Oracle Enterprise Manager

Provisioning, Patch Automation, and Configuration Management Lab

Session S318967
Oracle Enterprise Manager 11g
Provisioning, Patch Automation and Configuration Management
Hands-on Lab

Introduction to Enterprise Manager 11g

Oracle Enterprise Manager 11g is the centerpiece of Oracle's integrated IT management strategy, which rejects the notion of management as an after-thought. At Oracle, we design manageability into each product from the start, enabling Oracle Enterprise Manager to then serve as the integrator of manageability across the entire stack encompassing Oracle and non-Oracle technologies. Fueled by this unique vision, Oracle Enterprise Manager 11g has introduced business-driven IT management to help IT deliver greater business value through three highly differentiated capabilities:

- **Business-driven application management**, which combines industry-leading capabilities in real user experience management, business transaction management and business service management to improve application users’ productivity while enhancing business transaction availability
- **Integrated application-to-disk management**, which provides deep management across the entire Oracle stack to reduce IT management complexity and eliminate disparate point tools
- **Integrated systems management and support**, which utilizes industry-first technology bring support services into the IT management console; enabling proactive IT administration, increased application and system availability, and improved customer satisfaction

Introduction to Provisioning, Patch Automation and Configuration Management

The primary motive of Provisioning, Patching and Configuration Management is to create a consistently configured environment that is secure against known vulnerabilities and product defects. Automation is critical to eliminating error-prone manual processes that plague most data centers and drive up the overall cost of management. As complex, multi-tier applications become widespread; administrators are tasked with managing more systems and the complex relationships between those systems. Automation of Provisioning, Patching and Configuration Management processes and practices is critical to increasing operation efficiencies and availability.

This lab will demonstrate:

Enterprise Manager can

- Identify Vulnerabilities and Recommend Patches
- Manage the Patch Management lifecycle
- Create Standard Gold Images of Software from the patched deployments
- Provisioning Standard and Compliant Databases of Gold Images in an agile and automated fashion

Demonstrate to yourself how you can attain measurable IT cost savings by extending the availability of your computing resources, cultivating more productive and effective administrators, and achieving higher quality of service.
Track 1: End to End Software Patch and Configuration Management

Track One takes you through an end-to-end patching lifecycle scenario:

**Three approaches to patch identification and acquisition**
- My Oracle Support integration with EM, to provide proactive automated patch recommendations for monitored targets
- Monitor a Service Request, to fetch a patch recommended by Support for your specific case
- Ad hoc search for a specific patch

**Steps**
- Download patches
  - Add each to Plan
  - Validate patches – replace conflicting patches with merged patch, automatically supplied
  - Create user-defined policy (UDP) which will confirm whether the database is properly patched
  - Create policy group that includes the UDP, and map the policy group to the database targets
  - Evaluate the policy group in real time
  - Find the databases out-of-compliance for the required patches
  - Mass deploy the patch Plan – multiple patches across multiple targets simultaneously
  - Monitor the deployment
  - Recheck the policy group to find the databases in compliance

The exercise starts directly in the My Oracle Support area of EM, where you will practice three real-life alternatives to discovering and acquiring needed or useful patches for your database targets.

You’ll queue the patches in a Plan and validate them, receiving a merged patch – proactively recommended – when two of the patches are found to conflict.

Then you’ll build and run a compliance policy, which will check your target databases for the desired patch level.

When the targets are found not in compliance, you’ll mass deploy the patches that you previously assembled into a Plan, and finally recheck the targets for policy compliance.

This Track will introduce you to the power and ease of My Oracle Support integrated into Oracle Enterprise Manager, and how having a unified view of recommended maintenance, patch discussions, and the Support knowledge store, all in the context of your monitored targets, can save time and increase compliance metrics at every stage of the maintenance lifecycle.

**Summary:** Learn How Enterprise Manager Grid Control...
- Provides system vulnerabilities and provides patch recommendations
- Creating a Patch Plans to accumulate and plan your regular patch rollouts
- Identifies Issues, Conflicts and resolve them ahead of the actual deployment
- Create User Defined Policies for Patch Compliance
- Automate rollout of multiple patches across multiple environments in a single downtime window
- Check for Patch Compliance through the Policies
Track 2: Automated Database Provisioning (Optional/Extra Credit)

Track Two (optional) extends the lifecycle concept, where in you can mass-deploy compliant software to create standard environments.

