Oracle® Life Sciences Data Hub

Installation Guide

Release 2.5
F24142-02
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ORACLE

Oracle Life Sciences Data Hub Installation Guide, Release 2.5

F24142-02

Contents

3 Installing and Patching Oracle Applications and Oracle Database

4 Installing the Oracle TMS Database Tier

5 Installing Oracle Life Sciences Data Hub

6 Integrating Other Systems

7 Upgrading to Oracle Life Sciences Data Hub Release 2.5

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.

Preface

This preface contains the following sections:

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.

Related resources

All documentation and other supporting materials are available on the Oracle Help Center.

1

Before You Begin

This section includes the following topics:

> **Note:**
>
> 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 2.5.

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 2.5 Media Pack
- Download Software to a Staging Area

Get the Oracle Life Sciences Warehouse 2.5 Media Pack

Oracle LSH, Oracle Health Sciences Data Management Workbench, and their technology stacks are contained on the **Oracle Health Sciences Data Management Workbench 2.5** 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 2.5.0.0.0** and click **Add to Cart**.
4. Click **Checkout**. You see a list of the selected software:
    - Oracle Health Sciences Data Management Workbench 2.5.0.0.0 (Oracle Standard Terms and Conditions)
    - Oracle Life Sciences Data Hub 2.5.0.0.0
    - Oracle Health Sciences Data Management Workbench 2.5.0.0.0
5. From the Platform drop-down list, select the appropriate operating system.
6. Click **Continue**.
7. Review the Terms and Restrictions and select **I accept the terms in the 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*> 2.5 release and Oracle Health Sciences Data Management Workbench <*your operating system*> 2.5 release:

- Oracle Life Sciences Data Hub 2.5.0 (V988589-01.zip)
- Oracle Health Sciences Data Management Workbench 2.5.0 (V986465-01.zip)
- Oracle Thesaurus Management System 5.3.0 (V988638-01.zip)

8. Leave the list of zipped files selected to download the package of Oracle Health Sciences Data Management Workbench 2.5.0.0.0 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 (Oracle_SSN_DLM_02251701.exe). 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 (**p30560848_25000_Generic.zip**), Oracle LSH (**p6114439_R12_GENERIC.zip**, **p17269917_R12_GENERIC.zip**, **p28529507_R12_GENERIC.zip**) and Oracle TMS (**p20311744_53000_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 12.1.1 *operating_system* x86-64 Rapid Install: Databases, Tools, APPL_TOP, and documentation	Media pack	15 disks
Oracle Applications DBA 12.1.3 Product Release Update Pack	My Oracle Support	9239089
Oracle E-Business Suite 12.1.3 Release Update Pack	My Oracle Support	9239090
Oracle Database 11g Release 2 Client (11.2.0.1.0) for Microsoft Windows (64-bit) (to establish an Oracle Home for installing Oracle TMS)	Media Pack	V20609-01

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

Disk or Patch Name	Source	ID Number
Oracle Thesaurus Management System 5.3	Media Pack	20311744
Oracle LSH Splicer patch for Applications R12	Media Pack	6114439
Oracle Life Sciences Data Hub 2.5.0	Media Pack	28529507
Oracle Life Sciences Data Hub 2.5 online help	Media Pack	18551089
Oracle E-Business Suite SDK patch	Media Pack	17269917
NOT ABLE TO ADD HTTPS URL TO FAVORITES LINK IN 12.1.2. HTTP IS PRE-PENDED TO URL	My Oracle Support	11781531
FND_NO_DATABASE_CONNECTION	My Oracle Support	11832737
API TO PREVALIDATE EBS USERS for Oracle LSH (This patch is only required if you perform a full install of Oracle LSH 2.5 [not an upgrade to 2.5 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 2.5 [not an upgrade to 2.5 from a previous version].)	My Oracle Support	16263414
Oracle Database 11.2.0.4; for a list of patches required, see My Oracle Support article 1058763.1.	My Oracle Support	1058763.1

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 12.2.1.3 and Coherence for Linux x86	Media Pack	p26269885_122130_Generic.zip
ADF patch	My Oracle Support	16546129
ADF patch	My Oracle Support	16546157
Oracle Health Sciences Data Management Workbench 2.5	Media Pack	30560848

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 2.5*
- *Oracle Thesaurus Management System Installation Guide Release 5.3*
- *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 Warehouse Builder Installation and Administration Guide 11g Release 2 (11.2)*
- *Oracle Warehouse Builder Release Notes 11g Release 2 (11.2)*
- *Oracle Business Intelligence Publisher Installation Guide Release 10.1.3.4*
- *Oracle Fusion Middleware Installation Guide for Oracle Business Intelligence 11g Release 1 (11.1.1)*
- *Oracle Fusion Middleware Upgrade Guide for Oracle Business Intelligence 11g Release 1 (11.1.1)*

In addition, if you plan to integrate Oracle LSH with any of the systems listed in Integrating Other Systems, you need the installation guide and user documentation for those systems.

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
- Installing Oracle Applications and Oracle Database
- Installing Oracle Life Sciences Data Hub
- Upgrading to Oracle Life Sciences Data Hub Release 2.5

- 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*

Installing Oracle Applications and Oracle Database

Installing and Patching Oracle Applications and Oracle Database references the following My Oracle Support articles:

- 1138053.1, *Oracle Life Sciences Data Hub and Oracle Clinical Development Analytics Known Install and Configuration Issues*
- 1058763.1, *Interoperability Notes Oracle E-Business Suite Release 12 with Oracle Database 11g Release 2 (11.2.0)*
- 387859.1, *Using AutoConfig to Manage System Configurations in Oracle E-Business Suite Release 12*
- 406982.1, *Cloning Oracle Applications Release 12 with Rapid Clone*
- 455999.1, *How to Verify if OWB is Installed Correctly on RAC and Exadata*
- 403537.1, *Secure Configuration Guide for Oracle E-Business Suite Release 12*

Installing Oracle Life Sciences Data Hub

Installing Oracle Life Sciences Data Hub references the following My Oracle Support articles:

- 387859.1, *Using AutoConfig to Manage System Configurations in Oracle E-Business Suite Release 12*
- 727208.1, *AuditTrail Update Tables fails on View AP_SYSTEM_PARAMETERS_ALL_AC1*
- 164871.1, *Configuring the Workflow Notification Mailer in Oracle Applications Manager 11i*

Upgrading to Oracle Life Sciences Data Hub Release 2.5

Upgrading to Oracle Life Sciences Data Hub Release 2.5 references the following My Oracle Support article:

- 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*
- 296187.1, *How To Manually Install Oracle OLAP into a 9i, 10g or 11g database After the DB Has Been Created*
- 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, *adapcctl.sh: exiting with status 150*
- 1358564.1, *OWB Import of Entire Repository Fails with ORA-00001: Unique Constraint (OWBSYS.ET_PK) Violated*
- 1058763.1, *Interoperability Notes EBS 12.0 and 12.1 with Database 11gR2*

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, 2.3, 2.4, and 2.5 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

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

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 folllowing topics:

Database Tier

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

- Linux x86 (32-Bit)
  - Oracle Enterprise Linux 5
  - Oracle Enterprise Linux 6

  - Red Hat Enterprise AS/ES 5
  - Red Hat Enterprise AS/ES 6
- Linux x86-64 (64-Bit)
  - Oracle Enterprise Linux 5
  - Oracle Enterprise Linux 6
  - Red Hat Enterprise AS/ES 5
  - Red Hat Enterprise AS/ES 6
- AIX 6.1 (64-Bit)
- Oracle Solaris 10 on SPARC (64-Bit)
- Oracle Solaris 11 on SPARC (64-Bit)

Application Tier

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

- Linux x86 (32-Bit)
  - Oracle Enterprise Linux 5
  - Oracle Enterprise Linux 6
  - Red Hat Enterprise AS/ES 5
  - Red Hat Enterprise AS/ES 6
- Linux x86-64 (64-Bit)
  - Oracle Enterprise Linux 5
  - Oracle Enterprise Linux 6
  - 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 combinations of operating systems and browsers for clients:

- Chrome: 78.0.3904.97 Official Build (64 bit)
- Firefox: 68.3.0 ESR (32 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 12.1.1 and Oracle Database 11.2.0.4 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. See Installing the Oracle TMS Database Tier. You need at least one Windows computer if you plan to use Oracle Business Intelligence Enterprise Edition (OBIEE) to define Business Areas and create data visualizations (OBIEE Answers); see Integrating Oracle Business Intelligence Enterprise Editions (OBIEE) for Visualizations. You can use the same Windows computer for OBIEE 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 12.1.3** and required patches. See Install Oracle Applications 12.1.1.

> **Note:**
>
> **Oracle Life Sciences Data Hub has been tested ONLY on Release 12.1.3 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.**

- **JDK** Java Developer Kit 1.8.0_131 is required for DMW Middle Tier. (Weblogic server).
- **Oracle Database 11.2.0.4**
- **XML DB**, which is included with the 11.2.0.4 database, is required for Oracle LSH.
- **Oracle Warehouse Builder 11.2.0.4** OWB is required for Oracle LSH's execution system and is bundled with Oracle Database 11.2.0.4.
- **Oracle Thesaurus Management System 5.3 Database Tier** is used internally for the Oracle LSH classification system.
- **Oracle Reports 10.1.2.3.0** is required for Oracle LSH Programs of type Oracle Reports. It is bundled with Oracle Applications 12.1.1.
- A **zip utility** is 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.
- **Firefox 10 or later or Chrome (latest)**

Integrated External Systems

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

- **Oracle Clinical 4.6, or Oracle Clinical 4.5.1 or 4.5.3 with patch 4.5.1.14 or its successor 4.5.1.75**, applied. Both patches are compatible with 4.5.3 as well as 4.5.1.
- **SAS 9.1.3, SAS 9.2, SAS 9.3** Optional and licensed separately.
- **Oracle Business Intelligence Enterprise Edition (OBIEE) 11.1.1.3.0, 11.1.1.5.0, 11.1.1.6.4, 11.1.1.7, or 11.1.1.7.131017** 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 OBIEE. The latter two run on Windows only.

- **Oracle BI Publisher 10.1.3.4.1** can be used to create Oracle LSH reporting Programs of type BI Publisher. Optional and licensed separately.

Character Encoding Settings

The data loaded into Oracle Life Sciences Data Hub (Oracle LSH) may originate in many systems, and these systems may use different encodings for special characters, including characters used in languages other than English. Special characters encoded in a coding system other than the one used by Oracle LSH may not be stored or displayed correctly in Oracle LSH.

If your data includes special characters, follow the steps in the sections listed here to adjust the many settings that determine the encoding used by various processes.

Make changes only after carefully analyzing the potential impact on your own data.

- Set the database character set when installing Oracle Applications; see Oracle LSH UTF8 Requirements.
- Leave NLS_LENGTH_SEMANTICS set to its default value, which is BYTE. To use character semantics, which is required, see the next point.
- Set the LHS profile **Use Character Semantics for Workarea Installation** to **Yes**. See the chapter on setting profile values in the *Oracle Life Sciences Data Hub System Administrator's Guide* for information.

> **Note:**
>
> This setting is required for Oracle LSH and Oracle Health Sciences Data Management Workbench (Oracle DMW).

