Oracle LMS

Software Version: 1.30

User Guide

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Hewlett Packard Enterprise

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Document Changes

Version	Changes
1.30 (2nd Edition, September 2017)	• Added a known issue about Oracle STANDBY instance discovery and the solution in "Troubleshooting and Limitations" on page 41.

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Contents

Universal Discovery for Oracle License Management Implementation Software

Important Notes

- **Oracle LMS Release Strategy**
  - Universal Discovery (UD) for Oracle LMS is shipped with the latest scripts required for an Oracle audit.
  - HPE Software will work with Oracle to ensure the UD for Oracle LMS product is kept current with the inclusion of the latest Oracle audit scripts and as such aligns with the release schedule and support driven by Oracle.
  - The licensing model for Oracle LMS from HPE Software does not restrict its usage to any particular version, so upgrades for licensed installations are available at no additional cost.
- **Oracle LMS Support Model**

  HPE strongly recommends that you remain current and up to date with the UD for Oracle LMS release versions to get the best outcome and ensure compliance during the Oracle audit.

  The standard support cycle provided for software creating by HPE Software does not apply to the UD for Oracle LMS package.

  This is due to an Oracle requirement that the latest scripts be used for any audit of Oracle software, which will be available in the latest released version of the Oracle LMS package.

  Oracle reserves the right to require that you run the latest scripts during the Oracle audit.

Overview

Universal Discovery for Oracle License Management Implementation Software enables you to collect the required data for review, analysis and checking, and to send it to Oracle for use by their License Management Services division.

Universal Discovery for Oracle License Management Implementation Software uses SQL queries to the underlying Oracle databases, and enriches that data with data discovered by Universal Discovery's host discoveries.

Universal Discovery for Oracle License Management Implementation Software can report the hardware data, including the CPU data on different platforms and VMware inventory data.

Supported Versions

UCMDB version	Content Pack version	Oracle version
UCMDB 10.22 CUP4 or a later CUP	Content Pack 20 or later, with or without updates	Oracle version 8 and later
UCMDB 10.30 or later, with or without CUPs	Content Pack 20 or later, with or without updates	Oracle version 8 and later

Privileges Required to Collect Oracle LMS Data

- The following database privileges are required to collect Oracle LMS data. These privileges must be granted to the DB user whose credentials are used to gather the data.
  - CREATE SESSION
  - SELECT ANY TABLE
  - SELECT ANY DICTIONARY (for Oracle 9i or higher)
  - When DATABASE VAULT is in use, PARTICIPANT or OWNER authorization on "Oracle Database Vault Realm" is needed
- Shell access to the operating system command line (UNIX Shell or Windows Command Prompt) through the corresponding Shell protocol of Universal Discovery (SSH, NTCMD, PowerCmd, or

Universal Discovery) is required.

- On Linux, root access is required. If it is missing, a warning message is shown.

Upgrade Path

You can upgrade from Oracle LMS 1.0, 1.10, or 1.20. If you are running Oracle LMS 1.0, 1.10, or 1.20, simply install Oracle LMS 1.30.

How to Deploy the Software

This task contains the following steps:

1. **Prerequisite - Install UCMDB version 10.30 or later**

   This software requires the UCMDB version to be 10.30 or later. If UCMDB 10.30 or later is already installed, ignore this step and move to step 2. Otherwise, perform the following:

   To install UCMDB 10.30, follow the instructions in the interactive *HPE Universal CMDB Deployment Guide*.

2. **Prerequisite - Install Universal Discovery Content Pack 20 or later**

   This software requires Universal Discovery Content Pack (CP) 20 or later. If CP20 or later is already installed, ignore this step and move to step 3. Otherwise, follow the instructions for installing CP20 or later in the *Release Notes for Universal CMDB/Universal Discovery Content Pack* for the Content Pack that you are installing.

3. Deploy the package

   a. Locate the file **OracleLMS.zip** on the HPE Live Network website (https://hpln.hpe.com/), and save it to a directory on the local hard drive.

   b. Deploy the **OracleLMS.zip** package from the local hard drive, following the instructions in the section describing how to deploy a package in the *HPE Universal CMDB Administration Guide*.

What's New

What's New in Version 1.30

Oracle LMS version 1.30 contains the following new features and changes:

- The existing Oracle LMS Report button **Export LMS Data** is renamed to **Export LMS DB Options Data**.
- Added two new buttons in the Oracle LMS Report, allowing you to export more specific Oracle LMS data:
  - **Oracle LMS VMware Data**
  - **Oracle LMS CPU Data**
- Added a new job **Oracle LMS CPU Data Collection by Shell** to run CPU query scripts (provided by Oracle) to collect the CPU data on different platforms.

  The version for the CPU query scripts is v17.2.3.

  The CPU query scripts for different platforms are as follows:

Operating System	CPU Query Script
Windows	**lms_cpuq.cmd**
Linux/UNIX	**lms_cpuq.sh**

  The logic to run the scripts is as follows:

Platform	Description
IBM LPARs	Log in to each LPAR running Oracle Software and run the **lms_cpuq.sh** script.
Solaris Containers	Log in and run the **lms_cpuq.sh** script in the Global Zone.
Oracle VM Server for SPARC	Log in and run the **lms_cpuq.sh** script in the Control Domain.
Oracel VM Server for x86	Log in and run the **lms_cpuq.sh** script in dom0.
HP nPar	Log in and run the **lms_cpuq.sh** script in each nPar running Oracle

Platform	Description
	Software.
Microsoft Hyper-V	Log in and run the **lms_cpuq.cmd** script in the Root Partition.

Fixed Defects

The following table lists the defects that were fixed in Oracle LMS 1.30.

Global ID	Problem	Solution
QCCR1H104072	The default size of the column **PROCESS_IDENTIFIER** in the Data Flow Probe DB Table **LMS_ OVERVIEW** is **40**, causing Oracle LMS data collection to fail when the insertion of longer strings is attempted.	Fixed the issue by changing the size of the column **PROCESS_ IDENTIFIER** to **255**.
QCCR1H104190	Oracle LMS discovery fails with the following error message: "`Failed save to LMS_OPTIONS.java.sql. BatchUpdateException: Batch entry 80 INSERT INTO LMS_ OPTIONS`".	Fixed the issue by increasing the size of the affected column **col030** in the table **lms_options** to **1000**.
QCCR1H104760	The **Oracle LMS Data Collection by SQL** job uses the wrong table name and should not use **SYS.MODEL**.	Fixed the issue by changing the Oracle LMS related table name from **SYS.MODEL** to **SYS.MODEL$**.
QCCR1H104940 QCCR1H105118	Oracle LMS discovery does not show specific table names that are used in the SQL query.	Fixed the issue by specifying the required database privileged in the details of adapter definition for Oracle LMS discovery.
QCCR1H106211	When running Oracle LMS Audit, the following error message occurs: "`ORA-00904: invalid column name`".	Oracle 8 has no **DATABASE_ROLE** column in the table **V$DATABASE**. Just query the column **CREATED** if there is no **DATABASE_ROLE**.
QCCR1H109573	The **OutOfMemory** error occurs when exporting the Oracle LMS report.	If the **OutOfMemory** error occurs when exporting the Oracle LMS report through UCMDB UI, run the JMX method **exportOracleLMSDataWithChunks** to export the Oracle LMS report. **Note:** The maximum size of the

Global ID	Problem	Solution
		Oracle LMS report handled through UCMDB UI is 1.4 GB only if a 32-bit JRE is used.

What's New in Version 1.20

The discovery logic has been enhanced to use Oracle LMS scripts version 15.1. These scripts include the following new functionality:

- Usage detection of pluggable database (PDB)
- Enhanced usage detection of Database Vault
- Usage detection for Database In-Memory Option
- Other bug fixes and enhancements

Fixed Defects

The following table lists the defects that were fixed in Oracle LMS 1.20.

