

Oracle® Life Sciences Data Hub

Installation Guide



Release 3.1

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Preface

This preface contains the following sections:

- [Documentation accessibility](#)
- [Diversity and Inclusion](#)
- [Related resources](#)
- [Access to Oracle Support](#)

Documentation accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc>.

Diversity and Inclusion

Oracle is fully committed to diversity and inclusion. Oracle respects and values having a diverse workforce that increases thought leadership and innovation. As part of our initiative to build a more inclusive culture that positively impacts our employees, customers, and partners, we are working to remove insensitive terms from our products and documentation. We are also mindful of the necessity to maintain compatibility with our customers' existing technologies and the need to ensure continuity of service as Oracle's offerings and industry standards evolve. Because of these technical constraints, our effort to remove insensitive terms is ongoing and will take time and external cooperation.

Related resources

All documentation and other supporting materials are available on the [Oracle Help Center](#).

Access to Oracle Support

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info> or visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs> if you are hearing impaired.

1

Before You Begin

If you are upgrading from a previous release, you may only need to check for the most recent information, assemble the software, and upgrade to 3.0.

This section includes the following topics:

- [Check for the Most Recent Information](#)
- [Get Your Company ID from Oracle](#)
- [Assemble the Software](#)
- [Assemble the Documentation](#)

Check for the Most Recent Information

It is critical that you check that you have the most current information before you begin the installation process.

- **Latest Release Notes.** Check for the most recent version of the Release Notes on My Oracle Support with article ID 2617887.1.
- **Known Installation and Configuration Issues.** For up-to-date information, see My Oracle Support article 2617887.1.
- **Latest Critical Patch Updates and Technology Stack Updates.** Check My Oracle Support article 180430.1, *Oracle Health Sciences Applications Supported Technology Stack*, for the latest quarterly Oracle Critical Patch Update (CPU) certified with Oracle LSH, and apply it. This patch includes security fixes and should always be up to date.
- **Installation Verification.** After you have installed Oracle LSH, see My Oracle Support article 1063225.1, *Oracle Life Sciences Data Hub Installation Verification Test* (also called the "smoke test") to verify that all basic features are functioning properly.
- Check the **Oracle LSH Product Information Page** on My Oracle Support for the latest information; see article ID 1318219.1

Get Your Company ID from Oracle

When you install Oracle LSH, you need to enter a parameter value for the company ID. The company ID serves as part of the primary key for all the Oracle LSH objects you define in this instance of Oracle LSH. If your company ever merges with another company and your Oracle LSH data and metadata are merged with the data of another company, the company ID distinguishes the objects created in each original company and prevents duplicate object primary keys.

To ensure that you have a unique number relative to other Oracle LSH customers, Oracle recommends that you use a number assigned to you by Oracle. Company IDs are tracked in an Oracle bug that is not publicly viewable. Contact Oracle Support or ask your consultant to reserve a range of ten numbers for your company. You can use these numbers for:

- Your company ID. If you have multiple instances of Oracle LSH, Oracle recommends using a different company ID for each instance.
- The tech type ID of any adapters your company may create.

Assemble the Software

Use the technology stack product versions mentioned in this document. Even if newer versions of the technology stack products become available, they may not be compatible with Oracle LSH.

- [Get the Oracle Life Sciences Warehouse 3.1 Media Pack](#)
- [Download Software to a Staging Area](#)

Get the Oracle Life Sciences Warehouse 3.1 Media Pack

Oracle LSH, Oracle Health Sciences Data Management Workbench, and their technology stacks are contained on the **Oracle Health Sciences Data Management Workbench 3.1** media pack for various platforms.

To receive a physical media pack with all the required DVDs, contact Oracle Support. To expedite your request, you can call Oracle Support directly or open a Service Request (SR) selecting problem category: **Version Update Request**.

To download the media pack from eDelivery:

1. Go to Oracle Software Delivery Cloud, <http://edelivery.oracle.com>, click **Sign In**, and log in with your user ID.
2. Select **Download Package** from the **All Categories** drop-down list (or leave All Categories selected). Enter **Oracle Health Sciences Data Management Workbench** in the Search field and click **Search**.
3. Select **DLP: Oracle Health Sciences Data Management Workbench 3.1.0.0.0** and click **Add to Cart**.
4. Click **Checkout**. You see a list of the selected software:
 - Oracle Health Sciences Data Management Workbench 3.1.0.0.0 (Oracle Standard Terms and Conditions)
 - Oracle Life Sciences Data Hub 3.1.0.0.0
 - Oracle Health Sciences Data Management Workbench 3.1.0.0.0
5. From the **Platform** drop-down list, select the appropriate operating system.
6. Click **Continue**.
7. Review the Terms and Restrictions and select **I reviewed and accept the Oracle License Agreement** to continue. (Click **Print** from the top-right corner of the screen to print the agreement.) Click **Continue**. You see a list of zipped files for the Oracle Life Sciences Data Hub <your operating system> 3.1 release and Oracle Health Sciences Data Management Workbench <your operating system> 3.1 release:
 - Oracle Life Sciences Data Hub 3.1.0
 - Oracle Health Sciences Data Management Workbench 3.1.0
 - Oracle Thesaurus Management System 5.3.1

8. Leave the list of zipped files selected to download the package of Oracle Health Sciences Data Management Workbench 3.1.0.0 files or only select the files you need.
9. Click **Download**. Then browse to the location where you want to save the Oracle executable.
10. Double-click the Oracle executable. Leave the default destination or click **Browse** to select another one. Click **Next**. Oracle downloads the zipped files.
11. Move the zipped files to a staging area and unzip them. The full release contains a software folder for Oracle DMW (**p32003082_31000_Generic.zip**), Oracle LSH (**p6114439_R12_GENERIC.zip**, **p27723788_R12_GENERIC.zip**, **p31136807_R12_GENERIC.zip**, **p32078417_R12_GENERIC.zip**) and Oracle TMS (**p30717198_53100_Generic.zip**).
12. See [Download Software to a Staging Area](#) for details on downloading the software.

Download Software to a Staging Area

Creating a staging area is recommended, but not required.

To set up the staging area successfully, create a directory for each disk in the media pack and then download and expand all the files that comprise a single disk in the media pack to the same location.

See the spreadsheet on the documentation disk for a list of patches and their location on the media pack.

To download patches from My Oracle Support, go to <https://support.oracle.com>.



Note:

See My Oracle Support article 1138053.1, *Oracle Life Sciences Data Hub and Oracle Clinical Development Analytics Known Install and Configuration Issues* for the latest information.

Table 1-1 Software to Download for Oracle LSH and Oracle DMW

Disk or Patch Name	Source	ID Number
Oracle E-Business Suite Release 12.2 software distribution	Media pack	15 disks
Oracle Database 19c for Linux	Media Pack	V982063-01
Oracle Thesaurus Management System 5.3.1	Media Pack	30717198
Oracle LSH Splicer patch for Applications R12	Media Pack	6114439
Oracle Life Sciences Data Hub 3.1	Media Pack	32078417
Oracle Life Sciences Data Hub online help	Media Pack	18551089
Oracle E-Business Suite SDK patch	Media Pack	27723788
NOT ABLE TO ADD HTTPS URL TO FAVORITES LINK IN 12.1.2. HTTP IS PRE-PENDEED TO URL	My Oracle Support	11781531
FND_NO_DATABASE_CONNECTION	My Oracle Support	11832737

Table 1-1 (Cont.) Software to Download for Oracle LSH and Oracle DMW

Disk or Patch Name	Source	ID Number
API TO PREVALIDATE EBS USERS for Oracle LSH (This patch is only required if you perform a full install of Oracle LSH 3.0 [not an upgrade to 3.0 from a previous version].)	My Oracle Support	19357286
FND PRODUCT INSTALLATION IS NOT EXECUTING FOR GHR, OTL, IREC PRODUCTS (This patch is only required if you perform a full install of Oracle LSH 3.0 [not an upgrade to 3.0 from a previous version].)	My Oracle Support	16263414
Oracle Database 19c; for a list of patches required, see My Oracle Support article 1058763.1.	My Oracle Support	2580629.1, 2530680.1, and 2617850.1

If you use Oracle Health Sciences Data Management Workbench, download the following software to a separate application server. For system requirements, see the *Oracle Health Sciences Data Management Workbench Installation Guide*.

Table 1-2 Software to Download for Oracle DMW

Disk or Patch Name	Source	ID Number
Oracle WebLogic Server 12.2.1.4 and Coherence for Linux x86	Media Pack	p30188255_122140_Generic.zip
ADF patch	My Oracle Support	32588679
Oracle Health Sciences Data Management Workbench 3.1	Media Pack	32078417

Assemble the Documentation

Installing Oracle LSH is a complex process because it includes installing, upgrading, and patching a number of other products. This book guides you through the process, but refers you to the documentation for other products along the way.

Oracle recommends that you gather all the documentation you will need and read it before you begin the process of installing Oracle LSH.

- [Books](#)
- [My Oracle Support Articles](#)

Books

The books you need to install the technology stack are included in the media pack.

You can also find PDF and HTML copies online; see [Documentation accessibility](#).

In addition to this guide, you need:

- *Oracle Life Sciences Data Hub System Administrator's Guide Release*
- *Oracle Thesaurus Management System Installation Guide Release 5.3.1*
- *Oracle E-Business Suite Upgrade Guide Release 12.0 and 12.1 to 12.2*
- *Oracle E-Business Suite Release 12.1.1 Documentation Library* which includes:

- *Oracle E-Business Suite Maintenance Utilities*
- *Oracle E-Business Suite Maintenance Procedures*
- *Oracle E-Business Suite Patching Procedures*
- *Oracle E-Business Suite System Administrator's Guide - Configuration*
- *Oracle E-Business Suite System Administrator's Guide - Maintenance*
- *Oracle E-Business Suite System Administrator's Guide - Security*
- *Oracle® Applications Upgrade Guide Release 11i to 12.1.1*
- *Oracle E-Business Suite Installation Guide: Using Rapid Install Release 12*
- *Oracle Business Intelligence Publisher Installation Guide Release 10.1.3.4*

The rest of the Oracle LSH user documentation is also included. However, you should check [Oracle Help Center](#) for the most current versions.

My Oracle Support Articles

The My Oracle Support Web site contains links to the most recent patches and updates for Oracle products. This section lists all the My Oracle Support articles listed in subsequent sections of this guide so that you can copy all of them to one place. See [Documentation accessibility](#).