For the lab, we have pre-created the gold image of the Database software, patched with required patches. You would use deployment procedures to automate the deployment of the Gold Image to create new Databases. Upon creation you can check the newly created DB registered and readily monitored by EM and can run patch compliance check, to ensure compliance.

**Summary:** Learn How Enterprise Manager Grid Control...

- Create Gold Images of Standard Software, which are pre-patched to required levels.
- Create standard deployments from Gold Images in an automated way using Deployment Procedures
Housekeeping

Please feel free to seek assistance from the instructor or Oracle Demo staff at any point in time.

Before we start taking you through the demonstration, please note the following:

- You will be given a virtual machine address to use for this lab. For ease of reference, you may want to write this below:

  Virtual Machine Address: ______________________________________________________

- You will connect to that system using a simple browser connection using Firefox.

  Launch the Firefox browser from the Desktop menu. Click on the Grid Control option in the favorites to open up Enterprise Manager Grid Control

  ![](image)

  The Grid Control username and password are:

  Username: **sysman**

  Password: **oracle1**
Track 1: End to End Patch Management

**Patch Automation and Configuration Management**

1. Patch recommendations and creation of a Plan with a patch

My Oracle Support integration with Enterprise Manager features ‘Patches & Updates’, which provides:
- comprehensive patch recommendation across security and other recommendations,
- a new methodology to rollout patches using Plans,
- And the most interesting feature – single-click ‘Conflict’ resolution of patches.
In this exercise, you will identify Patch Recommendations and using Plans, automate the validation process.

1. Log in to Grid Control using the EM user credentials provided. (Username- sysman. Password – oracle1)

2. From Grid Control Home page, Click ‘My Oracle Support’ tab and select the ‘Patches & Updates’ sub-tab:

3. Click ‘All Recommendations’ in the Patch Recommendations section:

   *If you do not find the section there, scroll down in the page to see it below the Patching Quick Links region*

4. The page displays all the recommendations currently available for the Enterprise Manager targets. Each is classified as ‘Security’ or ‘Other Recommendations’.
a. From the recommendations, switch the Choose filter to ‘Target Name’ and search for the Target name ‘db04’

b. From the result select patch ’9654983’ against the database target – db04.oracle.com:

The Patch recommendations are computed in Enterprise Manager by directly downloading the metadata xml from My Oracle Support. User environments which are OFFLINE or DISCONNECTED can download the XML and upload to Grid Control to compute recommendations in offline mode.

5. Click ‘Full Screen’ on the action menu drop down:

6. The page displays information related to the patch like Patch attributes, bugs fixed, related Knowledge articles:
<table>
<thead>
<tr>
<th>Bug ID</th>
<th>Description</th>
<th>Modified</th>
<th>Product</th>
<th>Related to Patch ID</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1205020</td>
<td>Bug 1205020 (RDBMS-1205020) - 11.2.0.2.12 - Patch #188 - 11.2.0.2.12 - T1 Update (PSU)</td>
<td>07/20/2010</td>
<td>Oracle Database</td>
<td>1205020</td>
<td>Fixed</td>
</tr>
<tr>
<td>1205006</td>
<td>Bug 1205006 (RDBMS-1205006) - 11.2.0.2.12 - Patch #188 - 11.2.0.2.12 - T1 Update (PSU)</td>
<td>07/20/2010</td>
<td>Oracle Database</td>
<td>1205006</td>
<td>Fixed</td>
</tr>
<tr>
<td>1205004</td>
<td>Bug 1205004 (RDBMS-1205004) - 11.2.0.2.12 - Patch #188 - 11.2.0.2.12 - T1 Update (PSU)</td>
<td>07/20/2010</td>
<td>Oracle Database</td>
<td>1205004</td>
<td>Fixed</td>
</tr>
<tr>
<td>1205003</td>
<td>Bug 1205003 (RDBMS-1205003) - 11.2.0.2.12 - Patch #188 - 11.2.0.2.12 - T1 Update (PSU)</td>
<td>07/20/2010</td>
<td>Oracle Database</td>
<td>1205003</td>
<td>Fixed</td>
</tr>
<tr>
<td>1205002</td>
<td>Bug 1205002 (RDBMS-1205002) - 11.2.0.2.12 - Patch #188 - 11.2.0.2.12 - T1 Update (PSU)</td>
<td>07/20/2010</td>
<td>Oracle Database</td>
<td>1205002</td>
<td>Fixed</td>
</tr>
<tr>
<td>1205001</td>
<td>Bug 1205001 (RDBMS-1205001) - 11.2.0.2.12 - Patch #188 - 11.2.0.2.12 - T1 Update (PSU)</td>
<td>07/20/2010</td>
<td>Oracle Database</td>
<td>1205001</td>
<td>Fixed</td>
</tr>
<tr>
<td>1205000</td>
<td>Bug 1205000 (RDBMS-1205000) - 11.2.0.2.12 - Patch #188 - 11.2.0.2.12 - T1 Update (PSU)</td>
<td>07/20/2010</td>
<td>Oracle Database</td>
<td>1205000</td>
<td>Fixed</td>
</tr>
<tr>
<td>1205009</td>
<td>Bug 1205009 (RDBMS-1205009) - 11.2.0.2.12 - Patch #188 - 11.2.0.2.12 - T1 Update (PSU)</td>
<td>07/20/2010</td>
<td>Oracle Database</td>
<td>1205009</td>
<td>Fixed</td>
</tr>
</tbody>
</table>

