location Variables...

Cancel  Help  Back  Next  Finish
Please choose at least 350M of memory here. In my test, 250M was insufficient and caused ORA-4031 errors.
Database Storage

From the Database Storage page, you can specify storage parameters for database creation. This page displays a tree listing and summary view (multi-column lists) to enable you to change and view the following objects:

- Control files
- Tablespaces
- Datafiles
- Rollback Segments
- Redo Log Groups

From any object type folder, click Create to create a new object. To delete an object, select the specific object from within the object type folder and click Delete.

Important: If you select a database template including data files, then you will not be able to add or remove data files, tablespaces, or rollback segments. Selecting this type of template enables you to change the following:

- Destination of the datafiles
- Control files or log groups

For more information, refer to the Oracle Database Storage Administrator's Guide.

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Database Configuration Assistant, Step 11 of 11: Creation Options

Select the database creation options:

- [ ] Create Database
- [ ] Save as a Database Template
  - Name: EMREP
  - Description:
- [ ] Generate Database Creation Scripts
  - Destination Directory: /u01/app/oracle/admin/EMREP/scripts

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Create Database – Summary

Database Configuration Summary

- **Global Database Name**: EMREP.intra
- **Database Configuration Type**: Single Instance
- **SID**: EMREP
- **Management Option Type**: None
- **Storage Type**: File System
- **Memory Configuration Type**: Automatic Memory Management

Database Configuration Details

<table>
<thead>
<tr>
<th>Component</th>
<th>Selected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle JVM</td>
<td>true</td>
</tr>
<tr>
<td>Oracle Text</td>
<td>true</td>
</tr>
<tr>
<td>Oracle XML D9</td>
<td>true</td>
</tr>
</tbody>
</table>

Database Configuration Assistant

Database creation template: \$ORACLE_HOME/admin/EMREP剧本/Phase1/All/emrep scripts.

**Database Information**:
- **Global Database Name**: EMREP.intra
- **System Identifier (SID)**: EMREP
- **Server Parameter File name**: \$ORACLE_HOME/product/11.2.0/dbhome/ora EMREP ora

**Note**: All database accounts except SYS and SYSTEM are locked. Select the Password Management button to view a complete list of locked accounts or to manage the database accounts. From the Password Management window, unlock only the accounts you will use. Oracle Corporation strongly recommends changing the default passwords immediately after unlocking the account.
Network Configuration (Listener, TNS)
For remote connections to be made to your Oracle database, you must configure an Oracle Net listener. The Oracle Net Configuration Assistant allows you to add, reconfigure, rename or delete a listener.

Select what you want to do:

- Add
- Rename
- Delete
- Remove

For remote connections to be made to your Oracle database you must have at least one Oracle Net listener. Enter the name of the listener you want to create.

Listener name: [INPUT FIELD]

You can configure the listener to accept connections over one or more protocols. Select which protocols you want to configure for this listener. Keep your configuration as simple as possible by configuring only the protocols you need.
Oracle Net Configuration Assistant: Listener Configuration, TCP/IP Protocol

Which TCP/IP port number should the listener use? The port number selected should not be used by any other software on this computer.

- Use the standard port number of 1521
- Use another port number: [1521]

Oracle Net Configuration Assistant: Welcome

Welcome to the Oracle Net Configuration Assistant.
This tool will take you through the common configuration steps, listed below.

Choose the configuration you would like to do:
- Listener configuration
- Naming Methods configuration
- Local Net Service Name configuration
- Directory Usage Configuration

Oracle Net Configuration Assistant: Net Service Name Configuration

To access an Oracle database, or other service, across the network you use a net service name. The Oracle Net Configuration Assistant allows you to work with net service names resolved using local naming.

Select what you want to do:
- Add
- Reconfigure
- Delete
- Rename
- Test
Each Oracle database or service has a service name. An Oracle database's service name is normally its global database name. Enter the service name of the database or other service you want to access.

Service Name: EMGEP

To communicate with the database across a network, a network protocol is used. Select the protocol used for the database you want to access.

TCP
TCP/IP

To communicate with the database using the TCP/IP protocol, the database computer's host name is required. Enter the host name for the computer where the database is located.

Host name: 192.168.1.211

A TCP/IP port number is also required. In most cases the standard port number should be used.

- Use the standard port number of 1521
- Use another port number: 1521
Database Preparations

Ensure that the UNDO tablespace and the TEMP tablespace are autoextensible in the existing, certified Oracle Database. Moreover, resize UNDO tablespace to >200M.