- [System Requirements and Technology](#)
- [Upgrading to Oracle Life Sciences Data Hub Release 3.1](#)
- [Other Documents Related to Oracle Life Sciences Data Hub](#)

System Requirements and Technology

[System Requirements and Technology Stack](#) references the following My Oracle Support articles:

- 180430.1, *Oracle Life Sciences Applications Supported Technology Stacks*

Upgrading to Oracle Life Sciences Data Hub Release 3.1

[Upgrading to Oracle Life Sciences Data Hub Release 3.1](#) references the following My Oracle Support article:

- 1320300.1, *Oracle E-Business Suite Release Notes, Release 12.2*
- 1330701.1, *Oracle E-Business Suite Installation and Upgrade Notes Release 12 (12.2) for Linux x86-64 Note*
- 2495027.1, *Oracle E-Business Suite Release 12.2.9 Readme*
- 396009.1, *Database Initialization Parameters for Oracle E-Business Suite Release 12*
- 1531121.1, *Using the Online Patching Readiness Report in Oracle E-Business Suite Release 12.2*
- 1375769.1, *Sharing The Application Tier File System in Oracle E-Business Suite Release 12.2*
- 1054417.1, *Patch 6678700 Worker Fails On Applying MSDODPCODE.sql With ORA-33292 Insufficient Permissions To Access Analytic Workspace APPS.ODPCODE; ORA-33262: Analytic workspace ODPCODE does not exist.*

- 1314218.1, *ORA-37002: Oracle OLAP failed to initialize while applying patch 6678700*
- 2580629.1, *Interoperability Notes: Oracle E-Business Suite Release 12.1 with Oracle Database 19c*
- 2530680.1, *Using Oracle 19c RAC Multitenant (Single PDB) with Oracle E-Business Suite Release 12.1 (for an Oracle RAC environment)*
- 1333659.1, *Applying The Patch 6678700 Worker 1 Failed: File Cskbcat.Ldt. ERRORS: ORA-20000: Oracle Text error: DRG-50857: oracle error in textindexmethods.ODCIIndexUpdate, DRG-13201: KOREAN_LEXER is desupported*
- 1281478.1, *Script Czhist.Sql Fails During Application Of Patch 6678700*
- 1083981.1, *Script Pechktsk.Sql fails with, ORA-00979: Not A Group By Expression when applying Patch 6678700 or Patch 3500000*
- 1322144.1, *Error - ORA-54015 : biv_b_age_h_sum_mv.xdf Failes with Duplicate Column Expression was Specified*
- 1284055.1, *12.1.1 Upgrade Fails on Fem_bal_nacc_hier_l2_mv.xdf with Oracle 11.2.0.2 Database*
- 1106795.1, *adapctl.sh: exiting with status 150*

Other Documents Related to Oracle Life Sciences Data Hub

The following related documents are available on My Oracle Support. See [Documentation accessibility](#).

- *Oracle Life Science Data Hub (LSH) Summary of Patches Available (1376925.1)*
- *Oracle Life Sciences Data Hub 2.1.3, 2.1.4, 2.2, 2.2.1, 2.3, 2.3.1 and 2.4 Installation Verification Tests (1063225.1)*
- *Guide to Using Oracle VM Templates in an Oracle Life Sciences Data Hub 2.2 Installation (1450700.1)*
- *Oracle Life Sciences Data Hub 2.2 Data Guard Support (1342251.1)*
- *Oracle Life Sciences Data Hub Release 2.2 Performance Behavior and System Recommendations (1369871.1)*

2

System Requirements and Technology Stack

If you install Oracle LSH for the first time or upgrade to a new version after December 31, 2010 and are using Oracle Enterprise Manager (OEM) 10.2.0.4 or 10.2.0.5 with Oracle LSH, apply OEM patch 8350262.

For further information, see My Oracle Support article number 1217493.1.

This section contains the following topics:

- [System Requirements](#)
- [Technology Stack](#)
- [Integrated External Systems](#)

System Requirements

This section includes some general requirements for your Oracle Life Sciences Data Hub installation. For requirements on other products you need to install, see the documentation that came with them.

The general requirements topics include:

- [Operating Systems](#)
- [Hardware](#)

Operating Systems

To get the most current information on the Oracle LSH technology stack, see My Oracle Support article 180430.1, *Oracle Life Sciences Applications Supported Technology Stacks*.

This section includes the following topics:

- [Database Tier](#)
- [Application Tier](#)
- [Clients](#)

Database Tier

The Oracle LSH database tier can be installed on the following platforms:

- Linux x86-64 (64-Bit)
 - Oracle Enterprise Linux 7.4 or later
 - Red Hat Enterprise Linux 7.4 or later
- AIX 7.1 and 7.2 (64-Bit)
- Oracle Solaris 11 on SPARC (64-Bit)

**Note:**

The database global name cannot be greater than 64 characters.

Application Tier

You can install the Oracle LSH application tier on the following platforms:

- Linux x86-64 (64-Bit)
 - Oracle Enterprise Linux 6 or later, and 7.4 or later
 - Red Hat Enterprise AS/ES 5
 - Red Hat Enterprise AS/ES 6
- HP Itanium 11i v3 (11.31) (64-bit)
- AIX 6.1 (64-Bit)
- Oracle Solaris 10 on SPARC (64-Bit)
- Oracle Solaris 11 on SPARC (64-Bit)

Clients

Oracle LSH supports the following browsers on Microsoft Windows operating systems:

- Google Chrome Version 89.0.4389.114 (Official Build) (64-bit)
- Mozilla Firefox Quantum Extended Support Release 78.9.0esr (64-bit)
- Mozilla Firefox Version 87.0 (64-bit)
- Microsoft Edge Chromium Version 89.0.774.68 (Official build) (64-bit)

For **Oracle JRE**, Oracle LSH supports the same versions as Oracle E-Business Suite 12.1.3. To get the latest information:

1. Go to My Oracle Support at <https://support.oracle.com> and sign in.
2. Click the **Certifications** tab.
3. In the Search area, enter Oracle E-Business Suite for Product and 12.1.3 for Release, and click **Search**.
4. In the Search Results page, expand **Management and Development Tools**.
5. Check the Oracle JRE versions displayed and click the link to see more.

Hardware

Oracle Applications 12.2.9 and Oracle Database 19c can be installed on the same or different servers.

In addition, you need one computer running on Windows for use in installing Oracle Thesaurus Management System (Oracle TMS). You will not need this computer for Oracle LSH after installing Oracle TMS except to install any Oracle TMS patches that may be required in the future. You need at least one Windows computer if you plan to use Oracle Analytics Server to define Business Areas and create data visualizations

(Oracle Analytics Server Answers). You can use the same Windows computer for Oracle Analytics Server and Oracle TMS.

**Note:**

Oracle LSH does not support a Windows server for SAS.

In an installation where the application and database tiers are installed on different computers, those computers are typically connected by a local area network (LAN), while the application-tier computer is connected to clients in a wide area network (WAN).

Using Real Application Clusters (RAC) to install the database over several nodes is optional.

Oracle LSH uses Oracle XML Publisher (which is bundled with Oracle Applications) to generate PDF-format Report Sets. If you plan to use this feature and if your Report Sets are very large, you may want to dedicate one node to Oracle XML Publisher processing.

For system hardware requirements see the documentation for each component; see [Assemble the Documentation](#).

In addition:

- The TCP/IP network connection to the server should be at least at 1 GB.
- Be sure to allow for growth in database storage capacity.
- Oracle recommends installing a test environment as similar as possible to the production environment, including all operating system and other patches and updates.

Technology Stack

To get the most current information on the Oracle LSH technology stack, see My Oracle Support article 180430.1. At the time of publication of this document, the required technology stack for Oracle LSH consists of the following products:

- **Oracle Applications 12.2.9**

**Note:**

Oracle Life Sciences Data Hub has been tested ONLY on Release 12.2.9 of Oracle Applications. Do not install more recent releases unless explicitly instructed to do so by an Oracle Life Sciences Data Hub note or alert on My Oracle Support.

- **Java Development Kit (JDK) 1.8.0_211** is required for the Oracle LSH Distributed Processing Server.
- **Oracle Database 19c**
- **XML DB**, which is included with the 19c database, is required for Oracle LSH.
- **Oracle Thesaurus Management System 5.3.1 Database Tier** is used internally for the Oracle LSH classification system.

- A **zip utility** and **Java Development Kit (JDK) 1.8.0_211** are required for the Oracle LSH Distributed Processing Server.
- **WinZip** or **7-Zip** is required on clients used by Oracle LSH developers who launch integrated development environments (IDEs) such as SAS or the Oracle BI Administration Tool on their PC. Neither of these utilities is included on the media pack.
For WinZip, use Pro 11.2 SR-1, WinZip 8.1, or any other WinZip version that includes WZUNZIP.exe.

Integrated External Systems

Oracle LSH includes adapters to support integration with the following external systems.

- Oracle Clinical 5.2.1 and 5.2.2
- SAS 9.1.3, SAS 9.2, SAS 9.3, and SAS 9.4: Optional and licensed separately.
- Oracle Business Intelligence Enterprise Edition (OBIEE) 12.2.1.4 can be used to create OBIEE visualizations of Oracle LSH data. Optional and licensed separately. The OBIEE Presentation Server, OBIEE Server, and the OBIEE Administrator's Tool are required if you are using Oracle Analytics Server. The latter two run on Windows only.

3

The Two Supported Upgrade Paths

For upgrading to Oracle LSH release 3.1, the following are the two supported upgrade paths:

- If you are upgrading from a release prior to Oracle LSH release 3.0:
 1. Upgrade to Oracle LSH release 3.0 for both the technology stack and the Oracle LSH product. Follow instructions in the [Oracle Life Sciences Data Hub Installation Guide Release 3.0](#).
 2. Upgrade E-Business Suite. Follow instructions in [Upgrading E-Business Suite from 12.1.3 to 12.2.9](#).
 3. Upgrade to Oracle LSH release 3.1. Follow instructions in [Upgrading to Oracle Life Sciences Data Hub Release 3.1](#).
- If you are upgrading from Oracle LSH release 3.0:
 1. Upgrade E-Business Suite. Follow instructions in [Upgrading E-Business Suite from 12.1.3 to 12.2.9](#).
 2. Upgrade to Oracle LSH release 3.1. Follow instructions in [Upgrading to Oracle Life Sciences Data Hub Release 3.1](#).

