# SPARC SuperCluster T4-4

Enterprise Manager 12c Component of the Oracle® Optimized Solution for Enterprise Database Cloud Configuration Guide

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# Contents

# Using This Documentation

This document contains information about how to set up the Enterprise Manager Cloud Control 12c release 2 component of the Oracle Optimized Solution for Enterprise Database Cloud on the SPARC SuperCluster T4-4 from Oracle. This document is written for system administrators who have advanced experience configuring engineered systems.

Software versions required for this document are:

- Enterprise Manager Cloud Control version 12.1.0.2.0
- Oracle Database Plug-in 12.1.0.2.0

**Note –** The administrative user 'SYSMAN' is used in this guide only as a way of simplifying these instructions. In a full production environment it is assumed that enterprise manager cloud administrator accounts would be created and used for most of the steps in this guide.

This setup guide is not intended to replace the Enterprise Manager Cloud Control documentation, rather it is intended to give a worked example so as to facilitate first-time setup of Database as a service on SuperCluster


- "Product Documentation Library" on page 5
- "Feedback" on page 6


# Product Documentation Library

Documentation and resources for this product and related products are available on the system. Access the documentation by using a browser to view this directory on the first compute server installed in SuperCluster T4-4:

/opt/oracle/node/doc/E21659_01/index.html

# Feedback

Provide feedback about this documentation at:

http://www.oracle.com/goto/docfeedback

# Setting Up the Database as a Service



## ▼ Prepare the Target Oracle Solaris 11 Zones or Logical Domains

Database Cloud is implemented directly onto the logical domains of the SPARC SuperCluster (Global Zone) or within Non-Global Oracle Solaris Zones that are created on the logical domains.

Much of the preparation work in setting up the hardware was done during initial system installation, compared to using a non engineered system. The only step you must perform is to enable the `sudo` privileges.

For a complete list of requirements for installing the Oracle Cloud Control Management Agent, refer to the *Oracle Enterprise Manager Cloud Control Advanced Installation and Configuration Guide 12c Release 1 (12.1.0.1)*.

- **Update the `Sudoers` file.**

  Ensure that Oracle has permission to run the required agent commands in privileged mode by adding the following to the `/etc/sudoers` file on the target zone.

```
# egrep -v "^#|^$" /etc/sudoers

oracle ALL=(root) /usr/bin/id,
<agent-installation-base-directory>/agentibd/*/agentdeployroot.sh
```

# ▼ Add Credentials for the Oracle Software Update Center

The Oracle Software Update Center hosts bug fixes, software updates and a variety of add-ons for Oracle products. For DB Cloud, it is most likely that several Enterprise Manager 12c Cloud Control plug-ins will be required to be added to your Enterprise Manager 12c deployment, so this step describes setting up the connection from EM12c to the update center.

1. **From the Select Enterprise Manager Home page, choose Setup → My Oracle Support → Set Credentials.**
2. **Type your Oracle Support login and password and then click Apply.**

# ▼ Add Virtualizations, Cloud, and Chargeback Plug-ins

To use database as a service, you must install two additional plug-ins on the Oracle Management Service (OMS): Virtualization and Cloud. Adding the Chargeback plug-in is optional.

1. **Confirm you are successfully signed into the Oracle Update Center by setting credentials.**

   See "Add Credentials for the Oracle Software Update Center" on page 8.

2. **Add the Oracle Virtualization plug-in by choosing Setup → Plug-ins.**

3. **Expand the Server, Storage and Network folder, and then choose the Oracle Virtualization plug-in.**

4. **From the Deploy On menu, choose Management Servers.**

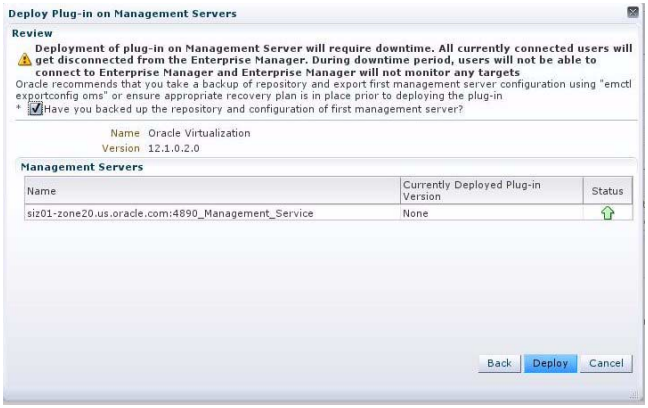
   The Deploy Plug in on Management Servers pop-up window is displayed.

5. **Select the latest version from the Version menu, type the Repository SYS Password, and then click Continue.**


6. **When the prerequisite checks are complete, click Next.**

7. **After you have backed up your repository and the configuration of the management server, select the check the box indicating this task has been completed, then click Deploy.**

   The OMS is unavailable during the upgrade, so the browser interface will also become unavailable.




8. **After the OMS restarts, log back in and repeat the procedure for the Cloud, and optionally for the Chargeback plug-ins.**

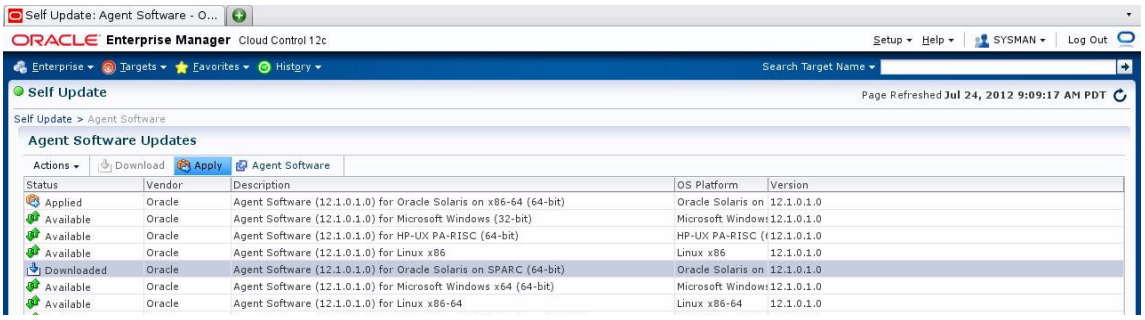
# ▼ Install the Cloud Control Agent on the SPARC SuperCluster 1.1

1. **Add support for the SPARC agent to the OMS.**

   a. **To install the Cloud Control agent on the SPARC SuperCluster 1.1, ensure that the agent for Oracle Solaris on SPARC is installed on the OMS. To check this, choose Setup → Extensibility → Self Update.**

   b. **Open the Agent Software folder.**

   c. **Download the SPARC agent if it has not already been downloaded, then select it and the click Apply.**

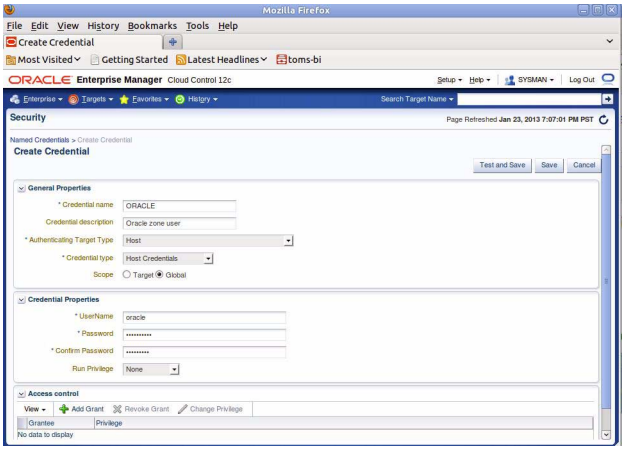


2. **Create named credentials.**

   a. **Next, create the named credentials for the Oracle user account that is used to install the agent. Chose Setup → Security → Named Credentials.**

   b. **Select Create and type credentials.**

      The credential named "ORACLE" is created here and used as an example in the rest of this document.




   c. **If you have a target to test on, select Test and Save, otherwise select Save. You can ignore any warnings about the credentials when you do not have a test target, but check them later, when you have a target host available.**

