

Technical white paper



Achieve Patch Currency for Oracle RAC Environments Using HP DMA

HP Database and Middleware Automation version 10.22

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Purpose

This paper describes how to use HP Database and Middleware Automation (HP DMA) to create a repeatable, standardized method to quickly and accurately apply Oracle quarterly patches on Oracle RAC environments across an enterprise to reach quarterly patch compliance standards.

Tip: To patch Oracle Grid standalone environments, see *Achieve Patch Related Compliance for Oracle Grid Standalone Environments Using HP DMA*.

To patch Oracle standalone environments, see *Achieve Patch Related Compliance for Oracle Standalone Environments Using HP DMA*.

These documents are available at: softwaresupport.hp.com

Benefits of HP DMA

HP DMA automates many of the daily administrative tasks required to manage the lifecycle of relational databases and J2EE application servers. These tasks are complex, often manual, typically time-consuming, and frequently error-prone. HP DMA improves the efficiency of these administrative tasks, enabling administrators to deliver change faster with higher quality, better consistency, and improved reliability.

HP DMA equips you to do the following:

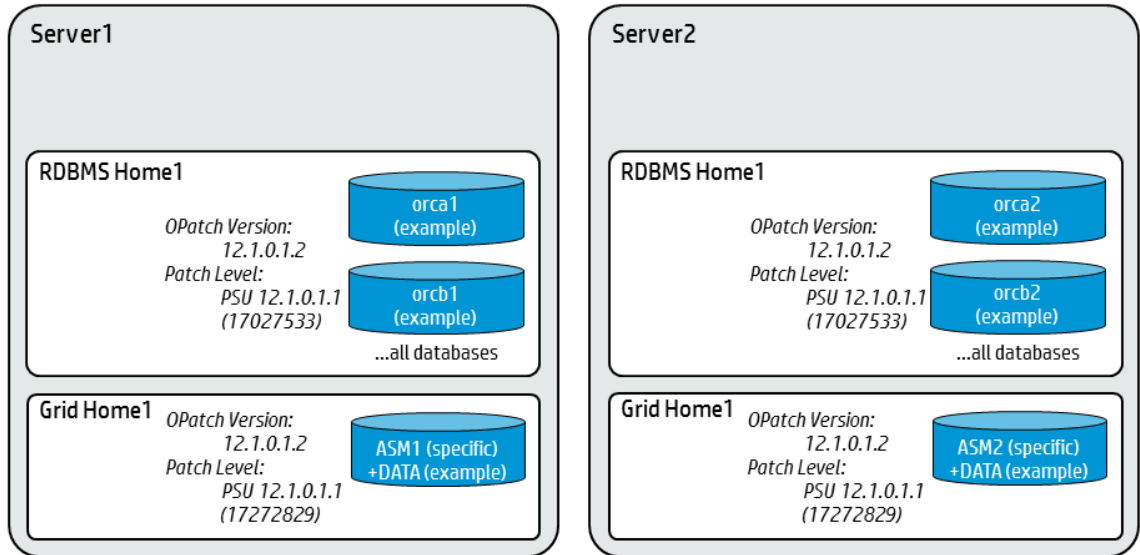
- Define and enforce standards for software installation
- Define an installation process once and reuse it repeatedly
- Leverage knowledge enterprise-wide
- Avoid human error

Many organizations require compliance with the PCI or SOX standards for applying Oracle quarterly patches. Depending on your data sensitivity, your organization may require patch application within 14 to 60 days of patch release.

Patches must be applied on all servers. Often this requires patching hundreds or even thousands of databases. Patching can be time-consuming and error-prone. HP DMA equips you to apply Oracle quarterly patches quickly, easily, and accurately across an enterprise.

Goal

This paper describes how to apply Oracle patches for an Oracle RAC environment with multiple servers, RDBMS Homes, and databases. This example shows two servers and each server is shown with a single RDBMS Home. HP DMA supports multiple RDBMS Homes.