- Set environment variables on each computer where you install the Oracle LSH Distributed Processing (DP) Server; see Set NLS_LANG to UTF8.
- Add a JVM argument to the DP Server Start script; see Edit the DP Server Start Script.
- If you are running SAS programs from Oracle LSH, see Start SAS in UTF8 Mode.
- Definers who have a SAS or Oracle client such as SQL Developer or SQL*Plus installed as a development environment on their PC should follow instructions in Set the NLS_LANG Environment Variable to UTF8.

3

Installing and Patching Oracle Applications and Oracle Database

This section includes the following topics:

Install Oracle Applications 12.1.1

To install Oracle Applications 12.1.1, use *Oracle E-Business Suite Installation Guide: Using Rapid Install Release 12 (12.1.1)* (Part E12842-04)).

> **Note:**
>
> **Oracle LSH has been tested ONLY on Release 12.1.3 of Oracle Applications. If more recent releases have become available, do NOT install them unless explicitly instructed to do so by an Oracle LSH-specific note or alert on My Oracle Support.**

Oracle LSH UTF8 Requirements

Oracle LSH has the following character set-related required settings:

- **Database character set=UTF8**. Oracle Applications Rapid Install prompts you for the database character set. **You MUST set this value to UTF8. A value of UTF8 is REQUIRED. This is the ONLY opportunity you have to set this value, and you CANNOT change it later**.
- **NLS_CHARACTERSET=UTF8**. When you set the database character set to UTF8 during Oracle Applications Rapid Install, it automatically sets NLS_CHARACTERSET to UTF8 as well, which is correct.

- **NLS_LENGTH_SEMANTICS=BYTE**. The default value for NLS_LENGTH_SEMANTICS is BYTE. **Do not change this value**. To use character semantics, set the LHS profile Use Character Semantics for Workarea Installation to **Yes**. See the chapter on setting profile values in the *Oracle Life Sciences Data Hub System Administrator's Guide* for information.

Upgrade Oracle Applications to R12.1.3 and Apply Patches

Install Patches Using Autopatch

Install the following patches using Autopatch to upgrade from R12.1.1 to R12.1.3:

- 9239089 Oracle Applications DBA 12.1.3 Product Release Update Pack
- 9239090 Oracle E-Business Suite 12.1.3 Release Update Pack
- 10222869 Oracle Applications Framework patch
- 12661509 for compatibility with Internet Explorer 8.
- 11781531, NOT ABLE TO ADD HTTPS URL TO FAVORITES LINK IN 12.1.2. HTTP IS PRE-PENDED TO URL
- 11832737, which is a forward port of patch 9908921 to Oracle Applications 12.1.3 fixing the intermittent FND_NO_DATABASE_CONNECTION error observed in the new home page.
- 19357286 - API TO PREVALIDATE EBS USERS for Oracle LSH (This patch is only required if you perform a full install of Oracle LSH 2.5 [not an upgrade to 2.5 from a previous version].)
- 16263414 - 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 2.5 [not an upgrade to 2.5 from a previous version].)

Download and Install the Software Development Kit for Java

The E-Business Suite Software Development Kit for Java ships as patch 17269917 (p17269917_R12_GENERIC.zip) on the Oracle Health Sciences Data Management Workbench 2.5.0 media pack.

The .zip file contains:

- The Oracle E-Business Suite SDK for Java file, **fndext.jar**
- README.txt
- Javadoc for Oracle E-Business Suite SDK for Java
- An Apache Ant XML file named **txkEbsSdkConfig.xml**

1. Extract fndext.jar.
2. Copy the extracted fndext.jar file and the txkEbsSdkConfig.xml file to a directory such as/home/user1/ebssdk on the WebLogic server.

3. Copy the Javadoc to any appropriate location for convenient reference.

> **Note:**
>
> - Check My Oracle Support article 1138053.1, *Oracle Life Sciences Data Hub and Oracle Clinical Development Analytics Known Install and Configuration Issues* to see if any other patches have become required. **Do not apply additional patches** unless they have been tested with Oracle LSH and listed in article 1138053.1.
> - Oracle recommends taking a full backup at this point.

Upgrade the Oracle Database and Oracle Warehouse Builder to 11.2.0.4

Oracle Applications Release 12.1.1 includes Oracle Database 11.1.0.7. To use Oracle LSH , you must upgrade to Oracle Database 11.2.0.4. The process includes upgrading Oracle Warehouse Builder (OWB) to 11.2.0.4. The software is available as patch 13390677.

Follow My Oracle Support document 1058763.1, *Interoperability Notes EBS 12.0 and 12.1 with Database 11gR2* to upgrade Oracle Database to 11.2.0.4.

> **Note:**
>
> - If a new Oracle Database patch set for 11gR2 is released in future, the article number 1058763.1 may be used for the new release. If the article applies to a newer release, it should display the new article number for the 11.2.0.4 Interoperability note. **Do not install newer Oracle Database patch sets unless explicitly instructed by an Oracle LSH-specific note or alert on My Oracle Support**.
> - Be sure to install the Oracle Examples, which are included in the media pack and include Oracle Text. Oracle Text is required by Oracle Thesaurus Management System for the Oracle LSH classification system.
> - Oracle recommends taking a full backup after the upgrade.
> - To install a RAC database, refer to note 823587.1, *Using Oracle 11g Release 2 Real Application Clusters with Oracle E-Business Suite Release 12*.

Edit listener_ifile.ora

You need to configure the database TNS listener to allow OWB to communicate with the database. Instead of making all the required changes in the listener.ora file, which is overwritten when you run Autoconfig, make the changes in the listener_ifile.ora file, which is called from listener.ora.

Check variable $TNS_ADMIN for the location of listener.ora. The file listener_ifile.ora is in the same location.

Edit listener_ifile.ora to make TNS listener-related changes. For example, if the database SID is xyz22:

```
SID_LIST_xyz22 =
  (SID_LIST =
    (SID_DESC =
      (GLOBAL_DBNAME = xyz22)
      (ORACLE_HOME= /slot/ems6636/oracle/xyz22db/11.2.0)
      (SID_NAME = xyz22)
    )
    (SID_DESC =
      (GLOBAL_DBNAME = lshdb.your_company.com)
      (ORACLE_HOME= /slot/ems6636/oracle/xyz22db/11.2.0)
      (SID_NAME = xyz22)
    )
    (SID_DESC =
      (SID_NAME = PLSExtProc)
      (ORACLE_HOME = /slot/ems6636/oracle/xyz22db/11.2.0)
      (PROGRAM = extproc)
    )
  )
```

Change Default Password Settings

Oracle 11gR2 includes new default password-related settings.

- Edit init.ora to turn off case-sensitive database logon as follows:

  ```
  sec_case_sensitive_logon=false
  ```

- To prevent database password expiration, log in to SQL*Plus as a superuser and enter:

  ```
  ALTER PROFILE DEFAULT LIMIT PASSWORD_LIFE_TIME UNLIMITED;
  ```

Increase JVM Memory

Oracle recommends a minimum Java Virtual Machine (JVM) setting of 2048M instead of the default size of 512M.

You must make this change through Oracle Applications Manager. If you do it manually, your changes will be lost when you run AutoConfig.

To increase this setting, do the following:

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_HTML/AppsLogin

   For example:

   http://*host*_0066.example.com:8000/OA_HTML/AppsLogin

   The Applications Login screen appears.
3. Log in as sysadmin.

An E-Business Suite screen opens.

4. Click **System Administration** in the left-hand column under Navigator. The system refreshes the page and adds a column of links on the right.
5. Under **Oracle Applications Manager** in the Navigator pane, click **Dashboard**. The Applications Dashboard screen opens.
6. Click **Sitemap** to go to the Sitemap tab.
7. Under **System Configuration**, click **AutoConfig**. The AutoConfig screen opens.
8. Under **Context Files**, click the **Edit Parameters** icon for the Application Tier. The Context File Parameters screen opens.
9. From the **Search** drop-down list, select **OA_VAR**.
10. In the field next to the **Search** drop-down list, enter the parameter name `s_oacore_jvm_start_options` and click **Go**.
11. In the Value field for s_jvm_options, change the value from:

    ```
    -Xmx512M -Xms128M -XX:MaxPermSize=128M -XX:NewRatio=2 -XX:
    +PrintGCTimeStamps -XX:+UseTLAB
    ```

    to:

    ```
    -Xmx2048M -Xms128M -XX:MaxPermSize=128M -XX:NewRatio=2 -XX:
    +PrintGCTimeStamps -XX:+UseTLAB
    ```

    Note the changed value is in **bold** above.
12. Run AutoConfig. See My Oracle Support article 387859.1, *Using AutoConfig to Manage System Configurations in Oracle E-Business Suite Release 12*.
13. Stop and start the Apache server for the new value to take effect.

Secure the Oracle Applications Installation

Follow instructions in My Oracle Support article 403537.1, *Secure Configuration Guide for Oracle E-Business Suite Release 12* to set up Oracle Applications securely.

Clone the Environment (Optional)

If you plan to create another Oracle LSH environment on the same platform, you can clone your installation at this point. You cannot clone it after you have installed OWB, TMS, or iAD. Refer to My Oracle Support article 406982.1, *Cloning Oracle Applications Release 12 with Rapid Clone*.

Install Oracle Warehouse Builder on Oracle Database 11gR2

Oracle Warehouse Builder is part of the standard installation on all hosts running Oracle Database 11g Release 2. When Oracle Database is installed, you must only unlock the OWBSYS and OWBSYS_AUDIT accounts. The OWBSYS schema contains all Warehouse Builder repository metadata, and the OWBSYS_AUDIT schema is used by the Warehouse Builder Control Center Agent to access the heterogeneous execution audit tables of the OWBSYS schema.

Create an Oracle Warehouse Builder Repository

Oracle Warehouse Builder 11.2.0.4 is required for Oracle LSH's execution system, which is also used by Oracle DMW. It is included in Oracle Database 11.2.0.4.

Follow instructions in *Oracle Warehouse Builder Installation and Administration Guide 11g Release 2 (11.2)* (Part E17130-03), which is included on the media pack, Chapter 4, Section 3, "Creating the First Workspace in the Repository on Linux."

> **Note:**
>
> **During the creation of the Workspace Repository, the value of both the Owner's Username and Workspace name should be CDR_RTREPOS. This is required for a successful Oracle LSH 2.5 installation.**

For a RAC installation, refer to instructions in "Installing Warehouse Builder in Oracle RAC Environments" in Chapter 2 of the *Oracle Warehouse Builder Installation and Administration Guide 11g Release 2 (11.2)* (Part E17130-03).

Verify that OWB is correctly installed following instructions in My Oracle Support article 455999.1, *How to Verify if OWB is Installed Correctly on RAC and Exadata*.

4

Installing the Oracle TMS Database Tier

The Oracle Life Sciences Data Hub (Oracle LSH) uses the Oracle Thesaurus Management System (TMS) 5.3 database tier internally for its classification system. If you are a new customer, see the Release 5.3 *Oracle Thesaurus Management System Installation Guide* at https://docs.oracle.com/health-sciences/tms-53/install/.