Global ID	Problem	Solution
QCCR1H99330	The errors messages returned on the Oracle Database by SQL Job do not contain the Oracle error code anymore.	Fixed the issue by adding none check for SID and return the Oracle error messages.
QCCR1H97800	Oracle displays a warning message that the CPU format built into the report is not matching what is expected. For example, currently "XEON" is returned instead of something like "Intel Xeon CPU X5675 @3.07Ghz". The information needed already exists on the CI level under the name attribute of the CPU CI type.	Fixed the issue by using **CPU.name** instead of **CPU.cpu_pecifier** as processor identifier in **LMS_ DETAIL.csv** and **LMS_ OVERVIEW.csv**.
QCCR1H99367	When checking the option name / pack name in the shortcuts mapping table, it is a case-sensitive search. For example, there is an option **Partitioning (user)** in users' Oracle database, but the option in the mapping table is **Partitioning (User)**. So this option will not show up in the **LMSOverview.csv** report.	Fixed the issue by applying case sensitive mode.

Global ID	Problem	Solution
QCCR1H96425	After upgrading Oracle LMS 1.0 to version 1.1 using management zone, "Can not create Oracle LMS tables" error occurs after a rerun of the Oracle LMS job.	Fixed the issue by using the alter table instead of the drop table to upgrade the database.
QCCR1H97058	The installed/enabled Oracle Database Options do not show up in the **LMS_ Overview.csv** file.	Fixed the issue by adding missing Options names and shortcut mapping to Oracle LMS.
QCCR1H92683	When performing LMS Oracle discovery to prepare for an audit, it is successful in discovering a majority of Oracle DB with their LMS files being created, but unable to discover others.	Fixed the issue by applying a code change.
QCCR1H100462	The Oracle LMS job failed on some host, because none check failed for **pdb_ credential** when there is no Oracle Service Name CI linked to Oracle.	Fixed the issue by adding none check for **pdb_ credentials**.

What's New in Version 1.10

New features for Oracle LMS version 1.10 are as follows:

The discovery logic has been enhanced to use Oracle LMS scripts version 14.1. These scripts include the following new functionality:

- Usage detection for the 12c Multitenant Option.
- Enhanced usage detection for OEM Packs. Most notably, the process has been enhanced to collect and reveal real usage of OEM Packs in OEM 12c Cloud Control. This OEM version records weekly statistics about the usage of Licensed Links available in OEM pages (GUI), through a mechanism that is similar to Database feature usage statistics collection.

  > **Note:** Oracle 12c is supported when used with UCMDB 10.10 or later.

- Tuning Pack real usage measurement is also enhanced through the detection of SQL Tuning Advisor, SQL Access Advisor and SQL Tuning Sets features.
- More features of the Advanced Compression, Advanced Security, and Active Data Guard Options are now detected, including Flashback Data Archive (Total Recall), now an Advanced Compression feature.

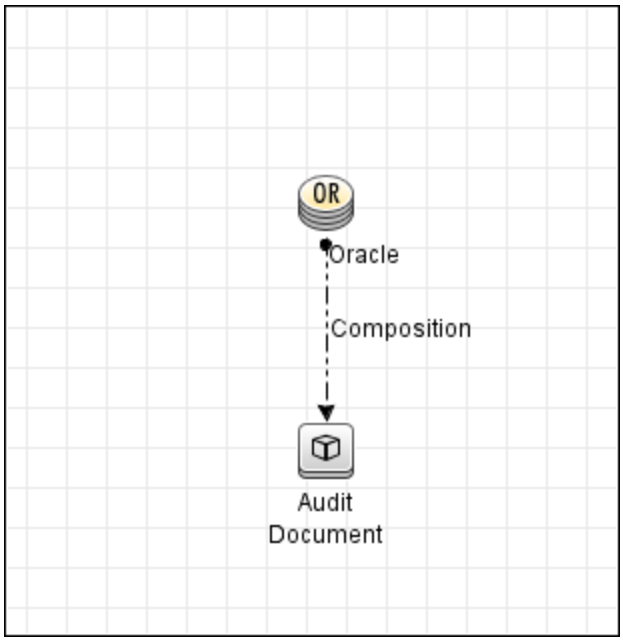
Topology

This section includes:

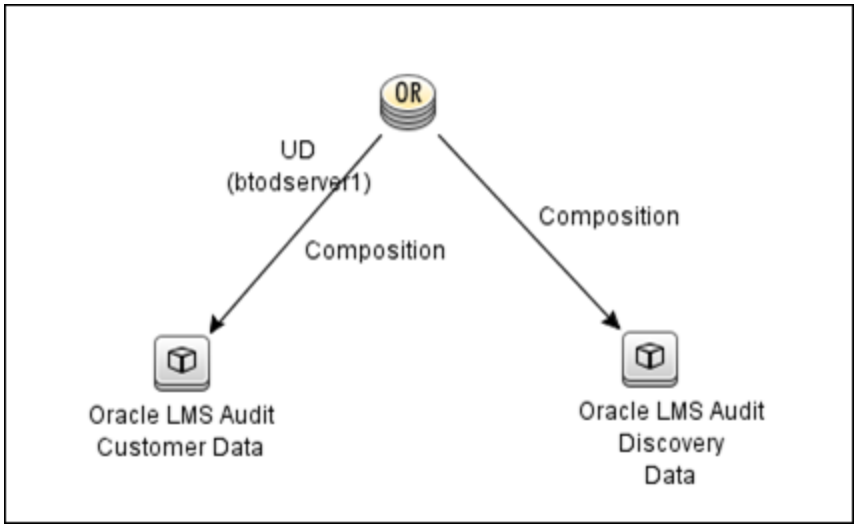
Topology for the Oracle LMS Data Collection by SQL job

The following image shows the topology for the **Oracle LMS Data Collection by SQL** job.

> **Note:** For a list of discovered CITs, see "Discovered CITs" on page 37.



The following image shows the reported CI instances.



The reported CI instances are:

- **Oracle LMS Audit Customer Data** (customer input fields)

  This CI is used to store the data provided by users and has the following parameters:

  - Aggregation Level
  - Application Name
  - Application Status
  - Group
  - Measurement Comments
  - Oracle CSI
  - Server Name in the Cluster
  - User Count

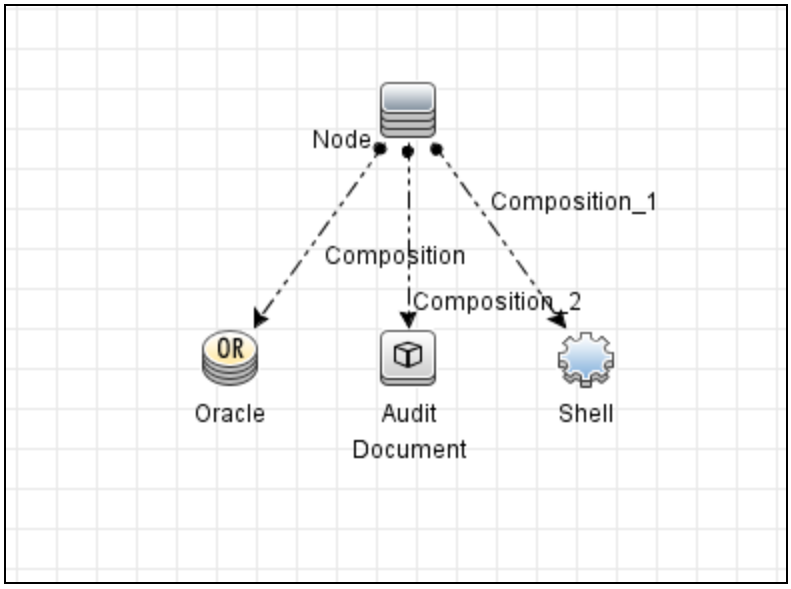
- **Oracle LMS Audit Discovery Data** (CSV data)

  This CI is used to store the data captured by the discovery jobs. The CSV files are generated according to that data.