4

Upgrading E-Business Suite from 12.1.3 to 12.2.9

This section includes the following topics:

- [Upgrade E-Business Suite from 12.1.3 to 12.2.9](#)
- [Apply the Database Patches](#)
- [Apply the Additional EBS Patches](#)
- [Revert Database Init Parameters and Grant Access to APPS](#)

Upgrade E-Business Suite from 12.1.3 to 12.2.9

For instruction on how to upgrade E-Business Suite (EBS) from release 12.1.3 to 12.2.9, see [Oracle E-Business Suite Upgrade Guide Release 12.0 and 12.1 to 12.2](#).

Note:

While following the instructions in the Oracle E-Business Suite Upgrade Guide, the following are a few exceptions you **must** perform as these are required specifically for Oracle DMW and Oracle LSH.

- Instead of instructions in chapter 4 Performing the Upgrade > section "Performing the Upgrade to Release 12.2.0" > step 1 "Disable AOL Audit Trail (conditional)", perform the following steps to back up the Oracle DMW and Oracle LSH audit tables and clean up the audit tables to prepare for the upgrade:
 1. Connect to the database as SYSDBA.
 2. Execute the following query to determine the space required by audit tables:

```
select segment_name,segment_type,bytes/1024/1024/1024 GB
  from dba_segments
  where segment_type='TABLE' and segment_name IN
('CDR_BA_DB_PRIVILEGES_A',
                                     'CDR_CONNECTIONS_A',
                                     'CDR_NAMINGS_A',
                                     'CDR_NAMING_VERSIONS_A',
                                     'CDR_OBJECT_SUBTYPES_B_A',
                                     'CDR_OBJECT_SUBTYPES_TL_A',
                                     'CDR_OBJ_CLA_MAPPINGS_A',
                                     'CDR_OBJ_UG_A',
                                     'CDR_OUTPUTS_A',
                                     'CDR_REMOTE_LOCATIONS_A',
                                     'CDR_ROLES_B_A',
                                     'CDR_ROLES_TL_A',
```

```
'CDR_SECURITY_DBACCOUNT_A',
'CDR_SOURCE_CODES_A',
'CDR_SUBTYPE_OPR_ROLES_A',
'CDR_TABLE_REFS_A',
'CDR_TABLE_REF_JOBS_A',
'CDR_UG_ROLES_A',
'CDR_USER_GROUPS_B_A',
'CDR_USER_GROUPS_TL_A',
'CDR_USER_UG_ROLES_A',
'DME_FLAG_DATA_A');
```

3. Execute the following query to determine the total space (in GB) required in the APPS_TS_TX_DATA tablespace to back up all the audit tables:

```
select sum(GB) from (select segment_name,segment_type,bytes/
1024/1024/1024 GB
  from dba_segments
  where segment_type='TABLE' and segment_name IN
('CDR_BA_DB_PRIVILEGES_A',
'CDR_CONNECTIONS_A',
'CDR_NAMINGS_A',
'CDR_NAMING_VERSIONS_A',
'CDR_OBJECT_SUBTYPES_B_A',
'CDR_OBJECT_SUBTYPES_TL_A',
'CDR_OBJ_CLA_MAPPINGS_A',
'CDR_OBJ_UG_A',
'CDR_OUTPUTS_A',
'CDR_REMOTE_LOCATIONS_A',
'CDR_ROLES_B_A',
'CDR_ROLES_TL_A',
'CDR_SECURITY_DBACCOUNT_A',
'CDR_SOURCE_CODES_A',
'CDR_SUBTYPE_OPR_ROLES_A',
'CDR_TABLE_REFS_A',
'CDR_TABLE_REF_JOBS_A',
'CDR_UG_ROLES_A',
'CDR_USER_GROUPS_B_A',
'CDR_USER_GROUPS_TL_A',
'CDR_USER_UG_ROLES_A',
'DME_FLAG_DATA_A')
) t ;
```

4. Allocate the required space (in GB) from the previous step to the APPS_TS_TX_DATA tablespace.
5. Download Oracle LSH 3.1 patch p32078417_R12_GENERIC.zip.
6. Unzip patch p32078417_R12_GENERIC.zip (**DO NOT APPLY PATCH**).
7. Go to *PATCH_Folder/32078417/cdr/patch/115/sql*.
8. Log in to SQL*Plus as the APPS user.
9. Execute the script *cdr31ugppreauditscript.sql* to back up the tables.
10. Set the audit groups (LSH_Audit and DMW_AUDIT) status to "Disable-Purge Table".

11. Run the Audit Table Update Request program. This will drop all triggers/views and data from `_A` tables.
 12. Go to `PATCH_Folder/32078417/cdr/patch/115/sql`.
 13. Log in to SQL*Plus as the APPS user.
 14. Execute the script `cdr31ugppostauditscript.sql` to drop the audit (`_A`) tables and the corresponding synonyms.
 15. Connect as APPS user and back up the `CDR_REMOTE_LOCATIONS` table data:
Create table `CDR.CDR_REMOTE_LOCATIONS_BK31` as `select * from CDR.CDR_REMOTE_LOCATIONS;`
- Before you disable the custom triggers in chapter 4 Performing the Upgrade > section "Performing the Upgrade to Release 12.2.0" > step 5 Disable custom triggers, constraints, indexes, business events, and VPD (conditional), drop the trigger "OWBSYS.CDR_RTREPOS_TG". Then, execute the following command to find the custom triggers that you must disable:

```
select trigger_name from dba_triggers where trigger_name like '%CDR%';
```


Follow the remaining instructions in step 5 Disable custom triggers, constraints, indexes, business events, and VPD (conditional).
 - Instead of instructions in chapter 4 Performing the Upgrade > section "Database and System Administration Tasks" > step 3 "Gather schema statistics (required)", perform the instructions in *Gathering Schema Statistics for DMW and LSH* (Doc ID 2220975.1). For all other EBS schemas, execute the following command:

 **Note:**

To save some upgrade time, perform this task at least 1 or 2 weeks before upgrading to Oracle LSH release 3.1.

```
FND_STATS.GATHER_SCHEMA_STATISTICS (<schema name>, <estimate percent>, <degree of parallelism>, <backup flag>, <restart request ID, if applicable>, <history mode>, <gather options>, <modificationsthreshold>, <invalidate dependent cursors>);
```

For example: `FND_STATS.GATHER_SCHEMA_STATISTICS('AK', 10, 8, 'NOBACKUP', NULL, 'LASTRUN', 'GATHER AUTO', 10, 'N');`

You can get the schema details by executing the following query:

```
set lines 1000
set pages 1000
select 'FND_STATS.GATHER_SCHEMA_STATISTICS('' || ORACLE_USERNAME ||'',
10, 8, 'NOBACKUP', NULL, 'LASTRUN', 'GATHER AUTO', 10, 'N')'
prep_statement
from fnd_oracle_userid where ORACLE_USERNAME not in
('APPS', 'CDR', 'APPLSYS');
;
```

- In chapter 4 Performing the Upgrade > section "Performing the Upgrade to Release 12.2.0" > step 13 "Apply AD 12.2 upgrade driver (required)", if any error occurs while applying the patch 10117518 as a prerequisite to run the `adgrants.sql`, see *R12 E-*

Business Suite On Oracle Cloud Administration Error "ORA-20000: ORA-01917: user or role 'APPS' does not exist" When Running Adgrants.sql Against A Cloud Multi Tenant Database (Doc ID 2447786.1).

- In chapter 4 Performing the Upgrade > section "Performing the Upgrade to Release 12.2.0" > step 3 "Update init.ora with upgrade parameters (required)", along with the instructions in *See Database Initialization Parameters for Oracle Applications Release 12.2* (Doc ID: 396009.1), execute the following query to update the "container_data" parameter (in both CDB and PDB) and revoke the administer database trigger:

```
alter system set audit_trail=NONE scope=spfile
  Revoke ADMINISTER DATABASE TRIGGER from APPS ;
alter system set container_data=ALL scope=spfile;
```

After the EBS upgrade is complete, you must revert all the changes done in the above query. For instruction on how to revert the changes, see [Revert Database Init Parameters and Grant Access to APPS](#).

- In chapter 4 Performing the Upgrade > section "Enabling Online Patching", while reviewing the output of the script ADZDPSUM.sql, do not register any custom schemas using the script ADZDREG.sql.
- Instead of instructions in chapter 4 Performing the Upgrade > section "Upgrading to the Latest Code Level" > sub-section "Apply the Latest AD and TXK for Release 12.2" > step 3.1 "Running adsplice", apply the AD Splicer patch for Oracle LSH, patch number 6114439, which is in the Oracle LSH media pack. For more information, see *Oracle Life Sciences Data Hub Installation Guide Release 3.0*.
- Instead of instructions in chapter 4 Performing the Upgrade > section "Upgrading to the Latest Code Level" > sub-section "Apply the Latest Oracle E-Business Suite Release Update Pack for Release 12.2", perform instructions in Oracle E-Business Suite Release 12.2.9 Readme (Doc ID 2495027.1) on My Oracle Support > section "Section 8: Apply Oracle E-Business Suite 12.2.9 Release Update Pack" > sub-section "8.1 Path A — Upgrade and New Installation Customers upgrading to Oracle E-Business Suite 12.2.9 Release Update Pack"

After performing the instructions in sub-section "8.1 Path A — Upgrade and New Installation Customers upgrading to Oracle E-Business Suite 12.2.9 Release Update Pack", see [Oracle E-Business Suite Upgrade Guide Release 12.0 and 12.1 to 12.2](#) > chapter 5 "Performing Post-Upgrade Tasks" > perform instructions in sections "Database and System Administration Tasks Database and System Administration Tasks" through "Oracle XML Publisher Tasks". After that, instead of performing the post-upgrade steps in chapter 5 "Performing Post-Upgrade Tasks", perform instructions in Oracle E-Business Suite Release 12.2.9 Readme (Doc ID 2495027.1) on My Oracle Support > section "Section 9: Post-Update Steps".

Apply the Database Patches

1. Apply the database patch p31463613_1910000DBRU_Linux-x86-64.zip.
2. Apply the database patch p30808109_1910000DBRU_Linux-x86-64.zip.