Users who will run Oracle LSH APIs that insert, delete, or modify Oracle LSH classification hierarchies and terms (LSH Classification Admin tasks) need security access for their Oracle LSH database account to the Oracle Thesaurus Management System (TMS) instance that is installed as part of Oracle LSH. See "Creating Database Accounts" in the *Oracle Life Sciences Data Hub System Administrator's Guide* for further information.

> **Note:**
>
> If you have installed RAC and you have Load Balancing and Failover enabled, the database connection may change from one node to another on the server side. To avoid this problem, shut down all but one database node for the duration of the TMS installation.

This section includes the following topics:

5

Installing Oracle Life Sciences Data Hub

$APPL_TOP, $CDR_TOP, and $JAVA_TOP are all on the middle tier. <OWB_HOME> is on the database server. The Distributed Processing (DP) Server Home directory is located on the DP Server. These may all be physically located on the same computer or they may be located on different computers, depending on your installation.

These instructions include copying files from one of these directories to another. Remember that you need to use FTP if they are on different computers.

> **Note:**
>
> During its initial development, the Oracle Life Sciences Data Hub (Oracle LSH) was known as CDR. Therefore many Oracle LSH-related directories, files, scripts, parameters, and so on are named CDR or contain the string `cdr`. Please think of CDR as a synonym for Oracle LSH as you go through the installation process.

This section includes the following topics:

- Install and Configure Java Web Start in Oracle E-Business Suite

Apply the Oracle Life Sciences Data Hub AD Splicer Patch

Because Oracle LSH is off-cycle from the rest of Oracle Applications, you must use the Applications DBA AD Splicer. You must apply the AD Splicer patch for Oracle LSH, patch number **6114439**, which is on the Oracle LSH media pack, before you apply the Oracle LSH patch.

Follow instructions in the readme file on how to splice Oracle LSH into your Oracle Applications instance **using the AD Splicer**.

> **Note:**
>
> The readme file currently contains contradictory information about how to apply the patch, saying first to use the AD Splicer and not Autopatch, and later saying to apply the driver using Autopatch. **Use only the AD Splicer**. Do not apply the unified driver using Autopatch as it says at the end.

For information on the AD Splicer utility, see the section on the AD Splicer in *Oracle E-Business Suite Maintenance Utilities* (E13676-03). This document is on the media pack.

Grant Execute Privileges to the APPS Schema

In SQL*Plus, grant privileges to the apps schema as follows:

```
grant execute any procedure to apps;
```

Install Oracle LSH 2.5

You must install the Oracle Life Sciences Data Hub 2.5 as a patch to Oracle Applications using AutoPatch. The patch, number **28529507**, is on the media pack.

1. Unzip the patch to $APPL_TOP/patches.
2. Run AutoPatch. See Install Patches Using Autopatch for details.

Install Online Help

Install online help patch **18551089**, available on the media pack, to be able to access online help from Oracle LSH and HTML versions of the:

- *Oracle Life Sciences Data Hub System Administrator's Guide*
- *Oracle Life Sciences Data Hub Implementation Guide*
- *Oracle Life Sciences Data Hub Application Developer's Guide*
- *Oracle Life Sciences Data Hub User's Guide*

Install the patch using AutoPatch. See Install Patches Using Autopatch for details.

Run the Health Check Scripts

Run the Health Check scripts for Oracle LSH and Oracle DMW as described in My Oracle Support Article 1983060.1 (https://support.oracle.com).

Integrate Oracle LSH with the Oracle Warehouse Builder

After you have installed both the Oracle Warehouse Builder (OWB) and the Oracle Life Sciences Data Hub (Oracle LSH), do the following:

- Set Up Your Environment
- Create Directories and Copy Files
- Disable Application Server Authentication
- Edit run_service.sh
- Edit runtime.properties
- Edit owb.classpath
- Edit Shell Scripts to Match Directory Structure
- Run OWB Shell Scripts
- Restart the OWB Service
- Edit listener_ifile.ora

Set Up Your Environment

You must set up your environment as follows.

- Ensure that Oracle SID and Short Global Names Match
- Edit init.ora
- Restart the Database and Listener
- Test Database Connectivity

Ensure that Oracle SID and Short Global Names Match

The database short global name must be the same as the Oracle SID. If they are not the same, you must change the short global name to match the Oracle SID.

For example, if the Oracle SID is LSHDB55, the short global name must also be set to LSHDB55.

Edit init.ora

Check the init.ora file and add the following parameters and values if they do not already exist.

Usually located in <ORACLE_HOME>/dbs on the database tier, the file is named init*Oracle SID*.ora; for example, `initLSHDB55.ora` where the database Oracle SID is LSHDB55.

The required parameter values are:

Compatible: This value must match the database release number; for example, in Oracle LSH 2.5:

```
compatible=11.2.0
```

Global Names: If you plan to set up a database link to one or more databases with a name different from the current database, set the Global Names parameter to FALSE both in the current Oracle LSH database and in each database to which you create a link from Oracle LSH.

```
global_names=FALSE
```

Job Queue Processes: This parameter value determines the number of job queue processes that are started. The default value is 2. Oracle recommends changing this to a minimum value of 10. If you do not have enough job queues started, OWB processes may not be able to start. However, too many job queues use resources unnecessarily.

```
job_queue_processes=10
```

Local Listener: Set as follows:

```
local_listener="(ADDRESS= (PROTOCOL=TCP)HOST=hostname.domain)(PORT=db_port))"
```

For example:

```
local_listener="(ADDRESS=(PROTOCOL=TCP)(HOST=lshdb.your_company.com)
(PORT=4321))"
```

where the hostname is lshdb, the domain is *your_company*.com, and the port is 4321.

Service Names: Set as follows:

```
service_names=Oracle_SID, Oracle_SID.domain
```

For example:

```
service_names=LSHDB, LSHDB.your_company.com
```

where the Oracle SID is LSHDB and the domain is *your_company*.com

Time Manager: The Time Manager process is required to move deferred messages from WAIT state to READY state when the message has passed its delay time. Set the aq_tm_processes parameter to 1 to enable the Time Manager process.

```
aq_tm_processes=1
```

Utility File Directory: The first value of the parameter utl_file_dir must match the value of the Oracle Applications variable $APPLPTMP. Otherwise the post-installation program will fail. For instructions on reading and modifying Oracle Applications variables, see Increase JVM Memory.

```
oa_var=s_applptmp
```

Open Links per Session: (Required only for Oracle DMW): Oracle suggests setting a value of 5.

```
open_links_per_session=5
```

Open Links per Instance: (Required only for Oracle DMW) Oracle suggests setting a value of 200 to support many parallel adapter executions (concurrent loads).

```
open_links_per_instance=200
```

Restart the Database and Listener

If you changed the value for the any parameter in the init.ora file, you must stop and start both the database and the listener for the changes to take effect.

Test Database Connectivity

Set up the environment so that you can connect to the database using SQL*Plus for the Oracle SID. This requires having values set for the following two variables in the environment:

- ORACLE_SID
- ORACLE_HOME

Create Directories and Copy Files

Create directories for Oracle LSH in the OWB home directory and copy files into them.

1. Go to the <OWB_HOME> directory.
2. Create a directory under <OWB_HOME> called **cdr** and run `chmod 755` to grant access permissions.
3. Copy files into the <OWB_HOME>/cdr directory as follows:
   - From $FND_SECURE/secure copy the **.dbc** Oracle Applications database connection file.
   - From $CDR_TOP/jar copy **cdr_owb_jars.zip**. This zip file contains the Oracle LSH/OWB integration jar files.
   - From $CDR_TOP/admin/template copy **installOwbOperator.sh** and **installOwbAdapter.sh** and **installOwbBIPAdapter.sh** These shell scripts integrate Oracle LSH adapters and operators with OWB.
4. Using a zip utility, unzip **cdr_owb_jars.zip** to extract the following files:
   - cdr_owb_operators.jar
   - cdr_owb_adapters.jar
   - cdr_owb_bip_adapters.jar
5. Create a directory under <OWB_HOME>/cdr called **appslibs**.
6. Copy the following files into <OWB_HOME>/cdr/appslibs from

   $JAVA_TOP/oracle/apps/fnd/jar:
   - fndsec.jar
   - fndaolj.jar
   - fndcct.jar

Disable Application Server Authentication

By default when Oracle Applications is installed, the application security authentication is set to ON. To enable OWB to find the jdbc connection from the dbc file during Business Area installation, set this to OFF by doing the following:

1. Open your Oracle LSH URL and log in as sysadmin.
2. Click **System Administration** in the left-hand column under Navigator. The system refreshes the page and adds a column of links on the right.
3. Under **Oracle Applications Manager** in the Navigation pane click **Dashboard**. The Applications Dashboard screen opens.
4. Click **Sitemap** to go to the Sitemap tab.
5. Under **System Configuration**, click **AutoConfig**. The AutoConfig screen opens.
6. Under **Context Files**, click the **Edit Parameters** icon for the Application Tier. The Context File Parameters screen opens.
7. From the **Search** drop-down list, select **OA_VAR**.
8. In the field next to the Search drop-down list, enter the parameter name `s_appserverid_authentication` and click **Go**.
9. In the **Value** field for s_appserverid_authentication, change the value to `OFF`.
10. Run AutoConfig. See My Oracle Support article 387859.1, *Using AutoConfig to Manage System Configurations in Oracle E-Business Suite Release 12*.
11. Stop and start the Apache server for the new value to take effect.

Edit run_service.sh

Edit the **run_service.sh** file as follows:

1. Go to the directory <OWB_HOME>/owb/bin/unix
2. Back up the **run_service.sh** as **run_service.sh.orig**
3. Open **run_service.sh**.
4. Find the command starting with: `$JAVAPATH/bin/java`
5. Modify this command by adding the DBC_LOCATION environment variable using the -D command line option. Enter the following string before the first existing -D parameter in the command:

   ```
   -DDBC_LOCATION="${OWB_HOME}/cdr/DBC_file_name.dbc"
   ```

   For example:

   ```
   $JAVAPATH/bin/java -Xmx768M -DDBC_LOCATION="${OWB_HOME}/cdr/XYZ.dbc" -D...
   ```

   where XYZ.dbc is the DBC file name.

Edit runtime.properties

This step enables OWB to read the setting of the profile LSH: Use Character Semantics for Workarea Installation. You can then set that profile to select whether to

use byte or character semantics during Work Area installation. The default setting is **byte**. If your data includes special characters, Oracle recommends using character semantics to help ensure that Oracle LSH stores and displays the characters correctly. See the *Oracle Life Sciences Data Hub System Administrator's Guide* for more information and instructions for setting the profile.

> **Note:**
>
> This step is required for all Oracle Health Sciences Data Management Workbench (Oracle DMW) installations.