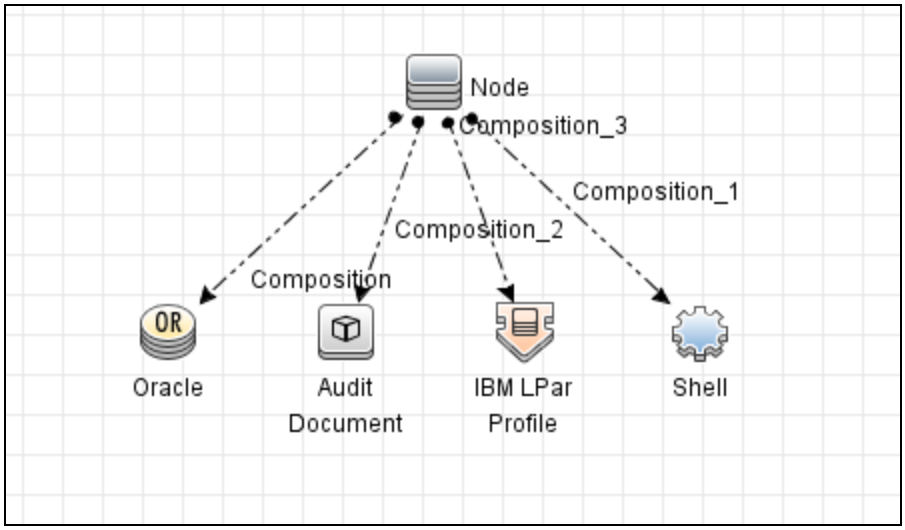
Topology for the Oracle LMS CPU Data Collection by Shell job

The following image shows the topology for the **Oracle LMS CPU Data Collection by Shell** job.

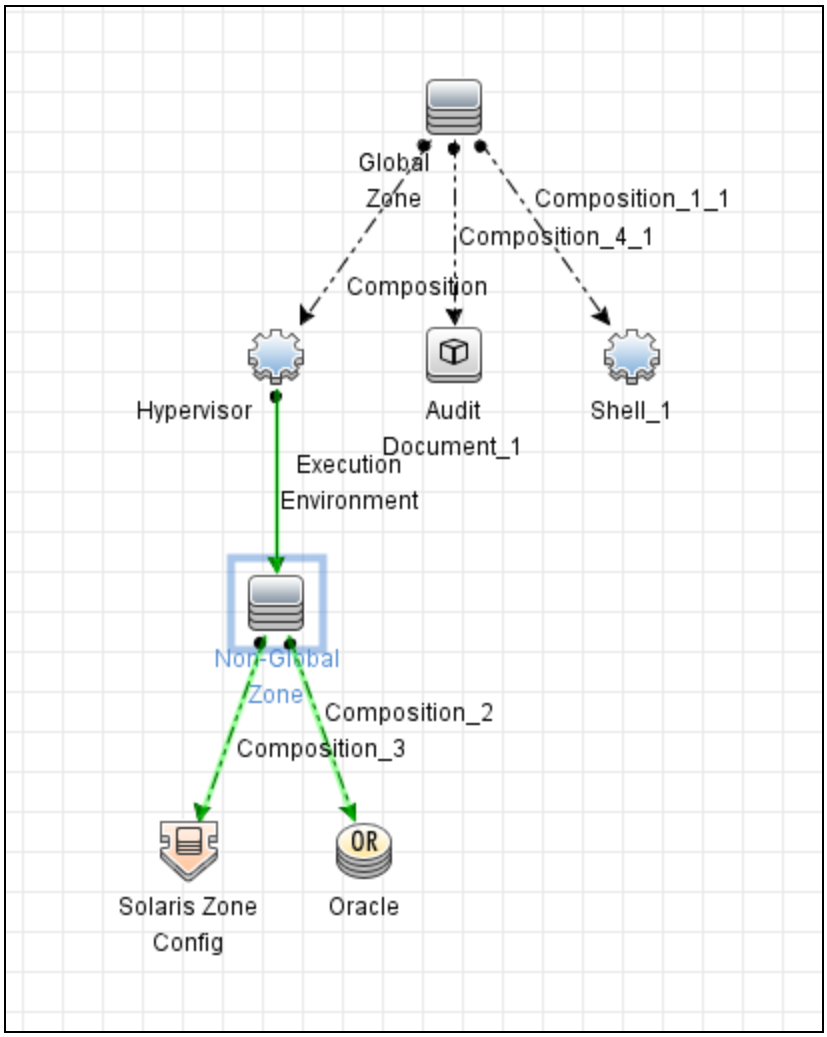
> **Note:** For a list of discovered CITs, see "Discovered CITs" on page 40.



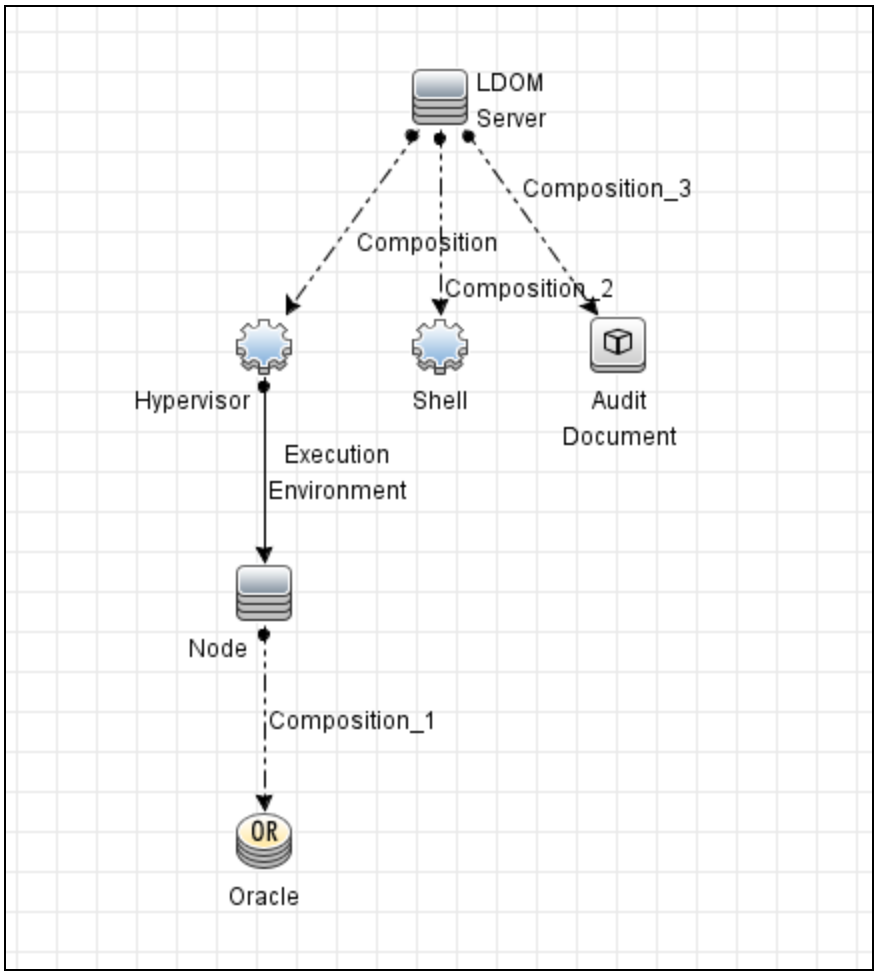
The following image shows the topology in IBM LPARs.