Prerequisites

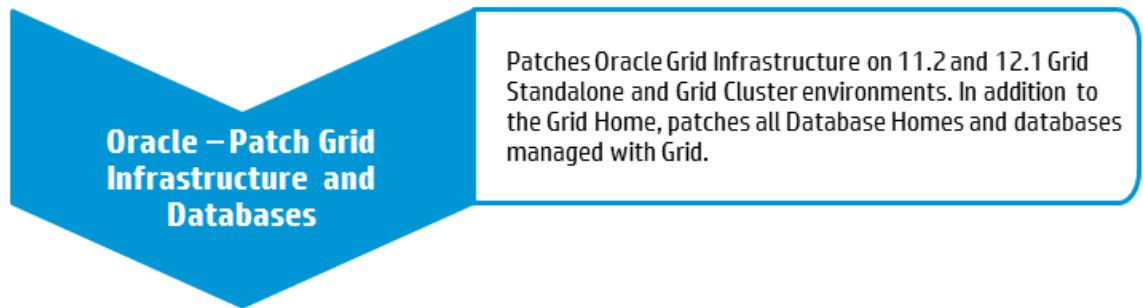
Before performing the procedures in this paper, your environment must meet the following minimum requirements:

- The Oracle Home and database are ready to be updated.
- The HP DMA server is online.
- You have obtained the following files:
 - The patch archive from Oracle
 - The current OPatch version from Oracle (optional)
 - The Oracle quarterly patch information XML file from HP Support (optional)
- You have licenses for Oracle Database and HP DMA.
- You have coordinated a scheduled outage for all application servers that use the databases.
- Your Oracle version is 11.2 or later.
- You have unchallenged ability to become the Oracle database user (typically oracle) on all nodes of the RAC.
- You have unchallenged ability to become the Oracle CRS user (example oracrs) on all nodes of the RAC.
- You have unchallenged ability to ssh to all the RAC nodes.
- You have read access to all specified inventory pointers (Linux/UNIX).
- You have enough free space available, which varies depending on the Oracle patch.

Process Overview

Patching an Oracle RAC environment with HP DMA is a simple, one-step process. All required checks and steps to patch the environment—including the cluster, the Grid Home, all Database Homes, and the databases—have been implemented in a single HP DMA workflow.

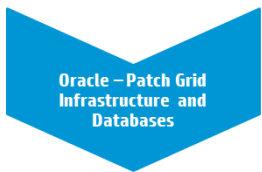
Use the following HP DMA workflow to standardize the process of applying an Oracle Patch Set Update (PSU):



The following section provides detailed information required to run the workflow.

Note: For additional information, see [How to run an HP DMA workflow](#).

Workflow: Oracle - Patch Grid Infrastructure and Databases



This section provides detailed information required to run the Oracle - Patch Grid Infrastructure and Databases workflow.

Note: The following instructions assume that the Patch Archive and the OPatch Archive are ZIP files found in the software repository or in the Download Location. For additional information, see [Alternative methods for specifying input files](#).

Solution pack

This workflow requires the HP DMA Advanced Database Patching Solution Pack.

Parameters to expose

None

Input parameters

When you deploy the Oracle - Patch Grid Infrastructure and Databases workflow, specify input parameter values for the following steps.

Note: Bold text in the following tables indicates that you must specify a value for the parameter.

Step: Gather Parameters for Patch Grid Infrastructure and Databases

Parameter	Description	Example Value
Patch Archive	Required: Comma-separated list of patch file names (not fully-qualified). ¹	p17272829_121010_Linux-x86-64.zip

Step: Gather Advanced Parameters for Patch Grid Infrastructure and Databases

Parameter	Description	Example Value
Grid Nodes	Optional: Comma-separated list of nodes that are part of a Grid Infrastructure Cluster environment. If you are using Grid Infrastructure for a Standalone Server the parameter should be left blank.	dma-rac1.mycompany.com, dma-rac2.mycompany.com
OPatch Archive	Optional: The OPatch Archive file required for this patch (not fully-qualified). If this parameter value is not specified, the current OPatch version will be used. ¹	p6880880_121010_Linux-x86-64.zip

¹If the file(s) are not found on the target server(s), they will be downloaded from the software repository. For additional information, see [Alternative methods for specifying input files](#).