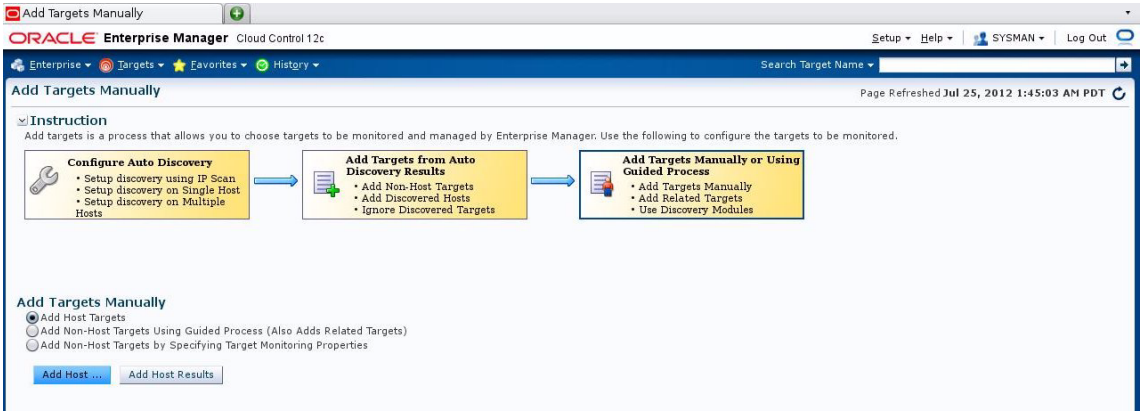
# Installing the EM12c Agent(s) on the Oracle Solaris Zones

Now you can manually deploy the Agent and Database Plug-ins to the Oracle Solaris zones on the SPARC SuperCluster. There are two parts to the agent deployment, firstly to install the EM12c Agent to the Hosts (in this case the Oracle Solaris Zones) that EM12c will use for Cloud management and the second part is to use the EM12c Guided Process to add the Agents for the Oracle RAC Clusters that run on the SuperCluster


- "Add the Oracle Solaris Zones Host Targets" on page 12
- "Add the Oracle RAC Targets" on page 14

# ▼ Add the Oracle Solaris Zones Host Targets

1. **Choose Setup → Add Target → Add Targets Manually.**
2. **In the** Add Targets Manually window, **select the Add Host Targets button, and then click Add Host.**




The Add Host Targets wizard is displayed.

a. **In the Host and Platform window, add hosts using one of the following methods.**

   Hosts can be added individually by specifying the target name or via a bulk load.

   i. **To add hosts individually, click Add and specify the host and platform details.**

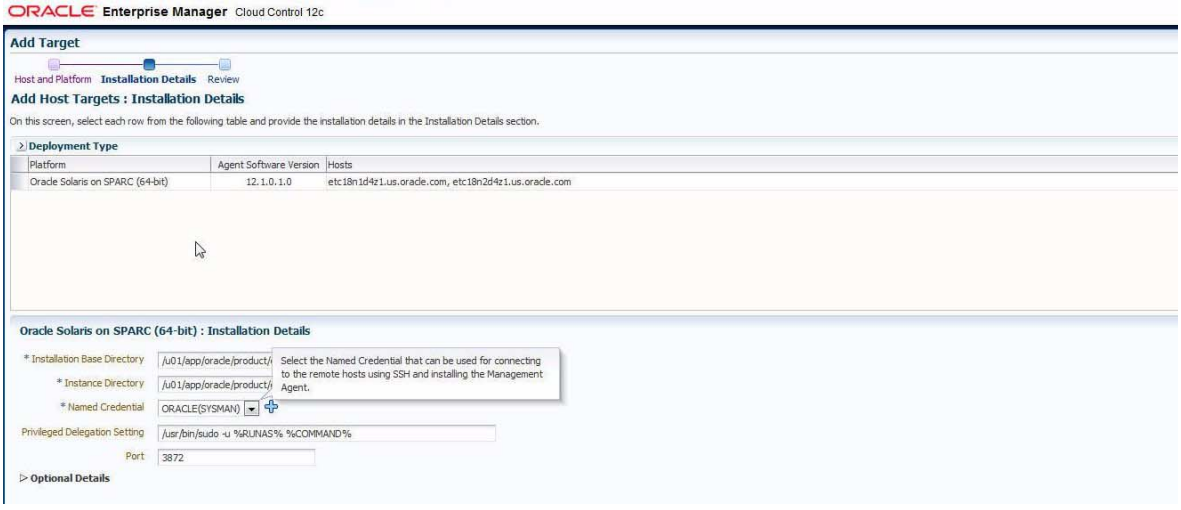
   ii. **To add a batch of hosts, create a simple text file containing the hosts to add.**


   Select Load from File, and browse to the location of the text file created earlier. Then click OK.


The text file of Host targets is uploaded and the EM12c Host targets list is populated from this file.

iii. **When hosts are added to the list, click Next.**

**b. In the** Installation Details window, **enter the following values:**




i. **Complete the entries for Installation Base Directory and Instance Directory.**

ii. **From the Named Credential menu, choose the unprivileged named credential created earlier.**

In the example, the ORACLE credential created earlier, is unprivileged.

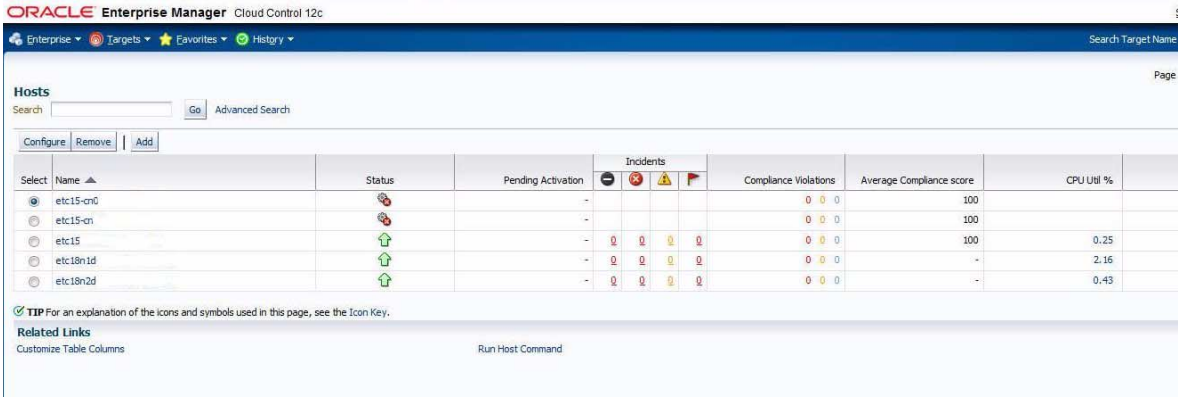
iii. **Fill in the privilege delegation setting and** `sudo` **command as shown (**`/usr/bin/sudo -S -u %RUNAS% %COMMAND%`**), so that this user can execute the privileged commands required on the host to deploy the agent software, and click Next.**

3. **In the** Review window, **review the details and select Next to begin installing the EM12c Agents**

   Agent installation now runs on the selected hosts.

   If there are any warnings or errors during installation, select Hosts from the Targets menus to list the running agents and diagnose any issues.

   The window below shows that the hosts (Oracle Solaris zones) etc18n1 and etc18n2 both have running agents.



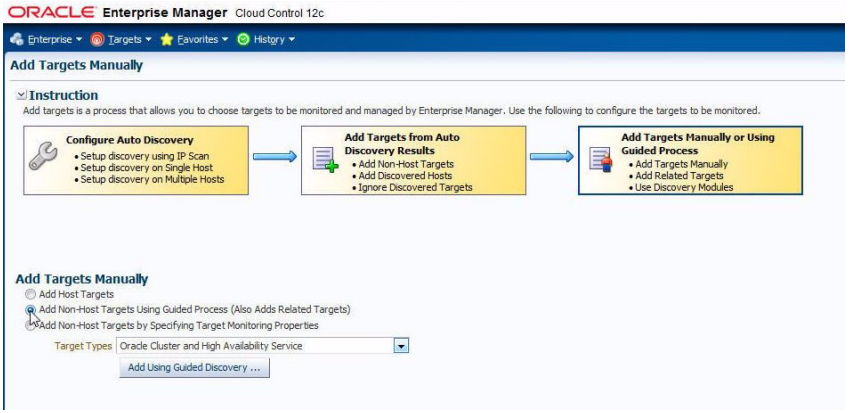

# Adding the Oracle RAC Targets

These procedure add details for the RAC and ASM targets that EM12c manages.

- "Add the Oracle RAC Targets" on page 14
- "Add the Details of the RAC Cluster" on page 16

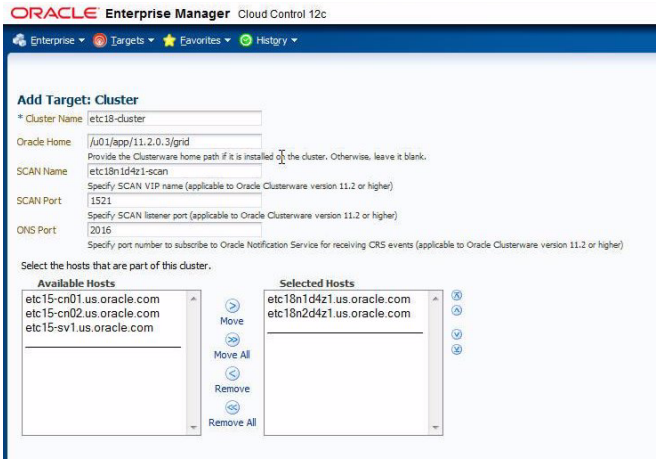
## ▼ Add the Oracle RAC Targets

1. **Choose Setup → Add Target → Add Targets Manually.**
2. **In the** Add Targets Manually window, **click the Add Non-Host Target Using Guided Process, choose Oracle Cluster and High Availability Service as the Target Type, and then click Add Using Guided Discovery.**




3. **Select the magnifying glass icon to find the Oracle Solaris zones that are part of a RAC cluster. Select the appropriate host and click Continue.**

4. **Confirm the cluster details. You can change the cluster name if desired. Click Add.**




A progress window is displayed and then the confirmation window is displayed showing that the RAC cluster has been added to the EM12c agents running on the hosts that comprise the cluster.