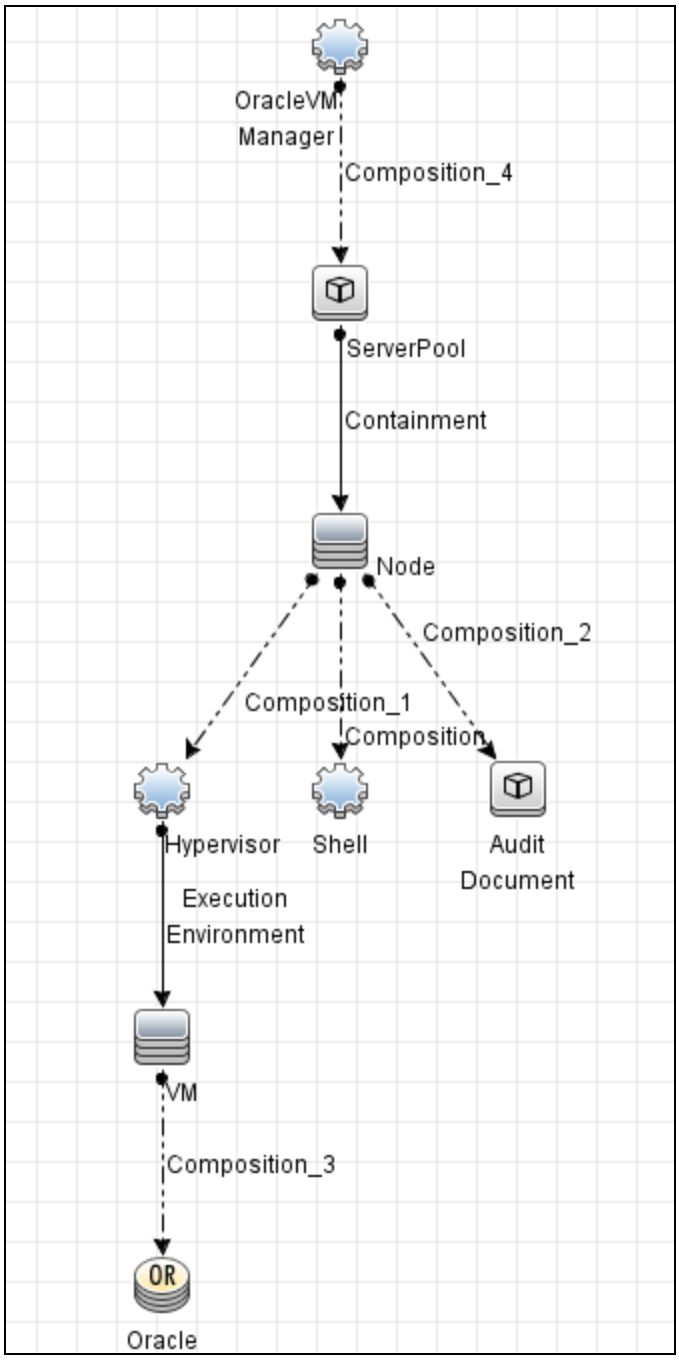
The following image shows the topology in Solaris Containers.



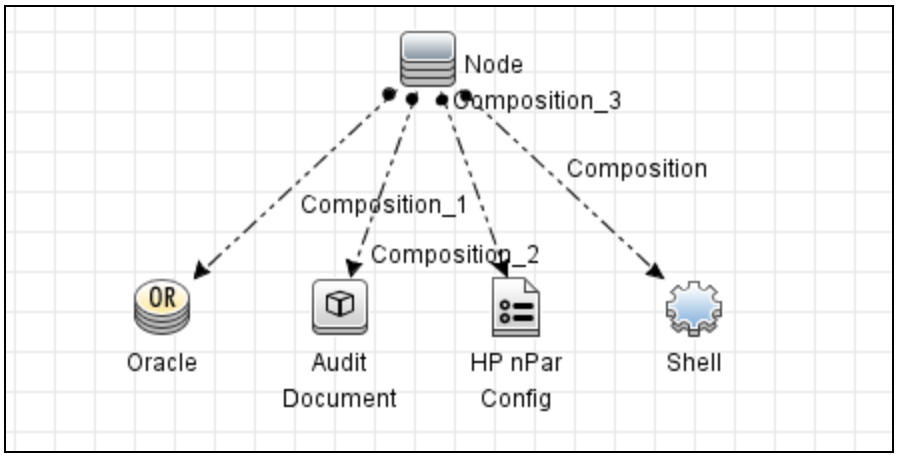
The following image shows the topology on Oracle VM Server for SPARC.



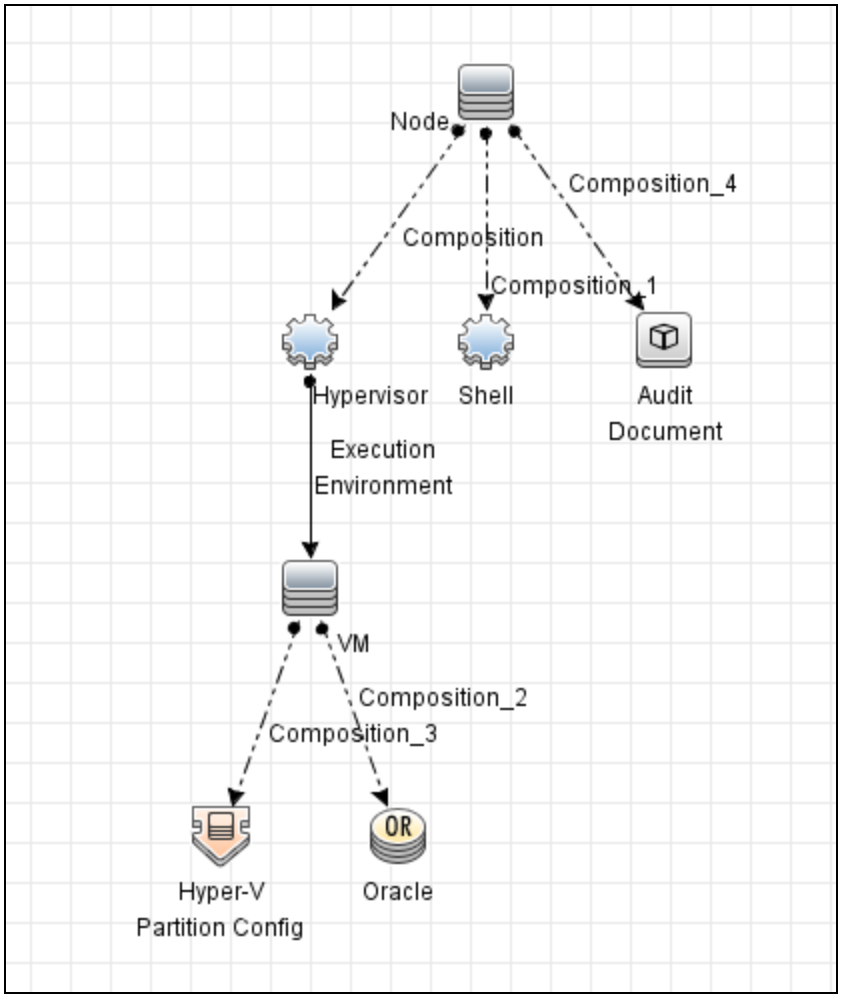
The following image shows the topology on Oracle VM Server for x86.



The following image shows the topology in HP nPar.



The following image shows the topology in Microsoft Hyper-V.



How to Discover Oracle LMS Data

> **Note:** Installing the Oracle LMS package adds Oracle LMS related resources to UCMDB, including:
>
> - An activity in **Data Flow Management > Universal Discovery > Zone Based Discovery > New Discovery Activity > Auditing**. For more information see the section describing how to run a zone-based discovery in the *HPE Universal CMDB Data Flow Management Guide*.
> - The **Oracle LMS Data Collection by SQL** and **Oracle LMS CPU Data Collection by Shell** jobs in **Data Flow Management > Universal Discovery > Discovery Modules/Jobs > Discovery Modules > Auditing**.
> - The **Oracle LMS Report** in **Modeling > Reports > Custom Reports > Custom > Auditing**.

Outline

Following is the discovery process for collecting Oracle LMS data:

- Configuring and activating discovery, to discover (a) the servers hosting Oracle databases, and (b) virtualization information
- Discovering Oracle database instances
- Running the **Oracle LMS Data Collection by SQL** job on the discovered Oracle database servers to collect the LMS DB Options data
- Running the **Oracle LMS CPU Data Collection by Shell** job on the discovered Oracle database servers to collect the LMS CPU data

  > **Note:** The Oracle LMS CPU data report requires UCMDB 10.30 or later.

Task

> **Note:** This part of the document describes all the task steps. You may already have completed some of these steps. If so, you do not have to repeat such steps, though you should ensure the configurations are accurate. For example, you do not need to create a new Management Zone if

you already have one.

You must have full read access rights to the target Oracle database server.

This task includes the following steps:

1. Prerequisite - Set up protocol credentials

   You must configure the following protocols:

   - NTCMD, SSH, PowerCmd, or Universal Discovery; to discover the hosts where Oracle is installed.
   - Generic DB Protocol (SQL); to discover Oracle instances.
   - VMware VIM; to discover virtualization topology.

