

HP Database and Middleware Automation Solution Packs

For the Linux, Solaris, AIX, HP-UX, and Windows operating systems

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Database Refresh - Oracle Workflows

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About HP DMA Solution Packs

HP Database and Middleware Automation (HP DMA) software automates administrative tasks like provisioning and configuration, compliance, patching, and release management for databases and application servers. When performed manually, these day-to-day operations are error-prone, time consuming, and difficult to scale.

HP DMA automates these daily, mundane, and repetitive administration tasks that take up 60-70% of a database or application server administrator's day. Automating these tasks enables greater efficiency and faster change delivery with higher quality and better predictability.

HP DMA provides role-based access to automation content. This enables you to better utilize resources at every level:

- End-users can deliver routine, yet complex, DBA and middleware tasks.
- Operators can execute expert level tasks across multiple servers including provisioning, patching, configuration, and compliance checking.
- Subject matter experts can define, enforce, and audit full stack automation across network, storage, server, database, & middleware.

An HP DMA workflow performs a specific automated task—such as provisioning database or application servers, patching database or application servers, or checking a database or application server for compliance with a specific standard. You specify environment-specific information that the workflow requires by configuring its parameters.

Related HP DMA workflows are grouped together in solution packs. When you purchase or upgrade HP DMA content, you are granted access to download specific solution packs.

Chapter 1

Quick Start Tutorial

This topic shows you how to install your solution pack and run a workflow. There are five basic steps:

1. [Install the Solution Pack below](#)
2. [Create a Deployable Workflow on next page](#)
3. [Create a Deployment on page 13](#)
4. [Run Your Workflow on page 14](#)
5. [View the Results on page 14](#)

This tutorial provides a simplified demonstration using the Export Oracle Database via Data Pump workflow. Default values are supplied for most input parameters. Before executing these procedures, make sure that these default values are suitable for your environment.

Note: See the [Reference Information](#) included in this guide for descriptions of all available input parameters for this workflow, including default values.

The information presented in this tutorial assumes the following:

- HP DMA is installed and operational.
- At least one valid target is available.

Note: For information about other automation scenarios, see [How To Use This Solution](#).

Install the Solution Pack

The following instructions assume that you have purchased the Database Refresh solution pack.

To install the solution pack:

1. Go to [HP Live Network](#) to view a list of the latest available HP DMA solution packs.
2. Download the pertinent solution pack file from [HP Software Support Online](#).
3. Extract the ZIP file that contains your solution pack (for example: DBRefresh.zip).
4. On the system where you downloaded the solution pack, open a web browser, and log in to the HP DMA server using an account with administrative privileges.

For instructions, see “Getting Started” in the *User Guide: Database and Middleware Automation*. This guide is included in the HP Server Automation documentation library (SA version 9.10 and later).

5. On the Solutions > Installed tab, click the **Browse** button in the lower right corner. The Choose File dialog opens.
6. Locate and select the ZIP file that you extracted in step 3, and click **Open**.
7. Click **Import solution pack**.

Create a Deployable Workflow

The workflow templates provided by HP in your solution pack are read-only and cannot be deployed. When you are viewing a read-only item in the HP DMA web UI, you will see the lock icon in the lower right corner:



Read-only workflows are not deployable. You can create a deployable workflow by making a copy of a workflow template.

To create a deployable copy of the workflow template:

1. In the HP DMA web interface, go to Automation > Workflows.
2. From the list of workflows, select the Export Oracle Database via Data Pump workflow template.
3. Click the **Copy** button in the lower left corner.
4. On the Documentation tab, specify the following:
 - Name – Name that will appear in the list of available workflows
 - Tags – Keywords that you can use later to search for this workflow (optional)
 - Type – Must be Oracle
 - Target level – Must be an Instance
5. On the Roles tab, grant Read access to at least one user or group and Write access to at least one user or group.
6. Click **Save**.

Your new workflow now appears in the list of available workflows, and the following message is displayed:

✓ Workflow saved successfully. Would you like to [deploy the workflow now?](#)

7. Click the **deploy the workflow now** link in the green message bar.

For more information about creating and working with workflows, see “Workflows” in the *User Guide: Database and Middleware Automation*. This guide is included in the HP Server Automation documentation library (SA version 9.10 and later).

Create a Deployment

Before you can run your new workflow, you must create a deployment. A deployment associates a workflow with one or more specific targets (in this case, an Instance).

To create a deployment:

1. If you do not see the green message bar—for example, if you navigated to another page after you created your copy of the workflow template—follow these steps:
 - a. Go to the Automation > Deployments page.
 - b. In the lower right corner, click **New deployment**.
2. Specify the following:
 - Name – Name that will appear in the list of available deployments.
 - Workflow – From the drop-down list, select the workflow that you just created.
 - Schedule – Frequency or date when the workflow will run. If you select None, the workflow will run only once when you explicitly tell it to run.
3. From the list of AVAILABLE servers on the left side of the Targets area, click the **ADD** link for the target (or targets) where the workflow will run.

Note: If you are running a bridged execution workflow, the targets that you select on the Deployment page will be included in the lists of available targets that you can choose from on the Run page.

For more information about bridged execution workflows, see the *User Guide: Database and Middleware Automation*. This guide is included in the HP Server Automation documentation library (SA version 9.10 and later).

4. On the Parameters tab, specify values for the input parameters listed there.

These are a subset of the required parameters for this workflow. Parameters that are not visible in the deployment will have default values.

Note: See the [Reference Information](#) included in this guide for descriptions of all available input parameters for this workflow, including default values.

5. If you do not want to explicitly enter the values here, you can create a policy that stores the values and then reference that policy in your deployment (see [Using a Policy to Specify Parameter Values on page 351](#)).
6. Click **Save**.

Your new deployment now appears in the list of available workflows, and the following message is displayed:

✔ Deployment saved successfully. Would you like to [run the workflow now?](#)

7. Click the **run the workflow now** link in the green message bar.

Run Your Workflow

Now you are ready to run your workflow against the server that you selected.

To run the workflow:

1. If you do not see the green message bar—for example, if you navigated to another page after you created your deployment—follow these steps:
 - a. Go to the Automation > Run area.
 - b. In the list of WORKFLOWS on the left side, select the workflow that you created.
 - c. In the list of DEPLOYMENTS in the center, double-click the deployment that you just created.
2. If you are running a single-target workflow, select the check box for each target where you want to run the workflow.

If you are running a bridged execution workflow, click the **SELECT** link to specify each target. The targets that are available to choose from here are the targets that you selected on the Deployment page.

For more information about bridged execution workflows, see the *User Guide: Database and Middleware Automation*. This guide is included in the HP Server Automation documentation library (SA version 9.10 and later).

3. Click the **Run workflow** button.
4. The following message is displayed:



✓ Workflow started successfully. For status, see the [console](#) or [history](#).

5. To view the progress of your deployment, click the **console** link in the green message bar.

View the Results

While your workflow is running, you can watch its progress on the Automation > Console page.

- To view the progress of the workflow as the deployment proceeds, click the workflow name in the upper box on the Console page.
- To view the outcome of a specific step, select that step in the left box in the Output area. Informational messages are displayed in the right box, and the values of any output parameters are listed.

While the workflow is running, its status indicator on the Console says RUNNING. After the workflow finishes, its status indicator changes to SUCCESS, FAILURE, or FINISHED.

After the workflow has finished running, you can view a summary of your deployment on the History page. This page lists all the deployments that have run on this HP DMA server during the time period specified in the Filter box.

While the workflow is running, the History page shows nothing in the status column. A workflow that results in the FINISHED state also shows nothing in the status column on this page.

To view step-by-step results, select the row in the table that corresponds to your deployment. The tabs below the table show you information about each step in the workflow. This includes the start and end time for each step, the exit code, and the following information:

- Output tab – any informational messages that were produced
- Errors tab – any errors that were reported
- Header tab – values assigned to any output parameters

Chapter 2

About this Solution

This guide describes the Oracle Database workflows included in the HP HP Database and Middleware Automation (HP DMA) Database Refresh solution pack.

You can use these workflows to implement a database refresh process. Database refresh involves moving the contents of a database in one Oracle instance into a database in another Oracle instance. This is useful, for example, if you want to move a database from a traditional IT infrastructure to a private cloud. It is also useful if you want to duplicate production data in a test environment for application development or troubleshooting purposes.

These workflows enable you to automate and simplify the following operations:

- Extracting all or some of the contents of a database into a file (or files)
- Loading a complete database or specific schemas from a file (or files)

You can perform these steps separately, or you can run a single bridged execution workflow that performs both steps.

Three of the workflows use Oracle Recovery Manager (RMAN), and six use the Oracle Data Pump utility. RMAN is generally faster, because it uses an image of the database. Data Pump uses SQL commands to import and export specific data objects. It slower than RMAN but offers more flexibility. You can use the Data Pump workflows to import and export specific schemas or entire databases.

The Data Pump workflows support cross-platform database refresh. The RMAN workflows do not.

The HP Database and Middleware Automation Solution Packs Oracle Database refresh solution contains the following workflows:

Workflow Name	Purpose
Extract Oracle Database via RMAN	Executes a full database backup using Oracle Recovery Manager (RMAN) for the purpose of performing a full database refresh.
Refresh Oracle Database via RMAN	Restores an Oracle database from a previously created RMAN backup set.
Extract and Refresh Oracle Database via RMAN	Uses RMAN to perform a full database backup of the SOURCE database followed by a full restore of the DESTINATION database.
Export Oracle Database via Data Pump	Performs a full database export using the Oracle Data Pump utility for the purpose of performing a full database refresh.
Refresh Oracle Database via Data Pump	Imports the contents of one or more previously created Data Pump export files.

Workflow Name	Purpose
Extract and Refresh Oracle Database via Data Pump	Uses the Data Pump utility to export the contents of the SOURCE database and then import them into the DESTINATION database.
Export Oracle Schema via Data Pump	Exports the specified schemas from an Oracle database using the Data Pump utility.
Refresh Oracle Schema via Data Pump	Imports the specified schemas from one or more previously created Data Pump export files.
Export and Refresh Oracle Schema via Data Pump	Uses the Data Pump utility to export the specified schemas from a SOURCE database and import them into a DESTINATION database.

Although minimal Oracle Database knowledge is required to run these workflows using the default settings, the workflows are highly customizable and can support complex environment-specific deployment scenarios.

The remaining topics in this chapter provide the following contextual information about this solution:

- [Audience below](#)
- [Supported Products and Platforms on next page](#)
- [Prerequisites on next page](#)
- [How this Solution is Organized on page 19](#)
- [Additional Resources on page 24](#)

Audience

This solution is designed for people who are responsible for the following types of tasks:

- Restoring a database from a database dump file
- Re-creating a database in a different environment—for example, moving a database from a traditional IT infrastructure to a private cloud
- Copying production data into a Dev/Test/Staging database environment for the purpose of application development or troubleshooting

Minimal Oracle Database knowledge is required to run the database refresh workflows using the default settings.

To customize this solution, however, you should be familiar with the following Oracle Database processes:

- Oracle database administration, including backup and restore procedures
- Oracle database migration
- Oracle Recovery Manager (RMAN) procedures
- Oracle Data Pump Export and Import utilities

You should also have hands-on experience upgrading or downgrading a large database (see the [Reference Information on page 105](#)).

Supported Products and Platforms

The Oracle Database database refresh workflows in this solution pack support the following database refresh scenarios on Linux and Solaris platforms:

Source Version	Destination Version
Oracle Database Enterprise Edition version 11g	Oracle Database Enterprise Edition version 11g
Oracle Database Enterprise Edition version 10g	Oracle Database Enterprise Edition version 10g or 11g

Operating Systems

For specific operating system versions supported, see the *HP Database and Middleware Automation Solution Packs version 9.14 Support Matrix* available in the HP Software product manuals library located here: <http://h20230.www2.hp.com/selfsolve/manuals>

See [Documentation Updates on page 3](#) for information about accessing the product manuals library.

Note: The Data Pump workflows in this solution pack can perform a cross-platform database refresh (from a supported version of Linux to a supported version of Solaris, and vice versa). The RMAN workflows cannot perform a cross-platform refresh.

Hardware Requirements

- For HP Server Automation requirements, see the *HP Server Automation Quick Reference: SA Installation Requirements* or the *HP Server Automation Standard/Advanced Installation Guide*.
- For Oracle Database hardware and software requirements, see the [Oracle Database Documentation Library](#).

HP Software Requirements

This solution can be used with HP Server Automation version 9.11 (or later).

Prerequisites

The following prerequisites must be satisfied before you can run the Oracle database refresh workflows in this solution pack:

1. The HP Server Automation agent must be installed on all target servers.
2. The Target Directory must exist prior to the execution of the workflow. This directory can be local, or it can be a Network File System (NFS) mount point.

Note: If you specify an NFS mount point, the pertinent NFS share must be available to the target server, and it must be mounted prior to running this workflow.

3. The specified Oracle DB User must have READ and WRITE permission for the Target Directory.
4. The Oracle Database software must be provisioned, and the database must exist in the target instance prior to workflow execution.

How this Solution is Organized

In HP DMA, a workflow executes a process —such as exporting the contents of a database and loading them into another database.

A solution pack contains one or more related workflow templates. This solution contains the following workflow templates:

Workflow Name	Purpose
Extract Oracle Database via RMAN	Executes a full database backup using Oracle Recovery Manager (RMAN) for the purpose of performing a full database refresh.
Refresh Oracle Database via RMAN	Restores an Oracle database from a previously created RMAN backup set.
Extract and Refresh Oracle Database via RMAN	Uses RMAN to perform a full database backup of the SOURCE database followed by a full restore of the DESTINATION database.
Export Oracle Database via Data Pump	Performs a full database export using the Oracle Data Pump utility for the purpose of performing a full database refresh.
Refresh Oracle Database via Data Pump	Imports the contents of one or more previously created Data Pump export files.
Extract and Refresh Oracle Database via Data Pump	Uses the Data Pump utility to export the contents of the SOURCE database and then import them into the DESTINATION database.
Export Oracle Schema via Data Pump	Exports the specified schemas from an Oracle database using the Data Pump utility.
Refresh Oracle Schema via Data Pump	Imports the specified schemas from one or more previously created Data Pump export files.
Export and Refresh Oracle Schema via Data Pump	Uses the Data Pump utility to export the specified schemas from a SOURCE database and import them into a DESTINATION database.

What's Inside

Each workflow template has a Documentation tab that provides detailed information about that workflow.

The screenshot displays the Oracle Database & Middleware Automation console. The top navigation bar includes 'Home', 'Automation', 'Reports', 'Environment', 'Solutions', and 'Setup'. The 'Automation' section is active, with sub-tabs for 'Workflows', 'Steps', 'Functions', 'Policies', 'Deployments', 'Run', 'Console', and 'History'. The main content area is titled 'Export and Refresh Oracle Database via Data Pump' and has tabs for 'Documentation', 'Workflow', 'Deployments', and 'Roles'. The 'Documentation' tab is selected, showing the following details:

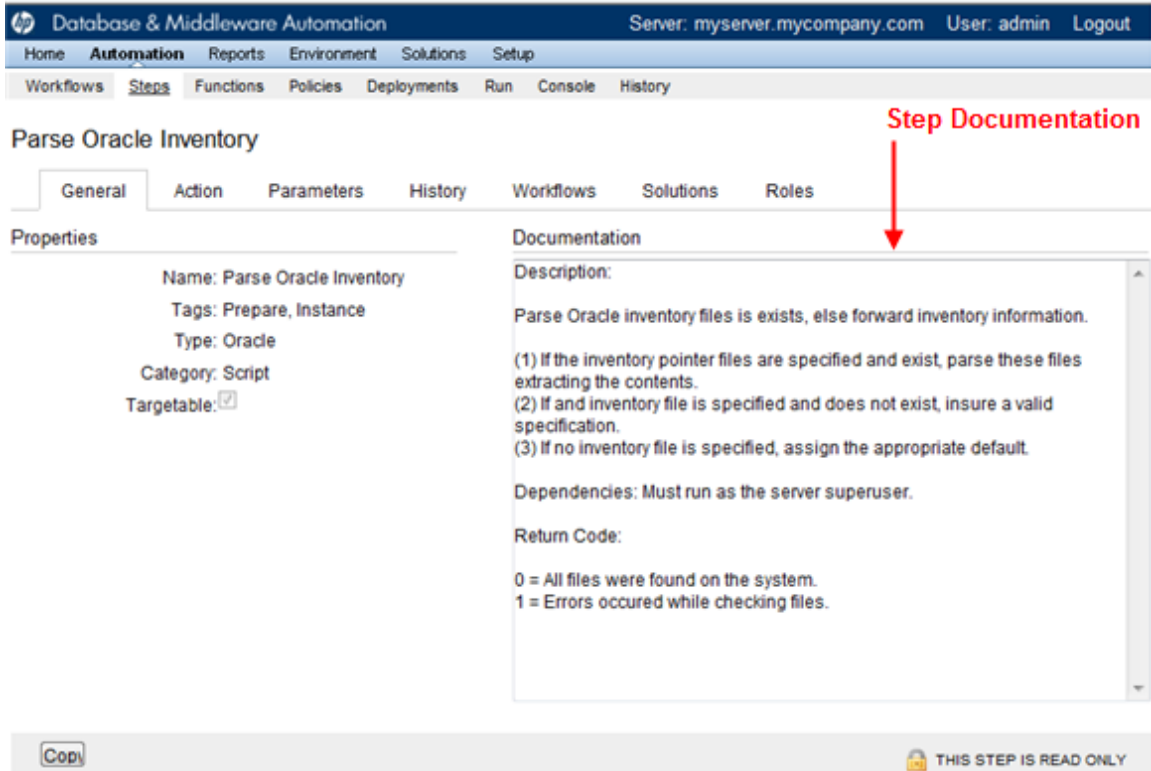
- Name: Export and Refresh Oracle Database via Data Pump
- Tags:
- Type: Oracle
- Target level: Instance

The 'Documentation' section contains three main sections:

- Purpose:** Performs a full database export on a source database instance and imports it to a defined target database server.
- Description:** This workflow performs a full database export and imports the generated dump files onto a designated target database instance. The workflow automatically detects which ORACLE_HOME and ORACLE_SID that need to be used in performing the required Data Pump tasks. The workflow user selects which server the export task is to be executed. User is also expected to identify the source database instance. Similarly, the target database instance where the database is to be refreshed must be appropriately named on the deployment page. User may supply a parameter file, and entries are properly validated. Should the parameter file be left blank, the workflow generates a parameter file to be used in performing either a Data Pump export or import. Oracle database and O/S versions are verified if it belongs to the supported platform prior to performing Data Pump tasks. Encryption, compression, maximum size of dump files are handled by defining proper entries in the parameter file.
- Usage Instructions:** User supplies all the necessary required data in the deployment parameter page. The target directory in the parameter file represents the path associated with the Oracle directory object and must be pre-created prior to execution of this workflow. This is the location where the export Data Pump dump files are to be placed and read by the target database server. Both the source and target database servers must have read and write access on the defined target server. The shared

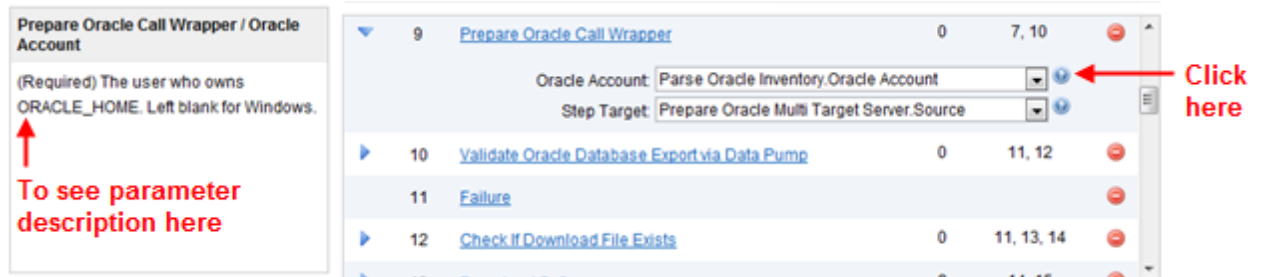
A red arrow labeled 'Workflow Documentation' points to the 'Documentation' tab. At the bottom of the console, there are buttons for 'Copy', 'EXPORT', and 'EXTRACT POLICY', along with a 'HELP PAGE' link and the text 'HP SERVER AUTOMATION DATABASE REFRESH'.

A workflow consist of a sequence of steps. Each step performs a very specific task. Each step includes a documentation panel that briefly describes its function. example



Steps can have input and output parameters. Output parameters from one step often serve as input parameters to another step. Steps can be shared among workflows.

Parameter descriptions are also displayed in several locations in the HP DMA web interface. They appear on the Workflow tab for each workflow.



Parameter descriptions also appear on the Parameters tab for each step in the workflow.

The screenshot shows the Oracle Database & Middleware Automation interface. At the top, there is a navigation bar with 'Database & Middleware Automation' on the left and 'Server: myserver.mycompany.com User: admin Logout' on the right. Below this is a menu with 'Home', 'Automation', 'Reports', 'Environment', 'Solutions', and 'Setup'. A secondary menu includes 'Workflows', 'Steps', 'Functions', 'Policies', 'Deployments', 'Run', 'Console', and 'History'. The main content area is titled 'Parse Oracle Inventory' and has several tabs: 'General', 'Action', 'Parameters', 'History', 'Workflows', 'Solutions', and 'Roles'. The 'Parameters' tab is selected, showing two sections: 'Input parameters' and 'Output parameters'.

Input parameters

Name	Value	Description
Inventory Files	<input type="text"/>	*Optional: Comma separated list of fully qualified Or:
Oracle Account	<input type="text"/>	*Optional: Oracle user that will own the ORACLE_HC
Oracle Home	<input type="text"/>	*Optional: The ORACLE_HOME to use if more than c
Server Wrapper	sudo su - root /opt/datapalette/jython/jython	*Required: String to execute routine as server super

Output parameters

Name	Description
CRS Account	The OS owner of the ORA_CRS_HOME
CRS Active Version	Active CRS Version
CRS Group	The Oracle group used for the ORA_CRS_HOME installation
CRS Home	The last ORA_CRS_HOME location in the inventory file
CRS Home Name	The name of the ORA_CRS_HOME as recorded in the inventory
CRS Nodes	List of all nodes the Oracle Clusterware is deployed to
Cluster Nodes	List of all nodes the Oracle Home is deployed to
Inventory Groups	Comma separated list of fully qualified inventory groups. One for each
Inventory Locations	Comma separated list of fully qualified inventory pathname directories
Inventory Pointers	Comma separated list of fully qualified inventory pointer files.

Parameter descriptions also appear on the Parameters tab in the deployment (organized by step).

New deployment

TARGETS Parameters Roles

Gather Parameters for Oracle Database Export and Refresh via Data Pump

EXPORT - Data Pump Parameter File: Enter at runtime
*Optional: Parameter File used with the Data Pump EXPORT Utility. Default parameter values will be generated if Parameter File none provided.

EXPORT - Oracle Account: Enter at runtime
*Optional: Oracle user that owns the ORACLE_HOME on SOURCE Database Server. Required if inventory does not exist. Left blank for Windows.

EXPORT - Target Directory: Enter at runtime
*Required: Staging directory path known to the SOURCE Database Server and shared with the DESTINATION Database Server. (i.e. path to NFS mount point as known by SOURCE Database Server). For Solaris NFS, these mount options are recommended: mount -o rw,bg,intr,hard,timeo=600,wsiz=32768,rsiz=32768

IMPORT - Data Pump Parameter File: Enter at runtime
*Optional: Parameter File used with the Data Pump IMPORT Utility. Default parameter values will be generated if Parameter File none provided.

IMPORT - Oracle Account: Enter at runtime
*Optional: Oracle user that owns the ORACLE_HOME on DESTINATION Database Server. Required if inventory does not exist. Left blank for Windows.

IMPORT - Target Directory: Enter at runtime
*Required: Staging directory path known to the DESTINATION Database Server and shared with the SOURCE Database Server. (i.e. path to NFS mount point as known by DESTINATION Database Server)

or

All parameters used by the workflows in this solution pack are also described in the [Reference Information](#) for this solution pack.

Note: The workflow templates included in this solution pack are read-only and cannot be deployed. To use a workflow template, you must first create a copy of the template and then customize that copy for your environment (see [Create a Deployable Workflow on page 12](#)

Additional Resources

If you are using HP Server Automation version 9.10 (or later), see these documents:

- *HP Server Automation User Guide: Application Deployment Manager*
- *HP Server Automation User Guide: Database and Middleware Automation*

If you are using HP HP Server Automation version 9.0x, see these documents:

- *HP Database and Middleware Automation Solution Packs User Guide*
- *HP Server Automation Integration Guide*

If you are using HP Database and Middleware Automation Solution Packs version 1.00, see these documents:

- *HP Database and Middleware Automation Solution Packs Installation Guide*
- *HP Database and Middleware Automation Solution Packs User Guide*

For a list of the operating systems, database, and application server products supported by HP DMA, see this documents:

- *HP Database and Middleware Automation Solution Packs Support Matrix*

All of these documents are available on the HP Software Support Product Manuals web site:

<http://h20230.www2.hp.com/selfsolve/manuals>

Chapter 3

How to Use this Solution

Each workflow included in this solution pack has a set of input parameters whose values will be unique to your environment. If you provide correct values for the parameters that each scenario requires, the workflow will be able to accomplish its objective.

There are two steps required to customize this solution:

1. Ensure that all required parameters are visible. You do this by using the workflow editor.

To perform a simple database refresh, you can use the default values for most parameters. To use more advanced features of this solution, you will need to expose additional parameters.

2. Specify the values for those parameters. You do this when you create a deployment.

Note: Each of these steps is explained in greater detail in the "How to Use this Workflow" topic for each workflow.

The information presented here assumes the following: show assumptions

- HP DMA is installed and operational.
- At least one suitable target server is available (see [Supported Products and Platforms on page 18](#)).
- You are logged in to the HP DMA web interface.
- You have permission to create, edit, and deploy copies of the workflows included in this solution pack.

Note: All parameters used by each workflow in this solution are described in the [Reference Information](#) included in this guide.

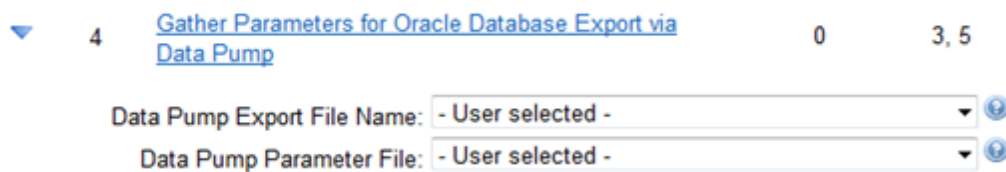
How to Expose Additional Workflow Parameters

Each workflow in this solution pack has a set of input parameters. Some are required and some are optional. To run a workflow in your environment, you must specify values for a subset of these parameters when you create a deployment.

By default, only a few of the input parameters for each workflow are visible on the Deployment page, and the rest are hidden. In order to specify a value for a parameter that is currently hidden, you must first expose that parameter by changing its mapping in the workflow editor.

To expose a hidden workflow parameter:

1. In the HP DMA web interface, go to Automation > Workflows.
2. From the list of workflows, select a deployable workflow (see [Create a Deployable Workflow on page 12](#)).
3. Go to the Workflow tab.
4. In the list of steps below the workflow diagram, click the ▶ (blue arrow) to the immediate left of the pertinent step name. This expands the list of input parameters for this step.
5. For the parameter that you want to expose, select - User Selected - from the drop-down list. For example:



6. Repeat steps 4 and 5 for all the parameters that you would like to specify in the deployment.
7. Click **Save** in the lower right corner.

Extract Oracle Database via RMAN

This workflow performs a full database backup using Oracle Recovery Manager (RMAN) for the purpose of performing a database refresh. The RMAN backup set files can be stored in the local file system or on a network share.

RMAN stores an image of the database. It optimizes both speed and space consumption, and it performs block-level corruption detection during both the backup and restore phases of a database refresh.

Note: You cannot use this workflow to perform a cross-platform database refresh (for example: Linux to Solaris). You must use the Oracle Data Pump workflows included in this solution pack if you want to perform a cross-platform refresh.

To use this workflow in your environment, see the following information:

Topic	Information Included
Prerequisites for this Workflow below	List of prerequisites that must be satisfied before you can run this workflow
How this Workflow Works on next page	Information about what the workflow does, including validation checks performed, steps executed, and a high-level process flow
How to Run this Workflow on page 30	Instructions for running this workflow in your environment
Sample Scenarios on page 31	Examples of typical parameter values for this workflow

Note: To view detailed information about the steps included in this workflow, see [Steps in this Workflow](#).

Prerequisites for this Workflow

Be sure that the following prerequisites are satisfied before you run the [Extract Oracle Database via RMAN](#) workflow:

1. The HP Server Automation agent must be installed on all target servers.
2. The Target Directory must exist prior to the execution of the workflow. This directory can be local, or it can be a Network File System (NFS) mount point.

Note: If you specify an NFS mount point, the pertinent NFS share must be available to the target server, and it must be mounted prior to running this workflow.

3. The specified Oracle DB User must have READ and WRITE permission for the Target Directory.
4. The Oracle Database software must be provisioned, and the database must exist in the target

instance prior to workflow execution.

Note: For RMAN backup files, the destination database structure, database name, and Oracle SID must match that of the source.

For more information about prerequisites for Oracle Database, refer to the [Oracle Database Product Documentation on page 348](#).

How this Workflow Works

This topic contains the following information about the [Extract Oracle Database via RMAN](#) workflow:

Overview

This workflow performs a full database backup using Oracle Recovery Manager (RMAN) for the purpose of performing a database refresh. You can instruct the workflow to store the RMAN backup set files in the local file system or on a network share.

You can use this workflow as part of a database refresh process. Database refresh involves moving the contents of a database in one Oracle instance into a database in another Oracle instance. This is useful, for example, if you want to move a database from a traditional IT infrastructure to a private cloud. It is also useful if you want to duplicate production data in a test environment for application development or troubleshooting purposes.

Validation Checks Performed

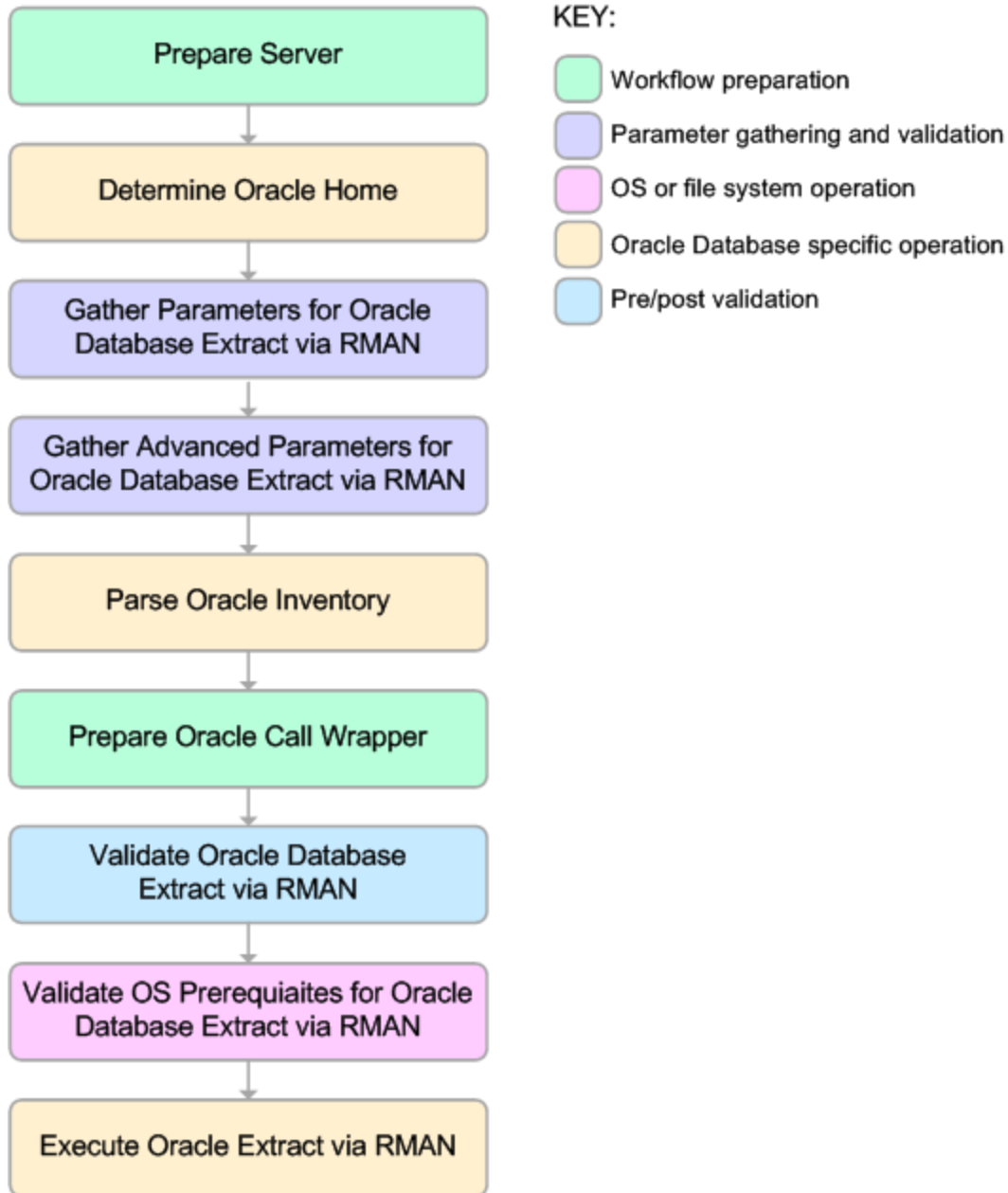
The workflow validates the following conditions:

1. The Oracle Home derived in the Determine Oracle Home step is a fully qualified path that exists on the target server.
2. The specified Target Directory exists, either locally or on a network share, and is writable.
3. The following system utilities are available: `ar`, `make`, `ls`, `nm`, `unzip`, and `mkdir`.
4. The workflow can connect to the Oracle SID derived in the Determine Oracle Home step.
5. All specified Ignorable Oracle Errors can safely be ignored.
6. The specified Tag Name parameter is not an empty string.
7. The specified Max Piece Size is at least 40 KByte and less than 16 TByte.

Steps Executed

The [Extract Oracle Database via RMAN](#) workflow includes the following steps. Each step must complete successfully before the next step can start. If a step fails, the workflow reports a failure, and all subsequent steps are skipped.

Click each box in the diagram to view additional information about that step.



Process Flow

This workflow performs the following tasks:

1. Determines the target server platform type, and identifies the server call wrapper.
2. Determines the Oracle Home path by reading the `oratab` file.
3. Gathers all required and optional parameters.
4. Determines the OS owner of the Oracle Home directory.
5. Prepares the instance call wrapper based on the specified Oracle User.
6. Validates all parameter values specified or derived.
7. Performs the RMAN backup.

How to Run this Workflow

The following instructions show you how to customize and run the [Extract Oracle Database via RMAN](#) workflow in your environment.

The workflow provides default values for some parameters. These default values are usually sufficient for a "typical" installation. You can override the defaults by specifying parameter values in the deployment. You can also expose additional parameters in the workflow, if necessary, to accomplish more advanced scenarios. Any parameters not explicitly specified in the deployment will have the default values listed in [Parameters for Extract Oracle Database via RMAN on page 107](#)

Note: Before following this procedure, review the [Prerequisites for this Workflow](#), and ensure that all requirements are satisfied.

To use the Extract Oracle Database via RMAN workflow:

1. Create a deployable copy of the workflow (see [Create a Deployable Workflow on page 12](#)).
2. Determine the values that you will specify for the following parameters: show

Parameter Name	Default Value	Required	Description
Oracle User	oracle	required	Oracle user that owns the ORACLE_HOME on the target Oracle database server. This user will perform the RMAN backup.
Target Directory	no default	required	Directory where the RMAN backup files will be placed. This directory must exist prior to workflow execution. The specified Oracle User must have READ and WRITE permissions for this directory. This directory must be accessible to the target database server.

Note: This is the minimum set of parameters required to run this workflow. You may need to expose additional parameters depending on your provisioning objectives.

See [Parameters for Extract Oracle Database via RMAN on page 107](#) for detailed descriptions of all input parameters for this workflow, including default values.

Note: To avoid entering passwords in clear text, see [Using a Policy to Specify Parameter Values on page 351](#).

3. In the workflow editor, expose any additional parameters that you need (see [How to Expose Additional Workflow Parameters on page 26](#)). You will specify values for those parameters when you create the deployment.
4. Save the changes to the workflow (click **Save** in the lower right corner).
5. Create a new deployment (see [Create a Deployment on page 13](#) for instructions).
6. On the Parameters tab, specify values for the required parameters listed in step 2 and any additional parameters that you have exposed. You do not need to specify values for those parameters whose default values are appropriate for your environment.
7. On the Targets tab, specify one or more targets for this deployment.
8. Save the deployment (click **Save** in the lower right corner).
9. Run the workflow using this deployment (see [Run Your Workflow on page 14](#) for instructions).

To verify the results:

The workflow will complete and report SUCCESS on the Console if it has run successfully. If an invalid parameter value is specified, an error is logged, and the workflow terminates in the FAILURE state.

Sample Scenarios

This topic shows you how to use various parameters to achieve the following database backup scenarios in your environment using the [Extract Oracle Database via RMAN](#) workflow:

Scenario 1: Create a Backup Set on the Local File System

This is the simplest RMAN extract scenario. In this example, the backup set is stored on the local file system. The parameters shown here are visible by default.

Step Name	Parameter Name	Example Value
Gather Parameters for Oracle Database Extract via RMAN on page 172	Oracle User	oracle
	Target Directory	/var/bckp/April2012/rman_04032012

Be sure that the default values for all remaining parameters are appropriate for your environment (see [Parameters for Extract Oracle Database via RMAN on page 107](#)).

Scenario 2: Create a Backup Set on a Network Share

In this example, the backup set is stored on a network share. The parameters shown here are visible by default.

Step Name	Parameter Name	Example Value
Gather Parameters for Oracle Database Extract via RMAN on page 172	Oracle User	oracle
	Target Directory	myfile-server.mycompany.com:/u01/nfs_share

Be sure that the default values for all remaining parameters are appropriate for your environment (see [Parameters for Extract Oracle Database via RMAN on page 107](#)).

Scenario 3: Create a Backup Set Using Non-Default Parameters

In this example, the backup set is stored on the local file system. The first two parameters listed are visible by default; the remaining parameters must be exposed in the workflow so that they are available in the deployment (see [How to Expose Additional Workflow Parameters on page 26](#)).

Step Name	Parameter Name	Example Value
Gather Parameters for Oracle Database Extract via RMAN on page 172	Oracle User	oracle
	Target Directory	/var/bckp/April2012/rman_04032012
Gather Advanced Parameters for Oracle Database Extract via RMAN on page 173	Ignorable Oracle Errors	ORA-39083, ORA-00959, ORA-01917, ORA-01918, ORA-01435
	Max Piece Size	2G
	Tag Name	FULL DATABASE BACKUP,FULLDB-BACKUP,ARCHIVED LOGS BACKUP,DMA REFRESH
	Temporary File Location	/var/temp/rman_temp_files

Be sure that the default values for all remaining parameters are appropriate for your environment (see [Parameters for Extract Oracle Database via RMAN on page 107](#)).

Refresh Oracle Database via RMAN

This workflow restores an Oracle database from a previously created RMAN backup set. The backup set files can be located in the local file system or on a network share.

Note: You cannot use this workflow to perform a cross-platform database refresh (for example: Linux to Solaris). You must use the Oracle Data Pump workflows included in this solution pack if you want to perform a cross-platform refresh.

To use this workflow in your environment, see the following information:

Topic	Information Included
Prerequisites for this Workflow below	List of prerequisites that must be satisfied before you can run this workflow
How this Workflow Works on next page	Information about what the workflow does, including validation checks performed, steps executed, and a high-level process flow
How to Run this Workflow on page 36	Instructions for running this workflow in your environment
Sample Scenarios on page 38	Examples of typical parameter values for this workflow

Note: To view detailed information about the steps included in this workflow, click the [Steps in this Workflow](#) button.

Prerequisites for this Workflow

Be sure that the following prerequisites are satisfied before you run the [Refresh Oracle Database via RMAN](#) workflow:

1. The HP Server Automation agent must be installed on all target servers.
2. The Target Directory must exist prior to the execution of the workflow. This directory can be local, or it can be a Network File System (NFS) mount point.

Note: If you specify an NFS mount point, the pertinent NFS share must be available to the target server, and it must be mounted prior to running this workflow.

3. The specified Oracle DB User must have READ and WRITE permission for the Target Directory.
4. The Oracle Database software must be provisioned, and the database must exist in the target instance prior to workflow execution.

Note: For RMAN backup files, the destination database structure, database name, and Oracle SID must match that of the source.

For more information about prerequisites for Oracle Database, refer to the [Oracle Database Product Documentation on page 348](#).

How this Workflow Works

This topic contains the following information about the [Refresh Oracle Database via RMAN](#) workflow:

Overview

This workflow performs a full RMAN database restore from a previously created RMAN backup set. A backup set contains an image that incorporates data from the following sources:

- Data files
- Archived redo log files
- Control files
- Server parameter files

The backup set can be located in the local file system or on a network share.

You can use this workflow as part of a database refresh process. Database refresh involves moving the contents of a database in one Oracle instance into a database in another Oracle instance. This is useful, for example, if you want to move a database from a traditional IT infrastructure to a private cloud. It is also useful if you want to duplicate production data in a test environment for application development or troubleshooting purposes.

Validation Checks Performed

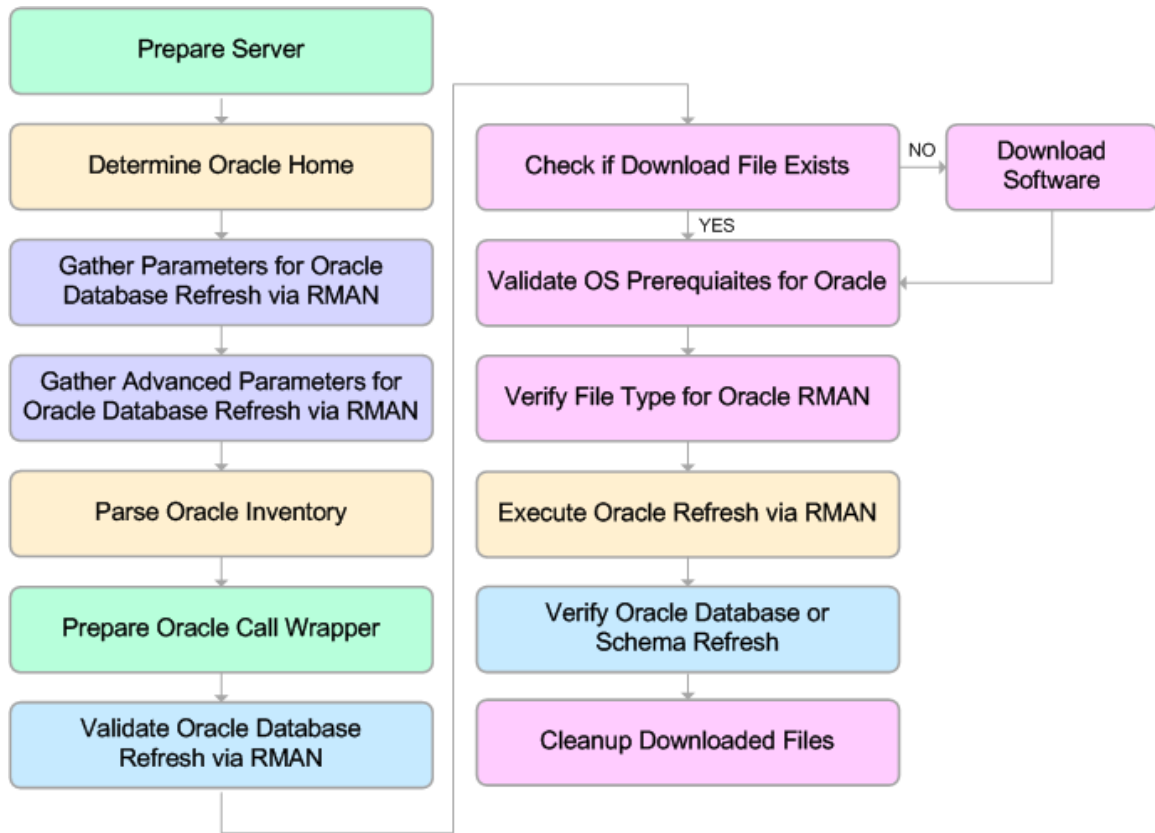
The workflow validates the following conditions:

1. The database to be restored is shut down.
2. The specified Target Directory exists, either locally or on a network share, and is writable.
3. The following system utilities are available: `ar`, `make`, `ls`, `nm`, `unzip`, and `mkdir`.
4. The specified Oracle Home exists and is, in fact, an Oracle home.
5. The workflow can connect to the specified Oracle SID in the specified Oracle Home.
6. The specified RMAN Archive Logs, RMAN Control File, and RMAN Data Files exist and have the proper format.
7. All specified Ignorable Oracle Errors can safely be ignored.
8. If a Verification SQL Script is specified, both that file and the Verification Result file exist.
9. The OS platform and Oracle Database version are supported by HP DMA.
10. Sufficient disk space is available to perform the database restore.

Steps Executed

The [Refresh Oracle Database via RMAN](#) workflow includes the following steps. Each step must complete successfully before the next step can start. If a step fails, the workflow reports a failure, and all subsequent steps are skipped.

Click each box in the diagram to view additional information about that step.



KEY:

- Workflow preparation
- Parameter gathering and validation
- OS or file system operation
- Oracle Database specific operation
- Pre/post validation

Process Flow

This workflow performs the following tasks:

1. Determines the target server platform type, and identifies the server call wrapper.
2. Gathers all required and optional parameters.
3. Determines the OS owner of the Oracle Home directory.
4. Prepares the instance call wrapper based on the specified Oracle Account.
5. Validates all parameter values specified or derived.
6. Determines whether the RMAN backup set files already exist on the target server. If the files do not yet exist, the workflow downloads them from the SA Core.
7. Determines whether sufficient disk space is available to restore the database from the backup set.
8. Verifies that the specified backup set files constitute a valid RMAN backup set.
9. Performs the RMAN restore.
10. Verifies that the database was successfully restored by ensuring that the following conditions are true:
 - The database is accessible.
 - Temporary tablespace has been created.
 - No tablespaces are in backup mode.
11. Runs the Verification SQL Script (if specified), and compares the result to the specified Verification Result file.
12. Removes any files downloaded to facilitate this restore.

How to Run this Workflow

The following instructions show you how to customize and run the [Refresh Oracle Database via RMAN](#) workflow in your environment.

The workflow provides default values for some parameters. These default values are usually sufficient for a "typical" installation. You can override the defaults by specifying parameter values in the deployment. You can also expose additional parameters in the workflow, if necessary, to accomplish more advanced scenarios. Any parameters not explicitly specified in the deployment will have the default values listed in [Parameters for Refresh Oracle Database via RMAN on page 109](#)

Note: Before following this procedure, review the [Prerequisites for this Workflow](#), and ensure that all requirements are satisfied.

To use the Refresh Oracle Database via RMAN workflow:

1. Create a deployable copy of the workflow (see [Create a Deployable Workflow on page 12](#)).
2. Determine the values that you will specify for the following parameters:

Parameter Name	Default Value	Required	Description
Oracle Account	oracle	optional	Oracle user that owns the ORACLE_HOME on the target Oracle database server where the RMAN backup will be restored. This user will perform the RMAN restore. Required if inventory does not exist. Leave blank for windows.
RMAN Archive Logs	no default	required	Archived redo log files that were generated from the source database. These redo logs are applied as part of the RMAN restore. Separate multiple files with commas. Include the full path where each file is located. For example: <code>/home/oracle/DbRefresh/ RMAN/archivelog_DB2_04n11fnh.bak</code>
RMAN Control File	no default	required	Control File generated from the source database.
RMAN Data Files	no default	required	RMAN backup data files created from the source database where the RMAN backup was performed. Separate multiple files with commas.
Target Directory	no default	required	Directory on the target database server where the RMAN backup files will be downloaded. This directory must exist prior to workflow execution. The Oracle Account user must have READ and WRITE access to this directory.
Database ID	no default	required	Database ID of the source database used to create the RMAN backup files.

Note: This is the minimum set of parameters required to run this workflow. You may need to expose additional parameters depending on your provisioning objectives.

See [Parameters for Refresh Oracle Database via RMAN on page 109](#) for detailed descriptions of all input parameters for this workflow, including default values.

Note: To avoid entering passwords in clear text, see [Using a Policy to Specify Parameter Values on page 351](#).

3. In the workflow editor, expose any additional parameters that you need (see [How to Expose](#)

[Additional Workflow Parameters on page 26](#)). You will specify values for those parameters when you create the deployment.

4. Save the changes to the workflow (click **Save** in the lower right corner).
5. Create a new deployment (see [Create a Deployment on page 13](#) for instructions).
6. On the Parameters tab, specify values for the required parameters listed in step 2 and any additional parameters that you have exposed. You do not need to specify values for those parameters whose default values are appropriate for your environment.
7. On the Targets tab, specify one or more targets for this deployment.
8. Save the deployment (click **Save** in the lower right corner).
9. Run the workflow using this deployment (see [Run Your Workflow on page 14](#) for instructions).

To verify the results:

The workflow will complete and report SUCCESS on the Console if it has run successfully. If an invalid parameter value is specified, an error is logged, and the workflow terminates in the FAILURE state.

Sample Scenarios

This topic shows you how to use various parameters to achieve the following database backup scenarios in your environment using the [Refresh Oracle Database via RMAN on page 33](#) workflow:

Scenario 1: Restore from a Backup Set on the Local File System

This is the simplest RMAN refresh scenario. In this example, the backup set is downloaded to the local file system. The parameters shown here are visible by default.

In this scenario, the [Refresh Oracle Database via RMAN on page 33](#) workflow uses extracted files from an RMAN backup. These are files that were generated by using the [Extract Oracle Database via RMAN on page 27](#) workflow or by using the RMAN backup utility. The Database ID parameter represents the Database Identification of the source Oracle database.

The workflow has additional input parameters that can be exposed and specified as needed. For example, you may want to use an encrypted RMAN backup file or increase the number of channels to speed up the refresh process.

Step Name	Parameter Name	Example Value
Gather Parameters for Oracle Database Refresh via RMAN on page 186	Oracle Account	oracle
	RMAN Archive Logs	/var/tmp/rman_dump/my_archivelog.bak
	RMAN Control File	/var/tmp/rman_dump/my_controlfile.ora
	RMAN Data Files	/var/tmp/rman_dump/my_datafile.bkp

Step Name	Parameter Name	Example Value
	Target Directory	/var/tmp/rman_dump
Execute Oracle Refresh via RMAN on page 198	Database ID	1935744575

Be sure that the default values for all remaining parameters are appropriate for your environment (see [Parameters for Refresh Oracle Database via RMAN on page 109](#)).

Scenario 2: Restore from a Backup Set on a Network Share

In this example, the backup set is downloaded to a network share. Restoring from a backup set stored on a network share alleviates the need to transfer files onto the target database servers.

The parameters shown here are visible by default. The workflow has additional parameters that can be modified to best fit any particular refresh scenario. For example, you can specify encryption parameters, ignore errors generated by the Oracle RMAN utility that do not affect the database refresh, or turn on and tune additional channels to speed up the refresh process.

Step Name	Parameter Name	Example Value
Gather Parameters for Oracle Database Refresh via RMAN on page 186	Oracle Account	oracle
	RMAN Archive Logs	/var/tmp/rman_dump/my_archivelog.bak
	RMAN Control File	/var/tmp/rman_dump/my_controlfile.ora
	RMAN Data Files	/var/tmp/rman_dump/my_datafile.bkp
	Target Directory	myfile-server.mycompany.com:/u01/nfs_share
Execute Oracle Refresh via RMAN on page 198	Database ID	1935744575

Be sure that the default values for all remaining parameters are appropriate for your environment (see [Parameters for Refresh Oracle Database via RMAN on page 109](#)).

Extract and Refresh Oracle Database via RMAN

This workflow performs a database refresh using Oracle Recovery Manager (RMAN) to first perform a full database backup on the SOURCE database and then perform a full database restore on the DESTINATION database.

RMAN stores an image of the database. It optimizes both speed and space consumption, and it performs block-level corruption detection during both the backup and restore phases of a database refresh.

Note: You cannot use this workflow to perform a cross-platform database refresh (for example: Linux to Solaris). You must use the Oracle Data Pump workflows included in this solution pack if you want to perform a cross-platform refresh.

To use this workflow in your environment, see the following information:

Topic	Information Included
Prerequisites for this Workflow below	List of prerequisites that must be satisfied before you can run this workflow
How this Workflow Works on next page	Information about what the workflow does, including validation checks performed, steps executed, and a high-level process flow
How to Run this Workflow on page 44	Instructions for running this workflow in your environment
Sample Scenarios on page 46	Examples of typical parameter values for this workflow

Note: To view detailed information about the steps included in this workflow, click the [Steps in this Workflow](#) button.

Prerequisites for this Workflow

Be sure that the following prerequisites are satisfied before you run the [Extract and Refresh Oracle Database via RMAN](#) workflow:

1. The HP Server Automation agent must be installed on all target servers.
2. The Target Directory must exist prior to the execution of the workflow. This directory can be local, or it can be a Network File System (NFS) mount point.

Note: If you specify an NFS mount point, the pertinent NFS share must be available to the target server, and it must be mounted prior to running this workflow.

3. The specified Oracle DB User must have READ and WRITE permission for the Target Directory.
4. The Oracle Database software must be provisioned, and the database must exist in the target

instance prior to workflow execution.

For more information about prerequisites for Oracle Database, refer to the [Oracle Database Product Documentation on page 348](#).

How this Workflow Works

This topic contains the following information about the [Extract and Refresh Oracle Database via RMAN](#) workflow:

Overview

This workflow performs a database refresh using Oracle Recovery Manager (RMAN) to first perform a full database backup on the SOURCE database and then perform a full database restore on the DESTINATION database.

RMAN stores an image of the database. It optimizes both speed and space consumption, and it performs block-level corruption detection during both the backup and restore phases of a database refresh.

Note: You cannot use this workflow to perform a cross-platform database refresh (for example: Linux to Solaris). You must use the Oracle Data Pump workflows included in this solution pack if you want to perform a cross-platform refresh.

Validation Checks Performed

The workflow first validates the following conditions for the SOURCE database:

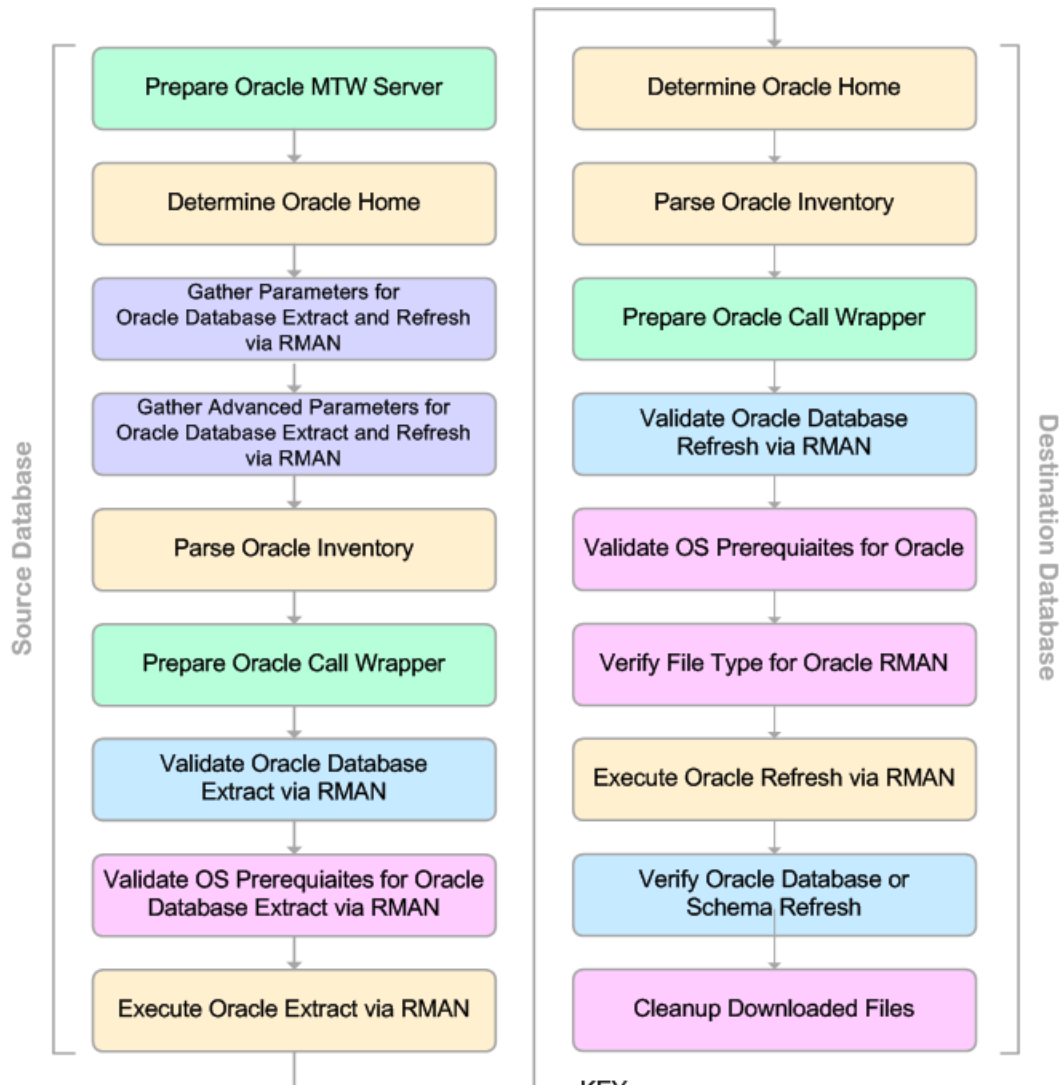
1. The Oracle Home derived in the Determine Oracle Home step is a fully qualified path that exists on the target server.
2. The specified Target Directory exists, either locally or on a network share, and is writable.
3. The following system utilities are available: `ar`, `make`, `ls`, `nm`, `unzip`, and `mkdir`.
4. The workflow can connect to the Oracle SID derived in the Determine Oracle Home step.
5. All specified Ignorable Oracle Errors can safely be ignored.
6. The specified Tag Name parameter is not an empty string.
7. The specified Max Piece Size is at least 40 KByte and less than 16 TByte.

The workflow validates the following conditions for the DESTINATION database:

1. The database to be restored is shut down.
2. The specified Target Directory exists, either locally or on a network share, and is writable.
3. The following system utilities are available: `ar`, `make`, `ls`, `nm`, `unzip`, and `mkdir`.
4. The specified Oracle Home exists and is, in fact, an Oracle home.
5. The workflow can connect to the specified Oracle SID in the specified Oracle Home.
6. The specified RMAN Archive Logs, RMAN Control File, and RMAN Data Files exist and have the proper format.
7. All specified Ignorable Oracle Errors can safely be ignored.
8. If a Verification SQL Script is specified, both that file and the Verification Result file exist.
9. The OS platform and Oracle Database version are supported by HP DMA.
10. Sufficient disk space is available to perform the database restore.

Steps Executed

The [Extract and Refresh Oracle Database via RMAN](#) workflow includes the following steps. Each step must complete successfully before the next step can start. If a step fails, the workflow reports a failure, and all subsequent steps are skipped.



KEY:

- Workflow preparation
- Parameter gathering and validation
- OS or file system operation
- Oracle Database specific operation
- Pre/post validation

Process Flow

This workflow first performs the following tasks on the SOURCE database:

1. Determines the target server platform type, and identifies the server call wrapper.
2. Determines the Oracle Home path by reading the `oratab` file.
3. Gathers all required and optional parameters.
4. Determines the OS owner of the Oracle Home directory.
5. Prepares the instance call wrapper based on the specified Oracle User.
6. Validates all parameter values specified or derived.
7. Performs the RMAN backup.

The workflow then performs the following tasks on the DESTINATION database:

1. Determines the OS owner of the Oracle Home directory.
2. Prepares the instance call wrapper based on the specified Oracle Account.
3. Validates all parameter values specified or derived.
4. Determines whether the RMAN backup set files already exist on the target server. If the files do not yet exist, the workflow downloads them from the SA Core.
5. Determines whether sufficient disk space is available to restore the database from the backup set.
6. Verifies that the specified backup set files constitute a valid RMAN backup set.
7. Performs the RMAN restore.
8. Verifies that the database was successfully restored by ensuring that the following conditions are true:
 - The database is accessible.
 - Temporary tablespace has been created.
 - No tablespaces are in backup mode.
9. Runs the Verification SQL Script (if specified), and compares the result to the specified Verification Result file.
10. Removes any files downloaded to facilitate this restore.

How to Run this Workflow

The following instructions show you how to customize and run the [Extract and Refresh Oracle Database via RMAN](#) workflow in your environment.

The workflow provides default values for some parameters. These default values are usually sufficient for a "typical" installation. You can override the defaults by specifying parameter values in the deployment. You can also expose additional parameters in the workflow, if necessary, to accomplish more advanced scenarios. Any parameters not explicitly specified in the deployment will have the default values listed in [Parameters for Extract and Refresh Oracle Database via RMAN on page 112](#)

Note: Before following this procedure, review the [Prerequisites for this Workflow](#), and ensure that all requirements are satisfied.

To use the Extract and Refresh Oracle Database via RMAN workflow:

1. Create a deployable copy of the workflow (see [Create a Deployable Workflow on page 12](#)).
2. Determine the values that you will specify for the following parameters: show

Parameter Name	Default Value	Required	Description
ALL - Target Directory	no default	required	Directory where the RMAN backup files will be placed on the SOURCE database server and subsequently downloaded on DESTINATION database server. This directory must be the same on both the SOURCE and DESTINATION servers. The directory must exist on both servers before the workflow runs, and it must be accessible to the Oracle Account user.
EXPORT - Oracle User	no default	required	Oracle user that owns the ORACLE_HOME on the SOURCE Oracle database server. This user will perform the RMAN backup.
IMPORT - Oracle Account	no default	optional	Oracle user that owns the ORACLE_HOME on the DESTINATION database server. This user will perform the RMAN restore.

Note: This is the minimum set of parameters required to run this workflow. You may need to expose additional parameters depending on your provisioning objectives.