Edit the Runtime.properties file as follows:

1. Go to the directory *OWB_HOME*/owb/bin/admin.
2. Edit Runtime.properties by adding the following lines at the end:

   ```
   connection.init_session=apps.cdr_owb_session_setup
   ```

Edit owb.classpath

Edit the owb.classpath file as follows:

1. Go to the directory <OWB_HOME>/owb/bin/admin.
2. Back up the **owb.classpath** as **owb.classpath.orig**
3. Edit **owb.classpath**. After the section on "OWB external jars" add the following lines:

   ```
   $OWB_HOME/cdr/cdr_owb_operators.jar
   $OWB_HOME/cdr/cdr_owb_adapters.jar
   $OWB_HOME/cdr/appslibs/fndsec.jar
   $OWB_HOME/cdr/appslibs/fndaolj.jar
   $OWB_HOME/cdr/appslibs/fndcct.jar
   ```

   If you are using or plan to use Oracle Business Intelligence Publisher, add the following lines as well:

   ```
   $OWB_HOME/cdr/cdr_owb_bip_adapters.jar
   $OWB_HOME/owb/lib/int/rtpcommon.jar
   $OWB_HOME/owb/lib/int/rtpplatform.jar
   $OWB_HOME/lib/xmlparserv2.jar
   $OWB_HOME/lib/activation.jar
   $OWB_HOME/lib/mail.jar
   $OWB_HOME/oc4j/j2ee/home/lib/http_client.jar
   $OWB_HOME/jdev/lib/jdev-rt.jar
   $IAS_ORACLE_HOME/BC4J/lib/bc4jdomorcl.jar
   ```

> **Note:**
>
> If your database and application servers are installed on different machines, you must copy this file from the application server to the $OWB_HOME/cdr/appslibs directory on the database server and include the new path instead of the line above:
>
> `$OWB_HOME/cdr/appslibs/bc4jdomorcl.jar`

In addition, for use with Oracle Business Intelligence Publisher, add the physical path for the Oracle Home:

ORACLE_HOME_VALUE`/oc4j/webservices/lib/soap.jar`

Edit Shell Scripts to Match Directory Structure

Before you run the shell scripts, edit the following values in each script to reflect your environment values:

- DB_HOST
- DB_PORT
- DB_SERVICE_NAME
- DB_SID
- OWB_HOME

Make sure that the <OWB_HOME> directory is set up the same way as in the file pathnames in the files **installOwbOperator.sh** and **installOwbAdapter.sh**; see Run OWB Shell Scripts.

You must edit the value of DB_USER_PASS if the OWBSYS account password has been reset:

DB_USER_NAME=owbsys

DB_USER_PASS=<*password*> (the password created for the OWBSYS account)

Run OWB Shell Scripts

To run the scripts:

> **Note:**
>
> These scripts require using a bash shell. Other shells do not work.

1. Change directory to <OWB_HOME>/cdr.
2. Install the adapters by running the following scripts. The third script is required only if you are using the Oracle Business Intelligence Publisher (BIP) adapter (required for creating BIP Programs).

   ```
   ./installOwbOperator.sh
   ```

```
./installOwbAdapter.sh
./installOwbBIPAdapter.sh
```

No Java exceptions should occur.

> **Note:**
>
> If you run **installOwbOperator.sh** more than once, you receive a unique constraint violation error. You can safely ignore this message.

The system creates a log file for each script in <OWB_HOME>/cdr called **installOwbOperator.log** and **installOwbAdapter.log**. The log files spool out the actual Java statement that the shell script sets up.

Restart the OWB Service

You must restart the OWB service. You will need the password you created for the OWBSYS account.

- Stop the OWB Service
- Starting the OWB Service

Stop the OWB Service

To stop the OWB service do the following:

1. Change directory to $ORACLE_HOME/owb/rtp/sql
2. Log into SQL*Plus as OWBSYS.
3. At the SQL prompt, enter:

```
@stop_service.sql
```

When the system displays the words "Not Available" the service is stopped.

Starting the OWB Service

To start the OWB service do the following:

1. Change directory to $ORACLE_HOME/owb/rtp/sql
2. Log into SQL*Plus as OWBSYS.
3. At the SQL prompt, enter:

```
@start_service.sql
```

When the system displays the word "Available" the service has been restarted.

Edit listener_ifile.ora

If you have not already done so, configure the database listener to allow OWB to communicate with the database by editing your listener_ifile.ora file; see Edit listener_ifile.ora.

Create System Administrator and Security Administrator Users

You must create Oracle LSH user accounts for one or more users and give them the roles required to perform Oracle LSH setup tasks:

- The **LSH System Administrator** can run the post-installation job and define service locations and services in the LSH user interface. (See Run the Post-Installation Programs and Define Service Locations and Services for details.)
- The **LSH Security Administrator** assigns other special security administrator roles (Adapter Security Administrator, Classification Administrator, Data Blind Administrator, Bootstrap Administrator, User Group Administrator) to other users and sets up the object security system (defines object subtypes, roles, and user groups).

The *Oracle Life Sciences Data Hub System Administrator's Guide* includes instructions for these and other security-related tasks. The *Oracle Life Sciences Data Hub System Implementation Guide* includes information on designing an object security system for your organization.

Log on as sysadmin

To log on, do the following:

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_HTML/AppsLogin

   For example:

   http://*appshost.your_company*.com:8000/OA_HTML/AppsLogin

   The Applications Login screen appears.
3. Log in as sysadmin.

   An E-Business Suite screen opens.

Create a User Account for the Administrator

You must create a user account for each person to whom you want to assign the LSH Security Administrator or LSH System Administrator role. Oracle LSH uses the standard Oracle Applications UMX interface for creating user accounts.

> **Note:**
>
> For complete information, see the *Oracle Applications System Administrator's Guide—Security*, Oracle Part Number B13923-02. The book is included on the media pack.
>
> You can see it online from the Oracle Technology Network at `http://www.oracle.com/technology/index.html`.

1. Select **User Management** by clicking on it in the Navigator (near the bottom of the list on the left). New links appear in the second column, including **Users**.
2. Click **Users** under User Management. The User Maintenance screen appears.
3. From the **Register** drop-down list, select **External Organization Contact** and click **Go**. The Register Business Contact screen appears.
4. Enter values in the following fields:
   - **Email Address**. Enter the user's email address. Oracle LSH uses this address for corresponding with the user.
   - **Name Fields**. Type the name of the user in the fields. The First Name and the Last Name are mandatory. Prefix, Middle Name and Suffix are optional.
   - **Organization**. If you have a multi-organizational setup, enter or search for the Organization the user belongs to.
   - **Phone Number**. The telephone contact details for the user.
   - **Extension**. The extension of the provided telephone number of the user.
   - **Account Information**. Select **Generate Automatically** for Oracle LSH to generate and email the password. Or select **Enter Manually** and type and confirm the password.
5. Click **Submit**. The Confirmation screen appears.
6. Click **OK**. Oracle LSH creates the user account and returns to the User Management screen.

Assign a Role

Assign administrator roles as follows:

- **LSH System Admin**. You must assign the LSH System Admin role to at least one user.
- **LSH Setup Admin**. You must assign the LSH Setup Admin responsibility to at least one user.
- **LSH Adapter Security Admin**. You must assign the LSH Adapter Security Admin role to at least one user.
- **LSH Data Security Admin**. This role allows a user to create all the objects required by the Oracle LSH object security system: object subtypes, object roles, and user groups.

- **LSH Function Security Admin**. This role allows a user to create user accounts and assign functional roles to them. Functional roles control which parts of the Oracle LSH user interface a user can view or allow special privileges.
- **LSH Security Administrator**. This role is a combination of the LSH Data Security and Functional Security Admin roles.

> **Note:**
>
> For further information on Oracle LSH security and security roles, see the *Oracle Life Sciences Data Hub System Administrator's Guide*.

To assign a functional role to a user:

1. Go to the User Maintenance screen.

   If you are already in the User Management tab, click the Users subtab.

   Or log in as sysadmin, click the **User Management** responsibility in the navigator, click **Users**, and click the Users subtab.
2. Search for the user to whom you want to assign roles. The system displays the search results in the lower portion of the screen.
3. Click the Update icon corresponding to the user. The Update User screen appears.
4. Click **Assign Roles**. The Search and Select screen appears.
5. Search for all Oracle LSH predefined roles by selecting Search By **Roles and Responsibilities**, entering `LSH%`, and clicking **Go**. The system displays all the predefined Oracle LSH functional roles in the lower part of the screen.
6. Select each role you want to assign by checking its box. See Assign a Role for further information.
7. Click **Select**. The system displays additional fields. Enter values as follows:
   - **Justification**. You must enter text in this field. Describe the reason this person needs this role.
   - **Active From**. The system automatically enters the current date. If you prefer to have the user's privileges begin at a later date, you can select the date you want by clicking the calendar icon.
   - **Active To**. Leave this field blank to avoid having the user's privileges automatically expire on the date you specify. When the user leaves the company or changes roles, you can enter an expiration date here. If you want to set an end date for the user's privileges associated with this role, use the calendar icon to specify the end date.
8. Click **Apply**. The system assigns the role(s) you specified plus any necessary base roles to the user.

Run Script

Run the following script to add the apps user to the CDR_RTREPOS OWB workspace.

1. Log in to the database as CDR_RTREPOS.

2. Run the script $CDR_TOP/patch/115/sql/cdrowbaddappstows.sql

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 OWB errors.

- Check That OWB Is Running Without Errors
- Log On to Oracle Applications
- Load the Adapter Files
- Set the Tech Type Value
- Run the Post-Installation Program
- Synchronize the APPS Password in OWB

Check That OWB Is Running Without Errors

You must have OWB running to run the post-installation programs; see Restart the OWB Service. If OWB is not running when you run the LOB Loader and Post-Installation programs, some required objects may not be created and you cannot create them by rerunning the programs after restarting OWB.

To check that the OWB service is running do the following:

1. Change directory to $ORACLE_HOME/owb/rtp/sql
2. Log into SQL*Plus as OWBSYS.
3. At the SQL prompt, enter:

```
@show_service.sql
```

The system displays the word "Available" if service is running.

To check that the OWB service is running without errors do the following:

1. If necessary, change directory to $ORACLE_HOME/owb/rtp/sql and log into SQL*Plus as OWBSYS.
2. At the SQL prompt, enter:

```
@service_doctor.sql
```

The system returns a series of statements. Read them to see if any error conditions are reported. Resolve any errors.

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 and yet the program may not have successfully completed all its tasks.

Set the Tech Type Value

In a fresh installation of Oracle LSH, you need to set the Tech Type value as described below. These steps are not required in an upgrade.

1. Log in to SQL*Plus as **apps**.
2. Run the following SQL statement:

```
select CDR_TECH_TYPES_ID_SEQ.nextval from dual;
```

Run the Post-Installation Program

> **Note:**
>
> - Read this whole section before you do this step. You must be very careful to **SET ALL PARAMETERS CORRECTLY**. **You cannot change some of them after you run the job.**
> - Run $ORACLE_HOME/owb/rtp/sql/show_service.sql as the OWBSYS user to check that the OWB service is running before attempting to do this step.

The Oracle LSH post-installation program takes parameter values you enter to configure your Oracle LSH instance and creates accounts and objects that Oracle LSH uses internally:

- Sets the Oracle LSH context from the parameter values you enter (listed below).
- Creates required FND Oracle Applications profiles for the company ID and owning location you specify.
- Creates the Oracle LSH instance domain. This is the parent defined object that contains all the Oracle LSH Domains and other defined objects in your Oracle LSH instance.
- Loads the predefined Oracle LSH object subtypes.
- Creates internal adapters, defined objects that store required Parameters and other elements used by Execution Setups and Oracle LSH Workflows. Oracle LSH uses these adapters as a template in creating required elements of these defined objects.