   For details, see the section describing Data Flow Probe Setup in the *HPE Universal CMDB Data Flow Management Guide*.

   Note:

   - On Linux, root access is verified at the beginning of the Oracle's CPU script; if the root access is missing, a warning message is returned by the **Oracle LMS CPU Data Collection by Shell** job.
   - Query scripts must be run from a temp folder with write permissions for the current user.
   - If you prefer not to configure SID in the Oracle credential, you can discover the Oracle SID in either of the following ways:
     - Run the Basic Software Configuration Discovery Activity to collect the SID information.
       A. Go to **Data Flow Management > Universal Discovery > Zone-Based Discovery > Management Zones >** select a Management Zone **>** click  **>** select **New Discovery Activity > Software Configuration > Basic**.
       B. Configure the activity.

          Make sure you select the **Run Oracle Discovery** check box on the Discovery Preferences page.
       C. Right-click the new activity you just configured and select **Activate** to discover the Oracle CI with SID information.
     - Run the **Data Flow Management > Universal Discovery > Discovery**

> **Modules/Jobs > Discovery Modules > Hosts and Resources > Basic Applications > Host Applications by Shell** job to discover the Oracle SID.

2. Create a Management Zone

Go to **Data Flow Management > Universal Discovery > Zone Based Discovery**, and click the  button. **Select New Management Zone**.

For details, see the section describing how to run a zone-based discovery in the *HPE Universal CMDB Data Flow Management Guide*.

3. Create an Infrastructure Discovery activity and activate it

a. Go to **Data Flow Management > Universal Discovery > Zone-Based Discovery > Management Zones**.

b. Select the appropriate Management Zone.

c. Click the  button.

d. Select **New Discovery Activity > Infrastructure**.

The **New Infrastructure Discovery Activity** dialog box appears.

For details, see "Infrastructure Discovery Activity" in the *HPE UCMDB Discovery and Integrations Content Guide - Discovery Activities* document.

4. Create an Inventory Discovery activity and activate it

a. Go to **Data Flow Management > Universal Discovery > Zone-Based Discovery > Management Zones**.

b. Select the appropriate Management Zone.

c. Click the  button.

d. Select **New Discovery Activity > Inventory**.

The **New Inventory Discovery Activity** dialog box appears.

For details, see "Inventory Discovery Activity" in the *HPE UCMDB Discovery and Integrations Content Guide - Discovery Activities* document.

Important:

- If Oracle is also hosted on Microsoft Hyper-V, Solaris Zones, or VMware ESX, you have the following options:
  - Enable **Include virtualization topology** on the **Virtualization** page of the Inventory Discovery Activity wizard.
  - Create a Virtualization Discovery activity, and activate it. (See below.)
- If Oracle is hosted on IBM LPAR (HMC), Linux Xen/KVM, Oracle VM for SPARC, or HP nPartitions, you must create a Virtualization Discovery activity and activate it.

  To create a Virtualization Discovery activity and activate it:

  i. Go to **Data Flow Management > Universal Discovery > Zone Based Discovery > Management Zones**.

  ii. Select the appropriate **Management Zone**.

  iii. Click the  button.

  iv. Select **New Discovery Activity > Software Configuration > Virtualization**.

  The **New Virtualization Discovery Activity** dialog box appears.

  v. Create the activity and activate it by following the online prompts through the activity wizard. You must enable discovery of the virtualization technologies that are in your environment.

5. Create a Database Discovery activity and activate it

   a. Go to **Data Flow Management > Universal Discovery > Zone Based Discovery > Management Zones**.

   b. Select the appropriate **Management Zone**.

   c. Click the  button.

   d. Select **New Discovery Activity > Software Configuration > Database**.

   The **New Database Software Configuration Discovery Activity** dialog box appears.

   e. Create the activity and activate it by following the online prompts through the activity wizard. You must enable **Run Oracle Discovery** on the **Discovery Preferences** page of the activity wizard.

6. Create an Oracle LMS Audit activity and activate it

   a. Go to **Data Flow Management > Universal Discovery > Zone Based Discovery >**

Management Zones.

b. Select the appropriate **Management Zone**.

c. Click the  button.

d. Select **New Discovery Activity > Auditing > Oracle LMS**.

The **New Oracle LMS Audit Activity** dialog box appears.

e. Create the activity and activate it by following the online prompts through the activity wizard. You must enable **Run Oracle LMS CPU Discovery** on the **Preferences** page of the activity wizard.

For details, see "Oracle LMS Audit Activity User Interface" on page 27.

How to Access the Oracle LMS Data

1. From the UMCDB UI, go to **Modeling > Reports > Custom Reports > Auditing > Oracle LMS Report**.
2. Drag **Oracle LMS Report** to the right pane.

   > **Note:** You may also double-click the report to make it display in the pane.

3. Export Oracle LMS data by clicking one of the following buttons:
   - Click **Export LMS DB Options Data**.

     A Save dialog box is displayed. The data is saved to a ZIP file named, by default, **OracleLMS_<timestamp>.zip**, containing the following CSV files:

     - **LMS_DBA_USERS.csv**
     - **LMS_DETAIL.csv**
     - **LMS_OPTIONS.csv**
     - **LMS_OVERVIEW.csv**
     - **LMS_V$LICENSE.csv**
     - **LMS_V$SESSION.csv**
   - Click **Export LMS VMware Data**.

     A Save dialog box is displayed. The data is saved to a ZIP file named, by default, **OracleLMS_VMwareInv_Data_<timestamp>.zip**, containing the following two CSV files:

     - **<vCenter Server Name>-HW-Inventory-Information.csv**
     - **<vCenter Server Name>-VMs-Information.csv**
   - Click **Export LMS CPU Data**.

     A Save dialog box is displayed. The data is saved to a ZIP file named, by default, **OracleLMS_CPU_Data_<timestamp>.zip**, containing several TXT files. The TXT files are named as follows:

     <*machine name*>-lms_cpuq.txt. For example, **cmswin12-lms_cpuq.txt**.

     If different hosts have the same host name, the count number is added to the TXT file names. For example,

- **cmswin12-1-lms_cpuq.txt**
- **cmswin12-2-lms_cpuq.txt**
- **cmswin12-3-lms_cpuq.txt**

See also "How to Edit the LMS Data Customer Fields" below.

> **Note:** In the file name of the exported ZIP packages, **<timestamp>** follows this format: **YYYY-MM-DD_HH_MM_SS**, where 24 hour system is used.

Tip: You may also access the Oracle LMS Data by exporting it using the JMX Console.

1. Log in to the UCMDB JMX console on the machine where UCMDB is installed. (Launch the Web browser and enter the following address: **https://localhost:8443/jmx-console**. You may have to log in with a user name and password.)
2. Enter **exportOracleLMSData**, **exportOracleLMSVMwareData**, or **exportOracleLMSCPUData** in the **UCMDB JMX Quick Search** field and click the link that appears.
3. Enter your Customer ID. (**Default: 1**).
4. Click **Invoke**.

   Assuming UCMDB is installed in **C:\hp\UCMDB\UCMDBServer**, the file is saved to the path **C:\hp\UCMDB\UCMDBServer\runtime\discovery\customer_<customerId>**, where **<customerId>** is the number you entered in the previous step.

> **Note:** The LMS data from UCMDB is created in a format required by Oracle. Besides the ZIP files, Oracle may require other information as part of the LMS data collection. If required, you will have to work on that with Oracle.

How to Edit the LMS Data Customer Fields

1. Go to **Modeling > IT Universe Manager**.
2. In the Search CIs mode, search for the CI Type **AuditDocument** in the topology map or the CI Selector, and select it.
3. In the **Advanced Pane**, select the **Properties** tab and click **Edit**.

   The **Configuration Item Properties** dialog box is displayed.

4. Click **Document Content**.

   A file containing the customer fields is displayed. You may edit and save the file as required.