Apply the Additional EBS Patches

Apply the additional EBS patches using ADOP, if not already applied.

- **Apply 31959538:R12.TXK.C, 31943873:R12.FWK.C, and 27222751:R12.FND.C patches by executing the following command:**

```
adop phase=prepare
adop phase=apply patches=31959538:R12.TXK.C, 31943873:R12.FWK.C,
27222751:R12.FND.C
adop phase=actualize_all
adop phase=finalize finalize_mode=full
adop phase=cutover
adop phase=cleanup cleanup_mode=full
```

Revert Database Init Parameters and Grant Access to APPS

Execute the following commands:

```
alter system set audit_trail=<original_value> scope=spfile;
Grant ADMINISTER DATABASE TRIGGER to APPS ;
alter system set container_data=<original_value> scope=spfile;
```

5

Upgrading to Oracle Life Sciences Data Hub Release 3.1

This section includes the following topics:

- [Run the Start Maintenance Script](#)
- [Stop Server Processes](#)
- [Back Up the Oracle E-Business Suite Database](#)
- [Upgrade to Oracle Life Sciences Data Hub 3.1](#)
- [Set Profile at the Site-Level](#)
- [Run the Post-Installation Programs](#)
- [Run the Stop Maintenance Script](#)
- [Start Server Processes](#)
- [Regenerate the JAR Files](#)
- [Run the Health Check Scripts](#)
- [Migrate Secure File](#)

Run the Start Maintenance Script

Before you upgrade any of the software, follow the steps in this procedure to start the maintenance activity.

To run the Start Maintenance script:

1. Download or copy the maintenance start script file from the Oracle LSH application server (EBS Middle Tier server) `$CDR_TOP/patch/115/sql/cdrmaintstart.sql` to the database server's `ORACLE_HOME` location or any other preferred location.
2. From the database server, log in to SQL*Plus (not SQL Developer) as the APPS database user.
3. Enter this command to stop the study health monitor scheduler:

```
SQL> EXECUTE DBMS_SCHEDULER.DISABLE('STUDY_HEALTH_REFRESH', FORCE => TRUE);
```
4. Enter this command to execute the script:

```
SQL> @cdrmaintstart.sql
```
5. Check the log file.

The log file validates the success of the Start Maintenance process and provides a maintenance ID. For example, it lists messages to show what it found up and running and what it stopped (such as the message queue and job queue).

Stop Server Processes

This step is required for all upgrade paths.

Before you begin the upgrade, stop the following servers:

- Oracle LSH Distributed Processing (DP) Server
- Application Server

Back Up the Oracle E-Business Suite Database

Oracle recommends that you make a cold backup of the Oracle E-Business Suite database in case you encounter problems during the upgrade process. You can use the backup to restore the database (if necessary).

 **Note:**

Shut down the database using the NORMAL option to ensure you can use the backup to restore the database. Do not use the IMMEDIATE or ABORT option to shut down the database.

Upgrade to Oracle Life Sciences Data Hub 3.1

These steps are required for all upgrade paths.

- [Database Tier Preinstallation Steps](#)
- [Provide Required Grants to the APPS Schema](#)
- [Apply Oracle LSH Patch 31136807](#)
- [Drop Non-edition Public Synonyms \(cdrdropnepubsynonym.sql\)](#)
- [Create Tablespace cdr_data_ts](#)
- [Install Oracle LSH 3.1](#)
- [Install the CdrRuntime.jar File](#)
- [Add clovi.gif to the EBS R12.2 File System](#)
- [Create Oracle LSH UI JAR File](#)
- [Set Up Resource Capping](#)
- [Check Non-Default Service](#)
- [Turn off EXE DEBUG](#)
- [Run the Upgrade Script to Edition Existing Schemas](#)
- [Enable Audit Trail](#)
- [Reset Init Parameters](#)
- [Execute the cdrretifytable.sql Script](#)

Database Tier Preinstallation Steps

This section contains the following topics:

- [Abort the Long-Running Jobs](#)
- [Cancel the Sessions Holding Locks on Application Objects](#)
- [Disconnect Blocking Sessions](#)

Abort the Long-Running Jobs

1. Log in to SQL*Plus as **apps**.
2. Run the following query to find the long running jobs:

```
select * from cdr_jobs where job_status_rc like '%EXECUTING%';
```

3. Log in to the Oracle LSH application.
4. Navigate to **Life Sciences Data Hub > Job Execution**.
5. Search for the job using the job ID and cancel it.

Cancel the Sessions Holding Locks on Application Objects

1. Run the following query:

```
SELECT 'alter system kill session'||''''||sid||','||serial#||''''||'  
immediate;'from v$session where sid in ( select session_id FROM  
sys.dba_ddl_locks  
WHERE (name like 'CDR_%' or name like 'DME_%') );
```

2. Run the alter statement to cancel the active sessions.

Disconnect Blocking Sessions

Before you upgrade, check for and stop any current database sessions.

1. If WebLogic Server is running, stop it. See *Oracle® Fusion Middleware Administering Server Startup and Shutdown for Oracle WebLogic Server (12.2.1.3)* at <https://docs.oracle.com/middleware/12213/wls/START/>.

Log files for the AdminServer and the DMWServer are located in:

```
middleware_home/user_projects/domains/DMWDomain/servers/AdminServer/logs
```

and

```
middleware_home/user_projects/domains/DMWDomain/servers/DMWServer/logs
```

2. Log in to SQL*Plus as **apps**.

3. Run the following query to find current sessions:

```
SELECT 'USER: '||s.username||' SID: '||s.sid||' SERIAL #: '||  
S.SERIAL# "USER  
HOLDING LOCK", s.inst_id  
FROM gv$lock l  
,dba_objects o  
,gv$session s  
WHERE l.id1 = o.object_id  
AND s.sid = l.sid  
AND o.owner = 'CDR'  
AND o.object_name = 'DME_DISC_WORKTABLIST';
```

This query returns the user, SID, serial number, and instance ID of each current session.

4. Disconnect each current session, passing in the SID and serial number:

```
alter system disconnect session 'SID, serial_number' IMMEDIATE
```

Provide Required Grants to the APPS Schema

- Connect to the PDB as sys user and execute the following commands:

```
grant execute any procedure to apps with admin option;
```

```
grant select any dictionary to apps;
```

```
grant ADMINISTER DATABASE TRIGGER to APPS;
```

Apply Oracle LSH Patch 31136807

- Apply patch 31136807 using ADOP, with `options=forceapply`.

Drop Non-edition Public Synonyms (cdrdropnepubsynonym.sql)

1. Download Oracle LSH 3.1 Patch `p32078417_R12_GENERIC.zip`.
2. Unzip patch `p32078417_R12_GENERIC.zip` (**DO NOT APPLY PATCH**).
3. Go to `PATCH_Folder/32078417/cdr/patch/115/sql`.
4. Connect to the database as APPS user and run the `cdrdropnepubsynonym.sql` script.
5. In the prompt, enter Y.

6. To verify whether or not the script has completed, run the following query to make sure there are no rows returned:

```
SELECT owner, object_name, object_type
FROM all_objects
WHERE owner = 'PUBLIC'
      and (upper(object_name) like 'CDR_%' or upper(object_name) like
'DME_%')
      and OBJECT_TYPE= 'SYNONYM'
      and edition_name is null;
```

7. Check the log file for any errors, and save it for future references. If you need help to fix any error, contact Health Sciences Support.

Create Tablespace cdr_data_ts

Create a separate tablespace `cdr_data_ts` for the LOB storage. You must calculate an estimated size of the old implementation of the LOB basic file and allocate 25% more tablespace size for the tablespace `cdr_data_ts`. This tablespace will store the migrated secure file implementation.

1. Connect to Oracle DMW PDB as SYS or SYSTEM user.
2. Calculate the approximate size of the existing LOB by executing the following SQL statement.

```
WITH lobsize AS (
  SELECT /*+ materialize cardinality(2) */
    *
  FROM
    (
      SELECT
        owner,
        segment_name
      FROM
        dba_lobsize
      WHERE
        table_name = 'CDR_JOB_LOG'
      UNION
      SELECT
        owner,
        index_name segment_name
      FROM
        dba_lobsize
      WHERE
        table_name = 'CDR_JOB_LOG'
    )
)
SELECT
  round(SUM(bytes) / 1024 / 1024) AS size_mb,
  round(SUM(bytes) / 1024 / 1024/1024) AS size_gb,
  round(SUM(bytes) / 1024 / 1024 / 1024 / 1024, 2) AS size_tb
FROM
  dba_segments
WHERE
```

```
( owner,
  segment_name ) IN (
  SELECT
    *
  FROM
    lobs
);
```

The SQL provides output in MB, GB, and TB.

3. Calculate the number of datafiles.

Number of required datafiles = Estimated size from step 1 (note the number from SIZE_GB) x 1.25 (25% over allocation) / OS max file size limit

For example, if the estimated size from step 1 is 875GB and the max file size limit is 30GB, then:

Number of required datafiles = $875 \times 1.25 / 30 = 36.45$

Round this calculated decimal number to 37.

- 4. Make sure there is enough space available in the ASM disk group. In case you do not use the ASM disk group, make sure there is enough disk space available at the operating system directory where the datafiles will be created.**
- 5. Create the tablespace cdr_data_ts by executing the following command:**

```
CREATE TABLESPACE cdr_data_ts DATAFILE
  'fully qualified datafile name' SIZE 500M
  AUTOEXTEND ON NEXT 100M MAXSIZE max size limit of the file,
  typically 30G on Linux OS
  EXTENT MANAGEMENT LOCAL UNIFORM SIZE 100M SEGMENT SPACE
  MANAGEMENT AUTO;
```

For example, assuming 30GB operating system file size limit using ASM storage "+DATA":

```
CREATE TABLESPACE cdr_data_ts DATAFILE '+DATA' SIZE 500M
  AUTOEXTEND ON NEXT 100M MAXSIZE 30G
  EXTENT MANAGEMENT LOCAL UNIFORM SIZE 100M SEGMENT SPACE
  MANAGEMENT AUTO;
```

6. Add the datafiles, as required by executing the following command:

```
ALTER TABLESPACE cdr_data_ts ADD DATAFILE 'fully qualified datafile
name' SIZE 500M AUTOEXTEND ON NEXT 100M MAXSIZE max size limit of the
file, typically 30G on Linux OS;
```

For example, assuming 30GB operating system file size limit using ASM storage "+DATA":

```
ALTER TABLESPACE cdr_data_ts ADD DATAFILE '+DATA' SIZE 500M
  AUTOEXTEND ON NEXT 100M MAXSIZE 30G;
```

7. Assign a quota for the tablespace cdr_data_ts to the user CDR and optionally to APPS.

```
ALTER USER CDR QUOTA UNLIMITED ON cdr_data_ts;
```

```
ALTER USER APPS QUOTA UNLIMITED ON cdr_data_ts;
```

Install Oracle LSH 3.1

Note:

You do not need to install the Oracle LSH online Help or create the system administrator when upgrading Oracle LSH. You only need to complete those tasks for a full installation.