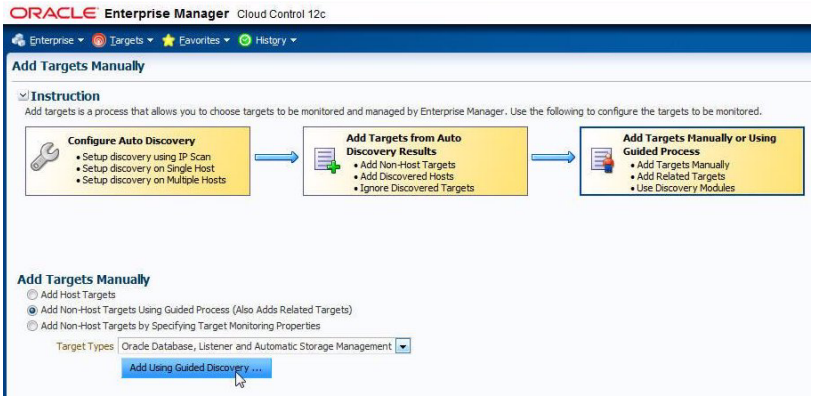
5. **Click OK to continue.**

## ▼ Add the Details of the RAC Cluster

**After you add the Oracle RAC targets, follow these step to add details of the RAC cluster such as listener, ASM and database instances to the EM12c agent running on the target hosts/Oracle Solaris zone.**

1. **Choose Setup → Add Target → Add Targets Manually.**

2. **From the** Add Targets Manually window, **select the Add Non-host Target Using Guided Process, choose Oracle Database, Listener and Automatic Storage Management as the Target Type, then Click Add Using Guided Discovery.**




3. **Select the magnifying glass icon to find the Oracle Solaris zone that is part of the RAC cluster.**

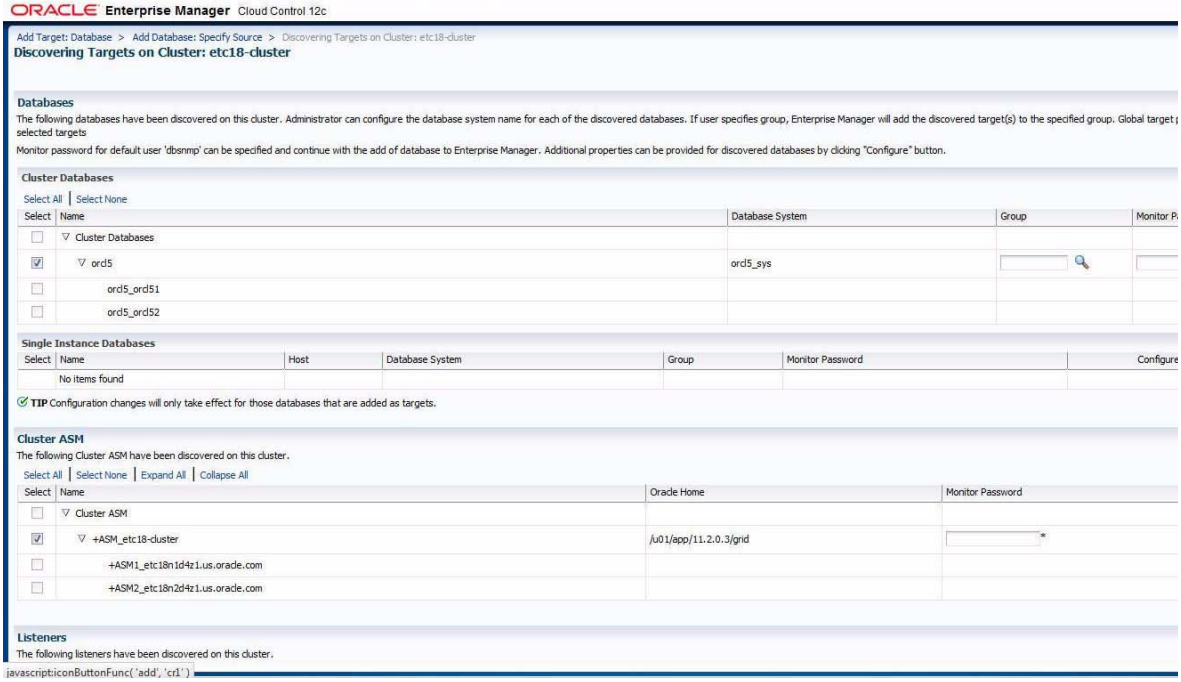
   Highlight the appropriate host and click Continue.

4. **Specify that EM12c should look for listener, ASM and database targets by clicking on all hosts in cluster and click Continue.**

   The discovery window is displayed and RAC cluster instances and ASM details are shown.

5. **If there are databases in the cluster, click the Configure icon in the Cluster Databases panel.**

   In the following example two databases instances are discovered by EM12c, however it is possible that there are no databases created on the SPARC SuperCluster T4-4 at this point of the setup and this field would be empty. The example assumes that there are databases, so in the cluster databases panel click the configure icon.

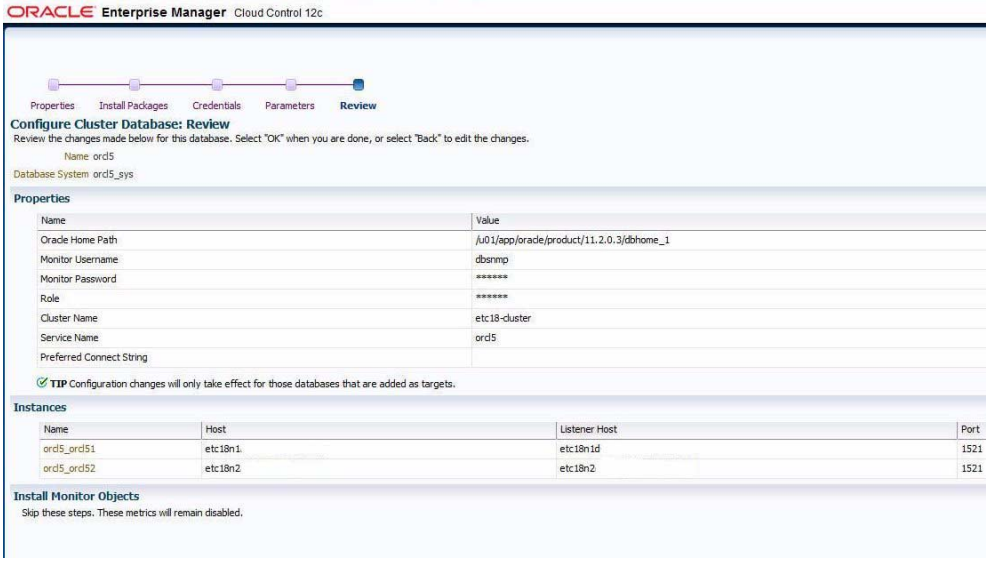



The Configure Cluster Database : Properties wizard is displayed.

**a. In the Credential window, type the `dbsnmp` password, and then click Test Connection.**

The `dbsnmp` account must be unlocked. Click Next.

**b. In the Review window, review the cluster details and click OK.**




Notice that the wrench icon on the configure panel for the database instances is now a solid blue color, indicating that the database targets of the RAC instances are now successfully configured to be managed and monitored by EM12c.

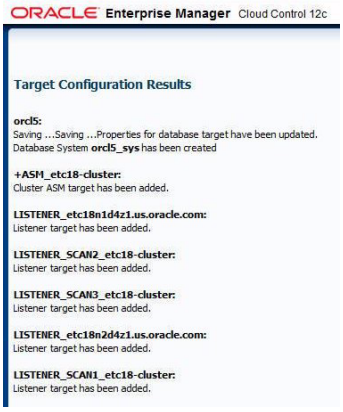
6. **In the** Discovering Targets on Cluster window, **select the wrench icon for the Cluster ASM.**

7. **In the** Configure Cluster ASM : Properties window, **type the** `asmsnmp` **password and click Test Connection.**


A confirmation of the successful connection is displayed.