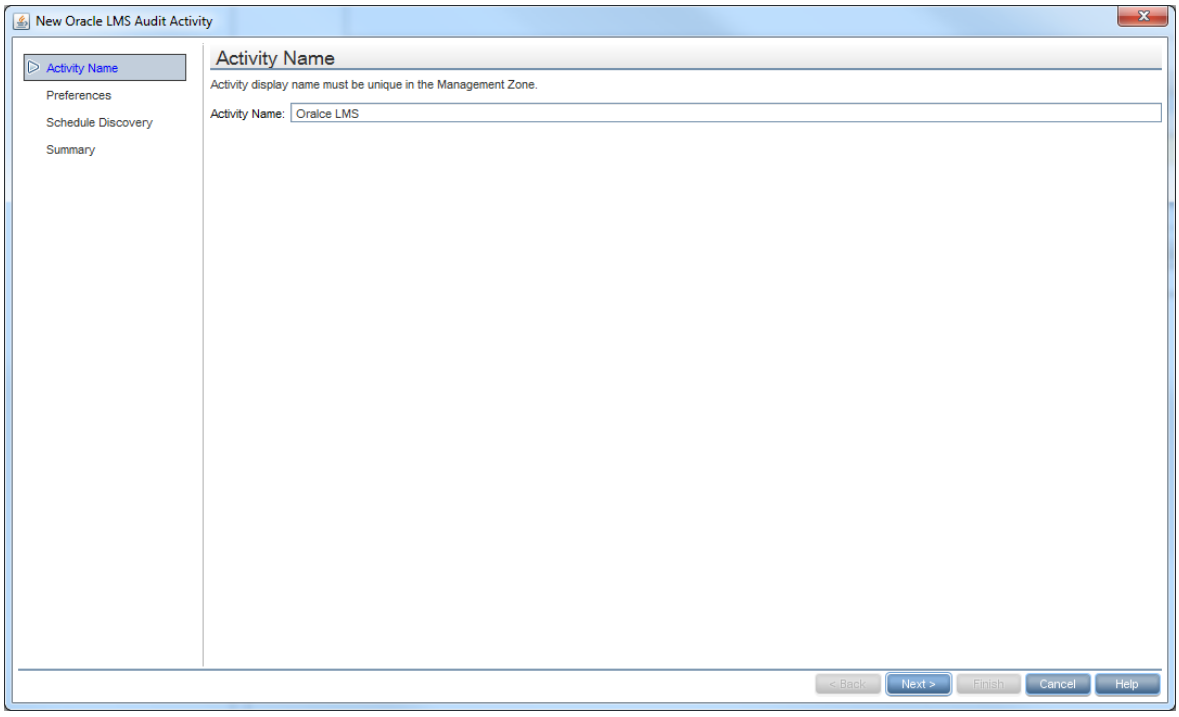
Oracle LMS Audit Activity User Interface

Enables you to collect Oracle data.

To access	Go to **Data Flow Management > Universal Discovery > Zone-Based Discovery > Management Zones >** select a Management Zone > click  > select **New Discovery Activity > Auditing > Oracle LMS**
Important Information	For more information, hold the pointer over a question mark icon.
Wizard Map	The **Oracle LMS Audit Activity** contains: "Activity Name Page" > "Preferences Page" > "Schedule Discovery Page" > "Summary Page"

Activity Name Page

Enables you to configure a name for the Oracle LMS Audit activity.



Activity Name Page

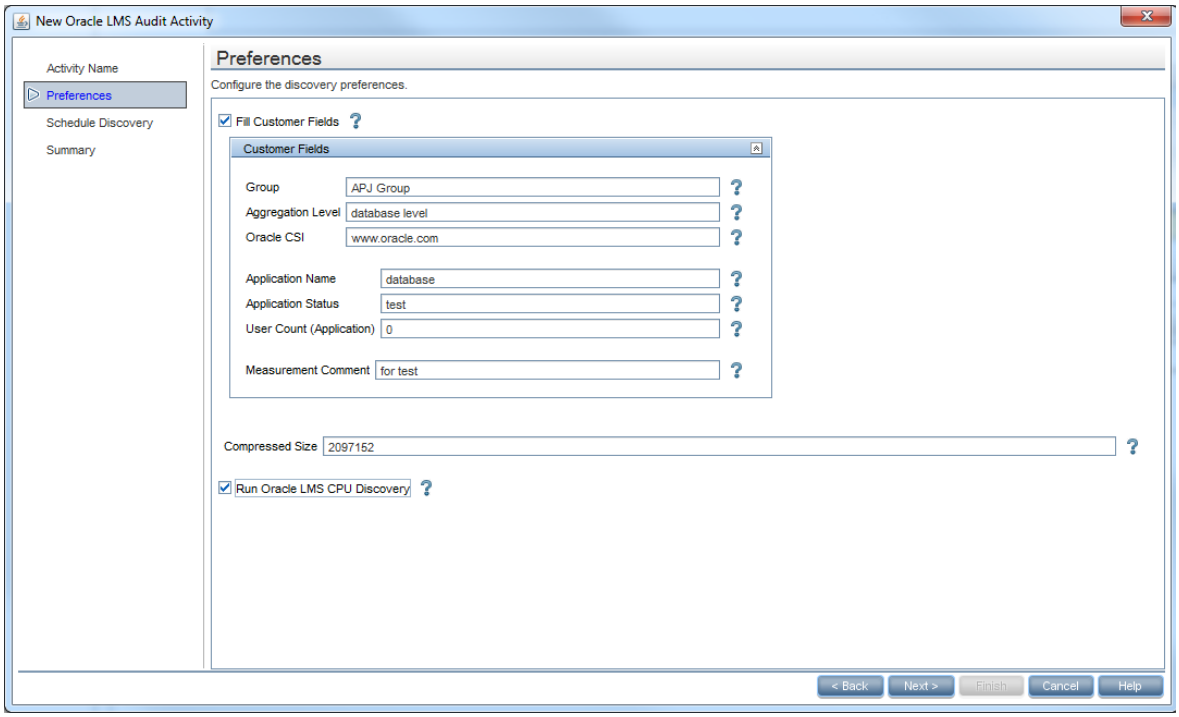
Important Information	General information about the activity is available in "Oracle LMS Audit Activity User Interface" on the previous page. **Note:** This screen is not displayed when editing an Oracle LMS Audit activity.
Wizard Map	The "Oracle LMS Audit Activity User Interface" contains: **Activity Name Page** > "Preferences Page" > "Schedule Discovery Page" > "Summary Page"

User interface elements are described below:

UI Element (A–Z)	Description
Activity Name	Enter a unique name for the Oracle LMS Audit activity. **Note:** Names should consist only of alphanumeric characters (a-z, A-Z, 0-9), hyphens (-), and periods (.). Names appear in some reports. Additionally, names may also appear in the **Updated by** attribute in the **CI Properties** page if a CI was updated by a job. Names can be changed at any time, however, the **Job ID** attribute that is associated with the job name does not change.

Preferences Page

Enables you to select preferences for the Oracle LMS Audit activity.



Preferences Page

Important Information	General information about the activity is available in "Oracle LMS Audit Activity User Interface" on page 27.
Wizard Map	The "Oracle LMS Audit Activity User Interface" contains: "Activity Name Page" > **Preferences Page** > "Schedule Discovery Page" > "Summary Page"