See [Parameters for Extract and Refresh Oracle Database via RMAN on page 112](#) for detailed descriptions of all input parameters for this workflow, including default values.

Note: To avoid entering passwords in clear text, see [Using a Policy to Specify Parameter Values on page 351](#).

3. In the workflow editor, expose any additional parameters that you need (see [How to Expose Additional Workflow Parameters on page 26](#)). You will specify values for these parameters when you create the deployment.
4. Save the changes to the workflow (click **Save** in the lower right corner).
5. Create a new deployment (see [Create a Deployment on page 13](#) for instructions).
 - a. On the Targets tab, select all the target servers—both source and destination—that will participate in this database refresh. The targets that you select here will be available in the Target Parameters drop-down menus on the Run page (see [step 7](#)).
 - b. On the Parameters tab, specify values for the required parameters listed in [step 2](#) and any additional parameters that you exposed in [step 3](#). You do not need to specify values for those parameters whose default values are appropriate for your environment.

6. Save the deployment (click **Save** in the lower right corner).
7. Run the workflow using this deployment (see [Run Your Workflow on page 14](#) for instructions).

On the Run page, select the following targets from the respective drop-down menus:

Parameter Name	Default	Description
Source	no default	Instance that contains the database whose contents will be extracted.
Destination	no default	Instance where the database will be restored.

To verify the results:

The workflow will complete and report SUCCESS on the Console if it has run successfully. If an invalid parameter value is specified, an error is logged, and the workflow terminates in the FAILURE state.

Sample Scenarios

This topic shows you how to use various parameters to achieve the following database backup scenarios in your environment using the [Extract and Refresh Oracle Database via RMAN](#) workflow:

Scenario 1: Store the Backup Set on the Local File System

This is the simplest RMAN extract and refresh scenario. In this example, the backup set is stored on the local file system of the SOURCE database server. The backup set files are then downloaded to the same location in the local file system of the DESTINATION database server. The parameters shown here are visible by default.

Step Name	Parameter Name	Example Value
Gather Parameters for Oracle Database Extract and Refresh via RMAN on page 204	ALL - Target Directory	/var/bckp/April2012/rman_04032012
	EXPORT - Oracle User	oracle
	IMPORT - Oracle Account	oracle

Be sure that the default values for all remaining parameters are appropriate for your environment (see [Parameters for Extract Oracle Database via RMAN on page 107](#)).

Scenario 2: Store the Backup Set on a Network Share

In this example, the backup set is stored on a network share that both the SOURCE and DESTINATION database servers can access. The parameters shown here are visible by default.

Step Name	Parameter Name	Example Value
Gather Parameters for Oracle Database Extract and Refresh via RMAN on page 204	ALL - Target Directory	myfile-server.mycompany.com:/u01/nfs_share
	EXPORT - Oracle User	oracle
	IMPORT - Oracle Account	oracle

Be sure that the default values for all remaining parameters are appropriate for your environment (see [Parameters for Extract Oracle Database via RMAN on page 107](#)).

Scenario 3: Create a Backup Set Using Non-Default Parameters

In this example, the backup set is stored on the local file systems. The first two parameters listed are visible by default; the remaining parameters must be exposed in the workflow so that they are available in the deployment (see [How to Expose Additional Workflow Parameters on page 26](#)).

Step Name	Parameter Name	Example Value
Gather Parameters for Oracle Database Extract and Refresh via RMAN on page 204	ALL - Target Directory	myfile-server.mycompany.com:/u01/nfs_share
	EXPORT - Oracle User	oracle
	IMPORT - Oracle Account	oracle
Gather Advanced Parameters for Oracle Database Extract and Refresh via RMAN on page 206	ALL - Ignorable Oracle Errors	ORA-39083, ORA-00959, ORA-01917, ORA-01918, ORA-01435
	EXPORT - Max Piece Size	524288

Step Name	Parameter Name	Example Value
	EXPORT - Tag Name	FULL DATABASE BACKUP,FULLDB-BACKUP,ARCHIVED LOGS BACKUP,DMA REFRESH
	EXPORT - Temporary File Location	/var/temp/rman_temp_files
	IMPORT - Verification Result	/var/temp/dbrefresh_ver_result.xml
	IMPORT - Verification SQL Script	/var/temp/dbrefresh_ver.sql

Be sure that the default values for all remaining parameters are appropriate for your environment (see [Parameters for Extract Oracle Database via RMAN on page 107](#)).

Export Oracle Database via Data Pump

This workflow performs a full database export using the Oracle Data Pump utility for the purpose of performing a database refresh. The Data Pump Export files can be stored in the local file system or on a network share. You can use this workflow to implement a cross-platform database refresh (for example: Linux to Solaris).

Data Pump uses SQL commands to import and export specific data objects. It slower than the Oracle Recovery Manager (RMAN) but offers more flexibility.

The workflow automatically detects which ORACLE_HOME and ORACLE_SID to use when performing the Data Pump export. You can specify the encryption mode, compression level, and file size to use for the export—be sure to use the same settings for the subsequent import.

You have the option of providing a Data Pump parameter file or entering the parameters on the Deployment page. In either case, the parameter values are validated prior to the Data Pump export. If you do not provide a parameter file, the workflow creates one based on the parameter values that you specify on the Deployment page. If you do not specify a value for a particular parameter, the default value is used (see [Parameters for Export Oracle Database via Data Pump on page 116](#)).

To use this workflow in your environment, see the following information:

Topic	Information Included
Prerequisites for this Workflow below	List of prerequisites that must be satisfied before you can run this workflow
How this Workflow Works below	Information about what the workflow does, including validation checks performed, steps executed, and a high-level process flow
How to Run this Workflow on page 52	Instructions for running this workflow in your environment
Sample Scenarios on page 54	Examples of typical parameter values for this workflow

Note: To view detailed information about the steps included in this workflow, see [Steps in this Workflow](#).

Prerequisites for this Workflow

Be sure that the following prerequisites are satisfied before you run the [Export Oracle Database via Data Pump](#) workflow:

1. The HP Server Automation agent must be installed on all target servers.
2. The Target Directory must exist prior to the execution of the workflow. This directory can be local, or it can be a Network File System (NFS) mount point.

Note: If you specify an NFS mount point, the pertinent NFS share must be available to the target server, and it must be mounted prior to running this workflow.

3. The specified Oracle DB User must have READ and WRITE permission for the Target Directory.
4. The Oracle Database software must be provisioned, and the database must exist in the target instance prior to workflow execution.

Note: For Data Pump workflows, you must specify the same Content and Encryption Password settings for the export and any subsequent import operations.

For more information about prerequisites for Oracle Database, refer to the [Oracle Database Product Documentation on page 348](#).

How this Workflow Works

This topic contains the following information about the [Export Oracle Database via Data Pump](#) workflow:

Overview

This workflow performs a full database export using the Oracle Data Pump utility for the purpose of performing a database refresh. The Data Pump Export files can be stored in the local file system or

on a network share. You can use this workflow to implement a cross-platform database refresh (for example: Linux to Solaris).

Data Pump uses SQL commands to import and export specific data objects. It is slower than the Oracle Recovery Manager (RMAN) but offers more flexibility.

The workflow automatically detects which ORACLE_HOME and ORACLE_SID to use when performing the Data Pump export. You can specify the encryption mode, compression level, and file size to use for the export—be sure to use the same settings for the subsequent import.

You have the option of providing a Data Pump parameter file or entering the parameters on the Deployment page. In either case, the parameter values are validated prior to the Data Pump export. If you do not provide a parameter file, the workflow creates one based on the parameter values that you specify on the Deployment page. If you do not specify a value for a particular parameter, the default value is used (see [Parameters for Export Oracle Database via Data Pump on page 116](#)).

You can use this workflow as part of a database refresh process. Database refresh involves moving the contents of a database in one Oracle instance into a database in another Oracle instance. This is useful, for example, if you want to move a database from a traditional IT infrastructure to a private cloud. It is also useful if you want to duplicate production data in a test environment for application development or troubleshooting purposes.

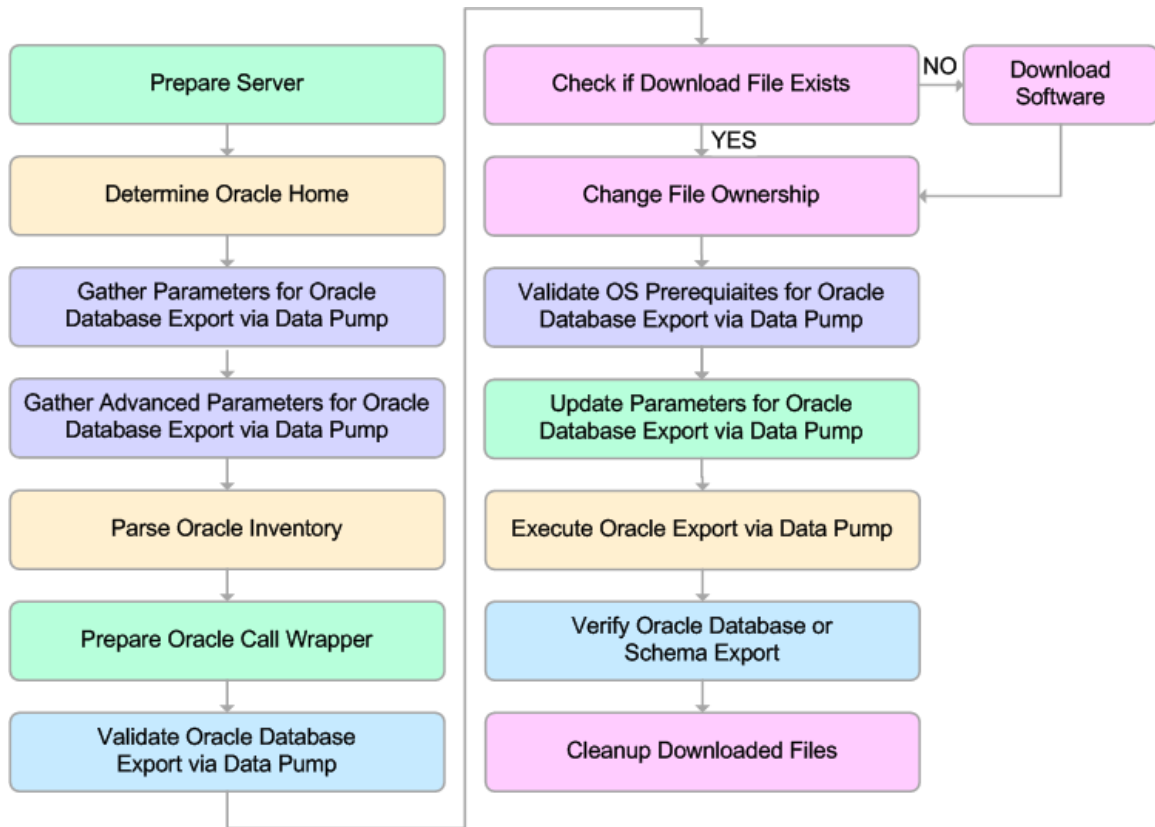
Validation Checks Performed

The workflow validates the following conditions:

1. The Oracle DB User can connect to and query the database specified in the Oracle SID.
2. Oracle Database version 10.2 (or later) is installed at the specified (or automatically detected) Oracle Home.
3. For Oracle Database version 11.2 (or later), the Oracle DB User has DATAPUMP_EXP_FULL_DATABASE permission. For earlier supported versions, the Oracle DB User has EXP_FULL_DATABASE permission.
4. The operating system on the target server is a supported HP DMA platform.
5. A temporary directory required for file storage can be created on the target server.
6. The specified Ignorable Oracle Errors are, in fact, valid error codes.
7. The specified Data Pump Export File is a valid path and file name.
8. If a Data Pump Parameter file is specified, the file exists in the specified location.
9. If a Data Pump Parameter file is not specified, at least one schema is specified.
10. The specified Target Directory exists, either locally or on a network share, or it can be created.
11. The directory names included in the Do Not Remove list (if any) are valid.

Steps Executed

The [Export Oracle Database via Data Pump](#) workflow includes the following steps. Each step must complete successfully before the next step can start. If a step fails, the workflow reports a failure, and all subsequent steps are skipped.



KEY:

- Workflow preparation
- Parameter gathering and validation
- OS or file system operation
- Oracle Database specific operation
- Pre/post validation

Process Flow

This workflow performs the following tasks:

1. Determines the target server platform type, and identifies the server call wrapper.
2. Determines the Oracle Home path and Oracle SID by reading the `oratab` file.
3. Gathers all required and optional parameters.
4. Determines the OS owner of the Oracle Home directory.
5. Prepares the instance call wrapper based on the specified Oracle User.
6. Validates all parameter values specified or derived.
7. Downloads the Data Pump Parameter File (if specified) from the SA Library.
8. Creates a Data Pump parameter file (or updates the existing parameter file) using values specified on the Deployment page. If you do not specify a value for a particular parameter, the default value is used.
9. Performs the Data Pump Export operation.
10. Verifies that the database is back online after the export:
 - No corrupted blocks exist.
 - No files are in backup mode.
 - Temporary table space is available.
11. Verifies that the Data Pump Export File exists in the Target Directory.
12. Removes any temporary files and directories used to perform the export.

How to Run this Workflow

The following instructions show you how to customize and run the [Export Oracle Database via Data Pump](#) workflow in your environment.

The workflow provides default values for most parameters. These default values are usually sufficient for a "typical" export. You can override the defaults by specifying parameter values in the deployment. You can also expose additional parameters in the workflow, if necessary, to accomplish more advanced scenarios. Any parameters not explicitly specified in the deployment will have the default values listed in [Parameters for Export Oracle Database via Data Pump on page 116](#)

Note: Before following this procedure, review the [Prerequisites for this Workflow](#), and ensure that all requirements are satisfied.

To use the Export Oracle Database via Data Pump workflow:

1. Create a deployable copy of the workflow (see [Create a Deployable Workflow on page 12](#)).
2. Determine the values that you will specify for the following parameters:

Parameter Name	Default Value	Required	Description
Data Pump Parameter File	no default	optional	Name of the Data Pump Export parameter file that you provide. If you do not specify the absolute path to the Parameter File, the workflow will look for the file in the Target Directory. If you do not specify a Parameter File, default Data Pump Export settings will be used for parameters not specified in the deployment.
Oracle Account	no default	optional	Oracle user that owns the ORACLE_HOME on the target Oracle database server. Required if an inventory file does not exist. Leave blank for Windows.
Target Directory	no default	required	Directory where the RMAN backup files will be placed. This directory must exist prior to workflow execution. The specified Oracle User must have READ and WRITE permissions for this directory. This directory must be accessible to the target database server.

Note: This is the minimum set of parameters required to run this workflow. You may need to expose additional parameters depending on your provisioning objectives.

See [Parameters for Export Oracle Database via Data Pump on page 116](#) for detailed descriptions of all input parameters for this workflow, including default values.

Note: To avoid entering passwords in clear text, see [Using a Policy to Specify Parameter Values on page 351](#).

3. In the workflow editor, expose any additional parameters that you need (see [How to Expose Additional Workflow Parameters on page 26](#)). You will specify values for those parameters when you create the deployment.
4. Save the changes to the workflow (click **Save** in the lower right corner).
5. Create a new deployment (see [Create a Deployment on page 13](#) for instructions).
6. On the Parameters tab, specify values for the required parameters listed in step 2 and any additional parameters that you have exposed. You do not need to specify values for those parameters whose default values are appropriate for your environment.
7. On the Targets tab, specify one or more targets for this deployment.
8. Save the deployment (click **Save** in the lower right corner).
9. Run the workflow using this deployment (see [Run Your Workflow on page 14](#) for instructions).

To verify the results:

The workflow will complete and report SUCCESS on the Console if it has run successfully. If an invalid parameter value is specified, an error is logged, and the workflow terminates in the FAILURE state.

Sample Scenarios

This topic shows you how to use various parameters to achieve the following database backup scenarios in your environment using the [Export Oracle Database via Data Pump](#) workflow:

Scenario 1: Perform an Export Using Default Settings and Store Export File Locally

This is the simplest Data Pump export scenario. In this example, the export file is stored on the local file system. The parameters shown here are visible by default.

In this scenario, the Data Pump Parameter File is not specified. The workflow will create its own parameter file using default values. The Oracle Account parameter is also not specified; it will be obtained from the Oracle inventory file (typically `oratab`).

The Target Directory will hold the Data Pump Export file (or files), which can subsequently be used to perform a database refresh on another target.

Step Name	Parameter Name	Example Value
Gather Parameters for Oracle Database Export via Data Pump on page 208	Target Directory	<code>/var/DPEExport/Full/May2012</code>

Be sure that the default values for all remaining parameters are appropriate for your environment (see [Parameters for Export Oracle Database via Data Pump on page 116](#)).

Scenario 2: Perform an Export Using Default Settings and Store Export File on a Network Share

This scenario is identical to Scenario 1, except that the Data Pump Export file will be stored on a network share. This eliminates the need to move files from one server to another. Data Pump Export files that are placed in a shared network directory can readily be used as an input to the [Refresh Oracle Database via Data Pump](#) workflow.

Step Name	Parameter Name	Example Value
Gather Parameters for Oracle Database Export via Data Pump on page 208	Target Directory	<code>myfileservers.mycompany.com:/uol/nfs_share</code>

Be sure that the default values for all remaining parameters are appropriate for your environment (see [Parameters for Export Oracle Database via Data Pump on page 116](#)).

Scenario 3: Perform an Export Using Non-Default Parameters

The [Export Oracle Database via Data Pump](#) workflow provides many parameters that can be modified to suit your needs. For example, the Data Pump Export file generated by the workflow can be compressed, encrypted, or divided into standard-sized pieces. You can also tell the workflow to

ignore specific Oracle errors that might arise during the export but would have no bearing on its outcome.

In this example, the Data Pump Export file is stored on the local file system. The first three parameters listed are visible by default; the remaining parameters must be exposed in the workflow so that they are available in the deployment (see [How to Expose Additional Workflow Parameters on page 26](#)).

Step Name	Parameter Name	Example Value
Gather Parameters for Oracle Database Export via Data Pump on page 208	Data Pump Parameter File	/var/DPEXport/Parms/myDPparameters.par
	Oracle Account	oracle
	Target Directory	/var/DPEXport/Output/Full/May2012
Gather Advanced Parameters for Oracle Database Export via Data Pump on page 211	Compression	DATA_ONLY
	Content	DATA_ONLY
	Encryption Mode	PASSWORD
	Encryption Password	myencpwd Note: To avoid entering passwords in clear text, see Using a Policy to Specify Parameter Values on page 351 .
	File Size	16GB
	Oracle DB User	siteadmin
	Oracle DB User Password	siteadminpwd Note: To avoid entering passwords in clear text, see Using a Policy to Specify Parameter Values on page 351 .

Step Name	Parameter Name	Example Value
	Ignorable Oracle Errors	ORA-39083, ORA-00959, ORA-01917, ORA-01918, ORA-01435
	Temporary File Location	/var/temp/datapump_temp_files

Be sure that the default values for all remaining parameters are appropriate for your environment (see [Parameters for Export Oracle Database via Data Pump on page 116](#)).

Refresh Oracle Database via Data Pump

This workflow imports a full Oracle database from a previously created Data Pump Export file (or files). The files can be located in the local file system or on a network share. You can use this workflow to implement a cross-platform database refresh (for example: Linux to Solaris).

Data Pump uses SQL commands to import and export specific data objects. It is slower than the Oracle Recovery Manager (RMAN) but offers more flexibility.

The workflow automatically detects which ORACLE_HOME and ORACLE_SID to use when performing the Data Pump import. You must specify the same encryption mode and password, compression level, and file size that was used for the export.

You have the option of providing a Data Pump parameter file or entering the parameters on the Deployment page. In either case, the parameter values are validated prior to the Data Pump import. If you do not provide a parameter file, the workflow creates one based on the parameter values that you specify on the Deployment page. If you do not specify a value for a particular parameter, the default value is used (see [Parameters for Refresh Oracle Database via Data Pump on page 123](#)).

To use this workflow in your environment, see the following information:

Topic	Information Included
Prerequisites for this Workflow on next page	List of prerequisites that must be satisfied before you can run this workflow
How this Workflow Works on next page	Information about what the workflow does, including validation checks performed, steps executed, and a high-level process flow
How to Run this Workflow on page 60	Instructions for running this workflow in your environment
Sample Scenarios on page 62	Examples of typical parameter values for this workflow

Note: To view detailed information about the steps included in this workflow, see [Steps in this Workflow](#).

Prerequisites for this Workflow

Be sure that the following prerequisites are satisfied before you run the [Refresh Oracle Database via Data Pump](#) workflow:

1. The HP Server Automation agent must be installed on all target servers.
2. The Target Directory must exist prior to the execution of the workflow. This directory can be local, or it can be a Network File System (NFS) mount point.

Note: If you specify an NFS mount point, the pertinent NFS share must be available to the target server, and it must be mounted prior to running this workflow.

3. The specified Oracle DB User must have READ and WRITE permission for the Target Directory.
4. The Oracle Database software must be provisioned, and the database must exist in the target instance prior to workflow execution.

Note: For Data Pump workflows, you must specify the same Content and Encryption Password settings for the export and any subsequent import operations.

For more information about prerequisites for Oracle Database, refer to the [Oracle Database Product Documentation on page 348](#).

How this Workflow Works

This topic contains the following information about the [Refresh Oracle Database via Data Pump](#) workflow:

Overview

This workflow imports a full Oracle database from a previously created Data Pump Export file (or files). The files can be located in the local file system or on a network share. You can use this workflow to implement a cross-platform database refresh (for example: Linux to Solaris).

Data Pump uses SQL commands to import and export specific data objects. It is slower than the Oracle Recovery Manager (RMAN) but offers more flexibility.

The workflow automatically detects which ORACLE_HOME and ORACLE_SID to use when performing the Data Pump import. You must specify the same encryption mode and password, compression level, and file size that was used for the export.

You have the option of providing a Data Pump parameter file or entering the parameters on the Deployment page. In either case, the parameter values are validated prior to the Data Pump import. If you do not provide a parameter file, the workflow creates one based on the parameter values that you specify on the Deployment page. If you do not specify a value for a particular parameter, the default value is used (see [Parameters for Refresh Oracle Database via Data Pump on page 123](#)).

You can use this workflow as part of a database refresh process. Database refresh involves moving the contents of a database in one Oracle instance into a database in another Oracle instance. This is useful, for example, if you want to move a database from a traditional IT infrastructure to a private cloud. It is also useful if you want to duplicate production data in a test environment for application development or troubleshooting purposes.

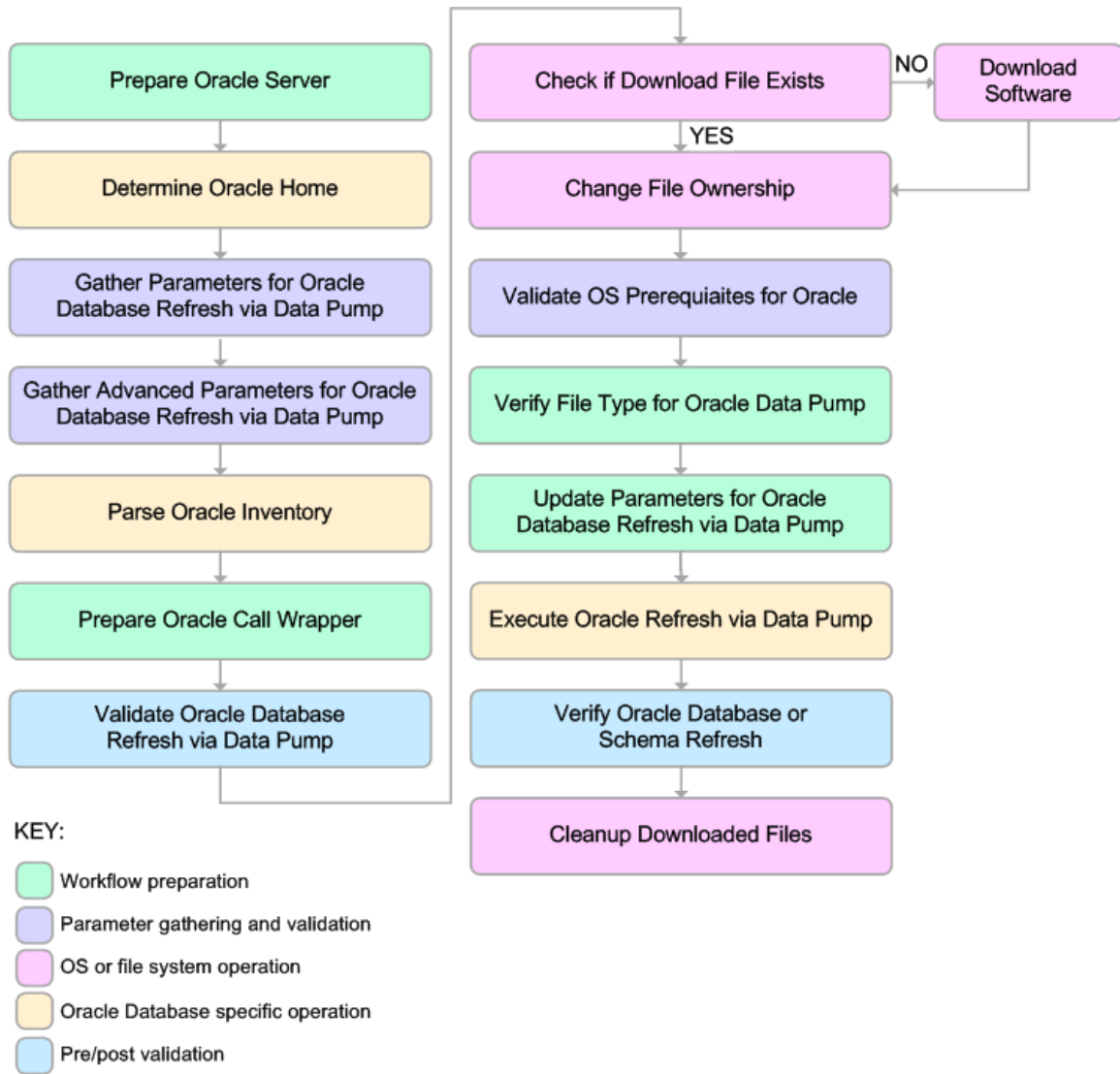
Validation Checks Performed

The workflow validates the following conditions:

1. The specified Oracle DB User can connect to and query the database specified in the Oracle SID.
2. Oracle Database version 10.2 (or later) is installed at the specified (or automatically detected) Oracle Home.
3. The Oracle DB User has permission to perform a full database export using the Data Pump utility. The Oracle DB User must have EXP_FULL_DATABASE permission.
4. A temporary directory required for file storage can be created on the target server.
5. The specified Ignorable Oracle Errors are, in fact, valid error codes.
6. The specified Data Pump Export File is a valid path and file name.
7. If a Data Pump Parameter file is specified, the file exists in the specified location.
8. The specified Target Directory exists, either locally or on a network share, and is writable.
9. The directory names included in the Do Not Remove list (if any) are valid.
10. The operating system on the target server is a support HP DMA platform.
11. The specified Data Pump Export File was, indeed, created by Data Pump.

Steps Executed

The [Refresh Oracle Database via Data Pump](#) workflow includes the following steps. Each step must complete successfully before the next step can start. If a step fails, the workflow reports a failure, and all subsequent steps are skipped.



Process Flow

This workflow performs the following tasks:

1. Determines the target server platform type, and identifies the server call wrapper.
2. Determines the Oracle Home path and Oracle SID by reading the `oratab` file.
3. Gathers all required and optional parameters.
4. Determines the OS owner of the Oracle Home directory.
5. Prepares the instance call wrapper based on the specified Oracle User.
6. Validates all parameter values specified or derived.
7. Downloads the Data Pump Parameter File, SQL Verification Script, and SQL Verification Results (if specified) from the SA Library.
8. Creates a Data Pump parameter file (or updates the existing parameter file) using values specified on the Deployment page. If you do not specify a value for a particular parameter, the default value is used.
9. Performs the Data Pump Import operation.
10. Checks the Import Log File to ensure that it does not contain any unexpected errors.
11. Verifies that the database is online after the import:
 - No corrupted blocks exist.
 - No files are in backup mode.
 - Temporary table space is available.
12. Runs the SQL Verification Script (if provided), and compares the results to the SQL Verification Results (must be provided if the script is provided).
13. Removes any temporary files and directories used to perform the import.

How to Run this Workflow

The following instructions show you how to customize and run the [Refresh Oracle Database via Data Pump](#) workflow in your environment.

The workflow provides default values for most parameters. These default values are usually sufficient for a "typical" export. You can override the defaults by specifying parameter values in the deployment. You can also expose additional parameters in the workflow, if necessary, to accomplish more advanced scenarios. Any parameters not explicitly specified in the deployment will have the default values listed in [Parameters for Refresh Oracle Database via Data Pump on page 123](#)

Note: Before following this procedure, review the [Prerequisites for this Workflow](#), and ensure that all requirements are satisfied.

To use the Refresh Oracle Database via Data Pump workflow:

1. Create a deployable copy of the workflow (see [Create a Deployable Workflow on page 12](#)).
2. Determine the values that you will specify for the following parameters:

Parameter Name	Default Value	Required	Description
Data Pump Export Files	no default	required	Comma-separated list of Data Pump Export dump files included in the dump file set that will be used for this Data Pump Import. If only one file is specified, no comma is required.
Data Pump Parameter File	no default	optional	Name of the Data Pump Export parameter file that you provide. If you do not specify the absolute path to the Parameter File, the workflow will look for the file in the Target Directory. If you do not specify a Parameter File, default Data Pump Export settings will be used for parameters not specified in the deployment.
Oracle Account	no default	optional	Oracle user that owns the ORACLE_HOME on the target Oracle database server. Required if an inventory file does not exist. Leave blank for Windows.
Target Directory	no default	required	Directory where the RMAN backup files will be placed. This directory must exist prior to workflow execution. The specified Oracle User must have READ and WRITE permissions for this directory. This directory must be accessible to the target database server.

Note: This is the minimum set of parameters required to run this workflow. You may need to expose additional parameters depending on your provisioning objectives.

See [Parameters for Refresh Oracle Database via Data Pump on page 123](#) for detailed descriptions of all input parameters for this workflow, including default values.

Note: To avoid entering passwords in clear text, see [Using a Policy to Specify Parameter Values on page 351](#).

3. In the workflow editor, expose any additional parameters that you need (see [How to Expose Additional Workflow Parameters on page 26](#)). You will specify values for those parameters when you create the deployment.
4. Save the changes to the workflow (click **Save** in the lower right corner).
5. Create a new deployment (see [Create a Deployment on page 13](#) for instructions).
6. On the Parameters tab, specify values for the required parameters listed in step 2 and any additional parameters that you have exposed. You do not need to specify values for those parameters whose default values are appropriate for your environment.
7. On the Targets tab, specify one or more targets for this deployment.

8. Save the deployment (click **Save** in the lower right corner).
9. Run the workflow using this deployment (see [Run Your Workflow on page 14](#) for instructions).

To verify the results:

The workflow will complete and report SUCCESS on the Console if it has run successfully. If an invalid parameter value is specified, an error is logged, and the workflow terminates in the FAILURE state.

Sample Scenarios

This topic shows you how to use various parameters to achieve the following database backup scenarios in your environment using the [Refresh Oracle Schema via Data Pump](#) workflow:

Scenario 1: Perform a Schema Import Using Default Settings and a Network Share Target Directory

This is the simplest Data Pump import scenario. In this example, the export file has been stored on a network share. The parameters shown here are visible by default.

In this scenario, the Data Pump Parameter File is not specified. The workflow will create its own parameter file using default values.

Step Name	Parameter Name	Example Value
Gather Parameters for Oracle Schema Refresh via Data Pump on page 311	Data Pump Export Files	april302012export.dmp
	Oracle Account	sysdba
	Schema	hr,sh,oe
	Target Directory	myfileservers.mycompany.com:/u01/nfs_share

Be sure that the default values for all remaining parameters are appropriate for your environment (see [Parameters for Refresh Oracle Schema via Data Pump on page 143](#)).

Scenario 2: Perform a Schema Import Using a Parameter File that is Stored in the SA Software Library

In this scenario, a Data Pump parameter file is used to specify all the Data Pump Import options—including the schemas that will be imported. In this case, the Data Pump Export file is located on a network share.

Step Name	Parameter Name	Example Value
Gather Parameters for Oracle Schema Refresh via Data Pump on page 311	Data Pump Export Files	april302012export.dmp
	Data Pump Parameter File	myDPparameters.par
	Oracle Account	sysdba
	Target Directory	myfileservers.mycompany.com:/u01/nfs_share

Be sure that the default values for all remaining parameters are appropriate for your environment (see [Parameters for Refresh Oracle Schema via Data Pump on page 143](#)).

Scenario 3: Perform a Schema Import Using Non-Default Parameters

The [Refresh Oracle Schema via Data Pump](#) workflow provides many parameters that can be modified to suit your needs. For example, the Data Pump Export file might have been compressed or encrypted. You can instruct Data Pump how to proceed if it finds existing data in the database. You can also tell the workflow to ignore specific Oracle errors that might arise during the import but would have no bearing on its outcome.

In this example, the Data Pump Export file is stored on a network share. The first three parameters listed are visible by default; the remaining parameters must be exposed in the workflow so that they are available in the deployment (see [How to Expose Additional Workflow Parameters on page 26](#)).

Step Name	Parameter Name	Example Value
Gather Parameters for Oracle Schema Refresh via Data Pump on page 311	Data Pump Export Files	april302012export.dmp
	Oracle Account	sysdba
	Target Directory	myfileservers.mycompany.com:/u01/nfs_share
Gather Advanced Parameters for Oracle Schema Refresh via Data Pump on page 314	Compression	DATA_ONLY
	Content	DATA_ONLY
	Encryption Mode	PASSWORD

Step Name	Parameter Name	Example Value
	Encryption Password	myencpwd Note: To avoid entering passwords in clear text, see Using a Policy to Specify Parameter Values on page 351 .
	File Size	16GB
	Oracle DB User	siteadmin
	Oracle DB User Password	siteadminpwd Note: To avoid entering passwords in clear text, see Using a Policy to Specify Parameter Values on page 351 .
	Ignorable Oracle Errors	ORA-39111,ORA-39151,ORA-31685
	Table Exist Action	REPLACE
	Temporary File Location	/var/temp/datapump_temp_files

Be sure that the default values for all remaining parameters are appropriate for your environment (see [Parameters for Refresh Oracle Schema via Data Pump on page 143](#)).

Export and Refresh Oracle Database via Data Pump

This workflow performs a database schema refresh using the Oracle Data Pump Utility. It exports the contents of one or more specific schemas in one Oracle instance (the SOURCE) and imports them into a database in another Oracle instance (the DESTINATION). You can use this workflow to implement a cross-platform database refresh (for example: Linux to Solaris).

Data Pump uses SQL commands to import and export specific data objects. It is slower than the Oracle Recovery Manager (RMAN) but offers more flexibility.

The workflow automatically detects which ORACLE_HOME and ORACLE_SID to use when performing the Data Pump export and import operations.

You have the option of either providing Data Pump parameter files or entering the parameters on the Deployment page. In either case, the parameter values are validated prior to the Data Pump operation export and import operations. If you do not provide a parameter file, the workflow creates one based on the parameter values that you specify on the Deployment page. If you do not specify a value for a particular parameter, the default value is used (see [Parameters for Export and Refresh Oracle Schema via Data Pump on page 148](#)).

Note: This workflow is a bridged execution workflow. You specify the SOURCE and DESTINATION targets at run-time.

To use this workflow in your environment, see the following information:

Topic	Information Included
Prerequisites for this Workflow below	List of prerequisites that must be satisfied before you can run this workflow
How this Workflow Works on next page	Information about what the workflow does, including validation checks performed, steps executed, and a high-level process flow
How to Run this Workflow on page 70	Instructions for running this workflow in your environment
Sample Scenarios on page 72	Examples of typical parameter values for this workflow

Note: To view detailed information about the steps included in this workflow, see [Steps in this Workflow](#).

Prerequisites for this Workflow

Be sure that the following prerequisites are satisfied before you run the [Export and Refresh Oracle Database via Data Pump](#) workflow:

1. The HP Server Automation agent must be installed on all target servers.
2. The Target Directory must exist prior to the execution of the workflow. This directory can be local, or it can be a Network File System (NFS) mount point.

Note: If you specify an NFS mount point, the pertinent NFS share must be available to the target server, and it must be mounted prior to running this workflow.

3. The specified Oracle DB User must have READ and WRITE permission for the Target Directory.
4. The Oracle Database software must be provisioned, and the database must exist in the target instance prior to workflow execution.

Note: For Data Pump workflows, you must specify the same Content and Encryption Password settings for the export and any subsequent import operations.

For more information about prerequisites for Oracle Database, refer to the [Oracle Database Product Documentation on page 348](#).

How this Workflow Works

This topic contains the following information about the [Export and Refresh Oracle Database via Data Pump](#) workflow:

Overview

This workflow performs a database schema refresh using the Oracle Data Pump Utility. It exports the contents of one or more specific schemas in one Oracle instance (the SOURCE) and imports them into a database in another Oracle instance (the DESTINATION). You can use this workflow to implement a cross-platform database refresh (for example: Linux to Solaris).

Data Pump uses SQL commands to import and export specific data objects. It is slower than the Oracle Recovery Manager (RMAN) but offers more flexibility.

The workflow automatically detects which ORACLE_HOME and ORACLE_SID to use when performing the Data Pump export and import operations.

You have the option of either providing Data Pump parameter files or entering the parameters on the Deployment page. In either case, the parameter values are validated prior to the Data Pump operation export and import operations. If you do not provide a parameter file, the workflow creates one based on the parameter values that you specify on the Deployment page. If you do not specify a value for a particular parameter, the default value is used (see [Parameters for Export and Refresh Oracle Schema via Data Pump on page 148](#)).

Note: This workflow is a bridged execution workflow. You specify the SOURCE and DESTINATION targets at run-time.

Validation Checks Performed

The workflow validates the following conditions on the SOURCE target:

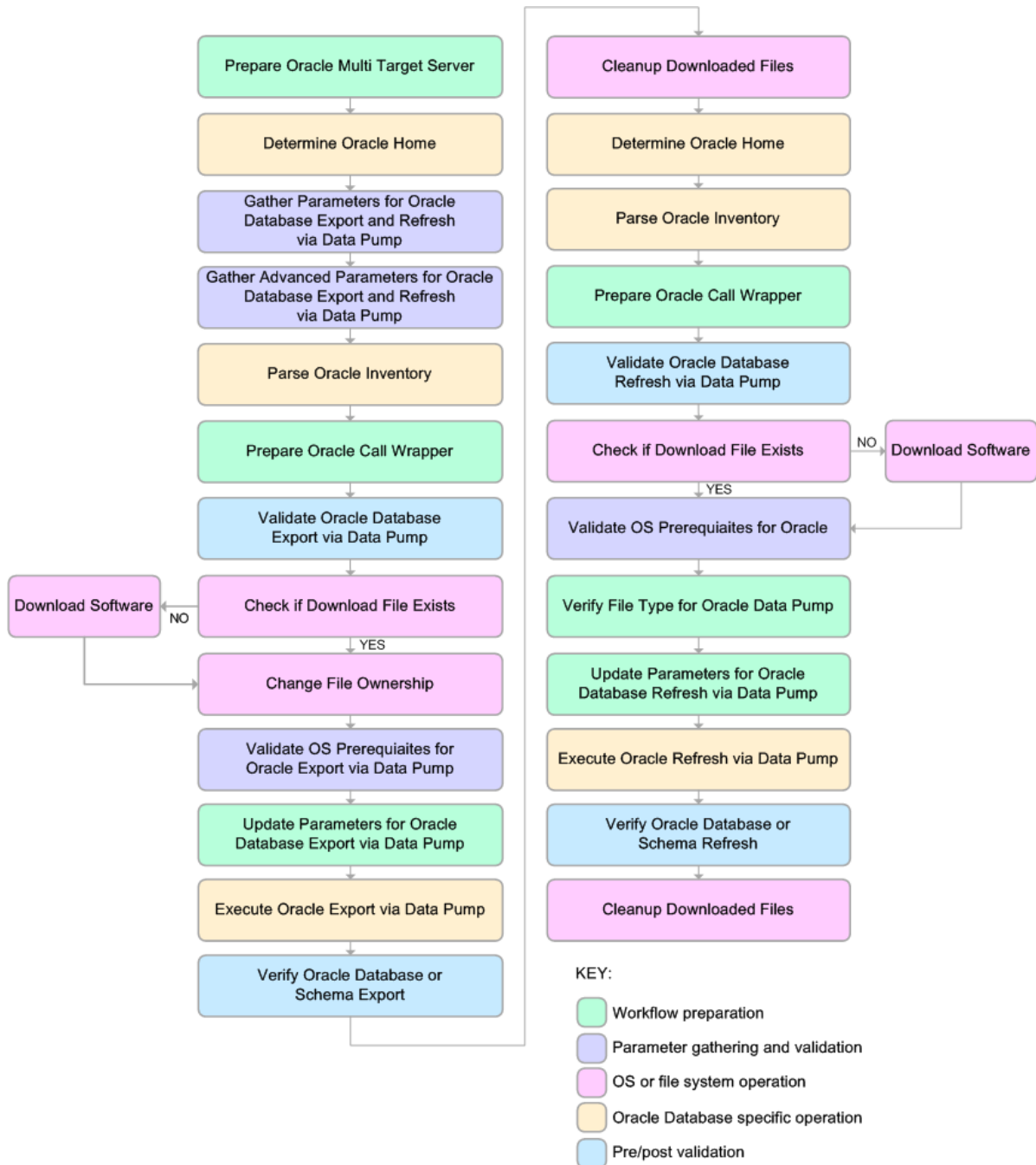
1. The specified Oracle DB User can connect to and query the database specified in the Oracle SID.
2. Oracle Database version 10.2 (or later) is installed at the specified (or automatically detected) Oracle Home.
3. The Oracle DB User has permission to perform a full database export using the Data Pump utility. The Oracle DB User must have EXP_FULL_DATABASE permission.
4. A temporary directory required for file storage can be created on the target server.
5. The specified Ignorable Oracle Errors are, in fact, valid error codes.
6. If a Data Pump Parameter file is specified, the file exists in the specified location.
7. The specified Target Directory exists, either locally or on a network share, and is writable.
8. The directory names included in the Do Not Remove list (if any) are valid.
9. The operating system on the target server is a support HP DMA platform.

After the workflow successfully performs the Data Pump Export on the SOURCE target, it validates the following conditions on the DESTINATION target:

1. The specified Oracle DB User can connect to and query the database specified in the Oracle SID.
2. Oracle Database version 10.2 (or later) is installed at the specified (or automatically detected) Oracle Home.
3. The Oracle DB User has permission to perform a full database export using the Data Pump utility.
4. A temporary directory required for file storage can be created on the target server.
5. The specified Ignorable Oracle Errors are, in fact, valid error codes.
6. If a Data Pump Parameter file is specified, the file exists in the specified location.
7. The specified Target Directory exists, either locally or on a network share, and is writable.
8. The directory names included in the Do Not Remove list (if any) are valid.
9. The operating system on the target server is a support HP DMA platform.

Steps Executed

The [Export and Refresh Oracle Database via Data Pump](#) workflow includes the following steps. Each step must complete successfully before the next step can start. If a step fails, the workflow reports a failure, and all subsequent steps are skipped.



Process Flow

This workflow performs the following tasks on the SOURCE target server:

1. Determines the target server platform type, and identifies the server call wrapper.
2. Determines the Oracle Home path and Oracle SID by reading the `oratab` file.
3. Gathers all required and optional parameters.
4. Determines the OS owner of the Oracle Home directory.
5. Prepares the instance call wrapper based on the specified Oracle User.
6. Validates all parameter values specified or derived.
7. Downloads the Data Pump Parameter File (if specified) from the SA Library.
8. Creates a Data Pump parameter file (or updates the existing parameter file) using values specified on the Deployment page. If you do not specify a value for a particular parameter, the default value is used.
9. Performs the Data Pump Export operation.
10. Verifies that the database is back online after the export:
 - No corrupted blocks exist.
 - No files are in backup mode.
 - Temporary table space is available.
11. Verifies that the Data Pump Export File exists in the Target Directory.
12. Removes any temporary files and directories used to perform the export.

The workflow then performs the following tasks on the DESTINATION target server:

1. Determines the target server platform type, and identifies the server call wrapper.
2. Determines the Oracle Home path and Oracle SID by reading the `oratab` file.
3. Gathers all required and optional parameters.
4. Determines the OS owner of the Oracle Home directory.
5. Prepares the instance call wrapper based on the specified Oracle User.
6. Validates all parameter values specified or derived.
7. Downloads the Data Pump Parameter File, SQL Verification Script, and SQL Verification Results (if specified) from the SA Library.
8. Creates a Data Pump parameter file (or updates the existing parameter file) using values specified on the Deployment page. If you do not specify a value for a particular parameter, the default value is used.
9. Performs the Data Pump Import operation.
10. Checks the Import Log File to ensure that it does not contain any unexpected errors.
11. Verifies that the database is online after the import:

- No corrupted blocks exist.
 - No files are in backup mode.
 - Temporary table space is available.
12. Runs the SQL Verification Script (if provided), and compares the results to the SQL Verification Results (must be provided if the script is provided).
 13. Removes any temporary files and directories used to perform the import.

How to Run this Workflow

The following instructions show you how to customize and run the [Export and Refresh Oracle Database via Data Pump](#) workflow in your environment.

The workflow provides default values for most parameters. These default values are usually sufficient for a "typical" export. You can override the defaults by specifying parameter values in the deployment. You can also expose additional parameters in the workflow, if necessary, to accomplish more advanced scenarios. Any parameters not explicitly specified in the deployment will have the default values listed in [Parameters for Export and Refresh Oracle Database via Data Pump on page 128](#)

Note: Before following this procedure, review the [Prerequisites for this Workflow](#), and ensure that all requirements are satisfied.

To use the Export and Refresh Oracle Database via Data Pump workflow:

1. Create a deployable copy of the workflow (see [Create a Deployable Workflow on page 12](#)).
2. Determine the values that you will specify for the following parameters:

Parameter Name	Default Value	Required	Description
EXPORT - Data Pump Parameter File	no default	optional	Name of the Data Pump Export parameter file that you provide. If you do not specify the absolute path to the EXPORT- Data Pump Parameter File, the workflow will look for the file in the EXPORT - Target Directory. If you do not specify an EXPORT- Parameter File at all, default Data Pump Export settings will be used for parameters not specified in the deployment.
EXPORT - Oracle Account	no default	optional	Oracle user that owns the ORACLE_HOME on the SOURCE database server. Required if an inventory file does not exist. Leave blank for Windows.
EXPORT - Target Directory	no default	required	Staging directory path known to the SOURCE database server and shared with the DESTINATION database server. This is the path to the NFS mount point as known by the SOURCE database server.
IMPORT - Data Pump Parameter File	no default	optional	Name of the Data Pump Import parameter file that you provide. If you do not specify the absolute path to the Parameter File, the workflow will look for the file in the IMPORT - Target Directory. If you do not specify a Parameter File, default Data Pump Import settings will be used for parameters not specified in the deployment.
IMPORT - Oracle Account	no default	optional	Oracle user that owns the ORACLE_HOME on the DESTINATION database server. Required if an inventory file does not exist. Leave blank for Windows.
IMPORT - Target Directory	no default	required	Staging directory path known to the DESTINATION database server and shared with the SOURCE database server. This is the path to the NFS mount point as known by the DESTINATION database server.

Note: This is the minimum set of parameters required to run this workflow. You may need to expose additional parameters depending on your provisioning objectives.

See [Parameters for Export and Refresh Oracle Database via Data Pump on page 128](#) for detailed descriptions of all input parameters for this workflow, including default values.

Note: To avoid entering passwords in clear text, see [Using a Policy to Specify Parameter Values on page 351](#).

3. In the workflow editor, expose any additional parameters that you need (see [How to Expose Additional Workflow Parameters on page 26](#)). You will specify values for these parameters when you create the deployment.
4. Save the changes to the workflow (click **Save** in the lower right corner).
5. Create a new deployment (see [Create a Deployment on page 13](#) for instructions).
 - a. On the Targets tab, select all the target servers—both source and destination—that will participate in this database refresh. The targets that you select here will be available in the Target Parameters drop-down menus on the Run page (see [step 7](#)).
 - b. On the Parameters tab, specify values for the required parameters listed in [step 2](#) and any additional parameters that you exposed in [step 3](#). You do not need to specify values for those parameters whose default values are appropriate for your environment.
6. Save the deployment (click **Save** in the lower right corner).
7. Run the workflow using this deployment (see [Run Your Workflow on page 14](#) for instructions).

On the Run page, select the following targets from the respective drop-down menus:

Parameter Name	Default	Description
Source	no default	Instance that contains the database whose contents will be exported.
Destination	no default	Instance where the database will be imported.

To verify the results:

The workflow will complete and report SUCCESS on the Console if it has run successfully. If an invalid parameter value is specified, an error is logged, and the workflow terminates in the FAILURE state.

Sample Scenarios

This topic shows you how to use various parameters to achieve the following database backup scenarios in your environment using the [Export and Refresh Oracle Database via Data Pump](#) workflow:

Scenario 1: Perform an Import Using Default Settings and a Network Share Target Directory

This is the simplest Data Pump database refresh scenario. In this example, the export file is stored on a network share to minimize data transfer overhead. The parameters shown here are visible by default.

In this scenario, the Data Pump Parameter File is not specified for either the export or the import. The workflow will create its own parameter files using default values. The Oracle Account parameter is also not specified; it will be obtained from the Oracle inventory file (typically `oratab`) on the SOURCE and DESTINATION target servers, respectively.

Step Name	Parameter Name	Example Value
Gather Parameters for Oracle Database Export and Refresh via Data Pump on page 267	EXPORT - Target Directory	myfilesERVER.mycompany.com:/u01/nfs_share
	IMPORT - Target Directory	myfilesERVER.mycompany.com:/u01/nfs_share

Be sure that the default values for all remaining parameters are appropriate for your environment (see [Parameters for Export and Refresh Oracle Schema via Data Pump on page 148](#)).

Scenario 2: Perform an Import Using Non-Default Parameters

The [Export and Refresh Oracle Database via Data Pump on page 64](#) workflow provides many parameters that can be modified to suit your needs. For example, you can compress or encrypt the Data Pump Export file. You can specify the type of content that should be refreshed, and you can instruct Data Pump about how to proceed if it finds existing data in the DESTINATION database. You can also tell the workflow to ignore specific Oracle errors that might arise during the export or the import but would have no bearing on its outcome.

Again in this scenario, the Data Pump Parameter File is not specified for either the export or the import. The workflow will create its own parameter files using default values. The Oracle Account parameter is also not specified; it will be obtained from the Oracle inventory file (typically `oratab`) on the SOURCE and DESTINATION target servers, respectively.

Here, the Data Pump Export file is stored on a network share to minimize data transfer overhead.

The first six parameters listed are visible by default; the remaining parameters must be exposed in the workflow so that they are available in the deployment (see [How to Expose Additional Workflow Parameters on page 26](#)).

Step Name	Parameter Name	Example Value
Gather Parameters for Oracle Database Export and Refresh via Data Pump on page 267	EXPORT - Target Directory	myfilesERVER.mycompany.com:/u01/nfs_share
	IMPORT - Target Directory	myfilesERVER.mycompany.com:/u01/nfs_share
Gather Advanced Parameters for Oracle Database Export and Refresh via Data Pump on page 270	ALL - Content	DATA_ONLY

Step Name	Parameter Name	Example Value
	EXPORT - Compression	DATA_ONLY
	EXPORT - Encryption Mode	PASSWORD
	ALL - Encryption Password	myencpwd Note: To avoid entering passwords in clear text, see Using a Policy to Specify Parameter Values on page 351 .
	EXPORT - File Size	16GB
	EXPORT - Oracle DB User	prodadmin
	EXPORT - Oracle DB User Password	prodadminpwd Note: To avoid entering passwords in clear text, see Using a Policy to Specify Parameter Values on page 351 .
	IMPORT - Oracle DB User	testadmin
	IMPORT - Oracle DB User Password	testadminpwd Note: To avoid entering passwords in clear text, see Using a Policy to Specify Parameter Values on page 351 .
	ALL - Ignorable Oracle Errors	ORA-39111,ORA-39151,ORA-31685
	IMPORT - Table Exist Action	REPLACE

Step Name	Parameter Name	Example Value
	IMPORT - Verification Result	/var/dp/sql_ver_results
	IMPORT - Verification SQL Script	/var/dp/sql_ver_script

Be sure that the default values for all remaining parameters are appropriate for your environment (see [Parameters for Export and Refresh Oracle Schema via Data Pump on page 148](#)).

Scenario 3: Perform an Import Using Parameter Files that are Stored in the SA Software Library

In this scenario, the Data Pump Parameter Files that contain all the non-default parameter settings for the import and export, respectively, are specified. The Oracle Account parameter is not specified; it will be obtained from the Oracle inventory file (typically `oratab`).

Step Name	Parameter Name	Example Value
Gather Parameters for Oracle Database Export and Refresh via Data Pump on page 267	EXPORT - Data Pump Parameter File	DPEXportParameters.par
	EXPORT - Target Directory	myfileservr.mycompany.com:/u01/nfs_share
	IMPORT - Data Pump Parameter File	DPImportParameters.par
	IMPORT - Target Directory	myfileservr.mycompany.com:/u01/nfs_share

Be sure that the default values for all remaining parameters are appropriate for your environment (see [Parameters for Export and Refresh Oracle Schema via Data Pump on page 148](#)).

Export Oracle Schema via Data Pump

This workflow exports a specific schema (or schemas) using the Oracle Data Pump utility for the purpose of performing a database refresh. The Data Pump Export files can be stored in the local file system or on a network share. You can use this workflow to implement a cross-platform database refresh (for example: Linux to Solaris).

Data Pump uses SQL commands to import and export specific data objects. It is slower than the Oracle Recovery Manager (RMAN) but offers more flexibility.

The workflow automatically detects which ORACLE_HOME and ORACLE_SID to use when performing the Data Pump export. You can specify the encryption mode, compression level, and file size to use for the export—be sure to use the same settings for the subsequent import.

You have the option of providing a Data Pump parameter file or entering the parameters on the Deployment page. In either case, the parameter values are validated prior to the Data Pump export. If you do not provide a parameter file, the workflow creates one based on the parameter values that you specify on the Deployment page. If you do not specify a value for a particular parameter, the default value is used (see [Parameters for Export Oracle Schema via Data Pump on page 136](#)).

The following tables describe the required and optional input parameters for this workflow. Most of these parameters are not initially visible in a deployment (see [How to Expose Additional Workflow Parameters on page 26](#)). For most parameters, if you do not specify a value for a parameter, a default value is assigned.

To use this workflow in your environment, see the following information:

Topic	Information Included
Prerequisites for this Workflow below	List of prerequisites that must be satisfied before you can run this workflow
How this Workflow Works on next page	Information about what the workflow does, including validation checks performed, steps executed, and a high-level process flow
How to Run this Workflow on page 80	Instructions for running this workflow in your environment
Sample Scenarios on page 82	Examples of typical parameter values for this workflow

Note: To view detailed information about the steps included in this workflow, see [Steps in this Workflow](#).

Prerequisites for this Workflow

Be sure that the following prerequisites are satisfied before you run the [Export Oracle Schema via Data Pump](#) workflow:

1. The HP Server Automation agent must be installed on all target servers.
2. The Target Directory must exist prior to the execution of the workflow. This directory can be local, or it can be a Network File System (NFS) mount point.

Note: If you specify an NFS mount point, the pertinent NFS share must be available to the target server, and it must be mounted prior to running this workflow.

3. The specified Oracle DB User must have READ and WRITE permission for the Target Directory.

4. The Oracle Database software must be provisioned, and the database must exist in the target instance prior to workflow execution.

Note: For Data Pump workflows, you must specify the same Content and Encryption Password settings for the export and any subsequent import operations.

For more information about prerequisites for Oracle Database, refer to the [Oracle Database Product Documentation on page 348](#).

How this Workflow Works

This topic contains the following information about the [Export Oracle Schema via Data Pump](#) workflow:

Overview

This workflow exports a specific schema (or schemas) using the Oracle Data Pump utility for the purpose of performing a database refresh. The Data Pump Export files can be stored in the local file system or on a network share. You can use this workflow to implement a cross-platform database refresh (for example: Linux to Solaris).

Data Pump uses SQL commands to import and export specific data objects. It is slower than the Oracle Recovery Manager (RMAN) but offers more flexibility.

The workflow automatically detects which ORACLE_HOME and ORACLE_SID to use when performing the Data Pump export. You can specify the encryption mode, compression level, and file size to use for the export—be sure to use the same settings for the subsequent import.

You have the option of providing a Data Pump parameter file or entering the parameters on the Deployment page. In either case, the parameter values are validated prior to the Data Pump export. If you do not provide a parameter file, the workflow creates one based on the parameter values that you specify on the Deployment page. If you do not specify a value for a particular parameter, the default value is used (see [Parameters for Export Oracle Schema via Data Pump on page 136](#)).

You can use this workflow as part of a database refresh process. Database refresh involves moving the contents of a database in one Oracle instance into a database in another Oracle instance. This is useful, for example, if you want to move a database from a traditional IT infrastructure to a private cloud. It is also useful if you want to duplicate production data in a test environment for application development or troubleshooting purposes.

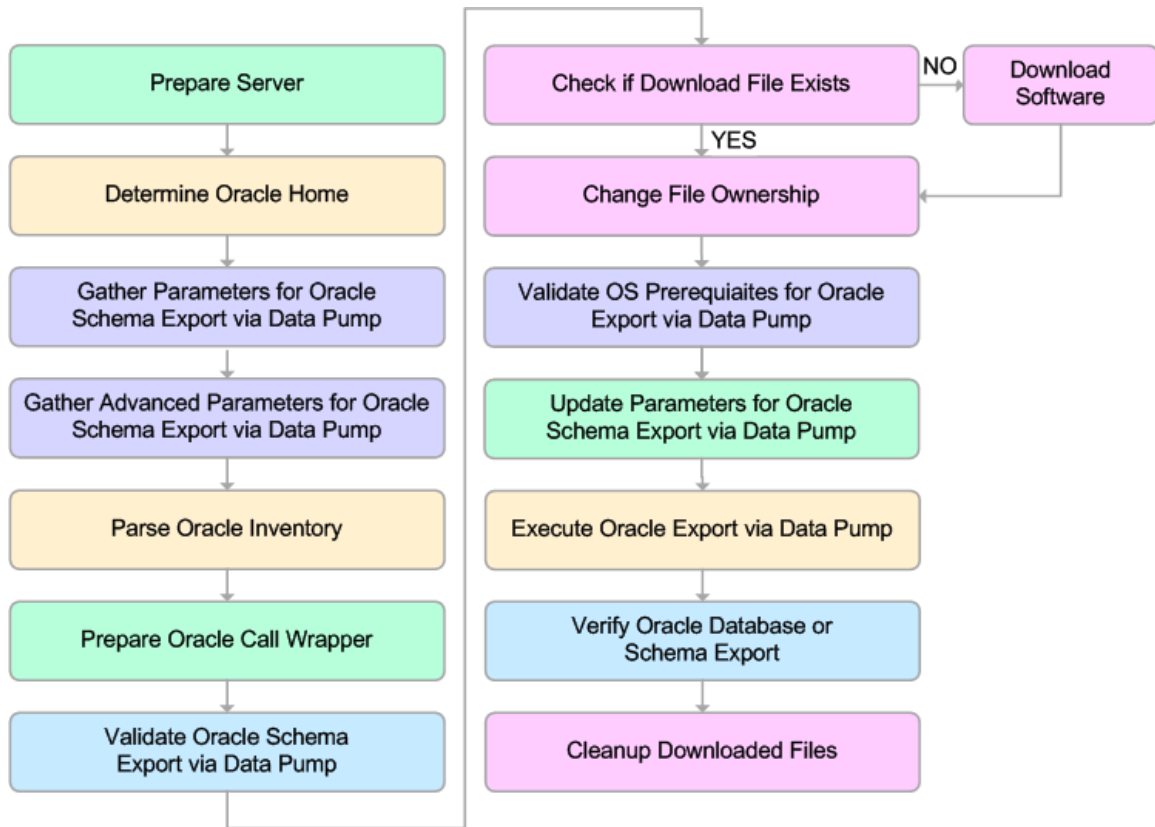
Validation Checks Performed

The workflow validates the following conditions:

1. The specified Oracle DB User can connect to and query the database specified in the Oracle SID.
2. Oracle Database version 10.2 (or later) is installed at the specified (or automatically detected) Oracle Home.
3. The Oracle DB User has permission to perform a full database export using the Data Pump utility. The Oracle User must have EXP_FULL_DATABASE permission.
4. A temporary directory required for file storage can be created on the target server.
5. The specified Ignorable Oracle Errors are, in fact, valid error codes.
6. If a Data Pump Parameter file is not provided, a schema (or multiple schemas) have been specified in the deployment.
7. The specified Data Pump Export File is a valid path and file name.
8. If a Data Pump Parameter file is specified, the file exists in the specified location.
9. The specified Target Directory exists, either locally or on a network share, and is writable.
10. The directory names included in the Do Not Remove list (if any) are valid.
11. The operating system on the target server is a support HP DMA platform.

Steps Executed

The [Export Oracle Schema via Data Pump](#) workflow includes the following steps. Each step must complete successfully before the next step can start. If a step fails, the workflow reports a failure, and all subsequent steps are skipped.



KEY:

- Workflow preparation
- Parameter gathering and validation
- OS or file system operation
- Oracle Database specific operation
- Pre/post validation

Process Flow

This workflow performs the following tasks:

1. Determines the target server platform type, and identifies the server call wrapper.
2. Determines the Oracle Home path and Oracle SID by reading the `oratab` file.
3. Gathers all required and optional parameters.
4. Determines the OS owner of the Oracle Home directory.
5. Prepares the instance call wrapper based on the specified Oracle User.
6. Validates all parameter values specified or derived.
7. Downloads the Data Pump Parameter File (if specified) from the SA Library.
8. Creates a Data Pump parameter file (or updates the existing parameter file) using values specified on the Deployment page. If you do not specify a value for a particular parameter, the default value is used.
9. Performs the Data Pump Export operation.
10. Verifies that the database is back online after the export:
 - No corrupted blocks exist.
 - No files are in backup mode.
 - Temporary table space is available.
11. Verifies that the Data Pump Export File exists in the Target Directory.
12. Removes any temporary files and directories used to perform the export.