**Related Knowledge to this Patch**
- [Related Articles](#)
- [Related Documentation](#)
- [Related Forum](#)
- [Related Discussion](#)
a. Click on ‘View Trends’

You can also get information on patch popularity, with the number and trend of downloads. You can also see and comment on reviews from other members of the community.

(Note: Download data is only available for Non-Security Patches – typically non-CPU patches.)

**Plans**

Plans are the new way to do rollouts, using My Oracle Support within the EM flow. You will use Plans to assemble sets or logical groups of patches, and validate their applicability. The following steps and further use-cases will showcase these features.

7. Click ‘Add to Plan’ and select ‘Add to New...’ Provide a unique name to the PLAN, say **PROD_ROLLOUT_PLAN**, and click ‘Create Plan’:
8. Click ‘View Plan’, which opens up the Plan wizard and shows the selected patch under the patches section:

9. Click ‘Validation’:

Click ‘Validate’
Upon clicking ‘Validate,’ the request to check if the patch or patches selected can be applied to the specified targets is sent to My Oracle Support. Upon processing, the following results are possible:

a) There are no conflicts, then the selected patches are “Ready for Deployment”

b) Conflict exists: You can directly file a Merge Request to obtain a conflict-free patch. If that request has already been filed by other customers, you would be added to queue directly.

c) Conflict exists: If there is a Merge Patch already available, you can directly opt to replace the conflicting patches with the Merge Patch.

10. In this exercise, for the selected patch there is no conflict and the Plan is ready for deployment:
2. Monitor a Service Request and add a patch suggested by Support

My Oracle Support integration with Enterprise Manager also features Service Requests and Knowledge articles. You can:

- Create / Update / Track Service Requests, associate patches with Plans, and automate deployment to resolve issues.
- Browse through Knowledge Articles.

**USER SCENARIO:** There was an issue reported by the customer on Oracle E-Business Suite 11i. Oracle Support verified the configuration information made available through Oracle Configuration Manager – Harvester and has promptly identified that the issue relates to the ORA-600 error on the underlying Database. As a resolution, Oracle Support has recommended a patch to be applied. The lead DBA / DBA Manager from the customer has recommended applying the patch as a part of the upcoming monthly rollout cycle.

For this exercise, you will use a pre-updated Service Request. The exercise highlights how you can address a real life situation such as the above and effectively carry out typical rollouts by accumulating patches and scheduling them all during a maintenance window.
1. Click ‘Service Requests’ tab on the main navigation bar on the top:

Select and Click on “PatchingLabTestSR” from the ‘Service Requests’ section

The Service Request can be marked as a Favorite by enabling the Star Icon against it.