8. **When a confirmation of the successful connection appears, click OK.**
9. **In the Discovering Targets on Cluster window, click Finish.**
10. **In the Summary window, click Save.**

    The targets are saved and a confirmation window is displayed.




At this point the EM12c is now able to manage and monitor the RAC cluster and its components. Repeat these steps for each RAC cluster configured on the SPARC SuperCluster T4-4 that the cloud administrator will make available to the Database Cloud end-users.

# ▼ Create an Enterprise Manager Cloud Administrator Role

1. **Choose Setup → Security → Roles.**
2. **In the Roles window, select Create.**


The Create Roles wizard is displayed.

a. **In the Property window, type a name and a description for the role, and then click Next.**

   In the example, the EM_SSA_DEVUSER_IT role is created.

b. **In the Roles window, select Remove All to remove any existing roles, select EM_SSA_USER, click Move, then click Next.**

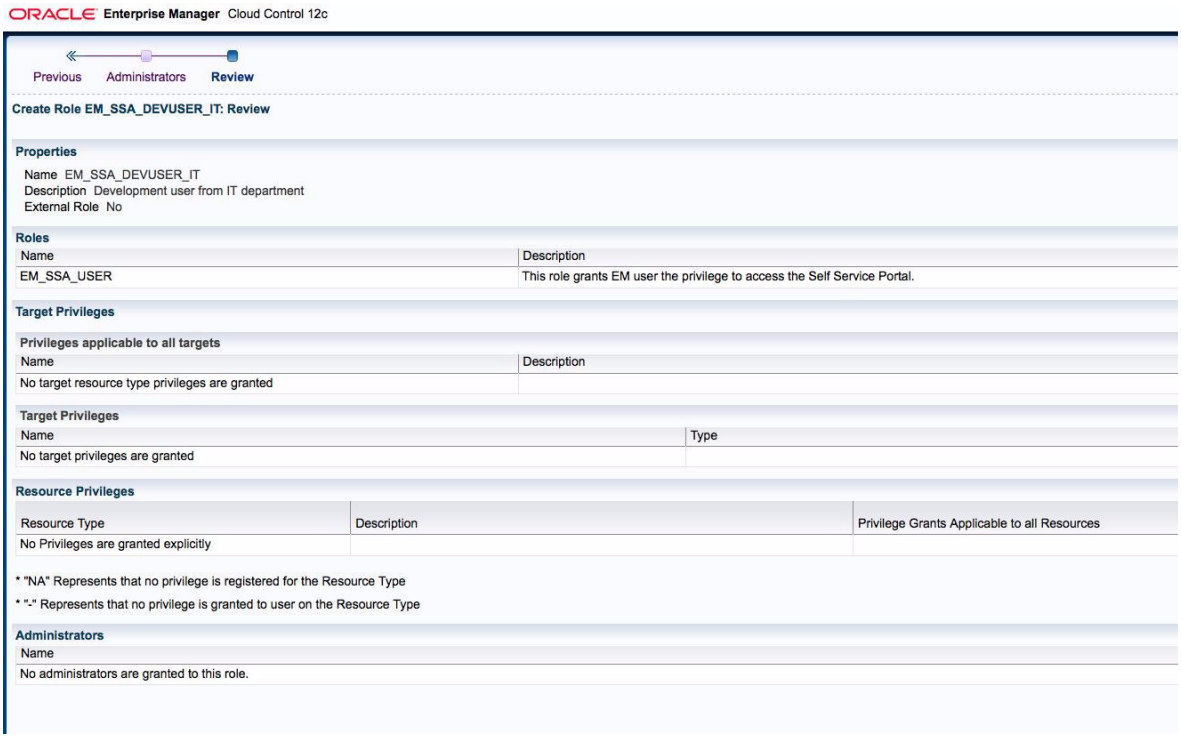
c. **In the Target Privileges window, click Next.**

d. **In the Resource Privileges window, click Next.**

e. **In the Administrator window, click Next.**

f. **In the Review window, review the details and click Finish.**

   You have created a very basic role that can be assigned to the PaaS infrastructure zone that will be created later.




# ▼ Create an Enterprise Manager Self Service User

Create a self service user to limit an unprivileged user to only the databases services that you want to offer.

1. **Choose Setup → Security → Administrators.**
2. **In the Administrators window, select Create.**


The Create Administrator wizard is displayed.

a. **In the Properties window, type a name and password, confirm the password and then click Next.**

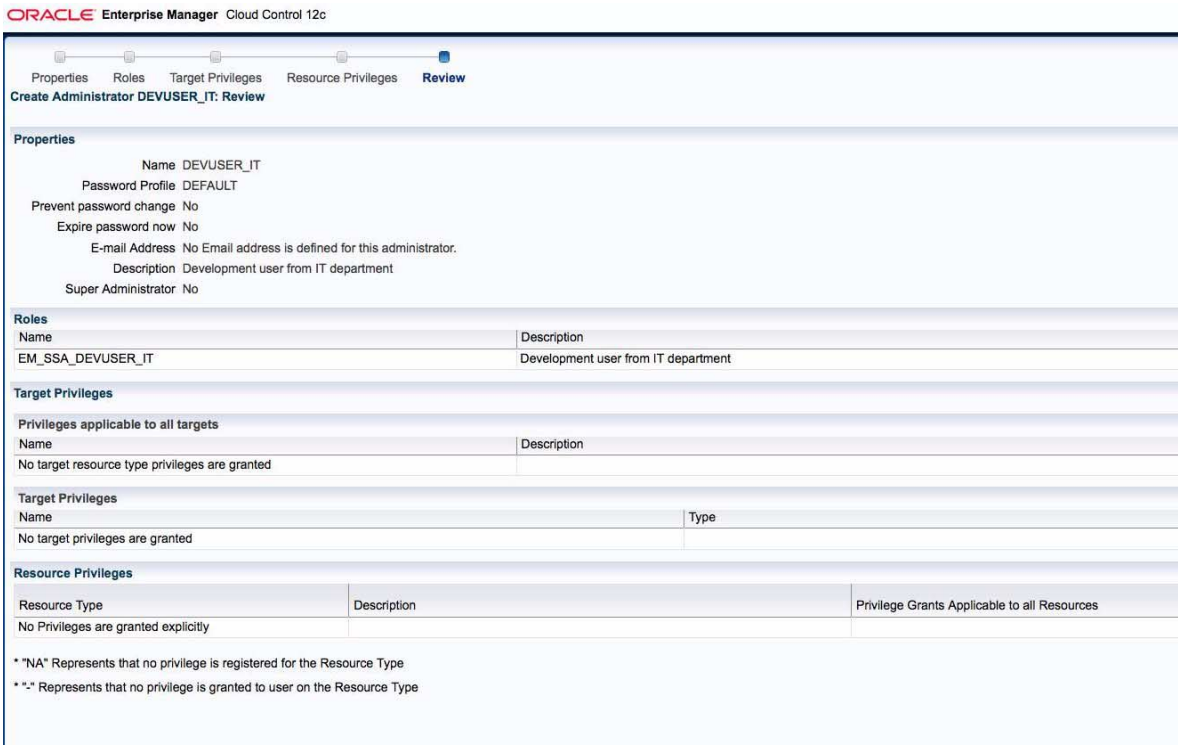
b. **In the Roles window, select Remove All to remove any existing roles, then highlight the EM_SSA_DEVUSER_IT role, click Move, and then click Next.**

c. **In the Target Privileges window, click Next.**

d. **In the Resource Privileges, click Next.**

e. **In the Review window, review the details and click Finish.**

   You can now log in to Cloud Control using the user name and password that you supplied here. However, until this user has been given access to a EM12c PaaS zone, they will not be able to perform any provisioning tasks.




# ▼ Create Database Deployment Procedure (Single Instance)

Database Deployment Procedures are a facility of EM12c that create the requested database(s) on behalf of the Cloud end user and will automatically return to the end user a connection string for the database that has been created.

The following example describes creating a deployment procedure for a single instance database.

---

**Note –** The database service template you create here is not instantiated immediately. Instead, it is offered as a service on the database zone that you create next.