How to Run this Workflow

The following instructions show you how to customize and run the [Export Oracle Schema via Data Pump](#) workflow in your environment.

The workflow provides default values for most parameters. These default values are usually sufficient for a "typical" schema export. You can override the defaults by specifying parameter values in the deployment. You can also expose additional parameters in the workflow, if necessary, to accomplish more advanced scenarios. Any parameters not explicitly specified in the deployment will have the default values listed in [Parameters for Export Oracle Schema via Data Pump on page 136](#)

Note: Before following this procedure, review the [Prerequisites for this Workflow](#), and ensure that all requirements are satisfied.

To use the Export Oracle Database via Data Pump workflow:

1. Create a deployable copy of the workflow (see [Create a Deployable Workflow on page 12](#)).
2. Determine the values that you will specify for the following parameters:

Parameter Name	Default Value	Required	Description
Data Pump Parameter File	no default	optional	Name of the Data Pump Export parameter file that you provide. If you do not specify the absolute path to the Parameter File, the workflow will look for the file in the Target Directory. If you do not specify a Parameter File, default Data Pump Export settings will be used for parameters not specified in the deployment.
Oracle Account	no default	optional	Oracle user that owns the ORACLE_HOME on the target Oracle database server. Required if an inventory file does not exist. Leave blank for Windows.
Target Directory	no default	required	Directory where the Data Pump Export dump file set and the Parameter file will be staged on the target database server. This directory must be known to the Oracle instance.
Schema	no default	optional	Comma-separated list of schemas to export. This parameter is required if a Data Pump Parameter File is not specified.

Note: This is the minimum set of parameters required to run this workflow. You may need to expose additional parameters depending on your provisioning objectives.

See [Parameters for Export Oracle Schema via Data Pump on page 136](#) for detailed descriptions of all input parameters for this workflow, including default values.

Note: To avoid entering passwords in clear text, see [Using a Policy to Specify Parameter Values on page 351](#).

3. In the workflow editor, expose any additional parameters that you need (see [How to Expose Additional Workflow Parameters on page 26](#)). You will specify values for those parameters when you create the deployment.
4. Save the changes to the workflow (click **Save** in the lower right corner).
5. Create a new deployment (see [Create a Deployment on page 13](#) for instructions).
6. On the Parameters tab, specify values for the required parameters listed in step 2 and any additional parameters that you have exposed. You do not need to specify values for those parameters whose default values are appropriate for your environment.
7. On the Targets tab, specify one or more targets for this deployment.

8. Save the deployment (click **Save** in the lower right corner).
9. Run the workflow using this deployment (see [Run Your Workflow on page 14](#) for instructions).

To verify the results:

The workflow will complete and report SUCCESS on the Console if it has run successfully. If an invalid parameter value is specified, an error is logged, and the workflow terminates in the FAILURE state.

Sample Scenarios

This topic shows you how to use various parameters to achieve the following database backup scenarios in your environment using the [Export Oracle Schema via Data Pump](#) workflow:

Scenario 1: Perform a Schema Export Using Default Settings and Store the Export File Locally

This is the simplest Data Pump schema export scenario. In this example, the export file is stored on the local file system. The parameters shown here are visible by default.

In this scenario, the Data Pump Parameter File is not specified. The workflow will create its own parameter file using default values. The Oracle Account parameter is also not specified; it will be obtained from the Oracle inventory file (typically `oratab`).

The Target Directory will hold the Data Pump Export file (or files), which can subsequently be used to perform a database refresh on another target.

Step Name	Parameter Name	Example Value
Gather Parameters for Oracle Schema Export via Data Pump on page 282	Target Directory	<code>/var/DPEXport/schemas/June2012</code>
	Schema	<code>hr, sh, oe</code>

Be sure that the default values for all remaining parameters are appropriate for your environment (see [Parameters for Export Oracle Schema via Data Pump on page 136](#)).

Scenario 2: Perform a Schema Export Using a Parameter File and Store the Export File on a Network Share

In this scenario, a Data Pump parameter file is used to specify all the Data Pump Export options, and the Oracle account is specified. In this case, the Data Pump Export file will be stored on a network share. This eliminates the need to move files from one server to another. Data Pump Export files that are placed in a shared network directory can readily be used as an input to the [Refresh Oracle Schema via Data Pump on page 84](#) workflow.

Step Name	Parameter Name	Example Value
Gather Parameters for Oracle Database Export via Data Pump on page 208	Data Pump Parameter File	/var/DPEXport/Parms/myDPparameters.par
	Oracle Account	sysdba
	Target Directory	myfileservers.mycompany.com:/u01/nfs_share

Be sure that the default values for all remaining parameters are appropriate for your environment (see [Parameters for Export Oracle Schema via Data Pump on page 136](#)).

Scenario 3: Perform an Export Using Non-Default Parameters

The [Export Oracle Schema via Data Pump on page 75](#) workflow provides many parameters that can be modified to suit your needs. For example, the Data Pump Export file generated by the workflow can be compressed, encrypted, or divided into standard-sized pieces. You can also tell the workflow to ignore specific Oracle errors that might arise during the export but would have no bearing on its outcome.

In this example, the Data Pump Export file is stored on the local file system. The first three parameters listed are visible by default; the remaining parameters must be exposed in the workflow so that they are available in the deployment (see [How to Expose Additional Workflow Parameters on page 26](#)).

Step Name	Parameter Name	Example Value
Gather Parameters for Oracle Schema Export via Data Pump on page 282	Oracle Account	oracle
	Target Directory	/var/DPEXport/Output/Full/May2012
	Schema	hr,sh,oe
Gather Advanced Parameters for Oracle Schema Export via Data Pump on page 285	Compression	DATA_ONLY
	Content	DATA_ONLY
	Encryption Mode	PASSWORD

Step Name	Parameter Name	Example Value
	Encryption Password	myencpwd Note: To avoid entering passwords in clear text, see Using a Policy to Specify Parameter Values on page 351 .
	File Size	16GB
	Oracle DB User	siteadmin
	Oracle DB User Password	siteadminpwd Note: To avoid entering passwords in clear text, see Using a Policy to Specify Parameter Values on page 351 .
	Ignorable Oracle Errors	ORA-39083, ORA-00959, ORA-01917, ORA-01918, ORA-01435
	Temporary File Location	/var/temp/datapump_temp_files

Be sure that the default values for all remaining parameters are appropriate for your environment (see [Parameters for Export Oracle Schema via Data Pump on page 136](#)).

Refresh Oracle Schema via Data Pump

This workflow imports a specific Oracle database schema (or schemas) from a previously created Data Pump Export file (or files). The files can be located in the local file system or on a network share. You can use this workflow to implement a cross-platform database refresh (for example: Linux to Solaris).

Data Pump uses SQL commands to import and export specific data objects. It is slower than the Oracle Recovery Manager (RMAN) but offers more flexibility.

The workflow automatically detects which ORACLE_HOME and ORACLE_SID to use when performing the Data Pump import. You must specify the same encryption mode and password, compression level, and file size that was used for the export.

You have the option of providing a Data Pump parameter file or entering the parameters on the Deployment page. In either case, the parameter values are validated prior to the Data Pump Import operation. If you do not provide a parameter file, the workflow creates one based on the parameter values that you specify on the Deployment page. If you do not specify a value for a particular parameter, the default value is used (see [Parameters for Refresh Oracle Schema via Data Pump on page 143](#)).

The following tables describe the required and optional input parameters for this workflow. Most of these parameters are not initially visible in a deployment (see [How to Expose Additional Workflow Parameters on page 26](#)). For most parameters, if you do not specify a value for a parameter, a default value is assigned.

To use this workflow in your environment, see the following information:

Topic	Information Included
Prerequisites for this Workflow below	List of prerequisites that must be satisfied before you can run this workflow
How this Workflow Works on next page	Information about what the workflow does, including validation checks performed, steps executed, and a high-level process flow
How to Run this Workflow on page 89	Instructions for running this workflow in your environment
Sample Scenarios on page 91	Examples of typical parameter values for this workflow

Note: To view detailed information about the steps included in this workflow, see [Steps in this Workflow](#).

Prerequisites for this Workflow

Be sure that the following prerequisites are satisfied before you run the [Refresh Oracle Schema via Data Pump](#) workflow:

1. The HP Server Automation agent must be installed on all target servers.
2. The Target Directory must exist prior to the execution of the workflow. This directory can be local, or it can be a Network File System (NFS) mount point.

Note: If you specify an NFS mount point, the pertinent NFS share must be available to the target server, and it must be mounted prior to running this workflow.

3. The specified Oracle DB User must have READ and WRITE permission for the Target Directory.
4. The Oracle Database software must be provisioned, and the database must exist in the target instance prior to workflow execution.

Note: For Data Pump workflows, you must specify the same Content and Encryption Password settings for the export and any subsequent import operations.

For more information about prerequisites for Oracle Database, refer to the [Oracle Database Product Documentation on page 348](#).

How this Workflow Works

This topic contains the following information about the [Refresh Oracle Schema via Data Pump](#) workflow:

Overview

This workflow imports a specific Oracle database schema (or schemas) from a previously created Data Pump Export file (or files). The files can be located in the local file system or on a network share. You can use this workflow to implement a cross-platform database refresh (for example: Linux to Solaris).

Data Pump uses SQL commands to import and export specific data objects. It is slower than the Oracle Recovery Manager (RMAN) but offers more flexibility.

The workflow automatically detects which ORACLE_HOME and ORACLE_SID to use when performing the Data Pump import. You must specify the same encryption mode and password, compression level, and file size that was used for the export.

You have the option of providing a Data Pump parameter file or entering the parameters on the Deployment page. In either case, the parameter values are validated prior to the Data Pump Import operation. If you do not provide a parameter file, the workflow creates one based on the parameter values that you specify on the Deployment page. If you do not specify a value for a particular parameter, the default value is used (see [Parameters for Refresh Oracle Schema via Data Pump on page 143](#)).

You can use this workflow as part of a database refresh process. Database refresh involves moving the contents of a database in one Oracle instance into a database in another Oracle instance. This is useful, for example, if you want to move a database from a traditional IT infrastructure to a private cloud. It is also useful if you want to duplicate production data in a test environment for application development or troubleshooting purposes.

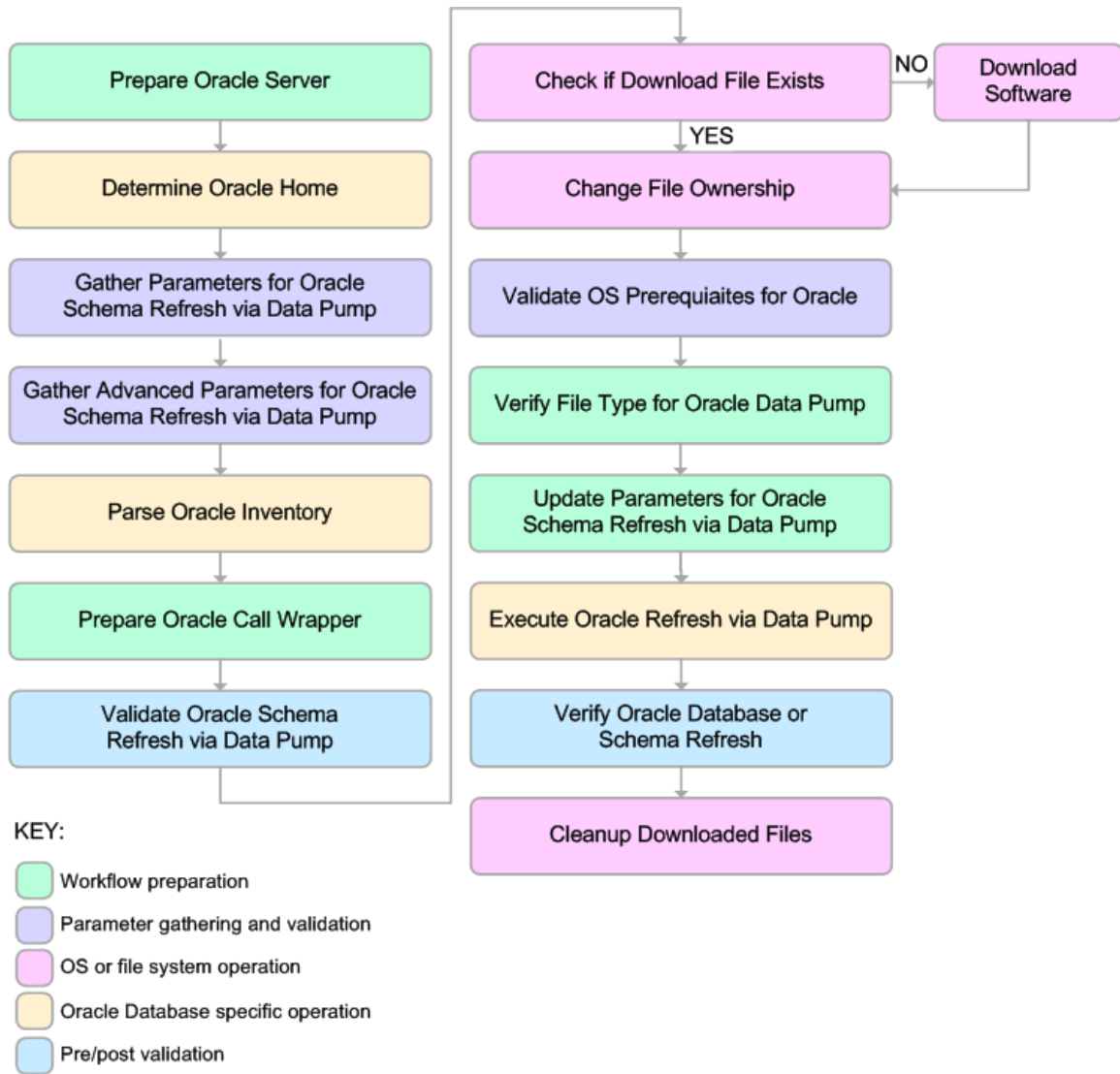
Validation Checks Performed

The workflow validates the following conditions:

1. The Oracle DB User can connect to and query the database specified in the Oracle SID.
2. Oracle Database version 10.2 (or later) is installed at the specified (or automatically detected) Oracle Home.
3. For Oracle Database version 11.2 (or later), the Oracle DB User has DATAPUMP_EXP_FULL_DATABASE permission. For earlier supported versions, the Oracle DB User has EXP_FULL_DATABASE permission.
4. The operating system on the target server is a supported HP DMA platform.
5. A temporary directory required for file storage can be created on the target server.
6. The specified Ignorable Oracle Errors are, in fact, valid error codes.
7. The specified Data Pump Export File is a valid path and file name.
8. If a Data Pump Parameter file is specified, the file exists in the specified location.
9. If a Data Pump Parameter file is not specified, at least one schema is specified.
10. The specified Target Directory exists, either locally or on a network share, and is readable.
11. The directory names included in the Do Not Remove list (if any) are valid.
12. The specified Data Pump Export File was, indeed, created by Data Pump.

Steps Executed

The [Refresh Oracle Database via Data Pump](#) workflow includes the following steps. Each step must complete successfully before the next step can start. If a step fails, the workflow reports a failure, and all subsequent steps are skipped.



Process Flow

This workflow performs the following tasks:

1. Determines the target server platform type, and identifies the server call wrapper.
2. Determines the Oracle Home path and Oracle SID by reading the `oratab` file.
3. Gathers all required and optional parameters.
4. Determines the OS owner of the Oracle Home directory.
5. Prepares the instance call wrapper based on the specified Oracle User.
6. Validates all parameter values specified or derived.
7. Downloads the Data Pump Parameter File, SQL Verification Script, and SQL Verification Results (if specified) from the SA Library.
8. Creates a Data Pump parameter file (or updates the existing parameter file) using values specified on the Deployment page. If you do not specify a value for a particular parameter, the default value is used.
9. Performs the Data Pump Import operation.
10. Checks the Import Log File to ensure that it does not contain any unexpected errors.
11. Verifies that the database is online after the import:
 - No corrupted blocks exist.
 - No files are in backup mode.
 - Temporary table space is available.
12. Runs the SQL Verification Script (if provided), and compares the results to the SQL Verification Results (must be provided if the script is provided).
13. Removes any temporary files and directories used to perform the import.

How to Run this Workflow

The following instructions show you how to customize and run the [Refresh Oracle Schema via Data Pump](#) workflow in your environment.

The workflow provides default values for most parameters. These default values are usually sufficient for a "typical" export. You can override the defaults by specifying parameter values in the deployment. You can also expose additional parameters in the workflow, if necessary, to accomplish more advanced scenarios. Any parameters not explicitly specified in the deployment will have the default values listed in [Parameters for Refresh Oracle Schema via Data Pump on page 143](#)

Note: Before following this procedure, review the [Prerequisites for this Workflow](#), and ensure that all requirements are satisfied.

To use the Refresh Oracle Database via Data Pump workflow:

1. Create a deployable copy of the workflow (see [Create a Deployable Workflow on page 12](#)).
2. Determine the values that you will specify for the following parameters:

Parameter Name	Default Value	Required	Description
Data Pump Export Files	no default	required	Comma-separated list of Data Pump Export dump files included in the dump file set that will be used for this Data Pump Import. If only one file is specified, no comma is required.
Data Pump Parameter File	no default	optional	Name of the Data Pump Export parameter file that you provide. If you do not specify the absolute path to the Parameter File, the workflow will look for the file in the Target Directory. If you do not specify a Parameter File, default Data Pump Export settings will be used for parameters not specified in the deployment.
Oracle Account	no default	optional	Oracle user that owns the ORACLE_HOME on the target Oracle database server. Required if an inventory file does not exist. Leave blank for Windows.
Schema	no default	optional	Comma-separated list of schemas to import. This parameter is required if a Data Pump Parameter File is not specified.
Target Directory	no default	required	Directory where the Data Pump Export dump file set and the Parameter file will be staged on the target database server. This directory must be known to the Oracle instance.

Note: This is the minimum set of parameters required to run this workflow. You may need to expose additional parameters depending on your provisioning objectives.

See [Parameters for Refresh Oracle Schema via Data Pump on page 143](#) for detailed descriptions of all input parameters for this workflow, including default values.

Note: To avoid entering passwords in clear text, see [Using a Policy to Specify Parameter Values on page 351](#).

3. In the workflow editor, expose any additional parameters that you need (see [How to Expose Additional Workflow Parameters on page 26](#)). You will specify values for those parameters when you create the deployment.
4. Save the changes to the workflow (click **Save** in the lower right corner).
5. Create a new deployment (see [Create a Deployment on page 13](#) for instructions).
6. On the Parameters tab, specify values for the required parameters listed in step 2 and any additional parameters that you have exposed. You do not need to specify values for those

parameters whose default values are appropriate for your environment.

7. On the Targets tab, specify one or more targets for this deployment.
8. Save the deployment (click **Save** in the lower right corner).
9. Run the workflow using this deployment (see [Run Your Workflow on page 14](#) for instructions).

To verify the results:

The workflow will complete and report SUCCESS on the Console if it has run successfully. If an invalid parameter value is specified, an error is logged, and the workflow terminates in the FAILURE state.

Sample Scenarios

This topic shows you how to use various parameters to achieve the following database backup scenarios in your environment using the [Refresh Oracle Database via Data Pump](#) workflow:

Scenario 1: Perform an Import Using Default Settings and a Network Share Target Directory

This is the simplest Data Pump import scenario. In this example, the export file has been stored on a network share. The parameters shown here are visible by default.

In this scenario, the Data Pump Parameter File is not specified. The workflow will create its own parameter file using default values. The Oracle Account parameter is also not specified; it will be obtained from the Oracle inventory file (typically `oratab`).

Step Name	Parameter Name	Example Value
Gather Parameters for Oracle Schema Refresh via Data Pump on page 311	Data Pump Export Files	april302012export.dmp
	Schema	hr, sh, oe
	Target Directory	myfileservers.mycompany.com:/u01/nfs_share

Be sure that the default values for all remaining parameters are appropriate for your environment (see [Parameters for Refresh Oracle Schema via Data Pump on page 143](#)).

Scenario 2: Perform an Import Using Non-Default Parameters

The [Refresh Oracle Schema via Data Pump](#) workflow provides many parameters that can be modified to suit your needs. For example, the Data Pump Export file might have been compressed or encrypted. You can instruct Data Pump how to proceed if it finds existing data in the database. You can also tell the workflow to ignore specific Oracle errors that might arise during the import but would have no bearing on its outcome.

In this example, the Data Pump Export file is stored on a network share. The first four parameters listed are visible by default; the remaining parameters must be exposed in the workflow so that they are available in the deployment (see [How to Expose Additional Workflow Parameters on page 26](#)).

Step Name	Parameter Name	Example Value
Gather Parameters for Oracle Schema Refresh via Data Pump on page 311	Data Pump Export Files	april302012export.dmp
	Schema	hr,sh,oe
	Oracle Account	oracle
	Target Directory	myfileservers.mycompany.com:/u01/nfs_share
Gather Advanced Parameters for Oracle Schema Refresh via Data Pump on page 314	Compression	DATA_ONLY
	Content	DATA_ONLY
	Encryption Mode	PASSWORD
	Encryption Password	myencpwd Note: To avoid entering passwords in clear text, see Using a Policy to Specify Parameter Values on page 351 .
	File Size	16GB
	Oracle DB User	siteadmin
	Oracle DB User Password	siteadminpwd Note: To avoid entering passwords in clear text, see Using a Policy to Specify Parameter Values on page 351 .
	Ignorable Oracle Errors	ORA-39111,ORA-39151,ORA-31685
	Table Exist Action	REPLACE
	Temporary File Location	/var/temp/datapump_temp_files

Be sure that the default values for all remaining parameters are appropriate for your environment (see [Parameters for Refresh Oracle Schema via Data Pump on page 143](#)).

Scenario 3: Perform an Import Using a Parameter File that is Stored in the SA Software Library

In this scenario, a Data Pump Parameter File that contains all the non-default parameter settings is specified. The Oracle Account parameter is not specified; it will be obtained from the Oracle inventory file (typically `oratab`).

Step Name	Parameter Name	Example Value
Gather Parameters for Oracle Schema Refresh via Data Pump on page 311	Data Pump Export Files	<code>april302012export.dmp</code>
	Data Pump Parameter File	<code>myDPparameters.par</code>
	Oracle Account	<code>oracle</code>
	Target Directory	<code>myfileservers.mycompany.com:/u01/nfs_share</code>

Be sure that the default values for all remaining parameters are appropriate for your environment (see [Parameters for Refresh Oracle Schema via Data Pump on page 143](#)).

Export and Refresh Oracle Schema via Data Pump

This workflow performs a database refresh using the Oracle Data Pump Utility. It exports one or more specific schemas in a database in one Oracle instance (the SOURCE) and imports them into a database in another Oracle instance (the DESTINATION). You can use this workflow to implement a cross-platform database refresh (for example: Linux to Solaris).

Data Pump uses SQL commands to import and export specific data objects. It is slower than the Oracle Recovery Manager (RMAN) but offers more flexibility.

The workflow automatically detects which `ORACLE_HOME` and `ORACLE_SID` to use when performing the Data Pump import. You must specify the same encryption mode and password, compression level, and file size that was used for the export.

You have the option of providing a Data Pump parameter file or entering the parameters on the Deployment page. In either case, the parameter values are validated prior to the Data Pump import. If you do not provide a parameter file, the workflow creates one based on the parameter values that you specify on the Deployment page. If you do not specify a value for a particular parameter, the default value is used (see [Parameters for Export and Refresh Oracle Database via Data Pump on page 128](#)).

Note: This workflow is a bridged execution workflow. You specify the SOURCE and

DESTINATION targets at run-time.

The following tables describe the required and optional input parameters for this workflow. Most of these parameters are not initially visible in a deployment (see [How to Expose Additional Workflow Parameters on page 26](#)). For most parameters, if you do not specify a value for a parameter, a default value is assigned.

To use this workflow in your environment, see the following information:

Topic	Information Included
Prerequisites for this Workflow below	List of prerequisites that must be satisfied before you can run this workflow
How this Workflow Works on next page	Information about what the workflow does, including validation checks performed, steps executed, and a high-level process flow
How to Run this Workflow on page 99	Instructions for running this workflow in your environment
Sample Scenarios on page 101	Examples of typical parameter values for this workflow

Note: To view detailed information about the steps included in this workflow, see [Steps in this Workflow](#).

Prerequisites for this Workflow

Be sure that the following prerequisites are satisfied before you run the [Export and Refresh Oracle Schema via Data Pump](#) workflow:

1. The HP Server Automation agent must be installed on all target servers.
2. The Target Directory must exist prior to the execution of the workflow. This directory can be local, or it can be a Network File System (NFS) mount point.

Note: If you specify an NFS mount point, the pertinent NFS share must be available to the target server, and it must be mounted prior to running this workflow.

3. The specified Oracle DB User must have READ and WRITE permission for the Target Directory.
4. The Oracle Database software must be provisioned, and the database must exist in the target instance prior to workflow execution.

Note: For Data Pump workflows, you must specify the same Content and Encryption Password settings for the export and any subsequent import operations.

For more information about prerequisites for Oracle Database, refer to the [Oracle Database Product Documentation on page 348](#).

How this Workflow Works

This topic contains the following information about the [Export and Refresh Oracle Schema via Data Pump](#) workflow:

Overview

This workflow performs a database schema refresh using the Oracle Data Pump Utility. It exports the contents of one or more specific schemas in one Oracle instance (the SOURCE) and imports them into a database in another Oracle instance (the DESTINATION). You can use this workflow to implement a cross-platform database refresh (for example: Linux to Solaris).

Data Pump uses SQL commands to import and export specific data objects. It is slower than the Oracle Recovery Manager (RMAN) but offers more flexibility.

The workflow automatically detects which ORACLE_HOME and ORACLE_SID to use when performing the Data Pump export and import operations.

You have the option of either providing Data Pump parameter files or entering the parameters on the Deployment page. In either case, the parameter values are validated prior to the Data Pump operation export and import operations. If you do not provide a parameter file, the workflow creates one based on the parameter values that you specify on the Deployment page. If you do not specify a value for a particular parameter, the default value is used (see [Parameters for Export and Refresh Oracle Schema via Data Pump on page 148](#)).

Note: This workflow is a bridged execution workflow. You specify the SOURCE and DESTINATION targets at run-time.

Validation Checks Performed

The workflow validates the following conditions on the SOURCE target:

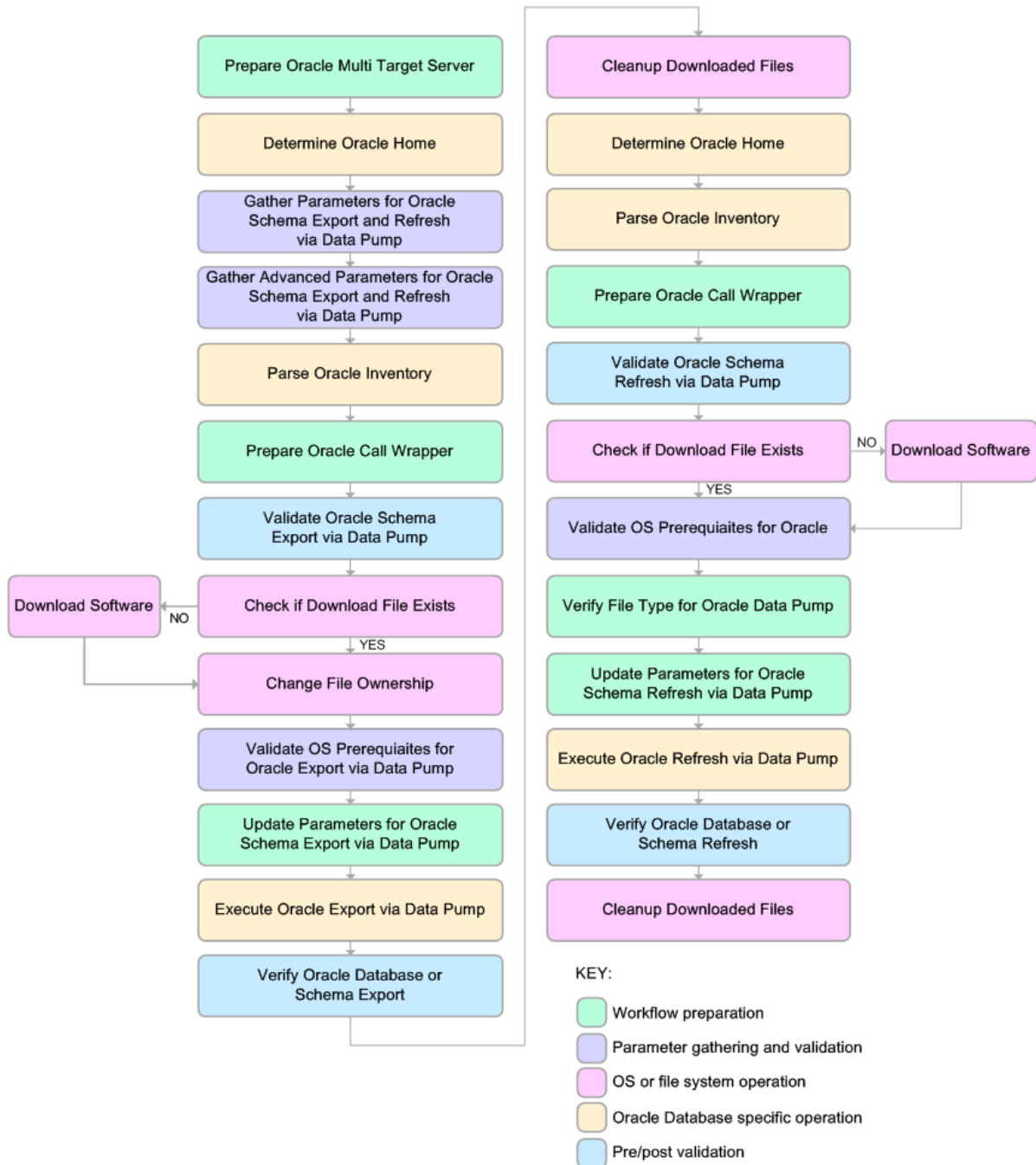
1. The specified Oracle DB User can connect to and query the database specified in the Oracle SID.
2. Oracle Database version 10.2 (or later) is installed at the specified (or automatically detected) Oracle Home.
3. The Oracle DB User has permission to perform a full database export using the Data Pump utility. The Oracle DB User must have EXP_FULL_DATABASE permission.
4. A temporary directory required for file storage can be created on the target server.
5. The specified Ignorable Oracle Errors are, in fact, valid error codes.
6. If a Data Pump Parameter file is specified, the file exists in the specified location.
If a Data Pump Parameter file is not specified, one or more schemas are specified in the deployment.
7. The specified Target Directory exists, either locally or on a network share, and is writable.
8. The directory names included in the Do Not Remove list (if any) are valid.
9. The operating system on the target server is a supported HP DMA platform.

After the workflow successfully performs the Data Pump Export on the SOURCE target, it validates the following conditions on the DESTINATION target:

1. The specified Oracle DB User can connect to and query the database specified in the Oracle SID.
2. Oracle Database version 10.2 (or later) is installed at the specified (or automatically detected) Oracle Home.
3. The Oracle DB User has permission to perform a full database export using the Data Pump utility.
4. A temporary directory required for file storage can be created on the target server.
5. The specified Ignorable Oracle Errors are, in fact, valid error codes.
6. If a Data Pump Parameter file is specified, the file exists in the specified location.
If a Data Pump Parameter file is not specified, one or more schemas are specified in the deployment.
7. The specified Target Directory exists, either locally or on a network share, and is writable.
8. The directory names included in the Do Not Remove list (if any) are valid.
9. The operating system on the target server is a support HP DMA platform.

Steps Executed

The [Export and Refresh Oracle Schema via Data Pump](#) workflow includes the following steps. Each step must complete successfully before the next step can start. If a step fails, the workflow reports a failure, and all subsequent steps are skipped.



Process Flow

This workflow performs the following tasks on the SOURCE target server:

1. Determines the target server platform type, and identifies the server call wrapper.
2. Determines the Oracle Home path and Oracle SID by reading the `oratab` file.
3. Gathers all required and optional parameters.
4. Determines the OS owner of the Oracle Home directory.
5. Prepares the instance call wrapper based on the specified Oracle User.
6. Validates all parameter values specified or derived.
7. Downloads the Data Pump Parameter File (if specified) from the SA Library.
8. Creates a Data Pump parameter file (or updates the existing parameter file) using values specified on the Deployment page. If you do not specify a value for a particular parameter, the default value is used.
9. Performs the Data Pump Export operation.
10. Verifies that the database is back online after the export:
 - No corrupted blocks exist.
 - No files are in backup mode.
 - Temporary table space is available.
11. Verifies that the Data Pump Export File exists in the Target Directory.
12. Removes any temporary files and directories used to perform the export.

The workflow then performs the following tasks on the DESTINATION target server:

1. Determines the target server platform type, and identifies the server call wrapper.
2. Determines the Oracle Home path and Oracle SID by reading the `oratab` file.
3. Gathers all required and optional parameters.
4. Determines the OS owner of the Oracle Home directory.
5. Prepares the instance call wrapper based on the specified Oracle User.
6. Validates all parameter values specified or derived.
7. Downloads the Data Pump Parameter File, SQL Verification Script, and SQL Verification Results (if specified) from the SA Library.
8. Creates a Data Pump parameter file (or updates the existing parameter file) using values specified on the Deployment page. If you do not specify a value for a particular parameter, the default value is used.
9. Performs the Data Pump Import operation.
10. Checks the Import Log File to ensure that it does not contain any unexpected errors.
11. Verifies that the database is online after the import:

- No corrupted blocks exist.
 - No files are in backup mode.
 - Temporary table space is available.
12. Runs the SQL Verification Script (if provided), and compares the results to the SQL Verification Results (must be provided if the script is provided).
 13. Removes any temporary files and directories used to perform the import.

How to Run this Workflow

The following instructions show you how to customize and run the [Export and Refresh Oracle Schema via Data Pump](#) workflow in your environment.

The workflow provides default values for most parameters. These default values are usually sufficient for a "typical" export. You can override the defaults by specifying parameter values in the deployment. You can also expose additional parameters in the workflow, if necessary, to accomplish more advanced scenarios. Any parameters not explicitly specified in the deployment will have the default values listed in [Parameters for Export and Refresh Oracle Schema via Data Pump on page 148](#)

Note: Before following this procedure, review the [Prerequisites for this Workflow](#), and ensure that all requirements are satisfied.

To use the Export and Refresh Oracle Database via Data Pump workflow:

1. Create a deployable copy of the workflow (see [Create a Deployable Workflow on page 12](#)).
2. Determine the values that you will specify for the following parameters:

Parameter Name	Default Value	Required	Description
ALL - Schema	no default	optional	Comma-separated list of schemas to export and import. This parameter is REQUIRED if the EXPORT- Data Pump Parameter File parameter is not specified.
EXPORT - Data Pump Parameter File	no default	optional	Name of the Data Pump Export parameter file that you provide. If you do not specify the absolute path to the EXPORT- Data Pump Parameter File, the workflow will look for the file in the EXPORT - Target Directory. If you do not specify an EXPORT- Parameter File at all, default Data Pump Export settings will be used for parameters not specified in the deployment.
EXPORT - Oracle Account	no default	optional	Oracle user that owns the ORACLE_HOME on the SOURCE database server. Required if an inventory file does not exist. Leave blank for Windows.

Parameter Name	Default Value	Required	Description
EXPORT - Target Directory	no default	required	Staging directory path known to the SOURCE database server and shared with the DESTINATION database server. This is the path to the NFS mount point as known by the SOURCE database server.
IMPORT - Data Pump Parameter File	no default	optional	Name of the Data Pump Import parameter file that you provide. If you do not specify the absolute path to the Parameter File, the workflow will look for the file in the IMPORT - Target Directory. If you do not specify a Parameter File, default Data Pump Import settings will be used for parameters not specified in the deployment.
IMPORT - Oracle Account	no default	optional	Oracle user that owns the ORACLE_HOME on the DESTINATION database server. Required if an inventory file does not exist. Leave blank for Windows.
IMPORT - Target Directory	no default	required	Staging directory path known to the DESTINATION database server and shared with the SOURCE database server. This is the path to the NFS mount point as known by the DESTINATION database server.

Note: This is the minimum set of parameters required to run this workflow. You may need to expose additional parameters depending on your provisioning objectives.

See [Parameters for Export and Refresh Oracle Schema via Data Pump on page 148](#) for detailed descriptions of all input parameters for this workflow, including default values.

Note: To avoid entering passwords in clear text, see [Using a Policy to Specify Parameter Values on page 351](#).

3. In the workflow editor, expose any additional parameters that you need (see [How to Expose Additional Workflow Parameters on page 26](#)). You will specify values for these parameters when you create the deployment.
4. Save the changes to the workflow (click **Save** in the lower right corner).
5. Create a new deployment (see [Create a Deployment on page 13](#) for instructions).
 - a. On the Targets tab, select all the target servers—both source and destination—that will participate in this database refresh. The targets that you select here will be available in the Target Parameters drop-down menus on the Run page (see [step 7](#)).
 - b. On the Parameters tab, specify values for the required parameters listed in [step 2](#) and any additional parameters that you exposed in [step 3](#). You do not need to specify values for those parameters whose default values are appropriate for your environment.
6. Save the deployment (click **Save** in the lower right corner).
7. Run the workflow using this deployment (see [Run Your Workflow on page 14](#) for instructions).

On the Run page, select the following targets from the respective drop-down menus:

Parameter Name	Default	Description
Source	no default	Instance that contains the database whose schema will be exported.
Destination	no default	Instance where the database schema will be imported.

To verify the results:

The workflow will complete and report SUCCESS on the Console if it has run successfully. If an invalid parameter value is specified, an error is logged, and the workflow terminates in the FAILURE state.

Sample Scenarios

This topic shows you how to use various parameters to achieve the following database backup scenarios in your environment using the [Export and Refresh Oracle Schema via Data Pump](#) workflow:

Scenario 1: Perform a Schema Export and Refresh Using Default Settings and a Network Share Target Directory

This is the simplest Data Pump database refresh scenario. In this example, the export file is stored on a network share to minimize data transfer overhead. The parameters shown here are visible by default.

In this scenario, the Data Pump Parameter File is not specified for either the export or the import. The workflow will create its own parameter files using default values. The Oracle Account parameter is also not specified; it will be obtained from the Oracle inventory file (typically `oratab`) on the SOURCE and DESTINATION target servers, respectively.

Step Name	Parameter Name	Example Value
Gather Parameters for Oracle Schema Export and Import via Data Pump on page 331	EXPORT - Target Directory	myfileservers.mycompany.com:/u01/nfs_share
	IMPORT - Target Directory	myfileservers.mycompany.com:/u01/nfs_share

Be sure that the default values for all remaining parameters are appropriate for your environment (see [Parameters for Export and Refresh Oracle Schema via Data Pump on page 148](#)).

Scenario 2: Perform an Import Using Parameter Files Stored in the SA Software Library

In this scenario, the Data Pump Parameter Files that contain all the non-default parameter settings for the import and export, respectively, are specified. The Oracle Account parameter is not specified; it will be obtained from the Oracle inventory file (typically `oratab`).

Step Name	Parameter Name	Example Value
Gather Parameters for Oracle Schema Export and Import via Data Pump on page 331	EXPORT - Data Pump Parameter File	DPEXportParameters.par
	EXPORT - Oracle Account	sysdba
	EXPORT - Target Directory	myfileservers.mycompany.com:/u01/nfs_share
	IMPORT - Data Pump Parameter File	DPImportParameters.par
	IMPORT - Oracle Account	sysdba
	IMPORT - Target Directory	myfileservers.mycompany.com:/u01/nfs_share

Be sure that the default values for all remaining parameters are appropriate for your environment (see [Parameters for Export and Refresh Oracle Schema via Data Pump on page 148](#)).

Scenario 3: Perform a Schema Export and Refresh Using Non-Default Parameters

The [Export and Refresh Oracle Schema via Data Pump](#) workflow provides many parameters that can be modified to suit your needs. For example, you can compress or encrypt the Data Pump Export file. You can specify the type of content that should be refreshed, and you can instruct Data Pump how to proceed if it finds existing data in the DESTINATION database. You can also tell the workflow to ignore specific Oracle errors that might arise during the export or the import but would have no bearing on its outcome.

Again in this scenario, the Data Pump Parameter File is not specified for either the export or the import. The workflow will create its own parameter files using default values. The EXPORT - Oracle Account parameter is also not specified; it will be obtained from the Oracle inventory file (typically `oratab`) on the SOURCE and DESTINATION target servers, respectively.

Here, the Data Pump Export file is stored on a network share to minimize data transfer overhead.

The first six parameters listed are visible by default; the remaining parameters must be exposed in the workflow so that they are available in the deployment (see [How to Expose Additional Workflow Parameters on page 26](#)).

Step Name	Parameter Name	Example Value
Gather Parameters for Oracle Schema Export and Import via Data Pump on page 331	EXPORT - Target Directory	myfilesERVER.mycompany.com:/u01/nfs_share
	IMPORT - Oracle Account	sysdba
	IMPORT - Target Directory	myfilesERVER.mycompany.com:/u01/nfs_share
Gather Advanced Parameters for Oracle Schema Export and Import via Data Pump on page 334	ALL - Content	DATA_ONLY
	EXPORT - Compression	DATA_ONLY
	EXPORT - Encryption Mode	PASSWORD
	ALL - Encryption Password	myencpwd Note: To avoid entering passwords in clear text, see Using a Policy to Specify Parameter Values on page 351 .
	EXPORT - File Size	16GB
	EXPORT - Oracle DB User	prodadmin
	EXPORT - Oracle DB User Password	prodadminpwd Note: To avoid entering passwords in clear text, see Using a Policy to Specify Parameter Values on page 351 .

Step Name	Parameter Name	Example Value
	IMPORT - Oracle DB User	testadmin
	IMPORT - Oracle DB User Password	testadminpwd Note: To avoid entering passwords in clear text, see Using a Policy to Specify Parameter Values on page 351 .
	ALL - Ignorable Oracle Errors	ORA-39111,ORA-39151,ORA-31685
	IMPORT - Table Exist Action	REPLACE
	IMPORT - Verification Result	/var/dp/sql_ver_results
	IMPORT - Verification SQL Script	/var/dp/sql_ver_script
	Defaulted Parameters	FULL,METRICS

Be sure that the default values for all remaining parameters are appropriate for your environment (see [Parameters for Export and Refresh Oracle Schema via Data Pump on page 148](#)).

Reference Information

This chapter contains the following information:

- **Input Parameters for All Workflows**

- [Parameters for Extract Oracle Database via RMAN on page 107](#)

- [Parameters for Refresh Oracle Database via RMAN on page 109](#)

- [Parameters for Extract and Refresh Oracle Database via RMAN on page 112](#)

- [Parameters for Export Oracle Database via Data Pump on page 116](#)

- [Parameters for Refresh Oracle Database via Data Pump on page 123](#)

- [Parameters for Export and Refresh Oracle Database via Data Pump on page 128](#)

- [Parameters for Export Oracle Schema via Data Pump on page 136](#)

- [Parameters for Refresh Oracle Schema via Data Pump on page 143](#)

- [Parameters for Export and Refresh Oracle Schema via Data Pump on page 148](#)

- **Steps Used by the Workflows**

- [Steps for Extract Oracle Database via RMAN on page 158](#)

- [Steps for Refresh Oracle Database via RMAN on page 159](#)

- [All Oracle Database Refresh Steps on page 167](#)

- **Links to Oracle Documentation**

- [Oracle Database Product Documentation on page 348](#)

- [Oracle RMAN Documentation on page 348](#)

- [Oracle Data Pump Documentation on page 349](#)

- **Other Reference Topics**

- [Example of a Verification SQL Script and Results File on page 347](#)

Chapter 5

Parameter Information

The following topics provide detailed information about the input parameters used by the workflows in this solution pack:

- [Parameters for Extract Oracle Database via RMAN on next page](#)
- [Parameters for Refresh Oracle Database via RMAN on page 109](#)
- [Parameters for Extract and Refresh Oracle Database via RMAN on page 112](#)
- [Parameters for Export Oracle Database via Data Pump on page 116](#)
- [Parameters for Refresh Oracle Database via Data Pump on page 123](#)
- [Parameters for Export and Refresh Oracle Database via Data Pump on page 128](#)
- [Parameters for Export Oracle Schema via Data Pump on page 136](#)
- [Parameters for Refresh Oracle Schema via Data Pump on page 143](#)
- [Parameters for Export and Refresh Oracle Schema via Data Pump on page 148](#)

Parameters for Extract Oracle Database via RMAN

The following tables describe the required and optional input parameters for this workflow. Most of these parameters are not initially visible in a deployment (see [How to Expose Additional Workflow Parameters on page 26](#)). For most parameters, if you do not specify a value for a parameter, a default value is assigned.

For information about which steps use which parameters, see [How this Workflow Works on page 49](#).

Parameters Defined in this Step: Gather Parameters for Oracle Database Extract via RMAN

Parameter Name	Default Value	Required	Description
Oracle User	oracle	required	Oracle user that owns the ORACLE_HOME on the target Oracle database server. This user will perform the RMAN backup.
Target Directory	no default	required	Directory where the RMAN backup files will be placed. This directory must exist prior to workflow execution. The specified Oracle User must have READ and WRITE permissions for this directory. This directory must be accessible to the target database server.

Additional Parameters Defined in this Step: Gather Advanced Parameters for Oracle Database Extract via RMAN

Parameter Name	Default Value	Required	Description
Ignorable Oracle Errors	ORA-31684,ORA-39111,ORA-39151,ORA-31685,ORA-00001,RMAN-00571,RMAN-00569,RMAN-03002,RMAN-06054	optional	<p>Comma delimited list of Oracle errors to ignore while executing the RMAN backup.</p> <p>The workflow always ignores ORA-39083, ORA-00959,ORA-01917,ORA-01918,ORA-01435,ORA-00942,ORA-31693, and ORA-20000.</p> <p>The workflow generates a warning but does not fail if it encounters LRM-00101, ORA-39000, ORA-31640, ORA-27037, ORA-31641, or ORA-27038.</p>
Max Piece Size	1048576	optional	Maximum size (in MB) of an RMAN backup set piece (physical file).

Additional Parameters Defined in this Step: Gather Advanced Parameters for Oracle Database Extract via RMAN (continued)

Parameter Name	Default Value	Required	Description
Tag Name	DMA Refresh	optional	A text string assigned to this backup.
Temporary File Location	no default	optional	Location to store temporary files while the workflow is running.

Additional Parameter Defined in this Step: Parse Oracle Inventory

Parameter Name	Default Value	Required	Description
Inventory Files	see description	optional	Comma separated list of Oracle inventory file names (with absolute paths). If not specified, set to the appropriate default value for the target server operating system. Defaults are: Solaris: /var/opt/oracle/oraInst.loc Linux: /etc/oraInst.loc Windows: %ProgramFiles%\Oracle\Inventory

Parameters for Refresh Oracle Database via RMAN

The following tables describe the required and optional input parameters for this workflow. Most of these parameters are not initially visible in a deployment (see [How to Expose Additional Workflow Parameters on page 26](#)). For most parameters, if you do not specify a value for a parameter, a default value is assigned.

For information about which steps use which parameters, see [How this Workflow Works on page 34](#).

Parameters Defined in this Step: Gather Parameters for Oracle Database Refresh via RMAN

Parameter Name	Default Value	Required	Description
Inventory Files	see description	optional	Comma separated list of Oracle inventory file names (with absolute paths). If not specified, set to the appropriate default value for the target server operating system. Defaults are: Solaris: /var/opt/oracle/oraInst.loc Linux: /etc/oraInst.loc Windows: %ProgramFiles%\Oracle\Inventory
Oracle Account	oracle	optional	Oracle user that owns the ORACLE_HOME on the target Oracle database server where the RMAN backup will be restored. This user will perform the RMAN restore. Required if inventory does not exist. Leave blank for windows.
Oracle Home	no default	optional	The ORACLE_HOME to use if more than one home is found in the inventory file (or files).
Oracle SID	no default	required	The Oracle System ID (SID) of the target database.
RMAN Archive Logs	no default	required	Archived redo log files that were generated from the source database. These redo logs are applied as part of the RMAN restore. Separate multiple files with commas. Include the full path where each file is located. For example: /home/oracle/DbRefresh/ RMAN/archivelog_DB2_04n11fnh.bak
RMAN Control File	no default	required	Control File generated from the source database.

Parameters Defined in this Step: Gather Parameters for Oracle Database Refresh via RMAN (continued)

Parameter Name	Default Value	Required	Description
RMAN Data Files	no default	required	RMAN backup data files created from the source database where the RMAN backup was performed. Separate multiple files with commas.
Target Directory	no default	required	Directory on the target database server where the RMAN backup files will be downloaded. This directory must exist prior to workflow execution. The Oracle Account user must have READ and WRITE access to this directory.

Additional Parameters Defined in this Step: Gather Advanced Parameters for Oracle Database Refresh via RMAN

Parameter Name	Default Value	Required	Description
Ignorable Oracle Errors	ORA-31684,ORA-39111,ORA-39151,ORA-31685,ORA-00001,RMAN-06497,RMAN-00571,RMAN-00569,RMAN-03002,RMAN-06054	optional	<p>Comma delimited list of Oracle errors to ignore while executing the RMAN restore.</p> <p>The workflow always ignores ORA-39083, ORA-00959,ORA-01917,ORA-01918,ORA-01435,ORA-00942,ORA-31693, and ORA-20000.</p> <p>The workflow generates a warning but does not fail if it encounters LRM-00101, ORA-39000, ORA-31640, ORA-27037, ORA-31641, or ORA-27038.</p>
Verification Result	no default	optional	<p>Name (with absolute path) of a text file containing the expected results of the SQL queries included in the Verification SQL Script.</p> <p>This parameter is required if you provide a Verification SQL Script. Be sure to run the Verification SQL Script on the SOURCE database before running this workflow, and copy the results into this file.</p> <p>You must provide this file in a location where the workflow can access it.</p>

Additional Parameters Defined in this Step: Gather Advanced Parameters for Oracle Database Refresh via RMAN (continued)

Parameter Name	Default Value	Required	Description
Verification SQL Script	no default	optional	<p>Name (with absolute path) of a text file containing a SQL script that verifies the following:</p> <ul style="list-style-type: none"> The import operation was successful. No data is missing. <p>You must provide this file in a location where the workflow can access it. The expected results of the queries included in this script must be provided in the Verification Result file.</p>

Additional Parameters Defined in this Step: Verify File Type for Oracle RMAN

Parameter Name	Default Value	Required	Description
RMAN Tags	FULL DATABASE BACKUP,FULLDB-BACKUP,ARCHIVED LOGS BACKUP,DMA REFRESH	optional	<p>Tags to search for in the specified RMAN backup files. Separate multiple tags with commas.</p> <p>You can assign a tag when you perform an RMAN backup on the source database (see Extract Oracle Database via RMAN on page 27).</p>

Additional Parameters Defined in this Step: Execute Oracle Refresh via RMAN

Parameter Name	Default Value	Required	Description
Database ID	no default	required	Database ID of the source database used to create the RMAN backup files.

Parameters for Extract and Refresh Oracle Database via RMAN

The following tables describe the required and optional input parameters for this workflow. Most of these parameters are not initially visible in a deployment (see [How to Expose Additional Workflow Parameters on page 26](#)). For most parameters, if you do not specify a value for a parameter, a default value is assigned.

For information about which steps use which parameters, see [How this Workflow Works on page 41](#).

Parameters Defined in this Step: Gather Parameters for Oracle Database Extract and Refresh via RMAN

Parameter Name	Default Value	Required	Description
ALL - Target Directory	no default	required	Directory where the RMAN backup files will be placed on the SOURCE database server and subsequently downloaded on DESTINATION database server. This directory must be the same on both the SOURCE and DESTINATION servers. The directory must exist on both servers before the workflow runs, and it must be accessible to the Oracle Account user.
EXPORT - Inventory Files	Solaris: /var/opt/oracle/oraInst.loc Linux: /etc/oraInst.loc Windows: %Program-Files%\Oracle\Inventory	optional	Comma separated list of Oracle inventory file names (with absolute paths) on the SOURCE database server.
EXPORT - Oracle User	no default	required	Oracle user that owns the ORACLE_HOME on the SOURCE Oracle database server. This user will perform the RMAN backup.

Parameters Defined in this Step: Gather Parameters for Oracle Database Extract and Refresh via RMAN (continued)

Parameter Name	Default Value	Required	Description
EXPORT-Target Directory	no default	optional	Directory accessible to the SOURCE database server where the RMAN backup files will be saved. This directory must exist before the workflow runs. The Oracle Account user must have READ and WRITE permissions for this directory. This directory must be also be accessible to the DESTINATION database server.
IMPORT - Inventory Files	no default	optional	Comma separated list of Oracle inventory file names (with absolute paths) on the DESTINATION database server.
IMPORT - Oracle Account	no default	optional	Oracle user that owns the ORACLE_HOME on the DESTINATION database server. This user will perform the RMAN restore.
Server Wrapper	jython	required	Command that will be used to construct the call wrapper. The workflow uses the call wrapper to execute subsequent steps as either the OS administrative user (for example: <code>sudo su - root /opt/opsware/dma/jython.sh</code>) or the Oracle user who owns the pertinent ORACLE_HOME (for example: <code>sudo su - sysdba /opt/opsware/dma/jython.sh</code>).

Additional Parameters Defined in this Step: Gather Advanced Parameters for Oracle Database Extract and Refresh via RMAN

Parameter Name	Default Value	Required	Description
ALL - Ignorable Oracle Errors	ORA-31684,ORA-39111,ORA-39151,ORA-31685,ORA-00001,RMAN-06497,RMAN-00571,RMAN-00569,RMAN-03002,RMAN-06054	optional	<p>Comma delimited list of Oracle errors to ignore while executing the RMAN extract and restore operations.</p> <p>The workflow always ignores ORA-39083, ORA-00959,ORA-01917,ORA-01918,ORA-01435,ORA-00942,ORA-31693, and ORA-20000.</p> <p>The workflow generates a warning but does not fail if it encounters LRM-00101, ORA-39000, ORA-31640, ORA-27037, ORA-31641, or ORA-27038.</p>
EXPORT - Max Piece Size	1048576	optional	Maximum size (in MB) of an RMAN backup set piece (physical file).
EXPORT - Tag Name	DMA Refresh	optional	A text string assigned to this backup.
EXPORT - Temporary File Location	no default	optional	Location to store temporary files while the workflow is running.
IMPORT - Verification Result	no default	optional	<p>Name (with absolute path) of a text file containing the expected results of the SQL queries included in the Verification SQL Script.</p> <p>This parameter is required if you provide a Verification SQL Script. Be sure to run the Verification SQL Script on the SOURCE database before running this workflow, and copy the results into this file.</p> <p>You must provide this file in a location where the workflow can access it.</p>

Additional Parameters Defined in this Step: Gather Advanced Parameters for Oracle Database Extract and Refresh via RMAN (continued)

Parameter Name	Default Value	Required	Description
IMPORT - Verification SQL Script	no default	optional	<p>Name (with absolute path) of a text file containing a SQL script that verifies the following:</p> <ul style="list-style-type: none">• The import operation on the DESTINATION database server was successful.• No data is missing. <p>You must provide this file in a location where the workflow can access it. The expected results of the queries included in this script must be provided in the Verification Result file.</p>

Parameters for Export Oracle Database via Data Pump

The following tables describe the required and optional input parameters for this workflow. Most of these parameters are not initially visible in a deployment (see [How to Expose Additional Workflow Parameters on page 26](#)). For most parameters, if you do not specify a value for a parameter, a default value is assigned.

Parameters whose values are derived in one step and consumed by another step are not shown here. For information about the steps in this workflow, including a list of input and output parameters for each step, see [Steps for Export Oracle Database via Data Pump on page 161](#).

Parameters Defined in this Step: Gather Parameters for Oracle Database Export via Data Pump

Parameter Name	Default Value	Required	Description
Data Pump Export File	<i>Target Directory</i> \ <code>Oracle SID.dmp</code>	optional	Name (absolute path) of the Data Pump Export dump file (or files) that will be created from an existing Oracle database.
Data Pump Parameter File	no default	optional	Name of the Data Pump Export parameter file that you provide. If you do not specify the absolute path to the Parameter File, the workflow will look for the file in the Target Directory. If you do not specify a Parameter File, default Data Pump Export settings will be used for parameters not specified in the deployment.
Inventory Files	see description	optional	Comma separated list of Oracle inventory file names (with absolute paths). If not specified, set to the appropriate default value for the target server operating system. Defaults are: Solaris: <code>/var/opt/oracle/oraInst.loc</code> Linux: <code>/etc/oraInst.loc</code> Windows: <code>%ProgramFiles%\Oracle\Inventory</code>
Oracle Account	no default	optional	Oracle user that owns the ORACLE_HOME on the target Oracle database server. Required if an inventory file does not exist. Leave blank for Windows.
Oracle Home	no default	optional	The ORACLE_HOME to use if more than one home is found in the inventory file (or files).
Oracle SID	no default	required	The Oracle System ID (SID) of the target database.

Parameters Defined in this Step: Gather Parameters for Oracle Database Export via Data Pump (continued)

Parameter Name	Default Value	Required	Description
Server Wrapper	jython	required	Command that will be used to construct the call wrapper. The workflow uses the call wrapper to execute subsequent steps as either the OS administrative user (for example: <code>sudo su - root /opt/opsware/dma/jython.sh</code>) or the Oracle user who owns the pertinent ORACLE_HOME (for example: <code>sudo su - sysdba /opt/opsware/dma/jython.sh</code>).
Target Directory	no default	required	Directory where the Data Pump Export dump file set and the Parameter file will be staged on the target database server. This directory must be known to the Oracle instance.

Parameters Defined in this Step: Gather Advanced Parameters for Oracle Database Export via Data Pump

Parameter Name	Default Value	Required	Description
Compression	ALL	optional	<p>Items that will be compressed in the Data Pump Export dump file set. Valid settings are ALL, NONE, DATA_ONLY, METADATA_ONLY.</p> <ul style="list-style-type: none"> • DATA_ONLY: Compress only the table row data (must also specify DATA_ONLY or ALL for the Content parameter). • METADATA_ONLY: Compress only the database object definitions (must also specify METADATA_ONLY or ALL for the Content parameter). • ALL: Compress both the table row data and the database object definitions in the dump file set (must also specify ALL for the Content parameter). • NONE: Nothing is compressed in the dump file set. <p>You must specify the same Compression setting for the export and any subsequent import operations.</p> <p>DATA_ONLY and ALL compression settings are only supported in Oracle Database Enterprise Edition version 11g. You must enable the Oracle Advanced Compression option to use these settings.</p>

Parameters Defined in this Step: Gather Advanced Parameters for Oracle Database Export via Data Pump (continued)

Parameter Name	Default Value	Required	Description
Content	ALL	optional	<p>What to include in the Data Pump Export dump file set. Valid settings are ALL, DATA_ONLY, or METADATA_ONLY.</p> <ul style="list-style-type: none">• DATA_ONLY: Include only table row data. Do not include database object definitions.• METADATA_ONLY: Include only database object definitions. Do not include table row data. If you specify METADATA_ONLY, any index or table statistics later imported from the dump file set will be locked after the import.• ALL: Include both table row data and database object definitions in the dump file set. <p>You must specify the same Content setting for the export and any subsequent import operations.</p>

Parameters Defined in this Step: Gather Advanced Parameters for Oracle Database Export via Data Pump (continued)

Parameter Name	Default Value	Required	Description
Encryption Mode	<p>Default depends on the other encryption settings. Assuming that ENCRYPTION is true:</p> <ul style="list-style-type: none"> • If Encryption Password is specified, and the Oracle encryption wallet is open, default is DUAL. • If Encryption Password is specified, and the wallet is closed, default is PASSWORD. • If Encryption Password is not specified, and the wallet is open, default is TRANSPARENT. • If Encryption Password is not specified, and the wallet is closed, the Data Pump Export operation returns an error. 	optional	<p>This setting determines how the dump file set will be encrypted and how it can later be decrypted during a subsequent Data Pump Import operation. Valid values are PASSWORD, TRANSPARENT, and DUAL.</p> <ul style="list-style-type: none"> • PASSWORD: Data Pump Export uses the Encryption Password to encrypt the dump file set. You must specify the same Encryption Password to perform a subsequent import. • TRANSPARENT: The Oracle encryption wallet is used to encrypt the dump file set using the Secure Sockets Layer (SSL) protocol. The encryption wallet must also be used to decrypt the dump file set during a subsequent import. You cannot specify an Encryption Password if you specify TRANSPARENT mode. • DUAL: During a subsequent import operation, the dump file set can either be decrypted transparently using the Oracle encryption wallet, or it can be decrypted by using the same Encryption Password that was used for the export. <p>DUAL and TRANSPARENT mode are only supported in Oracle Database Enterprise Edition version 11g.</p> <div style="background-color: #f0f0f0; padding: 5px;"> <p>Note: To use DUAL or TRANSPARENT mode, you must enable Oracle Advanced Security.</p> </div>

Parameters Defined in this Step: Gather Advanced Parameters for Oracle Database Export via Data Pump (continued)

Parameter Name	Default Value	Required	Description
Encryption Password	no default	optional	<p>Key used to ensure that any encrypted column data, metadata, or table data is re-encrypted before it is written to the dump file set. If you do not specify an Encryption Password—or specify TRANSPARENT for the Encryption Mode—data will be written to the dump files in clear text form.</p> <p>Note the following:</p> <ul style="list-style-type: none"> • If you specify an Encryption Password for the export, and the Encryption Mode is PASSWORD, you must specify the same Encryption Password for any subsequent import operations. • The Encryption Password is required when Encryption Mode is PASSWORD or DUAL. • The Encryption Password is not valid when Encryption Mode is TRANSPARENT. • If you specify an Encryption Password but do not specify the Encryption Mode, the mode defaults to PASSWORD. <p>This parameter is only supported in Oracle Database Enterprise Edition version 11g.</p>
File Size	200M	optional	<p>Maximum size (in MByte) of each dump file in the dump file set. If any file in the dump file set reaches this size, that file is closed, and Data Pump attempts to create a new file.</p> <p>Specify an integer and one of the following units: B (bytes), KB (kilobytes), MB (megabytes), GB (gigabytes), or TB (terabytes). The default unit is bytes.</p> <p>The minimum valid file size is 4 kilobytes; the maximum valid file size is 16 terabytes.</p> <p>The actual size of a dump file may be slightly smaller depending on the size of the internal blocks used.</p>

Parameters Defined in this Step: Gather Advanced Parameters for Oracle Database Export via Data Pump (continued)

Parameter Name	Default Value	Required	Description
Full	YES	optional	Set to YES to perform a full Data Pump Export (data and metadata); set to NO to export schemas (metadata). Caution: The workflow sets the value of this parameter. Do not modify the mapping for this parameter that is defined in the workflow.
Ignorable Oracle Errors	ORA-31684,ORA-39111,ORA-39151,ORA-31685,ORA-00001,RMAN-00571,RMAN-00569,RMAN-03002,RMAN-06054	optional	Comma delimited list of Oracle errors to ignore while executing the Data Pump Export.
Metrics	YES	optional	If you specify YES, the number of objects exported and the elapsed time required for the export operation to complete are recorded in the Data Pump log file. Valid values are YES or NO.
Oracle DB User	no default	optional	Database user account (if other than sysdba) that will be used to perform the Data Pump Export. Note: For Oracle Database 11g R2, this user must have the DATAPUMP_EXP_FULL_DATABASE role, or the workflow will fail. For earlier versions, the user must have the EXP_FULL_DATABASE role.
Oracle DB User Password	/ as sysdba	optional	Password for the Oracle DB User. This is required when this user is not sysdba.