2. View the recent update to the service request and from the recommendation from Oracle Support, click on patch number ‘9271344’:

(Use Scroll Down in the History section to look for the patch. You can also minimize the Description region so you could see the History region better)
3. The page displays the complete patch information:

   a. Make sure you switch the Platform to **Linux x86:**
4. Click ‘Add to Plan’ and select ‘Add to Existing’ and choose the Plan you created in Part 1 (example: PROD_ROLLOUT_PLAN):

5. In the ‘Add to Plan’ window, select to associate the patch with your assigned Database (db04).
   Make sure you search for the specific Database – db04.
   Specify it in the search, select the Database by highlighting its row, and Click ‘Add Patch to Plan’

6. The patch is successfully added to the Plan:

7. Click ‘Hide Message.’ We will return to the Plan after completing the steps in Part 3.
3. Search for a specific patch; add it to the Plan and then deploy the entire Plan

The third, and more common, way of looking for patches is by ‘Searching’. The Patch Search in 11g provides more flexible and advanced search capabilities. It also provides features like Save Search and Search based on Saved Searches, enabling you to perform a variety of actions more quickly and efficiently:

Typical cases include where DBA learns the existence of a patch from external sources like:
- blogs
- forums
- Colleagues.

The new search functionality, in addition to a simple Download functionality, provides integration with Plans. The user can now search and add patches directly to Plans for further Validation and Rollout.

In this exercise you will search for patches, add the patches to the previously created Plan, validate if all the selected patches can be deployed, and roll out the patches in an automated fashion using an out-of-the-box Deployment Procedure.

1. Click ‘Patches & Updates’ on the Navigation Bar:

2. From the Patch Search section, Search for Patch ‘9102860’, choose Platform - ‘Linux x86‘ and click on Search
3. From the results, select the patch for **Version 11.2.0.1.0**: 

4. Click ‘Add to Plan’ and select ‘Add to Existing’, and select the Plan you had previously created:

   Make sure you add to the Plan you had created in the Part 1 of the exercise.

5. In the ‘Add to Plan’ window, select a target to associate the patch with your assigned Database (db04):

   Make sure you search for the Database (db04.oracle.com). Specify it in the search and select the Database and Click ‘Add Patch to Plan’:
6. The patch is successfully added to the Plan:

Plan "PROD_ROLLOUT_PLAN" has been edited

7. Clicking 'View Plan' brings you into the Plan Wizard in the Patches section. The page displays all the patches accumulated for Rollout via Recommendation, Service Request and Search.

8. Click 'Validation' or 'Next' in the Wizard, since new patches were added to the Plan and it needs to revalidated. Click 'Revalidate':

Validation Needed
Some patches have been added or removed. Re-run the analysis to detect any conflicts.

9. Upon Validation this time, conflicts will be identified between two patches in the selected list. Click 'Request Replacement Patches'.
10. In this case, a conflict exists and a Merge Patch is already available. Click ‘Replace Conflicting Patches’:

**Conflicts Found, Replacements Available**

Replacement patches are available for some or all the conflicts in your patching plan.

[Replace Conflicting Patches]

11. We had selected an 11.2.0.1.0 version of the patch, and there is an overlay patch available for the same patch that is compatible with the PSU version 11.2.0.1.2:

[11.2.0.1.0 patch details]

12. The Merge replaces the conflicting patches and the wizard presents a Review page, showing all of the validated patches are ready to be deployed:
4. Create a User Defined Policy and Map the Target for Compliance

The Compliance Management features of Enterprise Manager test the conformance of targets for security standards, and configuration and storage requirements. By continually testing systems, services, and targets, users are ensuring the best possible protection and performance for their systems. Enterprise Manager provides two types of compliance management: Policies and Policy Groups. Policies are rules against which managed entities are evaluated, while Policy Groups are a collection of policies that are managed as a set.

Users can utilize a User-defined Policy (UDP) to test if the desired patches have been applied to all targets. The following screenshot shows a User Defined Policy that tracks the existence of the patches on a continual basis. Policies can also be tied in with notification mechanisms for DBAs to be informed when a violation is detected.

1. From your current screen, choose the Compliance tab on the Navigation bar. Select the Policies sub-tab, and Library sub-sub-tab. Click ‘Create…’ button:

---

1 For more details refer to Chapter 13 in Enterprise Manager Administration Guide.
2. On the next screen, enter details for your new policy:
   a. First, enter a name for your policy (this is mandatory), say 'Prod_Rollout_<Month>'.
   b. Second, choose Database Instance as target type.
   c. Third, choose Critical as severity.
   d. Fourth, choose Security as Category.
   e. Optionally, you may enter description, impact of violation, recommendation, and details link.
   f. Fifth, click on Next button:

   ![Create Policy: Details](image)

3. On the next screen, specify the following SQL query below to check for the patch compliance. All fields on this screen are mandatory but the message fields are pre-populated:

   ```sql
   select tgt.target_guid, tgt.target_name, '9654983,9102860,9271344' as patches from mgmt_targets tgt where target_type = 'oracle_database' and not exists ( select t.target_guid as TARGET_GUID, t.target_name as TARGET_NAME, t.target_type as TARGET_TYPE, decode(p.container_guid, null, 'N', 'Y') as IS_PATCHED from em$ecm_targets_by_aruid t, (select distinct ip.container_guid from mgmt_inv_patch ip where ip.id in ('9654983','9102860','9271344')) p where t.container_guid = p.container_guid (+) and decode(p.container_guid, null, 'N', 'Y') = 'Y' and t.target_guid = tgt.target_guid )
   ```

   You can also access the SQL Script from the TEXT file on the VNC Desktop – File Name:
   Demos > Enterprise Management > Patching & Configuration Management > 
   PatchingLab_UserDefinedPolicy_SQL.txt
4. Click on ‘Validate SQL’ to verify that the SQL Query is right:

![Image](image.png)

5. Click Next. On the next screen, enter the violation condition.

   In our lab example, a row is returned if the patch has not been applied. So the WHERE clause is trivial for our lab today. In general, the WHERE clause on this screen would be used to test for a violation.

   First, choose ‘2’ as the number of key columns. Second, choose SQL as the condition type. Third, enter ‘1=1’ in the WHERE text box. Finally, click Next:

   ![Image](image.png)

7. Set policy evaluation to a 24-hour schedule. First choose ‘By Hours’ for frequency type. Second, enter ‘24’ for ‘repeat every’. Third, click Next button:
8. Check all the entered information on the final review screen. Click the Back button if you need to edit any previously entered information. If you are satisfied, click the Finish button to create the policy. Your newly created policy will show up on the Policies: Library page.

---

Create Policy: Review

Name  Prod_Rollout_Sep
Target Type  Database Instance
Category  Security
Severity  Critical
Description
Details Link
Impact of Violation
Recommendation

Non-Compliant Message Policy A UDP - DB Patch check is non-compliant.
Compliant Message Policy A UDP - DB Patch check is compliant.

Parameters

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>Default Value</th>
</tr>
</thead>
</table>

SQL Query

```sql
select tgt.target_guid, tgt.target_name, '5750049' as patch from
import_targets tgt where target_type = 'oracle_database' and not exists (
select t.target_guid as TARGET_GUID, t.target_name as TARGET_NAME,
t.target_type as TARGET_TYPE, decode(t.container_guid, null, 'Y', 'Y')
) WHERE 1=1
```

---

Policy Prod_Rollout_Sep has been created

Policies: Library

Page 24 of 48
5. Create User Defined Policy Group

We will create a policy group with just one policy for demonstration purposes. We will then schedule this group for immediate evaluation on a particular target.

1. Choose the Compliance tab, Policy Groups sub-tab, and Library sub-sub-tab. Click the ‘Create…’ button:

2. Enter basic information on the Create Policy Group page. First, enter a name, say ‘Patch Compliance for Sep’. Second, choose Database Instance as target type. Third, enter your name as author. Fourth, click on ‘Add…’ button. Go to the next step to add policies to your new group.
3. On the ‘Create Policy Group: Select Policies’ page, search for the database patch policy you created earlier and add it to your new policy group. First, enter your policy name in the search text box next ‘Policy’. Second, click the Go button. Third, choose your newly created policy from the search results. Fourth, click the Continue button:

![Create Policy Group: Select Policies](image)

4. You should be back on the Create Policy Group page. The policy you added should show up on the page. Set the Importance Level to ‘High’ and click the OK button:

![Create Policy Group](image)

5. You should be back on the ‘Policy Groups: Library’ page. Verify that your newly created policy group shows on the page. Note the edit icon for editing your policy group is only available for user-defined policy groups:

![Policy Groups: Library](image)
6. Schedule One-time Immediate Evaluation for User Defined Policy Group

1. Choose the policy group you created in the previous step and click the ‘Schedule Evaluation’ button:

2. Click the Add button to add a target database for your evaluation:

3. A popup window will open. Choose Database targets – db04 and db06. Click the Select button:
4. You should now be on the main Schedule Evaluation screen. Choose schedule type ‘One Time (Immediately)’ and click OK:

![Schedule Evaluation: Patch Compliance for Sep]

You will be taken back to the policy group library page.