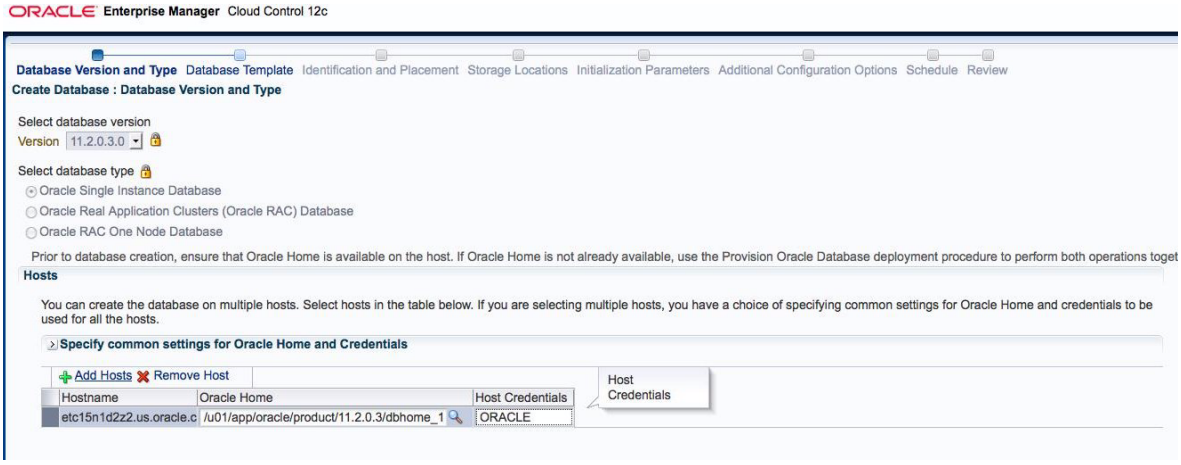
---

This example demonstrates the creation of an Oracle 11gR2 RAC single instance database, however, the same approach applies to creating deployment procedures for RAC Cluster or RAC One Node.

Note that the database storage for Oracle Database 11gR2 will be on the Exadata Storage Cells of the SPARC SuperCluster. This storage will already be established during SuperCluster installation and further administered and provisioned using the SuperCluster/Exadata Zone tools.

1. **Choose Enterprise → Provisioning and Patching → Database Provisioning.**
2. **Select Create Oracle Database from the Deployment Procedures panel, and then click Launch.**

   The Create Database wizard is displayed.
3. **In the Database and Version and Type window, enter the following values:**




   a. **Choose 11.2.0.3.0 from the Version menu, and choose Oracle Single Instance Database from the Select database type options.**

      This deployment procedure will be available to cloud end users, so click the lock icons next to each selection so that these values can't be changed by the end users.

   b. **Add the Host(s) where the database will be created.**

      i. **Click Add Hosts to launch the Search and Select: Targets pop-up window.**

      ii. **Select the Oracle Solaris on SPARC (64-bit) platform and click Search.**

      iii. **Highlight the appropriate host and click Select.**

   c. **Select the Oracle Home instance to use with the host.**

i. **Click the magnifying glass icon in the Oracle Home column to launch the Select Oracle Home pop-up window.**

ii. **Highlight the appropriate Oracle Home and click Select.**

d. **Select the Host Credentials column and type the credential name, then click Next.**

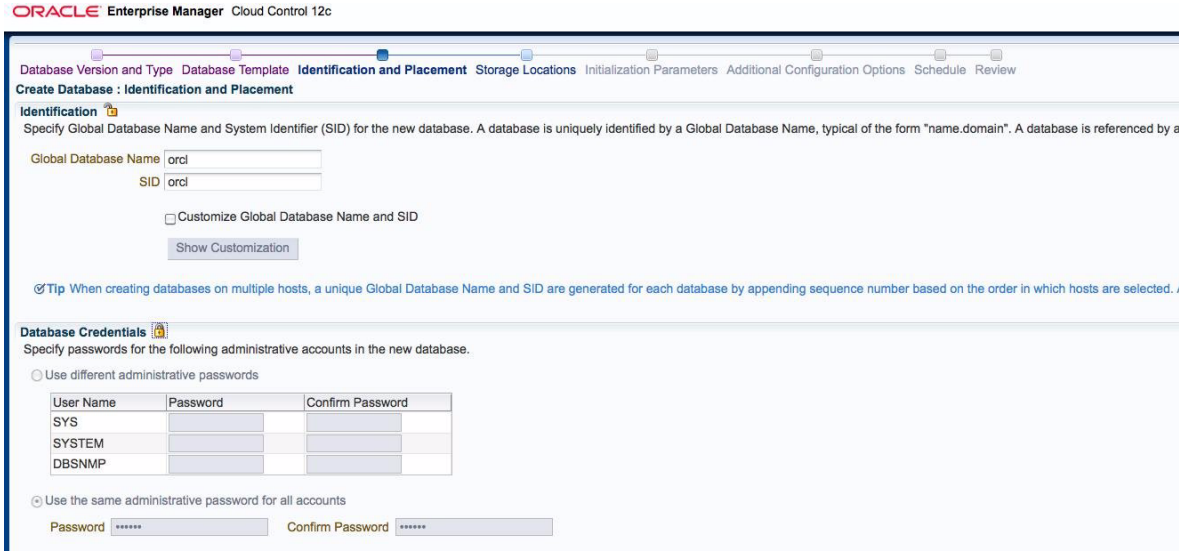
The example uses the ORACLE credential created earlier.

e. **Confirm entries, then click Next.**

This validates the Oracle Home.

4. **In the Database Template window, click Select Template From Oracle Home, and click Next.**

5. **In the Identification and Placement window, enter the following values:**




a. **Type values for the Global Database Name and SID boxes.**

When creating a template, these values are for validation purposes only and are not actually used. This is because the Global database name and SID are replaced by EM12c when it creates a unique database instance for the Database Cloud end user.

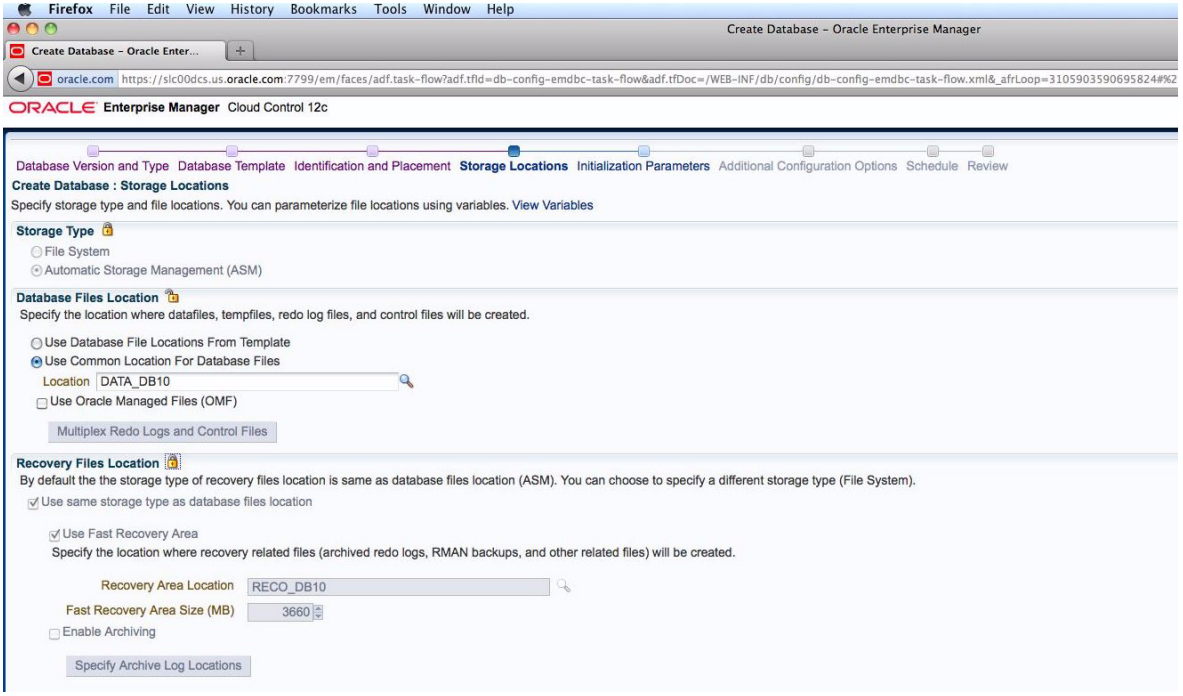
b. **Click the lock icon to unlock Database Credentials.**

Do not lock the Identification section, because these values are substituted when database as a service is used.

**c. Type and confirm the password, and then click Next.**

The verification window is displayed, and the Storage Locations window is displayed.