You must install the Oracle LSH 3.1 as a patch to Oracle Applications using ADOP. The patch, number **32078417**, is on the media pack.

1. Unzip the patch to \$NE_BASE/EBSapps/patch.
2. Run ADOP patch. See [instructions to install patch using adop](#) for details.

Install the CdrRuntime.jar File

1. On the Oracle LSH server, navigate to the \$CDR_TOP/jar folder. It contains the CdrRuntime.zip file.
2. Copy the CdrRuntime.zip file to the Oracle Database server in any temporary location. Then enter this command to unzip the file and extract CdrRuntime.jar:

```
unzip CdrRuntime.zip
```

3. Run these commands to load the java files to the database. First this command:

```
dropjava -force -thin -user apps/apps@"(DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)
(HOST=<DB hostname>)(PORT=<DB port number>))(CONNECT_DATA=(SERVICE_NAME=<DB
service name>))" CdrRuntime.jar
```

Then this command:

```
loadjava -force -thin -user apps/apps@"(DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)
(HOST=<DB host name>)(PORT=<DB port number>))(CONNECT_DATA=(SERVICE_NAME=<DB
service name>))" CdrRuntime.jar
```

4. Run this query to return a set of alter java commands that should be run to compile invalid classes:

```
SELECT
'alter java class "'
|| object_name
|| '" compile;'
FROM
dba_objects
WHERE
object_type = 'JAVA CLASS'
and object_name LIKE '%cdr%'
AND status = 'INVALID';
```

5. Connect to the database as APPS and run the statements returned by the able query.
6. Rerun the query and confirm that it does not return any rows.

 **Note:**

If the query returns rows, execute the statements returned again. Repeat this process until the SQL does not return any rows.

Add clovi.gif to the EBS R12.2 File System

1. Source the PATCH file system environment file.
2. Perform the following:
 - a. Copy clovi.gif from \$CDR_TOP/media to \$RUN_BASE/FMW_Home/Oracle_EBS-app1/applications/oacore/html/cabo/images/cache.
 - b. Copy clovi.gif from \$CDR_TOP/media to \$PATCH_BASE/FMW_Home/Oracle_EBS-app1/applications/oacore/html/cabo/images/cache.
3. Re-source the environment file, as required.

Create Oracle LSH UI JAR File

1. Create a directory \$FND_TOP/admin/template/custom.
2. Copy the existing \$FND_TOP/admin/template/ebsProductManifest_xml.tmp to \$FND_TOP/admin/template/custom.
3. Modify \$FND_TOP/admin/template/custom/ebsProductManifest_xml.tmp to add the following additional <classpath> entry after the <classpath> section for the customall.jar file. This should be after </classpath> and before the line </classpath-contents>.

```
<classpath>
  <absolute-path>%s_current_base%/EBSapps/comn/java/classes/oracle/apps/cdr/jar</absolute-path>
  <relative-path>../../../../java/classes/oracle/apps/cdr/jar</relative-path>
  <windows-path>@BEA_HOME@/../EBSapps/comn/java/classes/oracle/apps/cdr/jar</windows-path>
  <libraries>
    <library>cdrlshall.jar</library>
  </libraries>
</classpath>
```

Replace *EBSapps* with your corresponding directory name if it is different.

4. Run AutoConfig.
5. Bounce the application tier services.

 **Note:**

These changes must be redone if `ebsProductManifest_xml.tmp` is patched in future.

6. In order to to synchronize the changes (during the next prepare phase) between both the file systems fs1 and fs2, back up the file `<APPL_TOP_NE>/ad/custom/adop_sync.dr`.
7. Add the following lines (after replacing EBSapps with your correct directory name) to the original file just before the line `"#End Customization"`.

```
# For LSH 3.1 : BEGIN
cp -R %s_current_base%/EBSapps/comn/java/classes/oracle/apps/cdr
%s_other_base%/EBSapps/comn/java/classes/oracle/apps
cp %s_current_base%/EBSapps/comn/java/classes/oracle/apps/cdr/jar/
cdrlshall.jar %s_other_base%/EBSapps/comn/java/classes/oracle/apps/cdr/jar
cp %s_current_base%/EBSapps/appl/fnd/12.0.0/admin/template/custom/
ebsProductManifest_xml.tmp %s_other_base%/EBSapps/appl/fnd/12.0.0/admin/
template/custom
# For LSH 3.1 : END
```

8. After the changes are synchronized, make sure you run Autoconfig for the latest template changes to take effect.

Set Up Resource Capping

Resource capping of Oracle DMW and Oracle LSH jobs is required to ensure that you have enough resources available for the UI activity especially when jobs demand a high CPU time. If you do not set up the resource capping, the UI operations may suffer due to the CPU queue length and resource crunch. The system routes the data processing jobs to a database service specifically defined for that purpose. A resource plan which limits the CPU usage of these jobs to 75% is applied on the sessions that connect to this service.

1. Log on to the database as SYS user.
2. Create a database service. Perform one of the following:
 - For a non-RAC standalone database, run the following command. This service will be used for executing the data processing jobs (for example, XFM , Oracle InForm and so on).

```
begin
dbms_service.create_service('service_name','service_name');
end;
/
begin
dbms_service.start_service('service_name');
end;
/
```

- For a RAC database, run the following command:

```
srvctl add service -d CDB_NAME -s service_name -pdb PDB_NAME -
preferred CDB Instance1,CDB Instance2
srvctl start service -db CDB_NAME -service service_name
```

For example:

```
srvctl add service -d dmw3dvc -s service_name -pdb dmw3dv -
preferred dmw3dvc1,dmw3dvc2
srvctl start service -db dmw3dvc -service service_name
```

3. Navigate to \$CDR_TOP/patch/115/sql.
4. Execute the script dmwRMSetup.sql.
The script prompts for the database service created for the data processing jobs.
5. Enter the *service_name* you have created.
The script prompts for the Oracle DMW PDB name.
6. Enter the Oracle DMW PDB name.
7. Type Y, and press **Enter**.
The script creates a resource limit plan for the data processing jobs.

Check Non-Default Service

1. Log in to Oracle Database 19c as sysdba user.
2. Execute this query to find all the service names with LONG:


```
select NAME, NETWORK_NAME, CON_NAME, CLB_GOAL
from gv$active_services
where CLB_GOAL='LONG';
```
3. Check that the non-default service name is not the same as the pdb / cdb name or any sys service name.

Turn off EXE DEBUG

1. Log in to Oracle Database 19c.
2. Enter:

```
SQL> select FND_PROFILE.VALUE_SPECIFIC('LSH:ENABLE_DEBUGGING') from
dual;
      FND_PROFILE.VALUE_SPECIFIC('LSH:ENABLE_DEBUGGING')
-----
$YESNO$NO
SQL> select FND_PROFILE.VALUE_SPECIFIC('DMW:USER_DEBUGGING') from
dual;
      FND_PROFILE.VALUE_SPECIFIC('DMW:USER_DEBUGGING')
```


 **Note:**

After you install Oracle DMW, you sign in and navigate to the Administration page and click the Tracing & Logging tab to see that you disabled logging and tracing in Active Sessions.

Run the Upgrade Script to Edition Existing Schemas

Run the `dmeupg31runprgs.sql` script to ensure that all the applicable Oracle DMW and Oracle LSH schemas get editioned which were created in an earlier version of Oracle DMW and Oracle LSH. You must plan a maintenance window to run the script.

 **Note:**

Run this script only if you want to upgrade from Oracle DMW or Oracle LSH release 3.0 to release 3.1. For any other upgrade path, do not run this script.

This script generates a log file. For example, `dmeupg31runprgs<YYYYMMDDHHMISS>.LST`. The script displays the output on the console and also writes in the log file.

Enable the Oracle DMW Maintenance Mode and perform the following steps to run the script on a computer with an Oracle client that can connect to the Oracle DMW database server using SQLPlus:

1. Before you run the `dmeupg31runprgs.sql` script, you must remove the obsolete editions by executing the following commands:

```
adop phase=prepare
adop phase=actualize_all
adop phase=finalize finalize_mode=full
adop phase=cutover
adop phase=cleanup cleanup_mode=full
```

2. Download the `dmeupg31runprgs.sql` script file from `$CDR_TOP/patch/115/sql/`.
3. Log on to SQLPlus (not SQLDeveloper) as the APPS database user.
4. Invoke the script from your download directory. For example, `<download_directory>/ dmeupg31runprgs.sql`.

This script submits the job `DMEUPG31$EDITIONSCHS`. To track the status of this job, execute the following query:

```
SELECT * FROM DBA_SCHEDULER_JOBS WHERE JOB_NAME =
'DMEUPG31$EDITIONSCHS';
```

You can also monitor the job while it is executing:

```
SELECT * FROM DBA_SCHEDULER_RUNNING_JOBS WHERE JOB_NAME =
'DMEUPG31$EDITIONSCHS';
```

After the job execution completes, check the status of the job:

```
SELECT * FROM DBA_SCHEDULER_JOB_RUN_DETAILS WHERE JOB_NAME =
'DMEUPG31$EDITIONSCHS';
```

The script displays the number of schemas to get editioned. If this number is high, job execution may take more time to complete.

You can monitor the processed and remaining schemas using the below query anytime in addition to the above queries:

```
Select Decode(Success_Flag, 'Y', 'processed_schema_Count', 'F',  
'failed_schema_Count', 'remaining_schema_count') as status,  
Count(*) as num_schemas  
From DME_UPG31_SCH_TAB  
Group By Success_Flag;
```

 **Note:**

If you resubmit the script while the above job is already running, the script will abort.

Enable Audit Trail

The system administrator must enable the audit trail.