5. Click on the Evaluation Results sub-sub tab:

![Policy Groups: Library]

This table lists all available policy groups. User-defined policy groups can be created, edited from this page. Both system-defined and user-defined policy groups can be scheduled for evaluation.

6. Click on the policy group you created to view the evaluation results. Choose the Target Type as ‘Database Instance’ and click Go:

![Policy Groups: Evaluation Results]

Click on the Policy Group name – ‘Patch Compliance for Sep’
7. On the next screen first view the results. Next, click on the Configuration Group – Patch Compliance for Sep (collapsed item) to expand it. Click on Security in the list on the left to see the Policy:

Evaluation Results: Patch Compliance for Sep

<table>
<thead>
<tr>
<th>Target Name</th>
<th>Compliance Score (%)</th>
<th>Violations</th>
<th>Violated</th>
<th>Compliance Not Evaluated</th>
<th>Last Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>db01.oracle.com</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0 Aug 20, 2010 10:17:15 AM GMT</td>
</tr>
<tr>
<td>db04.oracle.com</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0 Aug 20, 2010 10:17:15 AM GMT</td>
</tr>
</tbody>
</table>

8. Click on the policy (as shown in the following figure):

Policy: Prod_Rollout_Sep

<table>
<thead>
<tr>
<th>Target Name</th>
<th>Violations</th>
<th>Last Evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>db01.oracle.com</td>
<td>1 Aug 20, 2010 10:17:15 AM GMT</td>
<td></td>
</tr>
<tr>
<td>db04.oracle.com</td>
<td>1 Aug 20, 2010 10:17:15 AM GMT</td>
<td></td>
</tr>
</tbody>
</table>

9. Click on the violations sub-tab in the right frame:

Policy: Prod_Rollout_Sep

<table>
<thead>
<tr>
<th>Target Name</th>
<th>TARGET_NAME</th>
<th>PATCHES</th>
<th>Non-Compliant Since</th>
<th>Last Evaluation</th>
</tr>
</thead>
</table>

Please note that the policy flags a violation because the patches have not been applied.
7. Automated Deployment of Patches

Mass Deployment – Multiple Patches across Multiple Targets

1. Click on ‘My Oracle Support’ tab on the Navigation bar, click on ‘Patches & Updates’ tab and select the Plan previously created by you.

   Page Loading sometimes takes time, wait for a minute or two

2. Select all of the patches and click ‘Run Procedure’:

   To Select> Hold Shift and Select the patches

3. Select ‘Patch Oracle Database’ from the list displayed and Click ‘Run Procedure’. This will trigger the automated deployment procedure to deploy patches:
Deployment Procedures are the best practices to automate the change. It encompasses the entire orchestration for patching including shut down, application of patches & SQuPs and startup. Procedures support Mass Deployment – application of multiple patches across multiple targets in a single change window.

**NOTE (PRODUCT SUPPORT INFORMATION):**
- Supports application of One-off patches (including CPUs & PSUs) and Patchsets (minor upgrades, say 10.2.0.3 to 10.2.0.4)
- Supports Databases version from 9i and onwards (includes 11.2DB support)
- Supports Oracle Databases, Real Application Clusters (RAC), Automated Storage Management (ASM), Clusterware, and Oracle Application Server
- Supports zero downtime application of patches on RAC in rolling mode
- Supports Databases in Physical Standby Configuration
- Supports multiple platforms (Unix and Windows)*

* For additional information of configuration support, refer to the ‘EM Target Patchability Report’ in your Grid Control under Reports

4. On the Software Updates page, it displays the patches selected in the Plan. Click Next:

<table>
<thead>
<tr>
<th>Software Updates</th>
<th>Target List</th>
<th>Library Step Properties</th>
<th>Oracle Configuration Manager Patches</th>
<th>Credentials</th>
<th>Schedule</th>
<th>More</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patch Oracle Database: Software Updates</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Select the Software Updates to Stage and Apply.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TIP: Directories where the Updates are staged to and applied from.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TIP: Staging of patches to a shared stage location is not allowed for All Nodes RAC/Clustertware Paching.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:**

Along with the application of Binary of the patch, the procedure also applies the SQLs that are part of metadata of the patch. By default it applies the SQLs associated with CPU (catbundle.sql), PSU (catpsu.sql), Patchsets (catupgrade.sql) and also the recompile SQL (utlrp.sql). The SQL is applied simultaneously on all of the databases of the selected Oracle Home.
5. The next step in the interview is the selection of Targets of the patch. Under “Database Targets to Be Patched”, click Add:

_Currently, there is no auto selection of targets from Plan, but the information on screen provides you the Targets associated with the Plan._

6. The procedure pre-populates with the candidate targets for the selected patches. Click the select box next to databases as shown in the figure below, and then click “Select”.