**6. In the Storage Locations window, enter the following values:**




**a. Under Storage Type, select Automatic Storage Management (ASM)**

**b. Under Database Files Location, select Use Common Location for Database Files.**

**i. Click the magnifying glass icon next to the Location box to launch the Select Disk Group pop-up window.**

**ii. Highlight the appropriate disk group and click Select.**

**c. Under Recovery Files Location, select Use same storage type as database files location and Use Fast Recovery Area.**

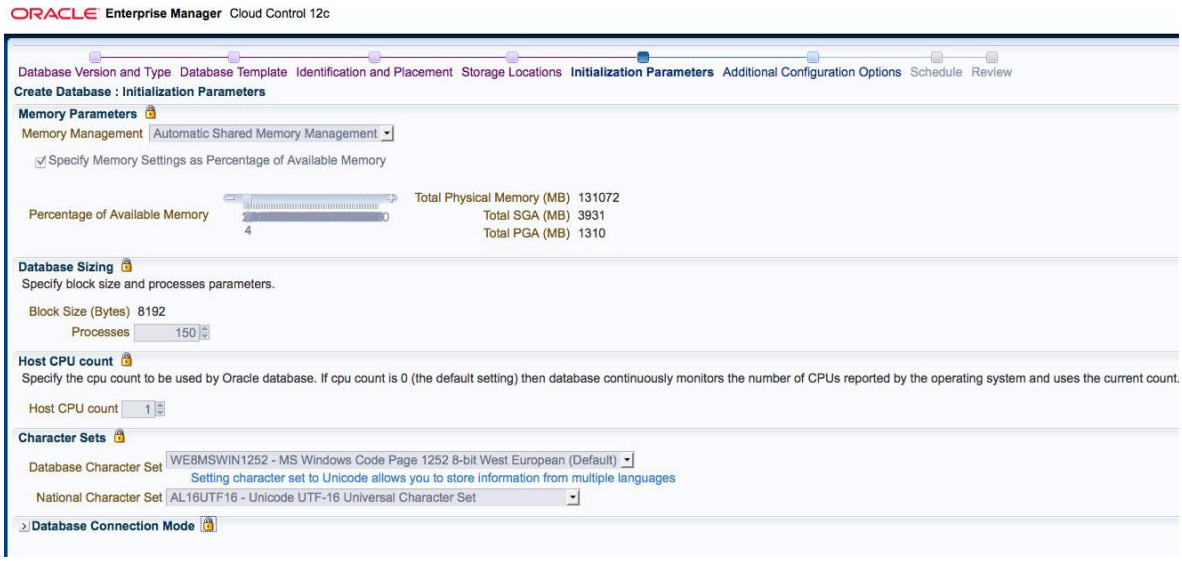
**i. Click the magnifying glass icon next to the Discovery Area Location box to launch the Select Disk Group pop-up window.**

**ii. Highlight the appropriate disk group and click Select.**

**d. Confirm entries, and then click Next.**

The storage configuration is validated, and a pop-up window displays the progress of this validation. When the validation has finished successfully, the Create Database : Initialization Parameters window is displayed.

**7. In the Initialization Parameters window, enter the following values:**




**a. Select Automatic Shared Memory Management, check Specify Memory Settings as Percentage of Available Memory and adjust the slider for Percentage of Available Memory.**

Use this memory setting to control the amount of memory available to the database instances the cloud end user creates. The example uses percentage of available memory for ease of demonstration, but you can also uncheck this to limit each database to a specified amount. For instance, a useful strategy might be to create separate deployment procedures for small, medium, and large memory configurations, where the SGA is set to an absolute value and not a percentage of available memory.

**b. Configure the Host CPU count and set the other database configuration parameters to suit.**

**c. Confirm your entries, and then click Next.**

A pop-up window indicates verification is run, then the Create Database : Additional Configurations Options window is displayed.

**8. In the Additional Configuration Options window, click Next.**

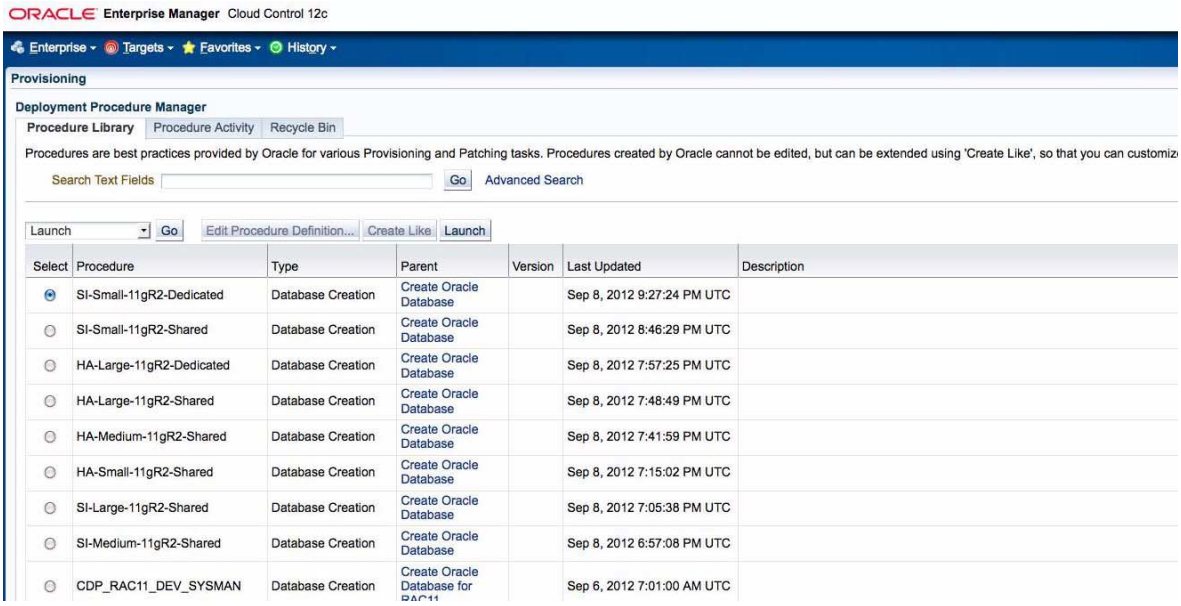
**9. In the Schedule window, enter the following values.**

a. **Type a name for the Deployment Procedure Instance Name, and then click Next.**

b. **Type a descriptive name for this deployment procedure in the Name box of the pop-up window, and then click Save.**

c. **Then in the next window, and click Cancel as you do not want to instantiate this procedure now.**

The new Deployment Procedure (in our example SI-Small-11gR2-Dedicated) is now visible in the list of deployment procedures.



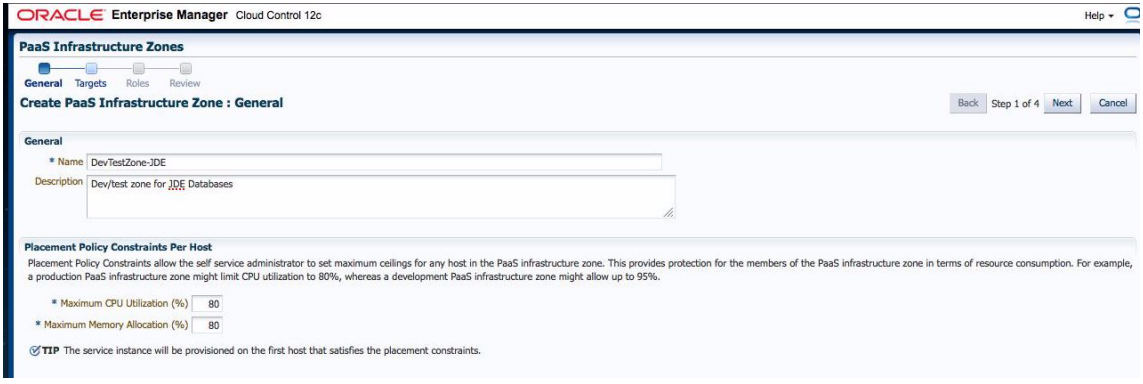

# ▼ Create a PaaS Infrastructure Zone

1. **Choose Enterprise → Cloud → Middleware and Database Home.**
2. **Choose Middleware and Database Cloud → Create PaaS Infrastructure Zone.**


The Create PaaS Infrastructure Zone wizard is displayed.

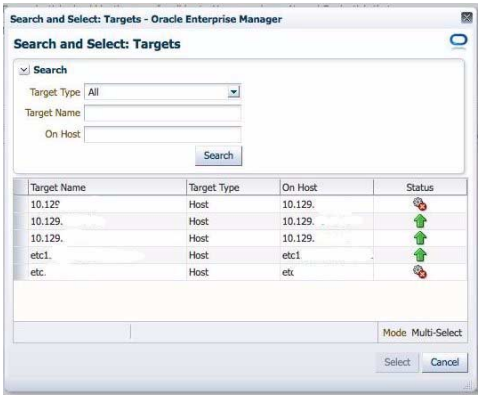
a. **Type a name and description for the zone, and specify the appropriate values for placement policy constraints based on the resources available to the members.**

   The following example uses `DevTestZone` as a name, indicating that databases for development and test will be in this zone. In this example, the default placement policy constrains are used, but in a development or test area you might allow starting of new database instances (placement) on Oracle Solaris zones that are more heavily used than 80%.