Parameters for Refresh Oracle Database via Data Pump

The following tables describe the required and optional input parameters for this workflow. Most of these parameters are not initially visible in a deployment (see [How to Expose Additional Workflow Parameters on page 26](#)). For most parameters, if you do not specify a value for a parameter, a default value is assigned.

Parameters whose values are derived in one step and consumed by another step are not shown here. For information about the steps in this workflow, including a list of input and output parameters for each step, see [Steps for Refresh Oracle Database via Data Pump on page 162](#).

Parameters Defined in this Step: Gather Parameters for Oracle Database Refresh via Data Pump

Parameter Name	Default Value	Required	Description
Data Pump Export Files	no default	required	Comma-separated list of Data Pump Export dump files included in the dump file set that will be used for this Data Pump Import. If only one file is specified, no comma is required.
Data Pump Parameter File	no default	optional	Name of the Data Pump Import parameter file that you provide. If you do not specify the absolute path to the Parameter File, the workflow will look for the file in the Target Directory. If you do not specify a Parameter File, default Data Pump Import settings will be used for parameters not specified in the deployment.
Inventory Files	see description	optional	Comma separated list of Oracle inventory file names (with absolute paths). If not specified, set to the appropriate default value for the target server operating system. Defaults are: Solaris: <code>/var/opt/oracle/oraInst.loc</code> Linux: <code>/etc/oraInst.loc</code> Windows: <code>%ProgramFiles%\Oracle\Inventory</code>
Oracle Account	no default	optional	Oracle user that owns the ORACLE_HOME on the target Oracle database server. Required if an inventory file does not exist. Leave blank for Windows.
Oracle Home	no default	optional	The ORACLE_HOME to use if more than one home is found in the inventory file (or files).
Oracle SID	no default	required	The Oracle System ID (SID) of the target database.

Parameters Defined in this Step: Gather Parameters for Oracle Database Refresh via Data Pump (continued)

Parameter Name	Default Value	Required	Description
Server Wrapper	jython	required	Command that will be used to construct the call wrapper. The workflow uses the call wrapper to execute subsequent steps as either the OS administrative user (for example: <code>sudo su - root /opt/opsware/dma/jython.sh</code>) or the Oracle user who owns the pertinent ORACLE_HOME (for example: <code>sudo su - sysdba /opt/opsware/dma/jython.sh</code>).
Target Directory	no default	required	Directory where the Data Pump Export dump file set and the Parameter file will be staged on the target database server. This directory must be known to the Oracle instance.

Parameters Defined in this Step: Gather Advanced Parameters for Oracle Database Refresh via Data Pump

Parameter Name	Default Value	Required	Description
Content	ALL	optional	<p>What is included in the Data Pump dump file set that will be imported. Valid settings are ALL, DATA_ONLY, or METADATA_ONLY.</p> <ul style="list-style-type: none"> DATA_ONLY: Include only table row data. Do not include database object definitions. METADATA_ONLY: Include only database object definitions. Do not include table row data. If you specify METADATA_ONLY, any index or table statistics later imported from the dump file set will be locked after the import. ALL: Include both table row data and database object definitions in the dump file set. <p>You must specify the same Content setting for the export and any subsequent import operations.</p>

Parameters Defined in this Step: Gather Advanced Parameters for Oracle Database Refresh via Data Pump (continued)

Parameter Name	Default Value	Required	Description
Encryption Password	no default	optional	<p>This setting determines how the dump file set that will be imported should be decrypted. Valid values are PASSWORD, TRANSPARENT, and DUAL.</p> <ul style="list-style-type: none"> PASSWORD: Data Pump Export used the Encryption Password to encrypt the dump file set. You must specify the same Encryption Password to perform a subsequent import. TRANSPARENT: The Oracle encryption wallet was used to encrypt the dump file set using the Secure Sockets Layer (SSL) protocol. The encryption wallet must also be used to decrypt the dump file set during the import. You cannot specify an Encryption Password if you specify TRANSPARENT mode. DUAL: The dump file set can either be decrypted transparently using the Oracle encryption wallet, or it can be decrypted by using the same Encryption Password that was used for the export. <p>DUAL and TRANSPARENT mode are only supported in Oracle Database Enterprise Edition version 11g.</p> <p>Note: To use DUAL or TRANSPARENT mode, you must enable Oracle Advanced Security.</p>
Ignorable Oracle Errors	ORA-31684,ORA-39111,ORA-39151,ORA-31685,ORA-00001	optional	Comma delimited list of Oracle errors to ignore while executing the Data Pump Import.
Oracle DB User	no default	optional	<p>Database user account (if other than sysdba) that will be used to perform the Data Pump Import.</p> <p>Note: For Oracle Database 11g R2, this user must have the DATAPUMP_IMP_FULL_DATABASE role, or the workflow will fail. For earlier versions, the user must have the IMP_FULL_DATABASE role.</p>

Parameters Defined in this Step: Gather Advanced Parameters for Oracle Database Refresh via Data Pump (continued)

Parameter Name	Default Value	Required	Description
Oracle DB User Password	/ as sysdba	optional	Password for the Oracle DB User. This is required when this user is not sysdba.
Table Exist Action	SKIP	optional	<p>This parameter tells the Data Pump Import utility what to do if a table that it is attempting to import already exists in the database. Valid values are:</p> <ul style="list-style-type: none"> • SKIP leaves the table unchanged (no rows are imported from the dump file). • APPEND adds the rows from the dump file and leaves the existing rows unchanged. • TRUNCATE deletes the existing rows from the table and adds the rows from the dump file. • REPLACE removes the existing table and recreates it from the dump file. <p>Note: SKIP and REPLACE are not valid options if Content is DATA_ONLY.</p>
Update System Tables	FALSE	optional	<p>Determines whether the system tables are updated during the Data Pump Import. If TRUE, all system tables will be included in the import. If FALSE, the SYS and SYSMGR tables are excluded from the import. This is useful, because importing these tables often generates numerous errors, each of which must otherwise be added to the Ignorable Oracle Errors list.</p> <p>You can explicitly specify a list of tables to be excluded from the import by using the Schema parameter in the Update Parameters for Oracle Database Refresh via Data Pump on page 261 step.</p>
Verification Result	no default	optional	<p>Name (with absolute path) of a text file containing the expected results of the SQL queries included in the Verification SQL Script.</p> <p>This parameter is required if you provide a Verification SQL Script. Be sure to run the Verification SQL Script on the SOURCE database before running this workflow, and copy the results into this file.</p> <p>You must provide this file in a location where the workflow can access it.</p>

Parameters Defined in this Step: Gather Advanced Parameters for Oracle Database Refresh via Data Pump (continued)

Parameter Name	Default Value	Required	Description
Verification SQL Script	no default	optional	Name (with absolute path) of a text file containing a SQL script that verifies the integrity of the database. You must provide this file in a location where the workflow can access it. The expected results of the queries included in this script must be provided in the Verification Result file.

Parameters for Export and Refresh Oracle Database via Data Pump

The following tables describe the required and optional input parameters for this workflow. Most of these parameters are not initially visible in a deployment (see [How to Expose Additional Workflow Parameters on page 26](#)). For most parameters, if you do not specify a value for a parameter, a default value is assigned.

Parameters whose values are derived in one step and consumed by another step are not shown here. For information about the steps in this workflow, including a list of input and output parameters for each step, see [Steps for Export and Refresh Oracle Database via Data Pump on page 163](#).

Parameters Defined in this Step: Gather Parameters for Oracle Database Refresh via Data Pump

Parameter Name	Default Value	Required	Description
EXPORT - Data Pump Parameter File	no default	optional	Name of the Data Pump Export parameter file that you provide. If you do not specify the absolute path to the EXPORT- Data Pump Parameter File, the workflow will look for the file in the EXPORT - Target Directory. If you do not specify an EXPORT- Parameter File at all, default Data Pump Export settings will be used for parameters not specified in the deployment.
EXPORT - Inventory Files	see description	optional	Comma-separated list of fully qualified Oracle inventory files on the SOURCE database server. Defaults are as follows: Solaris: /var/opt/oracle/oraInst.loc Linux: /etc/oraInst.loc Windows: %ProgramFiles%\Oracle\Inventory
EXPORT - Oracle Account	no default	optional	Oracle user that owns the ORACLE_HOME on the SOURCE database server. Required if an inventory file does not exist. Leave blank for Windows.
EXPORT - Target Directory	no default	required	Staging directory path known to the SOURCE database server and shared with the DESTINATION database server. This is the path to the NFS mount point as known by the SOURCE database server.
IMPORT - Data Pump Parameter File	no default	optional	Name of the Data Pump Import parameter file that you provide. If you do not specify the absolute path to the Parameter File, the workflow will look for the file in the IMPORT - Target Directory. If you do not specify a Parameter File, default Data Pump Import settings will be used for parameters not specified in the deployment.

Parameters Defined in this Step: Gather Parameters for Oracle Database Refresh via Data Pump (continued)

Parameter Name	Default Value	Required	Description
IMPORT - Inventory Files	see description	optional	Comma-separated list of fully qualified Oracle inventory files on the DESTINATION database server. Defaults are as follows: Solaris: /var/opt/oracle/oraInst.loc Linux: /etc/oraInst.loc Windows: %ProgramFiles%\Oracle\Inventory
IMPORT - Oracle Account	no default	optional	Oracle user that owns the ORACLE_HOME on the DESTINATION database server. Required if an inventory file does not exist. Leave blank for Windows.
IMPORT - Target Directory	no default	required	Staging directory path known to the DESTINATION database server and shared with the SOURCE database server. This is the path to the NFS mount point as known by the DESTINATION database server.
Server Wrapper	jython	required	Command that will be used to construct the call wrapper. The workflow uses the call wrapper to execute subsequent steps as either the OS administrative user (for example: <code>sudo su - root /opt/opsware/dma/jython.sh</code>) or the Oracle user who owns the pertinent ORACLE_HOME (for example: <code>sudo su - sysdba /opt/opsware/dma/jython.sh</code>).

Parameters Defined in this Step: Gather Advanced Parameters for Oracle Database Refresh via Data Pump

Parameter Name	Default Value	Required	Description
ALL - Content	ALL	optional	<p>What to export and subsequently import. Valid settings are ALL, DATA_ONLY, or METADATA_ONLY.</p> <ul style="list-style-type: none"> • DATA_ONLY: Include only table row data. Do not include database object definitions. • METADATA_ONLY: Include only database object definitions. Do not include table row data. If you specify METADATA_ONLY, any index or table statistics later imported from the dump file set will be locked after the import. • ALL: Include both table row data and database object definitions in the dump file set.
ALL - Encryption Password	no default	optional	<p>Key used to ensure that any encrypted column data, metadata, or table data is re-encrypted before it is written to the dump file set. If you do not specify an Encryption Password—or specify TRANSPARENT for the Encryption Mode in the Parameter File—data will be written to the dump files in clear text form.</p> <p>Note the following:</p> <ul style="list-style-type: none"> • The Encryption Password is required when Encryption Mode is PASSWORD or DUAL. • The Encryption Password is not valid when Encryption Mode is TRANSPARENT. <p>This parameter is only supported in Oracle Database Enterprise Edition version 11g</p>

Parameters Defined in this Step: Gather Advanced Parameters for Oracle Database Refresh via Data Pump (continued)

Parameter Name	Default Value	Required	Description
ALL - Ignorable Oracle Errors	ORA-31684,ORA-39111,ORA-39151,ORA-31685,ORA-00001,RMAN-00571,RMAN-00569,RMAN-03002,RMAN-06054	optional	Comma delimited list of Oracle errors to ignore while executing the export and subsequent import.
EXPORT - Compression	ALL	optional	<p>Items that will be compressed in the Data Pump Export dump file set. Valid settings are ALL, NONE, DATA_ONLY, METADATA_ONLY.</p> <ul style="list-style-type: none"> • DATA_ONLY: Compress only the table row data (must specify DATA_ONLY or ALL for the Content parameter). • METADATA_ONLY: Compress only the database object definitions (must specify METADATA_ONLY or ALL for the Content parameter). • ALL: Compress both the table row data and the database object definitions in the dump file set (must specify ALL for the Content parameter). • NONE: Nothing is compressed in the dump file set. <p>You must specify the same Compression setting for the export and subsequent import operations.</p> <p>DATA_ONLY and ALL compression settings are only supported in Oracle Database Enterprise Edition version 11g. You must enable the Oracle Advanced Compression option to use these settings.</p>
EXPORT - Data Pump Export File Name	no default	optional	Name of the Data Pump Export dump file (or files) that will be created from an existing Oracle database. A timestamp is appended to the file name (or names) that you specify. If you do not specify a file name, a default file name (or list of names) is generated.

Parameters Defined in this Step: Gather Advanced Parameters for Oracle Database Refresh via Data Pump (continued)

Parameter Name	Default Value	Required	Description
EXPORT - Encryption Mode	<p>Default depends on the other encryption settings. Assuming that ENCRYPTION is true:</p> <ul style="list-style-type: none"> • If Encryption Password is specified, and the Oracle encryption wallet is open, default is DUAL. • If Encryption Password is specified, and the wallet is closed, default is PASSWORD. • If Encryption Password is not specified, and the wallet is open, default is TRANSPARENT. • If Encryption Password is not specified, and the wallet is closed, the Data Pump Export operation returns an error. 	optional	<p>This setting determines how the dump file set will be encrypted and how it can later be decrypted during the subsequent import operation. Valid values are PASSWORD, TRANSPARENT, and DUAL.</p> <ul style="list-style-type: none"> • PASSWORD: Data Pump Export uses the Encryption Password to encrypt the dump file set. You must specify the same Encryption Password to perform a subsequent import. • TRANSPARENT: The Oracle encryption wallet is used to encrypt the dump file set using the Secure Sockets Layer (SSL) protocol. The encryption wallet must also be used to decrypt the dump file set during a subsequent import. You cannot specify an Encryption Password if you specify TRANSPARENT mode. • DUAL: During a subsequent import operation, the dump file set can either be decrypted transparently using the Oracle encryption wallet, or it can be decrypted by using the same Encryption Password that was used for the export. <p>DUAL and TRANSPARENT mode are only supported in Oracle Database Enterprise Edition version 11g.</p> <div style="background-color: #f0f0f0; padding: 5px;"> <p>Note: To use DUAL or TRANSPARENT mode, you must enable Oracle Advanced Security.</p> </div>

Parameters Defined in this Step: Gather Advanced Parameters for Oracle Database Refresh via Data Pump (continued)

Parameter Name	Default Value	Required	Description
EXPORT - File Size	200M	optional	<p>Maximum size of each dump file in the dump file set. If any file in the dump file set reaches this size, that file is closed, and Data Pump attempts to create a new file.</p> <p>Specify an integer and one of the following units: B (bytes), KB (kilobytes), MB (megabytes), GB (gigabytes), or TB (terabytes). The default unit is bytes.</p> <p>The minimum valid file size is 4 kilobytes; the maximum valid file size is 16 terabytes.</p> <p>The actual size of a dump file may be slightly smaller depending on the size of the internal blocks used.</p>
EXPORT - Full	YES	optional	<p>This parameter is set to YES to perform a full Data Pump Export (data and metadata) or NO to export schemas (metadata).</p> <p>Caution: The workflow sets the value of this parameter. Do not modify the mapping for this parameter that is defined in the workflow.</p>
EXPORT - Metrics	YES	optional	<p>If you specify YES, the number of objects exported and the elapsed time required for the export operation to complete are recorded in the Data Pump log file. Valid values are YES or NO.</p>
EXPORT - Oracle DB User	no default	optional	<p>SOURCE database user account that will be used to perform the Data Pump Export.</p> <p>Note: For Oracle Database 11g R2, this user must have the DATAPUMP_EXP_FULL_DATABASE and DATAPUMP_EXP_FULL_DATABASE roles.</p> <p>For earlier versions, the user must have the EXP_FULL_DATABASE and EXP_FULL_DATABASE roles.</p>

Parameters Defined in this Step: Gather Advanced Parameters for Oracle Database Refresh via Data Pump (continued)

Parameter Name	Default Value	Required	Description
EXPORT - Oracle DB User Password	no default	required	Password for the SOURCE Oracle database user specified in the EXPORT- Oracle DB User parameter. This is required when this user is not sysdba.
IMPORT - Oracle DB User	no default	optional	<p>DESTINATION database user account that will be used to perform the Data Pump Import.</p> <p>Note: For Oracle Database 11g R2, this user must have the DATAPUMP_IMP_FULL_DATABASE and DATAPUMP_IMP_FULL_DATABASE roles.</p> <p>For earlier versions, the user must have the IMP_FULL_DATABASE and IMP_FULL_DATABASE roles.</p>
IMPORT - Oracle DB User Password	no default	required	Password for the DESTINATION Oracle database user specified in the IMPORT- Oracle DB User parameter. This is required when this user is not sysdba.
IMPORT - Table Exist Action	SKIP	optional	<p>This parameter tells the Data Pump Import utility what to do if a table that it is attempting to import already exists in the database. Valid values are:</p> <ul style="list-style-type: none"> • SKIP leaves the table unchanged (no rows are imported from the dump file). • APPEND adds the rows from the dump file and leaves the existing rows unchanged. • TRUNCATE deletes the existing rows from the table and adds the rows from the dump file. • REPLACE removes the existing table and recreates it from the dump file. <p>Note: SKIP and REPLACE are not valid options if ALL - Content is DATA_ONLY.</p>

Parameters Defined in this Step: Gather Advanced Parameters for Oracle Database Refresh via Data Pump (continued)

Parameter Name	Default Value	Required	Description
IMPORT - Update System Tables	FALSE	optional	<p>Determines whether the system tables are updated during the Data Pump Import. If TRUE, all system tables will be included in the import. If FALSE, the SYS and SYSMGR tables are excluded from the import. This is useful, because importing these tables often generates numerous errors, each of which must otherwise be added to the Ignorable Oracle Errors list.</p> <p>You can explicitly specify a list of tables to be excluded from the import by using the Schema parameter in the Update Parameters for Oracle Database Refresh via Data Pump on page 261 step.</p>
IMPORT - Verification Result	no default	optional	<p>Name (with absolute path) of a text file containing the expected results of the SQL queries included in the Verification SQL Script.</p> <p>This parameter is required if you provide a Verification SQL Script. Be sure to run the Verification SQL Script on the SOURCE database before running this workflow, and copy the results into this file.</p> <p>You must provide this file in a location where the workflow can access it.</p>
IMPORT - Verification SQL Script	no default	optional	<p>Name (with absolute path) of a text file containing a SQL script that verifies the following on the DESTINATION database:</p> <ul style="list-style-type: none"> • The import operation was successful. • No data is missing. <p>You must provide this file in a location where the workflow can access it. The expected results of the queries included in this script must be provided in the Verification Result file.</p>

Parameters for Export Oracle Schema via Data Pump

The following tables describe the required and optional input parameters for this workflow. Most of these parameters are not initially visible in a deployment (see [How to Expose Additional Workflow Parameters on page 26](#)). For most parameters, if you do not specify a value for a parameter, a default value is assigned.

Parameters whose values are derived in one step and consumed by another step are not shown here. For information about the steps in this workflow, including a list of input and output parameters for each step, see [Steps for Export Oracle Schema via Data Pump on page 164](#).

Parameters Defined in this Step: Gather Parameters for Oracle Schema Export via Data Pump

Parameter Name	Default Value	Required	Description
Data Pump Export File	<i>Target Directory</i> \ <code>Oracle SID.dmp</code>	optional	Name (absolute path) of the Data Pump Export dump file (or files) that will be created from an existing Oracle database.
Data Pump Parameter File	no default	optional	Name of the Data Pump Export parameter file that you provide. If you do not specify the absolute path to the Parameter File, the workflow will look for the file in the Target Directory. If you do not specify a Parameter File, default Data Pump Export settings will be used for parameters not specified in the deployment.
Inventory Files	see description	optional	Comma separated list of Oracle inventory file names (with absolute paths). If not specified, set to the appropriate default value for the target server operating system. Defaults are: Solaris: <code>/var/opt/oracle/oraInst.loc</code> Linux: <code>/etc/oraInst.loc</code> Windows: <code>%ProgramFiles%\Oracle\Inventory</code>
Oracle Account	no default	optional	Oracle user that owns the ORACLE_HOME on the target Oracle database server. Required if an inventory file does not exist. Leave blank for Windows.
Oracle Home	no default	optional	The ORACLE_HOME to use if more than one home is found in the inventory file (or files).
Oracle SID	no default	required	The Oracle System ID (SID) of the target database.

Parameters Defined in this Step: Gather Parameters for Oracle Schema Export via Data Pump (continued)

Parameter Name	Default Value	Required	Description
Schema	no default	optional	Comma-separated list of schemas to export. This parameter is required if a Data Pump Parameter File is not specified.
Server Wrapper	jython	required	Command that will be used to construct the call wrapper. The workflow uses the call wrapper to execute subsequent steps as either the OS administrative user (for example: <code>sudo su - root /opt/opsware/dma/jython.sh</code>) or the Oracle user who owns the pertinent ORACLE_HOME (for example: <code>sudo su - sysdba /opt/opsware/dma/jython.sh</code>).
Target Directory	no default	required	Directory where the Data Pump Export dump file set and the Parameter file will be staged on the target database server. This directory must be known to the Oracle instance.

Parameters Defined in this Step: Gather Advanced Parameters for Oracle Schema Export via Data Pump

Parameter Name	Default Value	Required	Description
Compression	ALL	optional	<p>Items that will be compressed in the Data Pump Export dump file set. Valid settings are ALL, NONE, DATA_ONLY, METADATA_ONLY.</p> <ul style="list-style-type: none"> • DATA_ONLY: Compress only the table row data (must also specify DATA_ONLY or ALL for the Content parameter). • METADATA_ONLY: Compress only the database object definitions (must also specify METADATA_ONLY or ALL for the Content parameter). • ALL: Compress both the table row data and the database object definitions in the dump file set (must also specify ALL for the Content parameter). • NONE: Nothing is compressed in the dump file set. <p>You must specify the same Compression setting for the export and any subsequent import operations.</p> <p>DATA_ONLY and ALL compression settings are only supported in Oracle Database Enterprise Edition version 11g. You must enable the Oracle Advanced Compression option to use these settings.</p>

Parameters Defined in this Step: Gather Advanced Parameters for Oracle Schema Export via Data Pump (continued)

Parameter Name	Default Value	Required	Description
Content	ALL	optional	<p>What to include in the Data Pump Export dump file set. Valid settings are ALL, DATA_ONLY, or METADATA_ONLY.</p> <ul style="list-style-type: none">• DATA_ONLY: Include only table row data. Do not include database object definitions.• METADATA_ONLY: Include only database object definitions. Do not include table row data. If you specify METADATA_ONLY, any index or table statistics later imported from the dump file set will be locked after the import.• ALL: Include both table row data and database object definitions in the dump file set. <p>You must specify the same Content setting for the export and any subsequent import operations.</p>

Parameters Defined in this Step: Gather Advanced Parameters for Oracle Schema Export via Data Pump (continued)

Parameter Name	Default Value	Required	Description
Encryption Mode	<p>Default depends on the other encryption settings. Assuming that ENCRYPTION is true:</p> <ul style="list-style-type: none"> • If Encryption Password is specified, and the Oracle encryption wallet is open, default is DUAL. • If Encryption Password is specified, and the wallet is closed, default is PASSWORD. • If Encryption Password is not specified, and the wallet is open, default is TRANSPARENT. • If Encryption Password is not specified, and the wallet is closed, the Data Pump Export operation returns an error. 	optional	<p>This setting determines how the dump file set will be encrypted and how it can later be decrypted during a subsequent Data Pump Import operation. Valid values are PASSWORD, TRANSPARENT, and DUAL.</p> <ul style="list-style-type: none"> • PASSWORD: Data Pump Export uses the Encryption Password to encrypt the dump file set. You must specify the same Encryption Password to perform a subsequent import. • TRANSPARENT: The Oracle encryption wallet is used to encrypt the dump file set using the Secure Sockets Layer (SSL) protocol. The encryption wallet must also be used to decrypt the dump file set during a subsequent import. You cannot specify an Encryption Password if you specify TRANSPARENT mode. • DUAL: During a subsequent import operation, the dump file set can either be decrypted transparently using the Oracle encryption wallet, or it can be decrypted by using the same Encryption Password that was used for the export. <p>DUAL and TRANSPARENT mode are only supported in Oracle Database Enterprise Edition version 11g.</p> <div style="background-color: #f0f0f0; padding: 5px;"> <p>Note: To use DUAL or TRANSPARENT mode, you must enable Oracle Advanced Security.</p> </div>

Parameters Defined in this Step: Gather Advanced Parameters for Oracle Schema Export via Data Pump (continued)

Parameter Name	Default Value	Required	Description
Encryption Password	no default	optional	<p>Key used to ensure that any encrypted column data, metadata, or table data is re-encrypted before it is written to the dump file set. If you do not specify an Encryption Password—or specify TRANSPARENT for the Encryption Mode—data will be written to the dump files in clear text form.</p> <p>Note the following:</p> <ul style="list-style-type: none"> • If you specify an Encryption Password for the export, and the Encryption Mode is PASSWORD, you must specify the same Encryption Password for any subsequent import operations. • The Encryption Password is required when Encryption Mode is PASSWORD or DUAL. • The Encryption Password is not valid when Encryption Mode is TRANSPARENT. • If you specify an Encryption Password but do not specify the Encryption Mode, the mode defaults to PASSWORD. <p>This parameter is only supported in Oracle Database Enterprise Edition version 11g.</p>
File Size	200M	optional	<p>Maximum size (in MByte) of each dump file in the dump file set. If any file in the dump file set reaches this size, that file is closed, and Data Pump attempts to create a new file.</p> <p>Specify an integer and one of the following units: B (bytes), KB (kilobytes), MB (megabytes), GB (gigabytes), or TB (terabytes). The default unit is bytes.</p> <p>The minimum valid file size is 4 kilobytes; the maximum valid file size is 16 terabytes.</p> <p>The actual size of a dump file may be slightly smaller depending on the size of the internal blocks used.</p>

Parameters Defined in this Step: Gather Advanced Parameters for Oracle Schema Export via Data Pump (continued)

Parameter Name	Default Value	Required	Description
Full	YES	optional	Set to YES to perform a full Data Pump Export (data and metadata); set to NO to export schemas (metadata). Caution: The workflow sets the value of this parameter. Do not modify the mapping for this parameter that is defined in the workflow.
Ignorable Oracle Errors	ORA-31684,ORA-39111,ORA-39151,ORA-31685,ORA-00001,RMAN-00571,RMAN-00569,RMAN-03002,RMAN-06054	optional	Comma delimited list of Oracle errors to ignore while executing the Data Pump Export.
Metrics	YES	optional	If you specify YES, the number of objects exported and the elapsed time required for the export operation to complete are recorded in the Data Pump log file. Valid values are YES or NO.
Oracle DB User	no default	optional	Database user account (if other than sysdba) that will be used to perform the Data Pump Export. Note: For Oracle Database 11g R2, this user must have the DATAPUMP_EXP_FULL_DATABASE role, or the workflow will fail. For earlier versions, the user must have the EXP_FULL_DATABASE role.
Oracle DB User Password	/ as sysdba	optional	Password for the Oracle DB User. This is required when this user is not sysdba.

Parameters for Refresh Oracle Schema via Data Pump

The following tables describe the required and optional input parameters for this workflow. Most of these parameters are not initially visible in a deployment (see [How to Expose Additional Workflow Parameters on page 26](#)). For most parameters, if you do not specify a value for a parameter, a default value is assigned.

Parameters whose values are derived in one step and consumed by another step are not shown here. For information about the steps in this workflow, including a list of input and output parameters for each step, see [Steps for Refresh Oracle Schema via Data Pump on page 165](#).

Parameters Defined in this Step: Gather Parameters for Oracle Schema Refresh via Data Pump

Parameter Name	Default Value	Required	Description
Data Pump Export Files	no default	required	Comma-separated list of Data Pump Export dump files included in the dump file set that will be used for this Data Pump Import. If only one file is specified, no comma is required.
Data Pump Parameter File	no default	optional	Name of the Data Pump Import parameter file that you provide. If you do not specify the absolute path to the Parameter File, the workflow will look for the file in the Target Directory. If you do not specify a Parameter File, default Data Pump Import settings will be used for parameters not specified in the deployment.
Inventory Files	see description	optional	Comma separated list of Oracle inventory file names (with absolute paths). If not specified, set to the appropriate default value for the target server operating system. Defaults are: Solaris: <code>/var/opt/oracle/oraInst.loc</code> Linux: <code>/etc/oraInst.loc</code> Windows: <code>%ProgramFiles%\Oracle\Inventory</code>
Oracle Account	no default	optional	Oracle user that owns the ORACLE_HOME on the target Oracle database server. Required if an inventory file does not exist. Leave blank for Windows.
Oracle Home	no default	optional	The ORACLE_HOME to use if more than one home is found in the inventory file (or files).
Oracle SID	no default	required	The Oracle System ID (SID) of the target database.

Parameters Defined in this Step: Gather Parameters for Oracle Schema Refresh via Data Pump (continued)

Parameter Name	Default Value	Required	Description
Server Wrapper	jython	required	Command that will be used to construct the call wrapper. The workflow uses the call wrapper to execute subsequent steps as either the OS administrative user (for example: <code>sudo su - root /opt/opsware/dma/jython.sh</code>) or the Oracle user who owns the pertinent ORACLE_HOME (for example: <code>sudo su - sysdba /opt/opsware/dma/jython.sh</code>).
Target Directory	no default	required	Directory where the Data Pump Export dump file set and the Parameter file will be staged on the target database server. This directory must be known to the Oracle instance.

Parameters Defined in this Step: Gather Advanced Parameters for Oracle Schema Refresh via Data Pump

Parameter Name	Default Value	Required	Description
Content	ALL	optional	<p>What is included in the Data Pump dump file set that will be imported. Valid settings are ALL, DATA_ONLY, or METADATA_ONLY.</p> <ul style="list-style-type: none"> • DATA_ONLY: Include only table row data. Do not include database object definitions. • METADATA_ONLY: Include only database object definitions. Do not include table row data. If you specify METADATA_ONLY, any index or table statistics later imported from the dump file set will be locked after the import. • ALL: Include both table row data and database object definitions in the dump file set. <p>You must specify the same Content setting for the export and any subsequent import operations.</p>

Parameters Defined in this Step: Gather Advanced Parameters for Oracle Schema Refresh via Data Pump (continued)

Parameter Name	Default Value	Required	Description
Encryption Password	no default	optional	<p>This setting determines how the dump file set that will be imported should be decrypted. Valid values are PASSWORD, TRANSPARENT, and DUAL.</p> <ul style="list-style-type: none"> • PASSWORD: Data Pump Export used the Encryption Password to encrypt the dump file set. You must specify the same Encryption Password to perform a subsequent import. • TRANSPARENT: The Oracle encryption wallet was used to encrypt the dump file set using the Secure Sockets Layer (SSL) protocol. The encryption wallet must also be used to decrypt the dump file set during the import. You cannot specify an Encryption Password if you specify TRANSPARENT mode. • DUAL: The dump file set can either be decrypted transparently using the Oracle encryption wallet, or it can be decrypted by using the same Encryption Password that was used for the export. <p>DUAL and TRANSPARENT mode are only supported in Oracle Database Enterprise Edition version 11g.</p> <p>Note: To use DUAL or TRANSPARENT mode, you must enable Oracle Advanced Security.</p>
Ignorable Oracle Errors	ORA-31684,ORA-39111,ORA-39151,ORA-31685,ORA-00001	optional	Comma delimited list of Oracle errors to ignore while executing the Data Pump Import.
Oracle DB User	no default	optional	<p>Database user account (if other than sysdba) that will be used to perform the Data Pump Import.</p> <p>Note: For Oracle Database 11g R2, this user must have the DATAPUMP_IMP_FULL_DATABASE role, or the workflow will fail. For earlier versions, the user must have the IMP_FULL_DATABASE role.</p>

Parameters Defined in this Step: Gather Advanced Parameters for Oracle Schema Refresh via Data Pump (continued)

Parameter Name	Default Value	Required	Description
Oracle DB User Password	/ as sysdba	optional	Password for the Oracle DB User. This is required when this user is not sysdba.
Schema	no default	optional	Comma-separated list of schemas to import. This parameter is required if a Data Pump Parameter File is not specified.
Schema Excluded	no default	optional	Comma-separated list of schemas to exclude from the import.
Table Exist Action	SKIP	optional	<p>This parameter tells the Data Pump Import utility what to do if a table that it is attempting to import already exists in the database. Valid values are:</p> <ul style="list-style-type: none"> • SKIP leaves the table unchanged (no rows are imported from the dump file). • APPEND adds the rows from the dump file and leaves the existing rows unchanged. • TRUNCATE deletes the existing rows from the table and adds the rows from the dump file. • REPLACE removes the existing table and recreates it from the dump file. <p>Note: SKIP and REPLACE are not valid options if Content is DATA_ONLY.</p>
Verification Result	no default	optional	<p>Name (with absolute path) of a text file containing the expected results of the SQL queries included in the Verification SQL Script.</p> <p>This parameter is required if you provide a Verification SQL Script. Be sure to run the Verification SQL Script on the SOURCE database before running this workflow, and copy the results into this file.</p> <p>You must provide this file in a location where the workflow can access it.</p>
Verification SQL Script	no default	optional	<p>Name (with absolute path) of a text file containing a SQL script that verifies the integrity of the database.</p> <p>You must provide this file in a location where the workflow can access it. The expected results of the queries included in this script must be provided in the Verification Result file.</p>

Parameters for Export and Refresh Oracle Schema via Data Pump

The following tables describe the required and optional input parameters for this workflow. Most of these parameters are not initially visible in a deployment (see [How to Expose Additional Workflow Parameters on page 26](#)). For most parameters, if you do not specify a value for a parameter, a default value is assigned.

Parameters whose values are derived in one step and consumed by another step are not shown here. For information about the steps in this workflow, including a list of input and output parameters for each step, see [Steps for Export and Refresh Oracle Schema via Data Pump on page 166](#).

Parameters Defined in this Step: Gather Parameters for Oracle Schema Export and Import via Data Pump

Parameter Name	Default Value	Required	Description
ALL - Schema	no default	optional	Comma-separated list of schemas to export and import. This parameter is REQUIRED if the EXPORT- Data Pump Parameter File parameter is not specified.
EXPORT - Data Pump Parameter File	no default	optional	Name of the Data Pump Export parameter file that you provide. If you do not specify the absolute path to the EXPORT- Data Pump Parameter File, the workflow will look for the file in the EXPORT - Target Directory. If you do not specify an EXPORT- Parameter File at all, default Data Pump Export settings will be used for parameters not specified in the deployment.
EXPORT - Inventory Files	see description	optional	Comma-separated list of fully qualified Oracle inventory files on the SOURCE database server. Defaults are as follows: Solaris: <code>/var/opt/oracle/oraInst.loc</code> Linux: <code>/etc/oraInst.loc</code> Windows: <code>%ProgramFiles%\Oracle\Inventory</code>
EXPORT - Oracle Account	no default	optional	Oracle user that owns the ORACLE_HOME on the SOURCE database server. Required if an inventory file does not exist. Leave blank for Windows.
EXPORT - Target Directory	no default	required	Staging directory path known to the SOURCE database server and shared with the DESTINATION database server. This is the path to the NFS mount point as known by the SOURCE database server.

Parameters Defined in this Step: Gather Parameters for Oracle Schema Export and Import via Data Pump (continued)

Parameter Name	Default Value	Required	Description
IMPORT - Data Pump Parameter File	no default	optional	Name of the Data Pump Import parameter file that you provide. If you do not specify the absolute path to the Parameter File, the workflow will look for the file in the IMPORT - Target Directory. If you do not specify a Parameter File, default Data Pump Import settings will be used for parameters not specified in the deployment.
IMPORT - Inventory Files	see description	optional	Comma-separated list of fully qualified Oracle inventory files on the DESTINATION database server. Defaults are as follows: Solaris: /var/opt/oracle/oraInst.loc Linux: /etc/oraInst.loc Windows: %ProgramFiles%\Oracle\Inventory
IMPORT - Oracle Account	no default	optional	Oracle user that owns the ORACLE_HOME on the DESTINATION database server. Required if an inventory file does not exist. Leave blank for Windows.
IMPORT - Target Directory	no default	required	Staging directory path known to the DESTINATION database server and shared with the SOURCE database server. This is the path to the NFS mount point as known by the DESTINATION database server.
Server Wrapper	jython	required	Command that will be used to construct the call wrapper. The workflow uses the call wrapper to execute subsequent steps as either the OS administrative user (for example: <code>sudo su - root /opt/opsware/dma/jython.sh</code>) or the Oracle user who owns the pertinent ORACLE_HOME (for example: <code>sudo su - sysdba /opt/opsware/dma/jython.sh</code>).

Parameters Defined in this Step: Gather Advanced Parameters for Oracle Schema Export and Import via Data Pump

Parameter Name	Default Value	Required	Description
ALL - Content	ALL	optional	<p>What to export and subsequently import. Valid settings are ALL, DATA_ONLY, or METADATA_ONLY.</p> <ul style="list-style-type: none"> • DATA_ONLY: Include only table row data. Do not include database object definitions. • METADATA_ONLY: Include only database object definitions. Do not include table row data. If you specify METADATA_ONLY, any index or table statistics later imported from the dump file set will be locked after the import. • ALL: Include both table row data and database object definitions in the dump file set.
ALL - Encryption Password	no default	optional	<p>Key used to ensure that any encrypted column data, metadata, or table data is re-encrypted before it is written to the dump file set. If you do not specify an Encryption Password—or specify TRANSPARENT for the Encryption Mode in the Parameter File—data will be written to the dump files in clear text form.</p> <p>Note the following:</p> <ul style="list-style-type: none"> • The Encryption Password is required when Encryption Mode is PASSWORD or DUAL. • The Encryption Password is not valid when Encryption Mode is TRANSPARENT. <p>This parameter is only supported in Oracle Database Enterprise Edition version 11g</p>

Parameters Defined in this Step: Gather Advanced Parameters for Oracle Schema Export and Import via Data Pump (continued)

Parameter Name	Default Value	Required	Description
ALL - Ignorable Oracle Errors	ORA-31684,ORA-39111,ORA-39151,ORA-31685,ORA-00001,RMAN-00571,RMAN-00569,RMAN-03002,RMAN-06054	optional	Comma delimited list of Oracle errors to ignore while executing the export and subsequent import.
EXPORT - Compression	ALL	optional	<p>Items that will be compressed in the Data Pump Export dump file set. Valid settings are ALL, NONE, DATA_ONLY, METADATA_ONLY.</p> <ul style="list-style-type: none"> • DATA_ONLY: Compress only the table row data (must specify DATA_ONLY or ALL for the Content parameter). • METADATA_ONLY: Compress only the database object definitions (must specify METADATA_ONLY or ALL for the Content parameter). • ALL: Compress both the table row data and the database object definitions in the dump file set (must specify ALL for the Content parameter). • NONE: Nothing is compressed in the dump file set. <p>You must specify the same Compression setting for the export and subsequent import operations.</p> <p>DATA_ONLY and ALL compression settings are only supported in Oracle Database Enterprise Edition version 11g. You must enable the Oracle Advanced Compression option to use these settings.</p>
EXPORT - Data Pump Export File Name	no default	optional	Name of the Data Pump Export dump file (or files) that will be created from an existing Oracle database. A timestamp is appended to the file name (or names) that you specify. If you do not specify a file name, a default file name (or list of names) is generated.

Parameters Defined in this Step: Gather Advanced Parameters for Oracle Schema Export and Import via Data Pump (continued)

Parameter Name	Default Value	Required	Description
EXPORT - Encryption Mode	<p>Default depends on the other encryption settings. Assuming that ENCRYPTION is true:</p> <ul style="list-style-type: none"> If Encryption Password is specified, and the Oracle encryption wallet is open, default is DUAL. If Encryption Password is specified, and the wallet is closed, default is PASSWORD. If Encryption Password is not specified, and the wallet is open, default is TRANSPARENT. If Encryption Password is not specified, and the wallet is closed, the Data Pump Export operation returns an error. 	optional	<p>This setting determines how the dump file set will be encrypted and how it can later be decrypted during the subsequent import operation. Valid values are PASSWORD, TRANSPARENT, and DUAL.</p> <ul style="list-style-type: none"> PASSWORD: Data Pump Export uses the Encryption Password to encrypt the dump file set. You must specify the same Encryption Password to perform a subsequent import. TRANSPARENT: The Oracle encryption wallet is used to encrypt the dump file set using the Secure Sockets Layer (SSL) protocol. The encryption wallet must also be used to decrypt the dump file set during a subsequent import. You cannot specify an Encryption Password if you specify TRANSPARENT mode. DUAL: During a subsequent import operation, the dump file set can either be decrypted transparently using the Oracle encryption wallet, or it can be decrypted by using the same Encryption Password that was used for the export. <p>DUAL and TRANSPARENT mode are only supported in Oracle Database Enterprise Edition version 11g.</p> <p>Note: To use DUAL or TRANSPARENT mode, you must enable Oracle Advanced Security.</p>

Parameters Defined in this Step: Gather Advanced Parameters for Oracle Schema Export and Import via Data Pump (continued)

Parameter Name	Default Value	Required	Description
EXPORT - File Size	200M	optional	<p>Maximum size of each dump file in the dump file set. If any file in the dump file set reaches this size, that file is closed, and Data Pump attempts to create a new file.</p> <p>Specify an integer and one of the following units: B (bytes), KB (kilobytes), MB (megabytes), GB (gigabytes), or TB (terabytes). The default unit is bytes.</p> <p>The minimum valid file size is 4 kilobytes; the maximum valid file size is 16 terabytes.</p> <p>The actual size of a dump file may be slightly smaller depending on the size of the internal blocks used.</p>
EXPORT - Full	NO	optional	<p>This parameter is set to YES to perform a full Data Pump Export (data and metadata) or NO to export schemas (metadata).</p> <p>Caution: The workflow sets the value of this parameter. Do not modify the mapping for this parameter that is defined in the workflow.</p>
EXPORT - Metrics	YES	optional	<p>If you specify YES, the number of objects exported and the elapsed time required for the export operation to complete are recorded in the Data Pump log file. Valid values are YES or NO.</p>
EXPORT - Oracle DB User	no default	optional	<p>SOURCE database user account that will be used to perform the Data Pump Export.</p> <p>Note: For Oracle Database 11g R2, this user must have the DATAPUMP_EXP_FULL_DATABASE and DATAPUMP_EXP_FULL_DATABASE roles.</p> <p>For earlier versions, the user must have the EXP_FULL_DATABASE and EXP_FULL_DATABASE roles.</p>

Parameters Defined in this Step: Gather Advanced Parameters for Oracle Schema Export and Import via Data Pump (continued)

Parameter Name	Default Value	Required	Description
EXPORT - Oracle DB User Password	no default	required	Password for the SOURCE Oracle database user specified in the EXPORT- Oracle DB User parameter. This is required when this user is not sysdba.
IMPORT - Oracle DB User	no default	optional	DESTINATION database user account that will be used to perform the Data Pump Import. Note: For Oracle Database 11g R2, this user must have the DATAPUMP_IMP_FULL_DATABASE and DATAPUMP_IMP_FULL_DATABASE roles. For earlier versions, the user must have the IMP_FULL_DATABASE and IMP_FULL_DATABASE roles.
IMPORT - Oracle DB User Password	no default	required	Password for the DESTINATION Oracle database user specified in the IMPORT- Oracle DB User parameter. This is required when this user is not sysdba.
IMPORT - Schema Excluded	FALSE	optional	This parameter is set to TRUE if there are schema that will be explicitly excluded from the import. It is set to FALSE otherwise. Caution: The workflow sets the value of this parameter. Do not modify the mapping for this parameter that is defined in the workflow.

Parameters Defined in this Step: Gather Advanced Parameters for Oracle Schema Export and Import via Data Pump (continued)

Parameter Name	Default Value	Required	Description
IMPORT - Table Exist Action	SKIP	optional	<p>This parameter tells the Data Pump Import utility what to do if a table that it is attempting to import already exists in the database. Valid values are:</p> <ul style="list-style-type: none"> • SKIP leaves the table unchanged (no rows are imported from the dump file). • APPEND adds the rows from the dump file and leaves the existing rows unchanged. • TRUNCATE deletes the existing rows from the table and adds the rows from the dump file. • REPLACE removes the existing table and recreates it from the dump file. <p>Note: SKIP and REPLACE are not valid options if ALL - Content is DATA_ONLY.</p>
IMPORT - Update System Tables	FALSE	optional	<p>Determines whether the system tables are updated during the Data Pump Import. If TRUE, all system tables will be included in the import. If FALSE, the SYS and SYSMGR tables are excluded from the import. This is useful, because importing these tables often generates numerous errors, each of which must otherwise be added to the Ignorable Oracle Errors list.</p> <p>You can explicitly specify a list of tables to be excluded from the import by using the Schema parameter in the Update Parameters for Oracle Database Refresh via Data Pump on page 261 step.</p>

Parameters Defined in this Step: Gather Advanced Parameters for Oracle Schema Export and Import via Data Pump (continued)

Parameter Name	Default Value	Required	Description
IMPORT - Verification Result	no default	optional	<p>Name (with absolute path) of a text file containing the expected results of the SQL queries included in the Verification SQL Script.</p> <p>This parameter is required if you provide a Verification SQL Script. Be sure to run the Verification SQL Script on the SOURCE database before running this workflow, and copy the results into this file.</p> <p>You must provide this file in a location where the workflow can access it.</p>
IMPORT - Verification SQL Script	no default	optional	<p>Name (with absolute path) of a text file containing a SQL script that verifies the following on the DESTINATION database:</p> <ul style="list-style-type: none"> • The import operation was successful. • No data is missing. <p>You must provide this file in a location where the workflow can access it. The expected results of the queries included in this script must be provided in the Verification Result file.</p>

Chapter 6

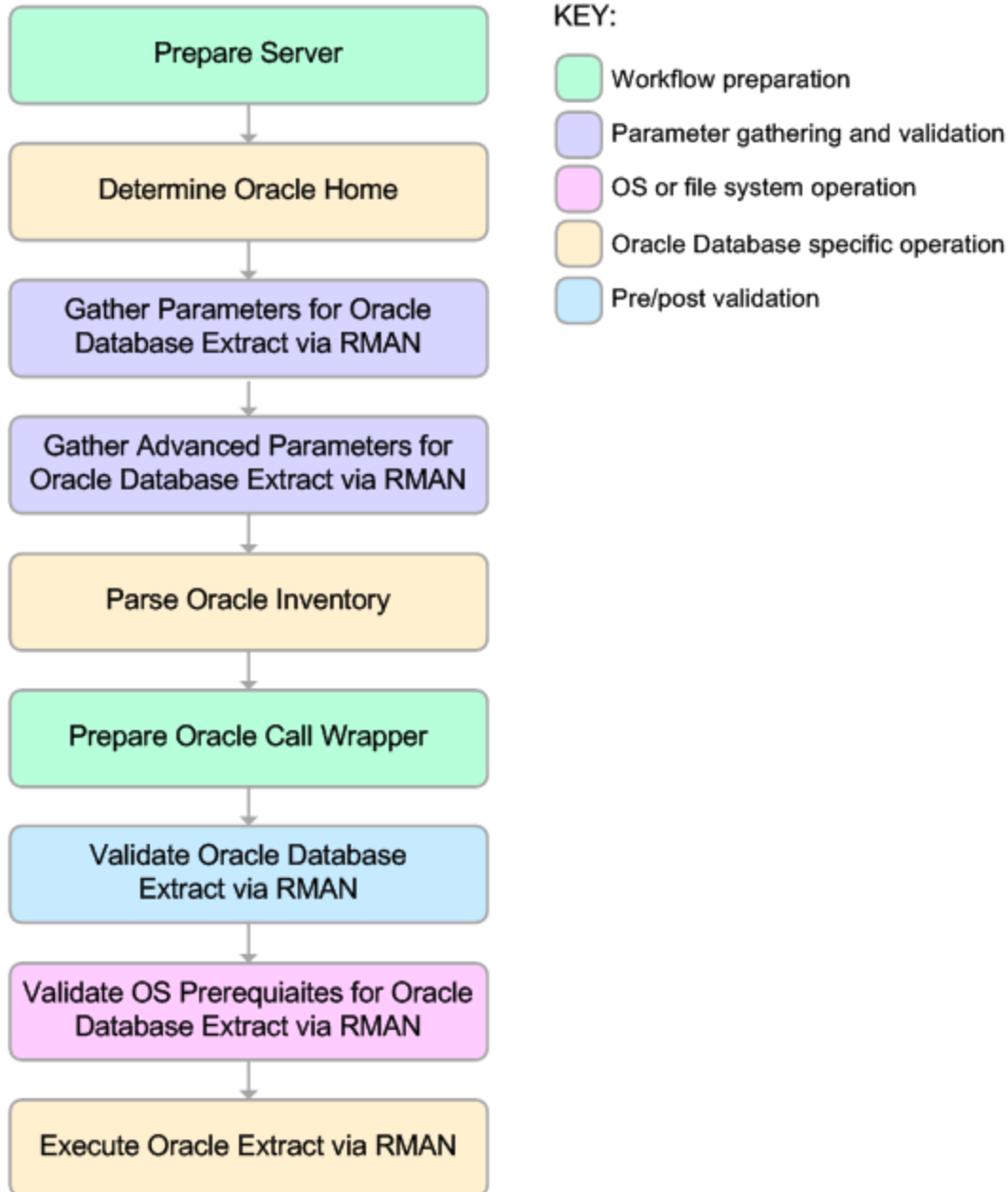
Step Information

The following topics provide detailed information about the steps used by the workflows in this solution pack:

- [Steps for Extract Oracle Database via RMAN on next page](#)
- [Steps for Refresh Oracle Database via RMAN on page 159](#)
- [Steps for Extract and Refresh Oracle Database via RMAN on page 160](#)
- [Steps for Export Oracle Database via Data Pump on page 161](#)
- [Steps for Refresh Oracle Database via Data Pump on page 162](#)
- [Steps for Export and Refresh Oracle Database via Data Pump on page 163](#)
- [Steps for Export Oracle Schema via Data Pump on page 164](#)
- [Steps for Refresh Oracle Schema via Data Pump on page 165](#)
- [Steps for Export and Refresh Oracle Schema via Data Pump on page 166](#)
- [All Oracle Database Refresh Steps on page 167](#)

Steps for Extract Oracle Database via RMAN

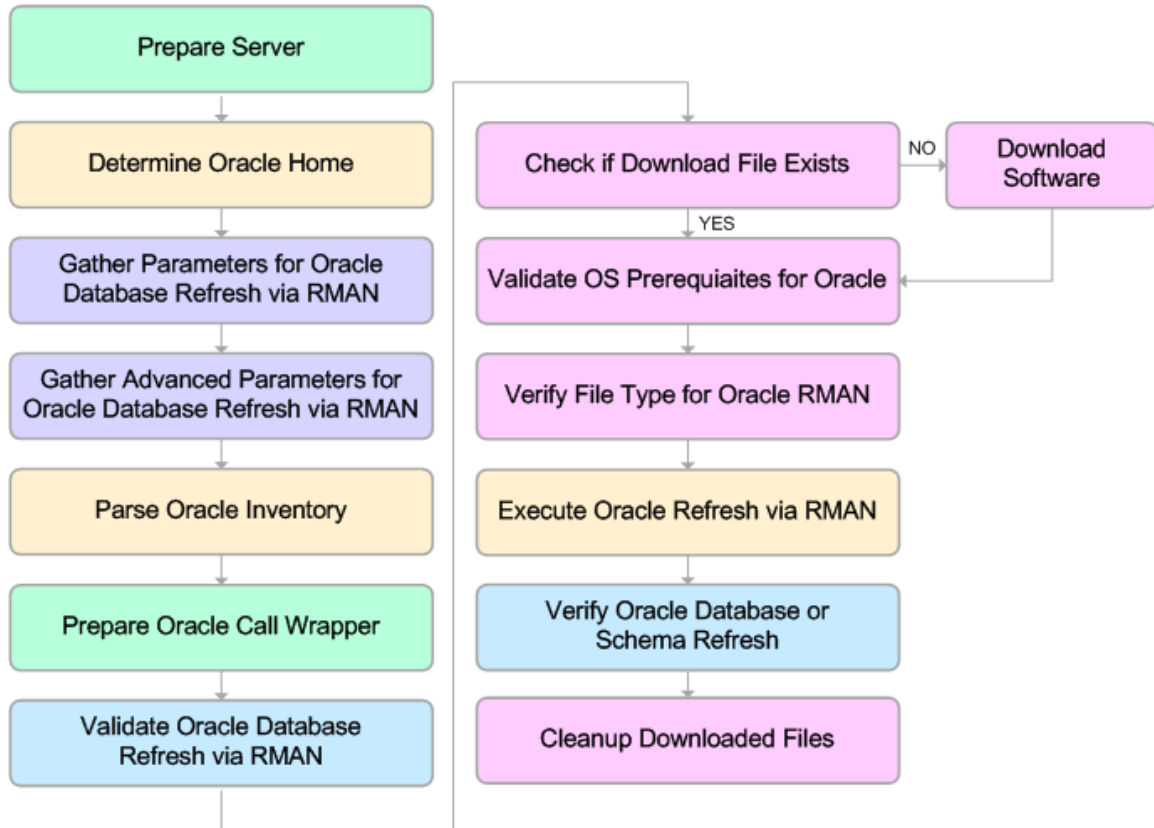
The [Extract Oracle Database via RMAN](#) workflow includes the following steps. Each step must complete successfully before the next step can start. If a step fails, the workflow reports a failure, and all subsequent steps are skipped.



For parameter descriptions and defaults, see [Parameters for Extract Oracle Database via RMAN](#) on page 107.

Steps for Refresh Oracle Database via RMAN

The [Refresh Oracle Database via RMAN](#) workflow includes the following steps. Each step must complete successfully before the next step can start. If a step fails, the workflow reports a failure, and all subsequent steps are skipped.



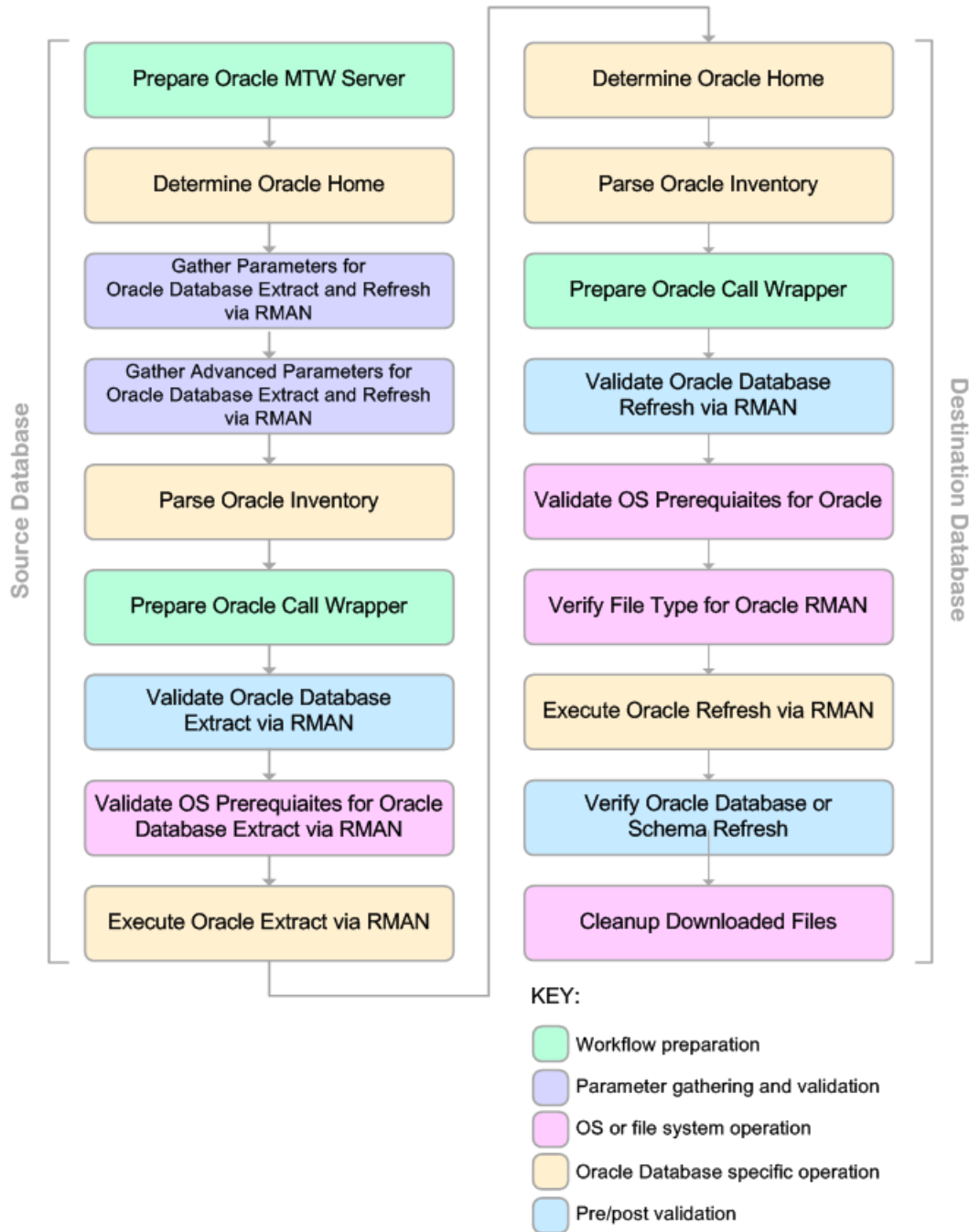
KEY:

- Workflow preparation
- Parameter gathering and validation
- OS or file system operation
- Oracle Database specific operation
- Pre/post validation

For parameter descriptions and defaults, see [Parameters for Refresh Oracle Database via RMAN](#) on page 109.

Steps for Extract and Refresh Oracle Database via RMAN

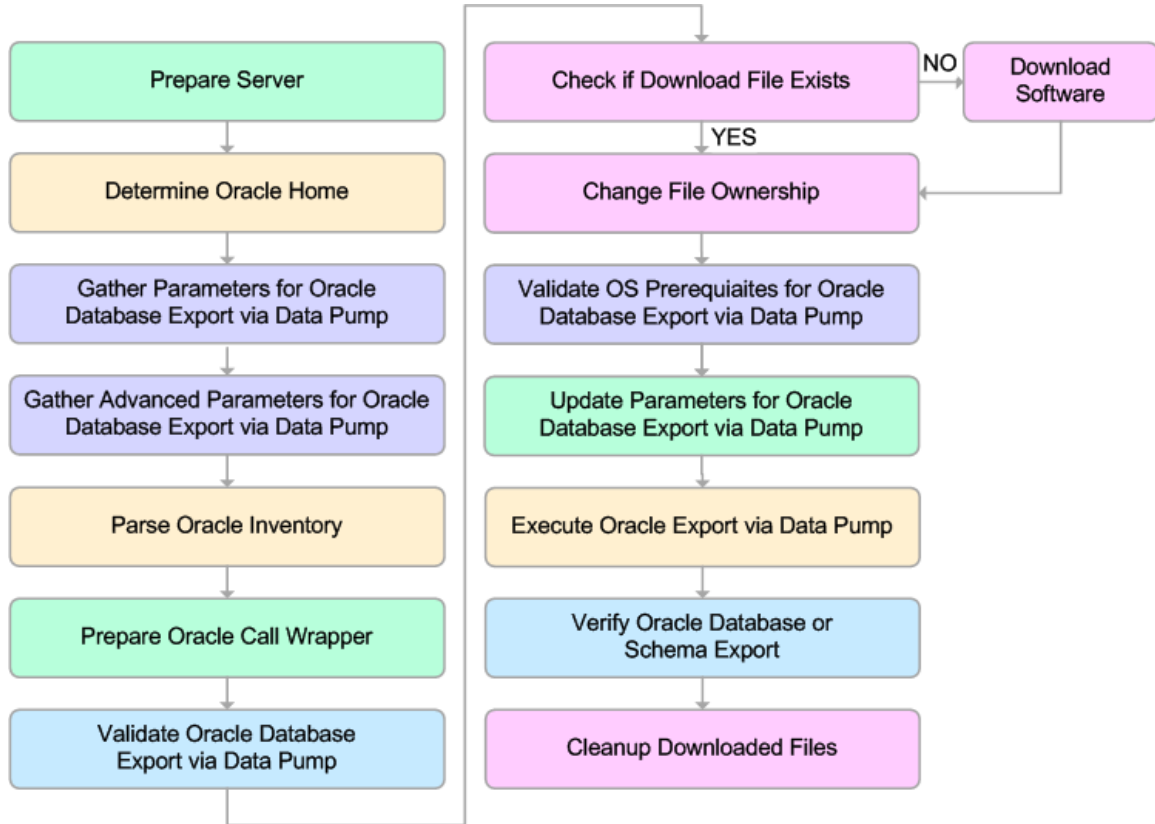
The [Extract and Refresh Oracle Database via RMAN](#) workflow includes the following steps. Each step must complete successfully before the next step can start. If a step fails, the workflow reports a failure, and all subsequent steps are skipped.



For parameter descriptions and defaults, see [Parameters for Refresh Oracle Database via RMAN](#) on page 109.

Steps for Export Oracle Database via Data Pump

The [Export Oracle Database via Data Pump](#) workflow includes the following steps. Each step must complete successfully before the next step can start. If a step fails, the workflow reports a failure, and all subsequent steps are skipped.