1. Navigate to Security > Audit Trail > Groups.
2. Set the status of the audit groups (LSH_AUDIT and DMW_AUDIT) to **Enable Requested**.
3. Run the Audit Table Update Request program.

Reset Init Parameters

- Execute the following command:

```
alter system set container_data=CURRENT_DICTIONARY  
scope=spfile; alter system set audit_trail=DB scope=spfile
```

Execute the cdrrectifytable.sql Script

If you are upgrading from Oracle LSH release 2.2.x or 2.4.9.x to release 3.1, you must execute the `cdrrectifytable.sql` script. However, if you have already executed this script earlier successfully in release 2.4.9.x, you need not execute this script again.

For executable objects like programs and data marts, the script validates that the `BLINDING_UPGRADABLE_RC` attribute is set correctly for the LSH 2.2.x tables. If the attribute is set incorrectly, the script updates it to use the correct value. In addition, if the `BLINDING_UPGRADABLE_RC` attribute is set incorrectly, the script re-installs text Load Sets and their target tables.

1. Log on to the application tier.
2. Source the environment file.
3. Navigate to the `$CDR_TOP/patch/115/sql` directory.
4. Log in to SQL*Plus as the APPS user.

5. Execute the script `cdrretifytable.sql`.

This script validates whether or not the Oracle LSH 2.2.x or 2.4.9.x tables are compatible with Oracle LSH 3.1. This script also submits the job "CDR_UPGRADEFROM22".

6. To track the job status, execute the following query:

```
select job_name,state from DBA_SCHEDULER_JOBS where
job_name='CDR_UPGRADEFROM22';
```

7. To monitor the job while it is executing, execute the following query:

```
SELECT job_name,session_id,running_instance FROM
DBA_SCHEDULER_RUNNING_JOBS WHERE JOB_NAME = 'CDR_UPGRADEFROM22';
```

8. To check the script execution status after the scheduler job is completed, execute the following query:

```
select job_name,status,error#,additional_info from
dba_scheduler_job_run_details where job_name='CDR_UPGRADEFROM22';
```

9. After the script execution is completed, extract the output from the CDR_EXE_DEBUG table by executing the following query:

```
select logentry from cdr_exe_debug where location='UPGRADEFROM22'
order by seq;
```

Set Profile at the Site-Level

Set the Manual Password Reset Enabled profile to Yes at the site-level.

1. Log on to Oracle E-Business Suite as sysadmin user.
2. Expand the **System Administrator** folder in the left panel.
3. Expand **Profile**, and select System.

The Find System Profile Values window appears.

4. In the **Profile** field, enter `Manual Password Reset Enabled`.
5. Click **Find**.

The system returns you to the System Profile Values window with Manual Password Reset Enabled displayed in the Profile Option Name column.

6. Select `Yes` as the value at the site-level.
7. Click **Save**.

Run the Post-Installation Programs

You must run the Oracle LSH LOB Loader and post-installation concurrent programs.

Note:

If you are using RAC, shut down all but one database node before running the post-installation programs. If you leave more than one node up, the jobs may run successfully but you may get errors.

- [Log On to Oracle Applications](#)
- [Load the Adapter Files](#)
- [Run the Post-Installation Concurrent Program](#)
- [Grant Security Rights to Seeded Adapters](#)

Log On to Oracle Applications

To run the jobs, you must log on to Oracle Applications as an Oracle LSH user with the following roles:

- LSH Setup Admin
 - LSH Adapter Security Admin
1. Open your Web browser.
 2. Enter the eBusiness Suite SSWA (Self-Service Web Application) URL as follows:
`http://<host name>.<domain name>:<HTTP port>/oa_servlets/AppsLogin`
For example:
`http://appshost.your_company.com:8000/oa_servlets/AppsLogin`
The Applications Login screen appears.
 3. Log in as a user with LSH Setup Admin and LSH Adapter Security Admin privileges. An Oracle LSH page opens. Click **Home** from the links on the top right corner of the page to reach the Oracle Applications Home Page.
 4. Select the **LSH Setup Admin** Responsibility by clicking on it. **Lookups** appears in the second column.
 5. Click **Lookups**. (If necessary, click **Grant This Session** or **Grant Always**.) The Oracle Life Sciences Data Hub Lookups window opens.
 6. From the **View** menu, select **Requests**.

Load the Adapter Files

Oracle LSH includes predefined adapters that control the interaction between Oracle LSH and other systems. The Oracle LSH LOB Loader concurrent program finds all the adapter SQL files and loads them into a table in Oracle LSH.

To run the Oracle LSH LOB Loader:

1. Follow steps in [Log On to Oracle Applications](#).
2. Click **Submit a New Request**. The Submit a New Request window opens.
3. Select **Single Request** and click **OK**. The Submit Request window opens.
4. Click the gray LOV button on the right of the **Name** field. The Reports List of Values opens.
5. Select **LSH LOB Loader Concurrent Program** and click **OK**.
6. Click **Submit**. A window pops up with the job ID and asks if you want to submit another request.
7. Click **No**.

To monitor the concurrent program's progress:

1. Click **Find**.
2. Click **Refresh Data** periodically to update the execution phase and status displayed on screen.

When the status is Complete you can view the log file by clicking the **View Log** button.

 **Note:**

- Always check the log file because the phase may be Complete and the status Normal, but the program may not have successfully completed all its tasks.
- If you see this message in the log file: "ORA-20001: APP-FND-02901: You do not have access privilege to any operating unit. Please check if your profile option MO: Security Profile includes any operating unit or the profile option MO: Operating Unit is set. has been detected in MO_GLOBAL.INIT," see this article on [My Oracle Support: ORA-20001: APP-FND-02901 Errors Running Collections or Plan in 12.2 OR in Trying to View Request Log from Legacy Collections Self Service In R12.0/12.1](#) (article 981828.1).

Run the Post-Installation Concurrent Program

Run the Job: To run the Oracle LSH post-installation concurrent process:

1. Click **Submit a New Request** under one of the following circumstances:
 - in the Requests window you used to monitor the Oracle LSH LOB Loader concurrent process
 - after following the steps in [Log On to Oracle Applications](#)
2. Select **Single Request** and click **OK**. The Submit Request window opens.
3. Click the gray LOV button on the right of the **Name** field. The Reports List of Values opens.
4. Select **LSH: Post Installation Program** and click **OK**. The Parameters pop-up window appears.
5. Enter values for the following Parameters:

 **Note:**

Carefully set the following parameters. You cannot change the values for some of the parameters after you run the job.

- **Company ID.** The company ID serves as part of the primary key for all the Oracle LSH objects you define in this instance of Oracle LSH.
- **Owning Location.** Enter the name of your Oracle Applications instance.
- **Object Sequence Start Value.** Enter a single digit. The system will end all object IDs with this digit to further distinguish objects created in this Oracle LSH instance.

- **Object Sequence Start Value.** Leave blank. The system will end all object IDs with the number 1.
 - **Database Host Name.** Enter the machine name of the database server instance.
 - **Database Port Number.** Enter the port number of the database server instance.
6. Click **Submit**. A window pops up with the job ID and asks if you want to submit another request.
 7. Note the job ID and click **No**.

Monitor the Process: To monitor the concurrent process's progress:

1. Click **Find**. Use the job ID to search for the process.
2. Click **Refresh Data** periodically to update the execution phase and status displayed on screen.
3. When the phase is Complete, click the **View Log**.

 **Note:**

Always check the log file, because the phase may be Complete and the status Normal and yet the process may not have successfully completed all its tasks.

Check the log file to make sure it did the following:

- Set the company ID
- Set the owning location
- Recreated the cdr_object_id_seq with the start value you provided
- Inserted one record each in the cdr_namings and cdr_naming_versions tables for the instance domain

 **Note:**

The job does the above only the first time it runs.

- Set the profile to check if the post-installation has been run for this site.

Grant Security Rights to Seeded Adapters

In order to ensure that seeded adapters have the security rights they need to call APIs, do the following:

1. Make sure that no LSH session is up and running.
2. Log in to SQL*Plus as apps.
3. Run `$CDR_TOP/patch/115/sql/cdradaptergrants.sql`

Run the Stop Maintenance Script

After you upgrade the software, follow the steps in this procedure to stop the maintenance activity.

To run the Stop Maintenance script:

1. Download or copy the maintenance start script file from the Oracle LSH application server (EBS Middle Tier server) `$CDR_TOP/patch/115/sql/cdrmaintstop.sql` to the database server's `ORACLE_HOME` location or any other preferred location.
2. From the database server, log in to SQL*Plus (not SQL Developer) as the APPS database user.
3. Enter this command to execute the script:

```
SQL> @cdrmaintstop.sql
```

4. Check the log file.

The log file validates the success of the Stop Maintenance process and provides a maintenance ID. For example, it lists the job report (ID, user name, job duration, job type), Distributed Processing (DP) server report (location, description, and machine), and service details. If you notice that any errors with stopping the maintenance script, contact Oracle Support.

Start Server Processes

This step is required for all upgrade paths.

Start the following servers:

- Application Server
- Oracle LSH Distributed Processing (DP) Server

If the following issue occurs during the DP server start process, add an entry to `listener.ora` and reload the listener (instructions are mentioned below):

```
[CdrExeJSExe] Exception thrown: Error in creating JDBC Connections for
ConnectionPool.
Related SQL Exception: Unable to start the Universal Connection Pool:
oracle.ucp.UniversalConnectionPoolException: Cannot get Connection from
Datasource: java.sql.SQLException: ORA-01034: ORACLE not
available
ORA-27101: shared memory realm does not exist
Linux-x86_64 Error: 2: No such file or directory
Additional information: 4460
Additional information: -1725901513
oracle.apps.cdr.dpserver.exec.server.CdrExeJSExeption: Error in creating
JDBC Connections for ConnectionPool.
at
oracle.apps.cdr.dpserver.exec.server.CdrExeJSDataSource.getConnection(CdrE
xeJSDataSource.java:191)
at
oracle.apps.cdr.dpserver.exec.server.CdrExeJSInitializer.<init>(CdrExeJSIn
itializer.java:92)
```

```
at
oracle.apps.cdr.dpserver.exec.server.CdrExeJSExe.startService(CdrExe
JSExe.java:263)
at
oracle.apps.cdr.dpserver.exec.server.CdrExeJSExe.main(CdrExeJSExe.ja
va:562)
```

1. Add the following entry to listener.ora:

```
USE_SID_AS_SERVICE_<Listener_Name> = ON
where, <Listener_Name> is the listener name that is in use.
```

2. Reload the listener:

```
lsnrctl reload
```

Regenerate the JAR Files

1. Log on to Oracle LSH with the same user that was used for submitting the Post Install and the Lob Loader programs.
2. On the Home page, expand the **Life Sciences Data Hub** link.
3. Click on any link available to you, such as Home or Applications.
4. If the page is rendered properly, do not regenerate the JAR files. If the page is not rendered properly and throws some error, regenerate the JAR files by performing the following steps:
 - a. Source the Run File System environment file.
 - b. Run adadmin (provide SYSTEM and APPS password when prompted).
 - c. Select **Generate Applications Files**.
 - d. Select **Generate product JAR Files**.
 - e. Type ALL for all products when prompted.
 - f. Type Yes for the force generation of JAR files when prompted.
 - g. Restart the Oracle LSH middle tier services.