   Click Next to continue. The Create PaaS Infrastructure Zone: Targets page is displayed.

b. **Next allocate servers (targets) to the PaaS infrastructure zones. In the case of Database Cloud for SPARC SuperCluster, these targets are Oracle Solaris zones. Click Add to search for available Oracle Solaris zones on the SuperCluster.**

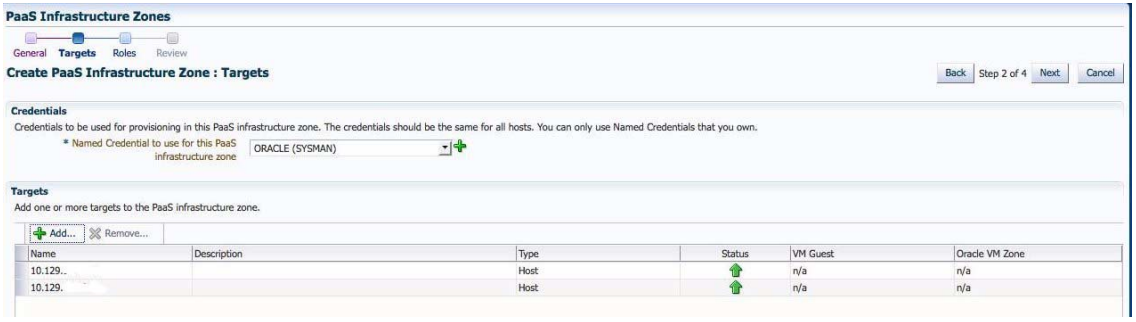



Click on each Oracle Solaris zone you want to add as a target, then click Select.

**c. Specify the Named Credentials to be used for provisioning all the targets in this zone.**

Click the + icon to add new named credentials.

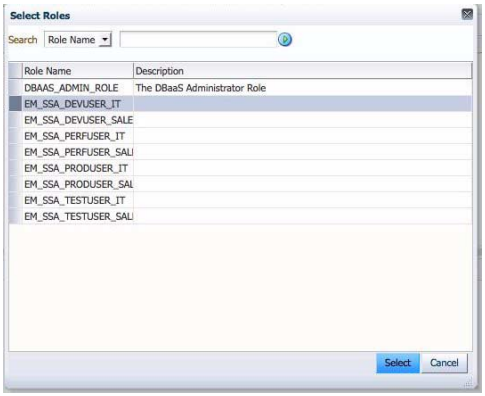
The example uses the ORACLE credential created earlier.




Click Next to continue.

**d. In the** Create PaaS Infrastructure Zone: Roles window, **click Add to select the roles that can access this PaaS Infrastructure Zone, and then highlight the appropriate role and click Select.**

The example uses the EM_SSA_DEVUSER_IT role created earlier.




**e. In the** Create PaaS Infrastructure Zone: Review window, **review the details and click Submit to create the zone.**

A message confirms that the PaaS Infrastructure Zone was successfully created. You will return to the Middleware and Database Cloud Home page.

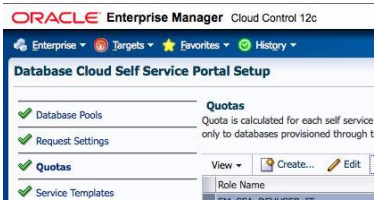
# ▼ Establish Quotas for the Cloud Control User

1. **Choose Setup → Middleware and Database Cloud Home → Cloud → Database.**

   The Database Pools window is displayed.

2. **Select Quotas from the left menu.**

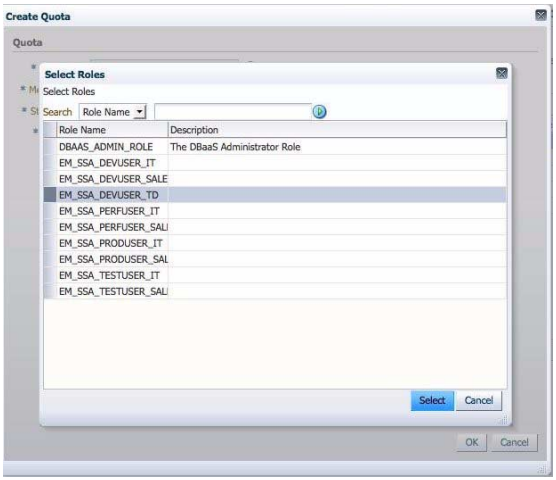
3. **Click Create on the Quotas window.**



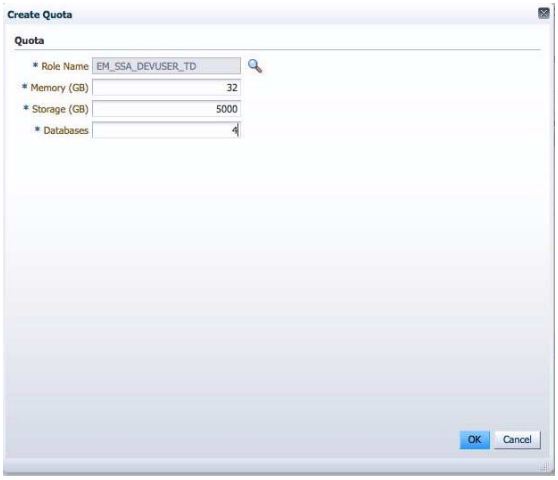

The Create Quota window is displayed.

**a. Click the magnifying glass icon next to the Role Name.**

**b. In the** Select Roles window, h**ighlight the** `EM_SSA_DEVUSER_IT` **role created earlier, and then click Select.**




**c. In the Create Quota window, type the memory, storage, and database resources that will be available to this role, and then click OK.**




The new quota is added to the list of available Quotas.

# ▼ Create the Database Software Pool

This database software pool will contain the ORACLE_HOME installations that will be used to create database instances on the servers (zones) in the PaaS infrastructure zone.

1. **Choose Setup → Middleware and Database Cloud Home → Cloud → Database.**

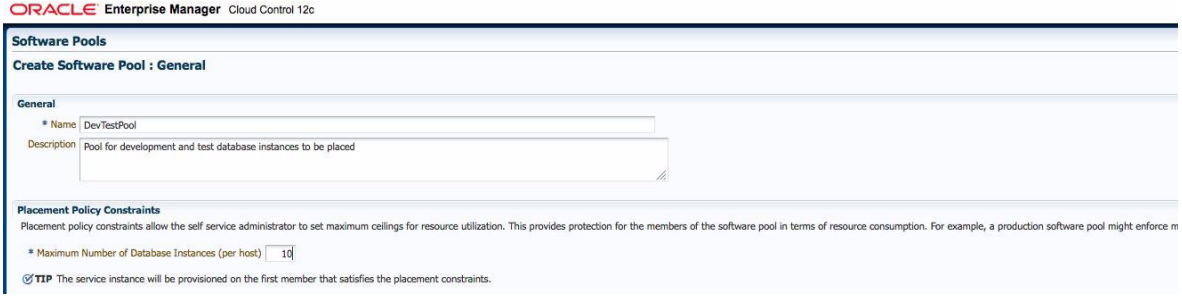
   The Database Pools window is displayed.

2. **Click Create on the Database Pools window.**


   The Create Software Pool wizard is displayed.

   a. **In the General window, type the name and description of the software pool to create, and then click Next.**

      In the example, the maximum amount of databases per host is set to 10 for demonstration purposes. In a live deployment this number is determined as part of the overall system sizing exercise.



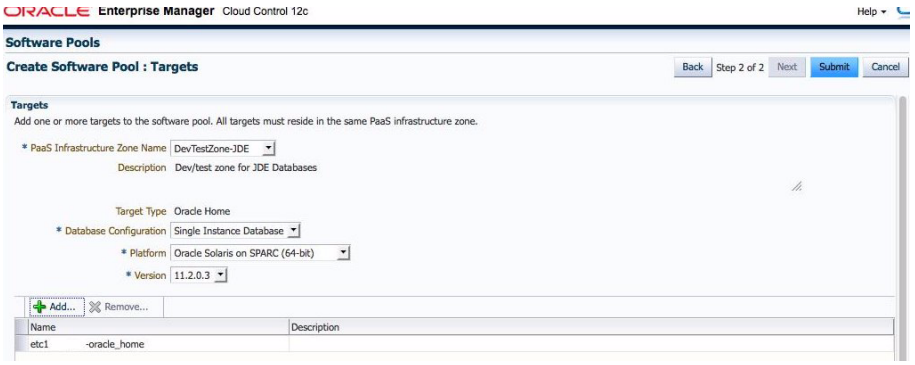

   b. **In the Targets window, type the details of the targets (for example, which ORACLE_HOME software installations and which Oracle Solaris zones) that will be used to create databases instances for the Cloud end user.**

      Select the `DevTestZone` PaaS infrastructure zone created earlier and set the correct Oracle Solaris version.

   c. **Click Add to search for available ORACLE_HOME targets.**

**d. In the Targets page, highlight each target you want to add to the software pool, and then click Select.**

**e. Review the details, and then click Submit to create the software database pool.**




The new database pool is available on the Database Pools window.