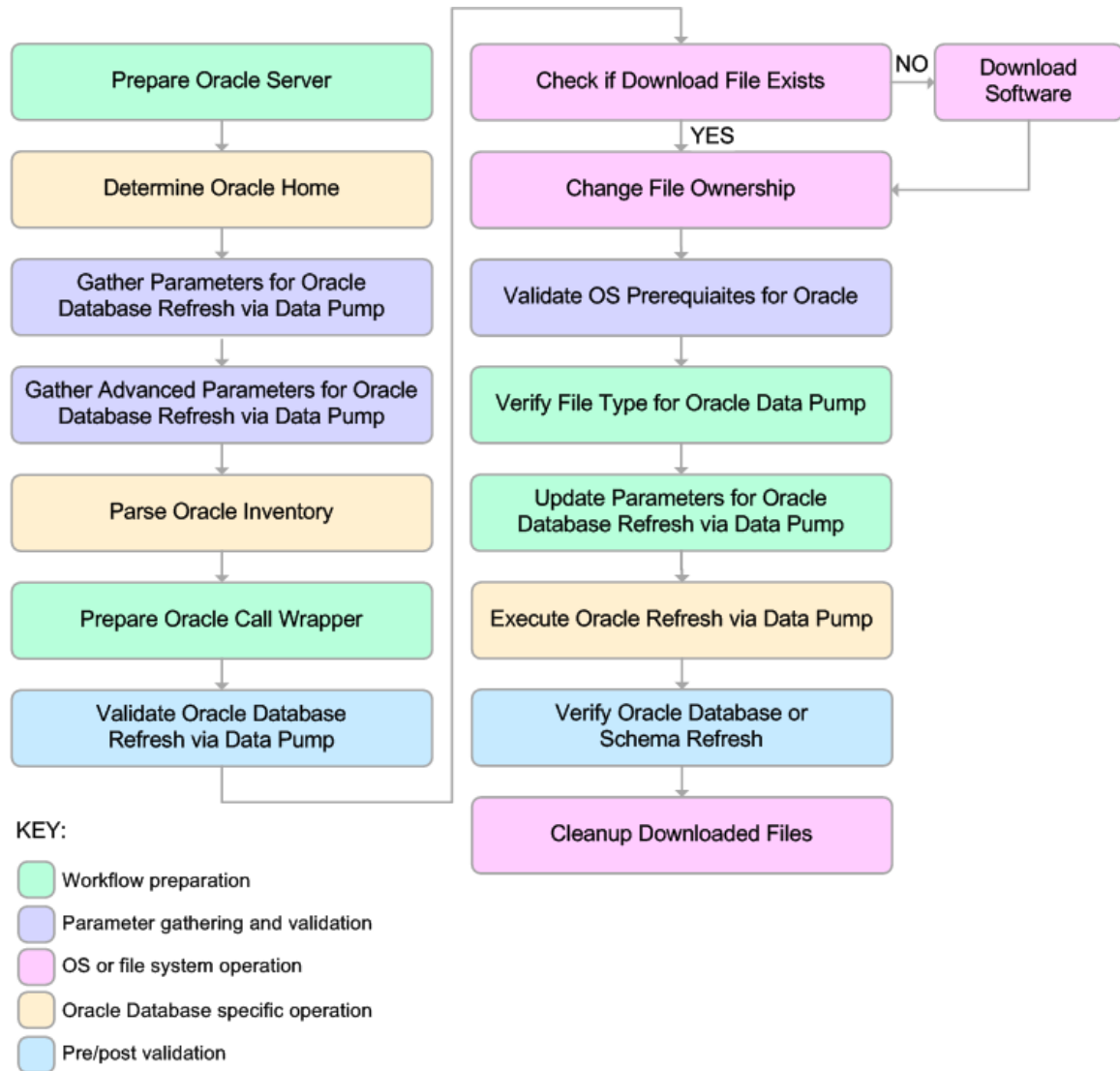
KEY:

- Workflow preparation
- Parameter gathering and validation
- OS or file system operation
- Oracle Database specific operation
- Pre/post validation

For parameter descriptions and defaults, see [Parameters for Export Oracle Database via Data Pump](#) on page 116.

Steps for Refresh Oracle Database via Data Pump

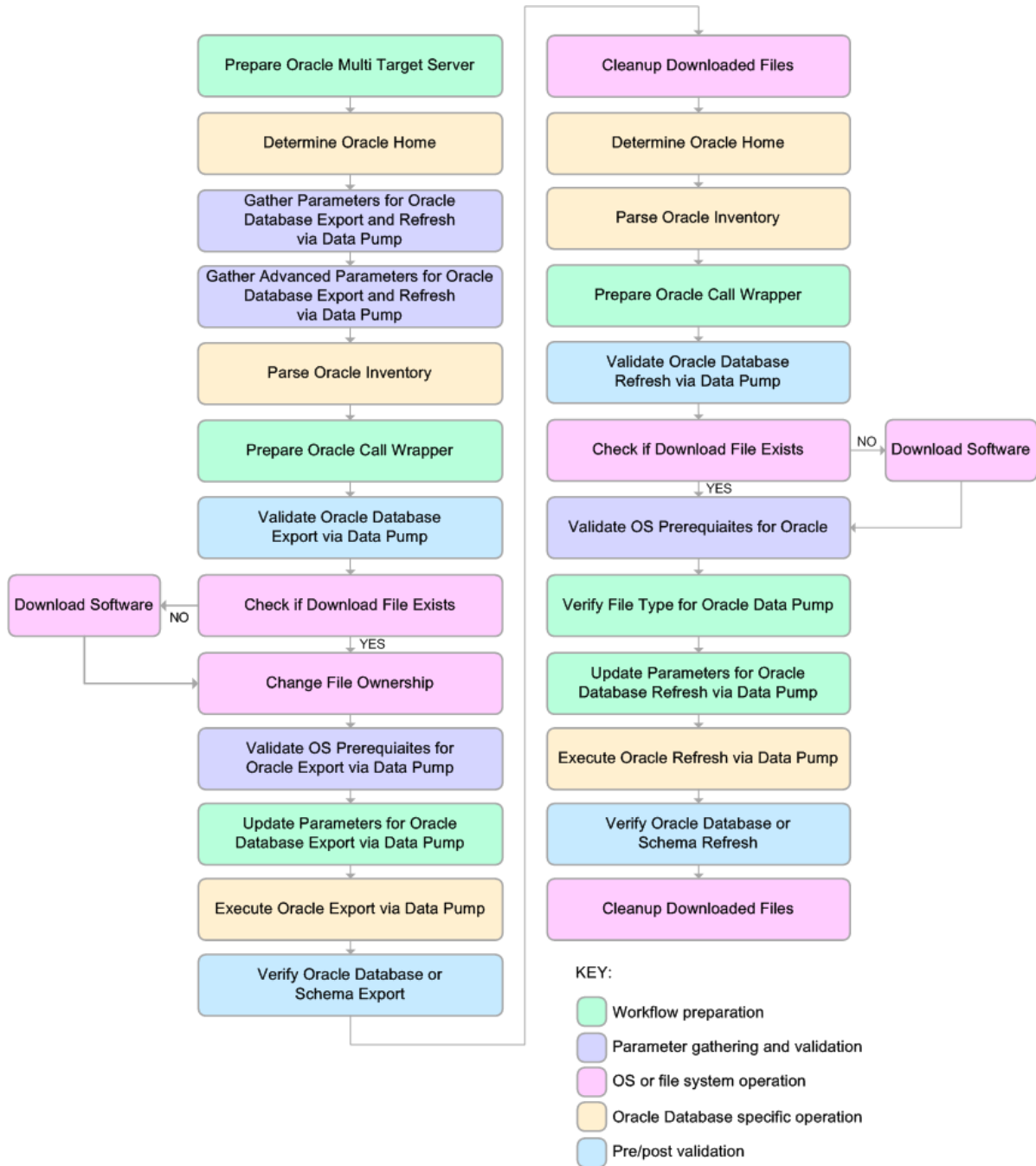
The [Refresh Oracle Database via Data Pump](#) workflow includes the following steps. Each step must complete successfully before the next step can start. If a step fails, the workflow reports a failure, and all subsequent steps are skipped.



For parameter descriptions and defaults, see [Parameters for Refresh Oracle Database via Data Pump](#) on page 123.

Steps for Export and Refresh Oracle Database via Data Pump

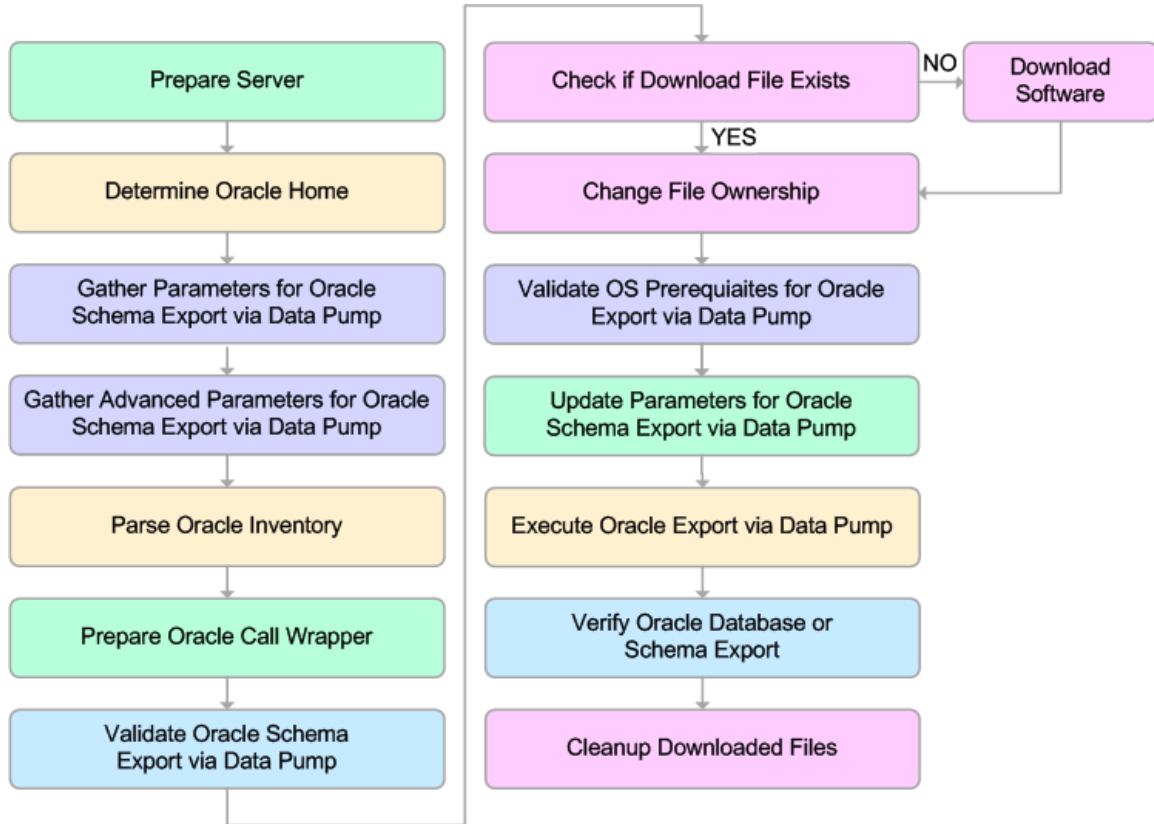
The [Export and Refresh Oracle Database via Data Pump](#) workflow includes the following steps. Each step must complete successfully before the next step can start. If a step fails, the workflow reports a failure, and all subsequent steps are skipped.



For parameter descriptions and defaults, see [Parameters for Export and Refresh Oracle Database via Data Pump on page 128](#).

Steps for Export Oracle Schema via Data Pump

The [Export Oracle Schema via Data Pump](#) workflow includes the following steps. Each step must complete successfully before the next step can start. If a step fails, the workflow reports a failure, and all subsequent steps are skipped.



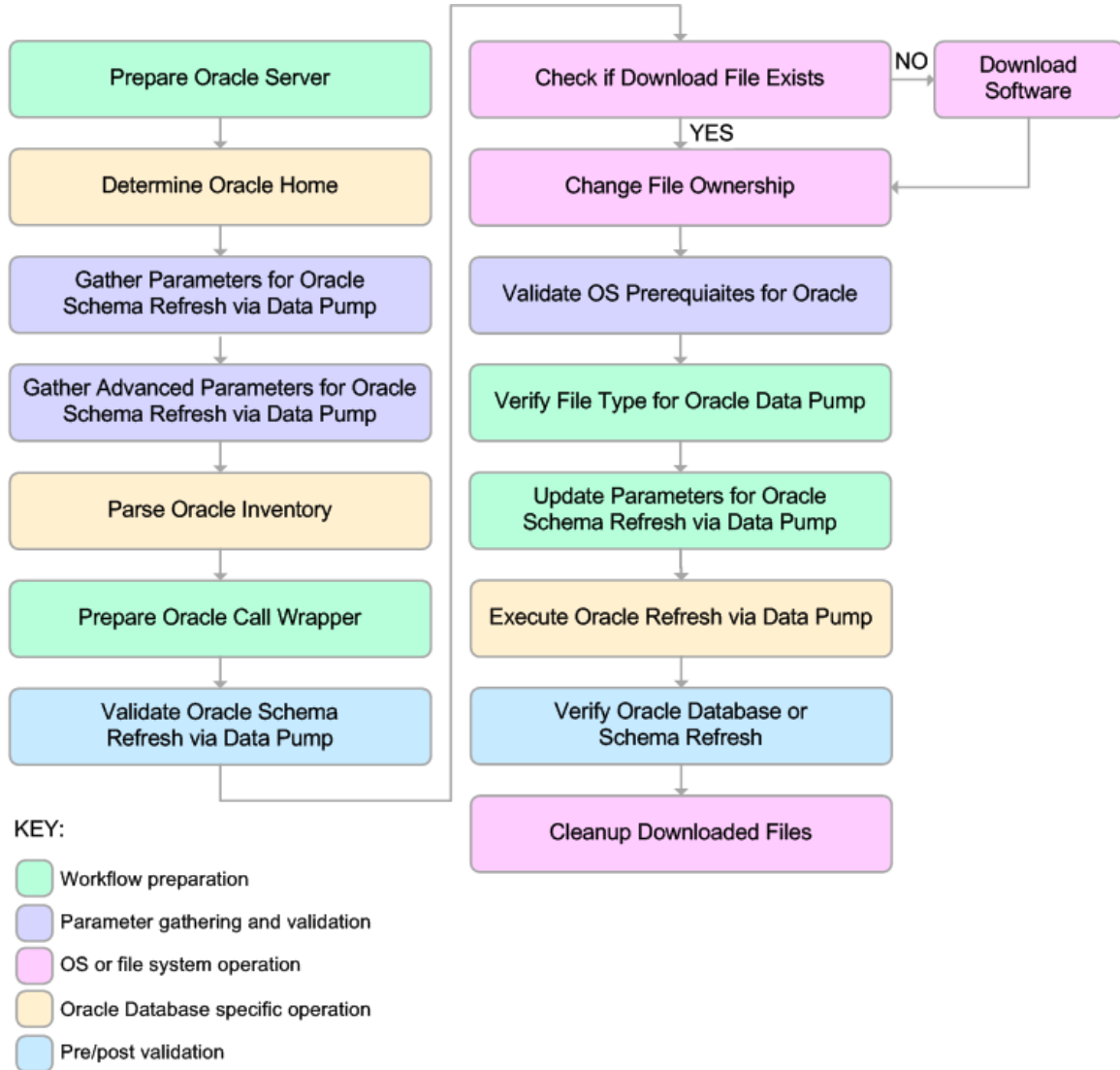
KEY:

- Workflow preparation
- Parameter gathering and validation
- OS or file system operation
- Oracle Database specific operation
- Pre/post validation

For parameter descriptions and defaults, see [Parameters for Export Oracle Schema via Data Pump](#) on page 136.

Steps for Refresh Oracle Schema via Data Pump

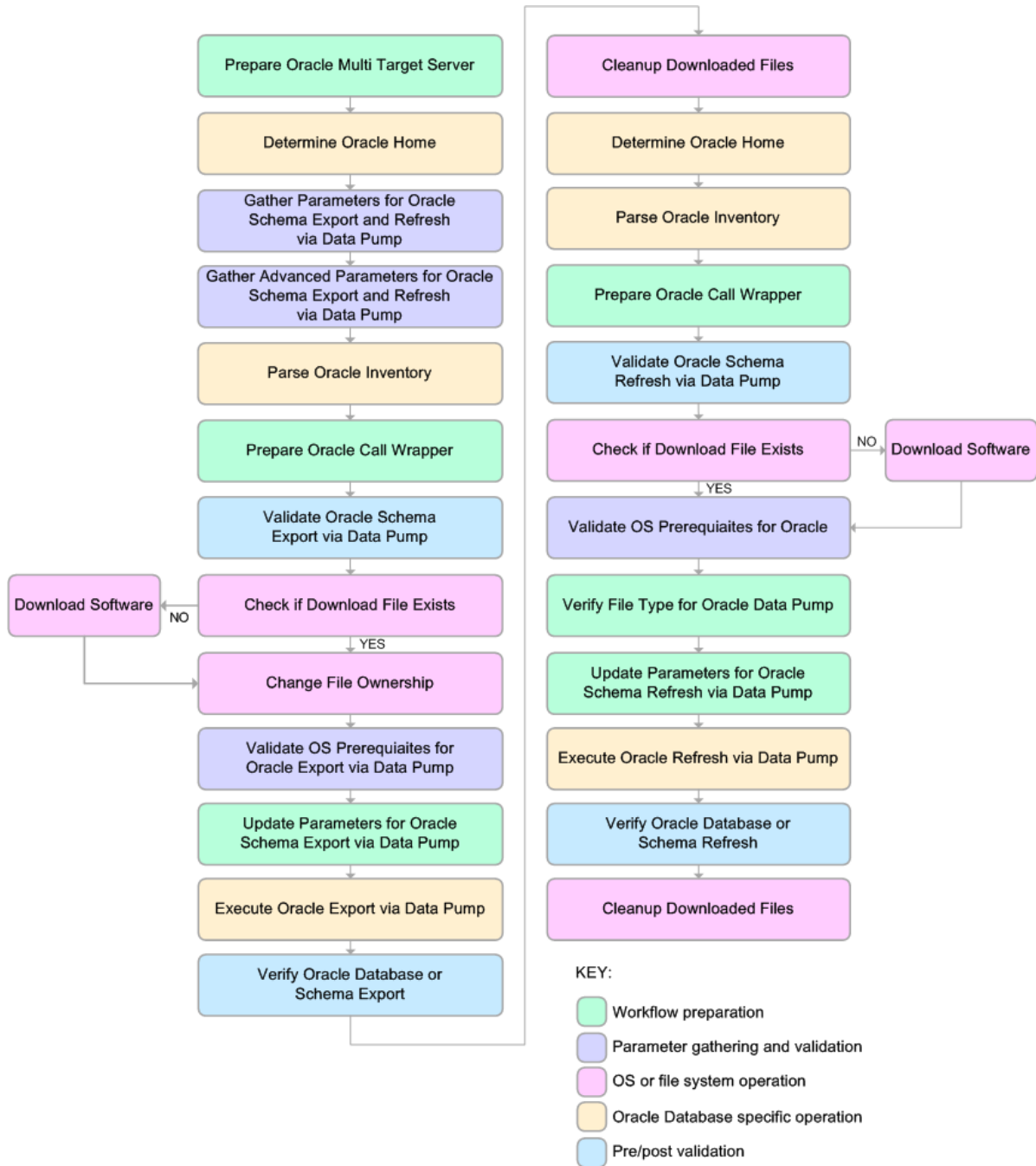
The [Refresh Oracle Schema via Data Pump](#) workflow includes the following steps. Each step must complete successfully before the next step can start. If a step fails, the workflow reports a failure, and all subsequent steps are skipped.



For parameter descriptions and defaults, see [Parameters for Refresh Oracle Schema via Data Pump](#) on page 143.

Steps for Export and Refresh Oracle Schema via Data Pump

The [Export and Refresh Oracle Schema via Data Pump](#) workflow includes the following steps. Each step must complete successfully before the next step can start. If a step fails, the workflow reports a failure, and all subsequent steps are skipped.



For parameter descriptions and defaults, see [Parameters for Export and Refresh Oracle Schema via Data Pump on page 148](#).

All Oracle Database Refresh Steps

The following steps are used by the workflows in this solution.

Note: Many steps are used by multiple workflows in this solution pack. Each step is only listed once in this table, however. To view a list of every step used by a specific workflow, click the See Also button at the end of this topic.

Steps Organized by Workflow

Workflow	Steps
Utility Steps (used by all multiple workflows)	<ul style="list-style-type: none"> • Prepare Server on page 170 • Determine Oracle Home on page 171 • Parse Oracle Inventory on page 175 • Prepare Oracle Call Wrapper on page 178 • Check If Download File Exists on page 195 • Prepare Oracle Multi Target Server on page 203 • Change File Ownership on page 230
Extract Oracle Database via RMAN on page 27	<ul style="list-style-type: none"> • Gather Parameters for Oracle Database Extract via RMAN on page 172 • Gather Advanced Parameters for Oracle Database Extract via RMAN on page 173 • Validate Oracle Database Extract via RMAN on page 180 • Validate OS Prerequisites for Oracle on page 194 • Validate OS Prerequisites for Oracle Database Extract via RMAN on page 182 • Execute Oracle Extract via RMAN on page 184
Refresh Oracle Database via RMAN on page 33	<ul style="list-style-type: none"> • Gather Parameters for Oracle Database Refresh via RMAN on page 186 • Gather Advanced Parameters for Oracle Database Refresh via RMAN on page 188 • Validate Oracle Database Refresh via RMAN on page 190 • Verify File Type for Oracle RMAN on page 197 • Execute Oracle Refresh via RMAN on page 198 • Verify Oracle Database or Schema Refresh on page 200

Steps Organized by Workflow (continued)

Workflow	Steps
Extract and Refresh Oracle Database via RMAN on page 40	<ul style="list-style-type: none"> • Gather Parameters for Oracle Database Extract and Refresh via RMAN on page 204 • Gather Advanced Parameters for Oracle Database Extract and Refresh via RMAN on page 206
Export Oracle Database via Data Pump on page 48	<ul style="list-style-type: none"> • Gather Parameters for Oracle Database Export via Data Pump on page 208 • Gather Advanced Parameters for Oracle Database Export via Data Pump on page 211 • Validate Oracle Database Export via Data Pump on page 220 • Validate OS Prerequisites for Oracle Export via Data Pump on page 231 • Update Parameters for Oracle Database Export via Data Pump on page 232 • Execute Oracle Export via Data Pump on page 239
Refresh Oracle Database via Data Pump on page 56	<ul style="list-style-type: none"> • Gather Parameters for Oracle Database Refresh via Data Pump on page 243 • Gather Advanced Parameters for Oracle Database Refresh via Data Pump on page 246 • Validate Oracle Database Refresh via Data Pump on page 252 • Update Parameters for Oracle Database Refresh via Data Pump on page 261 • Execute Oracle Refresh via Data Pump on page 265 • Verify File Type for Oracle Data Pump on page 260
Export and Refresh Oracle Database via Data Pump on page 64	<ul style="list-style-type: none"> • Gather Parameters for Oracle Database Export and Refresh via Data Pump on page 267 • Gather Advanced Parameters for Oracle Database Export and Refresh via Data Pump on page 270

Steps Organized by Workflow (continued)

Workflow	Steps
Export Oracle Schema via Data Pump on page 75	<ul style="list-style-type: none"> • Gather Parameters for Oracle Schema Export via Data Pump on page 282 • Gather Advanced Parameters for Oracle Schema Export via Data Pump on page 285 • Validate Oracle Schema Export via Data Pump on page 294 • Update Parameters for Oracle Schema Export via Data Pump on page 304
Refresh Oracle Schema via Data Pump on page 84	<ul style="list-style-type: none"> • Gather Parameters for Oracle Schema Refresh via Data Pump on page 311 • Gather Advanced Parameters for Oracle Schema Refresh via Data Pump on page 314 • Validate Oracle Schema Refresh on page 320 • Update Parameters for Oracle Schema Refresh via Data Pump on page 327
Export and Refresh Oracle Schema via Data Pump on page 93	<ul style="list-style-type: none"> • Gather Parameters for Oracle Schema Export and Import via Data Pump on page 331 • Gather Advanced Parameters for Oracle Schema Export and Import via Data Pump on page 334

Prepare Server

Purpose

This step prepares the target server for superuser access..

Input Parameters

There are no input parameters for this step.

Output Parameters

Parameter Name	Description
Instance Wrapper	Jython call wrapper to run as the Oracle instance owner.
No Value	Empty mapping for future steps.
Server Wrapper	String to execute routine as the server superuser.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

- [Extract Oracle Database via RMAN on page 27](#)
- [Refresh Oracle Database via RMAN on page 33](#)
- [Export Oracle Database via Data Pump on page 48](#)
- [Refresh Oracle Database via Data Pump on page 56](#)
- [Export Oracle Schema via Data Pump on page 75](#)
- [Refresh Oracle Schema via Data Pump on page 84](#)

Determine Oracle Home

Purpose

This step determines the value of ORACLE_HOME:

- From the `/etc/oratab` or `/var/opt/oracle/oratab` file on UNIX systems.
- From the registry on Windows systems.

This step serves the same purpose as Get Oracle Home but also provides step log output.

Input Parameters

Parameter Name	Default Value	Required	Description
<code>_TARGET_IDENTIFIER_</code>	n/a	n/a	Ignore: DMA system parameter for use in SA 9.11 and later. Displayed, but ignored, in earlier releases.

Output Parameters

Parameter Name	Description
Oracle Home	The fully qualified name of the ORACLE_HOME for this instance.
Oracle SID	The Oracle Server (Instance) ID.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

- [Extract Oracle Database via RMAN on page 27](#)
- [Refresh Oracle Database via RMAN on page 33](#)
- [Extract and Refresh Oracle Database via RMAN on page 40](#)
- [Export Oracle Database via Data Pump on page 48](#)
- [Refresh Oracle Database via Data Pump on page 56](#)
- [Export and Refresh Oracle Database via Data Pump on page 64](#)
- [Export Oracle Schema via Data Pump on page 75](#)
- [Refresh Oracle Schema via Data Pump on page 84](#)
- [Export and Refresh Oracle Schema via Data Pump on page 93](#)

Gather Parameters for Oracle Database Extract via RMAN

Purpose

This step gathers the parameters required to extract the contents of an Oracle database using Oracle Recovery Manager (RMAN). This step does not perform any type of validation on the parameter values. That is addressed later in the workflow.

Input Parameters

Parameter Name	Default Value	Required	Description
Oracle User	oracle	required	Oracle user that owns the ORACLE_HOME on the target Oracle database server. This user will perform the RMAN backup.
Target Directory	no default	required	Directory where the RMAN backup files will be placed. This directory must exist prior to workflow execution. The specified Oracle User must have READ and WRITE permissions for this directory. This directory must be accessible to the target database server.

Output Parameters

Parameter Name	Description
Oracle User	Oracle user that owns the ORACLE_HOME on the target Oracle database server. This user will perform the RMAN backup.
Target Directory	Directory where the RMAN backup files will be placed. This directory must exist prior to workflow execution. The specified Oracle User must have READ and WRITE permissions for this directory. This directory must be accessible to the target database server.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

[Extract Oracle Database via RMAN on page 27](#)

Gather Advanced Parameters for Oracle Database Extract via RMAN

Purpose

This step gathers and validates additional parameters required to extract the contents of an Oracle database using Oracle Recovery Manager (RMAN).

Input Parameters

Parameter Name	Default Value	Required	Description
Ignorable Oracle Errors	ORA-31684,ORA-39111,ORA-39151,ORA-31685,ORA-00001,RMAN-00571,RMAN-00569,RMAN-03002,RMAN-06054	optional	Maximum size (in MB) of an RMAN backup set piece (physical file).
Max Piece Size	1048576	optional	Maximum size (in MB) of an RMAN backup set piece (physical file).
Tag Name	DMA Refresh	optional	A text string assigned to this backup.
Temporary File Location	no default	optional	Location to store temporary files while the workflow is running.

Output Parameters

Parameter Name	Description
Ignorable Oracle Errors	Comma delimited list of Oracle errors to ignore while executing the RMAN backup. The workflow always ignores ORA-39083, ORA-00959,ORA-01917,ORA-01918,ORA-01435,ORA-00942,ORA-31693, and ORA-20000. The workflow generates a warning but does not fail if it encounters LRM-00101, ORA-39000, ORA-31640, ORA-27037, ORA-31641, or ORA-27038.
Max Piece Size	Maximum size (in MB) of an RMAN backup set piece (physical file).
Tag Name	A text string assigned to this backup.
Temporary File Location	Location to store temporary files while the workflow is running.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

[Extract Oracle Database via RMAN on page 27](#)

Parse Oracle Inventory

Purpose

This step parses Oracle inventory files located in the specified directories.

- If the specified directories exist, the step parses the inventory files found in those directories and extracts their contents.
- If no inventory file directories are specified, the step uses the appropriate default directory for the target server operating system.
- If the specified or default directory does not exist, the step creates it.

Note: This step must run as the server superuser.

Input Parameters

Parameter Name	Default Value	Required	Description
Inventory Files	see description	optional	Comma separated list of Oracle inventory file names (with absolute paths). If not specified, set to the appropriate default value for the target server operating system. Defaults are: Solaris: /var/opt/oracle/oraInst.loc Linux: /etc/oraInst.loc Windows: %ProgramFiles%\Oracle\Inventory
Oracle Account	no default	optional	Oracle user that owns the ORACLE_HOME on the target Oracle database server. Required if an inventory file does not exist. Leave blank for Windows.
Oracle Home	no default	optional	The ORACLE_HOME to use if more than one home is found in the inventory file (or files).
Server Wrapper	jython	required	Command that will be used to construct the call wrapper. The workflow uses the call wrapper to execute subsequent steps as either the OS administrative user (for example: <code>sudo su - root /opt/opsware/dma/jython.sh</code>) or the Oracle user who owns the pertinent ORACLE_HOME (for example: <code>sudo su - sysdba /opt/opsware/dma/jython.sh</code>).

Output Parameters

Parameter Name	Description
CRS Account	The OS owner of the ORA_CRS_HOME.

Parameter Name	Description
CRS Active Version	Active CRS Version.
CRS Group	The Oracle group used for the ORA_CRS_HOME installation.
CRS Home	The last ORA_CRS_HOME location in the inventory file.
CRS Home Name	The name of the ORA_CRS_HOME as recorded in the inventory.
CRS Nodes	List of all nodes to which the Oracle Clusterware is deployed.
Cluster Nodes	List of all nodes to which the Oracle Home is deployed.
Inventory Groups	Comma separated list of fully qualified inventory groups (one for each Inventory File).
Inventory Locations	Comma separated list of fully qualified inventory path name directories.
Inventory Pointers	Comma separated list of fully qualified inventory pointer files.
Oracle Account	The OS owner of the ORACLE_HOME.
Oracle Group	The Oracle group used for the ORACLE_HOME installation.
Oracle Home	The last ORACLE_HOME located in the inventory file or input Home.
Oracle Home Info	Dictionary list of all information discovered in the supplied inventory file(s).
Oracle Home Name	The name of the ORACLE_HOME as recorded in the inventory
Oracle Listener Account	The OS owner of the ORACLE_HOME of the relevant listener
Oracle Version	Version of the Oracle Home
SQLPlus Version	Version of SQLPlus from Oracle Home

Return Codes

0 = All specified files were found on the target server and successfully parsed.

1 = Errors were found when checking one or more files.

Used By Workflows

- [Extract Oracle Database via RMAN on page 27](#)
- [Refresh Oracle Database via RMAN on page 33](#)
- [Extract and Refresh Oracle Database via RMAN on page 40](#)
- [Export Oracle Database via Data Pump on page 48](#)
- [Refresh Oracle Database via Data Pump on page 56](#)
- [Export and Refresh Oracle Database via Data Pump on page 64](#)

- [Export Oracle Schema via Data Pump on page 75](#)
- [Refresh Oracle Schema via Data Pump on page 84](#)
- [Export and Refresh Oracle Schema via Data Pump on page 93](#)

Prepare Oracle Call Wrapper

Purpose

This step prepares the call wrappers needed to become the owner of the Oracle Database software and root.

It sets the default values for the Instance Wrapper, Server Wrapper, and Oracle Account owner variables used in subsequent workflow steps.

Input Parameters

Parameter Name	Default Value	Required	Description
Oracle Account	no default	optional	Oracle user that owns the ORACLE_HOME on the target Oracle database server. Required if an inventory file does not exist. Leave blank for Windows.

Output Parameters

Parameter Name	Description
Boolean False	Boolean value for False.
Boolean True	Boolean value for True.
Instance Wrapper	Command that will be used to execute subsequent steps as the Oracle user who owns the pertinent ORACLE_HOME (for example: <code>sudo su - sysdba /opt/opsware/dma/jython.sh</code>).
None Value	Value containing None.
Oracle Account	The user who owns ORACLE_HOME.
Server Wrapper	Command that will be used to execute subsequent steps as either the OS administrative user (for example: <code>sudo su - root /opt/opsware/dma/jython.sh</code>).

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

- [Extract Oracle Database via RMAN on page 27](#)
- [Refresh Oracle Database via RMAN on page 33](#)
- [Extract and Refresh Oracle Database via RMAN on page 40](#)
- [Export Oracle Database via Data Pump on page 48](#)
- [Refresh Oracle Database via Data Pump on page 56](#)
- [Export and Refresh Oracle Database via Data Pump on page 64](#)
- [Export Oracle Schema via Data Pump on page 75](#)
- [Refresh Oracle Schema via Data Pump on page 84](#)
- [Export and Refresh Oracle Schema via Data Pump on page 93](#)

Validate Oracle Database Extract via RMAN

Purpose

This step determines whether a valid value has been specified for each input parameter.

Input Parameters

Parameter Name	Default Value	Required	Description
Ignorable Oracle Errors	ORA-31684,ORA-39111,ORA-39151,ORA-31685,ORA-00001,RMAN-00571,RMAN-00569,RMAN-03002,RMAN-06054	optional	Comma delimited list of Oracle errors to ignore while executing the RMAN backup. The workflow always ignores ORA-39083, ORA-00959,ORA-01917,ORA-01918,ORA-01435,ORA-00942,ORA-31693, and ORA-20000. The workflow generates a warning but does not fail if it encounters LRM-00101, ORA-39000, ORA-31640, ORA-27037, ORA-31641, or ORA-27038.
Instance Wrapper	no default	optional	Command that will be used to execute subsequent steps as the Oracle user who owns the pertinent ORACLE_HOME (for example: <code>sudo su - sysdba /opt/opsware/dma/jython.sh</code>).
Max Piece Size	1048576	optional	Maximum size (in MB) of an RMAN backup set piece (physical file).
Oracle Home	no default	optional	The ORACLE_HOME to use if more than one home is found in the inventory file (or files).
Oracle SID	no default	required	The Oracle System ID (SID) of the target database.
Oracle User	oracle	required	Oracle user that owns the ORACLE_HOME on the target Oracle database server. This user will perform the RMAN backup.
Tag Name	DMA Refresh	optional	A text string assigned to this backup.
Target Directory	no default	required	Directory where the RMAN backup files will be placed. This directory must exist prior to workflow execution. The specified Oracle User must have READ and WRITE permissions for this directory. This directory must be accessible to the target database server.

Parameter Name	Default Value	Required	Description
Temporary File Location	no default	optional	Location to store temporary files while the workflow is running.

Output Parameters

Parameter Name	Description
Ignorable Oracle Errors	Comma delimited list of Oracle errors to ignore while executing the RMAN backup. The workflow always ignores ORA-39083, ORA-00959, ORA-01917, ORA-01918, ORA-01435, ORA-00942, ORA-31693, and ORA-20000. The workflow generates a warning but does not fail if it encounters LRM-00101, ORA-39000, ORA-31640, ORA-27037, ORA-31641, or ORA-27038.
Max Piece Size	Maximum size (in MB) of an RMAN backup set piece (physical file).
Oracle Home	The ORACLE_HOME to use if more than one home is found in the inventory file (or files).
Oracle SID	The Oracle System ID (SID) of the target database.
Oracle User	Oracle user that owns the ORACLE_HOME on the target Oracle database server. This user will perform the RMAN backup.
Tag Name	A text string assigned to this backup.
Target Directory	Directory where the RMAN backup files will be placed. This directory must exist prior to workflow execution. The specified Oracle User must have READ and WRITE permissions for this directory. This directory must be accessible to the target database server.
Temporary File Location	Location to store temporary files while the workflow is running.

Return Codes

0 = All specified parameter values are valid.

1 = One or more parameter values is not valid.

Used By Workflows

- [Extract Oracle Database via RMAN on page 27](#)
- [Extract and Refresh Oracle Database via RMAN on page 40](#)

Validate OS Prerequisites for Oracle Database Extract via RMAN

Purpose

This step determines whether the operating system on the target server will support the database extract operation.

Input Parameters

Parameter Name	Default Value	Required	Description
Ignorable Oracle Errors	no default	optional	*Optional: Comma delimited list of Oracle errors to ignore while executing the import. Example: ORA-31684,ORA-39111
Max Piece Size	no default	required	*Required: Maximum size (in MB) of a backup set piece.
Oracle User	no default	required	*Required: OS user who owns the oracle process.
Server Wrapper	no default	optional	*Optional: Jython call wrapper to run as the admin user.
Tag Name	no default	required	*Required: Tag name for the archive.
Target Directory	no default	required	*Required: Directory where archive files will be placed.
_TARGET_IDENTIFIER_	no default	optional	*Ignore: DMA system parameter for use in SA 9.11 and later. Displayed, but ignored in earlier releases.

Output Parameters

Parameter Name	Description
Ignorable Oracle Errors	*Optional: Comma delimited list of Oracle errors to ignore while executing the import. Example: ORA-31684,ORA-39111
Max Piece Size	*Required: Maximum size (in MB) of a backup set piece.
Oracle User	*Required: OS user who owns the oracle process.
Tag Name	*Required: Tag name for the archive.
Target Directory	*Required: Directory where archive files will be placed.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

- [Extract Oracle Database via RMAN on page 27](#)
- [Extract and Refresh Oracle Database via RMAN on page 40](#)

Execute Oracle Extract via RMAN

Purpose

This step performs the Oracle Recovery Manager (RMAN) operations required to extract the contents of the specified Oracle database and store the contents in *.bkp files in the specified Target Directory.

Input Parameters

Parameter Name	Default Value	Required	Description
Ignorable Oracle Errors	no default	optional	*Optional: Comma delimited list of Oracle errors to ignore while executing the import. Example: ORA-31684,ORA-39111
Instance Wrapper	no default	optional	*Optional: Jython call wrapper to run as the Oracle Instance owner.
Max Piece Size	no default	required	*Required: Maximum size (in MB) of a backup set piece.
Oracle Home	no default	required	*Required: Oracle home of this instance.
Oracle SID	no default	required	*Required: SID of this oracle instance.
Tag Name	no default	required	*Required: Tag name for the archive.
Target Directory	no default	required	*Required: Directory where archive files will be placed.
Temporary File Location	no default	optional	*Optional: Location to store temporary files.
_TARGET_IDENTIFIER_	no default	optional	*Ignore: DMA system parameter for use in SA 9.11 and later. Displayed, but ignored in earlier releases.

Output Parameters

Parameter Name	Description
Database ID	The DBID of the database.
RMAN Archive Logs	Archived log files generated from the source database via RMAN. Separated with commas.
RMAN Control File	Control File generated from the source database.

Parameter Name	Description
RMAN Data Files	List of RMAN backup data files from the source database. Separated with commas.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

- [Extract Oracle Database via RMAN on page 27](#)
- [Extract and Refresh Oracle Database via RMAN on page 40](#)

Gather Parameters for Oracle Database Refresh via RMAN

Purpose

This step gathers the parameters required to restore an Oracle database from a set of *.bkp files previously archived using Oracle Recovery Manager (RMAN). This step does not perform any type of validation on the parameter values. That is addressed later in the workflow.

Input Parameters

Parameter Name	Default Value	Required	Description
Inventory Files	no default	optional	*Optional: Comma separated list of fully qualified paths where the Oracle inventory files are located.
Oracle Account	no default	optional	*Optional: Oracle user that will own the ORACLE_HOME. Required if inventory does not exist. Left blank for Windows.
Oracle Home	no default	optional	*Optional: The ORACLE_HOME to use if more than one home in the inventory file(s).
Oracle SID	no default	required	*Required: The Oracle Server (Instance) ID.
RMAN Archive Logs	no default	required	*Required: Archived log files generated from the source database via RMAN. Separate multiple files with a comma.
RMAN Control File	no default	required	*Required: Control File generated from the source database.
RMAN Data Files	no default	required	*Required: RMAN backup of data files from the source database. Separate multiple files with a comma.
Target Directory	no default	required	*Required: Directory where RMAN backup files are to be downloaded on the target database server. Must be known to the Oracle Account.

Output Parameters

Parameter Name	Description
Inventory Files	Comma separated list of fully qualified Oracle inventory files. If not specified, default to /etc/orainst.loc, /var/opt/oracle/orainst.loc, or %ProgramFiles%\Oracle\Inventory.
Oracle Account	Oracle user that will own the ORACLE_HOME. Required if inventory does not exist. Left blank for Windows.
Oracle Home	The ORACLE_HOME to use if more than one home in the inventory file(s).

Parameter Name	Description
Oracle SID	The Oracle Server (Instance) ID.
RMAN Archive Logs	Archived log files generated from the source database via RMAN. Separated with commas.
RMAN Control File	Control File generated from the source database.
RMAN Data Files	RMAN backup of data files from the source database. Separated with commas.
Target Directory	Directory where RMAN backup files are to be downloaded on the target database server. Must be known to the Oracle Account.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

[Refresh Oracle Database via RMAN on page 33](#)

Gather Advanced Parameters for Oracle Database Refresh via RMAN

Purpose

This step collects a list of errors that will be ignored during the Oracle Recovery Manager (RMAN) database restore operation. These errors are passed on to the Execute Oracle Database Refresh via RMAN step, which will ignore each specified error if it is encountered.

This step also enables you to specify a verification SQL script that the workflow will use after the restore operation is completed. If you specify a verification script, you must also provide a file that contains the results that you expect to see.

Input Parameters

Parameter Name	Default Value	Required	Description
Ignorable Oracle Errors	ORA-31684,ORA-39111,ORA-39151,ORA-31685,ORA-00001,RMAN-06497,RMAN-00571,RMAN-00569,RMAN-03002,RMAN-06054	optional	*Optional: Comma delimited list of Oracle errors to ignore while executing the import.
Verification Result	no default	optional	*Optional: File containing result of the "Verification SQL Script".
Verification SQL Script	no default	optional	*Optional: File containing sql commands used to verify the refresh completed correctly.

Output Parameters

Parameter Name	Description
Ignorable Oracle Errors	*Optional: Comma delimited list of Oracle errors to ignore while executing the import. Example: ORA-31684,ORA-39111
Verification Result	*Optional: File containing result of the "Verification SQL Script".
Verification SQL Script	*Optional: File containing sql commands used to verify the refresh completed correctly.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

[Refresh Oracle Database via RMAN on page 33](#)

Validate Oracle Database Refresh via RMAN

Purpose

This step determines whether a valid value has been specified for each input parameter and verifies that the destination database is shut down.

Input Parameters

Parameter Name	Default Value	Required	Description
Ignorable Oracle Errors	no default	optional	*Optional: Comma delimited list of Oracle errors to ignore while executing the import. Example: ORA-31684,ORA-39111
Instance Wrapper	no default	optional	*Optional: Jython call wrapper to run as the Oracle Instance owner.
Inventory Files	Solaris or HP-UX: <code>/var/opt/oracle/oraInst.loc</code> Other UNIX: <code>/etc/oraInst.loc</code> Windows: <code>%ProgramFiles%\Oracle\Inventory</code>	optional	*Optional: Comma separated list of fully qualified paths where the Oracle inventory files are located. If not specified, set to the appropriate default value for the target server operating system.
Oracle Account	no default	optional	*Optional: Oracle user that will own the ORACLE_HOME. Required if inventory does not exist. Left blank for Windows.
Oracle Home	no default	required	*Required: OS Home of the Oracle instance.
Oracle SID	no default	required	*Required: Target Instance ID.

Parameter Name	Default Value	Required	Description
RMAN Archive Logs	no default	required	*Required: Archived log files generated from the source database via RMAN. Separate multiple files with commas.
RMAN Control File	no default	required	*Required: Control File generated from the source database.
RMAN Data Files	no default	required	*Required: RMAN backup of data files from the source database. Separate multiple files with commas.
Target Directory	no default	required	*Required: Directory where RMAN backup files are to be downloaded on the target database server. Must be known to the Oracle Account.
Verification Result	no default	optional	*Optional: File containing result of the "Verification SQL Script".
Verification SQL Script	no default	optional	*Optional: File containing sql commands used to verify the refresh completed correctly.
_TARGET_IDENTIFIER_	no default	optional	*Ignore: DMA system parameter for use in SA 9.11 and later. Displayed, but ignored in earlier releases.

Output Parameters

Parameter Name	Description
Do Not Remove List	Comma separated list of files (with absolute paths) that should NOT be removed after the database restore operation is completed.
Downloaded Files	Comma separated list of all the file names (with absolute paths) specified in the following input parameters: RMAN Control File, RMAN Data Files, RMAN Archive Logs, Verification Result, and Verification SQL Script.
File List	Comma separated list of all the file names (without paths) specified in the following input parameters: RMAN Control File, RMAN Data Files, RMAN Archive Logs, Verification Result, and Verification SQL Script.
Ignorable Oracle Errors	Comma separated list of Oracle errors to ignore while executing the import. Example: ORA-31684,ORA-39111
Inventory Files	Comma separated list of fully qualified paths where the Oracle inventory files are located.
Oracle Account	The OS owner of the ORACLE_HOME.
Oracle Home	OS Home of the Oracle instance.
Oracle SID	Target Instance ID.
RMAN Archive Logs	Archived log files generated from the source database via RMAN. Separated with commas.
RMAN Control File	Control File generated from the source database.
RMAN Data Files	List of RMAN backup data files from the source database. Separated with commas.
Target Directory	Directory where RMAN backup files will be downloaded on the target database server. Must be known to the Oracle Account.
Temporary File Location	Location to store temporary files on the target server.
Verification Result	File containing result of the "Verification SQL Script".
Verification SQL Script	File containing sql commands used to verify the refresh completed correctly.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

- [Refresh Oracle Database via RMAN on page 33](#)
- [Extract and Refresh Oracle Database via RMAN on page 40](#)

Validate OS Prerequisites for Oracle

Purpose

This step determines whether the target server is running a supported operating system and a supported version of Oracle Database. It also determines whether there is sufficient disk space to download and, subsequently, restore the specified Archive Files.

Input Parameters

Parameter Name	Default Value	Required	Description
Archive Files	no default	optional	Comma separated list of database archive files from which the destination target database will be restored.
Instance Wrapper	no default	required	Command that will be used to execute subsequent steps as the Oracle user who owns the pertinent ORACLE_HOME (for example: <code>sudo su - sysdba /opt/opsware/dma/jython.sh</code>).
Oracle Home	no default	optional	The ORACLE_HOME to use if more than one home is found in the inventory file (or files).
Oracle Version	no default	optional	Specific version of the Oracle Database instance where you will perform the Data Pump operation. Valid values are 10.2 and later.

Output Parameters

This step has no output parameters.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

- [Refresh Oracle Database via RMAN on page 33](#)
- [Extract and Refresh Oracle Database via RMAN on page 40](#)
- [Refresh Oracle Database via Data Pump on page 56](#)
- [Export and Refresh Oracle Database via Data Pump on page 64](#)
- [Refresh Oracle Schema via Data Pump on page 84](#)
- [Export and Refresh Oracle Schema via Data Pump on page 93](#)

Check If Download File Exists

Purpose

This step determines whether any of the files that need to be downloaded to the target server already exist there—any files that already exist in the Download To location on the target server will not be downloaded again. This step also changes permissions on the Download To directory (on UNIX platforms) to enable subsequent steps to copy files to that directory.

Input Parameters

Parameter Name	Default Value	Required	Description
Call Wrapper	jython	optional	Command that will be used to construct the call wrapper. The workflow uses the call wrapper to execute subsequent steps as either the OS administrative user (for example: <code>sudo su - root /opt/opsware/dma/jython.sh</code>) or the owner of the ORACLE_HOME (for example: <code>sudo su - oracle /opt/opsware/dma/jython.sh</code>).
Download From	no default	optional	List of file(s) to download in non-absolute path format.
Download To	no default	optional	Directory (absolute path) where the downloaded files will be placed.
Windows Network Share Filepath	no default	optional	Absolute path to a single file to be downloaded from a Windows Network Share (for Windows targets only).
_TARGET_IDENTIFIER_	no default	optional	*Ignore: DMA system parameter for use in SA 9.11 and later. Displayed, but ignored in earlier releases.

Output Parameters

Parameter Name	Description
Download From	List of file(s) to download in non-absolute path format.
Full Path to Use	Full path where the downloaded files will be placed.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

- [Refresh Oracle Database via RMAN on page 33](#)
- [Export Oracle Database via Data Pump on page 48](#)
- [Refresh Oracle Database via Data Pump on page 56](#)

- [Export and Refresh Oracle Database via Data Pump on page 64](#)
- [Export Oracle Schema via Data Pump on page 75](#)
- [Refresh Oracle Schema via Data Pump on page 84](#)
- [Export and Refresh Oracle Schema via Data Pump on page 93](#)

Verify File Type for Oracle RMAN

Purpose

This step checks the specified Oracle Recovery Manager (RMAN) data archive file headers and verifies that the files were created by the RMAN export utility.

Input Parameters

Parameter Name	Default Value	Required	Description
Archive Files	no default	optional	Comma separated list of database archive files from which the destination target database will be restored.
Instance Wrapper	jython	optional	Jython call wrapper to run as the Oracle instance owner.
RMAN Tags	FULL DATABASE BACKUP,FULLDB-BACKUP,ARCHIVED LOGS BACKUP,DMA REFRESH	optional	Tag to search for in RMAN archive file(s).
_TARGET_IDENTIFIER_	no default	optional	*Ignore: DMA system parameter for use in SA 9.11 and later. Displayed, but ignored in earlier releases.

Output Parameters

This step has no output parameters.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

- [Refresh Oracle Database via RMAN on page 33](#)
- [Extract and Refresh Oracle Database via RMAN on page 40](#)

Execute Oracle Refresh via RMAN

Purpose

This step performs a database import from a set of Oracle Recovery Manager (RMAN) data archive files.

Input Parameters

Parameter Name	Default Value	Required	Description
Archive Log	no default	required	Comma separated list of archived log files generated when the source database was exported using RMAN.
Control File	no default	required	RMAN control file generated when the source database was exported.
Data Files	no default	required	Comma separated list of data files generated when the source database was exported using RMAN.
Database ID	no default	required	DB ID of the source database.
Ignorable Oracle Errors	no default	optional	Comma separated list of Oracle errors to ignore while executing the import. For example: ORA-31684,ORA-39111
Instance Wrapper	no default	required	Jython call wrapper required to run as the Oracle instance owner.
Oracle Home	no default	required	Fully qualified path name of the Oracle Home where the destination database resides.
Oracle SID	no default	required	The Oracle SID of the destination database.
Temporary File Location	no default	optional	The location where all temporary output files will be placed. This directory will be removed at the completion of the workflow.
_TARGET_IDENTIFIER_	no default	optional	*Ignore: DMA system parameter for use in SA 9.11 and later. Displayed, but ignored in earlier releases.

Output Parameters

This step has no output parameters.

Return Codes

0 = Database was successfully imported using RMAN.

1 = Database import was not successful.

Used By Workflows

- [Refresh Oracle Database via RMAN on page 33](#)
- [Extract and Refresh Oracle Database via RMAN on page 40](#)

Verify Oracle Database or Schema Refresh

Purpose

This step performs the following checks after an Oracle database refresh:

- The new database exists on the target server.
- The new database is accessible:
 - No blocks are corrupted.
 - No files are in Backup mode.
 - Temporary table space is available.
- The SQL statements specified in the Verification SQL Script parameter run successfully and show consistent results for the source and destination databases.

Input Parameters

Parameter Name	Default Value	Required	Description
Instance Wrapper	no default	required	Command that will be used to execute subsequent steps as the Oracle user who owns the pertinent ORACLE_HOME (for example: <code>sudo su - sysdba /opt/opsware/dma/jython.sh</code>).
Oracle Home	no default	optional	The ORACLE_HOME to use if more than one home is found in the inventory file (or files).
Oracle SID	no default	required	The Oracle System ID (SID) of the target database.
Time Stamp	no default	optional	Date and time when the import log file is created in in %Y%m%d%H%M%S format. By default, this time stamp is included in the Import Log file name. <div style="background-color: #f0f0f0; padding: 5px; border: 1px solid #ccc;"> <p>Caution: This parameter is derived by the workflow. Under most circumstances, you should not change its mapping or its value.</p> </div>
Verification Result	no default	optional	Name (with absolute path) of a text file containing the expected results of the SQL queries included in the Verification SQL Script. This parameter is required if you provide a Verification SQL Script. Be sure to run the Verification SQL Script on the SOURCE database before running this workflow, and copy the results into this file. You must provide this file in a location where the workflow can access it.

Parameter Name	Default Value	Required	Description
Verification SQL Script	no default	optional	Name (with absolute path) of a text file containing a SQL script that verifies the integrity of the database. You must provide this file in a location where the workflow can access it. The expected results of the queries included in this script must be provided in the Verification Result file.

Output Parameters

This step has no output parameters.

Return Codes

0 = All three checks are successful (see [Purpose on previous page](#)).

1 = One or more checks fail.

Used By Workflows

- [Refresh Oracle Database via RMAN on page 33](#)
- [Extract and Refresh Oracle Database via RMAN on page 40](#)
- [Refresh Oracle Database via Data Pump on page 56](#)
- [Export and Refresh Oracle Database via Data Pump on page 64](#)
- [Refresh Oracle Schema via Data Pump on page 84](#)
- [Export and Refresh Oracle Schema via Data Pump on page 93](#)

Cleanup Downloaded Files

Purpose

This step removes downloaded files and archives. It is typically used at the end of a workflow, after the primary task of the workflow has been completed.

Input Parameters

Parameter Name	Default Value	Required	Description
Call Wrapper	no default	required	The jython call wrapper required to run as the owner of the files/directories.
Do Not Remove List	no default	optional	List of directories that should not be removed.
Download File List	no default	optional	List of file downloaded to the target server from the HP DMA server.
Temporary File Location	no default	optional	The location where all temporary output files will be placed.
_TARGET_IDENTIFIER_	no default	optional	*Ignore: DMA system parameter for use in SA 9.11 and later. Displayed, but ignored in earlier releases.

Output Parameters

This step has no output parameters.

Return Codes

0 = Specified files were successfully removed.

1 = One or more specified files were not removed.

Used By Workflows

- [Refresh Oracle Database via RMAN on page 33](#)
- [Extract and Refresh Oracle Database via RMAN on page 40](#)
- [Export Oracle Database via Data Pump on page 48](#)
- [Refresh Oracle Database via Data Pump on page 56](#)
- [Export and Refresh Oracle Database via Data Pump on page 64](#)
- [Export Oracle Schema via Data Pump on page 75](#)
- [Refresh Oracle Schema via Data Pump on page 84](#)
- [Export and Refresh Oracle Schema via Data Pump on page 93](#)

Prepare Oracle Multi Target Server

Purpose

This step gets the Source and Destination targets (servers or instances) for a bridged execution workflow. These targets are specified on the Run page at run time.

This step also creates the Server Wrapper.

Input Parameters

Parameter Name	Default Value	Required	Description
Destination	no default	required	The DESTINATION Oracle Database Server or Instance of the workflow.
Source	no default	required	The SOURCE Oracle Database Server or Instance of the workflow.

Output Parameters

Parameter Name	Description
Destination	The DESTINATION Oracle Database Server or Instance of the workflow.
No Value	Empty mapping for future steps.
Server Wrapper	Command that will execute steps as the server superuser (by default, <code>sudo su - root /opt/datapalette/jython/jython</code> on UNIX targets and <code>jython</code> running as Administrator on Windows targets).
Source	The SOURCE Oracle Database Server or Instance of the workflow.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

- [Extract and Refresh Oracle Database via RMAN on page 40](#)
- [Export and Refresh Oracle Database via Data Pump on page 64](#)
- [Export and Refresh Oracle Schema via Data Pump on page 93](#)

Gather Parameters for Oracle Database Extract and Refresh via RMAN

Purpose

This step gathers some of the parameters required to extract the contents of an Oracle database using Oracle Recovery Manager (RMAN) on the Source target and create the same database on the Destination target (or targets).

Input Parameters

Parameter Name	Default Value	Required	Description
ALL - Target Directory	no default	required	Directory where RMAN backup files will be placed on the source server and where RMAN backup files are to be downloaded on target database server. Must be known to the Oracle Account and must be the same directory on the source and destination target database servers.
EXPORT - Inventory Files	no default	optional	On the SOURCE Database Server - comma separated list of fully qualified Oracle inventory files. If not specified, defaults to <code>/etc/oraInst.loc</code> , <code>/var/opt/oracle/oraInst.loc</code> , or <code>%ProgramFiles%\Oracle\Inventory</code> in a later step.
EXPORT - Oracle User	no default	required	OS user who owns the oracle process.
IMPORT - Inventory Files	no default	optional	On the DESTINATION Database Server - comma separated list of fully qualified Oracle inventory files. If not specified, defaults to <code>/etc/oraInst.loc</code> , <code>/var/opt/oracle/oraInst.loc</code> , or <code>%ProgramFiles%\Oracle\Inventory</code> in a later step.
IMPORT - Oracle Account	no default	optional	Oracle user that will own the ORACLE_HOME. Required if inventory does not exist. Left blank for Windows.
Server Wrapper	ython	required	String to execute routine as server superuser.

Output Parameters

Parameter Name	Description
ALL - Target Directory	Directory where RMAN backup files will be placed on the source server and where RMAN backup files are to be downloaded on target database server. Must be known to the Oracle Account and must be the same directory on the source and destination target database servers.

Parameter Name	Description
EXPORT - Inventory Files	On the SOURCE Database Server - comma separated list of fully qualified Oracle inventory files.
EXPORT - Oracle User	OS user who owns the oracle process.
IMPORT - Inventory Files	On the DESTINATION Database Server - comma separated list of fully qualified Oracle inventory files.
IMPORT - Oracle Account	Oracle user that will own the ORACLE_HOME. Required if inventory does not exist. Left blank for Windows.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

[Extract and Refresh Oracle Database via RMAN on page 40](#)

Gather Advanced Parameters for Oracle Database Extract and Refresh via RMAN

Purpose

This step gathers and validates additional parameters required to extract the contents of an Oracle database using Oracle Recovery Manager (RMAN) on the Source target and create the same database on the Destination target (or targets).

Input Parameters

Parameter Name	Default Value	Required	Description
ALL - Ignorable Oracle Errors	ORA-31684,ORA-39111,ORA-39151,ORA-31685,ORA-00001,RMAN-06497,RMAN-00571,RMAN-00569,RMAN-03002,RMAN-06054	optional	Comma separated list of Oracle errors that can be ignored if the occur.
EXPORT - Max Piece Size	1048576	optional	Maximum size (in MB) of a backup set piece.
EXPORT - Tag Name	DMA Refresh	optional	Tag name for the archive.
EXPORT - Temporary File Location	no default	optional	Location to store temporary files.
IMPORT - Verification Result	no default	optional	Text file containing expected result output from running the Verification SQL Script after the Data Pump Import has been completed. Required only if Verification SQL Script is provided.
IMPORT - Verification SQL Script	no default	optional	SQL Script to be run on the DESTINATION Database Server after the Data Pump Import has completed. Output will be compared with the Verification Result expected results text file.
Server Wrapper	jython	required	String to execute routine as server superuser.

Output Parameters

Parameter Name	Description
ALL - Ignorable Oracle Errors	Comma separated list of Oracle errors that can be ignored if they occur. (i.e. ORA-31684, ORA-39111, etc.)
EXPORT - Max Piece Size	Maximum size (in MB) of a backup set piece.
EXPORT - Tag Name	Tag name for the archive.
EXPORT - Temporary File Location	Location to store temporary files.
IMPORT - Verification Result	Text file containing expected result output from running the Verification SQL Script after the Data Pump Import has been completed. Required only if Verification SQL Script is provided.
IMPORT - Verification SQL Script	SQL Script to be run on the DESTINATION Database Server after the Data Pump Import has completed. Output will be compared with the Verification Result expected results text file.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

[Extract and Refresh Oracle Database via RMAN on page 40](#)

Gather Parameters for Oracle Database Export via Data Pump

Purpose

This step gathers the basic parameters required to export the contents of an Oracle database using Oracle Data Pump. This step does not perform any type of validation on the parameter values. That is addressed later in the workflow.

Input Parameters

Parameter Name	Default Value	Required	Description
Data Pump Export File	<i>Target Directory</i> \ <code>Oracle SID.dmp</code>	optional	Name (absolute path) of the Data Pump Export dump file (or files) that will be created from an existing Oracle database.
Data Pump Parameter File	no default	optional	Name of the Data Pump Export parameter file that you provide. If you do not specify the absolute path to the Parameter File, the workflow will look for the file in the Target Directory. If you do not specify a Parameter File, default Data Pump Export settings will be used for parameters not specified in the deployment.
Inventory Files	see description	optional	Comma separated list of Oracle inventory file names (with absolute paths). If not specified, set to the appropriate default value for the target server operating system. Defaults are: Solaris: <code>/var/opt/oracle/oraInst.loc</code> Linux: <code>/etc/oraInst.loc</code> Windows: <code>%ProgramFiles%\Oracle\Inventory</code>
Oracle Account	no default	optional	Oracle user that owns the ORACLE_HOME on the target Oracle database server. Required if an inventory file does not exist. Leave blank for Windows.
Oracle Home	no default	optional	The ORACLE_HOME to use if more than one home is found in the inventory file (or files).
Oracle SID	no default	required	The Oracle System ID (SID) of the target database.

Parameter Name	Default Value	Required	Description
Server Wrapper	jython	required	Command that will be used to construct the call wrapper. The workflow uses the call wrapper to execute subsequent steps as either the OS administrative user (for example: <code>sudo su - root /opt/opsware/dma/jython.sh</code>) or the Oracle user who owns the pertinent ORACLE_HOME (for example: <code>sudo su - sysdba /opt/opsware/dma/jython.sh</code>).
Target Directory	no default	required	Directory where the Data Pump dump and Parameter files are to be staged on the target database server. Must be known to the Oracle Instance.