Run the Health Check Scripts

Run the Health Check scripts for Oracle LSH and Oracle DMW as described in My Oracle Support Article 2733714.1 (<https://support.oracle.com>).

Migrate Secure File

This section includes the following topics:

- [Initiate the Secure File Migration](#)
Instructions to initiate the secure file migration.
- [Monitor the Secure File Migration](#)
- [Post Secure File Migration Task](#)
Tasks that are required after the secure file migration completes.

Initiate the Secure File Migration

Instructions to initiate the secure file migration.

1. Log on to the application tier.
2. Source the environment file.
3. Navigate to the `$CDR_TOP/patch/115/sql` directory.
4. Log in to SQL*Plus as the APPS user.
5. Execute the script `cdrsecfilepostinstscript.sql`.

A prompt to enter the number of threads appears.

6. Enter 8.

A prompt to enter the logfile pathname appears.

7. Press **Enter** to select the default logfile pathname or enter a name of your choice.
8. After the script execution is complete, check for any errors. If case of an error, contact Health Sciences Support.

The migration process starts.

Monitor the Secure File Migration

1. Make sure at least two DBMS_SCHEDULER JOBS are scheduled and running. These jobs name starts with `MIGRATE_BASICFILE_TO_SECUREFILE`. Execute the following command to confirm:

```
select
owner,
job_name,
JOB_ACTION,
START_DATE,
ENABLED,
STATE
from dba_SCHEDULER_JOBS
where job_name like 'MIGRATE_BASICFILE_TO_SECUREFILE%'
```

2. Wait for the BASIC FILE to SECUREFILE migration to complete. You can monitor the migration progress by executing the following command:

```
select thread_id,
Number_of_batch_to_processe,
no_of_processed_batch,
case when THREAD_ID in (1,2) then 'DBMS JOB SHOULD BE RUNNING'
when Number_of_batch_to_processe > no_of_processed_batch then 'DBMS JOB
SHOULD BE RUNNING'
else 'DBMS JOB SHOULD NOT BE RUNNING' end as status
from
(
select thread_id,
count(distinct batchid) Number_of_batch_to_processe,
(select count(1) from cdr_job_log_sfm_tmp where THREAD_ID=a.THREAD_ID and
```

```

status in ('COMPLETE','FAILED')) no_of_processed_batch
from cdr_job_log_sfm_tmp a
group by thread_id
);

```

Post Secure File Migration Task

Tasks that are required after the secure file migration completes.

To perform the next set of tasks, wait for at least 12 hours after the secure file migration completes. A complete application downtime is required.

1. Stop all application tier services and job queue.

Note:

DO NOT stop the database.

- a. Stop the listener and database services.
 - b. Disable all the enabled DBMS_SCHEDULER JOBS.
 - c. Make sure that no scheduler job is in the RUNNING state.
 - d. Disable the Logon Trigger.
 - e. Make sure that no application-related sessions are there in gv\$session.
2. If there is any cronjob related to Oracle LSH or Oracle DMW, suspend them. Disable any custom scheduler or DBMS jobs related to Oracle LSH or Oracle DMW.
 3. Note the count of the invalid objects of APPS, APPLSYS, and CDR schema by executing the following command:

```

select owner,
       status,
       count(1)
from dba_objects
where status <> 'VALID'
and owner in ('APPS','APPLSYS','CDR')
AND   object_name <> 'CDR_SECUREFILE_MIGRATION'
AND   object_name NOT LIKE 'CDR%SECFILE%'
AND   object_name NOT LIKE 'CDR%SFM%'
group by owner,
       status;

```

4. Once all application tier services are stopped, execute the cutover script by performing the following steps:
 - a. Log in to the application tier.
 - b. Source the environment file.
 - c. Navigate to the \$CDR_TOP/patch/115/sql directory.
 - d. Log in to SQL*Plus as the APPS user.

- e. Execute the script `cdrsecfilecutoff.sql`.
A prompt to press enter to start the process appears.
- f. Press **Enter**.
A prompt to enter the logfile pathname appears.
- g. Press **Enter** to select the default logfile pathname or enter a name of your choice.
- h. After the script execution is complete, check for any errors. If case of an error, contact Health Sciences Support.

It will take some time for the script to execute.

5. After the script `cdrsecfilecutoff.sql` executes, make sure no DBMS_SCHEDULER JOBS are running related to secure file migration.
6. Make sure the new CDR_JOB_LOG table's LOB column LOG_MESSAGE is of type SECUREFILE.

To do so, execute the following SQL command. The output of the SECUREFILE column should be YES corresponding to the CDR_JOB_LOG table.

```
select
OWNER,
TABLE_NAME,
COLUMN_NAME,
SEGMENT_NAME,
LOGGING,
SECUREFILE
from dba_lobs
where table_name like 'CDR_JOB_LOG%';
```

7. If there is any new INVALID objects in the APPS, APPLSYS, or CDR schema, compile those invalid objects.

```
select owner,
       status,
       count(1)
from dba_objects
where status <> 'VALID'
and owner in ('APPS','APPLSYS','CDR')
AND   object_name <> 'CDR_SECUREFILE_MIGRATION'
AND   object_name NOT LIKE 'CDR%SECFILE%'
AND   object_name NOT LIKE 'CDR%$FM%'
group by owner,
       status;
```

- a. Start the UTLRP and wait for its completion.
 - b. Enable the Logon Trigger.
 - c. Start the listener/database services.
 - d. Enable all the DBMS_SCHEDULER JOBS which were disabled at step 1.b.
8. After all validations are successful, start all the application tier services and job queue.

6

What's Next

After you have finished all the installation tasks outlined in this book, you must do the following tasks before you can begin to use the Oracle Life Sciences Data Hub (Oracle LSH):



Note:

Oracle Health Sciences Data Management Warehouse customers can skip this section and proceed to the *Oracle Health Sciences Data Management Warehouse Installation Guide*.

- Define Oracle LSH Distributed Processing (DP) Server service locations and services to integrate Oracle LSH with its processing engines and IDEs. See "Setting Up Services" in the *Oracle Life Sciences Data Hub System Administrator's Guide*.
- Design an object security system, classification system, and organizational structure for your implementation of Oracle LSH. See "Designing a Security System," "Designing a Classification System," and "Designing an Organizational Structure" in the *Oracle Life Sciences Data Hub Implementation Guide*.
- Set up the security system, see "Setting Up the Security System" in the *Oracle Health Sciences Data Management Workbench and Life Sciences Data Hub Security Guide*.
- Set up the classification system and organizational domains. See "Setting Up the Classification System" in the *Oracle Life Sciences Data Hub System Administrator's Guide* and "Applications User Interface" in *Oracle Life Sciences Data Hub Application Developer's Guide*.
- Define remote locations to integrate Oracle LSH with Oracle-based source data systems. See "Registering Locations and Connections" in the *Oracle Life Sciences Data Hub System Administrator's Guide*.
- If you plan to use OBIEE for visualizations or Oracle BIP for reports, do the additional setup required for each system. See the *Oracle Life Sciences Data Hub System Administrator's Guide* for information.

7

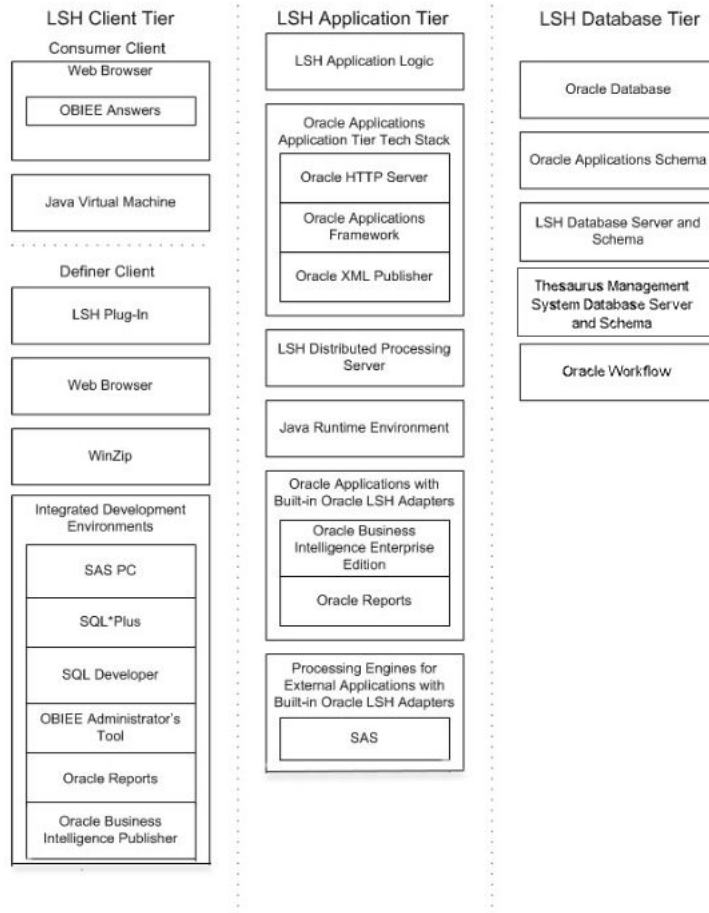
Change Record

- April 2021: First version of the guide.
- May 2021: Second version of the guide. In this version:
 - Removed the support of Oracle Enterprise Linux and Red Hat Enterprise Linux version 8 for the database tier; see [Database Tier](#)
 - Added support for Oracle Enterprise Linux version 7.4 or later; see [Application Tier](#)
 - Added the chapter [The Two Supported Upgrade Paths](#)
 - In [Upgrade E-Business Suite from 12.1.3 to 12.2.9](#):
 - * Added information to drop the trigger "OWBSYS.CDR_RTREPOS_TG"
 - * Added a note for gathering the schema statistics
 - * Added information on troubleshooting any error that occurs while applying the patch 10117518 as a prerequisite to run the adgrants.sql
 - Added a step to stop the study health monitor scheduler in [Run the Start Maintenance Script](#)
 - Removed a few topics from the guide that were not required for upgrading to Oracle LSH release 3.1.
- June 2021: Third version of the guide. In this version:
 - Added a step to apply the database patch p30808109_1910000DBRU_Linux-x86-64.zip in [Apply the Database Patches](#).
 - Updated step to log in to Oracle Database 19c as sysdba user in [Check Non-Default Service](#).
 - Updated the query to monitor the processed and remaining schemas in [Run the Upgrade Script to Edition Existing Schemas](#).
 - Added a step to restart the Oracle LSH middle tier services in [Regenerate the JAR Files](#).
 - Added the troubleshooting steps for the exception error that might occur during the Oracle LSH Distributed Processing (DP) server start process in [Start Server Processes](#).
- January 2024: Fourth version of the guide. In this version, updated step 1 and step 7 in [Post Secure File Migration Task](#).