Enterprise Manager allows you to apply multiple patches on multiple targets in a single downtime window. Typically, this procedure orchestrates patching in parallel across multiple hosts and does a sequential operation across the Oracle Homes within a host. Within a given Oracle Home, the procedure patches all of the Databases simultaneously.

7. Verify that the correct database was selected for patching, and then click Next.
8. Next step in the process is to provide the information of the user who patches the databases. The Credentials are stored in Enterprise Manger as Preferred Credentials, so it gets pre-populated directly on the screen.

Click Next to continue.

*Deployment Procedures also support authentication using *sudo*, power broker or any other authentication module.*

9. The fourth and last step in the procedure is the scheduling of the execution. In the Schedule screen, the schedule is set to immediately by default.

Click Next.

Typically you would associate the RFC Ticket number with the Instance Name to track its execution:
10. In the Review screen, verify the selection, and then click Deploy:

![Review screen](image)

11. The procedure lands on the ‘Procedure Completion Status’ page, which provides you the ability to monitor the execution (if required) at the procedure level, or optionally drill down into individual steps to view their status:

![Deployment Procedure Manager](image)

12. Click either on the Procedure or status to check the step level execution status. The status can be auto refreshed by setting the refresh parameter to a 30-second refresh from EM options:
13. As the procedure runs it orchestrates every step and applies all of the patches selected on both the targets selected. Set the Refresh to 'Real Time: 1 Minute Refresh' and allow the procedure till completion with the status of 'Succeeded'.
8. Patch Compliance Verification

*Wait till the end of execution of the Deployment Procedure to schedule the evaluation*

1. Select the ‘Compliance’ tab, Policy Groups sub-tab. Modify the Target Type to ‘Database Instance’ and Click ‘Go’ to search for the Policy Group previously created *(Patch Compliance for Sep)*:

   - **Target Type**: Database Instance
   - **Policy Group**: (No search completed)
   - **Policy Group**: Patch Compliance for Sep

2. Select the ‘Library’ tab and Select the group and click ‘Schedule Evaluation’ button:

   - **Policy Groups: Library**
   - **Select Policy Group**: Patch Compliance for Sep
   - **Target Type**: Database Instance
   - **Scheduled Evaluations**: 0

3. Click on the Add button to add a target database for your evaluation:

   - **Schedule Evaluation: Patch Compliance for Sep**
   - **Target Type**: Database Instance
   - **Targets**: Add the targets to be evaluated.

4. A popup window will open. Choose Database targets - db04 and db06. Click the Select button:
Wait till the end of execution of the Deployment Procedure to schedule the evaluation.

5. You should now be on the main ‘Schedule Evaluation’ screen. Choose schedule type ‘One Time (Immediately)’ and click OK.

6. Click on the Evaluation Results sub-sub tab:

7. Click on the policy group you created to view the evaluation results. Choose the Target Type as ‘Database Instance’ and click Go:
The Databases are now compliant with the Patch Policy.

This concludes the Oracle Enterprise Manager Hands-on Lab. If you have time, you can continue with the Optional track that follows.
Track 2: Automated Software Provisioning (Optional/Extra Credit)

Mass Deployment of Oracle Databases

In this exercise, you will learn about the Oracle Database Provisioning feature which allows one to perform mass deployment of standard databases across the Enterprise in a single change window. This feature allows mass deployment using a live reference installation or a standard pre-patched gold image.

The gold image is created by pointing Enterprise Manager to a known tested and patched reference installation. Once created, the gold image is stored in Enterprise Manager’s software library, which can be used to perform release management operations.

In this lab, we will clone an 11gR2 database from a pre-created gold image, which is stored in the software library.