Output Parameters**Return Codes**

Parameter Name	Description
Data Pump Export File	Name (absolute path) of the Data Pump Export dump file (or files) that will be created from an existing Oracle database.
Data Pump Parameter File	Name of the Data Pump Export parameter file that you provide. If you do not specify the absolute path to the Parameter File, the workflow will look for the file in the Target Directory. If you do not specify a Parameter File, default Data Pump Export settings will be used for parameters not specified in the deployment.
Inventory Files	Comma separated list of Oracle inventory file names (with absolute paths). If not specified, set to the appropriate default value for the target server operating system. Defaults are: Solaris: <code>/var/opt/oracle/oraInst.loc</code> Linux: <code>/etc/oraInst.loc</code> Windows: <code>%ProgramFiles%\Oracle\Inventory</code>
Oracle Account	Oracle user that owns the ORACLE_HOME on the target Oracle database server. Required if an inventory file does not exist. Leave blank for Windows.
Oracle Home	The ORACLE_HOME to use if more than one home is found in the inventory file (or files).
Oracle SID	The Oracle System ID (SID) of the target database.
Target Directory	Directory where the Data Pump dump and Parameter files are to be staged on the target database server. Must be known to the Oracle Instance.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

[Export Oracle Database via Data Pump on page 48](#)

Gather Advanced Parameters for Oracle Database Export via Data Pump

Purpose

This step gathers additional parameters required to export the contents of an Oracle database to a file (or multiple files) using the Oracle Data Pump utility. Some parameters are assigned default values if they are not specified. Validation is performed in another step.

Input Parameters

Parameter Name	Default Value	Required	Description
Compression	ALL	optional	<p>Items that will be compressed in the Data Pump Export dump file set. Valid settings are ALL, NONE, DATA_ONLY, METADATA_ONLY.</p> <ul style="list-style-type: none"> • DATA_ONLY: Compress only the table row data (must also specify DATA_ONLY or ALL for the Content parameter). • METADATA_ONLY: Compress only the database object definitions (must also specify METADATA_ONLY or ALL for the Content parameter). • ALL: Compress both the table row data and the database object definitions in the dump file set (must also specify ALL for the Content parameter). • NONE: Nothing is compressed in the dump file set. <p>You must specify the same Compression setting for the export and any subsequent import operations.</p> <p>DATA_ONLY and ALL compression settings are only supported in Oracle Database Enterprise Edition version 11g. You must enable the Oracle Advanced Compression option to use these settings.</p>

Parameter Name	Default Value	Required	Description
Content	ALL	optional	<p>What to include in the Data Pump Export dump file set. Valid settings are ALL, DATA_ONLY, or METADATA_ONLY.</p> <ul style="list-style-type: none"> • DATA_ONLY: Include only table row data. Do not include database object definitions. • METADATA_ONLY: Include only database object definitions. Do not include table row data. If you specify METADATA_ONLY, any index or table statistics later imported from the dump file set will be locked after the import. • ALL: Include both table row data and database object definitions in the dump file set. <p>You must specify the same Content setting for the export and any subsequent import operations.</p>

Parameter Name	Default Value	Required	Description
Encryption Mode	<p>Default depends on the other encryption settings. Assuming that ENCRYPTION is true:</p> <ul style="list-style-type: none"> • If Encryption Password is specified, and the Oracle encryption wallet is open, default is DUAL. • If Encryption Password is specified, and the wallet is closed, default is PASSWORD. • If Encryption Password is not specified, and the wallet is open, default is TRANSPARENT. • If Encryption Password is not specified, and the wallet is closed, the Data Pump Export operation returns an error. 	optional	<p>This setting determines how the dump file set will be encrypted and how it can later be decrypted during a subsequent Data Pump Import operation. Valid values are PASSWORD, TRANSPARENT, and DUAL.</p> <ul style="list-style-type: none"> • PASSWORD: Data Pump Export uses the Encryption Password to encrypt the dump file set. You must specify the same Encryption Password to perform a subsequent import. • TRANSPARENT: The Oracle encryption wallet is used to encrypt the dump file set using the Secure Sockets Layer (SSL) protocol. The encryption wallet must also be used to decrypt the dump file set during a subsequent import. You cannot specify an Encryption Password if you specify TRANSPARENT mode. • DUAL: During a subsequent import operation, the dump file set can either be decrypted transparently using the Oracle encryption wallet, or it can be decrypted by using the same Encryption Password that was used for the export. <p>DUAL and TRANSPARENT mode are only supported in Oracle Database Enterprise Edition version 11g.</p> <div style="background-color: #e0e0e0; padding: 5px;"> <p>Note: To use DUAL or TRANSPARENT mode, you must enable Oracle Advanced Security.</p> </div>

Parameter Name	Default Value	Required	Description
Encryption Password	no default	optional	<p>Key used to ensure that any encrypted column data, metadata, or table data is re-encrypted before it is written to the dump file set. If you do not specify an Encryption Password—or specify TRANSPARENT for the Encryption Mode—data will be written to the dump files in clear text form.</p> <p>Note the following:</p> <ul style="list-style-type: none"> • If you specify an Encryption Password for the export, and the Encryption Mode is PASSWORD, you must specify the same Encryption Password for any subsequent import operations. • The Encryption Password is required when Encryption Mode is PASSWORD or DUAL. • The Encryption Password is not valid when Encryption Mode is TRANSPARENT. • If you specify an Encryption Password but do not specify the Encryption Mode, the mode defaults to PASSWORD. <p>This parameter is only supported in Oracle Database Enterprise Edition version 11g.</p>
File Size	200M	optional	<p>Maximum size (in MByte) of each dump file in the dump file set. If any file in the dump file set reaches this size, that file is closed, and Data Pump attempts to create a new file.</p> <p>Specify an integer and one of the following units: B (bytes), KB (kilobytes), MB (megabytes), GB (gigabytes), or TB (terabytes). The default unit is bytes.</p> <p>The minimum valid file size is 4 kilobytes; the maximum valid file size is 16 terabytes.</p> <p>The actual size of a dump file may be slightly smaller depending on the size of the internal blocks used.</p>

Parameter Name	Default Value	Required	Description
Full	YES	optional	Set to YES to perform a full Data Pump Export (data and metadata); set to NO to export schemas (metadata). Caution: The workflow sets the value of this parameter. Do not modify the mapping for this parameter that is defined in the workflow.
Ignorable Oracle Errors	ORA-31684,ORA-39111,ORA-39151,ORA-31685,ORA-00001,RMAN-00571,RMAN-00569,RMAN-03002,RMAN-06054	optional	Comma delimited list of Oracle errors to ignore while executing the Data Pump Export.
Metrics	YES	optional	If you specify YES, the number of objects exported and the elapsed time required for the export operation to complete are recorded in the Data Pump log file. Valid values are YES or NO.
Oracle DB User	no default	optional	Database user account (if other than sysdba) that will be used to perform the Data Pump Export. Note: For Oracle Database 11g R2, this user must have the DATAPUMP_EXP_FULL_DATABASE role, or the workflow will fail. For earlier versions, the user must have the EXP_FULL_DATABASE role.
Oracle DB User Password	/ as sysdba	optional	Password for the Oracle DB User. This is required when this user is not sysdba.

Parameter Name	Default Value	Required	Description
Server Wrapper	jython	required	Command that will be used to construct the call wrapper. The workflow uses the call wrapper to execute subsequent steps as either the OS administrative user (for example: <code>sudo su - root /opt/opsware/dma/jython.sh</code>) or the Oracle user who owns the pertinent ORACLE_HOME (for example: <code>sudo su - sysdba /opt/opsware/dma/jython.sh</code>).

Output Parameters

Parameter Name	Description
Compression	<p>Items that will be compressed in the Data Pump Export dump file set. Valid settings are ALL, NONE, DATA_ONLY, METADATA_ONLY.</p> <ul style="list-style-type: none"> • DATA_ONLY: Compress only the table row data (must also specify DATA_ONLY or ALL for the Content parameter). • METADATA_ONLY: Compress only the database object definitions (must also specify METADATA_ONLY or ALL for the Content parameter). • ALL: Compress both the table row data and the database object definitions in the dump file set (must also specify ALL for the Content parameter). • NONE: Nothing is compressed in the dump file set. <p>You must specify the same Compression setting for the export and any subsequent import operations.</p> <p>DATA_ONLY and ALL compression settings are only supported in Oracle Database Enterprise Edition version 11g. You must enable the Oracle Advanced Compression option to use these settings.</p>

Parameter Name	Description
Content	<p>What to include in the Data Pump Export dump file set. Valid settings are ALL, DATA_ONLY, or METADATA_ONLY.</p> <ul style="list-style-type: none"> • DATA_ONLY: Include only table row data. Do not include database object definitions. • METADATA_ONLY: Include only database object definitions. Do not include table row data. If you specify METADATA_ONLY, any index or table statistics later imported from the dump file set will be locked after the import. • ALL: Include both table row data and database object definitions in the dump file set. <p>You must specify the same Content setting for the export and any subsequent import operations.</p>
Encryption Mode	<p>This setting determines how the dump file set will be encrypted and how it can later be decrypted during a subsequent Data Pump Import operation. Valid values are PASSWORD, TRANSPARENT, and DUAL.</p> <ul style="list-style-type: none"> • PASSWORD: Data Pump Export uses the Encryption Password to encrypt the dump file set. You must specify the same Encryption Password to perform a subsequent import. • TRANSPARENT: The Oracle encryption wallet is used to encrypt the dump file set using the Secure Sockets Layer (SSL) protocol. The encryption wallet must also be used to decrypt the dump file set during a subsequent import. You cannot specify an Encryption Password if you specify TRANSPARENT mode. • DUAL: During a subsequent import operation, the dump file set can either be decrypted transparently using the Oracle encryption wallet, or it can be decrypted by using the same Encryption Password that was used for the export. <p>DUAL and TRANSPARENT mode are only supported in Oracle Database Enterprise Edition version 11g.</p> <div style="background-color: #f0f0f0; padding: 5px;"> <p>Note: To use DUAL or TRANSPARENT mode, you must enable Oracle Advanced Security.</p> </div>

Parameter Name	Description
Encryption Password	<p>Key used to ensure that any encrypted column data, metadata, or table data is re-encrypted before it is written to the dump file set. If you do not specify an Encryption Password—or specify TRANSPARENT for the Encryption Mode—data will be written to the dump files in clear text form.</p> <p>Note the following:</p> <ul style="list-style-type: none"> • If you specify an Encryption Password for the export, and the Encryption Mode is PASSWORD, you must specify the same Encryption Password for any subsequent import operations. • The Encryption Password is required when Encryption Mode is PASSWORD or DUAL. • The Encryption Password is not valid when Encryption Mode is TRANSPARENT. • If you specify an Encryption Password but do not specify the Encryption Mode, the mode defaults to PASSWORD. <p>This parameter is only supported in Oracle Database Enterprise Edition version 11g.</p>
File Size	<p>Maximum size (in MByte) of each dump file in the dump file set. If any file in the dump file set reaches this size, that file is closed, and Data Pump attempts to create a new file.</p> <p>Specify an integer and one of the following units: B (bytes), KB (kilobytes), MB (megabytes), GB (gigabytes), or TB (terabytes). The default unit is bytes.</p> <p>The minimum valid file size is 4 kilobytes; the maximum valid file size is 16 terabytes.</p> <p>The actual size of a dump file may be slightly smaller depending on the size of the internal blocks used.</p>
Full	<p>Set to YES to perform a full Data Pump Export (data and metadata); set to NO to export schemas (metadata).</p> <div style="background-color: #f0f0f0; padding: 5px; margin-top: 10px;"> <p>Caution: The workflow sets the value of this parameter. Do not modify the mapping for this parameter that is defined in the workflow.</p> </div>
Ignorable Oracle Errors	<p>Comma delimited list of Oracle errors to ignore while executing the Data Pump Export.</p>
Metrics	<p>If you specify YES, the number of objects exported and the elapsed time required for the export operation to complete are recorded in the Data Pump log file. Valid values are YES or NO.</p>

Parameter Name	Description
Oracle DB User	Database user account (if other than sysdba) that will be used to perform the Data Pump Export. Note: For Oracle Database 11g R2, this user must have the DATAPUMP_EXP_FULL_DATABASE role, or the workflow will fail. For earlier versions, the user must have the EXP_FULL_DATABASE role.
Oracle DB User Password	Password for the Oracle DB User. This is required when this user is not sysdba.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

[Export Oracle Database via Data Pump on page 48](#)

Validate Oracle Database Export via Data Pump

Purpose

This step validates the parameter values specified on the Deployment page. It also checks the target directory where the Data Pump Export File and Data Pump Parameter File will be staged—if this directory does not yet exist, the step creates it.

Input Parameters

Parameter Name	Default Value	Required	Description
Compression	ALL	optional	<p>Items that will be compressed in the Data Pump Export dump file set. Valid settings are ALL, NONE, DATA_ONLY, METADATA_ONLY.</p> <ul style="list-style-type: none"> • DATA_ONLY: Compress only the table row data (must also specify DATA_ONLY or ALL for the Content parameter). • METADATA_ONLY: Compress only the database object definitions (must also specify METADATA_ONLY or ALL for the Content parameter). • ALL: Compress both the table row data and the database object definitions in the dump file set (must also specify ALL for the Content parameter). • NONE: Nothing is compressed in the dump file set. <p>You must specify the same Compression setting for the export and any subsequent import operations.</p> <p>DATA_ONLY and ALL compression settings are only supported in Oracle Database Enterprise Edition version 11g. You must enable the Oracle Advanced Compression option to use these settings.</p>

Parameter Name	Default Value	Required	Description
Content	ALL	optional	<p>What to include in the Data Pump Export dump file set. Valid settings are ALL, DATA_ONLY, or METADATA_ONLY.</p> <ul style="list-style-type: none"> • DATA_ONLY: Include only table row data. Do not include database object definitions. • METADATA_ONLY: Include only database object definitions. Do not include table row data. If you specify METADATA_ONLY, any index or table statistics later imported from the dump file set will be locked after the import. • ALL: Include both table row data and database object definitions in the dump file set. <p>You must specify the same Content setting for the export and any subsequent import operations.</p>
Data Pump Export File	<i>Target Directory</i> \ <code>Oracle SID.dmp</code>	optional	Name (absolute path) of the Data Pump Export dump file (or files) that will be created from an existing Oracle database.
Data Pump Parameter File	no default	optional	Name of the Data Pump Export parameter file that you provide. If you do not specify the absolute path to the Parameter File, the workflow will look for the file in the Target Directory. If you do not specify a Parameter File, default Data Pump Export settings will be used for parameters not specified in the deployment.

Parameter Name	Default Value	Required	Description
Encryption Mode	<p>Default depends on the other encryption settings. Assuming that ENCRYPTION is true:</p> <ul style="list-style-type: none"> • If Encryption Password is specified, and the Oracle encryption wallet is open, default is DUAL. • If Encryption Password is specified, and the wallet is closed, default is PASSWORD. • If Encryption Password is not specified, and the wallet is open, default is TRANSPARENT. • If Encryption Password is not specified, and the wallet is closed, the Data Pump Export operation returns an error. 	optional	<p>This setting determines how the dump file set will be encrypted and how it can later be decrypted during a subsequent Data Pump Import operation. Valid values are PASSWORD, TRANSPARENT, and DUAL.</p> <ul style="list-style-type: none"> • PASSWORD: Data Pump Export uses the Encryption Password to encrypt the dump file set. You must specify the same Encryption Password to perform a subsequent import. • TRANSPARENT: The Oracle encryption wallet is used to encrypt the dump file set using the Secure Sockets Layer (SSL) protocol. The encryption wallet must also be used to decrypt the dump file set during a subsequent import. You cannot specify an Encryption Password if you specify TRANSPARENT mode. • DUAL: During a subsequent import operation, the dump file set can either be decrypted transparently using the Oracle encryption wallet, or it can be decrypted by using the same Encryption Password that was used for the export. <p>DUAL and TRANSPARENT mode are only supported in Oracle Database Enterprise Edition version 11g.</p> <div style="background-color: #f0f0f0; padding: 5px;"> <p>Note: To use DUAL or TRANSPARENT mode, you must enable Oracle Advanced Security.</p> </div>

Parameter Name	Default Value	Required	Description
Encryption Password	no default	optional	<p>Key used to ensure that any encrypted column data, metadata, or table data is re-encrypted before it is written to the dump file set. If you do not specify an Encryption Password—or specify TRANSPARENT for the Encryption Mode—data will be written to the dump files in clear text form.</p> <p>Note the following:</p> <ul style="list-style-type: none"> • If you specify an Encryption Password for the export, and the Encryption Mode is PASSWORD, you must specify the same Encryption Password for any subsequent import operations. • The Encryption Password is required when Encryption Mode is PASSWORD or DUAL. • The Encryption Password is not valid when Encryption Mode is TRANSPARENT. • If you specify an Encryption Password but do not specify the Encryption Mode, the mode defaults to PASSWORD. <p>This parameter is only supported in Oracle Database Enterprise Edition version 11g.</p>
File Size	200M	optional	<p>Maximum size (in MByte) of each dump file in the dump file set. If any file in the dump file set reaches this size, that file is closed, and Data Pump attempts to create a new file.</p> <p>Specify an integer and one of the following units: B (bytes), KB (kilobytes), MB (megabytes), GB (gigabytes), or TB (terabytes). The default unit is bytes.</p> <p>The minimum valid file size is 4 kilobytes; the maximum valid file size is 16 terabytes.</p> <p>The actual size of a dump file may be slightly smaller depending on the size of the internal blocks used.</p>

Parameter Name	Default Value	Required	Description
Full	YES	optional	Set to YES to perform a full Data Pump Export (data and metadata); set to NO to export schemas (metadata). Caution: The workflow sets the value of this parameter. Do not modify the mapping for this parameter that is defined in the workflow.
Ignorable Oracle Errors	ORA-31684,ORA-39111,ORA-39151,ORA-31685,ORA-00001,RMAN-00571,RMAN-00569,RMAN-03002,RMAN-06054	optional	Comma delimited list of Oracle errors to ignore while executing the Data Pump Export.
Instance Wrapper	no default	required	Command that will be used to execute subsequent steps as the Oracle user who owns the pertinent ORACLE_HOME (for example: <code>sudo su - sysdba /opt/opsware/dma/jython.sh</code>).
Metrics	YES	optional	If you specify YES, the number of objects exported and the elapsed time required for the export operation to complete are recorded in the Data Pump log file. Valid values are YES or NO.
Oracle DB User	no default	optional	Database user account (if other than sysdba) that will be used to perform the Data Pump Export. Note: For Oracle Database 11g R2, this user must have the DATAPUMP_EXP_FULL_DATABASE role, or the workflow will fail. For earlier versions, the user must have the EXP_FULL_DATABASE role.
Oracle DB User Password	/ as sysdba	optional	Password for the Oracle DB User. This is required when this user is not sysdba.

Parameter Name	Default Value	Required	Description
Oracle Home	no default	optional	The ORACLE_HOME to use if more than one home is found in the inventory file (or files).
Oracle SID	no default	required	The Oracle System ID (SID) of the target database.
Target Directory	no default	required	Directory where the Data Pump Export dump file set and the Parameter file will be staged on the target database server. This directory must be known to the Oracle instance.

Output Parameters

Parameter Name	Description
Compression	<p>Items that will be compressed in the Data Pump Export dump file set. Valid settings are ALL, NONE, DATA_ONLY, METADATA_ONLY.</p> <ul style="list-style-type: none"> • DATA_ONLY: Compress only the table row data (must also specify DATA_ONLY or ALL for the Content parameter). • METADATA_ONLY: Compress only the database object definitions (must also specify METADATA_ONLY or ALL for the Content parameter). • ALL: Compress both the table row data and the database object definitions in the dump file set (must also specify ALL for the Content parameter). • NONE: Nothing is compressed in the dump file set. <p>You must specify the same Compression setting for the export and any subsequent import operations.</p> <p>DATA_ONLY and ALL compression settings are only supported in Oracle Database Enterprise Edition version 11g. You must enable the Oracle Advanced Compression option to use these settings.</p>

Parameter Name	Description
Content	<p>What to include in the Data Pump Export dump file set. Valid settings are ALL, DATA_ONLY, or METADATA_ONLY.</p> <ul style="list-style-type: none"> • DATA_ONLY: Include only table row data. Do not include database object definitions. • METADATA_ONLY: Include only database object definitions. Do not include table row data. If you specify METADATA_ONLY, any index or table statistics later imported from the dump file set will be locked after the import. • ALL: Include both table row data and database object definitions in the dump file set. <p>You must specify the same Content setting for the export and any subsequent import operations.</p>
Data Pump Export File	Name (absolute path) of the Data Pump Export dump file (or files) that will be created from an existing Oracle database.
Data Pump Parameter File	Name of the Data Pump Export parameter file that you provide. If you do not specify the absolute path to the Parameter File, the workflow will look for the file in the Target Directory. If you do not specify a Parameter File, default Data Pump Export settings will be used for parameters not specified in the deployment.
Do Not Remove List	List of directories that should NOT be removed from the target server after the Data Pump Export operation is completed.
Downloaded Files	Comma-separated list of files that will be downloaded from the HP DMA server to the target server prior to the Data Pump Export operation. The file paths are the absolute paths after the download (they include the Target Directory name).

Parameter Name	Description
Encryption Mode	<p>This setting determines how the dump file set will be encrypted and how it can later be decrypted during a subsequent Data Pump Import operation. Valid values are PASSWORD, TRANSPARENT, and DUAL.</p> <ul style="list-style-type: none"> • PASSWORD: Data Pump Export uses the Encryption Password to encrypt the dump file set. You must specify the same Encryption Password to perform a subsequent import. • TRANSPARENT: The Oracle encryption wallet is used to encrypt the dump file set using the Secure Sockets Layer (SSL) protocol. The encryption wallet must also be used to decrypt the dump file set during a subsequent import. You cannot specify an Encryption Password if you specify TRANSPARENT mode. • DUAL: During a subsequent import operation, the dump file set can either be decrypted transparently using the Oracle encryption wallet, or it can be decrypted by using the same Encryption Password that was used for the export. <p>DUAL and TRANSPARENT mode are only supported in Oracle Database Enterprise Edition version 11g.</p> <div style="background-color: #f0f0f0; padding: 5px;"> <p>Note: To use DUAL or TRANSPARENT mode, you must enable Oracle Advanced Security.</p> </div>
Encryption Password	<p>Key used to ensure that any encrypted column data, metadata, or table data is re-encrypted before it is written to the dump file set. If you do not specify an Encryption Password—or specify TRANSPARENT for the Encryption Mode—data will be written to the dump files in clear text form.</p> <p>Note the following:</p> <ul style="list-style-type: none"> • If you specify an Encryption Password for the export, and the Encryption Mode is PASSWORD, you must specify the same Encryption Password for any subsequent import operations. • The Encryption Password is required when Encryption Mode is PASSWORD or DUAL. • The Encryption Password is not valid when Encryption Mode is TRANSPARENT. • If you specify an Encryption Password but do not specify the Encryption Mode, the mode defaults to PASSWORD. <p>This parameter is only supported in Oracle Database Enterprise Edition version 11g.</p>

Parameter Name	Description
File List	Comma-separated list of files that will be downloaded from the HP DMA server to the target server prior to the Data Pump Export operation. The file paths are the original absolute paths on the HP DMA server.
File Size	<p>Maximum size (in MByte) of each dump file in the dump file set. If any file in the dump file set reaches this size, that file is closed, and Data Pump attempts to create a new file.</p> <p>Specify an integer and one of the following units: B (bytes), KB (kilobytes), MB (megabytes), GB (gigabytes), or TB (terabytes). The default unit is bytes.</p> <p>The minimum valid file size is 4 kilobytes; the maximum valid file size is 16 terabytes.</p> <p>The actual size of a dump file may be slightly smaller depending on the size of the internal blocks used.</p>
Full	<p>Set to YES to perform a full Data Pump Export (data and metadata); set to NO to export schemas (metadata).</p> <p>Caution: The workflow sets the value of this parameter. Do not modify the mapping for this parameter that is defined in the workflow.</p>
Ignorable Oracle Errors	Comma delimited list of Oracle errors to ignore while executing the Data Pump Export.
Metrics	If you specify YES, the number of objects exported and the elapsed time required for the export operation to complete are recorded in the Data Pump log file. Valid values are YES or NO.
Oracle DB User	<p>Database user account (if other than sysdba) that will be used to perform the Data Pump Export.</p> <p>Note: For Oracle Database 11g R2, this user must have the DATAPUMP_EXP_FULL_DATABASE role, or the workflow will fail. For earlier versions, the user must have the EXP_FULL_DATABASE role.</p>
Oracle DB User Password	Password for the Oracle DB User. This is required when this user is not sysdba.
Oracle Home	The ORACLE_HOME to use if more than one home is found in the inventory file (or files).
Oracle SID	The Oracle System ID (SID) of the target database.

Parameter Name	Description
Target Directory	Directory where the Data Pump Export dump file set and the Parameter file will be staged on the target database server. This directory must be known to the Oracle instance.
Temporary File Location	The location where all temporary output files will be placed. This directory will be removed at the completion of the workflow.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

- [Export Oracle Database via Data Pump on page 48](#)
- [Export and Refresh Oracle Database via Data Pump on page 64](#)

Change File Ownership

Purpose

This step...

Input Parameters

Parameter Name	Default Value	Required	Description
Call Wrapper	no default	required	*Required: Jython call wrapper required to run as the root user.
File List	no default	required	*Required: List of files to change ownership.
New Group	no default	optional	Optional: Name of the group for all files to be owned by.
New User	no default	optional	Optional: Name of the user for all files to be owned by.
_TARGET_IDENTIFIER_	no default	optional	*Ignore: DMA system parameter for use in SA 9.11 and later. Displayed, but ignored in earlier releases.

Output Parameters

This step has no output parameters.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

- Workflow 1
- Workflow 2
- Workflow 3

Validate OS Prerequisites for Oracle Export via Data Pump

Purpose

This step determines whether the target server operating system (OS) and target Oracle Database instance are supported by HP DMA. A warning message is displayed if the server OS or Oracle Database version is not supported. See the *HP Database and Middleware Automation Solution Packs Support Matrix* for a list of specific platforms supported (see [Additional Resources on page 24](#)).

Input Parameters

Parameter Name	Default Value	Required	Description
Instance Wrapper	no default	required	Command that will be used to execute subsequent steps as the Oracle user who owns the pertinent ORACLE_HOME (for example: <code>sudo su - sysdba /opt/opsware/dma/jython.sh</code>).
Oracle Home	no default	optional	The ORACLE_HOME to use if more than one home is found in the inventory file (or files).
Oracle Version	no default	optional	Specific version of the Oracle Database instance where you will perform the Data Pump operation. Valid values are 10.2 and later.

Output Parameters

This step has no output parameters.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

- [Export Oracle Database via Data Pump on page 48](#)
- [Export and Refresh Oracle Database via Data Pump on page 64](#)

Update Parameters for Oracle Database Export via Data Pump

Purpose

This step checks the values of the Data Pump Export parameters to ensure that valid values have been specified. It also updates any required values that are missing. It then updates (or creates) the Data Pump parameter file that the workflow will use to perform the export operation. It also creates the log file for the Data Pump Export operation.

Input Parameters

Parameter Name	Default Value	Required	Description
Compression	ALL	optional	<p>Items that will be compressed in the Data Pump Export dump file set. Valid settings are ALL, NONE, DATA_ONLY, METADATA_ONLY.</p> <ul style="list-style-type: none"> • DATA_ONLY: Compress only the table row data (must also specify DATA_ONLY or ALL for the Content parameter). • METADATA_ONLY: Compress only the database object definitions (must also specify METADATA_ONLY or ALL for the Content parameter). • ALL: Compress both the table row data and the database object definitions in the dump file set (must also specify ALL for the Content parameter). • NONE: Nothing is compressed in the dump file set. <p>You must specify the same Compression setting for the export and any subsequent import operations.</p> <p>DATA_ONLY and ALL compression settings are only supported in Oracle Database Enterprise Edition version 11g. You must enable the Oracle Advanced Compression option to use these settings.</p>

Parameter Name	Default Value	Required	Description
Content	ALL	optional	<p>What to include in the Data Pump Export dump file set. Valid settings are ALL, DATA_ONLY, or METADATA_ONLY.</p> <ul style="list-style-type: none"> • DATA_ONLY: Include only table row data. Do not include database object definitions. • METADATA_ONLY: Include only database object definitions. Do not include table row data. If you specify METADATA_ONLY, any index or table statistics later imported from the dump file set will be locked after the import. • ALL: Include both table row data and database object definitions in the dump file set. <p>You must specify the same Content setting for the export and any subsequent import operations.</p>
Data Pump Export File	<i>Target Directory</i> \ <code>Oracle SID.dmp</code>	optional	Name (absolute path) of the Data Pump Export dump file (or files) that will be created from an existing Oracle database.
Data Pump Parameter File	no default	optional	Name of the Data Pump Export parameter file that you provide. If you do not specify the absolute path to the Parameter File, the workflow will look for the file in the Target Directory. If you do not specify a Parameter File, default Data Pump Export settings will be used for parameters not specified in the deployment.

Parameter Name	Default Value	Required	Description
Defaulted Parameters	no default	optional	<p>Note: The following information pertains only to the Export and Refresh Oracle Database via Data Pump on page 64 workflow.</p> <p>The Defaulted Parameters list ensures that the following order of precedence is honored when parameter values are specified:</p> <ol style="list-style-type: none"> 1. Specified in a parameter file 2. Specified in the deployment 3. Defaulted <p>By default, the list of Default Parameters is generated automatically by the workflow.</p> <p>However, if you unmap one or more of the following parameters in the workflow and specify their values in the deployment (or at run-time), you must tell the workflow which of the other parameters should be defaulted:</p> <ul style="list-style-type: none"> • COMPRESSION • CONTENT • FILESIZE • FULL • METRICS <p>For example: If you unmap COMPRESSION and specify its value in the deployment, you must also unmap Defaulted Parameters and specify CONTENT, FILESIZE, FULL, METRICS if these parameters are not specified in your parameter file.</p>

Parameter Name	Default Value	Required	Description
Encryption Mode	<p>Default depends on the other encryption settings. Assuming that ENCRYPTION is true:</p> <ul style="list-style-type: none"> • If Encryption Password is specified, and the Oracle encryption wallet is open, default is DUAL. • If Encryption Password is specified, and the wallet is closed, default is PASSWORD. • If Encryption Password is not specified, and the wallet is open, default is TRANSPARENT. • If Encryption Password is not specified, and the wallet is closed, the Data Pump Export operation returns an error. 	optional	<p>This setting determines how the dump file set will be encrypted and how it can later be decrypted during a subsequent Data Pump Import operation. Valid values are PASSWORD, TRANSPARENT, and DUAL.</p> <ul style="list-style-type: none"> • PASSWORD: Data Pump Export uses the Encryption Password to encrypt the dump file set. You must specify the same Encryption Password to perform a subsequent import. • TRANSPARENT: The Oracle encryption wallet is used to encrypt the dump file set using the Secure Sockets Layer (SSL) protocol. The encryption wallet must also be used to decrypt the dump file set during a subsequent import. You cannot specify an Encryption Password if you specify TRANSPARENT mode. • DUAL: During a subsequent import operation, the dump file set can either be decrypted transparently using the Oracle encryption wallet, or it can be decrypted by using the same Encryption Password that was used for the export. <p>DUAL and TRANSPARENT mode are only supported in Oracle Database Enterprise Edition version 11g.</p> <div style="background-color: #f0f0f0; padding: 5px;"> <p>Note: To use DUAL or TRANSPARENT mode, you must enable Oracle Advanced Security.</p> </div>

Parameter Name	Default Value	Required	Description
Encryption Password	no default	optional	<p>Key used to ensure that any encrypted column data, metadata, or table data is re-encrypted before it is written to the dump file set. If you do not specify an Encryption Password—or specify TRANSPARENT for the Encryption Mode—data will be written to the dump files in clear text form.</p> <p>Note the following:</p> <ul style="list-style-type: none"> • If you specify an Encryption Password for the export, and the Encryption Mode is PASSWORD, you must specify the same Encryption Password for any subsequent import operations. • The Encryption Password is required when Encryption Mode is PASSWORD or DUAL. • The Encryption Password is not valid when Encryption Mode is TRANSPARENT. • If you specify an Encryption Password but do not specify the Encryption Mode, the mode defaults to PASSWORD. <p>This parameter is only supported in Oracle Database Enterprise Edition version 11g.</p>
File Size	200M	optional	<p>Maximum size (in MByte) of each dump file in the dump file set. If any file in the dump file set reaches this size, that file is closed, and Data Pump attempts to create a new file.</p> <p>Specify an integer and one of the following units: B (bytes), KB (kilobytes), MB (megabytes), GB (gigabytes), or TB (terabytes). The default unit is bytes.</p> <p>The minimum valid file size is 4 kilobytes; the maximum valid file size is 16 terabytes.</p> <p>The actual size of a dump file may be slightly smaller depending on the size of the internal blocks used.</p>

Parameter Name	Default Value	Required	Description
Full	YES	optional	Set to YES to perform a full Data Pump Export (data and metadata); set to NO to export schemas (metadata). Caution: The workflow sets the value of this parameter. Do not modify the mapping for this parameter that is defined in the workflow.
Instance Wrapper	no default	required	Command that will be used to execute subsequent steps as the Oracle user who owns the pertinent ORACLE_HOME (for example: <code>sudo su - sysdba /opt/opsware/dma/jython.sh</code>).
Metrics	YES	optional	If you specify YES, the number of objects exported and the elapsed time required for the export operation to complete are recorded in the Data Pump log file. Valid values are YES or NO.
Oracle DB User	no default	optional	Database user account (if other than sysdba) that will be used to perform the Data Pump Export. Note: For Oracle Database 11g R2, this user must have the DATAPUMP_EXP_FULL_DATABASE role, or the workflow will fail. For earlier versions, the user must have the EXP_FULL_DATABASE role.
Oracle DB User Password	/ as sysdba	optional	Password for the Oracle DB User. This is required when this user is not sysdba.
Oracle Home	no default	optional	The ORACLE_HOME to use if more than one home is found in the inventory file (or files).
Oracle SID	no default	required	The Oracle System ID (SID) of the target database.
Target Location	no default	required	Directory where the Data Pump Export dump file set and the Parameter file will be staged on the target database server. This directory must be known to the Oracle instance.

Output Parameters

Parameter Name	Description
Data Pump Parameter File	Name of the Data Pump Export parameter file that is updated (or created) by this step. If you do not specify a Parameter File, default Data Pump Export settings will be used for parameters not specified in the deployment.
Dump File Name	Name (absolute path) of the Data Pump Export dump file (or files) that will be created from an existing Oracle database.
Import Log File	Name of the log file for the Data Pump Export operation. If you specified a parameter file, and you specified the log file in the parameter file, the Import Log File is the log file name that you specified. If you did not specify a parameter file—or you specified a parameter file but did not specify the log file in the parameter file—the Import Log File name is constructed as follows: <code>DataPumpImp_TimeStamp.log</code> , where <i>TimeStamp</i> is the time that the log file is created.
Time Stamp	Date and time when the import log file is created in in <code>%Y%m%d%H%M%S</code> format. By default, this time stamp is included in the Import Log file name.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

- [Export Oracle Database via Data Pump on page 48](#)
- [Export and Refresh Oracle Database via Data Pump on page 64](#)

Execute Oracle Export via Data Pump

Purpose

This step verifies access to the parameter file and executes the Data Pump Export utility.

Input Parameters

Parameter Name	Default Value	Required	Description
Ignorable Oracle Errors	ORA-31684,ORA-39111,ORA-39151,ORA-31685,ORA-00001,RMAN-00571,RMAN-00569,RMAN-03002,RMAN-06054	optional	Comma delimited list of Oracle errors to ignore while executing the Data Pump Export.
Instance Wrapper	no default	required	Command that will be used to execute subsequent steps as the Oracle user who owns the pertinent ORACLE_HOME (for example: <code>sudo su - sysdba /opt/opsware/dma/jython.sh</code>).
Log File Name	no default	required	Name of the log file for the Data Pump Export operation.
Oracle Home	no default	optional	The ORACLE_HOME to use if more than one home is found in the inventory file (or files).
Oracle SID	no default	required	The Oracle System ID (SID) of the target database.
Parameter File Name	no default	required	Full path to file containing parameter information for execution of the Data Pump Export utility.
Temporary File Location	no default	required	The location where all temporary output files will be placed. This directory will be removed at the completion of the workflow.

Output Parameters

This step has no output parameters.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

- [Export Oracle Database via Data Pump on page 48](#)
- [Export and Refresh Oracle Database via Data Pump on page 64](#)

Verify Oracle Database or Schema Export

Purpose

This step verifies that the database export was successful. It specifically checks the following things:

- The workflow can connect to the database.
- No blocks in the database are corrupted.
- No database files are in backup mode.
- Temporary tablespace exists.
- The Data Pump Export file exists.

Input Parameters

Parameter Name	Default Value	Required	Description
Data Pump Export File	<i>Target Directory</i> \ <code>Oracle SID.dmp</code>	optional	Name (absolute path) of the Data Pump Export dump file (or files) that will be created from an existing Oracle database.
Instance Wrapper	no default	required	Command that will be used to execute subsequent steps as the Oracle user who owns the pertinent ORACLE_HOME (for example: <code>sudo su - sysdba /opt/opsware/dma/jython.sh</code>).
Oracle Home	no default	optional	The ORACLE_HOME to use if more than one home is found in the inventory file (or files).
Oracle SID	no default	required	The Oracle System ID (SID) of the target database.
Time Stamp	no default	optional	Date and time when the import log file is created in in %Y%m%d%H%M%S format. By default, this time stamp is included in the Import Log file name. Caution: This parameter is derived by the workflow. Under most circumstances, you should not change its mapping or its value.

Output Parameters

Parameter Name	Description
Dump File Name	Name (absolute path) of the Data Pump Export dump file (or files) that was created from an existing Oracle database.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

- [Export Oracle Database via Data Pump on page 48](#)
- [Export Oracle Schema via Data Pump on page 75](#)
- [Export and Refresh Oracle Database via Data Pump on page 64](#)
- [Export and Refresh Oracle Schema via Data Pump on page 93](#)

Gather Parameters for Oracle Database Refresh via Data Pump

Purpose

This step gathers the parameters required to refresh the contents of an Oracle database from a set of *.dmp files previously archived using Data Pump Export. This step does not perform any type of validation on the parameter values. That is addressed later in the workflow.

Input Parameters

Parameter Name	Default Value	Required	Description
Data Pump Export Files	no default	required	Comma-separated list of Data Pump Export dump files included in the dump file set that will be used for this Data Pump Import. If only one file is specified, no comma is required.
Data Pump Parameter File	no default	optional	Name of the Data Pump Import parameter file that you provide. If you do not specify the absolute path to the Parameter File, the workflow will look for the file in the Target Directory. If you do not specify a Parameter File, default Data Pump Import settings will be used for parameters not specified in the deployment.
Inventory Files	see description	optional	Comma separated list of Oracle inventory file names (with absolute paths). If not specified, set to the appropriate default value for the target server operating system. Defaults are: Solaris: /var/opt/oracle/oraInst.loc Linux: /etc/oraInst.loc Windows: %ProgramFiles%\Oracle\Inventory
Oracle Account	no default	optional	Oracle user that owns the ORACLE_HOME on the target Oracle database server. Required if an inventory file does not exist. Leave blank for Windows.
Oracle Home	no default	optional	The ORACLE_HOME to use if more than one home is found in the inventory file (or files).
Oracle SID	no default	required	The Oracle System ID (SID) of the target database.

Parameter Name	Default Value	Required	Description
Server Wrapper	jython	required	Command that will be used to construct the call wrapper. The workflow uses the call wrapper to execute subsequent steps as either the OS administrative user (for example: <code>sudo su - root /opt/opsware/dma/jython.sh</code>) or the Oracle user who owns the pertinent ORACLE_HOME (for example: <code>sudo su - sysdba /opt/opsware/dma/jython.sh</code>).
Target Directory	no default	required	Directory where the Data Pump Export dump file set and the Parameter file will be staged on the target database server. This directory must be known to the Oracle instance.

Output Parameters

Parameter Name	Description
Data Pump Export Files	Comma-separated list of Data Pump Export dump files included in the dump file set that will be used for this Data Pump Import. If only one file is specified, no comma is required.
Data Pump Parameter File	Parameter File used with the Data Pump Import Utility. Default will be generated if none provided.
Inventory Files	Comma separated list of Oracle inventory file names (with absolute paths). If not specified, set to the appropriate default value for the target server operating system. Defaults are: Solaris: <code>/var/opt/oracle/oraInst.loc</code> Linux: <code>/etc/oraInst.loc</code> Windows: <code>%ProgramFiles%\Oracle\Inventory</code>
Oracle Account	Oracle user that owns the ORACLE_HOME on the target Oracle database server. Required if an inventory file does not exist. Leave blank for Windows.
Oracle Home	The ORACLE_HOME to use if more than one home is found in the inventory file (or files).
Oracle SID	The Oracle System ID (SID) of the target database.
Target Directory	Directory where the Data Pump Export dump file set and the Parameter file will be staged on the target database server. This directory must be known to the Oracle instance.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

[Refresh Oracle Database via Data Pump on page 56](#)

Gather Advanced Parameters for Oracle Database Refresh via Data Pump

Purpose

This step gathers additional parameters required to import the contents of a previously created Oracle Data Pump Export file (or multiple files). Some parameters are assigned default values if they are not specified. Validation is performed in another step.

This step collects a list of errors that will be ignored during the Data Pump Import database refresh operation. These errors are passed on to the Execute Oracle Refresh via Data Pump step, which will ignore each specified error if it is encountered.

This step also enables you to specify a verification SQL script that the workflow will use after the restore operation is completed. If you specify a verification script, you must also provide a file that contains the results that you expect to see.

Input Parameters

Parameter Name	Default Value	Required	Description
Content	ALL	optional	<p>What is included in the Data Pump dump file set that will be imported. Valid settings are ALL, DATA_ONLY, or METADATA_ONLY.</p> <ul style="list-style-type: none"> DATA_ONLY: Include only table row data. Do not include database object definitions. METADATA_ONLY: Include only database object definitions. Do not include table row data. If you specify METADATA_ONLY, any index or table statistics later imported from the dump file set will be locked after the import. ALL: Include both table row data and database object definitions in the dump file set. <p>You must specify the same Content setting for the export and any subsequent import operations.</p>

Parameter Name	Default Value	Required	Description
Encryption Password	no default	optional	<p>This setting determines how the dump file set that will be imported should be decrypted. Valid values are PASSWORD, TRANSPARENT, and DUAL.</p> <ul style="list-style-type: none"> PASSWORD: Data Pump Export used the Encryption Password to encrypt the dump file set. You must specify the same Encryption Password to perform a subsequent import. TRANSPARENT: The Oracle encryption wallet was used to encrypt the dump file set using the Secure Sockets Layer (SSL) protocol. The encryption wallet must also be used to decrypt the dump file set during the import. You cannot specify an Encryption Password if you specify TRANSPARENT mode. DUAL: The dump file set can either be decrypted transparently using the Oracle encryption wallet, or it can be decrypted by using the same Encryption Password that was used for the export. <p>DUAL and TRANSPARENT mode are only supported in Oracle Database Enterprise Edition version 11g.</p> <p>Note: To use DUAL or TRANSPARENT mode, you must enable Oracle Advanced Security.</p>
Ignorable Oracle Errors	ORA-31684,ORA-39111,ORA-39151,ORA-31685,ORA-00001	optional	Comma delimited list of Oracle errors to ignore while executing the Data Pump Import.
Oracle DB User	no default	optional	<p>Database user account (if other than sysdba) that will be used to perform the Data Pump Import.</p> <p>Note: For Oracle Database 11g R2, this user must have the DATAPUMP_IMP_FULL_DATABASE role, or the workflow will fail. For earlier versions, the user must have the IMP_FULL_DATABASE role.</p>
Oracle DB User Password	sysdba	required	Required only if the DB User Password is not '/ as sysdba'.

Parameter Name	Default Value	Required	Description
Server Wrapper	jython	required	Command that will be used to construct the call wrapper. The workflow uses the call wrapper to execute subsequent steps as either the OS administrative user (for example: <code>sudo su - root /opt/opsware/dma/jython.sh</code>) or the Oracle user who owns the pertinent ORACLE_HOME (for example: <code>sudo su - sysdba /opt/opsware/dma/jython.sh</code>).
Table Exist Action	SKIP	optional	<p>This parameter tells the Data Pump Import utility what to do if a table that it is attempting to import already exists in the database. Valid values are:</p> <ul style="list-style-type: none"> • SKIP leaves the table unchanged (no rows are imported from the dump file). • APPEND adds the rows from the dump file and leaves the existing rows unchanged. • TRUNCATE deletes the existing rows from the table and adds the rows from the dump file. • REPLACE removes the existing table and recreates it from the dump file. <p>Note: SKIP and REPLACE are not valid options if Content is DATA_ONLY.</p>
Update System Tables	FALSE	optional	<p>Determines whether the system tables are updated during the Data Pump Import. If TRUE, all system tables will be included in the import. If FALSE, the SYS and SYSMGR tables are excluded from the import. This is useful, because importing these tables often generates numerous errors, each of which must otherwise be added to the Ignorable Oracle Errors list.</p> <p>You can explicitly specify a list of tables to be excluded from the import by using the Schema parameter in the Update Parameters for Oracle Database Refresh via Data Pump on page 261 step.</p>

Parameter Name	Default Value	Required	Description
Verification Result	no default	optional	<p>Name (with absolute path) of a text file containing the expected results of the SQL queries included in the Verification SQL Script.</p> <p>This parameter is required if you provide a Verification SQL Script. Be sure to run the Verification SQL Script on the SOURCE database before running this workflow, and copy the results into this file.</p> <p>You must provide this file in a location where the workflow can access it.</p>
Verification SQL Script	no default	optional	<p>Name (with absolute path) of a text file containing a SQL script that verifies the integrity of the database.</p> <p>You must provide this file in a location where the workflow can access it. The expected results of the queries included in this script must be provided in the Verification Result file.</p>

Output Parameters

Parameter Name	Description
Content	<p>What is included in the Data Pump dump file set that will be imported. Valid settings are ALL, DATA_ONLY, or METADATA_ONLY.</p> <ul style="list-style-type: none"> • DATA_ONLY: Include only table row data. Do not include database object definitions. • METADATA_ONLY: Include only database object definitions. Do not include table row data. If you specify METADATA_ONLY, any index or table statistics later imported from the dump file set will be locked after the import. • ALL: Include both table row data and database object definitions in the dump file set. <p>You must specify the same Content setting for the export and any subsequent import operations.</p>

Parameter Name	Description
Encryption Password	<p>This setting determines how the dump file set that will be imported should be decrypted. Valid values are PASSWORD, TRANSPARENT, and DUAL.</p> <ul style="list-style-type: none"> • PASSWORD: Data Pump Export used the Encryption Password to encrypt the dump file set. You must specify the same Encryption Password to perform a subsequent import. • TRANSPARENT: The Oracle encryption wallet was used to encrypt the dump file set using the Secure Sockets Layer (SSL) protocol. The encryption wallet must also be used to decrypt the dump file set during the import. You cannot specify an Encryption Password if you specify TRANSPARENT mode. • DUAL: The dump file set can either be decrypted transparently using the Oracle encryption wallet, or it can be decrypted by using the same Encryption Password that was used for the export. <p>DUAL and TRANSPARENT mode are only supported in Oracle Database Enterprise Edition version 11g.</p> <p>Note: To use DUAL or TRANSPARENT mode, you must enable Oracle Advanced Security.</p>
Ignorable Oracle Errors	Comma delimited list of Oracle errors to ignore while executing the Data Pump Import.
Oracle DB User	<p>Database user account (if other than sysdba) that will be used to perform the Data Pump Import.</p> <p>Note: For Oracle Database 11g R2, this user must have the DATAPUMP_IMP_FULL_DATABASE role, or the workflow will fail. For earlier versions, the user must have the IMP_FULL_DATABASE role.</p>
Oracle DB User Password	Required only if the DB User Password is not '/' as sysdba'.

Parameter Name	Description
Table Exist Action	<p>This parameter tells the Data Pump Import utility what to do if a table that it is attempting to import already exists in the database. Valid values are:</p> <ul style="list-style-type: none"> • SKIP leaves the table unchanged (no rows are imported from the dump file). • APPEND adds the rows from the dump file and leaves the existing rows unchanged. • TRUNCATE deletes the existing rows from the table and adds the rows from the dump file. • REPLACE removes the existing table and recreates it from the dump file. <p>Note: SKIP and REPLACE are not valid options if Content is DATA_ONLY.</p>
Update System Tables	<p>Determines whether the system tables are updated during the Data Pump Import. If TRUE, all system tables will be included in the import. If FALSE, the SYS and SYSMGR tables are excluded from the import. This is useful, because importing these tables often generates numerous errors, each of which must otherwise be added to the Ignorable Oracle Errors list.</p> <p>You can explicitly specify a list of tables to be excluded from the import by using the Schema parameter in the Update Parameters for Oracle Database Refresh via Data Pump on page 261 step.</p>
Verification Result	<p>Name (with absolute path) of a text file containing the expected results of the SQL queries included in the Verification SQL Script.</p> <p>This parameter is required if you provide a Verification SQL Script. Be sure to run the Verification SQL Script on the SOURCE database before running this workflow, and copy the results into this file.</p> <p>You must provide this file in a location where the workflow can access it.</p>
Verification SQL Script	<p>Name (with absolute path) of a text file containing a SQL script that verifies the integrity of the database. You must provide this file in a location where the workflow can access it. The expected results of the queries included in this script must be provided in the Verification Result file.</p>

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

[Refresh Oracle Database via Data Pump on page 56](#)

Validate Oracle Database Refresh via Data Pump

Purpose

This step validates the parameter values specified on the Deployment page. It also checks the target directory where the Data Pump Export File and Data Pump Parameter File will be staged—if this directory does not yet exist, the step creates it.

Input Parameters

Parameter Name	Default Value	Required	Description
Content	ALL	optional	<p>What is included in the Data Pump dump file set that will be imported. Valid settings are ALL, DATA_ONLY, or METADATA_ONLY.</p> <ul style="list-style-type: none"> DATA_ONLY: Include only table row data. Do not include database object definitions. METADATA_ONLY: Include only database object definitions. Do not include table row data. If you specify METADATA_ONLY, any index or table statistics later imported from the dump file set will be locked after the import. ALL: Include both table row data and database object definitions in the dump file set. <p>You must specify the same Content setting for the export and any subsequent import operations.</p>
Data Pump Export Files	no default	required	Comma-separated list of Data Pump Export dump files included in the dump file set that will be used for this Data Pump Import. If only one file is specified, no comma is required.
Data Pump Parameter File	no default	optional	Name of the Data Pump Import parameter file that you provide. If you do not specify the absolute path to the Parameter File, the workflow will look for the file in the Target Directory. If you do not specify a Parameter File, default Data Pump Import settings will be used for parameters not specified in the deployment.

Parameter Name	Default Value	Required	Description
Encryption Password	no default	optional	<p>This setting determines how the dump file set that will be imported should be decrypted. Valid values are PASSWORD, TRANSPARENT, and DUAL.</p> <ul style="list-style-type: none"> • PASSWORD: Data Pump Export used the Encryption Password to encrypt the dump file set. You must specify the same Encryption Password to perform a subsequent import. • TRANSPARENT: The Oracle encryption wallet was used to encrypt the dump file set using the Secure Sockets Layer (SSL) protocol. The encryption wallet must also be used to decrypt the dump file set during the import. You cannot specify an Encryption Password if you specify TRANSPARENT mode. • DUAL: The dump file set can either be decrypted transparently using the Oracle encryption wallet, or it can be decrypted by using the same Encryption Password that was used for the export. <p>DUAL and TRANSPARENT mode are only supported in Oracle Database Enterprise Edition version 11g.</p> <p>Note: To use DUAL or TRANSPARENT mode, you must enable Oracle Advanced Security.</p>
Ignorable Oracle Errors	ORA-31684,ORA-39111,ORA-39151,ORA-31685,ORA-00001	optional	Comma delimited list of Oracle errors to ignore while executing the Data Pump Import.
Instance Wrapper	no default	required	Command that will be used to execute subsequent steps as the Oracle user who owns the pertinent ORACLE_HOME (for example: <code>sudo su - sysdba /opt/opsware/dma/jython.sh</code>).

Parameter Name	Default Value	Required	Description
Oracle DB User	no default	optional	Database user account (if other than sysdba) that will be used to perform the Data Pump Import. Note: For Oracle Database 11g R2, this user must have the DATAPUMP_IMP_FULL_DATABASE role, or the workflow will fail. For earlier versions, the user must have the IMP_FULL_DATABASE role.
Oracle DB User Password	sysdba	required	Required only if the DB User Password is not '/' as sysdba'.
Oracle Home	no default	optional	The ORACLE_HOME to use if more than one home is found in the inventory file (or files).
Oracle SID	no default	required	The Oracle System ID (SID) of the target database.
Table Exist Action	SKIP	optional	This parameter tells the Data Pump Import utility what to do if a table that it is attempting to import already exists in the database. Valid values are: <ul style="list-style-type: none"> • SKIP leaves the table unchanged (no rows are imported from the dump file). • APPEND adds the rows from the dump file and leaves the existing rows unchanged. • TRUNCATE deletes the existing rows from the table and adds the rows from the dump file. • REPLACE removes the existing table and recreates it from the dump file. Note: SKIP and REPLACE are not valid options if Content is DATA_ONLY.
Target Directory	no default	required	Directory where the Data Pump Export dump file set and the Parameter file will be staged on the target database server. This directory must be known to the Oracle instance.

Parameter Name	Default Value	Required	Description
Update System Tables	FALSE	optional	<p>Determines whether the system tables are updated during the Data Pump Import. If TRUE, all system tables will be included in the import. If FALSE, the SYS and SYSMGR tables are excluded from the import. This is useful, because importing these tables often generates numerous errors, each of which must otherwise be added to the Ignorable Oracle Errors list.</p> <p>You can explicitly specify a list of tables to be excluded from the import by using the Schema parameter in the Update Parameters for Oracle Database Refresh via Data Pump on page 261 step.</p>
Verification Result	no default	optional	<p>Name (with absolute path) of a text file containing the expected results of the SQL queries included in the Verification SQL Script.</p> <p>This parameter is required if you provide a Verification SQL Script. Be sure to run the Verification SQL Script on the SOURCE database before running this workflow, and copy the results into this file.</p> <p>You must provide this file in a location where the workflow can access it.</p>
Verification SQL Script	no default	optional	<p>Name (with absolute path) of a text file containing a SQL script that verifies the integrity of the database.</p> <p>You must provide this file in a location where the workflow can access it. The expected results of the queries included in this script must be provided in the Verification Result file.</p>

Output Parameters

Parameter Name	Description
Content	<p>What is included in the Data Pump dump file set that will be imported. Valid settings are ALL, DATA_ONLY, or METADATA_ONLY.</p> <ul style="list-style-type: none"> • DATA_ONLY: Include only table row data. Do not include database object definitions. • METADATA_ONLY: Include only database object definitions. Do not include table row data. If you specify METADATA_ONLY, any index or table statistics later imported from the dump file set will be locked after the import. • ALL: Include both table row data and database object definitions in the dump file set. <p>You must specify the same Content setting for the export and any subsequent import operations.</p>
Data Pump Export Files	Comma-separated list of Data Pump Export dump files included in the dump file set that will be used for this Data Pump Import. If only one file is specified, no comma is required.
Data Pump Parameter File	Name of the Data Pump Import parameter file that you provide. If you do not specify the absolute path to the Parameter File, the workflow will look for the file in the Target Directory. If you do not specify a Parameter File, default Data Pump Import settings will be used for parameters not specified in the deployment.
Do Not Remove List	List of directories that should NOT be removed from the target server after the Data Pump operation is completed.
Downloaded Files	Comma-separated list of files that will be downloaded from the HP DMA server to the target server prior to the Data Pump Import operation. The file paths are the absolute paths after the download (they include the Target Directory name).

Parameter Name	Description
Encryption Password	<p>This setting determines how the dump file set that will be imported should be decrypted. Valid values are PASSWORD, TRANSPARENT, and DUAL.</p> <ul style="list-style-type: none"> • PASSWORD: Data Pump Export used the Encryption Password to encrypt the dump file set. You must specify the same Encryption Password to perform a subsequent import. • TRANSPARENT: The Oracle encryption wallet was used to encrypt the dump file set using the Secure Sockets Layer (SSL) protocol. The encryption wallet must also be used to decrypt the dump file set during the import. You cannot specify an Encryption Password if you specify TRANSPARENT mode. • DUAL: The dump file set can either be decrypted transparently using the Oracle encryption wallet, or it can be decrypted by using the same Encryption Password that was used for the export. <p>DUAL and TRANSPARENT mode are only supported in Oracle Database Enterprise Edition version 11g.</p> <p>Note: To use DUAL or TRANSPARENT mode, you must enable Oracle Advanced Security.</p>
Ignorable Oracle Errors	Comma delimited list of Oracle errors to ignore while executing the Data Pump Import.
File List	Comma-separated list of files that will be downloaded from the HP DMA server to the target server prior to the Data Pump Export operation. The file paths are the original absolute paths on the HP DMA server.
Oracle DB User	<p>Database user account (if other than sysdba) that will be used to perform the Data Pump Import.</p> <p>Note: For Oracle Database 11g R2, this user must have the DATAPUMP_IMP_FULL_DATABASE role, or the workflow will fail. For earlier versions, the user must have the IMP_FULL_DATABASE role.</p>
Oracle DB User Password	Required only if the DB User Password is not '/' as sysdba'.
Oracle Home	The ORACLE_HOME to use if more than one home is found in the inventory file (or files).
Oracle SID	The Oracle System ID (SID) of the target database.

Parameter Name	Description
Schema	<p>Tables that will be excluded from the import. For additional information, see the Update System Tables parameter (set in the Gather Advanced Parameters for Oracle Database Refresh via Data Pump on page 246 step).</p> <p>This parameter is derived by the workflow. Under most circumstances, you should not change its mapping or its value.</p>
Table Exist Action	<p>This parameter tells the Data Pump Import utility what to do if a table that it is attempting to import already exists in the database. Valid values are:</p> <ul style="list-style-type: none"> • SKIP leaves the table unchanged (no rows are imported from the dump file). • APPEND adds the rows from the dump file and leaves the existing rows unchanged. • TRUNCATE deletes the existing rows from the table and adds the rows from the dump file. • REPLACE removes the existing table and recreates it from the dump file. <p>Note: SKIP and REPLACE are not valid options if Content is DATA_ONLY.</p>
Target Directory	<p>Directory where the Data Pump Export dump file set and the Parameter file will be staged on the target database server. This directory must be known to the Oracle instance.</p>
Temporary File Location	<p>The location where all temporary output files will be placed. This directory will be removed at the completion of the workflow.</p>
Update System Tables	<p>Determines whether the system tables are updated during the Data Pump Import. If TRUE, all system tables will be included in the import. If FALSE, the SYS and SYSMGR tables are excluded from the import. This is useful, because importing these tables often generates numerous errors, each of which must otherwise be added to the Ignorable Oracle Errors list.</p> <p>You can explicitly specify a list of tables to be excluded from the import by using the Schema parameter in the Update Parameters for Oracle Database Refresh via Data Pump on page 261 step.</p>
Verification Result	<p>Name (with absolute path) of a text file containing the expected results of the SQL queries included in the Verification SQL Script.</p> <p>This parameter is required if you provide a Verification SQL Script. Be sure to run the Verification SQL Script on the SOURCE database before running this workflow, and copy the results into this file.</p> <p>You must provide this file in a location where the workflow can access it.</p>

Parameter Name	Description
Verification SQL Script	Name (with absolute path) of a text file containing a SQL script that verifies the integrity of the database. You must provide this file in a location where the workflow can access it. The expected results of the queries included in this script must be provided in the Verification Result file.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

- [Refresh Oracle Database via Data Pump on page 56](#)
- [Export and Refresh Oracle Database via Data Pump on page 64](#)

Verify File Type for Oracle Data Pump

Purpose

This step examines the file header in each of the Archive Files to ensure that the contents of each file were exported using the Data Pump Export utility.

Input Parameters

Parameter Name	Default Value	Required	Description
Archive Files	no default	optional	Comma separated list of database archive files from which the destination target database will be restored.
Instance Wrapper	no default	required	Command that will be used to execute subsequent steps as the Oracle user who owns the pertinent ORACLE_HOME (for example: <code>sudo su - sysdba /opt/opsware/dma/jython.sh</code>).

Output Parameters

This step has no output parameters.

Return Codes

0 = All files are valid Data Pump archives.

1 = One file is not a valid Data Pump archive—or no files were specified.

Used By Workflows

- [Refresh Oracle Database via Data Pump on page 56](#)
- [Export and Refresh Oracle Database via Data Pump on page 64](#)

Update Parameters for Oracle Database Refresh via Data Pump

Purpose

This step checks the values of the Data Pump Import parameters to ensure that valid values have been specified. It also updates any required values that are missing. It then updates (or creates) the Data Pump parameter file that the workflow will use to perform the import operation. It also creates the log file for the Data Pump Import operation.

Input Parameters

Parameter Name	Default Value	Required	Description
Content	ALL	optional	<p>What is included in the Data Pump dump file set that will be imported. Valid settings are ALL, DATA_ONLY, or METADATA_ONLY.</p> <ul style="list-style-type: none"> DATA_ONLY: Include only table row data. Do not include database object definitions. METADATA_ONLY: Include only database object definitions. Do not include table row data. If you specify METADATA_ONLY, any index or table statistics later imported from the dump file set will be locked after the import. ALL: Include both table row data and database object definitions in the dump file set. <p>You must specify the same Content setting for the export and any subsequent import operations.</p>
Data Pump Export Files	no default	required	Comma-separated list of Data Pump Export dump files included in the dump file set that will be used for this Data Pump Import. If only one file is specified, no comma is required.
Data Pump Parameter File	no default	optional	Name of the Data Pump Import parameter file that you provide. If you do not specify the absolute path to the Parameter File, the workflow will look for the file in the Target Directory. If you do not specify a Parameter File, default Data Pump Import settings will be used for parameters not specified in the deployment.