- Enables the job queue. (To start the queue, see the chapter "Stopping and Starting Services and Queues" of the *Oracle Life Sciences Data Hub System Administrator's Guide*.)
- Configures a PL/SQL service and three service instances for internal Oracle LSH use. For information on services, see "Setting Up Services" in the *Oracle Life Sciences Data Hub System Administrator's Guide*.
- Deploys standard process flows to enable the Notifications feature of LSH Workflows.

In addition to the adapter files loaded by the LOB Loader, Oracle LSH's adapters are composed of metadata elements that are Oracle LSH definitional objects. The post-installation job creates and installs these objects as follows:

- For each adapter, the job creates an Adapter Domain, an Adapter Area within the Adapter Domain, and an Adapter Work Area within the Adapter Area. In the case of Oracle Clinical the job creates a single Adapter Domain containing an Adapter Area and Adapter Work Area for each of the specialized Oracle Clinical adapters.
- The job creates a Program and related object definitions in each adapter's Adapter Area and object instances in its Work Area. The job adds the adapter SQL files loaded by the Oracle LSH LOB Loader job to the Source Code definition.
- The job installs each Adapter Work Area, creating a schema dedicated to each adapter. You must assign user groups to each Adapter Area. See "Setting Up Security for Adapters" in the *Oracle Life Sciences Data Hub System Administrator's Guide*. Users in the user groups assigned to an Adapter Area can create and run Load Sets, Data Marts, Programs, or Business Areas based on that adapter.

> **Note:**
>
> - If you run the Oracle LSH post-installation job more than once, the job upgrades the adapters.
> - The first value of the parameter utl_file_dir of the init.ora file must match the middle tier variable $APPLPTMP. Otherwise the post-installation program will fail. See Edit init.ora.

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

1. Click the **Submit a New Request** button either:
   - in the Requests window you used to monitor the Oracle LSH LOB Loader concurrent process
   - after following steps under 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:**
>
> Be very careful to set these Parameters correctly. You cannot change some of them after you run the job.
>
> See If You Must Change a Post-Installation Job Parameter Value for details.

- **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 other company's, the company ID distinguishes the objects created in each original company and helps prevent duplicate object primary keys.

  In order 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; see Get Your Company ID from Oracle . If you are installing multiple Oracle LSH instances, use a different Company ID for each one.

  > **Note:**
  >
  > Be sure to enter the correct company ID. Oracle LSH uses the company ID in the internal ID for every defined object in Oracle LSH. Changing the ID requires manually removing the data in internal tables for all objects created with the original ID.

- **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.

- If You Must Change a Post-Installation Job Parameter Value

If You Must Change a Post-Installation Job Parameter Value

To create an adapter, the post-installation job creates objects—including a Work Area and Program—inside an Adapter Area in an Adapter Domain, and installs the Work Area. These objects are created using the post-installation job parameters values that you entered when you ran the job. If you change the values of some of these parameters after running the job, it may cause problems. The problems vary depending on which parameter you change, and are given for each parameter below.

However, you can call the function FND_PROFILE.SAVE in SQL*Plus to change most parameters. This function takes the following parameters. You must enter single quotes around each value.

- **x_name** is the profile name
- **x_value** is the profile value that you want to set
- **x_level_name** is the name of the level at which the value should be set

> **Note:**
>
> You must set each value at the Site level. To do this, enter `'Site'` for the function parameter x_level_name each time you call the function.

To call FND_PROFILE.SAVE:

1. Log in to SQL*Plus as apps.

2. At the SQL prompt, enter:

```
begin
FND_PROFILE.SAVE ('x_name''x_value' 'x_level_name');
end;
/
```

You need a line calling FND_PROFILE.SAVE for each post-installation job parameter you need to change. The function parameter values required to change each post-installation parameter are included below. When you are ready to commit the changes, enter:

```
commit;
```

The details for each post-installation job parameter are:

- **Object ID Sequence**. You cannot change this value.
- **DB Host Name**. If the Oracle LSH database moves to a different machine or the name of the current machine changes, you can call FND_PROFILE.SAVE to change the name. However, changing this value will result in subsequent adapter Work Area installations and upgrades failing when you upgrade to a new version of Oracle LSH. Provide the following function parameter values:

  ```
  FND_PROFILE.SAVE('CDR_DBHOST_NAME','New_Host_Name', 'SITE');
  ```

- **DB Port Number**. If the DB port number changes, you can call FND_PROFILE.SAVE to change it. However, changing this value will result in subsequent adapter Work Area installations and upgrades failing when you upgrade to a new version of Oracle LSH. Provide the following function parameter values:

  ```
  FND_PROFILE.SAVE('CDR_DBPORT_NUM','New_Port_Number', 'SITE');
  ```

- **Owning Location**. There are currently no restrictions in changing this parameter value. Provide the following function parameter values:

  ```
  FND_PROFILE.SAVE('OWNING_LOCATION','New_Owning_Location', 'SITE');
  ```

- **Company ID**. Never change the company ID. The company ID is part of the unique key for every object in Oracle LSH, including the adapter objects that were created by running the post-installation job. Changing this value could lead to the system not working in many places, including job execution, the user interface not listing submitted jobs, and more.

Synchronize the APPS Password in OWB

You must synchronize the APPS password in OWB for the Workflow store using the following steps:

1. Log in to the database as OWBSYS.
2. Run $CDR_TOP/patch/115/sql/cdrowbpwsynch.sql.
3. At the prompts, enter the following: Enter the APPS password when prompted by the script.
   - OWB schema name: enter `OWBSYS`
   - OWB schema password
   - Database name

- New APPS password

> **Note:**
>
> If you change the APPS password after installing Oracle LSH, you must run Autoconfig to create a new .dbc file and do these steps again.

Gather Statistics on Schemas

For details on gathering statistics on schemas (CDR, APPS, and OWBSYS), see article 2220975.1 on My Oracle Support.

Schedule the Context Index Refresh Program

The Oracle LSH Context Index Refresh Program refreshes context server indexes in Oracle LSH and TMS. You must set it up to run regularly so that user-entered metadata is continuously updated and available for use in Oracle LSH.

To schedule the Context Index Refresh Program:

1. Click the **Submit a New Request** button either:
   - in the Requests window you used to monitor the Oracle LSH Post-Installation Program
   - after following steps under 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 Context Index Refresh Program** and click **OK**.
5. Click **Schedule**. The Schedule pop-up opens.
6. In the Run the Job section, select **Periodically**. Additional fields appear.
7. Schedule the job to run every two minutes by typing the number **2** in the blank field and selecting **Minutes** from the drop-down list in the Run Every line.
8. Click **OK**. A warning message appears stating that selecting a schedule without an end date will result in the request's being resubmitted until cancelled.
9. Click **OK**. The Submit Request screen appears.
10. Click **Submit**.

Start Journaling Internal Tables

Oracle keeps an audit trail of all data changes in some of its internal metadata tables in shadow journaling tables. However, you must explicitly turn this feature on. Journaling tables help to satisfy regulatory requirements.

- Set AuditTrail:Activate Profile to Yes

- Define the Audit Installation
- Prevent Error
- Run the Audit Trail Update Tables Concurrent Program

Set AuditTrail:Activate Profile to Yes

Set the **AuditTrail:Activate** profile to Yes at the Oracle LSH Application level.

1. Log on as sysadmin; see Log on as sysadmin for details.
2. Click the **System Administrator** responsibility link. A new column of links appears.
3. Under **Profile** in the right-hand column, click **System**.

   If you receive a message asking if you want to install an applet, do so.

   The **Find System Profile Values** window appears.
4. In the Display section, uncheck **Site** and check **Application**.
5. In the **Application** field, enter`%life%` to bring up Oracle Life Sciences Data Hub.
6. In the **Profile** field, enter `AuditTrail:Activate` in the **Profile** text box at the bottom of the window.
7. Click **Find**. The system returns you to the **System Profile Values** window with `AuditTrail:Activate` displayed in the **Profile Option Name** column and `Oracle Life Sciences Data Hub` displayed in the **Application** column.
8. Select `Yes` as the value for the column **Application** and click the **Save** icon or save from the File menu (File > Save).

Define the Audit Installation

To start journaling, do the following:

1. Log on as sysadmin; see Log on as sysadmin for details.
2. Click the **System Administrator** responsibility link. A new column of links appears.
3. In the new column of links, scroll down to **Security: Audit Trail**. In this section, click **Install**.

   If you receive a message asking if you want to install an applet, do so.

   The **Audit Installations** window appears.
4. Click the Search icon (flashlight/torch) in the toolbar. The **Find Audit Installations** pop-up appears.

> **Note:**
>
> If the icon is inactive, the wrong window is in focus. If necessary, retrieve the **Audit Installations** window:
>
> a. In the **Navigator - System Administrator** window, **Functions** tab, expand the **Security** node.
>
> b. Expand the **Audit Trail** node.
>
> c. Click **Install**.The **Audit Installations** window appears.
>
> Then click the Search icon in the toolbar.

5. Click in the **Oracle Username** field to display the ellipsis (...), then click the ellipsis to display the list of values. Find and select `CDR`.
6. Click **Find**. The system returns you to the **Audit Installation** window with `CDR` displayed in the **Oracle Username** column
7. Select the **Audit Enabled** checkbox and click **Save**.

Prevent Error

For the most current information, see My Oracle Support article 727208.1, *AuditTrail Update Tables fails on View AP_SYSTEM_PARAMETERS_ALL_AC1*.

To follow Step 1 in the article, do the following:

1. Log in to Oracle LSH as sysadmin.
2. Navigate to **System Administrator**, then **Security**, then **Audit Trail**, and then **Groups**.
3. Confirm anything necessary to get the application to run and a form appears.
4. Press F11.
5. In the Audit Group line enter `SQLAP.AP_SYSTEM_PARAMETERS_ALL` and press Ctrl +F11. The Audit Group SQLAP.AP_SYSTEM_PARAMETERS_ALL appears.
6. Proceed with Step 2 in the MOS article.

Step 2 in the article is:

1. Set the Group state to "Disable - Purge Table" for AP_SYSTEM_PARAMETERS_ALL. This option Disable - Purge Table Drops the auditing triggers and views and deletes all data from the shadow table.
2. Be sure to Save before exiting.

Step 3 in the article is Run the Audit Trail Update Tables Concurrent Program.

Run the Audit Trail Update Tables Concurrent Program

After you have defined CDR as the audit installation, run the Audit Trail Concurrent Program to enable auditing.

1. From the **View** menu, select **Requests**. The **Find Requests** pop-up appears.
2. Click **Submit a New Request**. The **Submit a New Request** pop-up appears.

3. Select **Single Request** and click **OK**. The **Submit Request** pop-up appears.
4. From the **Name** drop-down list, select **AuditTrail Update Tables** and click **OK**. The system returns you to the **Submit Request** window with **AuditTrail Update Tables** displayed in the **Name** field.
5. Click **Submit**. A window pops up with the Request ID and asks if you want to submit another request.
6. Make a note of the Request ID and click **No**.

Monitor the Job: To monitor the job's progress:

1. Click **Find** and use the Request ID to search for the job.
2. Click **Refresh Data** periodically to update the execution phase and status of the job displayed on screen.
3. When the phase is Complete, click the **View Log**. Always check the log file.