Documentation mentions that for RDBMS 11.2.0.1 as Grid Control Repository, patch for bug# 9002336 and 9067282 should be installed. I prefer to install PSU 11.2.0.1.1, which contains bugfix 9067282. Bug 9002336 can be addressed by underscore parameter 
\_optimizer\_distinct\_agg\_transform = false
SQL> alter system set "_optimizer_distinct_agg_transform"=false scope=spfile;
SQL> alter system set log_buffer=10485760 scope=spfile;
SQL> alter system set processes = 500 scope=spfile;
SQL> alter system set session_cached_cursors=200 scope=spfile;
SQL> alter database datafile '/u01/app/orallgr2/oradata/EMREP/undotbs01.dbf' resize 256M;

Check whether fine grained access control is installed:
select value from v$option where parameter = 'Fine-grained access control';

At this point, deinstall DB Control:
./emca -deconfig dbcontrol db -repos drop

Note:
My Oracle Support Node 561429.1 mentions that 11.2.0.1 can only be used as repository, if DNS is used. For my demo installation, I prefer usage of /etc/hosts. I have tested and found no issues without DNS.

7) WebLogic Server Patch Installation

Grid Control documentation mentions that WebLogic Patch WDJ7 is mandatory. Therefore we install it:

cd /u01/app/oraoem/Middleware
cd utils/bsu
./bsu.sh
Log in to Oracle Smart Update with your Support ID to download patches and Maintenance Packs. Work offline to just manage existing maintenance.

Support ID: martin.decker@xxxxxxxxx
Password: ********

☑ Remember this

Cancel  Help  Work Offline  Login

Register for security updates

Please provide your email address to be informed of the security issues and initiate configuration manager. [http://www.oracle.com/support/policies.html]

Email:     Easier for you if you use your My Oracle Support email address/username...

☐ I wish to receive security updates via My Oracle Support.

My Oracle Support password: 

Continue
Click Tab "Get Patches", Select WDJ7 and click "Download Selected".
Next, click "Apply" for WDJ7.
8) Installation Enterprise Manager Grid Control 11g

Download and unpack Grid Control:

```
./runInstaller
```

![Oracle Enterprise Manager Grid Control 11g Installation](image)
Select Installation Type

Select the type of installation you want to perform and the product language you want to use. All installations require an existing, certified Oracle WebLogic Server to be pre-installed for running the Enterprise Manager application.

- **Install a new Enterprise Manager system**
  - Creates a new Enterprise Manager system. In addition to Oracle WebLogic Server, this installation requires an existing, certified database to be used for the repository.

- **Add an additional Management Service**
  - Installs an additional server to an existing Enterprise Manager system.

Check Prerequisites

The following prerequisite checks are run to ensure that your environment meets all the minimum requirements to result in a successful installation and configuration of the products you have selected for installation.

<table>
<thead>
<tr>
<th>Prerequisite Name</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Checking if Oracle software certified on the current OJS</td>
<td>Succeeded</td>
</tr>
<tr>
<td>Checking for required packages installed on the system</td>
<td>Succeeded</td>
</tr>
<tr>
<td>Checking whether required CLOB is installed on the system</td>
<td>Succeeded</td>
</tr>
<tr>
<td>Checking for sufficient disk space in TEMP location</td>
<td>Succeeded</td>
</tr>
<tr>
<td>Checking for sufficient disk space in inventory location</td>
<td>Succeeded</td>
</tr>
<tr>
<td>Checking whether the software compatible for current OJS</td>
<td>Succeeded</td>
</tr>
<tr>
<td>Checking for sufficient physical memory</td>
<td>Succeeded</td>
</tr>
<tr>
<td>Checking for the Install point</td>
<td>Succeeded</td>
</tr>
<tr>
<td>Checking for the Install point</td>
<td>Succeeded</td>
</tr>
<tr>
<td>Checking for the Hostname</td>
<td>Succeeded</td>
</tr>
</tbody>
</table>
Secure Oracle Management Service

By default, communication between the Oracle Management Service and the Management Agents uses a secure protocol. Securing the communication channel requires a registration password for authenticating new agents into the Enterprise Manager/OM system. This password is created and stored when EM is first configured, and it is specified later when configuring the agent software to add new managed hosts. Specify the agent registration password.

Registration Password: ************
Confirm Password: ************

Management Agents can send and receive data from the OMS using either HTTP or HTTPS protocols. If you want to secure the communication, you can choose to allow only secure Management Agents to communicate with the OMS.

- Allow only secure agents to communicate with the OMS

You can access the Enterprise Manager Grid Control console using either HTTP or HTTPS protocols. If you want to secure the console, you can choose to restrict access only to the HTTPS protocol.

- Allow only secure access to the console

Customize Ports

Configuration of the Enterprise Manager system requires the allocation of several ports to facilitate internal communication between system components as well as to provide access to the console via a browser. The table below contains the ports that will be allocated, along with the recommended port ranges, for each component. By default, the first available port in the specified port range has been chosen.