1. Start at the Grid Control Home page. Select the Deployments tab. Click on the Provisioning sub-tab. The Software Library shows Gold images created from a standard and patched 11gR2 Database Upgrade

2. Click on the General tab. Scroll down to select Database Provisioning Procedures:
3. Select the “Oracle Database Provisioning” procedure and click on Schedule Deployment to perform a mass deployment of database Oracle Homes:

![Deployment Procedure Manager](image)

4. You will go through a simple 2-step interview page to perform mass provisioning in an unattended manner. Select Oracle Database Provisioning to reach the Select Source and Destination page. Click on the Torch icon to look up the Gold Image in Software Library:
5. Select Source: Provisioning procedure allows you choose a gold image from Software library, or an existing reference installation. In this exercise we will select Software library and then click on the torch to select the gold image for Oracle Database 11gR2:
6. Specify Destination Host Settings: Select one or multiple destination servers for provisioning the Oracle Home in a single window. Click the Add button to add destinations hosts:

Select the host “dbsecurity.oracle.com”:

7. Once you add a host, you will see default values for Oracle Base, Oracle Home, and other fields. Change the given values as follows:
   a. Oracle Base – /u01/oracle/product/11.2.0
   b. Oracle Home – /u01/oracle/product/11.2.0/dbhome_3
8. Click on ‘Customize Host Settings..’ and select ‘Custom Home Name’:

The table is updated with a new column for Oracle Home Name, specify the Oracle Home Name as “Oradb112_home3”:

**NOTE – ADDITIONAL INFO**

a. **Advanced**: Allows you to specify any additional Oracle Universal Installer (OUI) parameters you want to specify for performing the cloning operation

b. **Stage to Shared Location**: If you want to stage the software binaries to a shared location, then select “Stage to Shared Location” and specify a shared storage location that is accessible by all destination hosts. This staged location can also act as a source for future deployments.
9. **Configure Database**: Select this to configure the database. If not selected, the procedure will perform a software-only installation of the databases:

```
Advanced

Additional Parameters: E.g., -debug
Stage to Shared Location
Shared Location: The location should be shared across all destination hosts
```

10. **Schedule**: This allows you to schedule the deployment for a future date/time with sitting and waiting for it. For this exercise, we will leave it at the default ‘Immediate’. Click Next.

11. **Oracle Database Provisioning: Database Configuration** – Required, to provide values to configure Database on the destination Oracle Home:

   a. SID and Global Database Name – **db101**
   b. Database Password – **oracle1**
   c. Data File Location – `/u01/oracle/product/11.2.0/dbhome_3/oradata` (within the Oracle Home)
   d. Listener Port – **1525**
12. Review the details provided and click on the Finish button to submit the deployment procedure:
13. The deployment procedure is submitted and the status page comes up. Click on the first deployment procedure execution link `<OracleDBProvisioning_timestamp>` in the table that comes up:

![Deployment Procedure Manager](image)

14. You can drill down into the procedure to check on the status of individual steps. Upon completion the procedure shows a 'Succeeded' status:

![Status](image)
15. Click on the Targets tab, Databases sub-tab, and you will see the newly cloned databases up and running in Grid Control:

This concludes the Optional/Extra Credit Track of the Oracle Enterprise Manager Hands-on Lab. Thank you for participating.
What Others Are Saying

“Our administrators needed a tool to help manage, monitor, and administer various deployments in their datacenters. Oracle Enterprise Manager helped to standardize our process for provisioning and patching in a completely automated, repeatable, and reliable manner. As a result, we have been able to reduce costs, increase staff productivity, and ensure compliance.”

- Raymond Payne, Principal Architect,
  Johns Hopkins University Applied Physics
  Laboratory and Ex-President IOUG

“Reliably and repeatedly provision multiple databases in a single change window with 100% time saving. Skill-agnostic process ensures compliance to standards.”

- Telstra

“We manage thousands of databases and application servers with Enterprise Manager, and we have been able to reduce the time for database upgrades from 4 hours down to 1 hour, as well as reduce patch application time from 1 hour down to 1 minute per database. Enterprise Manager Grid Control allows us to automate this process, which translates into huge savings in time and money.”

- Andreas Stephan, Bayer Business Services

For additional information, visit:

Oracle Configuration Management:

Oracle Provisioning and Patch Automation:

Enterprise Manager Administrator’s Guide for Software and Server Provisioning and Patching

Oracle Enterprise Manager:
http://www.oracle.com/enterprise_manager/index.html