A

Architecture Overview

The following figure shows the logical Oracle Life Sciences Data Hub architecture described in this section.



This section contains the following topics:

- [Client Tier](#)
- [Application Tier](#)
- [Database Tier](#)
- [Adapters to External Systems](#)

Client Tier

There are two ways to set up a client, depending on the type of user:

Consumers and Administrators: Oracle Life Sciences Data Hub (Oracle LSH) Consumers, who retrieve information in the form of reports and visualizations, and Oracle LSH Administrators, who perform administrative tasks within Oracle LSH, require the following on their personal computers:

- A Web browser
- Java Virtual Machine (JVM)

Administrators require either JInitiator or JVM to use any of the Oracle Forms screens related to security, to run the post-installation jobs, and to set up user accounts and functional roles.

Definers: A full-service client for users who create (define) the programs that operate on Oracle LSH data and generate reports requires additional software:

- Oracle LSH plug-in for launching Integrated Development Environments (IDEs)
- WinZip
- Web browser
- In addition, Definers need one or more IDE clients. These may include: SAS PC, SQL*Plus, SQL Developer, Oracle BI Administration Tool, Oracle Reports, and Oracle Business Intelligence Publisher.

Application Tier

In addition to standard Oracle Applications components, the Oracle Life Sciences Data Hub application tier includes the following:

Oracle LSH Application Server: The Oracle LSH Application Server renders the user interface using the Oracle Applications Framework and handles the communication between the user interface and the database using the Java Runtime Environment.

Oracle LSH Distributed Processing (DP) Server: The Oracle LSH DP Server handles the communication between Oracle LSH and the external processing systems required to support the IDEs.

Processing Systems

XML Publisher is required for internal Oracle LSH processing. The other systems are required only if you are developing Oracle LSH Programs in those technologies:

- **Oracle XML Publisher** is used by Oracle LSH to run system reports. Oracle LSH also uses XML Publisher to create Report Sets as a single PDF output with a unified table of contents and custom templates.
- **Oracle Reports** executes user-developed Oracle Reports Programs.
- **Oracle Business Intelligence Publisher** executes user-developed Oracle BIP Programs.
- **SAS** executes user-developed SAS Programs.
- **Oracle Discoverer Plus.** Accessed by Consumer clients through a Web browser, this application generates data visualizations based on user-developed Oracle LSH Discoverer Business Areas.

Database Tier

The Oracle Life Sciences Data Hub database tier includes the following:

- **Oracle Enterprise Edition RDBMS.** All of the Oracle LSH database tier components use the Oracle Enterprise Edition database server and database.
- **Oracle Applications Schema.** The Oracle Applications Schema is the schema installed as part of the Oracle Applications installation.
- **Oracle Workflow.** Oracle LSH uses Oracle Workflow to allow users to create and execute Workflow programs. Oracle Workflow is installed with Oracle Applications.
- **Oracle Thesaurus Management System (TMS).** Oracle LSH uses the TMS database tier internally to run its classification system, which is a required part of Oracle LSH functionality.

Oracle Enterprise Edition RDBMS

All of the Oracle LSH database tier components use the Oracle Enterprise Edition database server and database.

Oracle Applications Schema

The Oracle Applications Schema is the schema installed as part of the Oracle Applications installation. It contains the Oracle LSH schema.

Oracle LSH Database Server and Schema

These include the Oracle LSH business logic in PL/SQL packages, internal Oracle LSH tables and views, security, adapters, and APIs; as well as Oracle LSH user-developed metadata tables and packages.

Oracle Workflow

Oracle LSH uses Oracle Workflow to allow users to create and execute Oracle LSH Workflow Programs. Oracle Workflow is installed with Oracle Applications.

Oracle Thesaurus Management System (TMS)

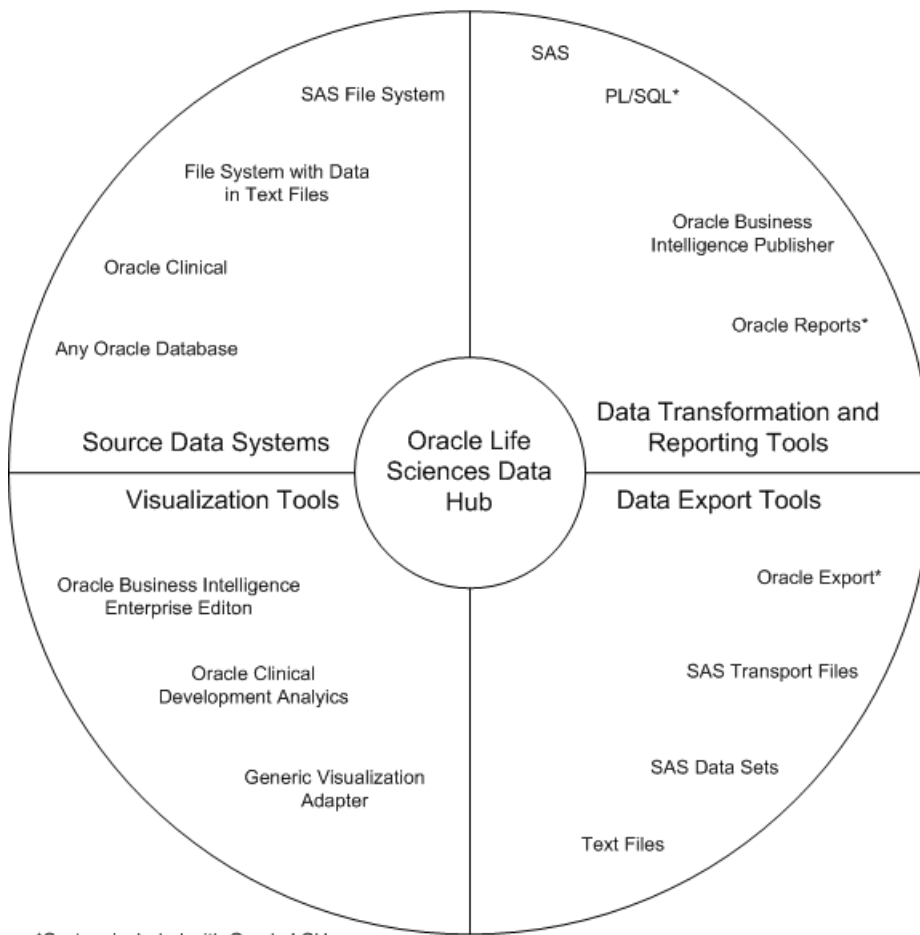
The Oracle LSH classification system is based on TMS.

Adapters to External Systems

Oracle Life Sciences Data Hub (Oracle LSH) is intended for integration with other systems for a variety of purposes. Each external system integrated with Oracle LSH requires an adapter to handle whatever communication and exchange is required, depending on the purpose of the integration and the technical specifications of the external system. Oracle LSH is shipped with built-in adapters for loading data into Oracle LSH from other systems, for developing and executing programs operating on Oracle LSH data, and for exporting data out of Oracle LSH.

[#GUID-F406D70F-BB51-42EE-B6DF-5AA0452F42C2/CBHGAICE](#) shows the adapters that are included with Oracle LSH. Adapters to other systems may be available from third parties.

Oracle Life Sciences Data Hub Built-In Adapters



This section contains the following topics:

- [Source Data Systems](#)
- [Data Transformation and Reporting Tools](#)
- [Visualization Tools](#)
- [Data Export Tools](#)

Source Data Systems

Oracle Life Sciences Data Hub (Oracle LSH) includes adapters to external systems that you can use to load data into Oracle LSH:

- **SAS.** The SAS adapter allows you to load SAS data sets into Oracle LSH.
- **Text.** The Text adapter allows you to load text files from any system into Oracle LSH.
- **Oracle Databases.** The general Oracle Databases adapter allows you to load data from any Oracle database into Oracle LSH.

- **Oracle Clinical.** The Oracle Clinical adapter family includes eight specialized adapters for loading the following data and metadata from Oracle Clinical:
 - Data Extract SAS Views
 - Data Extract Oracle Views
 - Global Library
 - Labs
 - Study Data
 - Study Design and Definition
 - Stable Interface Tables
 - Randomization

Data Transformation and Reporting Tools

Oracle LSH includes adapters to set up the following systems as integrated development environments (IDEs) for developing and generating programs:

- SAS
- PL/SQL
- Oracle Reports
- Oracle Business Intelligence Publisher

Visualization Tools

Oracle LSH includes adapters to allow the following systems to display visualizations of Oracle LSH data:

- Oracle Discoverer
- Oracle Business Intelligence Enterprise Edition (OBIEE) Answers
- Oracle Clinical Development Analytics—to view visualizations in OBIEE Answers of Oracle Clinical data in Oracle LSH
- Generic Visualization Adapter—to integrate other visualization tools

Data Export Tools

Oracle LSH includes adapters to allow exporting Oracle LSH data:

- Oracle Export
- SAS—Transport Files and Data Sets
- Text Files