Parameter Name	Default Value	Required	Description
Encryption Password	no default	optional	<p>This setting determines how the dump file set that will be imported should be decrypted. Valid values are PASSWORD, TRANSPARENT, and DUAL.</p> <ul style="list-style-type: none"> • PASSWORD: Data Pump Export used the Encryption Password to encrypt the dump file set. You must specify the same Encryption Password to perform a subsequent import. • TRANSPARENT: The Oracle encryption wallet was used to encrypt the dump file set using the Secure Sockets Layer (SSL) protocol. The encryption wallet must also be used to decrypt the dump file set during the import. You cannot specify an Encryption Password if you specify TRANSPARENT mode. • DUAL: The dump file set can either be decrypted transparently using the Oracle encryption wallet, or it can be decrypted by using the same Encryption Password that was used for the export. <p>DUAL and TRANSPARENT mode are only supported in Oracle Database Enterprise Edition version 11g.</p> <p>Note: To use DUAL or TRANSPARENT mode, you must enable Oracle Advanced Security.</p>
Instance Wrapper	jython	optional	
Oracle DB User	no default	optional	<p>Database user account (if other than sysdba) that will be used to perform the Data Pump Import.</p> <p>Note: For Oracle Database 11g R2, this user must have the DATAPUMP_IMP_FULL_DATABASE role, or the workflow will fail. For earlier versions, the user must have the IMP_FULL_DATABASE role.</p>
Oracle DB User Password	/ as sysdba	optional	<p>Password for the Oracle DB User. This is required when this user is not sysdba.</p>
Oracle Home	no default	optional	<p>The ORACLE_HOME to use if more than one home is found in the inventory file (or files).</p>
Oracle SID	no default	required	<p>The Oracle System ID (SID) of the target database.</p>

Parameter Name	Default Value	Required	Description
Schema	no default	optional	<p>Tables that will be excluded from the import. For additional information, see the Update System Tables parameter (set in the Gather Advanced Parameters for Oracle Database Refresh via Data Pump on page 246 step).</p> <p>This parameter is derived by the workflow. Under most circumstances, you should not change its mapping or its value.</p>
Table Exist Action	SKIP	optional	<p>This parameter tells the Data Pump Import utility what to do if a table that it is attempting to import already exists in the database. Valid values are:</p> <ul style="list-style-type: none"> • SKIP leaves the table unchanged (no rows are imported from the dump file). • APPEND adds the rows from the dump file and leaves the existing rows unchanged. • TRUNCATE deletes the existing rows from the table and adds the rows from the dump file. • REPLACE removes the existing table and recreates it from the dump file. <p>Note: SKIP and REPLACE are not valid options if Content is DATA_ONLY.</p>
Target Location	no default	required	<p>Directory where the Data Pump Export dump file set and the Parameter file will be staged on the target database server. This directory must be known to the Oracle instance.</p>

Output Parameters

Parameter Name	Description
Data Pump Parameter File	<p>Name of the Data Pump Import parameter file that you provide. If you do not specify the absolute path to the Parameter File, the workflow will look for the file in the Target Directory. If you do not specify a Parameter File, default Data Pump Import settings will be used for parameters not specified in the deployment.</p>
Import Log File	<p>Name of the log file that will be generated by the Data Pump Import utility. If you do not specify an absolute path, Data Pump will put this file in the Target Directory. If the file that you specify already exists, it will be overwritten.</p> <p>Caution: This parameter is derived by the workflow. Under most circumstances, you should not change its mapping or its value.</p>

Parameter Name	Description
Time Stamp	<p>Date and time when the import log file is created in in %Y%m%d%H%M%S format. By default, this time stamp is included in the Import Log file name.</p> <p>Caution: This parameter is derived by the workflow. Under most circumstances, you should not change its mapping or its value.</p>

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

- [Refresh Oracle Database via Data Pump on page 56](#)
- [Export and Refresh Oracle Database via Data Pump on page 64](#)
- Workflow 3

Execute Oracle Refresh via Data Pump

Purpose

This step verifies access to the parameter file and executes the Data Pump Import utility.

Input Parameters

Parameter Name	Default Value	Required	Description
Ignorable Oracle Errors	ORA-31684,ORA-39111,ORA-39151,ORA-31685,ORA-00001	optional	Comma delimited list of Oracle errors to ignore while executing the Data Pump Import.
Instance Wrapper	no default	required	Command that will be used to execute subsequent steps as the Oracle user who owns the pertinent ORACLE_HOME (for example: <code>sudo su - sysdba /opt/opsware/dma/jython.sh</code>).
Log File Name	no default	required	Name of the log file for the Data Pump Export operation.
Oracle Home	no default	optional	The ORACLE_HOME to use if more than one home is found in the inventory file (or files).
Oracle SID	no default	required	The Oracle System ID (SID) of the target database.
Data Pump Parameter File	no default	optional	Name of the Data Pump Import parameter file that you provide. If you do not specify the absolute path to the Parameter File, the workflow will look for the file in the Target Directory. If you do not specify a Parameter File, default Data Pump Import settings will be used for parameters not specified in the deployment.
Temporary File Location	no default	required	The location where all temporary output files will be placed. This directory will be removed at the completion of the workflow.

Output Parameters

Parameter Name	Description
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Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

- [Refresh Oracle Database via Data Pump on page 56](#)
- [Export and Refresh Oracle Database via Data Pump on page 64](#)

Gather Parameters for Oracle Database Export and Refresh via Data Pump

Purpose

This step gathers some of the parameters required to export the contents of an Oracle database on the Source target and create the same database on the Destination target (or targets) by using the Oracle Data Pump utility.

Input Parameters

Parameter Name	Default Value	Required	Description
EXPORT - Data Pump Parameter File	no default	optional	Name of the Data Pump Export parameter file that you provide. If you do not specify the absolute path to the EXPORT- Data Pump Parameter File, the workflow will look for the file in the EXPORT - Target Directory. If you do not specify an EXPORT- Parameter File at all, default Data Pump Export settings will be used for parameters not specified in the deployment.
EXPORT - Inventory Files	see description	optional	Comma-separated list of fully qualified Oracle inventory files on the SOURCE database server. Defaults are as follows: Solaris: /var/opt/oracle/oraInst.loc Linux: /etc/oraInst.loc Windows: %ProgramFiles%\Oracle\Inventory
EXPORT - Oracle Account	no default	optional	Oracle user that owns the ORACLE_HOME on the SOURCE database server. Required if an inventory file does not exist. Leave blank for Windows.
EXPORT - Target Directory	no default	required	Staging directory path known to the SOURCE database server and shared with the DESTINATION database server. This is the path to the NFS mount point as known by the SOURCE database server.
IMPORT - Data Pump Parameter File	no default	optional	Name of the Data Pump Import parameter file that you provide. If you do not specify the absolute path to the Parameter File, the workflow will look for the file in the IMPORT - Target Directory. If you do not specify a Parameter File, default Data Pump Import settings will be used for parameters not specified in the deployment.

Parameter Name	Default Value	Required	Description
IMPORT - Inventory Files	see description	optional	Comma-separated list of fully qualified Oracle inventory files on the DESTINATION database server. Defaults are as follows: Solaris: /var/opt/oracle/oraInst.loc Linux: /etc/oraInst.loc Windows: %ProgramFiles%\Oracle\Inventory
IMPORT - Oracle Account	no default	optional	Oracle user that owns the ORACLE_HOME on the DESTINATION database server. Required if an inventory file does not exist. Leave blank for Windows.
IMPORT - Target Directory	no default	required	Staging directory path known to the DESTINATION database server and shared with the SOURCE database server. This is the path to the NFS mount point as known by the DESTINATION database server.
Server Wrapper	jython	required	Command that will be used to construct the call wrapper. The workflow uses the call wrapper to execute subsequent steps as either the OS administrative user (for example: <code>sudo su - root /opt/opsware/dma/jython.sh</code>) or the Oracle user who owns the pertinent ORACLE_HOME (for example: <code>sudo su - sysdba /opt/opsware/dma/jython.sh</code>).

Output Parametersshow

Parameter Name	Description
EXPORT - Data Pump Parameter File	Name of the Data Pump Export parameter file that you provide. If you do not specify the absolute path to the EXPORT- Data Pump Parameter File, the workflow will look for the file in the EXPORT - Target Directory. If you do not specify an EXPORT- Parameter File at all, default Data Pump Export settings will be used for parameters not specified in the deployment.
EXPORT - Inventory Files	Comma-separated list of fully qualified Oracle inventory files on the SOURCE database server. Defaults are as follows: Solaris: /var/opt/oracle/oraInst.loc Linux: /etc/oraInst.loc Windows: %ProgramFiles%\Oracle\Inventory

Parameter Name	Description
EXPORT - Oracle Account	Oracle user that owns the ORACLE_HOME on the SOURCE database server. Required if an inventory file does not exist. Leave blank for Windows.
EXPORT - Target Directory	Staging directory path known to the SOURCE database server and shared with the DESTINATION database server. This is the path to the NFS mount point as known by the SOURCE database server.
IMPORT - Data Pump Parameter File	Name of the Data Pump Import parameter file that you provide. If you do not specify the absolute path to the Parameter File, the workflow will look for the file in the IMPORT - Target Directory. If you do not specify a Parameter File, default Data Pump Import settings will be used for parameters not specified in the deployment.
IMPORT - Inventory Files	Comma-separated list of fully qualified Oracle inventory files on the DESTINATION database server. Defaults are as follows: Solaris: /var/opt/oracle/oraInst.loc Linux: /etc/oraInst.loc Windows: %ProgramFiles%\Oracle\Inventory
IMPORT - Oracle Account	Oracle user that owns the ORACLE_HOME on the DESTINATION database server. Required if an inventory file does not exist. Leave blank for Windows.
IMPORT - Target Directory	Staging directory path known to the DESTINATION database server and shared with the SOURCE database server. This is the path to the NFS mount point as known by the DESTINATION database server.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

[Export and Refresh Oracle Database via Data Pump on page 64](#)

Gather Advanced Parameters for Oracle Database Export and Refresh via Data Pump

Purpose

This step gathers and validates additional parameters required to export the contents of an Oracle database on the Source target and create the same database on the Destination target (or targets) by using the Oracle Data Pump utility.

Input Parameters

Parameter Name	Default Value	Required	Description
ALL - Content	ALL	optional	<p>What to export and subsequently import. Valid settings are ALL, DATA_ONLY, or METADATA_ONLY.</p> <ul style="list-style-type: none">• DATA_ONLY: Include only table row data. Do not include database object definitions.• METADATA_ONLY: Include only database object definitions. Do not include table row data. If you specify METADATA_ONLY, any index or table statistics later imported from the dump file set will be locked after the import.• ALL: Include both table row data and database object definitions in the dump file set.

Parameter Name	Default Value	Required	Description
ALL - Encryption Password	no default	optional	<p>Key used to ensure that any encrypted column data, metadata, or table data is re-encrypted before it is written to the dump file set. If you do not specify an Encryption Password—or specify TRANSPARENT for the Encryption Mode in the Parameter File—data will be written to the dump files in clear text form.</p> <p>Note the following:</p> <ul style="list-style-type: none"> • The Encryption Password is required when Encryption Mode is PASSWORD or DUAL. • The Encryption Password is not valid when Encryption Mode is TRANSPARENT. <p>This parameter is only supported in Oracle Database Enterprise Edition version 11g</p>
ALL - Ignorable Oracle Errors	ORA-31684,ORA-39111,ORA-39151,ORA-31685,ORA-00001,RMAN-00571,RMAN-00569,RMAN-03002,RMAN-06054	optional	<p>Comma delimited list of Oracle errors to ignore while executing the export and subsequent import.</p>

Parameter Name	Default Value	Required	Description
EXPORT - Compression	ALL	optional	<p>Items that will be compressed in the Data Pump Export dump file set. Valid settings are ALL, NONE, DATA_ONLY, METADATA_ONLY.</p> <ul style="list-style-type: none"> • DATA_ONLY: Compress only the table row data (must specify DATA_ONLY or ALL for the Content parameter). • METADATA_ONLY: Compress only the database object definitions (must specify METADATA_ONLY or ALL for the Content parameter). • ALL: Compress both the table row data and the database object definitions in the dump file set (must specify ALL for the Content parameter). • NONE: Nothing is compressed in the dump file set. <p>You must specify the same Compression setting for the export and subsequent import operations.</p> <p>DATA_ONLY and ALL compression settings are only supported in Oracle Database Enterprise Edition version 11g. You must enable the Oracle Advanced Compression option to use these settings.</p>
EXPORT - Data Pump Export File Name	no default	optional	<p>Name of the Data Pump Export dump file (or files) that will be created from an existing Oracle database. A timestamp is appended to the file name (or names) that you specify. If you do not specify a file name, a default file name (or list of names) is generated.</p>

Parameter Name	Default Value	Required	Description
EXPORT - Encryption Mode	<p>Default depends on the other encryption settings. Assuming that ENCRYPTION is true:</p> <ul style="list-style-type: none"> • If Encryption Password is specified, and the Oracle encryption wallet is open, default is DUAL. • If Encryption Password is specified, and the wallet is closed, default is PASSWORD. • If Encryption Password is not specified, and the wallet is open, default is TRANSPARENT. • If Encryption Password is not specified, and the wallet is closed, the Data Pump Export operation returns an error. 	optional	<p>This setting determines how the dump file set will be encrypted and how it can later be decrypted during the subsequent import operation. Valid values are PASSWORD, TRANSPARENT, and DUAL.</p> <ul style="list-style-type: none"> • PASSWORD: Data Pump Export uses the Encryption Password to encrypt the dump file set. You must specify the same Encryption Password to perform a subsequent import. • TRANSPARENT: The Oracle encryption wallet is used to encrypt the dump file set using the Secure Sockets Layer (SSL) protocol. The encryption wallet must also be used to decrypt the dump file set during a subsequent import. You cannot specify an Encryption Password if you specify TRANSPARENT mode. • DUAL: During a subsequent import operation, the dump file set can either be decrypted transparently using the Oracle encryption wallet, or it can be decrypted by using the same Encryption Password that was used for the export. <p>DUAL and TRANSPARENT mode are only supported in Oracle Database Enterprise Edition version 11g.</p> <div style="background-color: #f0f0f0; padding: 5px;"> <p>Note: To use DUAL or TRANSPARENT mode, you must enable Oracle Advanced Security.</p> </div>

Parameter Name	Default Value	Required	Description
EXPORT - File Size	200M	optional	<p>Maximum size of each dump file in the dump file set. If any file in the dump file set reaches this size, that file is closed, and Data Pump attempts to create a new file.</p> <p>Specify an integer and one of the following units: B (bytes), KB (kilobytes), MB (megabytes), GB (gigabytes), or TB (terabytes). The default unit is bytes.</p> <p>The minimum valid file size is 4 kilobytes; the maximum valid file size is 16 terabytes.</p> <p>The actual size of a dump file may be slightly smaller depending on the size of the internal blocks used.</p>
EXPORT - Full	YES	optional	<p>This parameter is set to YES to perform a full Data Pump Export (data and metadata) or NO to export schemas (metadata).</p> <p>Caution: The workflow sets the value of this parameter. Do not modify the mapping for this parameter that is defined in the workflow.</p>
EXPORT - Metrics	YES	optional	<p>If you specify YES, the number of objects exported and the elapsed time required for the export operation to complete are recorded in the Data Pump log file. Valid values are YES or NO.</p>
EXPORT - Oracle DB User	no default	optional	<p>SOURCE database user account that will be used to perform the Data Pump Export.</p> <p>Note: For Oracle Database 11g R2, this user must have the DATAPUMP_EXP_FULL_DATABASE and DATAPUMP_EXP_FULL_DATABASE roles.</p> <p>For earlier versions, the user must have the EXP_FULL_DATABASE and EXP_FULL_DATABASE roles.</p>

Parameter Name	Default Value	Required	Description
EXPORT - Oracle DB User Password	no default	required	Password for the SOURCE Oracle database user specified in the EXPORT- Oracle DB User parameter. This is required when this user is not sysdba.
IMPORT - Oracle DB User	no default	optional	<p>DESTINATION database user account that will be used to perform the Data Pump Import.</p> <p>Note: For Oracle Database 11g R2, this user must have the DATAPUMP_IMP_FULL_DATABASE and DATAPUMP_IMP_FULL_DATABASE roles.</p> <p>For earlier versions, the user must have the IMP_FULL_DATABASE and IMP_FULL_DATABASE roles.</p>
IMPORT - Oracle DB User Password	no default	required	Password for the DESTINATION Oracle database user specified in the IMPORT- Oracle DB User parameter. This is required when this user is not sysdba.
IMPORT - Table Exist Action	SKIP	optional	<p>This parameter tells the Data Pump Import utility what to do if a table that it is attempting to import already exists in the database. Valid values are:</p> <ul style="list-style-type: none"> • SKIP leaves the table unchanged (no rows are imported from the dump file). • APPEND adds the rows from the dump file and leaves the existing rows unchanged. • TRUNCATE deletes the existing rows from the table and adds the rows from the dump file. • REPLACE removes the existing table and recreates it from the dump file. <p>Note: SKIP and REPLACE are not valid options if ALL - Content is DATA_ONLY.</p>

Parameter Name	Default Value	Required	Description
IMPORT - Update System Tables	FALSE	optional	<p>Determines whether the system tables are updated during the Data Pump Import. If TRUE, all system tables will be included in the import. If FALSE, the SYS and SYSMGR tables are excluded from the import. This is useful, because importing these tables often generates numerous errors, each of which must otherwise be added to the Ignorable Oracle Errors list.</p> <p>You can explicitly specify a list of tables to be excluded from the import by using the Schema parameter in the Update Parameters for Oracle Database Refresh via Data Pump on page 261 step.</p>
IMPORT - Verification Result	no default	optional	<p>Name (with absolute path) of a text file containing the expected results of the SQL queries included in the Verification SQL Script.</p> <p>This parameter is required if you provide a Verification SQL Script. Be sure to run the Verification SQL Script on the SOURCE database before running this workflow, and copy the results into this file.</p> <p>You must provide this file in a location where the workflow can access it.</p>
IMPORT - Verification SQL Script	no default	optional	<p>Name (with absolute path) of a text file containing a SQL script that verifies the following on the DESTINATION database:</p> <ul style="list-style-type: none"> • The import operation was successful. • No data is missing. <p>You must provide this file in a location where the workflow can access it. The expected results of the queries included in this script must be provided in the Verification Result file.</p>

Parameter Name	Default Value	Required	Description
Server Wrapper	jython	required	Command that will be used to construct the call wrapper. The workflow uses the call wrapper to execute subsequent steps as either the OS administrative user (for example: <code>sudo su - root /opt/opsware/dma/jython.sh</code>) or the Oracle user who owns the pertinent ORACLE_HOME (for example: <code>sudo su - sysdba /opt/opsware/dma/jython.sh</code>).

Output Parameters

Parameter Name	Description
ALL - Content	<p>What to export and subsequently import. Valid settings are ALL, DATA_ONLY, or METADATA_ONLY.</p> <ul style="list-style-type: none"> DATA_ONLY: Include only table row data. Do not include database object definitions. METADATA_ONLY: Include only database object definitions. Do not include table row data. If you specify METADATA_ONLY, any index or table statistics later imported from the dump file set will be locked after the import. ALL: Include both table row data and database object definitions in the dump file set.
ALL - Encryption Password	<p>Key used to ensure that any encrypted column data, metadata, or table data is re-encrypted before it is written to the dump file set. If you do not specify an Encryption Password—or specify TRANSPARENT for the Encryption Mode in the Parameter File—data will be written to the dump files in clear text form.</p> <p>Note the following:</p> <ul style="list-style-type: none"> The Encryption Password is required when Encryption Mode is PASSWORD or DUAL. The Encryption Password is not valid when Encryption Mode is TRANSPARENT. <p>This parameter is only supported in Oracle Database Enterprise Edition version 11g</p>
ALL - Ignorable Oracle Errors	<p>Comma delimited list of Oracle errors to ignore while executing the export and subsequent import.</p>

Parameter Name	Description
EXPORT - Compression	<p>Items that will be compressed in the Data Pump Export dump file set. Valid settings are ALL, NONE, DATA_ONLY, METADATA_ONLY.</p> <ul style="list-style-type: none"> • DATA_ONLY: Compress only the table row data (must specify DATA_ONLY or ALL for the Content parameter). • METADATA_ONLY: Compress only the database object definitions (must specify METADATA_ONLY or ALL for the Content parameter). • ALL: Compress both the table row data and the database object definitions in the dump file set (must specify ALL for the Content parameter). • NONE: Nothing is compressed in the dump file set. <p>You must specify the same Compression setting for the export and subsequent import operations.</p> <p>DATA_ONLY and ALL compression settings are only supported in Oracle Database Enterprise Edition version 11g. You must enable the Oracle Advanced Compression option to use these settings.</p>
EXPORT - Data Pump Export File Name	<p>Name of the Data Pump Export dump file (or files) that will be created from an existing Oracle database. A timestamp is appended to the file name (or names) that you specify. If you do not specify a file name, a default file name (or list of names) is generated.</p>
EXPORT - Encryption Mode	<p>This setting determines how the dump file set will be encrypted and how it can later be decrypted during the subsequent import operation. Valid values are PASSWORD, TRANSPARENT, and DUAL.</p> <ul style="list-style-type: none"> • PASSWORD: Data Pump Export uses the Encryption Password to encrypt the dump file set. You must specify the same Encryption Password to perform a subsequent import. • TRANSPARENT: The Oracle encryption wallet is used to encrypt the dump file set using the Secure Sockets Layer (SSL) protocol. The encryption wallet must also be used to decrypt the dump file set during a subsequent import. You cannot specify an Encryption Password if you specify TRANSPARENT mode. • DUAL: During a subsequent import operation, the dump file set can either be decrypted transparently using the Oracle encryption wallet, or it can be decrypted by using the same Encryption Password that was used for the export. <p>DUAL and TRANSPARENT mode are only supported in Oracle Database Enterprise Edition version 11g.</p> <p>Note: To use DUAL or TRANSPARENT mode, you must enable Oracle Advanced Security.</p>

Parameter Name	Description
EXPORT - File Size	<p>Maximum size of each dump file in the dump file set. If any file in the dump file set reaches this size, that file is closed, and Data Pump attempts to create a new file.</p> <p>Specify an integer and one of the following units: B (bytes), KB (kilobytes), MB (megabytes), GB (gigabytes), or TB (terabytes). The default unit is bytes.</p> <p>The minimum valid file size is 4 kilobytes; the maximum valid file size is 16 terabytes.</p> <p>The actual size of a dump file may be slightly smaller depending on the size of the internal blocks used.</p>
EXPORT - Full	<p>This parameter is set to YES to perform a full Data Pump Export (data and metadata) or NO to export schemas (metadata).</p> <p>Caution: The workflow sets the value of this parameter. Do not modify the mapping for this parameter that is defined in the workflow.</p>
EXPORT - Metrics	<p>If you specify YES, the number of objects exported and the elapsed time required for the export operation to complete are recorded in the Data Pump log file. Valid values are YES or NO.</p>
EXPORT - Oracle DB User	<p>SOURCE database user account that will be used to perform the Data Pump Export.</p> <p>Note: For Oracle Database 11g R2, this user must have the DATAPUMP_EXP_FULL_DATABASE and DATAPUMP_EXP_FULL_DATABASE roles.</p> <p>For earlier versions, the user must have the EXP_FULL_DATABASE and EXP_FULL_DATABASE roles.</p>
EXPORT - Oracle DB User Password	<p>Password for the SOURCE Oracle database user specified in the EXPORT-Oracle DB User parameter. This is required when this user is not sysdba.</p>
IMPORT - Oracle DB User	<p>DESTINATION database user account that will be used to perform the Data Pump Import.</p> <p>Note: For Oracle Database 11g R2, this user must have the DATAPUMP_IMP_FULL_DATABASE and DATAPUMP_IMP_FULL_DATABASE roles.</p> <p>For earlier versions, the user must have the IMP_FULL_DATABASE and IMP_FULL_DATABASE roles.</p>

Parameter Name	Description
IMPORT - Oracle DB User Password	Password for the DESTINATION Oracle database user specified in the IMPORT- Oracle DB User parameter. This is required when this user is not sysdba.
IMPORT - Table Exist Action	<p>This parameter tells the Data Pump Import utility what to do if a table that it is attempting to import already exists in the database. Valid values are:</p> <ul style="list-style-type: none"> • SKIP leaves the table unchanged (no rows are imported from the dump file). • APPEND adds the rows from the dump file and leaves the existing rows unchanged. • TRUNCATE deletes the existing rows from the table and adds the rows from the dump file. • REPLACE removes the existing table and recreates it from the dump file. <p>Note: SKIP and REPLACE are not valid options if ALL - Content is DATA_ONLY.</p>
IMPORT - Update System Tables	<p>Determines whether the system tables are updated during the Data Pump Import. If TRUE, all system tables will be included in the import. If FALSE, the SYS and SYSMGR tables are excluded from the import. This is useful, because importing these tables often generates numerous errors, each of which must otherwise be added to the Ignorable Oracle Errors list.</p> <p>You can explicitly specify a list of tables to be excluded from the import by using the Schema parameter in the Update Parameters for Oracle Database Refresh via Data Pump on page 261 step.</p>
IMPORT - Verification Result	<p>Name (with absolute path) of a text file containing the expected results of the SQL queries included in the Verification SQL Script.</p> <p>This parameter is required if you provide a Verification SQL Script. Be sure to run the Verification SQL Script on the SOURCE database before running this workflow, and copy the results into this file.</p> <p>You must provide this file in a location where the workflow can access it.</p>
IMPORT - Verification SQL Script	<p>Name (with absolute path) of a text file containing a SQL script that verifies the following on the DESTINATION database:</p> <ul style="list-style-type: none"> • The import operation was successful. • No data is missing. <p>You must provide this file in a location where the workflow can access it. The expected results of the queries included in this script must be provided in the Verification Result file.</p>

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

[Export and Refresh Oracle Database via Data Pump on page 64](#)

Gather Parameters for Oracle Schema Export via Data Pump

Purpose

This step gathers the basic parameters required to export specific Oracle database schemas using Oracle Data Pump. This step does not perform any type of validation on the parameter values. That is addressed later in the workflow.

Input Parameters

Parameter Name	Default Value	Required	Description
Data Pump Export File	<i>Target Directory</i> \ <code>Oracle SID.dmp</code>	optional	Name (absolute path) of the Data Pump Export dump file (or files) that will be created from an existing Oracle database.
Data Pump Parameter File	no default	optional	Name of the Data Pump Export parameter file that you provide. If you do not specify the absolute path to the Parameter File, the workflow will look for the file in the Target Directory. If you do not specify a Parameter File, default Data Pump Export settings will be used for parameters not specified in the deployment.
Inventory Files	see description	optional	Comma separated list of Oracle inventory file names (with absolute paths). If not specified, set to the appropriate default value for the target server operating system. Defaults are: Solaris: <code>/var/opt/oracle/oraInst.loc</code> Linux: <code>/etc/oraInst.loc</code> Windows: <code>%ProgramFiles%\Oracle\Inventory</code>
Oracle Account	no default	optional	Oracle user that owns the ORACLE_HOME on the target Oracle database server. Required if an inventory file does not exist. Leave blank for Windows.
Oracle Home	no default	optional	The ORACLE_HOME to use if more than one home is found in the inventory file (or files).
Oracle SID	no default	required	The Oracle System ID (SID) of the target database.
Schema	no default	optional	Comma-separated list of schemas to export. This parameter is required if a Data Pump Parameter File is not specified.

Parameter Name	Default Value	Required	Description
Server Wrapper	jython	required	Command that will be used to construct the call wrapper. The workflow uses the call wrapper to execute subsequent steps as either the OS administrative user (for example: <code>sudo su - root /opt/opsware/dma/jython.sh</code>) or the Oracle user who owns the pertinent ORACLE_HOME (for example: <code>sudo su - sysdba /opt/opsware/dma/jython.sh</code>).
Target Directory	no default	required	Directory where the Data Pump Export dump file set and the Parameter file will be staged on the target database server. This directory must be known to the Oracle instance.

Output Parameters

Parameter Name	Description
Data Pump Export File Name	Name (absolute path) of the Data Pump Export dump file (or files) that will be created from an existing Oracle database.
Data Pump Parameter File	Name of the Data Pump Export parameter file that you provide. If you do not specify the absolute path to the Parameter File, the workflow will look for the file in the Target Directory. If you do not specify a Parameter File, default Data Pump Export settings will be used for parameters not specified in the deployment.
Inventory Files	Comma separated list of Oracle inventory file names (with absolute paths). If not specified, set to the appropriate default value for the target server operating system. Defaults are: Solaris: <code>/var/opt/oracle/oraInst.loc</code> Linux: <code>/etc/oraInst.loc</code> Windows: <code>%ProgramFiles%\Oracle\Inventory</code>
Oracle Account	Oracle user that owns the ORACLE_HOME on the target Oracle database server. Required if an inventory file does not exist. Leave blank for Windows.
Oracle Home	The ORACLE_HOME to use if more than one home is found in the inventory file (or files).
Oracle SID	The Oracle System ID (SID) of the target database.
Schema	Comma-separated list of schemas to export. This parameter is required if a Data Pump Parameter File is not specified.

Parameter Name	Description
Target Directory	Directory where the Data Pump Export dump file set and the Parameter file will be staged on the target database server. This directory must be known to the Oracle instance.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

[Export Oracle Schema via Data Pump on page 75](#)

Gather Advanced Parameters for Oracle Schema Export via Data Pump

Purpose

This step gathers additional parameters required to export specific schemas in an Oracle database to a file (or multiple files) using the Oracle Data Pump utility. Some parameters are assigned default values if they are not specified. Validation is performed in another step.

Input Parameters

Parameter Name	Default Value	Required	Description
Compression	ALL	optional	<p>Items that will be compressed in the Data Pump Export dump file set. Valid settings are ALL, NONE, DATA_ONLY, METADATA_ONLY.</p> <ul style="list-style-type: none"> • DATA_ONLY: Compress only the table row data (must also specify DATA_ONLY or ALL for the Content parameter). • METADATA_ONLY: Compress only the database object definitions (must also specify METADATA_ONLY or ALL for the Content parameter). • ALL: Compress both the table row data and the database object definitions in the dump file set (must also specify ALL for the Content parameter). • NONE: Nothing is compressed in the dump file set. <p>You must specify the same Compression setting for the export and any subsequent import operations.</p> <p>DATA_ONLY and ALL compression settings are only supported in Oracle Database Enterprise Edition version 11g. You must enable the Oracle Advanced Compression option to use these settings.</p>

Parameter Name	Default Value	Required	Description
Content	ALL	optional	<p>What to include in the Data Pump Export dump file set. Valid settings are ALL, DATA_ONLY, or METADATA_ONLY.</p> <ul style="list-style-type: none">• DATA_ONLY: Include only table row data. Do not include database object definitions.• METADATA_ONLY: Include only database object definitions. Do not include table row data. If you specify METADATA_ONLY, any index or table statistics later imported from the dump file set will be locked after the import.• ALL: Include both table row data and database object definitions in the dump file set. <p>You must specify the same Content setting for the export and any subsequent import operations.</p>

Parameter Name	Default Value	Required	Description
Encryption Mode	<p>Default depends on the other encryption settings. Assuming that ENCRYPTION is true:</p> <ul style="list-style-type: none"> • If Encryption Password is specified, and the Oracle encryption wallet is open, default is DUAL. • If Encryption Password is specified, and the wallet is closed, default is PASSWORD. • If Encryption Password is not specified, and the wallet is open, default is TRANSPARENT. • If Encryption Password is not specified, and the wallet is closed, the Data Pump Export operation returns an error. 	optional	<p>This setting determines how the dump file set will be encrypted and how it can later be decrypted during a subsequent Data Pump Import operation. Valid values are PASSWORD, TRANSPARENT, and DUAL.</p> <ul style="list-style-type: none"> • PASSWORD: Data Pump Export uses the Encryption Password to encrypt the dump file set. You must specify the same Encryption Password to perform a subsequent import. • TRANSPARENT: The Oracle encryption wallet is used to encrypt the dump file set using the Secure Sockets Layer (SSL) protocol. The encryption wallet must also be used to decrypt the dump file set during a subsequent import. You cannot specify an Encryption Password if you specify TRANSPARENT mode. • DUAL: During a subsequent import operation, the dump file set can either be decrypted transparently using the Oracle encryption wallet, or it can be decrypted by using the same Encryption Password that was used for the export. <p>DUAL and TRANSPARENT mode are only supported in Oracle Database Enterprise Edition version 11g.</p> <div style="background-color: #e0e0e0; padding: 5px;"> <p>Note: To use DUAL or TRANSPARENT mode, you must enable Oracle Advanced Security.</p> </div>

Parameter Name	Default Value	Required	Description
Encryption Password	no default	optional	<p>Key used to ensure that any encrypted column data, metadata, or table data is re-encrypted before it is written to the dump file set. If you do not specify an Encryption Password—or specify TRANSPARENT for the Encryption Mode—data will be written to the dump files in clear text form.</p> <p>Note the following:</p> <ul style="list-style-type: none"> • If you specify an Encryption Password for the export, and the Encryption Mode is PASSWORD, you must specify the same Encryption Password for any subsequent import operations. • The Encryption Password is required when Encryption Mode is PASSWORD or DUAL. • The Encryption Password is not valid when Encryption Mode is TRANSPARENT. • If you specify an Encryption Password but do not specify the Encryption Mode, the mode defaults to PASSWORD. <p>This parameter is only supported in Oracle Database Enterprise Edition version 11g.</p>
File Size	200M	optional	<p>Maximum size (in MByte) of each dump file in the dump file set. If any file in the dump file set reaches this size, that file is closed, and Data Pump attempts to create a new file.</p> <p>Specify an integer and one of the following units: B (bytes), KB (kilobytes), MB (megabytes), GB (gigabytes), or TB (terabytes). The default unit is bytes.</p> <p>The minimum valid file size is 4 kilobytes; the maximum valid file size is 16 terabytes.</p> <p>The actual size of a dump file may be slightly smaller depending on the size of the internal blocks used.</p>

Parameter Name	Default Value	Required	Description
Full	YES	optional	<p>Set to YES to perform a full Data Pump Export (data and metadata); set to NO to export schemas (metadata).</p> <p>Caution: The workflow sets the value of this parameter. Do not modify the mapping for this parameter that is defined in the workflow.</p>
Ignorable Oracle Errors	ORA-31684,ORA-39111,ORA-39151,ORA-31685,ORA-00001,RMAN-00571,RMAN-00569,RMAN-03002,RMAN-06054	optional	Comma delimited list of Oracle errors to ignore while executing the Data Pump Export.
Metrics	YES	optional	If you specify YES, the number of objects exported and the elapsed time required for the export operation to complete are recorded in the Data Pump log file. Valid values are YES or NO.
Oracle DB User	no default	optional	<p>Database user account (if other than sysdba) that will be used to perform the Data Pump Export.</p> <p>Note: For Oracle Database 11g R2, this user must have the DATAPUMP_EXP_FULL_DATABASE role, or the workflow will fail. For earlier versions, the user must have the EXP_FULL_DATABASE role.</p>
Oracle DB User Password	/ as sysdba	optional	Password for the Oracle DB User. This is required when this user is not sysdba.

Parameter Name	Default Value	Required	Description
Server Wrapper	jython	required	Command that will be used to construct the call wrapper. The workflow uses the call wrapper to execute subsequent steps as either the OS administrative user (for example: <code>sudo su - root /opt/opsware/dma/jython.sh</code>) or the Oracle user who owns the pertinent ORACLE_HOME (for example: <code>sudo su - sysdba /opt/opsware/dma/jython.sh</code>).

Output Parameters

Parameter Name	Description
Compression	<p>Items that will be compressed in the Data Pump Export dump file set. Valid settings are ALL, NONE, DATA_ONLY, METADATA_ONLY.</p> <ul style="list-style-type: none"> • DATA_ONLY: Compress only the table row data (must also specify DATA_ONLY or ALL for the Content parameter). • METADATA_ONLY: Compress only the database object definitions (must also specify METADATA_ONLY or ALL for the Content parameter). • ALL: Compress both the table row data and the database object definitions in the dump file set (must also specify ALL for the Content parameter). • NONE: Nothing is compressed in the dump file set. <p>You must specify the same Compression setting for the export and any subsequent import operations.</p> <p>DATA_ONLY and ALL compression settings are only supported in Oracle Database Enterprise Edition version 11g. You must enable the Oracle Advanced Compression option to use these settings.</p>

Parameter Name	Description
Content	<p>What to include in the Data Pump Export dump file set. Valid settings are ALL, DATA_ONLY, or METADATA_ONLY.</p> <ul style="list-style-type: none"> • DATA_ONLY: Include only table row data. Do not include database object definitions. • METADATA_ONLY: Include only database object definitions. Do not include table row data. If you specify METADATA_ONLY, any index or table statistics later imported from the dump file set will be locked after the import. • ALL: Include both table row data and database object definitions in the dump file set. <p>You must specify the same Content setting for the export and any subsequent import operations.</p>
Encryption Mode	<p>This setting determines how the dump file set will be encrypted and how it can later be decrypted during a subsequent Data Pump Import operation. Valid values are PASSWORD, TRANSPARENT, and DUAL.</p> <ul style="list-style-type: none"> • PASSWORD: Data Pump Export uses the Encryption Password to encrypt the dump file set. You must specify the same Encryption Password to perform a subsequent import. • TRANSPARENT: The Oracle encryption wallet is used to encrypt the dump file set using the Secure Sockets Layer (SSL) protocol. The encryption wallet must also be used to decrypt the dump file set during a subsequent import. You cannot specify an Encryption Password if you specify TRANSPARENT mode. • DUAL: During a subsequent import operation, the dump file set can either be decrypted transparently using the Oracle encryption wallet, or it can be decrypted by using the same Encryption Password that was used for the export. <p>DUAL and TRANSPARENT mode are only supported in Oracle Database Enterprise Edition version 11g.</p> <div style="background-color: #f0f0f0; padding: 5px;"> <p>Note: To use DUAL or TRANSPARENT mode, you must enable Oracle Advanced Security.</p> </div>

Parameter Name	Description
Encryption Password	<p>Key used to ensure that any encrypted column data, metadata, or table data is re-encrypted before it is written to the dump file set. If you do not specify an Encryption Password—or specify TRANSPARENT for the Encryption Mode—data will be written to the dump files in clear text form.</p> <p>Note the following:</p> <ul style="list-style-type: none"> • If you specify an Encryption Password for the export, and the Encryption Mode is PASSWORD, you must specify the same Encryption Password for any subsequent import operations. • The Encryption Password is required when Encryption Mode is PASSWORD or DUAL. • The Encryption Password is not valid when Encryption Mode is TRANSPARENT. • If you specify an Encryption Password but do not specify the Encryption Mode, the mode defaults to PASSWORD. <p>This parameter is only supported in Oracle Database Enterprise Edition version 11g.</p>
File Size	<p>Maximum size (in MByte) of each dump file in the dump file set. If any file in the dump file set reaches this size, that file is closed, and Data Pump attempts to create a new file.</p> <p>Specify an integer and one of the following units: B (bytes), KB (kilobytes), MB (megabytes), GB (gigabytes), or TB (terabytes). The default unit is bytes.</p> <p>The minimum valid file size is 4 kilobytes; the maximum valid file size is 16 terabytes.</p> <p>The actual size of a dump file may be slightly smaller depending on the size of the internal blocks used.</p>
Full	<p>Set to YES to perform a full Data Pump Export (data and metadata); set to NO to export schemas (metadata).</p> <div style="background-color: #f0f0f0; padding: 5px;"> <p>Caution: The workflow sets the value of this parameter. Do not modify the mapping for this parameter that is defined in the workflow.</p> </div>
Ignorable Oracle Errors	<p>Comma delimited list of Oracle errors to ignore while executing the Data Pump Export.</p>
Metrics	<p>If you specify YES, the number of objects exported and the elapsed time required for the export operation to complete are recorded in the Data Pump log file. Valid values are YES or NO.</p>

Parameter Name	Description
Oracle DB User	Database user account (if other than sysdba) that will be used to perform the Data Pump Export. Note: For Oracle Database 11g R2, this user must have the DATAPUMP_EXP_FULL_DATABASE role, or the workflow will fail. For earlier versions, the user must have the EXP_FULL_DATABASE role.
Oracle DB User Password	Password for the Oracle DB User. This is required when this user is not sysdba.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

[Export Oracle Schema via Data Pump on page 75](#)

Validate Oracle Schema Export via Data Pump

Purpose

This step validates the parameter values specified on the Deployment page. It also checks the target directory where the Data Pump Export File and Data Pump Parameter File will be staged—if this directory does not yet exist, the step creates it.

Input Parameters

Parameter Name	Default Value	Required	Description
Compression	ALL	optional	<p>Items that will be compressed in the Data Pump Export dump file set. Valid settings are ALL, NONE, DATA_ONLY, METADATA_ONLY.</p> <ul style="list-style-type: none"> • DATA_ONLY: Compress only the table row data (must also specify DATA_ONLY or ALL for the Content parameter). • METADATA_ONLY: Compress only the database object definitions (must also specify METADATA_ONLY or ALL for the Content parameter). • ALL: Compress both the table row data and the database object definitions in the dump file set (must also specify ALL for the Content parameter). • NONE: Nothing is compressed in the dump file set. <p>You must specify the same Compression setting for the export and any subsequent import operations.</p> <p>DATA_ONLY and ALL compression settings are only supported in Oracle Database Enterprise Edition version 11g. You must enable the Oracle Advanced Compression option to use these settings.</p>

Parameter Name	Default Value	Required	Description
Content	ALL	optional	<p>What to include in the Data Pump Export dump file set. Valid settings are ALL, DATA_ONLY, or METADATA_ONLY.</p> <ul style="list-style-type: none"> • DATA_ONLY: Include only table row data. Do not include database object definitions. • METADATA_ONLY: Include only database object definitions. Do not include table row data. If you specify METADATA_ONLY, any index or table statistics later imported from the dump file set will be locked after the import. • ALL: Include both table row data and database object definitions in the dump file set. <p>You must specify the same Content setting for the export and any subsequent import operations.</p>
Data Pump Export File Name	<i>Target Directory</i> \ <code>Oracle SID.dmp</code>	optional	Name (absolute path) of the Data Pump Export dump file (or files) that will be created from an existing Oracle database.
Data Pump Parameter File	no default	optional	Name of the Data Pump Export parameter file that you provide. If you do not specify the absolute path to the Parameter File, the workflow will look for the file in the Target Directory. If you do not specify a Parameter File, default Data Pump Export settings will be used for parameters not specified in the deployment.

Parameter Name	Default Value	Required	Description
Encryption Mode	<p>Default depends on the other encryption settings. Assuming that ENCRYPTION is true:</p> <ul style="list-style-type: none"> • If Encryption Password is specified, and the Oracle encryption wallet is open, default is DUAL. • If Encryption Password is specified, and the wallet is closed, default is PASSWORD. • If Encryption Password is not specified, and the wallet is open, default is TRANSPARENT. • If Encryption Password is not specified, and the wallet is closed, the Data Pump Export operation returns an error. 	optional	<p>This setting determines how the dump file set will be encrypted and how it can later be decrypted during a subsequent Data Pump Import operation. Valid values are PASSWORD, TRANSPARENT, and DUAL.</p> <ul style="list-style-type: none"> • PASSWORD: Data Pump Export uses the Encryption Password to encrypt the dump file set. You must specify the same Encryption Password to perform a subsequent import. • TRANSPARENT: The Oracle encryption wallet is used to encrypt the dump file set using the Secure Sockets Layer (SSL) protocol. The encryption wallet must also be used to decrypt the dump file set during a subsequent import. You cannot specify an Encryption Password if you specify TRANSPARENT mode. • DUAL: During a subsequent import operation, the dump file set can either be decrypted transparently using the Oracle encryption wallet, or it can be decrypted by using the same Encryption Password that was used for the export. <p>DUAL and TRANSPARENT mode are only supported in Oracle Database Enterprise Edition version 11g.</p> <div style="background-color: #f0f0f0; padding: 5px;"> <p>Note: To use DUAL or TRANSPARENT mode, you must enable Oracle Advanced Security.</p> </div>

Parameter Name	Default Value	Required	Description
Encryption Password	no default	optional	<p>Key used to ensure that any encrypted column data, metadata, or table data is re-encrypted before it is written to the dump file set. If you do not specify an Encryption Password—or specify TRANSPARENT for the Encryption Mode—data will be written to the dump files in clear text form.</p> <p>Note the following:</p> <ul style="list-style-type: none">• If you specify an Encryption Password for the export, and the Encryption Mode is PASSWORD, you must specify the same Encryption Password for any subsequent import operations.• The Encryption Password is required when Encryption Mode is PASSWORD or DUAL.• The Encryption Password is not valid when Encryption Mode is TRANSPARENT.• If you specify an Encryption Password but do not specify the Encryption Mode, the mode defaults to PASSWORD. <p>This parameter is only supported in Oracle Database Enterprise Edition version 11g.</p>

Parameter Name	Default Value	Required	Description
Encryption Password	no default	optional	<p>Key used to ensure that any encrypted column data, metadata, or table data is re-encrypted before it is written to the dump file set. If you do not specify an Encryption Password—or specify TRANSPARENT for the Encryption Mode—data will be written to the dump files in clear text form.</p> <p>Note the following:</p> <ul style="list-style-type: none"> • If you specify an Encryption Password for the export, and the Encryption Mode is PASSWORD, you must specify the same Encryption Password for any subsequent import operations. • The Encryption Password is required when Encryption Mode is PASSWORD or DUAL. • The Encryption Password is not valid when Encryption Mode is TRANSPARENT. • If you specify an Encryption Password but do not specify the Encryption Mode, the mode defaults to PASSWORD. <p>This parameter is only supported in Oracle Database Enterprise Edition version 11g.</p>
Full	YES	optional	<p>Set to YES to perform a full Data Pump Export (data and metadata); set to NO to export schemas (metadata).</p> <div style="background-color: #f0f0f0; padding: 5px; margin-top: 10px;"> <p>Caution: The workflow sets the value of this parameter. Do not modify the mapping for this parameter that is defined in the workflow.</p> </div>
Ignorable Oracle Errors	ORA-31684,ORA-39111,ORA-39151,ORA-31685,ORA-00001,RMAN-00571,RMAN-00569,RMAN-03002,RMAN-06054	optional	<p>Comma delimited list of Oracle errors to ignore while executing the Data Pump Export.</p>

Parameter Name	Default Value	Required	Description
Instance Wrapper	no default	required	Command that will be used to execute subsequent steps as the Oracle user who owns the pertinent ORACLE_HOME (for example: <code>sudo su - sysdba /opt/opsware/dma/jython.sh</code>).
Metrics	YES	optional	If you specify YES, the number of objects exported and the elapsed time required for the export operation to complete are recorded in the Data Pump log file. Valid values are YES or NO.
Oracle DB User	no default	optional	Database user account (if other than sysdba) that will be used to perform the Data Pump Export. Note: For Oracle Database 11g R2, this user must have the DATAPUMP_EXP_FULL_DATABASE role, or the workflow will fail. For earlier versions, the user must have the EXP_FULL_DATABASE role.
Oracle DB User Password	/ as sysdba	optional	Password for the Oracle DB User. This is required when this user is not sysdba.
Oracle Home	no default	optional	The ORACLE_HOME to use if more than one home is found in the inventory file (or files).
Oracle SID	no default	required	The Oracle System ID (SID) of the target database.
Schema	no default	optional	Comma-separated list of schemas to export. This parameter is required if a Data Pump Parameter File is not specified.
Target Directory	no default	required	Directory where the Data Pump Export dump file set and the Parameter file will be staged on the target database server. This directory must be known to the Oracle instance.

Output Parameters

Parameter Name	Description
Compression	<p>Items that will be compressed in the Data Pump Export dump file set. Valid settings are ALL, NONE, DATA_ONLY, METADATA_ONLY.</p> <ul style="list-style-type: none"> • DATA_ONLY: Compress only the table row data (must also specify DATA_ONLY or ALL for the Content parameter). • METADATA_ONLY: Compress only the database object definitions (must also specify METADATA_ONLY or ALL for the Content parameter). • ALL: Compress both the table row data and the database object definitions in the dump file set (must also specify ALL for the Content parameter). • NONE: Nothing is compressed in the dump file set. <p>You must specify the same Compression setting for the export and any subsequent import operations.</p> <p>DATA_ONLY and ALL compression settings are only supported in Oracle Database Enterprise Edition version 11g. You must enable the Oracle Advanced Compression option to use these settings.</p>
Content	<p>What to include in the Data Pump Export dump file set. Valid settings are ALL, DATA_ONLY, or METADATA_ONLY.</p> <ul style="list-style-type: none"> • DATA_ONLY: Include only table row data. Do not include database object definitions. • METADATA_ONLY: Include only database object definitions. Do not include table row data. If you specify METADATA_ONLY, any index or table statistics later imported from the dump file set will be locked after the import. • ALL: Include both table row data and database object definitions in the dump file set. <p>You must specify the same Content setting for the export and any subsequent import operations.</p>
Data Pump Export File Name	Name (absolute path) of the Data Pump Export dump file (or files) that will be created from an existing Oracle database.
Data Pump Parameter File	Name of the Data Pump Export parameter file that is updated (or created) by this step. If you do not specify a Parameter File, default Data Pump Export settings will be used for parameters not specified in the deployment.
Do Not Remove List	List of directories that should NOT be removed from the target server after the Data Pump operation is completed.

Parameter Name	Description
Downloaded Files	Comma-separated list of files that will be downloaded from the HP DMA server to the target server prior to the Data Pump Export operation. The file paths are the absolute paths after the download (they include the Target Directory name).
Encryption Mode	<p>This setting determines how the dump file set will be encrypted and how it can later be decrypted during a subsequent Data Pump Import operation. Valid values are PASSWORD, TRANSPARENT, and DUAL.</p> <ul style="list-style-type: none">• PASSWORD: Data Pump Export uses the Encryption Password to encrypt the dump file set. You must specify the same Encryption Password to perform a subsequent import.• TRANSPARENT: The Oracle encryption wallet is used to encrypt the dump file set using the Secure Sockets Layer (SSL) protocol. The encryption wallet must also be used to decrypt the dump file set during a subsequent import. You cannot specify an Encryption Password if you specify TRANSPARENT mode.• DUAL: During a subsequent import operation, the dump file set can either be decrypted transparently using the Oracle encryption wallet, or it can be decrypted by using the same Encryption Password that was used for the export. <p>DUAL and TRANSPARENT mode are only supported in Oracle Database Enterprise Edition version 11g.</p> <p>Note: To use DUAL or TRANSPARENT mode, you must enable Oracle Advanced Security.</p>

Parameter Name	Description
Encryption Password	<p>Key used to ensure that any encrypted column data, metadata, or table data is re-encrypted before it is written to the dump file set. If you do not specify an Encryption Password—or specify TRANSPARENT for the Encryption Mode—data will be written to the dump files in clear text form.</p> <p>Note the following:</p> <ul style="list-style-type: none"> • If you specify an Encryption Password for the export, and the Encryption Mode is PASSWORD, you must specify the same Encryption Password for any subsequent import operations. • The Encryption Password is required when Encryption Mode is PASSWORD or DUAL. • The Encryption Password is not valid when Encryption Mode is TRANSPARENT. • If you specify an Encryption Password but do not specify the Encryption Mode, the mode defaults to PASSWORD. <p>This parameter is only supported in Oracle Database Enterprise Edition version 11g.</p>
File List	Comma-separated list of files that will be downloaded from the HP DMA server to the target server prior to the Data Pump Export operation. The file paths are the original absolute paths on the HP DMA server.
File Size	<p>Maximum size (in MByte) of each dump file in the dump file set. If any file in the dump file set reaches this size, that file is closed, and Data Pump attempts to create a new file.</p> <p>Specify an integer and one of the following units: B (bytes), KB (kilobytes), MB (megabytes), GB (gigabytes), or TB (terabytes). The default unit is bytes.</p> <p>The minimum valid file size is 4 kilobytes; the maximum valid file size is 16 terabytes.</p> <p>The actual size of a dump file may be slightly smaller depending on the size of the internal blocks used.</p>
Full	<p>Set to YES to perform a full Data Pump Export (data and metadata); set to NO to export schemas (metadata).</p> <p>Caution: The workflow sets the value of this parameter. Do not modify the mapping for this parameter that is defined in the workflow.</p>
Ignorable Oracle Errors	Comma delimited list of Oracle errors to ignore while executing the Data Pump Export.

Parameter Name	Description
Metrics	If you specify YES, the number of objects exported and the elapsed time required for the export operation to complete are recorded in the Data Pump log file. Valid values are YES or NO.
Oracle DB User	Database user account (if other than sysdba) that will be used to perform the Data Pump Export. Note: For Oracle Database 11g R2, this user must have the DATAPUMP_EXP_FULL_DATABASE role, or the workflow will fail. For earlier versions, the user must have the EXP_FULL_DATABASE role.
Oracle DB User Password	Password for the Oracle DB User. This is required when this user is not sysdba.
Oracle Home	The ORACLE_HOME to use if more than one home is found in the inventory file (or files).
Oracle SID	The Oracle System ID (SID) of the target database.
Schema	Comma-separated list of schemas to export. This parameter is required if a Data Pump Parameter File is not specified.
Target Directory	Directory where the Data Pump Export dump file set and the Parameter file will be staged on the target database server. This directory must be known to the Oracle instance.
Temporary File Location	The location where all temporary output files will be placed. This directory will be removed at the completion of the workflow.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

- [Export Oracle Schema via Data Pump on page 75](#)
- [Export and Refresh Oracle Schema via Data Pump on page 93](#)

Update Parameters for Oracle Schema Export via Data Pump

Purpose

This step checks the values of the Data Pump Export parameters to ensure that valid values have been specified. It also updates any required values that are missing. It then updates (or creates) the Data Pump parameter file that the workflow will use to perform the export operation. It also creates the log file for the Data Pump Export operation.

Input Parameters

Parameter Name	Default Value	Required	Description
Compression	ALL	optional	<p>Items that will be compressed in the Data Pump Export dump file set. Valid settings are ALL, NONE, DATA_ONLY, METADATA_ONLY.</p> <ul style="list-style-type: none"> • DATA_ONLY: Compress only the table row data (must also specify DATA_ONLY or ALL for the Content parameter). • METADATA_ONLY: Compress only the database object definitions (must also specify METADATA_ONLY or ALL for the Content parameter). • ALL: Compress both the table row data and the database object definitions in the dump file set (must also specify ALL for the Content parameter). • NONE: Nothing is compressed in the dump file set. <p>You must specify the same Compression setting for the export and any subsequent import operations.</p> <p>DATA_ONLY and ALL compression settings are only supported in Oracle Database Enterprise Edition version 11g. You must enable the Oracle Advanced Compression option to use these settings.</p>

Parameter Name	Default Value	Required	Description
Content	ALL	optional	<p>What to include in the Data Pump Export dump file set. Valid settings are ALL, DATA_ONLY, or METADATA_ONLY.</p> <ul style="list-style-type: none"> • DATA_ONLY: Include only table row data. Do not include database object definitions. • METADATA_ONLY: Include only database object definitions. Do not include table row data. If you specify METADATA_ONLY, any index or table statistics later imported from the dump file set will be locked after the import. • ALL: Include both table row data and database object definitions in the dump file set. <p>You must specify the same Content setting for the export and any subsequent import operations.</p>
Data Pump Export File Name	<i>Target Directory\Oracle SID.dmp</i>	optional	Name (absolute path) of the Data Pump Export dump file (or files) that will be created from an existing Oracle database.
Data Pump Parameter File	no default	optional	Name of the Data Pump Export parameter file that you provide. If you do not specify the absolute path to the Parameter File, the workflow will look for the file in the Target Directory. If you do not specify a Parameter File, default Data Pump Export settings will be used for parameters not specified in the deployment.

Parameter Name	Default Value	Required	Description
Defaulted Parameters	no default	optional	<p>Note: The following information pertains only to the Export and Refresh Oracle Schema via Data Pump on page 93 workflow.</p> <p>The Defaulted Parameters list ensures that the following order of precedence is honored when parameter values are specified:</p> <ol style="list-style-type: none"> 1. Specified in a parameter file 2. Specified in the deployment 3. Defaulted <p>By default, the list of Default Parameters is generated automatically by the workflow.</p> <p>However, if you unmap one or more of the following parameters in the workflow and specify their values in the deployment (or at run-time), you must tell the workflow which of the other parameters should be defaulted:</p> <ul style="list-style-type: none"> • COMPRESSION • CONTENT • FILESIZE • FULL • METRICS <p>For example: If you unmap COMPRESSION and specify its value in the deployment, you must also unmap Defaulted Parameters and specify CONTENT, FILESIZE, FULL, METRICS if these parameters are not specified in your parameter file.</p>

Parameter Name	Default Value	Required	Description
Encryption Mode	<p>Default depends on the other encryption settings. Assuming that ENCRYPTION is true:</p> <ul style="list-style-type: none"> • If Encryption Password is specified, and the Oracle encryption wallet is open, default is DUAL. • If Encryption Password is specified, and the wallet is closed, default is PASSWORD. • If Encryption Password is not specified, and the wallet is open, default is TRANSPARENT. • If Encryption Password is not specified, and the wallet is closed, the Data Pump Export operation returns an error. 	optional	<p>This setting determines how the dump file set will be encrypted and how it can later be decrypted during a subsequent Data Pump Import operation. Valid values are PASSWORD, TRANSPARENT, and DUAL.</p> <ul style="list-style-type: none"> • PASSWORD: Data Pump Export uses the Encryption Password to encrypt the dump file set. You must specify the same Encryption Password to perform a subsequent import. • TRANSPARENT: The Oracle encryption wallet is used to encrypt the dump file set using the Secure Sockets Layer (SSL) protocol. The encryption wallet must also be used to decrypt the dump file set during a subsequent import. You cannot specify an Encryption Password if you specify TRANSPARENT mode. • DUAL: During a subsequent import operation, the dump file set can either be decrypted transparently using the Oracle encryption wallet, or it can be decrypted by using the same Encryption Password that was used for the export. <p>DUAL and TRANSPARENT mode are only supported in Oracle Database Enterprise Edition version 11g.</p> <div style="background-color: #f0f0f0; padding: 5px;"> <p>Note: To use DUAL or TRANSPARENT mode, you must enable Oracle Advanced Security.</p> </div>

Parameter Name	Default Value	Required	Description
Encryption Password	no default	optional	<p>Key used to ensure that any encrypted column data, metadata, or table data is re-encrypted before it is written to the dump file set. If you do not specify an Encryption Password—or specify TRANSPARENT for the Encryption Mode—data will be written to the dump files in clear text form.</p> <p>Note the following:</p> <ul style="list-style-type: none"> • If you specify an Encryption Password for the export, and the Encryption Mode is PASSWORD, you must specify the same Encryption Password for any subsequent import operations. • The Encryption Password is required when Encryption Mode is PASSWORD or DUAL. • The Encryption Password is not valid when Encryption Mode is TRANSPARENT. • If you specify an Encryption Password but do not specify the Encryption Mode, the mode defaults to PASSWORD. <p>This parameter is only supported in Oracle Database Enterprise Edition version 11g.</p>
File Size	no default	optional	<p>Maximum size (in MByte) of each dump file in the dump file set. If any file in the dump file set reaches this size, that file is closed, and Data Pump attempts to create a new file.</p> <p>Specify an integer and one of the following units: B (bytes), KB (kilobytes), MB (megabytes), GB (gigabytes), or TB (terabytes). The default unit is bytes.</p> <p>The minimum valid file size is 4 kilobytes; the maximum valid file size is 16 terabytes.</p> <p>The actual size of a dump file may be slightly smaller depending on the size of the internal blocks used.</p>

Parameter Name	Default Value	Required	Description
Full	NO	optional	<p>Set to YES to perform a full Data Pump Export (data and metadata); set to NO to export schemas (metadata).</p> <p>Caution: The workflow sets the value of this parameter. Do not modify the mapping for this parameter that is defined in the workflow.</p>
Instance Wrapper	no default	required	<p>Command that will be used to execute subsequent steps as the Oracle user who owns the pertinent ORACLE_HOME (for example: <code>sudo su - sysdba /opt/opsware/dma/jython.sh</code>).</p>
Metrics	YES	optional	<p>If you specify YES, the number of objects exported and the elapsed time required for the export operation to complete are recorded in the Data Pump log file. Valid values are YES or NO.</p>
Oracle DB User	no default	optional	<p>Database user account (if other than sysdba) that will be used to perform the Data Pump Export.</p> <p>Note: For Oracle Database 11g R2, this user must have the DATAPUMP_EXP_FULL_DATABASE role, or the workflow will fail. For earlier versions, the user must have the EXP_FULL_DATABASE role.</p>
Oracle DB User Password	/ as sysdba	optional	<p>Password for the Oracle DB User. This is required when this user is not sysdba.</p>
Oracle Home	no default	optional	<p>The ORACLE_HOME to use if more than one home is found in the inventory file (or files).</p>
Oracle SID	no default	required	<p>The Oracle System ID (SID) of the target database.</p>
Schema	no default	optional	<p>Comma-separated list of schemas to export. This parameter is required if a Data Pump Parameter File is not specified.</p>

Parameter Name	Default Value	Required	Description
Target Location	no default	required	Directory where the Data Pump Export dump file set and the Parameter file will be staged on the target database server. This directory must be known to the Oracle instance.

Output Parameters

Parameter Name	Description
Data Pump Parameter File	Name of the Data Pump Export parameter file that is updated (or created) by this step. If you do not specify a Parameter File, default Data Pump Export settings will be used for parameters not specified in the deployment.
Dump File Name	Name (absolute path) of the Data Pump Export dump file (or files) that will be created from an existing Oracle database.
Import Log File	Name of the log file for the Data Pump Export operation. If you specified a parameter file, and you specified the log file in the parameter file, the Import Log File is the log file name that you specified. If you did not specify a parameter file—or you specified a parameter file but did not specify the log file in the parameter file—the Import Log File name is constructed as follows: <code>DataPumpImp_TimeStamp.log</code> , where <i>TimeStamp</i> is the time that the log file is created.
Time Stamp	Date and time when the import log file is created in in <code>%Y%m%d%H%M%S</code> format. By default, this time stamp is included in the Import Log file name.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

- [Export Oracle Schema via Data Pump on page 75](#)
- [Export and Refresh Oracle Schema via Data Pump on page 93](#)

Gather Parameters for Oracle Schema Refresh via Data Pump

Purpose

This step gathers the basic parameters required to import specific Oracle database schemas that were previously exported from another (or the same) database using Oracle Data Pump. This step does not perform any type of validation on the parameter values. That is addressed later in the workflow.