<table>
<thead>
<tr>
<th>Component Name</th>
<th>Recommended Port Range</th>
<th>Port</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enterprise Manager Upload HTTP Port</td>
<td>4889-4898</td>
<td>4889</td>
</tr>
<tr>
<td>Enterprise Manager Upload HTTP SSL Port</td>
<td>1159-4899-4908</td>
<td>4990</td>
</tr>
<tr>
<td>Enterprise Manager Central Console HTTP Port</td>
<td>7799-7809</td>
<td>7799</td>
</tr>
<tr>
<td>Web Manager HTTP Port</td>
<td>2701-7500</td>
<td>7401</td>
</tr>
<tr>
<td>Managed Server HTTP Port</td>
<td>2701-7300</td>
<td>7301</td>
</tr>
<tr>
<td>Enterprise Manager Central Console HTTP Port</td>
<td>7778-7798</td>
<td>7788</td>
</tr>
<tr>
<td>Oracle Management Agent Port</td>
<td>3832-16386-1649</td>
<td>3832</td>
</tr>
<tr>
<td>Admin Server HTTP SSL Port</td>
<td>7201-7202</td>
<td>7202</td>
</tr>
<tr>
<td>Managed Server HTTP SSL Port</td>
<td>7301-7400</td>
<td>7301</td>
</tr>
</tbody>
</table>
Review

- Check your support details
- Check for updates
- Select installation type
- Check prerequisites
- Specify installation location
- Create WebLogic server domain
- Connect to Oracle database
- Configure Oracle Management
- Secure Oracle Management Set
- Customize ports
- Review

Review the information you have provided and click Install to begin the installation process.

- Install a new Enterprise Manager system
  - Source: `/home/repmgr/gc_inetstage/products.xml`
  - Disk Space
    - Available: 13.82GB
    - Required: 4GB
  - Installation location
    - OMS Home: `/u01/app/oracle/Middleware/oracle11g`
    - Agent Home: `/u01/app/oracle/Middleware/oracle11g`
- Product languages
  - English
- Ports

Installation Progress Details

- Installing Oracle Management Service 11.1.0.6 Release 1 (11.1)
  - Install pending...
  - Link pending...
  - Setup pending...
  - Installing Oracle Management Agent 11.1.0.6 Release 1 (11.1)
  - Installing Weblogic

Overall Progress

Preparing for Install...

0%

You can find the log for this session at:

'/u01/app/oracleinventory/logs/preprod2010-05-29_11-51-30.log'

- OMS Home: `/u01/app/oracle/Middleware/oracle11g`
- Agent Home: `/u01/app/oracle/Middleware/oracle11g`
- Weblogic Home: `/u01/app/oracle/Middleware/oracle_11g`

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The following configuration scripts need to be executed as the "root" user:

Scripts to be executed

<table>
<thead>
<tr>
<th>Number</th>
<th>Script Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>/u01/app/oraem/Middleware/ora11g/airoot.sh</td>
</tr>
</tbody>
</table>

To execute the configuration scripts:
1. Open a new terminal window
2. Login in as 'root'
3. Run the scripts
4. Return to this window and click "OK" to continue
Installation is now complete and Grid Control can be accessed via browser:

https://ora-vm2.intra:7799/em/

Click on "Setup" Tab, then Agents, then ora-vm2:3872. Then you see that EMREP database is not configured yet.

Unlock and set the password:

```sql
SQL> user dbsnmp identified by xxx account unlock;
```
Configure the respective password for dbsnmp and finish.

8) Enterprise Manager Grid Control 11g Patches

Environment-Files:

/home/oraoem/OMS.env:

```
export ORACLE_HOME=/u01/app/oraoem/Middleware/oms11g
export PATH=$ORACLE_HOME/bin:$PATH
```

/home/oraoem/AGENT.env:

```
export ORACLE_HOME=/u01/app/oraoem/Middleware/agent11g
export PATH=$ORACLE_HOME/bin:$PATH
```

Stoppen von OMS und Agent

```
as root: /etc/init.d/gcstartup stop
```

OMS Patch: (as oraoem)

```
. /home/oraoem/OMS.env
unzip p9659466_111010_Generic.zip
cd 9659466
/u01/app/oraoem/Middleware/oms11g/OPatch/opatch apply
/u01/app/oraoem/Middleware/oms11g/bin/rcuJDBCEngine
sys/xxx@ora-vm2.intra:1521:EMREP JDBC_SCRIPT
post_install_script.sql $PWD $ORACLE_HOME
```
Agent Patch: (as oraoem)

```
. /home/oraoem/AGENT.env
unzip p9738008_111010_LINUX.zip
cd 9738008
/u01/app/oraoem/Middleware/agent11g/OPatch/opatch apply

unzip p9676134_111010_Generic.zip
cd 9676134
/u01/app/oraoem/Middleware/agent11g/OPatch/opatch apply
```

Starten von OMS und Agent

```
as root: /etc/init.d/gcstartup start
```

9) Stopping/Starting of Grid Control

Grid Control Components can be stopped like described here:

OMS:

```
. /home/oraoem/OMS.env
emctl stop oms
```

Agent:

```
. /home/oraoem/AGENT.env
emctl stop agent
```