   The log file contains a record of queries to update the FND tables, creating shadow tables, giving grants, creating triggers and procedures. At the end it should say: `Concurrent Request completed successfully` or, if the job did not complete successfully, an error message giving the reason for the failure.

Increase Memory Available for MetaData Reports

To allow predefined Oracle LSH metadata reports to run, you must change the Options setting for each of the concurrent programs that runs a set of reports. In addition, you may want to change the Priorities setting to the highest possible setting for the quickest display of the reports. The short names of the concurrent programs, with the type of reports they run, are:

- CDR_MDATA_DEFN_CP (Definitions reports)
- CDR_MDATA_INST_CP (Instances reports)
- CDR_MDATA_LIBR_CP (Library reports)
- CDR_MDATA_SECU_CP (Security reports)
- CDR_MDATA_WA_CP (Work Area reports)

See the *Oracle Life Sciences Data Hub System Administrator's Guide* chapter on System Reports for information on the reports.

To change the setting, do the following for each set of reports:

1. Log on as sysadmin; see Log on as sysadmin for details.
2. Click the **System Administrator** responsibility link. A new column of links appears.
3. In the new column of links, scroll down to **Concurrent: Program**. In this section, click **Define**.

   If you receive a pop-message asking if you want to install an applet, do so.

   The **Concurrent Programs** window appears.
4. Press the F11 key to enter Query mode.
5. In the **Short Name** field, enter the short name of one of the sets of metadata reports (see list above). For example, enter: `CDR_MDATA_DEFN_CP`

6. Press Ctrl+F11 to enter the query. The system populates all the fields with the current information for that set of reports.
7. In the **Options** field, enter: `-Xmx512M`
8. (Optional) In the **Priority** field, enter: `1`

   1 is the highest possible setting and 100 is the lowest possible setting.
9. From the **File** menu, select **Save**.
10. Repeat the procedure until you have changed the settings for all metadata report sets.

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

Create CDR_USER Role

Create the CDR_USER role using the following script:

1. Log in to SQL*Plus as apps.
2. Run $CDR_TOP/patch/115/sql/cdrcreatecdruserrole.sql

Set Up the Notification Mailer

To enable Oracle LSH to send Notifications to users' email address (as well as their Oracle LSH My Home page) you must set up an email account for the purpose of handling Notification responses and configure the Notification Mailer in the Oracle Workflow user interface. Follow instructions in My Oracle Support article 164871.1, *Configuring the Workflow Notification Mailer in Oracle Applications Manager 11i*.

For information on the Notification Mailer, see the *Oracle Applications System Administrator's Guide - Maintenance*, Release 11*i*.

Set Up the Distributed Processing Server

The Distributed Processing (DP) Server is the mechanism Oracle LSH uses to communicate with the external processing engines that run some Oracle LSH jobs.

Install the DP Server on each computer where you have installed an external processing engine (such as SAS) and where you have installed XML Publisher. If you install multiple external processing engines on the same computer, you can install the DP Server once on that computer.

For information about the DP Server, see "Setting Up Services" in the *Oracle Life Sciences Data Hub System Administrator's Guide*. For information on integrating particular external systems with Oracle LSH, see Integrating Other Systems.

> **Note:**
>
> For Oracle DMW, the DP Server is required for File Watcher, for loading SAS and text data files. SAS files require the SAS processing engine and text files require the SQL*Loader, which is installed with Oracle Database.

Setting up the DP Server includes the following steps. You must do them in the following order:

- Create the Distributed Processing Server User Account
- Install the Distributed Processing Server
- Secure Distributed Processing Server Files
- Set NLS_LANG to UTF8
- Copy and Edit Files
- Define Service Locations and Services
- Start the DP Server

Create the Distributed Processing Server User Account

You must run a script to create the Distributed Processing (DP) Server database account `cdr_dpserver` and set its password. Use this account to start the DP Server.

> **Note:**
>
> When you start the DP Server on each service location, you need this password. You should change the default password for use within your company.
>
> To change a password:
>
> 1. Log in to SQL*Plus.
> 2. Enter the following:
>
>   `alter user old_password identified by new_password`

To run the script:

1. Go to $CDR_TOP/patch/115/sql
2. Log in to SQL*Plus as apps
3. Run the script:

   `cdrcreatedpserveruser.sql`

   At the prompt, enter the password you want to use for the cdr_dpserver account.
4. Exit from SQL*Plus.

Install the Distributed Processing Server

On each computer where you have installed one or more processing engines for use with Oracle LSH, do the following to install the Oracle LSH Distributed Processing (DP) Server:

1. Create a home directory for the DP Server. It can be located anywhere on the computer where the DP Server resides. Oracle recommends naming it `DPServer_Home`.
2. In the DP Server Home directory, create two subdirectories: **lib** and **log**.

   The lib directory will hold the jar files the DP Server uses. The log directory will hold DP Server log files. Each time you start the DP Server it creates one log file. The DP Server adds log information to that log file each time it runs a job.
3. Change to the lib directory.
4. Copy **DPServer.zip** from $CDR_TOP/jar to the lib directory.
5. Using GNU zip or another utility, unzip **DPServer.zip** into the lib directory. The DPServer.zip file contains the following files:
   - **DPServer.jar**
   - **fileWatcherServer.jar**
   - **xmlparserv2.zip**
   - **xmlparserv2-904.zip**
6. Using SFTP, copy the following files from the $ORACLE_HOME/rdbms/jlib directory on the database server computer to the lib directory.
   - **jmscommon.jar**
   - **aqapi.jar**
7. Using SFTP, copy the following files from the $ORACLE_HOME/jlib directory on the database server computer to the lib directory:
   - **jta.jar**
   - **orai18n-mapping.jar**
8. Using SFTP, copy **ojdbc5.jar** from $ORACLE_HOME/jdbc/lib directory on the database server computer to the lib directory.
9. Using SFTP, copy **ucp.jar** from $ORACLE_HOME/ucp/lib directory on the database server computer to the lib directory.
10. Change directories to the DP Server Home directory.
11. Create a working directory with a meaningful name for each service that will run on this machine. For example, if you will run SAS jobs on this computer, create a directory such as SASWORK. If you will also run Oracle Reports jobs on this computer, create another directory with a name like REPWORK.

    Each time one of these engines runs a job, the DP Server creates a directory containing the files required for the job and gives the directory the job ID as a name. When you define services in the Oracle LSH user interface, specify that you want the DP Server to create these job directories in the working directories you have created. For more details, see Define Service Locations and Services.

12. Set the TNS alias in the tnsnames.ora file to the global_name of the database server. This is required because the DP server runs jobs, such as SAS programs, that connect to the database server using the global_name.
13. On the DP Server machine, create a symbolic link from the location where SAS is installed to user home:

    ```
    ln -s  SAS_executalble_path/sas_u8 DP_Server_Home_path/sas
    ```

> **Note:**
>
> If you need to set up the DP Server outside the firewall, make sure the computer outside the firewall can connect to the database server inside the firewall. To do this, change a firewall setting to allow external access to the TNS listener port on the database server.

Secure Distributed Processing Server Files

The DP Server log files in the log directory may contain information that is sensitive to your organization. Oracle recommends granting full access to this directory only to the Oracle database user running the DP Server process and any other external processing engine user.

Set NLS_LANG to UTF8

On each Server where you install the DP Server, set the computer's NLS_LANG environment variable to UTF8.

- Windows
- UNIX

Windows

Check and set your NLS_LANG environment variable:

1. Right-click the **My Computer** icon on your desktop, then click **Properties**.
2. Click the **Advanced** tab, then click **Environment Variables**.
3. In **User Variables** and **System Variables**, check if there is a variable named NLS_LANG.
4. If there is an NLS_LANG variable, highlight it and click **Edit**.
5. Set the variable value to UTF8; for example: `AMERICAN_AMERICA.UTF8`

If you do not have the NLS_LANG environment variable, change your registry settings:

1. Click **Start**, then **Run**.
2. In the Run window, enter `regedit` and click **OK**.
3. Locate one of the following registry key entries:
   - HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE
   - HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\HOME*x*

where *x* is the unique number identifying the Oracle home

4. Add a new key named NLS_LANG with a value including UTF8; for example:

```
NLS_LANG=AMERICAN_AMERICA.UTF8
```

UNIX

Do the following:

1. Check the environment variable NLS_LANG:

```
echo $NLS_LANG
```

2. Set the environment variable NLS_LANG to UTF8; for example:

```
% setenv NLS_LANG American_America.UTF8
```

Copy and Edit Files

This section contains the following topics:

Copy DP Server Files

1. Go to the DP Server home directory you created when you installed the DP Server code.
2. Copy the following files from $CDR_TOP/admin/template to the DP Server home directory:
   - **cdr_apps_dpserver.sh** (or cdr_apps_dpserver.cmd for running Windows services such as OBIEE)
   - **checkJSapps.sh**
   - **stopJSapps.sh**
   - **killproc.sh**

> **Note:**
>
> Do not copy **killproc.sh** if the DP server is running on a Windows computer, for example, running the OBIEE server.

Edit the DP Server Start Script

You must add local values to **cdr_apps_dpserver.sh** (or **cdr_apps_dpserver.cmd** on Windows) before you can start the DP Server.

1. Log in as the owner of the DP Server Home Directory.
2. Go to the DP Server home directory.
3. Edit cdr_apps_dpserver.sh (or cdr_apps_dpserver.cmd). Enter the actual value for each of the following:
   - **$DPSERVER_HOME**. Enter the full path for the DP Server home on this computer.
   - **SVC**. Enter the Service Location Name (not a Service name) that you defined or will define in the Service Location subtab for the Service Location that corresponds to this computer. (For more details, see Define Service Locations and Services.) The name is case-sensitive. For example:

     ```
     SVC=SERVICE_LOCATION_NAME
     ```

     > **Note:**
     >
     > On Windows you must enter this value at runtime.

   - **JDK Location (JDK_LOC)**. Enter the full path to the JDK executable.

     For example:

     ```
     JDK_LOC=/app/oracle/product/11.2.0/jdk/bin
     ```

   - **JVM Arguments**. Add the following line immediately after the Java command (`COMMANDLINE=java`), which follows the RAC flag setting:

     ```
     -DFile.encoding=UTF8 -Duser.language=en -Duser.country=US
     ```

   You can accept the default values for all other variables. Some values must be set at runtime. See Start the DP Server for details.

Make Scripts Executable

Make all the scripts executable with the following command:

```
chmod 755 *.sh
```

Copy RTF Template Files for XML Publisher

The following steps are required only on the computer where you are running XML Publisher:

1. In the DP Server home directory, create a directory called **cdrtemplates**.
2. Copy the following files from $CDR_TOP/patch/115/publisher/templates to the new **cdrtemplates** directory:
   - cdr_output_summ_cs.rtf
   - lsh-title-page.rtf
   - lsh-toc-template.rtf
   - lsh-pagenum.rtf
   - lsh-template.rtf
   - lsh-blank-page.pdf

Copy, Edit, and Grant Permissions to Execution Command Files for Processing Engines

Do the following on each computer where you have installed a processing engine:

1. From $CDR_TOP/admin/template, copy the sample execution command script for each processing engine installed on the computer. You can copy the scripts directly into the DP Server Home directory or create a subdirectory for them.