# ▼ Create a Service Template

The service template is displayed to the Cloud end-user by way of the EM12c self service portal. The user selects this service template to request EM12c Cloud Control to run the deployment procedure and create the database instance on behalf of the user.

1. **Choose Setup → Middleware and Database Cloud Home → Cloud → Database.**

   The Database Pools window is displayed.

2. **Select Service Templates from the left menu.**

3. **Click Create on the Service Templates window.**

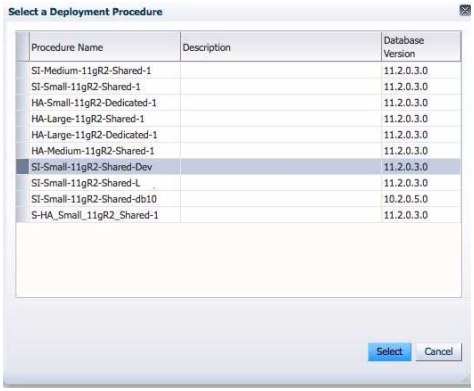
   The Service Templates wizard is displayed.

   **a. In the General window, type a name and optionally a description for the Service Template.**

   This service template will be made available to the database cloud end users, so a descriptive name is important.

   **i. Click the magnifying glass icon to display a list of deployment procedures.**

ii. **Highlight the deployment procedure created earlier to provision a small Single Instance database suitable for a development test environment, and then click Select.**




b. **In the Configuration window, type a user name and password for the database that the deployment procedure will create for the Database Cloud end-user.**

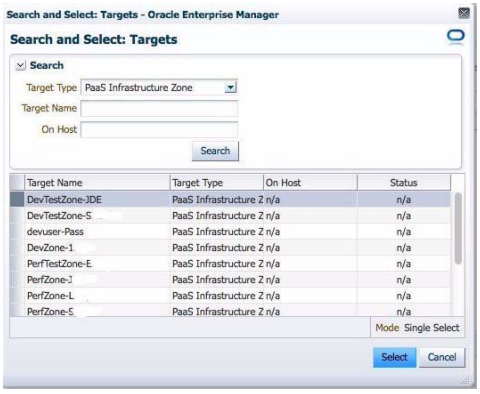
Click the locks to stop the end-user from changing the user name or password.

RAC is not used in this example, so the number of RAC instances is blank. Click Next to continue.

c. **In the PaaS Infrastructure Zones window, click Add.**

i. **Select PaaS Infrastructure Zone as the target type, and then click Search.**

ii. **Highlight the appropriate target in the list, and then click Select.**

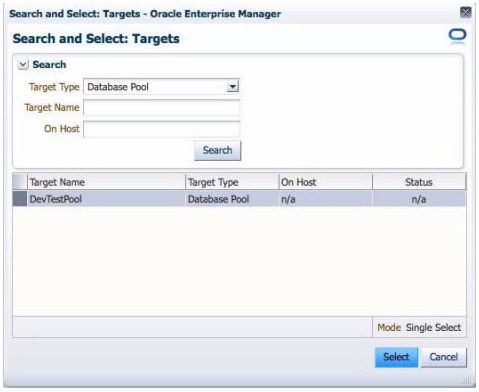



The selected target is displayed in the list on the Create Service Template: PaaS Infrastructure Zones window.

iii. **Click the magnifying glass icon next to the added zone to display the list of Database Software Pools.**

iv. **Select Database Pool as the target type, and then click Search.**

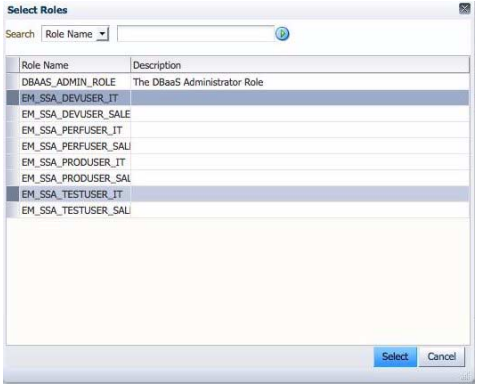
v. **Highlight the database pool created earlier, and then click Select.**




vi. **In the Paas Infrastructure Zones window, click Next.**

d. **In the Roles window, click Add.**

e. **Highlight the roles that will access the service template, and then click Select.**




The `EM_SSA_DEVUSER_IT` and the `EM_SSA_TESTUSER_IT` roles are both selected in this example.

f. **Click Next on the Roles window.**

g. **In the Review window, review the details and click Submit to create the service template.**

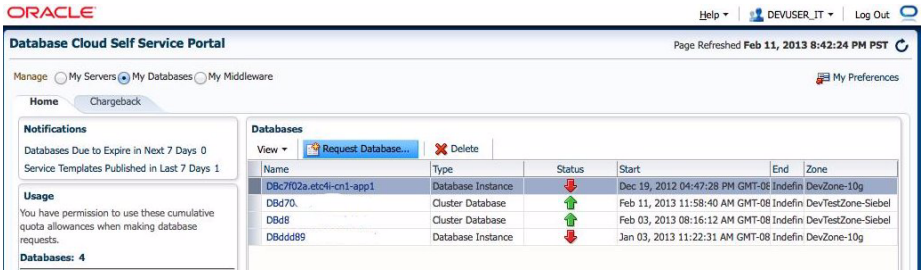
The service template is created and displayed in the Service Templates list.

# ▼ Use Database as a Service

Once you have configured all of the necessary components, use this procedure to use the database as a service on the SPARC SuperCluster T4-4 from Oracle.

1. **Log in to OEM Cloud Control 12c as the `DEVUSER_IT` user created earlier.**

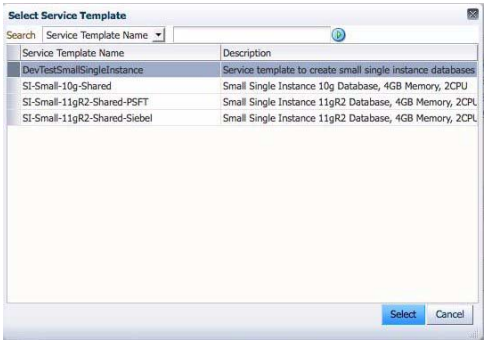
2. **Click the My Database option, and then click the Request Database button in the Databases panel.**




The Select Service Template window is displayed.

3. **Select the service template that was made available to this user's role.**

   In this case, `DevTestSmallSingleInstance` is selected, which was created earlier. Click Select.




The New Database Request wizard is displayed.

   a. **In the General window, select the database zone from Destination Zone menu. In this case, `DevTestZone`. Then select Next.**

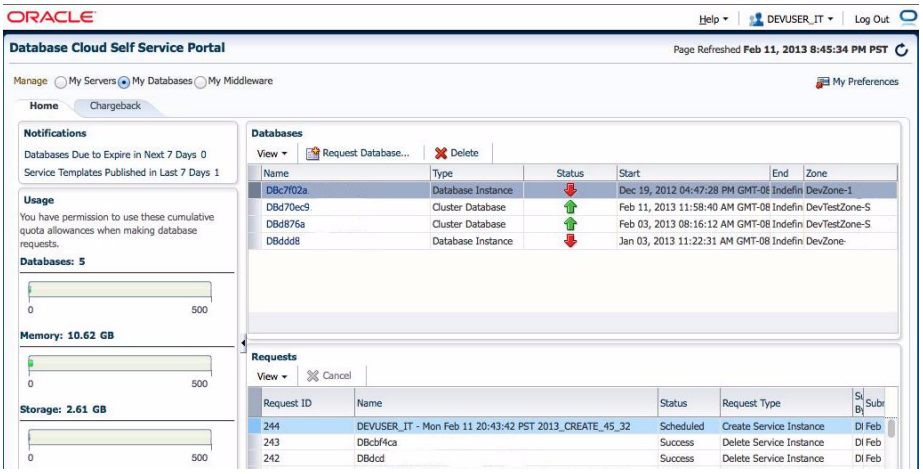
   b. **In the Deployment Inputs window, type a user name that can access the database in the User Name box and click Next.**

   c. **In the Schedule window, click Next.**

**d. In the Review window, review the details and click Submit.**


The request has been submitted and its progress is indicated in the lower half of the window.

When the database provisioning process is complete, the request will terminate successfully and the Oracle service name created is displayed in the upper half of the window (request ID 244 in this example).




To manage and monitor a database instance, simply click the instance name in the database pane. Note that this window displays the connection string to enable the user to connect and use the database.