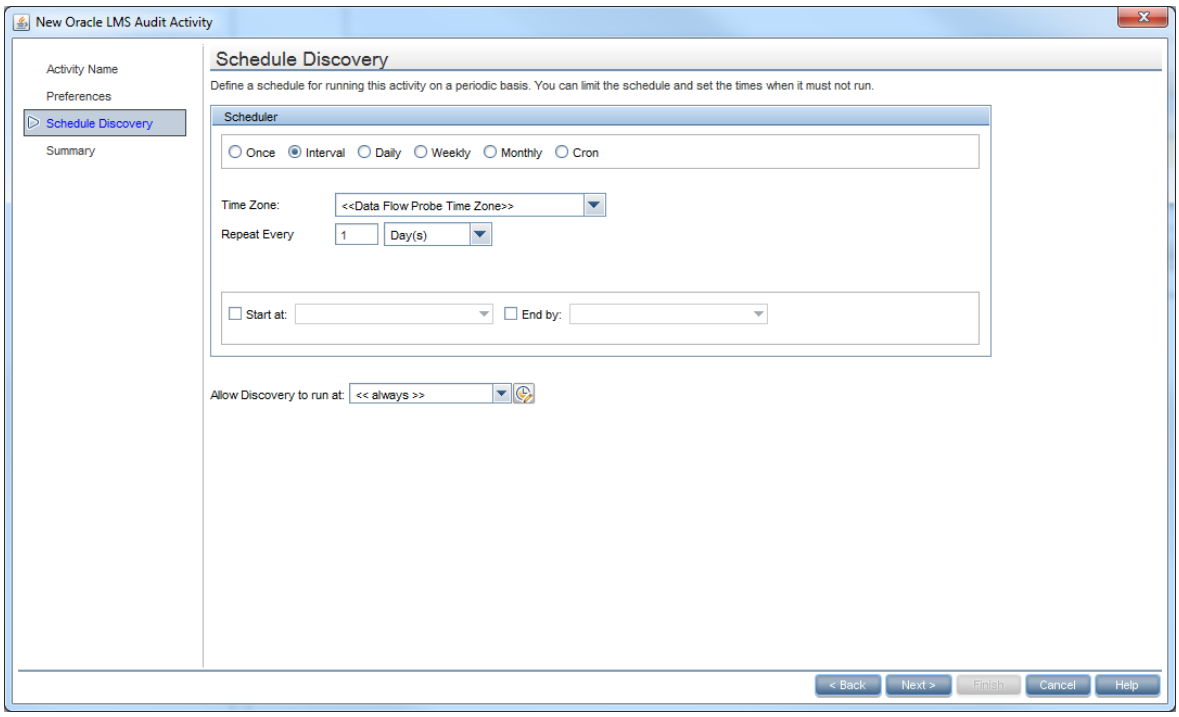
User interface elements are described below:

UI Element (A–Z)	Description
Fill Customer Fields	Customer Fields are user definable fields in the Oracle LMS data. You may select this option and complete these fields here, if you want them to apply to all databases queried by this activity. Otherwise, you may set unique values for these fields in the **DocumentContent**

UI Element (A–Z)	Description
	attribute of the **AuditDocument** CI instance stored in the database. For details, see "Parameters" on page 37.
Compressed Size	A limit on the size of the collected LMS data per database CI, in bytes. **Default:** 2 MB (2,097,152 bytes).
Run Oracle LMS CPU Discovery	Select this option to run the Oracle LMS CPU Data discovery via Shell-based protocols.

Schedule Discovery Page

Enables you to define a schedule for the Oracle LMS Audit activity.



Schedule Discovery Page

Important Information	General information about the activity is available in "Oracle LMS Audit Activity User Interface" on page 27.
Wizard Map	The "Oracle LMS Audit Activity User Interface" contains: "Activity Name Page" > "Preferences Page" > **Schedule Discovery Page** > "Summary Page"

User interface elements are described below (unlabeled elements are shown in angle brackets):

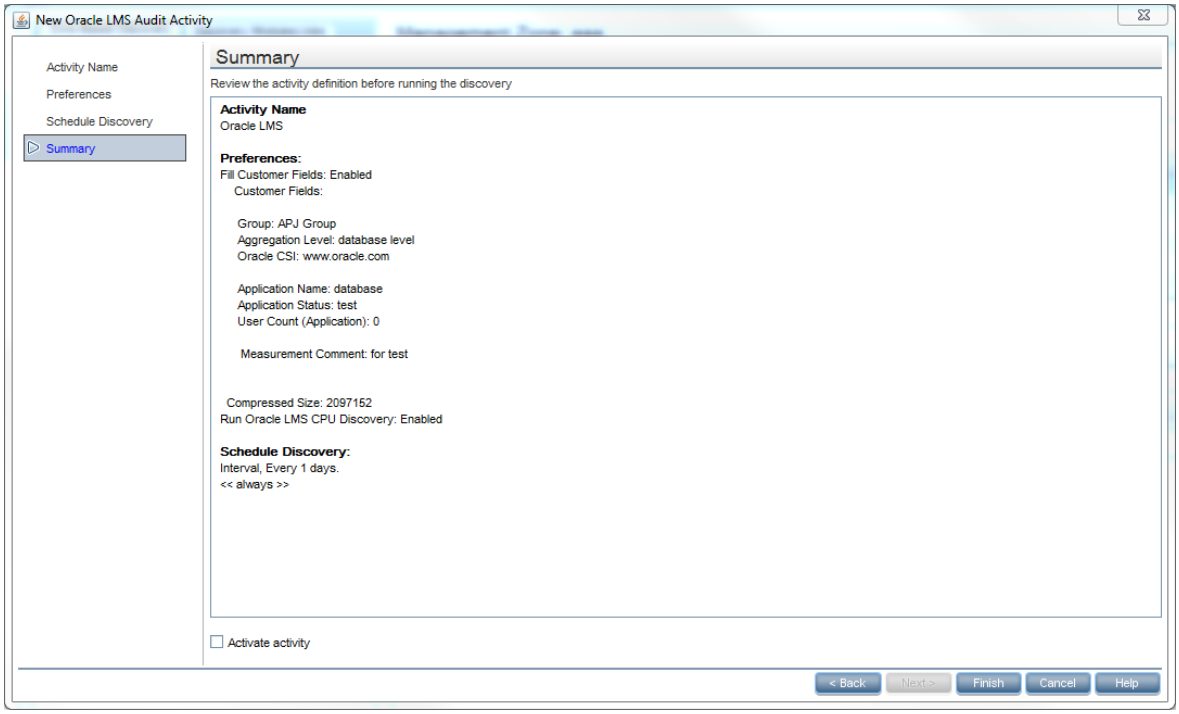
UI Element (A–Z)	Description
Validate Expression	(Appears when you select **Cron**.) Click to validate the Cron expression you entered.
	Click the **Time Templates** icon to open the Time Templates dialog box. Enables you to define a custom schedule to run the discovery activity. For more information, see "Time Templates Dialog Box" in the *HPE Universal CMDB Data Flow Management Guide*.
Allow Discovery to run at	Select the time template that you want to use to schedule the discovery activity.
<Days of month>	(Appears when you select **Monthly**.) Click the button to choose the days of the month on which the discovery activity must run. The Select Days dialog box opens. Choose the required days by selecting the check boxes. You can select multiple days. •  **Select All.** Select all the days. •  **Clear Selection.** Clear all the selected days. •  **Invert Selection.** Switch the selection.
<Days of the week> (Sunday - Saturday)	(Appears when you select **Weekly**.) Select the day or days on which the discovery activity should run.
<Schedule options>	• **Once.** Define the task to run only once. • **Interval.** Defines the interval between successive runs. • **Daily.** Run a task on a daily basis. • **Weekly.** Run a task on a weekly basis. • **Monthly.** Run a task on a monthly basis. • **Cron.** Enter a Cron expression in the correct format. For descriptions and examples of Cron expressions, see "Cron Expressions" in the *HPE Universal CMDB Modeling Guide*.
Cron Expression	(Appears when you select **Cron**.) Enter a Cron expression in the proper format. For descriptions and examples of Cron expressions, see "Cron Expressions" in the *HPE Universal CMDB Modeling Guide*
<Months of the year> (January -	(Appears when you select **Monthly**.) Select the month or months in which the discovery activity must run.