Step: Gather Advanced Parameters for Patch Grid Infrastructure and Databases, continued

Parameter	Description	Example Value
Oracle Database Homes	Optional: Oracle Database Homes you would like to patch with the Oracle Grid. Valid values are: - ALL - NONE - INCLUDE: followed by a comma-separated list of Oracle Homes to be patched with the Oracle Grid - EXCLUDE: followed by a comma-separated list of Oracle Homes to exclude from the patching process	ALL
Patch Information File	Optional: Patch information file that contains supplementary patch data in XML format—supplied by HP Support. If not specified, defaults to the Oracle patch information that was available when the HP DMA version released. Contact HP Support for the updated Patch Information File. ¹	201310_PatchInfo.xml
Trust SSL Certificates	Deprecated: HP DMA no longer uses this workflow parameter to determine whether the workflow will trust any Secure Sockets Layer (SSL) certificate used to connect to the HP DMA web server. HP DMA now uses the <code>com.hp.dma.conn.trustAllCertificates</code> parameter in the <code>dma.xml</code> file.	
Web Service Password	Optional: Password for the HP DMA Discovery web service API.	●●●
Web Service URL	Optional: URL for the discovery web service API.	
Web Service User	Optional: User who is capable of modifying the managed environment by using the HP DMA Discovery web service API.	

¹If the file is not found on the target server(s), it will be downloaded from the software repository. For additional information, see [Alternative methods for specifying input files](#).

FAQs

What can cause the workflow to fail?

The workflow will fail if you do not have the latest patch information file. This file becomes obsolete after three months. To solve this problem, get the latest patch information file from HP Support.

What if I don't want specific Oracle errors to prevent patching?

The README file lists Oracle errors that are permissible—in other words, patching will continue even if these errors occur. If you have additional Oracle errors that you want to permit, specify the permissible errors in the Ignorable Oracle Errors parameter. Use the form: `ORA-nnnnn,ORA-nnnnn,ORA-nnnnn`

Workflow: Oracle - Patch Grid Infrastructure and Databases

Step: Gather Advanced Parameters for Patch Grid Infrastructure and Databases

Parameter: Ignorable Oracle Errors¹

Can I run an SQL script before updating the database catalog?

Yes. If you have an SQL script file, HP DMA can run it before updating the database catalog if you specify that file in the Preparatory SQL parameter:

Workflow: Oracle - Patch Grid Infrastructure and Databases

Step: Gather Advanced Parameters for Patch Grid Infrastructure and Databases

Parameter: Preparatory SQL¹

Can I use the Oracle Configuration Manager with HP DMA?

Yes. If you have an Oracle Configuration Manager (OCM) response file, HP DMA can use it if you specify that file in the OCM Response File parameter:

Workflow: Oracle - Patch Grid Infrastructure and Databases

Step: Gather Advanced Parameters for Patch Grid Infrastructure and Databases

Parameter: OCM Response File¹

¹This parameter is hidden by default and must be exposed when you make a copy of the workflow. For additional information, see [How to expose hidden parameters](#).

Can HP DMA back up my Oracle environment before the patches are applied?

Yes. HP DMA can back up your Oracle environment before patches are applied by specifying values for the following parameters:

Workflow: Oracle - Patch Grid Infrastructure and Databases

Step: Gather Advanced Parameters for Patch Grid Infrastructure and Databases

Parameters: Backup File List¹
Backup File Name¹
Backup Location¹

To use the backup, you need to manually restore your Oracle environment.

If you do not specify the backup parameters, no backup is created.