   > **Note:**
   >
   > Keep a record of the absolute location of these scripts. You will need it when you define a service location for the computer. See Define Service Locations and Services for details.

   The scripts include:

   - **cdrzip.sh** and **cdrunzip.sh**for Text Data Marts
   - **sasNormal.sh** for SAS Programs
   - **oraexp.sh** for Oracle Export Data Marts
   - **orareprunner.sh** for Oracle Reports Programs
   - **txtNormal.sh** for Text Load Sets
   - **xmlprunner.sh** for post-processing Report Sets
   - **xmlpreprunner.sh** for the Oracle LSH system reports and for cover sheets for outputs
   - **obieeinstall.cmd** for Oracle Business Intelligence Business Areas—required only on the BI Server
   - **obieedeploy.cmd** for Oracle Business Intelligence Business Areas— required only on the BI Server
   - **obieepsrestart.cmd** for Oracle Business Intelligence Business Areas—required only on Windows computers where a Presentation Service instance is installed but the BI Server is not installed
   - **obieepsrestart.sh** for Oracle Business Intelligence Business Areas—required only on Unix computers where a Presentation Service instance is installed but the BI Server is not installed.

2. Edit each script with information specific to the computer, for example:
   - Oracle SID
   - Location of the technology server
   - Location of Oracle setup script `coraenv`
   - Paths

   Ensure that environment variables are accessible to the DP server. For example, if the script refers to the variable $ORACLE_HOME, either define the variable or provide the full path in the script.

> **Note:**
>
> If you run SAS programs, add instructions to sasNormal.sh to start SAS in UTF8 mode. (See Start SAS in UTF8 Mode for details.) In addition, include the DP Server Home path in the environment variable as shown:
>
> ```
> PATH=$ORACLE_HOME/bin:$ORACLE_HOME/lib32: DP_Server_Home_Path:$PATH
> export PATH
> ```

3. Make all the scripts executable on the UNIX system with the following command:

   ```
   chmod 755 *.sh
   ```

Define Service Locations and Services

You must define Service Locations and Services in the Oracle LSH user interface for each computer where the Oracle LSH Distributed Processing (DP) Server will run. You define one service location for each computer, and at least one service for each engine or development environment that you want to run on that computer.

To define service locations and services you must have a user account with the LSH System Admin role assigned to it. See Create System Administrator and Security Administrator Users for details.

To log into Oracle LSH, do the following:

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. Enter the username and password associated with the LSH System Admin responsibility and click **Login**.
4. Under Navigator, click **Life Sciences Data Hub**. The system displays the list of Oracle LSH user interface locations to which you have access.
5. Click **Service Location**. The Service Location screen opens.

To define service locations and services in the Oracle LSH user interface, follow the instructions in "Setting Up Services" in the *Oracle Life Sciences Data Hub System Administrator's Guide*.

> **Note:**
>
> For Oracle DMW, you need one or two Service Locations. You need two services; **Text for SQL*Loader** and **SAS**. The two services can be on the same Service Location if it has access to both SQL*Loader and the SAS processing engine as well as the folders you will create to put data files into for loading into Oracle DMW. You can put text and SAS files in different locations.

Start the DP Server

To start the DP Server, do the following:

1. Log on as the owner of the DP Server Home Directory.
2. Run the script by entering the following command for UNIX. Information on the parameters is given below.

   ```
   ./cdr_apps_dpserver.sh ORACLE_SID DB_HOST DB_PORT RAC_TNS RAC_FLAG
   FW_ENABLED FW_FREQ FW_POLL
   ```

   or for Windows:

   ```
   c:> cdr_apps_dpserver.cmd ORACLE_SID DB_HOST DB_PORT RAC_TNS RAC_FLAG
   FW_ENABLED FW_FREQ FW_POLL
   ```

   where:

   - *ORACLE_SID* is the Oracle SID of the database

     > **Note:**
     >
     > The Oracle SID is case-sensitive.

   - *DB_HOST* is the name of the computer where the Oracle_SID resides.
   - *DB_PORT* is the SQL*Net Listener port for the Oracle_SID.
   - *RAC_TNS* is the JDBC connection string of the database server.
   - *RAC_FLAG* indicates whether you are using an Oracle RAC (Real Application Cluster) database installation. Set to `RAC` if you have a RAC installation. Set to `NO-RAC` if you do not.

     The RAC_FLAG setting determines which input parameter values the script uses when starting the DP Server.

     > **Note:**
     >
     > At the time of publication, Release 2.5 is not certified with RAC.

     – If RAC_FLAG is set to RAC, the script uses only the value for RAC_TNS.

  - If RAC_FLAG is set to NO-RAC, the script uses the values for ORACLE_SID, DB_HOST, and DB_PORT.

  In either case, it does not matter what value you enter for the unused parameters.

- *FW_ENABLED* Set to **Yes** to start the File Watcher service or **No** if you are not using Oracle DMW.
- *FW_FREQ* (Applies only to Oracle DMW customers.) Refresh frequency in seconds. This value specifies the minimum interval between requests to the database to check if there is a new set of Watcher Configurations. This value cannot be set lower than 60 seconds. A high setting will result in a delay between the user's addition or adjustment of a Watcher Configuration in Oracle DMW and the changes' taking effect in file detection behavior.
- *FW_POLL* (Applies only to Oracle DMW customers.) Polling frequency in seconds. The polling frequency represents the minimum interval at which a File Watcher Service may run to detect if there are any files in the watched location that should be loaded into Oracle DMW. The minimum value permitted is 60 seconds.

NO-RAC Example when RAC_FLAG is set to NO-RAC:

```
./cdr_apps_dpserver.sh LSHDB adxxxsdb.example.com 20502 NA NO-RAC NO 0 0
```

where:

- `LSHDB` is the Oracle SID
- `adxxxsdb.example.com` is the host
- `20502` is the port
- You may enter NA (Not Applicable) or any other value for RAC_TNS.
- NO-RAC is the setting for RAC_FLAG
- NO indicates that File Watcher is not enabled; Oracle DMW is not being used.
- 0 FileWatcher Refresh Frequency, since File Watcher is not enabled
- 0 FileWatcher Polling Frequency, since File Watcher is not enabled

RAC Example when RAC_FLAG is set to RAC:

```
./cdr_apps_dpserver.sh NA NA NA
'jdbc:oracle:thin:@(DESCRIPTION=(LOAD_BALANCE=YES)(FAILOVER=YES)
(ADDRESS_LIST=(ADDRESS=(PROTOCOL=tcp)(HOST=AP1RAC.example.com)(PORT=1521))
(ADDRESS=(PROTOCOL=tcp)(HOST=AP2RAC.example.com)(PORT=1521)))
(CONNECT_DATA=(SERVICE_NAME=CDRXXX)))'  RAC NO 0 0
```

where:

- You may enter NA (Not Applicable) or any other value for ORACLE_SID.
- You may enter NA (Not Applicable) or any other value for DB_PORT.
- You may enter NA (Not Applicable) or any other value for DB_HOST.
- `'jdbc:oracle:thin:@(DESCRIPTION=(LOAD_BALANCE=YES)(FAILOVER=YES)(ADDRESS_LIST=(ADDRESS=(PROTOCOL=tcp)(HOST=AP1RAC.example.com)(PORT=1521))(ADDRESS=(PROTOCOL=tcp)(HOST=AP3RAC.example.com)(PORT=1521)))(CONNECT_DATA=(SERVICE_NAME=CDRXXX)))`is the JDBC connection string of the database server

- RAC is the setting for RAC_FLAG
- NO indicates that File Watcher is not enabled; Oracle DMW is not being used.
- 0 FileWatcher Refresh Frequency, since File Watcher is not enabled
- 0 FileWatcher Polling Frequency, since File Watcher is not enabled

3. The script prompts you for a password. Enter the password for the cdr_dpserver user.

> **Note:**
>
> Do not change the value of DB_USER.

Set Up Client Computers

There are two types of client setups depending on the role of the Oracle LSH user:

- Consumers and Administrators
- Application Developers

For information on supported operating systems and browsers for the client, see My Oracle Support article 180430.1, *Oracle Life Sciences Applications Supported Technology Stacks*.

- Consumers and Administrators
- Application Developers

Consumers and Administrators

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 (one of those supported by Oracle Applications)
- Java Virtual Machine (JVM)

Consumers require JVM if they are using Oracle Discoverer Plus to create data visualizations.

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

The first time a user opens one of the Oracle Forms screens, the user is prompted to download and install JVM if it is not already installed.

> **Note:**
>
> If you are currently using JInitiator, you can continue to do so.

Application Developers

An Oracle LSH Application Developer (also called a Definer) writes source code on his or her personal computer in an integrated development environment (IDE) and then uploads the source code file to Oracle LSH.

An Oracle LSH Definer client requires:

- A Web browser (one of those supported by Oracle Applications)
- Java Virtual Machine (JVM)
- A Zip utility: 7-Zip or WinZip Pro 11.2 SR-1, WinZip 8.1, or any other WinZip version that includes the WZUNZIP.exe
- Oracle LSH client plug-in (see Install the Client Plug-In)
- NLS_LANG environment variable set to UTF8 (see Set NLS_LANG to UTF8)
- One or more IDE clients (see Set Up Development Environments)

This section contains the following topics:

Install the Client Plug-In

Oracle LSH files contained in **CdrClientInstall.zip** handle the integration of the IDEs with Oracle LSH.

System Administrator Tasks

To prepare these files for installation by developers, do the following:

1. Download **CdrClientInstall.zip** from $CDR_TOP/plugin/sas.
2. Unzip **CdrClientInstall.zip**. One of the files unzipped is **cdrconfig.xml**.
3. (Optional) Edit **cdrconfig.xml** to add a directory path for each IDE developers may use, including the IDEs mentioned in Integrating Other Systems. and any other IDEs that your company is using with Oracle LSH, either by buying a third party adapter or developing your own adapter.

   If you are using 7-Zip instead of WinZip, follow instructions in Section 5.17.2.1.3, "Enabling Using 7-Zip".
4. Write the unzipped contents of **CdrClientInstall.zip** to a CD-ROM.
5. Give the CD-ROM to each Oracle LSH Definer who will use an IDE, with instructions for where to install the IDE software so that the directory paths you entered in **cdrconfig.xml** are correct.

> **Note:**
>
> Alternatively, do not edit **cdrconfig.xml** before writing it to the CD-ROM and tell each Definer to edit his or her own copy.

Definer Task

On each Definer's personal computer, load the CD-ROM that contains the unzipped files. InstallShield automatically runs **setup.exe**, which loads **cdrconfig.xml** and **cdrclient.exe** to a location the Definer specifies on his or her local computer. The default location is *ProgramFilesDir*\oracle\cdr where *ProgramFilesDir* is the registry entry for the value name ProgramFilesDir. If the specified location does not exist, the InstallShield creates it.

In addition, it sets the location for the CDR Work directory. By default this location is %USERPROFILE%/Application Data/CDR. Oracle recommends using this setting if you are installing the client IDE on a server for access by multiple users. It creates a separate work space for each user so they do not overwrite each other's files.