Input Parameters

Parameter Name	Default Value	Required	Description
Data Pump Export Files	no default	required	Comma-separated list of Data Pump Export dump files included in the dump file set that will be used for this Data Pump Import. If only one file is specified, no comma is required.
Data Pump Parameter File	no default	optional	Name of the Data Pump Import parameter file that you provide. If you do not specify the absolute path to the Parameter File, the workflow will look for the file in the Target Directory. If you do not specify a Parameter File, default Data Pump Import settings will be used for parameters not specified in the deployment.
Inventory Files	see description	optional	Comma separated list of Oracle inventory file names (with absolute paths). If not specified, set to the appropriate default value for the target server operating system. Defaults are: Solaris: <code>/var/opt/oracle/oraInst.loc</code> Linux: <code>/etc/oraInst.loc</code> Windows: <code>%ProgramFiles%\Oracle\Inventory</code>
Oracle Account	no default	optional	Oracle user that owns the ORACLE_HOME on the target Oracle database server. Required if an inventory file does not exist. Leave blank for Windows.
Oracle Home	no default	optional	The ORACLE_HOME to use if more than one home is found in the inventory file (or files).
Oracle SID	no default	required	The Oracle System ID (SID) of the target database.

Parameter Name	Default Value	Required	Description
Server Wrapper	jython	required	Command that will be used to construct the call wrapper. The workflow uses the call wrapper to execute subsequent steps as either the OS administrative user (for example: <code>sudo su - root /opt/opsware/dma/jython.sh</code>) or the Oracle user who owns the pertinent ORACLE_HOME (for example: <code>sudo su - sysdba /opt/opsware/dma/jython.sh</code>).
Target Directory	no default	required	Directory where the Data Pump Export dump file set and the Parameter file will be staged on the target database server. This directory must be known to the Oracle instance.

Output Parameters

Parameter Name	Description
Data Pump Export Files	Comma-separated list of Data Pump Export dump files included in the dump file set that will be used for this Data Pump Import. If only one file is specified, no comma is required.
Data Pump Parameter File	Name of the Data Pump Import parameter file that you provide. If you do not specify the absolute path to the Parameter File, the workflow will look for the file in the Target Directory. If you do not specify a Parameter File, default Data Pump Import settings will be used for parameters not specified in the deployment.
Inventory Files	Comma separated list of Oracle inventory file names (with absolute paths). If not specified, set to the appropriate default value for the target server operating system. Defaults are: Solaris: <code>/var/opt/oracle/oraInst.loc</code> Linux: <code>/etc/oraInst.loc</code> Windows: <code>%ProgramFiles%\Oracle\Inventory</code>
Oracle Account	Oracle user that owns the ORACLE_HOME on the target Oracle database server. Required if an inventory file does not exist. Leave blank for Windows.
Oracle Home	The ORACLE_HOME to use if more than one home is found in the inventory file (or files).
Oracle SID	The Oracle System ID (SID) of the target database.
Target Directory	Directory where the Data Pump Export dump file set and the Parameter file will be staged on the target database server. This directory must be known to the Oracle instance.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

[Refresh Oracle Schema via Data Pump on page 84](#)

Gather Advanced Parameters for Oracle Schema Refresh via Data Pump

Purpose

This step gathers additional parameters required to import specific schemas into an Oracle database that were previously exported from another (or the same) database using the Oracle Data Pump utility. Some parameters are assigned default values if they are not specified. Validation is performed in another step.

Input Parameters

Parameter Name	Default Value	Required	Description
Content	ALL	optional	<p>What is included in the Data Pump dump file set that will be imported. Valid settings are ALL, DATA_ONLY, or METADATA_ONLY.</p> <ul style="list-style-type: none">• DATA_ONLY: Include only table row data. Do not include database object definitions.• METADATA_ONLY: Include only database object definitions. Do not include table row data. If you specify METADATA_ONLY, any index or table statistics later imported from the dump file set will be locked after the import.• ALL: Include both table row data and database object definitions in the dump file set. <p>You must specify the same Content setting for the export and any subsequent import operations.</p>

Parameter Name	Default Value	Required	Description
Encryption Password	no default	optional	<p>This setting determines how the dump file set that will be imported should be decrypted. Valid values are PASSWORD, TRANSPARENT, and DUAL.</p> <ul style="list-style-type: none"> • PASSWORD: Data Pump Export used the Encryption Password to encrypt the dump file set. You must specify the same Encryption Password to perform a subsequent import. • TRANSPARENT: The Oracle encryption wallet was used to encrypt the dump file set using the Secure Sockets Layer (SSL) protocol. The encryption wallet must also be used to decrypt the dump file set during the import. You cannot specify an Encryption Password if you specify TRANSPARENT mode. • DUAL: The dump file set can either be decrypted transparently using the Oracle encryption wallet, or it can be decrypted by using the same Encryption Password that was used for the export. <p>DUAL and TRANSPARENT mode are only supported in Oracle Database Enterprise Edition version 11g.</p> <p>Note: To use DUAL or TRANSPARENT mode, you must enable Oracle Advanced Security.</p>
Ignorable Oracle Errors	ORA-31684,ORA-39111,ORA-39151,ORA-31685,ORA-00001	optional	Comma delimited list of Oracle errors to ignore while executing the Data Pump Import.
Oracle DB User	no default	optional	<p>Database user account (if other than sysdba) that will be used to perform the Data Pump Import.</p> <p>Note: For Oracle Database 11g R2, this user must have the DATAPUMP_IMP_FULL_DATABASE role, or the workflow will fail. For earlier versions, the user must have the IMP_FULL_DATABASE role.</p>
Oracle DB User Password	/ as sysdba	optional	Password for the Oracle DB User. This is required when this user is not sysdba.

Parameter Name	Default Value	Required	Description
Schema	no default	optional	Comma-separated list of schemas to import. This parameter is required if a Data Pump Parameter File is not specified.
Schema Excluded	no default	optional	Comma-separated list of schemas to exclude from the import.
Server Wrapper	jython	required	Command that will be used to construct the call wrapper. The workflow uses the call wrapper to execute subsequent steps as either the OS administrative user (for example: <code>sudo su - root /opt/opsware/dma/jython.sh</code>) or the Oracle user who owns the pertinent ORACLE_HOME (for example: <code>sudo su - sysdba /opt/opsware/dma/jython.sh</code>).
Table Exist Action	SKIP	optional	<p>This parameter tells the Data Pump Import utility what to do if a table that it is attempting to import already exists in the database. Valid values are:</p> <ul style="list-style-type: none"> • SKIP leaves the table unchanged (no rows are imported from the dump file). • APPEND adds the rows from the dump file and leaves the existing rows unchanged. • TRUNCATE deletes the existing rows from the table and adds the rows from the dump file. • REPLACE removes the existing table and recreates it from the dump file. <p>Note: SKIP and REPLACE are not valid options if Content is DATA_ONLY.</p>
Verification Result	no default	optional	<p>Name (with absolute path) of a text file containing the expected results of the SQL queries included in the Verification SQL Script.</p> <p>This parameter is required if you provide a Verification SQL Script. Be sure to run the Verification SQL Script on the SOURCE database before running this workflow, and copy the results into this file.</p> <p>You must provide this file in a location where the workflow can access it.</p>

Parameter Name	Default Value	Required	Description
Verification SQL Script	no default	optional	<p>Name (with absolute path) of a text file containing a SQL script that verifies the integrity of the database.</p> <p>You must provide this file in a location where the workflow can access it. The expected results of the queries included in this script must be provided in the Verification Result file.</p>

Output Parameters

Parameter Name	Description
Content	<p>What is included in the Data Pump dump file set that will be imported. Valid settings are ALL, DATA_ONLY, or METADATA_ONLY.</p> <ul style="list-style-type: none"> • DATA_ONLY: Include only table row data. Do not include database object definitions. • METADATA_ONLY: Include only database object definitions. Do not include table row data. If you specify METADATA_ONLY, any index or table statistics later imported from the dump file set will be locked after the import. • ALL: Include both table row data and database object definitions in the dump file set. <p>You must specify the same Content setting for the export and any subsequent import operations.</p>
Encryption Password	<p>This setting determines how the dump file set that will be imported should be decrypted. Valid values are PASSWORD, TRANSPARENT, and DUAL.</p> <ul style="list-style-type: none"> • PASSWORD: Data Pump Export used the Encryption Password to encrypt the dump file set. You must specify the same Encryption Password to perform a subsequent import. • TRANSPARENT: The Oracle encryption wallet was used to encrypt the dump file set using the Secure Sockets Layer (SSL) protocol. The encryption wallet must also be used to decrypt the dump file set during the import. You cannot specify an Encryption Password if you specify TRANSPARENT mode. • DUAL: The dump file set can either be decrypted transparently using the Oracle encryption wallet, or it can be decrypted by using the same Encryption Password that was used for the export. <p>DUAL and TRANSPARENT mode are only supported in Oracle Database Enterprise Edition version 11g.</p> <p>Note: To use DUAL or TRANSPARENT mode, you must enable Oracle Advanced Security.</p>

Parameter Name	Description
Ignorable Oracle Errors	Comma delimited list of Oracle errors to ignore while executing the Data Pump Import.
Oracle DB User	Database user account (if other than sysdba) that will be used to perform the Data Pump Import. Note: For Oracle Database 11g R2, this user must have the DATAPUMP_IMP_FULL_DATABASE role, or the workflow will fail. For earlier versions, the user must have the IMP_FULL_DATABASE role.
Oracle DB User Password	Password for the Oracle DB User. This is required when this user is not sysdba.
Schema	Comma-separated list of schemas to import. This parameter is required if a Data Pump Parameter File is not specified.
Schema Excluded	Comma-separated list of schemas to exclude from the import.
Table Exist Action	This parameter tells the Data Pump Import utility what to do if a table that it is attempting to import already exists in the database. Valid values are: <ul style="list-style-type: none"> • SKIP leaves the table unchanged (no rows are imported from the dump file). • APPEND adds the rows from the dump file and leaves the existing rows unchanged. • TRUNCATE deletes the existing rows from the table and adds the rows from the dump file. • REPLACE removes the existing table and recreates it from the dump file. Note: SKIP and REPLACE are not valid options if Content is DATA_ONLY.
Verification Result	Name (with absolute path) of a text file containing the expected results of the SQL queries included in the Verification SQL Script. This parameter is required if you provide a Verification SQL Script. Be sure to run the Verification SQL Script on the SOURCE database before running this workflow, and copy the results into this file. You must provide this file in a location where the workflow can access it.

Parameter Name	Description
Verification SQL Script	Name (with absolute path) of a text file containing a SQL script that verifies the integrity of the database. You must provide this file in a location where the workflow can access it. The expected results of the queries included in this script must be provided in the Verification Result file.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

[Refresh Oracle Schema via Data Pump on page 84](#)

Validate Oracle Schema Refresh

Purpose

This step validates the parameter values specified on the Deployment page. It also checks the target directory where the Data Pump Export File and Data Pump Parameter File will be staged—if this directory does not yet exist, the step creates it.

Input Parameters

Parameter Name	Default Value	Required	Description
Content	ALL	optional	<p>What is included in the Data Pump dump file set that will be imported. Valid settings are ALL, DATA_ONLY, or METADATA_ONLY.</p> <ul style="list-style-type: none"> DATA_ONLY: Include only table row data. Do not include database object definitions. METADATA_ONLY: Include only database object definitions. Do not include table row data. If you specify METADATA_ONLY, any index or table statistics later imported from the dump file set will be locked after the import. ALL: Include both table row data and database object definitions in the dump file set. <p>You must specify the same Content setting for the export and any subsequent import operations.</p>
Data Pump Export Files	no default	required	Comma-separated list of Data Pump Export dump files included in the dump file set that will be used for this Data Pump Import. If only one file is specified, no comma is required.
Data Pump Parameter File	no default	optional	Name of the Data Pump Import parameter file that you provide. If you do not specify the absolute path to the Parameter File, the workflow will look for the file in the Target Directory. If you do not specify a Parameter File, default Data Pump Import settings will be used for parameters not specified in the deployment.

Parameter Name	Default Value	Required	Description
Encryption Password	no default	optional	<p>This setting determines how the dump file set that will be imported should be decrypted. Valid values are PASSWORD, TRANSPARENT, and DUAL.</p> <ul style="list-style-type: none"> • PASSWORD: Data Pump Export used the Encryption Password to encrypt the dump file set. You must specify the same Encryption Password to perform a subsequent import. • TRANSPARENT: The Oracle encryption wallet was used to encrypt the dump file set using the Secure Sockets Layer (SSL) protocol. The encryption wallet must also be used to decrypt the dump file set during the import. You cannot specify an Encryption Password if you specify TRANSPARENT mode. • DUAL: The dump file set can either be decrypted transparently using the Oracle encryption wallet, or it can be decrypted by using the same Encryption Password that was used for the export. <p>DUAL and TRANSPARENT mode are only supported in Oracle Database Enterprise Edition version 11g.</p> <p>Note: To use DUAL or TRANSPARENT mode, you must enable Oracle Advanced Security.</p>
Ignorable Oracle Errors	ORA-31684,ORA-39111,ORA-39151,ORA-31685,ORA-00001	optional	Comma delimited list of Oracle errors to ignore while executing the Data Pump Import.
Instance Wrapper	jython	required	*Required: The jython call wrapper required to run as the owner of the files/directories.
Oracle DB User	no default	optional	<p>Database user account (if other than sysdba) that will be used to perform the Data Pump Import.</p> <p>Note: For Oracle Database 11g R2, this user must have the DATAPUMP_IMP_FULL_DATABASE role, or the workflow will fail. For earlier versions, the user must have the IMP_FULL_DATABASE role.</p>

Parameter Name	Default Value	Required	Description
Oracle DB User Password	/ as sysdba	optional	Password for the Oracle DB User. This is required when this user is not sysdba.
Oracle Home	no default	optional	The ORACLE_HOME to use if more than one home is found in the inventory file (or files).
Oracle SID	no default	required	The Oracle System ID (SID) of the target database.
Schema	no default	optional	Comma-separated list of schemas to import. This parameter is required if a Data Pump Parameter File is not specified.
Schema Excluded	no default	optional	Comma-separated list of schemas to exclude from the import.
Table Exist Action	SKIP	optional	<p>This parameter tells the Data Pump Import utility what to do if a table that it is attempting to import already exists in the database. Valid values are:</p> <ul style="list-style-type: none"> • SKIP leaves the table unchanged (no rows are imported from the dump file). • APPEND adds the rows from the dump file and leaves the existing rows unchanged. • TRUNCATE deletes the existing rows from the table and adds the rows from the dump file. • REPLACE removes the existing table and recreates it from the dump file. <p>Note: SKIP and REPLACE are not valid options if Content is DATA_ONLY.</p>
Target Location	no default	required	Directory where the Data Pump Export dump file set and the Parameter file will be staged on the target database server. This directory must be known to the Oracle instance.

Parameter Name	Default Value	Required	Description
Verification Result	no default	optional	<p>Name (with absolute path) of a text file containing the expected results of the SQL queries included in the Verification SQL Script.</p> <p>This parameter is required if you provide a Verification SQL Script. Be sure to run the Verification SQL Script on the SOURCE database before running this workflow, and copy the results into this file.</p> <p>You must provide this file in a location where the workflow can access it.</p>
Verification SQL Script	no default	optional	<p>Name (with absolute path) of a text file containing a SQL script that verifies the integrity of the database.</p> <p>You must provide this file in a location where the workflow can access it. The expected results of the queries included in this script must be provided in the Verification Result file.</p>

Output Parameters

Parameter Name	Description
Content	<p>What is included in the Data Pump dump file set that will be imported. Valid settings are ALL, DATA_ONLY, or METADATA_ONLY.</p> <ul style="list-style-type: none"> • DATA_ONLY: Include only table row data. Do not include database object definitions. • METADATA_ONLY: Include only database object definitions. Do not include table row data. If you specify METADATA_ONLY, any index or table statistics later imported from the dump file set will be locked after the import. • ALL: Include both table row data and database object definitions in the dump file set. <p>You must specify the same Content setting for the export and any subsequent import operations.</p>
Data Pump Export Files	<p>Comma-separated list of Data Pump Export dump files included in the dump file set that will be used for this Data Pump Import. If only one file is specified, no comma is required.</p>
Data Pump Parameter File	<p>Name of the Data Pump Import parameter file that you provide. If you do not specify the absolute path to the Parameter File, the workflow will look for the file in the Target Directory. If you do not specify a Parameter File, default Data Pump Import settings will be used for parameters not specified in the deployment.</p>

Parameter Name	Description
Do Not Remove List	List of directories that should NOT be removed from the target server after the Data Pump operation is completed.
Downloaded Files	Comma-separated list of files that will be downloaded from the HP DMA server to the target server prior to the Data Pump Import operation. The file paths are the absolute paths after the download (they include the Target Directory name).
Encryption Password	<p>This setting determines how the dump file set that will be imported should be decrypted. Valid values are PASSWORD, TRANSPARENT, and DUAL.</p> <ul style="list-style-type: none"> • PASSWORD: Data Pump Export used the Encryption Password to encrypt the dump file set. You must specify the same Encryption Password to perform a subsequent import. • TRANSPARENT: The Oracle encryption wallet was used to encrypt the dump file set using the Secure Sockets Layer (SSL) protocol. The encryption wallet must also be used to decrypt the dump file set during the import. You cannot specify an Encryption Password if you specify TRANSPARENT mode. • DUAL: The dump file set can either be decrypted transparently using the Oracle encryption wallet, or it can be decrypted by using the same Encryption Password that was used for the export. <p>DUAL and TRANSPARENT mode are only supported in Oracle Database Enterprise Edition version 11g.</p> <p>Note: To use DUAL or TRANSPARENT mode, you must enable Oracle Advanced Security.</p>
File List	Comma-separated list of files that will be downloaded from the HP DMA server to the target server prior to the Data Pump Export operation. The file paths are the original absolute paths on the HP DMA server.
Ignorable Oracle Errors	Comma delimited list of Oracle errors to ignore while executing the Data Pump Import.
Oracle DB User	<p>Database user account (if other than sysdba) that will be used to perform the Data Pump Import.</p> <p>Note: For Oracle Database 11g R2, this user must have the DATAPUMP_IMP_FULL_DATABASE role, or the workflow will fail. For earlier versions, the user must have the IMP_FULL_DATABASE role.</p>

Parameter Name	Description
Oracle DB User Password	Required only if the DB User Password is not '/' as sysdba'.
Oracle Home	The ORACLE_HOME to use if more than one home is found in the inventory file (or files).
Oracle SID	The Oracle System ID (SID) of the target database.
Oracle Version	Specific version of the Oracle Database instance where you will perform the Data Pump operation. Valid values are 10.2 and later.
Schema	Comma-separated list of schemas to import. This parameter is required if a Data Pump Parameter File is not specified.
Schema Excluded	Comma-separated list of schemas to exclude from the import.
Table Exist Action	<p>This parameter tells the Data Pump Import utility what to do if a table that it is attempting to import already exists in the database. Valid values are:</p> <ul style="list-style-type: none"> • SKIP leaves the table unchanged (no rows are imported from the dump file). • APPEND adds the rows from the dump file and leaves the existing rows unchanged. • TRUNCATE deletes the existing rows from the table and adds the rows from the dump file. • REPLACE removes the existing table and recreates it from the dump file. <p>Note: SKIP and REPLACE are not valid options if Content is DATA_ONLY.</p>
Target Location	Directory where the Data Pump Export dump file set and the Parameter file will be staged on the target database server. This directory must be known to the Oracle instance.
Temporary File Location	The location where all temporary output files will be placed. This directory will be removed at the completion of the workflow.
Verification Result	<p>Name (with absolute path) of a text file containing the expected results of the SQL queries included in the Verification SQL Script.</p> <p>This parameter is required if you provide a Verification SQL Script. Be sure to run the Verification SQL Script on the SOURCE database before running this workflow, and copy the results into this file.</p> <p>You must provide this file in a location where the workflow can access it.</p>

Parameter Name	Description
Verification SQL Script	Name (with absolute path) of a text file containing a SQL script that verifies the integrity of the database. You must provide this file in a location where the workflow can access it. The expected results of the queries included in this script must be provided in the Verification Result file.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

- [Refresh Oracle Schema via Data Pump on page 84](#)
- [Export and Refresh Oracle Schema via Data Pump on page 93](#)

Update Parameters for Oracle Schema Refresh via Data Pump

Purpose

This step checks the values of the Data Pump Import parameters to ensure that valid values have been specified. It also updates any required values that are missing. It then updates (or creates) the Data Pump parameter file that the workflow will use to perform the import operation. It also creates the log file for the Data Pump Import operation.

Input Parameters

Parameter Name	Default Value	Required	Description
Content	ALL	optional	<p>What is included in the Data Pump dump file set that will be imported. Valid settings are ALL, DATA_ONLY, or METADATA_ONLY.</p> <ul style="list-style-type: none"> DATA_ONLY: Include only table row data. Do not include database object definitions. METADATA_ONLY: Include only database object definitions. Do not include table row data. If you specify METADATA_ONLY, any index or table statistics later imported from the dump file set will be locked after the import. ALL: Include both table row data and database object definitions in the dump file set. <p>You must specify the same Content setting for the export and any subsequent import operations.</p>
Data Pump Export Files	no default	required	Comma-separated list of Data Pump Export dump files included in the dump file set that will be used for this Data Pump Import. If only one file is specified, no comma is required.
Data Pump Parameter File	no default	optional	Name of the Data Pump Import parameter file that you provide. If you do not specify the absolute path to the Parameter File, the workflow will look for the file in the Target Directory. If you do not specify a Parameter File, default Data Pump Import settings will be used for parameters not specified in the deployment.

Parameter Name	Default Value	Required	Description
Encryption Password	no default	optional	<p>This setting determines how the dump file set that will be imported should be decrypted. Valid values are PASSWORD, TRANSPARENT, and DUAL.</p> <ul style="list-style-type: none"> • PASSWORD: Data Pump Export used the Encryption Password to encrypt the dump file set. You must specify the same Encryption Password to perform a subsequent import. • TRANSPARENT: The Oracle encryption wallet was used to encrypt the dump file set using the Secure Sockets Layer (SSL) protocol. The encryption wallet must also be used to decrypt the dump file set during the import. You cannot specify an Encryption Password if you specify TRANSPARENT mode. • DUAL: The dump file set can either be decrypted transparently using the Oracle encryption wallet, or it can be decrypted by using the same Encryption Password that was used for the export. <p>DUAL and TRANSPARENT mode are only supported in Oracle Database Enterprise Edition version 11g.</p> <p>Note: To use DUAL or TRANSPARENT mode, you must enable Oracle Advanced Security.</p>
Instance Wrapper	no default	required	<p>Command that will be used to execute subsequent steps as the Oracle user who owns the pertinent ORACLE_HOME (for example: <code>sudo su - sysdba /opt/opsware/dma/jython.sh</code>).</p>
Oracle DB User	no default	optional	<p>Database user account (if other than sysdba) that will be used to perform the Data Pump Import.</p> <p>Note: For Oracle Database 11g R2, this user must have the DATAPUMP_IMP_FULL_DATABASE role, or the workflow will fail. For earlier versions, the user must have the IMP_FULL_DATABASE role.</p>
Oracle DB User Password	/ as sysdba	optional	<p>Password for the Oracle DB User. This is required when this user is not sysdba.</p>
Oracle Home	no default	optional	<p>The ORACLE_HOME to use if more than one home is found in the inventory file (or files).</p>

Parameter Name	Default Value	Required	Description
Oracle SID	no default	required	The Oracle System ID (SID) of the target database.
Schema	no default	optional	Comma-separated list of schemas to import. This parameter is required if a Data Pump Parameter File is not specified.
Schema Excluded	no default	optional	Comma-separated list of schemas to exclude from the import.
Table Exist Action	SKIP	optional	<p>This parameter tells the Data Pump Import utility what to do if a table that it is attempting to import already exists in the database. Valid values are:</p> <ul style="list-style-type: none"> • SKIP leaves the table unchanged (no rows are imported from the dump file). • APPEND adds the rows from the dump file and leaves the existing rows unchanged. • TRUNCATE deletes the existing rows from the table and adds the rows from the dump file. • REPLACE removes the existing table and recreates it from the dump file. <p>Note: SKIP and REPLACE are not valid options if Content is DATA_ONLY.</p>
Target Location	no default	required	Directory where the Data Pump Export dump file set and the Parameter file will be staged on the target database server. This directory must be known to the Oracle instance.

Output Parameters

Parameter Name	Description
Data Pump Parameter File	Name of the Data Pump Import parameter file that you provide. If you do not specify the absolute path to the Parameter File, the workflow will look for the file in the Target Directory. If you do not specify a Parameter File, default Data Pump Import settings will be used for parameters not specified in the deployment.
Import Log File	<p>Name of the log file that will be generated by the Data Pump Import utility. If you do not specify an absolute path, Data Pump will put this file in the Target Directory. If the file that you specify already exists, it will be overwritten.</p> <p>Caution: This parameter is derived by the workflow. Under most circumstances, you should not change its mapping or its value.</p>

Parameter Name	Description
Time Stamp	<p>Date and time when the import log file is created in in %Y%m%d%H%M%S format. By default, this time stamp is included in the Import Log file name.</p> <p>Caution: This parameter is derived by the workflow. Under most circumstances, you should not change its mapping or its value.</p>

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

- [Refresh Oracle Schema via Data Pump on page 84](#)
- [Export and Refresh Oracle Schema via Data Pump on page 93](#)

Gather Parameters for Oracle Schema Export and Import via Data Pump

Purpose

This step gathers some of the parameters required to export specific schemas from an Oracle database on the Source target and import the same schemas in another database on the Destination target (or targets) by using the Oracle Data Pump utility.

Input Parameters

Parameter Name	Default Value	Required	Description
ALL - Schema	no default	optional	Comma-separated list of schemas to export and import. This parameter is REQUIRED if the EXPORT-Data Pump Parameter File parameter is not specified.
EXPORT - Data Pump Parameter File	no default	optional	Name of the Data Pump Export parameter file that you provide. If you do not specify the absolute path to the EXPORT-Data Pump Parameter File, the workflow will look for the file in the EXPORT - Target Directory. If you do not specify an EXPORT-Parameter File at all, default Data Pump Export settings will be used for parameters not specified in the deployment.
EXPORT - Inventory Files	see description	optional	Comma-separated list of fully qualified Oracle inventory files on the SOURCE database server. Defaults are as follows: Solaris: /var/opt/oracle/oraInst.loc Linux: /etc/oraInst.loc Windows: %ProgramFiles%\Oracle\Inventory
EXPORT - Oracle Account	no default	optional	Oracle user that owns the ORACLE_HOME on the SOURCE database server. Required if an inventory file does not exist. Leave blank for Windows.
EXPORT - Target Directory	no default	required	Staging directory path known to the SOURCE database server and shared with the DESTINATION database server. This is the path to the NFS mount point as known by the SOURCE database server.
IMPORT - Data Pump Parameter File	no default	optional	Name of the Data Pump Import parameter file that you provide. If you do not specify the absolute path to the Parameter File, the workflow will look for the file in the IMPORT - Target Directory. If you do not specify a Parameter File, default Data Pump Import settings will be used for parameters not specified in the deployment.

Parameter Name	Default Value	Required	Description
IMPORT - Inventory Files	see description	optional	Comma-separated list of fully qualified Oracle inventory files on the DESTINATION database server. Defaults are as follows: Solaris: /var/opt/oracle/oraInst.loc Linux: /etc/oraInst.loc Windows: %ProgramFiles%\Oracle\Inventory
IMPORT - Oracle Account	no default	optional	Oracle user that owns the ORACLE_HOME on the DESTINATION database server. Required if an inventory file does not exist. Leave blank for Windows.
IMPORT - Target Directory	no default	required	Staging directory path known to the DESTINATION database server and shared with the SOURCE database server. This is the path to the NFS mount point as known by the DESTINATION database server.
Server Wrapper	jython	required	Command that will be used to construct the call wrapper. The workflow uses the call wrapper to execute subsequent steps as either the OS administrative user (for example: <code>sudo su - root /opt/opsware/dma/jython.sh</code>) or the Oracle user who owns the pertinent ORACLE_HOME (for example: <code>sudo su - sysdba /opt/opsware/dma/jython.sh</code>).

Output Parameters

Parameter Name	Description
ALL - Schema	Comma-separated list of schemas to export and import. This parameter is REQUIRED if the EXPORT- Data Pump Parameter File parameter is not specified.
EXPORT - Data Pump Parameter File	Name of the Data Pump Export parameter file that you provide. If you do not specify the absolute path to the EXPORT- Data Pump Parameter File, the workflow will look for the file in the EXPORT - Target Directory. If you do not specify an EXPORT- Parameter File at all, default Data Pump Export settings will be used for parameters not specified in the deployment.
EXPORT - Inventory Files	Comma-separated list of fully qualified Oracle inventory files on the SOURCE database server. Defaults are as follows: Solaris: /var/opt/oracle/oraInst.loc Linux: /etc/oraInst.loc Windows: %ProgramFiles%\Oracle\Inventory

Parameter Name	Description
EXPORT - Oracle Account	Oracle user that owns the ORACLE_HOME on the SOURCE database server. Required if an inventory file does not exist. Leave blank for Windows.
EXPORT - Target Directory	Staging directory path known to the SOURCE database server and shared with the DESTINATION database server. This is the path to the NFS mount point as known by the SOURCE database server.
IMPORT - Data Pump Parameter File	Name of the Data Pump Import parameter file that you provide. If you do not specify the absolute path to the Parameter File, the workflow will look for the file in the IMPORT - Target Directory. If you do not specify a Parameter File, default Data Pump Import settings will be used for parameters not specified in the deployment.
IMPORT - Inventory Files	Comma-separated list of fully qualified Oracle inventory files on the DESTINATION database server. Defaults are as follows: Solaris: /var/opt/oracle/oraInst.loc Linux: /etc/oraInst.loc Windows: %ProgramFiles%\Oracle\Inventory
IMPORT - Oracle Account	Oracle user that owns the ORACLE_HOME on the DESTINATION database server. Required if an inventory file does not exist. Leave blank for Windows.
IMPORT - Target Directory	Staging directory path known to the DESTINATION database server and shared with the SOURCE database server. This is the path to the NFS mount point as known by the DESTINATION database server.

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

[Export and Refresh Oracle Schema via Data Pump on page 93](#)

Gather Advanced Parameters for Oracle Schema Export and Import via Data Pump

Purpose

This step gathers and validates additional parameters required to export specific schemas in an Oracle database on the Source target and import the same schemas into a database on the Destination target (or targets) by using the Oracle Data Pump utility.

Input Parameters

Parameter Name	Default Value	Required	Description
ALL - Content	ALL	optional	<p>What to export and subsequently import. Valid settings are ALL, DATA_ONLY, or METADATA_ONLY.</p> <ul style="list-style-type: none">• DATA_ONLY: Include only table row data. Do not include database object definitions.• METADATA_ONLY: Include only database object definitions. Do not include table row data. If you specify METADATA_ONLY, any index or table statistics later imported from the dump file set will be locked after the import.• ALL: Include both table row data and database object definitions in the dump file set.

Parameter Name	Default Value	Required	Description
ALL - Encryption Password	no default	optional	<p>Key used to ensure that any encrypted column data, metadata, or table data is re-encrypted before it is written to the dump file set. If you do not specify an Encryption Password—or specify TRANSPARENT for the Encryption Mode in the Parameter File—data will be written to the dump files in clear text form.</p> <p>Note the following:</p> <ul style="list-style-type: none"> • The Encryption Password is required when Encryption Mode is PASSWORD or DUAL. • The Encryption Password is not valid when Encryption Mode is TRANSPARENT. <p>This parameter is only supported in Oracle Database Enterprise Edition version 11g</p>
ALL - Ignorable Oracle Errors	ORA-31684,ORA-39111,ORA-39151,ORA-31685,ORA-00001,RMAN-00571,RMAN-00569,RMAN-03002,RMAN-06054	optional	<p>Comma delimited list of Oracle errors to ignore while executing the export and subsequent import.</p>

Parameter Name	Default Value	Required	Description
EXPORT - Compression	ALL	optional	<p>Items that will be compressed in the Data Pump Export dump file set. Valid settings are ALL, NONE, DATA_ONLY, METADATA_ONLY.</p> <ul style="list-style-type: none"> • DATA_ONLY: Compress only the table row data (must specify DATA_ONLY or ALL for the Content parameter). • METADATA_ONLY: Compress only the database object definitions (must specify METADATA_ONLY or ALL for the Content parameter). • ALL: Compress both the table row data and the database object definitions in the dump file set (must specify ALL for the Content parameter). • NONE: Nothing is compressed in the dump file set. <p>You must specify the same Compression setting for the export and subsequent import operations.</p> <p>DATA_ONLY and ALL compression settings are only supported in Oracle Database Enterprise Edition version 11g. You must enable the Oracle Advanced Compression option to use these settings.</p>
EXPORT - Data Pump Export File Name	no default	optional	<p>Name of the Data Pump Export dump file (or files) that will be created from an existing Oracle database. A timestamp is appended to the file name (or names) that you specify. If you do not specify a file name, a default file name (or list of names) is generated.</p>

Parameter Name	Default Value	Required	Description
EXPORT - Encryption Mode	<p>Default depends on the other encryption settings. Assuming that ENCRYPTION is true:</p> <ul style="list-style-type: none"> • If Encryption Password is specified, and the Oracle encryption wallet is open, default is DUAL. • If Encryption Password is specified, and the wallet is closed, default is PASSWORD. • If Encryption Password is not specified, and the wallet is open, default is TRANSPARENT. • If Encryption Password is not specified, and the wallet is closed, the Data Pump Export operation returns an error. 	optional	<p>This setting determines how the dump file set will be encrypted and how it can later be decrypted during the subsequent import operation. Valid values are PASSWORD, TRANSPARENT, and DUAL.</p> <ul style="list-style-type: none"> • PASSWORD: Data Pump Export uses the Encryption Password to encrypt the dump file set. You must specify the same Encryption Password to perform a subsequent import. • TRANSPARENT: The Oracle encryption wallet is used to encrypt the dump file set using the Secure Sockets Layer (SSL) protocol. The encryption wallet must also be used to decrypt the dump file set during a subsequent import. You cannot specify an Encryption Password if you specify TRANSPARENT mode. • DUAL: During a subsequent import operation, the dump file set can either be decrypted transparently using the Oracle encryption wallet, or it can be decrypted by using the same Encryption Password that was used for the export. <p>DUAL and TRANSPARENT mode are only supported in Oracle Database Enterprise Edition version 11g.</p> <div style="background-color: #e0e0e0; padding: 5px;"> <p>Note: To use DUAL or TRANSPARENT mode, you must enable Oracle Advanced Security.</p> </div>

Parameter Name	Default Value	Required	Description
EXPORT - File Size	200M	optional	<p>Maximum size of each dump file in the dump file set. If any file in the dump file set reaches this size, that file is closed, and Data Pump attempts to create a new file.</p> <p>Specify an integer and one of the following units: B (bytes), KB (kilobytes), MB (megabytes), GB (gigabytes), or TB (terabytes). The default unit is bytes.</p> <p>The minimum valid file size is 4 kilobytes; the maximum valid file size is 16 terabytes.</p> <p>The actual size of a dump file may be slightly smaller depending on the size of the internal blocks used.</p>
EXPORT - Full	NO	optional	<p>This parameter is set to YES to perform a full Data Pump Export (data and metadata) or NO to export schemas (metadata).</p> <p>Caution: The workflow sets the value of this parameter. Do not modify the mapping for this parameter that is defined in the workflow.</p>
EXPORT - Metrics	YES	optional	<p>If you specify YES, the number of objects exported and the elapsed time required for the export operation to complete are recorded in the Data Pump log file. Valid values are YES or NO.</p>
EXPORT - Oracle DB User	no default	optional	<p>SOURCE database user account that will be used to perform the Data Pump Export.</p> <p>Note: For Oracle Database 11g R2, this user must have the DATAPUMP_EXP_FULL_DATABASE and DATAPUMP_EXP_FULL_DATABASE roles.</p> <p>For earlier versions, the user must have the EXP_FULL_DATABASE and EXP_FULL_DATABASE roles.</p>

Parameter Name	Default Value	Required	Description
EXPORT - Oracle DB User Password	no default	required	Password for the SOURCE Oracle database user specified in the EXPORT- Oracle DB User parameter. This is required when this user is not sysdba.
IMPORT - Oracle DB User	no default	optional	<p>DESTINATION database user account that will be used to perform the Data Pump Import.</p> <p>Note: For Oracle Database 11g R2, this user must have the DATAPUMP_IMP_FULL_DATABASE and DATAPUMP_IMP_FULL_DATABASE roles.</p> <p>For earlier versions, the user must have the IMP_FULL_DATABASE and IMP_FULL_DATABASE roles.</p>
IMPORT - Oracle DB User Password	no default	required	Password for the DESTINATION Oracle database user specified in the IMPORT- Oracle DB User parameter. This is required when this user is not sysdba.
IMPORT - Schema Excluded	FALSE	optional	<p>This parameter is set to TRUE if there are schema that will be explicitly excluded from the import. It is set to FALSE otherwise.</p> <p>Caution: The workflow sets the value of this parameter. Do not modify the mapping for this parameter that is defined in the workflow.</p>

Parameter Name	Default Value	Required	Description
IMPORT - Table Exist Action	SKIP	optional	<p>This parameter tells the Data Pump Import utility what to do if a table that it is attempting to import already exists in the database. Valid values are:</p> <ul style="list-style-type: none"> • SKIP leaves the table unchanged (no rows are imported from the dump file). • APPEND adds the rows from the dump file and leaves the existing rows unchanged. • TRUNCATE deletes the existing rows from the table and adds the rows from the dump file. • REPLACE removes the existing table and recreates it from the dump file. <p>Note: SKIP and REPLACE are not valid options if ALL - Content is DATA_ONLY.</p>
IMPORT - Update System Tables	FALSE	optional	<p>Determines whether the system tables are updated during the Data Pump Import. If TRUE, all system tables will be included in the import. If FALSE, the SYS and SYSMGR tables are excluded from the import. This is useful, because importing these tables often generates numerous errors, each of which must otherwise be added to the Ignorable Oracle Errors list.</p> <p>You can explicitly specify a list of tables to be excluded from the import by using the Schema parameter in the Update Parameters for Oracle Database Refresh via Data Pump on page 261 step.</p>

Parameter Name	Default Value	Required	Description
IMPORT - Verification Result	no default	optional	<p>Name (with absolute path) of a text file containing the expected results of the SQL queries included in the Verification SQL Script.</p> <p>This parameter is required if you provide a Verification SQL Script. Be sure to run the Verification SQL Script on the SOURCE database before running this workflow, and copy the results into this file.</p> <p>You must provide this file in a location where the workflow can access it.</p>
IMPORT - Verification SQL Script	no default	optional	<p>Name (with absolute path) of a text file containing a SQL script that verifies the following on the DESTINATION database:</p> <ul style="list-style-type: none"> • The import operation was successful. • No data is missing. <p>You must provide this file in a location where the workflow can access it. The expected results of the queries included in this script must be provided in the Verification Result file.</p>
Server Wrapper	jython	required	<p>Command that will be used to construct the call wrapper. The workflow uses the call wrapper to execute subsequent steps as either the OS administrative user (for example: <code>sudo su - root /opt/opsware/dma/jython.sh</code>) or the Oracle user who owns the pertinent ORACLE_HOME (for example: <code>sudo su - sysdba /opt/opsware/dma/jython.sh</code>).</p>

Output Parameters

Parameter Name	Description
ALL - Content	<p>What to export and subsequently import. Valid settings are ALL, DATA_ONLY, or METADATA_ONLY.</p> <ul style="list-style-type: none"> • DATA_ONLY: Include only table row data. Do not include database object definitions. • METADATA_ONLY: Include only database object definitions. Do not include table row data. If you specify METADATA_ONLY, any index or table statistics later imported from the dump file set will be locked after the import. • ALL: Include both table row data and database object definitions in the dump file set.
ALL - Encryption Password	<p>Key used to ensure that any encrypted column data, metadata, or table data is re-encrypted before it is written to the dump file set. If you do not specify an Encryption Password—or specify TRANSPARENT for the Encryption Mode in the Parameter File—data will be written to the dump files in clear text form.</p> <p>Note the following:</p> <ul style="list-style-type: none"> • The Encryption Password is required when Encryption Mode is PASSWORD or DUAL. • The Encryption Password is not valid when Encryption Mode is TRANSPARENT. <p>This parameter is only supported in Oracle Database Enterprise Edition version 11g</p>
ALL - Ignorable Oracle Errors	<p>Comma delimited list of Oracle errors to ignore while executing the export and subsequent import.</p>

Parameter Name	Description
EXPORT - Compression	<p>Items that will be compressed in the Data Pump Export dump file set. Valid settings are ALL, NONE, DATA_ONLY, METADATA_ONLY.</p> <ul style="list-style-type: none"> • DATA_ONLY: Compress only the table row data (must specify DATA_ONLY or ALL for the Content parameter). • METADATA_ONLY: Compress only the database object definitions (must specify METADATA_ONLY or ALL for the Content parameter). • ALL: Compress both the table row data and the database object definitions in the dump file set (must specify ALL for the Content parameter). • NONE: Nothing is compressed in the dump file set. <p>You must specify the same Compression setting for the export and subsequent import operations.</p> <p>DATA_ONLY and ALL compression settings are only supported in Oracle Database Enterprise Edition version 11g. You must enable the Oracle Advanced Compression option to use these settings.</p>
EXPORT - Data Pump Export File Name	<p>Name of the Data Pump Export dump file (or files) that will be created from an existing Oracle database. A timestamp is appended to the file name (or names) that you specify. If you do not specify a file name, a default file name (or list of names) is generated.</p>
EXPORT - Encryption Mode	<p>This setting determines how the dump file set will be encrypted and how it can later be decrypted during the subsequent import operation. Valid values are PASSWORD, TRANSPARENT, and DUAL.</p> <ul style="list-style-type: none"> • PASSWORD: Data Pump Export uses the Encryption Password to encrypt the dump file set. You must specify the same Encryption Password to perform a subsequent import. • TRANSPARENT: The Oracle encryption wallet is used to encrypt the dump file set using the Secure Sockets Layer (SSL) protocol. The encryption wallet must also be used to decrypt the dump file set during a subsequent import. You cannot specify an Encryption Password if you specify TRANSPARENT mode. • DUAL: During a subsequent import operation, the dump file set can either be decrypted transparently using the Oracle encryption wallet, or it can be decrypted by using the same Encryption Password that was used for the export. <p>DUAL and TRANSPARENT mode are only supported in Oracle Database Enterprise Edition version 11g.</p> <p>Note: To use DUAL or TRANSPARENT mode, you must enable Oracle Advanced Security.</p>

Parameter Name	Description
EXPORT - File Size	<p>Maximum size of each dump file in the dump file set. If any file in the dump file set reaches this size, that file is closed, and Data Pump attempts to create a new file.</p> <p>Specify an integer and one of the following units: B (bytes), KB (kilobytes), MB (megabytes), GB (gigabytes), or TB (terabytes). The default unit is bytes.</p> <p>The minimum valid file size is 4 kilobytes; the maximum valid file size is 16 terabytes.</p> <p>The actual size of a dump file may be slightly smaller depending on the size of the internal blocks used.</p>
EXPORT - Full	<p>This parameter is set to YES to perform a full Data Pump Export (data and metadata) or NO to export schemas (metadata).</p> <p>Caution: The workflow sets the value of this parameter. Do not modify the mapping for this parameter that is defined in the workflow.</p>
EXPORT - Metrics	<p>If you specify YES, the number of objects exported and the elapsed time required for the export operation to complete are recorded in the Data Pump log file. Valid values are YES or NO.</p>
EXPORT - Oracle DB User	<p>SOURCE database user account that will be used to perform the Data Pump Export.</p> <p>Note: For Oracle Database 11g R2, this user must have the DATAPUMP_EXP_FULL_DATABASE and DATAPUMP_EXP_FULL_DATABASE roles.</p> <p>For earlier versions, the user must have the EXP_FULL_DATABASE and EXP_FULL_DATABASE roles.</p>
EXPORT - Oracle DB User Password	<p>Password for the SOURCE Oracle database user specified in the EXPORT-Oracle DB User parameter. This is required when this user is not sysdba.</p>
IMPORT - Oracle DB User	<p>DESTINATION database user account that will be used to perform the Data Pump Import.</p> <p>Note: For Oracle Database 11g R2, this user must have the DATAPUMP_IMP_FULL_DATABASE and DATAPUMP_IMP_FULL_DATABASE roles.</p> <p>For earlier versions, the user must have the IMP_FULL_DATABASE and IMP_FULL_DATABASE roles.</p>

Parameter Name	Description
IMPORT - Oracle DB User Password	Password for the DESTINATION Oracle database user specified in the IMPORT- Oracle DB User parameter. This is required when this user is not sysdba.
IMPORT - Schema Excluded	<p>This parameter is set to TRUE if there are schema that will be explicitly excluded from the import. It is set to FALSE otherwise.</p> <p>Caution: The workflow sets the value of this parameter. Do not modify the mapping for this parameter that is defined in the workflow.</p>
IMPORT - Table Exist Action	<p>This parameter tells the Data Pump Import utility what to do if a table that it is attempting to import already exists in the database. Valid values are:</p> <ul style="list-style-type: none"> • SKIP leaves the table unchanged (no rows are imported from the dump file). • APPEND adds the rows from the dump file and leaves the existing rows unchanged. • TRUNCATE deletes the existing rows from the table and adds the rows from the dump file. • REPLACE removes the existing table and recreates it from the dump file. <p>Note: SKIP and REPLACE are not valid options if ALL - Content is DATA_ONLY.</p>
IMPORT - Update System Tables	<p>Determines whether the system tables are updated during the Data Pump Import. If TRUE, all system tables will be included in the import. If FALSE, the SYS and SYSMGR tables are excluded from the import. This is useful, because importing these tables often generates numerous errors, each of which must otherwise be added to the Ignorable Oracle Errors list.</p> <p>You can explicitly specify a list of tables to be excluded from the import by using the Schema parameter in the Update Parameters for Oracle Database Refresh via Data Pump on page 261 step.</p>
IMPORT - Verification Result	<p>Name (with absolute path) of a text file containing the expected results of the SQL queries included in the Verification SQL Script.</p> <p>This parameter is required if you provide a Verification SQL Script. Be sure to run the Verification SQL Script on the SOURCE database before running this workflow, and copy the results into this file.</p> <p>You must provide this file in a location where the workflow can access it.</p>

Parameter Name	Description
IMPORT - Verification SQL Script	<p>Name (with absolute path) of a text file containing a SQL script that verifies the following on the DESTINATION database:</p> <ul style="list-style-type: none">• The import operation was successful.• No data is missing. <p>You must provide this file in a location where the workflow can access it. The expected results of the queries included in this script must be provided in the Verification Result file.</p>

Return Codes

0 = No errors occurred during the execution of this step.

1 = One or more errors occurred.

Used By Workflows

[Export and Refresh Oracle Schema via Data Pump on page 93](#)

Chapter 7

Other Reference Information

The following topics provide additional information pertinent to the workflows in this solution pack:

- [Oracle Database Product Documentation on next page](#)
- [Example of a Verification SQL Script and Results File below](#)
- [Using this Solution Pack With HP Server Automation on page 350](#)

How to Set Up an NFS Share

The following examples show you one way to create and mount an NFS share that can be used by the Database Refresh workflows in this solution pack. The specific settings will vary according to the environment.

These examples assume that you have already set up an NFS server, and the NFS daemon is running.

- Example 1: Create the NFS share on one server

On Linux servers, add the following command to the `/etc/dfstab` file:

```
share -F nfs -o rw,anon=0 -d sharedDir /u01/nfs_share
```

On Solaris servers, add the following command to the `/etc/dfs/dfstab` file:

```
share -F nfs -o rw,anon=0 -d sharedDir /u01/nfs_share
```

In both cases, `sharedDir` is the directory that you want to share.

- Example 2: Mount the NFS share on another server

```
mount -t nfs -o  
rw,rsize=32768,wsiz=32768,tcp,hard,-  
nointr,nfsvers=3,bg,actimeo=0,timeo=600,suid,async  
serverName:/u01/nfs_share /var/tmp/nfs_share
```

Here, `serverName` is the network resolvable name of the server where the NFS share resides, and `/u01/nfs_share` is the shared directory on that server.

Note: In this example, the `/var/tmp/nfs_share` directory must exist before the `mount` command is executed.

Example of a Verification SQL Script and Results File

The following example shows a simple SQL script that could be used to verify that the contents of the source and destination databases are the same.

SQL Script Example

Here are the contents of a simple Verification SQL Script that could be used to verify a Data Pump import or RMAN restore operation:

```
connect ESPN/ESPN
select count(*) from player;
select * from player where player_id = 27;
select * from team where team_code = 10;
exit
```

Results File Example

Here are the results of running the Verification SQL Script shown above on the source database prior to the Data Pump export or the RMAN backup operation. The goal is to get the same results when you run the script on the destination database after the Data Pump import or the RMAN restore operation.

```
COUNT (*)
-----
      27

PLAYER_ID  PLAYER_NAME                                COUNTRY  G
-----
      27 Michael Jordan                                USA      M

TEAM_CODE  NAME                                HOME_TOWN  SPORTS_CODE
-----
      10 Unilever Volei                                Rio de Janerio      6
```

Oracle Database Product Documentation

For information about Oracle Database 11g, including prerequisites, see the product documentation available at the following web site:

Document Title	Link to the Current Version
Oracle Database 11g Documentation Library	http://www.oracle.com/pls/db112/homepage
Oracle Database 11g Documentation Book List	http://www.oracle.com/pls/db112/portal.all_books
Oracle Recovery Manager Documentation	See Oracle RMAN Documentation below
Oracle Data Pump Documentation	See Oracle Data Pump Documentation on next page

Oracle RMAN Documentation

The following topics in the Oracle Database product documentation suite provide information about the Recovery Manager (RMAN) utility:

Document Title	Topic	Current Link
Oracle® Database Backup and Recovery User's Guide 11g Release 2 (11.2)	Recovery Manager Architecture	http://docs.oracle.com/cd/E11882_01/backup.112/e10642/rcmarchi.htm#BRADV001
Oracle Database Backup and Recovery User's Guide 11g Release 2 (11.2)	RMAN Backup Concepts	http://docs.oracle.com/cd/E11882_01/backup.112/e10642/rcmcncpt.htm#BRADV002
Oracle Database 2 Day DBA 11g Release 2 (11.2)	Performing Backup and Recovery	http://docs.oracle.com/cd/E11882_01/server.112/e10897/backrest.htm#ADMQS009
Oracle Database Backup and Recovery Reference 11g Release 2 (11.2)	About RMAN Commands	http://docs.oracle.com/cd/E11882_01/backup.112/e10643/rcmcomma.htm#RCMRF001

The links listed here were correct as of the publication of this guide. They are subject to change at Oracle's discretion.

Oracle Data Pump Documentation

The following topics in the Oracle Database product documentation suite provide information about the Data Pump utility:

Document Title	Topic	Current Link
Oracle Database Concepts 11g Release 2	Data Pump Architecture	http://docs.oracle.com/cd/E11882_01/server.112/e25789/cncptdba.htm#CNCPT1277

Document Title	Topic	Current Link
Oracle® Database Concepts 11g Release 2 (11.2)	Oracle Data Pump Export and Import	http://docs.oracle.com/cd/E11882_01/server.112/e25789/cncptdba.htm#CHDDDDBJ
Oracle® Database Utilities 11g Release 2 (11.2)	Overview of Oracle Data Pump	http://docs.oracle.com/cd/E11882_01/server.112/e22490/dp_overview.htm#SUTIL100
Oracle® Database Utilities 11g Release 2 (11.2)	Data Pump Export	http://docs.oracle.com/cd/E11882_01/server.112/e22490/dp_export.htm#SUTIL200
Oracle® Database Utilities 11g Release 2 (11.2)	Data Pump Import	http://docs.oracle.com/cd/E11882_01/server.112/e22490/dp_import.htm#SUTIL300
Oracle Database Utilities 11g Release 2 (11.2)	Data Pump Command Reference	http://docs.oracle.com/cd/E11882_01/server.112/e22490/part_dp.htm#i436481

The links listed here were correct as of the publication of this guide. They are subject to change at Oracle's discretion.

Using this Solution Pack With HP Server Automation

HP Database and Middleware Automation (HP DMA) version 1.00 is compatible with HP Server Automation version 9.02 (and later 9.0x versions).

For information about running HP DMA workflows from HP Server Automation versions prior to 9.10, refer to the following documents:

- *HP Server Automation Application Deployment User Guide* (version 9.02 and later 9.0x versions)
- *HP Database and Middleware Automation User Guide* (version 1.00)

HP Database and Middleware Automation version 9.10 is compatible with HP Server Automation version 9.10 (and later).

For information about running HP Database and Middleware Automation workflows from HP Server Automation version 9.10 (and later), refer to the following documents:

- *User Guide: Application Deployment Manager*
- *User Guide: Database and Middleware Automation User Guide*

These guides are included in the HP Server Automation documentation library (version 9.10 and later).

Chapter 8

Tips and Best Practices

This portion of the online helpdocument contains a collection of tips and best practices that will enable you to use HP DMA more effectively. It contains the following topics:

[Using a Policy to Specify Parameter Values below](#)

Using a Policy to Specify Parameter Values

It is sometimes advantageous to provide parameter values by using a policy rather than explicitly specifying the values in a deployment. This approach has the following advantages:

- Passwords are obfuscated (not displayed in clear text).
- The policy can be used in any deployment.
- It is faster and less error-prone than specifying parameter values manually.

To establish a policy, you can either [Create a Policy](#) or [Extract a Policy](#) from a workflow.

After you establish the policy, you must [Reference the Policy in the Deployment](#).

If you are using HP Server Automation, see the *User Guide: Database and Middleware Automation*. This guide is included in the HP Server Automation documentation library (SA version 9.10 and later).

If you are using HP DMA 1.00, see "Policies" in the *HP Database and Middleware Automation User Guide* for more information.

Create a Policy

The first step in this approach is to create a policy that provides parameter values. There are two ways to do this: (1) create a new policy, and define all attributes manually (as shown here) or (2) extract a policy from a workflow (see [Extract a Policy on next page](#)).

To create a policy that provides parameter values:

1. In the HP DMA web UI, go to Automation > Policies.
2. Click **New Policy**.
3. In the **Name** box, specify the name of the policy
4. For each parameter value that you want to provide using this policy, perform the following actions on the Attributes tab:
 - a. From the drop-down list, select the type of attribute:
 - A Text attribute contains simple text that users can view while deploying and running workflows.

- A List attribute contains a comma-delimited list of values (or a large amount of text not suitable for a Text attribute).
 - A Password attribute contains simple text, but it is obfuscated so that users cannot see the text.
- b. In the text box to the left of the Add button, specify the name of the attribute.
- For your convenience, this name should be similar to the parameter name used in the pertinent workflow (or workflows).
- c. Click **Add**.
- d. In the new text box to the right of the attribute's name, enter a value for this attribute.
- To remove an attribute, click the **Remove** button.
5. On the Roles tab, grant Read and Write permission to any additional users and groups who will be using this policy. By default, any groups to which you belong have Read and Write permission.
6. Click the **Save** button (lower right corner).

Extract a Policy

An alternative to creating your own policy one attribute at a time is to extract the policy. This automatically creates a reusable policy that provides values for all input parameters associated with a workflow. This is a convenient way to create a policy.

To extract a policy:

1. Go to Automation > Workflows.
2. Select the Workflow that you want to work with.
3. Click the Extract Policy link at the bottom of the screen.
4. Specify values for each attribute listed.
5. *Optional:* Remove any attributes that you do not want to use.

Note: Extracted policies only use Text type attributes. Therefore, passwords are not obfuscated when you specify them in an extracted policy. You can, however, delete an automatically extracted attribute and then add a new one of type Password.

6. *Optional:* Add any new attributes that you want to use.
7. *Optional:* On the Roles tab, select the Read box for any users or user groups that you want to be able to use this policy to provide parameter values in a Deployment. Select the Write box for any users or groups that you want to be able to modify this Policy (add or remove attributes).
8. Click **Save**.

Reference the Policy in the Deployment

After you create a policy, you can reference its attributes in a deployment.

To reference policy attributes in a deployment:

1. Create or access the deployment.

See “Deployments” in the *User Guide: Database and Middleware Automation* for details. This guide is included in the HP Server Automation documentation library (SA version 9.10 and later).

2. On the Parameters tab, perform the following steps for each parameter whose value you want to provide by referencing a policy attribute:

- a. In the text box to the right of the parameter name, type the first few characters of the policy name.

A drop-down list of policy attributes appears.

- b. From the drop-down list, select the attribute that you want to reference.

3. Click **Save** to save your changes to the deployment.

Chapter 9

Troubleshooting

These topics can help you address problems that might occur when you install and run the workflows in this solution pack:

- [Target Type below](#)
- [User Permissions and Related Requirements below](#)
- [Discovery in HP Server Automation on next page](#)

For additional information, refer to the “Troubleshooting” chapter in the *HP Server Automation User Guide: Database and Middleware Automation*.

If you are using HP Database and Middleware Automation version 1.00, see the *HP Database and Middleware Automation Installation Guide*.

Target Type

In your deployment, make sure that you have specified the correct type of target. The workflow type and the target type must match. A workflow designed to run against an instance target, for example, cannot run against a server target.

User Permissions and Related Requirements

Roles define access (Read or Write) permissions for organizations, workflows, steps, policies, and deployments. Deployments have an extra permission: Execute. Users are assigned to roles, and they gain access to these items according to the permissions defined for their roles.

Note: The following information pertains only to HP DMA 1.00:

Roles can be defined in one of two ways: native or LDAP groups.

- Native roles define groups of HP DMA users in the repository.
- LDAP groups are retrieved from the LDAP server configured in the Setup > Expert Engine area. No user information is stored in the repository for LDAP groups. This allows you to use your corporate directory for defining users and their permissions making security audits easier.

Roles are assigned on the Roles tab of the Setup page. See “Roles” in the *HP Database and Middleware Automation User Guide* (version 1.00) for more information.

Make sure that the HP DMA users in your environment are assigned roles that grant them the permissions they need to accomplish their tasks. For example:

- To view a workflow, your role must have Read permission for that workflow.
- To view a deployment, your role must have Read permission for that deployment.

- To edit a workflow, your role must have Write permission for that workflow.
- To run a deployment, your role must have Execute permission for that deployment.

Permissions determine what features and functions are available and active in the HP DMA UI. For a detailed breakdown, see the HP Database and Middleware Automation *User Guide*.

Note: In HP Server Automation, roles and permissions work differently. Both roles and permissions are assigned by the SA administrator. See the HP Server Automation *Administration Guide* and the *User Guide: Database and Middleware Automation* for more information. Both guides are included in the HP Server Automation documentation library (SA version 9.10 and later).

Discovery in HP Server Automation

HP DMA uses a process called “discovery” to find information about the servers, networks, and database instances on target machines in your managed environment.

In HP DMA version 1.00, discovery is automatically activated when an agent is started on a target machine.

In HP Server Automation, you must explicitly initiate the process of discovery—it is not automatic. Refer to the *User Guide: Database and Middleware Automation* for instructions. This guide is included in the SA documentation library (version 9.10 and later).

Glossary

B

bridged execution

A bridged execution workflow includes some steps that run on certain targets and other steps that run on different targets. An example of a bridged execution workflow is Extract and Refresh Oracle Database via RMAN (in the Database Refresh solution pack). This workflow extracts the contents of a database on one target (the Source) and creates a new database with the same contents on another target (the Destination). This workflow is useful when you want to clone a database - for example, to move it from a traditional IT infrastructure location into a private cloud. Bridged execution workflows are supported on HP Server Automation version 9.11 (and later).

C

cross-platform

Cross-platform database refresh involves converting the data from one type of byte ordering to another. This is necessary, for example, if you want to load a database dump file on a little-endian Linux target that was created on a big-endian Solaris server.

D

deployment

Deployments associate a workflow with a target environment in which a workflow runs. You can customize a deployment by specifying values for any workflow

parameters that are designated - User Selected - in the workflow. You must save a deployment before you can run the workflow. You can re-use a saved deployment as many times as you like.

destination

In a database refresh scenario, the contents of a database dump file are loaded into the DESTINATION database.

DESTINATION

In a database refresh scenario, the contents of a database dump file are loaded into the DESTINATION database.

I

input parameters

A workflow has a set of required parameters for which you must specify a value. The required parameters are a subset of all the parameters associated with that workflow. The remaining parameters are considered optional. You can specify a value for an optional parameter by first exposing it using the workflow editor and then specifying the value when you create a deployment.

M

mapping

An input parameter is said to be "mapped" when its value is linked to an output parameter from a previous step in the workflow or to a metadata field. Mapped parameters are not visible on the Deployment page. You can "unmap" a parameter by specifying - User Selected - in the workflow editor. This parameter will

then become visible on the Deployment page.

O

Oracle Data Pump

Oracle Data Pump is a utility that enables you to move data or metadata from one database to another. You can use Data Pump to move a complete database or a subset of a database.

P

parameters

Parameters are pieces of information - such as a file system path or a user name - that a step requires to carry out its action. Values for parameters that are designated User Selected in the workflow can be specified in the deployment. Parameters that are marked Enter at Runtime in the deployment must be specified on the target system when the workflow runs.

R

raw devices

In Sybase ASE version 15, you can create and mount database devices on raw bound devices. This enables Sybase ASE to use direct memory access from your address space to the physical sectors on the disk. This can improve performance by reducing memory copy operations from the user address space to the operating system kernel buffers.

Recovery Manager (RMAN)

Oracle Recovery Manager (RMAN) is a backup and recovery tool included in Oracle Database Enterprise Edition (and related products). RMAN enables you to efficiently backup and restore data files, control files, server parameter files, and archived redo log files. It provides block-

level corruption detection during both the backup and restore phases. It is optimized for performance and space consumption.

S

source

In a database refresh scenario, the contents of the SOURCE database are extracted and stored in a file (or multiple files).

SOURCE

In a database refresh scenario, the contents of the SOURCE database are extracted and stored in a file (or multiple files).

source database

In the context of MS SQL database refresh, the "source database" is the database from which the backup file is created.

steps

Steps contains the actual code used to perform a unit of work detailed in a workflow.

T

target instance

In the context of MS SQL database refresh, the term "target instance" refers to the SQL Server instance where the database that will be restored resides.

W

workflow

A workflow automates the process followed for an operational procedure. Workflows contain steps, which are linked together to form business logic for a common task. Workflows connect existing tasks in order to perform a new

business process by building on existing best practices and processes.

workflow editor

The workflow editor is the tool that you use to assemble steps into workflows. You can map each input parameter to output parameters of previous steps or built-in metadata (such as the server name, instance name, or database name). You can also specify User Selected to expose a parameter in the deployment; this enables the person who creates the deployment to specify a value for that parameter.