¹This parameter is hidden by default and must be exposed when you make a copy of the workflow. For additional information, see [How to expose hidden parameters](#).

Appendix A: Alternative methods for specifying input files

HP DMA provides alternative methods for specifying input files, either downloaded from the software repository or stored directly on the target server(s).

Method 1: The input files are in the software repository

1. Obtain the pertinent input files.

For example, download the patch files from Oracle, obtain the patch information file from HP Support, or create your own file.

2. Import the files into the software repository. For additional information, see [How to import a file into the software repository](#).
3. When you create the workflow deployment, specify the filenames and/or directory names for the pertinent input parameters—the files should not exist on the target server(s).
4. When the deployment is executed, HP DMA determines that the input files do not exist on the target server(s) in the specified (or default) download location and then downloads them from the software repository. If the input files need to be processed (for example, unzipped), the new files are placed in the specified (or default) extract location.
5. All downloaded, extracted, and staged files are removed upon successful completion of the workflow.

Method 2: The input files are stored on each target server

1. Obtain the pertinent input files.

For example, download the patch files from Oracle, obtain the patch information file from HP Support, or create your own file.

2. Copy the files to each target server into the specified (or default) download location.
3. When you create the workflow deployment, specify the filenames and/or directory names for the pertinent input parameters.
4. When the deployment is executed, HP DMA determines that the input files exist on the target server (s) in the specified (or default) download location. If the input file needs to be processed (for example, unzipped), the new files are placed in the specified (or default) extract location.
5. All extracted and staged files (and any downloaded files) are removed upon successful completion of the workflow.

Appendix B: How to import a file into the software repository

Many HP DMA workflows are capable of downloading files from the software repository on the HP DMA server to the target server(s) where the workflow is running. The following procedure shows how to import a file into the software repository so that it can be downloaded and deployed by a workflow.

HP DMA uses the HP Server Automation (SA) Software Library as its software repository.

Tip: Be sure to use unique file names for all files that you import into the software repository.

To import a file into the SA Software Library:

1. Launch the SA Client from the Windows Start Menu.

By default, the SA Client is located in Start → All Programs → HP Software → HP Server Automation Client.

If the SA Client is not installed locally, follow the instructions under “Download and Install the HP SA Client Launcher” in the *HP Server Automation Single-Host Installation Guide* available at: softwaresupport.hp.com

2. In the navigation pane in the SA Client, select Library → By Folder. Select (or create) the folder where you want to store the file. Click **Import Software**.
3. In the Import Software dialog, browse to the file (or files) to import, select the character encoding, and then click **Open**. For the Type, select **Unknown**. Select (or browse to) the folder where you want to store the files. For the Platform, select all the operating systems. Click **Import**.
4. Click **Close** after the import completes.

Appendix C: How to run an HP DMA workflow


The following steps outline the general instructions to run an HP DMA workflow:

1. Import the specified HP DMA solution pack (if it is not already available).
2. Create a deployable copy of the workflow: Specify a name, add roles, optionally expose parameters (for additional information, see [How to expose hidden parameters](#)), and then **Save**.
3. Create a deployment: Specify a name, schedule, targets, and input parameters, and then **Save**.
4. Execute the deployment to run the workflow.
5. View the results to verify that the workflow ran correctly (refer to the online workflow documentation).

Note: For more information about running HP DMA workflows, see the *HP DMA Quick Start Tutorial* available at: softwaresupport.hp.com

Appendix D: How to expose hidden parameters

If you need to expose any hidden parameters, perform the following additional steps when you create a deployable copy of the workflow:

1. Click the Workflow tab.
2. Click the blue arrow  next to the pertinent step to expand the list of input parameters.
3. For the parameter that you want to expose, select **- User selected -** from the drop-down list. For example:



4. Repeat steps 2 and 3 for all the parameters that you would like to expose.
5. Save the copy of the workflow.

To learn more about HP Database and Middleware Automation visit
hp.com/go/dma

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