UI Element (A–Z)	Description
December)	
End by	(Does not appear when you select **Once**). Select the date and time when the discovery activity must finish running by selecting the **End by** check box, opening the calendar, selecting the date and time, and clicking **OK**. **Note:** This step is optional. If you do not need to specify an ending date, leave the **End by** check box cleared.
Invocation hour	(Appears when you select **Daily**, **Weekly**, or **Monthly**.) Select the time to activate the discovery activity. Click the button to open the **Select Hours** dialog box. Choose the required time by selecting the check boxes. You can select multiple times. • **Select All.** Select all the times. • **Clear Selection.** Clear all the selected times. • **Invert Selection.** Switch the selection. **Note:** You can also enter the time manually in the **Invocation hour** box. Separate times by a comma and enter **AM** or **PM** after the hour. The manually entered action times are not restricted to the hour and half hour only: you can assign any hour and minute combination. Use the following format: **HH:MM AM**, for example, **8:15 AM, 11:59 PM**.
Invocation Time	(Displayed when you select **Once**.) Choose the date and time the action should begin running by opening the calendar and choosing a date and time, or accept the default.
Repeat every	(Displayed when you select **Interval**.) Select how often the discovery activity runs. Type a value for the interval between successive runs and choose the required unit of time (minutes, hours, or days). **Note:** After each change, the next time that the discovery activity runs is the current time plus the interval, that is, the discovery activity does not start immediately.
Start at	(Does not appear when you select **Once**). Choose the date and time when the discovery activity must begin running by selecting the **Start at** check box, opening the calendar, selecting the date and time, and clicking **OK**. **Note:** • When selecting the start time, the time zone in the start time is set

UI Element (A–Z)	Description
	according to the client machine's location, although it may not match the value selected in **Time Zone**. • This step is optional. If you do not want to specify a beginning time, leave the **Start at** check box unselected.
Time zone	Select the time zone according to which the Probe must schedule jobs. The default is **<<Data Flow Probe Time Zone>>**: the Probe uses its own system-defined time zone. This enables scheduling to take place at different times in different geographical locations. For all Probes to start working at the same time, select a specific time zone. (This assumes that the Probes' system date/time and time zone are correctly configured.)

Summary Page

Enables you to review all configurations and parameter values before running the Oracle LMS Audit activity.



Summary Page

Important Information	Review configurations and decide whether to run the activity or go back and make changes. General information about the activity is available in "Oracle LMS Audit Activity User Interface" on page 27.
Wizard Map	The "Oracle LMS Audit Activity User Interface" contains: "Activity Name Page" > "Preferences Page" > "Schedule Discovery Page" > **Summary Page**

User interface elements are described below:

UI Element (A–Z)	Description
Activate Activity	Activates the activity upon creating it. **Note:** If you do not want to activate the activity at this stage, you can activate it later from the Zone-Based Discovery view.
Finish	• **Creation mode:** Closes the wizard and adds the activity to the Management Zone tree. **Note:** If you selected **Activate Activity**, the activity is activated upon creation. • **Edit mode** Saves the changes to the activity. **Note:** You cannot activate the activity from the wizard in Edit mode.

Oracle LMS Data Collection by SQL Job

Adapter

This job uses the **Oracle LMS data collection by SQL** adapter.

Discovery Flow

1. Connect to the target Oracle database with Oracle SID or session ID using the Generic DB protocol (SQL).
2. Run the SQL query in the target Oracle database and save the result to the probe database.
3. Send the collected data from the probe database to the UCMDB server.

Oracle LMS Data Collection by SQL Adapter

Input CIT

Oracle

Input TQL Query

Host with Oracle with LMS

Triggered CI Data

Name	Value
core_number	${Cpu.core_number:NA}
cpu_clock_speed	${Cpu.cpu_clock_speed:NA}
cpu_name	${Cpu.name:}
cpu_specifier	${Cpu.cpu_specifier:NA}
credentialsId	${SOURCE.credentials_id}
discovered_host_name	${HOST.name:NA}
discovered_model	${HOST.discovered_model:NA}
discovered_os_name	${HOST.discovered_os_name:NA}
discovered_vendor	${HOST.discovered_vendor:NA}
document_content	${AuditDocument.document_content:NA}
host_isvirtual	${HOST.host_isvirtual:NA}
ip_address	${SOURCE.application_ip}
logical_cpu_count	${Cpu.logical_cpu_count:NA}
partitioning_amazon_ec2_config	${Amazon EC2 Config.name:NA}
partitioning_hp_npar_config	${HP nPar Config.name:NA}
partitioning_hp_vpar_config	${HP vPar Config.name:NA}
partitioning_hyper-v_partition_config	${HyperV Partition Config.name:NA}
partitioning_ibm_lpar_profile	${IBM LPar Profile.name:NA}
partitioning_solaris_zone_config	${Solaris Zone Config.name:NA}
partitioning_vmware_host_resource	${VMware Host Resource.name:NA}
partitioning_xen_domain_config	${Xen domain config.name:NA}
port	${SOURCE.application_port:NA}
sid	${SOURCE.name:NA}

Used Scripts

- **Oracle_LMS.py**
- **OracleLMSDbaUsers.py**
- **OracleLMSDetail.py**
- **OracleLMSOptions.py**
- **OracleLMSOverview.py**
- **OracleLMSUtils.py**
- **OracleLMSVLicense.py**
- **OracleLMSVSession.py**

Discovered CITs

- **AuditDocument**
- **Composition**
- **Oracle**

Parameters

Name	Description
aggregationLevel	The relevant aggregation level. For example: database level, server level, or network level.
applicationName	The name of the application running in conjunction with the Oracle product.
applicationStatus	The status of the application. For example: development, production, test environment, or training.
group	The relevant grouping as you define it. For example: region, or department.

Name	Description
measurementComment	Additional comments you want to add to the data.
oracleCSI	The Oracle Customer Support Identifier that you use when dealing with Oracle Support Services.
serverNameInTheCluster	If the servers are clustered, the names of the servers in the cluster.
size	Default size of the compressed LMS data in bytes.
userCountForApplication	If the DBA_USERS table has generic usernames or schemas to connect to the application or database, this is the User Count at Application Level.

Oracle LMS CPU Data Collection by Shell Job

Adapter

This job uses the **Oracle LMS CPU Data Collection by Shell** adapter.

Discovery Flow

1. Connect to the target server using the Shell Protocol.
2. Upload the script provided by Oracle on the target server.
3. Send the generated TXT files to the UCMDB server.

Oracle LMS CPU Data Collection by Shell Adapter

Input CIT

Shell

Input TQL Query

host_shell_with_oracle_or_vm_with_oracle

Triggered CI Data

Name	Value
Protocol	${SOURCE.root_class}
codepage	${SOURCE.codepage:NA}
credentialsId	${SOURCE.credentials_id:NA}
host_id	${NODE.root_id:}
host_server_audit_document	${AuditDocument.root_id:}
host_server_id	${NODE_HOST.root_id:}
ip_address	${SOURCE.application_ip}
language	${SOURCE.language:NA}

Used Scripts

- **OracleLMSCPUDiscoverer.py**
- **OracleLMSCPU.py**

Discovered CITs

- **AuditDocument**
- **Composition**
- **Node**

Troubleshooting and Limitations

- **Problem:** The warning message "Configuration file X size (Y) is too big" appears when running the **Oracle LMS Data Collection by SQL** job.

  Solution: Increase the **size** parameter in the **Oracle LMS Data Collection by SQL** adapter to be greater than **Y**. You should leave some margin (for example, by making the size 10% larger than Y) to prevent reoccurrence of this problem in subsequent runs.

- **Problem:** The following warning message appears when running the **Oracle LMS Data Collection by SQL** job:

  "*TotalPhysicalCores is not discovered. You should run an Inventory Activity to discover this data. For details, see Inventory Activity in the HP Universal CMDB Discovery and Integration Content Guide.*"

  > **Note:** Instead of **TotalPhysicalCores**, the message may show SocketsPopulatedPhys, ProcessorIdentifier, PartitioningMethod, and so on.

  Solution: Run an Inventory Discovery or Virtualization Discovery, then re-run **Oracle LMS Data Collection by SQL**.

- **Problem:** The auditing data are missing in the Oracle LMS report for STANDBY Oracle instances. Because the **Oracle Database Connection by SQL** job cannot connect to STANDBY Oracle instances.

  Solution: To fix the issue, Oracle Connection by Shell job is introduced to discover all Oracle database servers using the Shell protocol starting with CP19. To have the auditing data in the Oracle LMS report, make sure you upgrade your Content Pack to CP19 or later.

  > **Note:**
  >
  > - The Oracle Connection by Shell discovery requires UCMDB version 10.22 CUP1 or later.
  > - The account that is used to connect to Oracle should have the privilege to run SQL*Plus as SYSDBA.
  >
  > For details, see the "How to Discover Oracle Data Guard" section in the *HPE UCMDB Discovery and Integrations Content Guide - Discovery Modules*.