Enabling Using 7-Zip

If you want to use 7-Zip instead of WinZip, do one of the following:

- Edit cdrconfig.xml to Use 7-Zip If WinZip Is Not Installed
- Create a .bat File and Edit cdrconfig.xml
- Edit cdrconfig.xml When 7-Zip is the Only Option

Edit cdrconfig.xml to Use 7-Zip If WinZip Is Not Installed

Add the following code:

```
REM ------------------------------------------
REM wzunzip
REM ------------------------------------------
if  exist "%ProgramFiles%\WinZip\wzunzip.exe"
"%ProgramFiles%\WinZip\wzunzip.exe" -yo %1 %2 %3
if  not exist "%ProgramFiles%\WinZip\wzunzip.exe"  goto 7zip
goto end

:7zip
REM ------------------------------------------
REM 7-zip
REM ------------------------------------------
if  exist "%ProgramFiles%\7-Zip\7z.exe"  "%ProgramFiles%\7-Zip\7z.exe" x -y
%3
if  not exist "%ProgramFiles%\7-Zip\7z.exe" goto errormsg
goto end

:errormsg
msg "%username%" Either wzunzip nor 7z could be found. No Launch possible.

goto end

:end
```

Create a .bat File and Edit cdrconfig.xml

1. Create a file called wzunzip.bat with the following contents:

   ```
   "C:\Program Files\7-Zip\7z" x %3
   ```

2. Add the path to the wzunzip.bat to the CDRCONFIG.xml file.

Edit cdrconfig.xml When 7-Zip is the Only Option

Change this line in CDRCONFIG file:

```
<USER_DEFINE NAME="WINZIPEXE" VALUE="&quot;C:\Program Files\ WinZip
\wzunzip.exe&quot;"/>
```

to:

```
<USER_DEFINE NAME="WINZIPEXE" VALUE="&quot;C:\Program Files\ 7-Zip
\7z.exe&quot;"/>
```

Set NLS_LANG to UTF8

Check and set your NLS_LANG environment variable:

1. Right-click the **My Computer** icon on your desktop, then click **Properties**.
2. Click the **Advanced** tab, then click **Environment Variables**.
3. In **User Variables** and **System Variables**, check if there is a variable named NLS_LANG.
4. If there is an NLS_LANG variable, highlight it and click **Edit**.
5. Set the variable value to UTF8; for example: `AMERICAN_AMERICA.UTF8`

If you do not have the NLS_LANG environment variable, change your registry settings:

1. Click **Start**, then **Run**.
2. In the Run window, enter `regedit` and click **OK**.
3. Locate one of the following registry key entries:
   - HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE
   - HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\HOME*x*

     where *x* is the unique number identifying the Oracle home
4. Add a new key named NLS_LANG with a value including UTF8; for example:

   ```
   NLS_LANG=AMERICAN_AMERICA.UTF8
   ```

Set Up Development Environments

Oracle LSH supports several integrated development environments (IDEs). For information on configuring these for use with Oracle LSH, see:

- Set Up SAS as an Integrated Development Environment
- Integrating Oracle SQL Developer or Oracle SQL*Plus with the Oracle Life Sciences Data Hub
- Set Up Business Intelligence Publisher Definer Tools

For information on setting up the Oracle BI Administration Tool, see the *Oracle Life Sciences Data Hub System Administrator's Guide*.

Install and Configure Java Web Start in Oracle E-Business Suite

For information on installing and configuring Java Web Start in Oracle E-Business Suite, see *Using Java Web Start with Oracle E-Business Suite*, article 2188898.1, on My Oracle Support.

6
Integrating Other Systems

The Oracle Life Sciences Data Hub (Oracle LSH) supports integration with other systems as sources of data, as means of visualizing and reporting on Oracle LSH data, and as processing engines for transforming Oracle LSH data. Oracle LSH handles integration with such systems with adapters custom made for each external system. Adapters for the systems included in this chapter are included with Oracle LSH.

You must install the adapters and grant them security privileges. These tasks are covered in Load the Adapter Files and Grant Security Rights to Seeded Adapters.

Each external system you choose to integrate with Oracle LSH requires installation and some additional setup, described here. The exception is Oracle Reports, which is installed as part of Oracle Applications and requires no further setup.

For information on supported versions of these products, see Integrated External Systems or for the most current information, see My Oracle Support article 180430.1, *Oracle Life Sciences Applications Supported Technology Stacks*.

This section contains the following topics:

- Integrating Oracle Clinical with the Oracle Life Sciences Data Hub
- Integrating SAS with the Oracle Life Sciences Data Hub
- Integrating Oracle SQL Developer or Oracle SQL*Plus with the Oracle Life Sciences Data Hub
- Integrating Oracle Business Intelligence Enterprise Editions (OBIEE) for Visualizations
- Integrating Oracle Business Intelligence Publisher for Programs

Integrating Oracle Clinical with the Oracle Life Sciences Data Hub

Oracle LSH 2.5 is compatible with **Oracle Clinical 4.6, or Oracle Clinical 4.5.1 or 4.5.3 with patch 4.5.1.14 or its successor 4.5.1.75**, applied. Both patches are compatible with 4.5.3 as well as 4.5.1.

Oracle LSH includes a set of adapters custom-designed for the purpose of loading data and metadata from Oracle Clinical into Oracle LSH.

To load data and metadata from Oracle Clinical into Oracle LSH you must do the following:

1. In the Oracle LSH user interface, define a remote location and connection to each Oracle Clinical location from which you want to load data. See "Registering Locations and Connections" in the *Oracle Life Sciences Data Hub System Administrator's Guide* for further information.

2. Define, check in, install, and run one or more Oracle Clinical Load Sets in Oracle LSH. See "Defining Load Sets" in the *Oracle Life Sciences Data Hub Application Developer's Guide* for further information.

   You can also use APIs to create Load Sets. These packages are documented in the *Oracle Life Sciences Data Hub Application Programming Interface Guide*.

Integrating SAS with the Oracle Life Sciences Data Hub

Oracle LSH is designed for close integration with SAS at several levels. You can load SAS data set files into Oracle LSH, use SAS as an integrated development environment to create Oracle LSH Programs with SAS source code, and use the SAS engine to run these Programs on Oracle LSH data.

Oracle LSH supports integration with SAS 9.1.3, SAS 9.2, or SAS 9.3.

> **Note:**
>
> Oracle Life Sciences Data Hub does not support a SAS Windows server.

This section includes the following topics:

SAS Compatibility

SAS with connectivity to Oracle LSH requires an Oracle 11*g* library. Oracle recommends that the Oracle 11*g* Release 2 Client reside on the same server computer as the SAS installation.

To install Oracle LSH and SAS as a processing engine on the same computer:

1. Create an 11*g* Oracle Home by installing the Oracle Client 11*g* Release 2.
2. Install SAS.
3. Set the UNIX environment variable LD_LIBRARY_PATH to the 11*g* $*ORACLE_HOME*/lib.

Set Up SAS Job Execution

To enable running SAS jobs from Oracle LSH, you must integrate the SAS server with Oracle LSH and start the server in UTF8 mode. This section contains the following topics:

Integrate the SAS Server with Oracle LSH

Do each of the following:

1. Install SAS Access to Oracle on the SAS server.
2. Install the Oracle LSH Distributed Processing (DP) Server on the computer where the SAS server is installed. See Set Up the Distributed Processing Server.
3. Define a service location in Oracle LSH for the computer where the SAS server is installed. See "Defining Service Locations" in the *Oracle Life Sciences Data Hub System Administrator's Guide* for instructions.
4. Define one or more services for the service location. See "Defining Service Locations" in the *Oracle Life Sciences Data Hub System Administrator's Guide* for instructions.

Start SAS in UTF8 Mode

To help ensure that Oracle LSH stores and displays special characters in your data correctly, start SAS in UTF8 mode by editing the DP Server execution command file sasNormal.sh, which you copied and edited in Copy, Edit, and Grant Permissions to Execution Command Files for Processing Engines.

If you are using SAS 9.2 or 9.3, add lines to sasNormal.sh as in the following examples:

- In UNIX:

```
sas -encoding UTF8
```

- In Windows, specify the version of SAS you are using. For example, for SAS 9.2:

```
C:\Program Files\SAS\SASFoundation\9.2\sas.exe" -CONFIG C:\Program Files\SAS
\SASFoundation\9.2\nls\u8\SASV9.CFG"
```

> **Note:**
>
> The example above should not contain any line breaks. It is not possible to display it on one line.

If you are using SAS 9.1.3, install SAS with the DBCS option and add lines to sasNormal.sh as follows (in UNIX):

```
/user/local/SAS/SAS_9.1/bin/sas_dbcs  -encoding UTF-8  $*
```

Set Up Loading Data from SAS

Oracle LSH includes an adapter custom-designed for the purpose of loading data from SAS database into Oracle LSH.

To enable loading data from SAS into Oracle LSH you must do the following:

1. Complete all steps listed in Set Up SAS Job Execution .

2. Make sure that the LOB Loader Oracle LSH post-installation job has been run; this job creates the SAS adapter. This is a required step in the installation of Oracle LSH; see Load the Adapter Files.
3. Make sure that you have followed instructions in Grant Security Rights to Seeded Adapters.
4. Assign at least one user group to the SAS adapter. See "Setting Up Adapters to External Systems" in the *Oracle Life Sciences Data Hub System Administrator's Guide*.

Set Up SAS as an Integrated Development Environment

To use SAS as an integrated development environment (IDE) each Definer must do the following on his or her local PC:

- Install SAS in the location specified by the system administrator.
- Install the Oracle LSH client plug-in by inserting the CD-ROM supplied by the system administrator (see Install the Client Plug-In).

  InstallShield runs **cdrclient.exe**, which loads **cdrconfig.xml** and **cdrclient.exe** either to the default location or to a location the Definer specifies on his or her local computer; see Set Up Client Computers.
- Ensure that **cdrconfig.xml** has the correct directory path for the SAS executable.
- Set the user preference for the SAS connection mode (details below). Instructions are in the "SAS Connection Type" section of the Getting Started chapter of the *Oracle Life Sciences Data Hub User's Guide*.
- Install any software required to support the preferred connection mode (details below).
- Set the NLS_LANG environment variable or registry settings to support UTF8 character encoding; see Set the NLS_LANG Environment Variable to UTF8.

SAS Connection Modes: SAS can work as an integrated development environment (IDE) in different ways. Each user must set a preference for the way he or she wants to work. Oracle LSH supports the following connection modes:

- **Connected Mode**. The Definer has the SAS client installed on his or her personal computer. When he or she launches SAS as an IDE from an Oracle LSH Program, Oracle LSH downloads views based on the source Table Descriptors defined in the Program. The Definer works locally on the SAS client, using the views to read current data in Oracle LSH. The Definer's SAS program can write to local SAS data sets. When the SAS program is ready, the Definer goes into the Oracle LSH Program and uploads the SAS source code as an Oracle LSH Source Code file.

  The client must use the SAS Access to Oracle tool to connect to Oracle LSH.
- **SAS Connected Mode with Work Area Data**. This mode is the same as Connected mode except that it connects to the Work Area schema in the database. From SAS, the user can browse views of current data in all Table instances in the Work Area, not just the Table instances linked to Table Descriptors of the Program.

  The client must use the SAS Access to Oracle tool to connect to Oracle LSH.
- **Disconnected Mode**. The Definer has the SAS client installed on his or her personal computer. When the Definer launches SAS as an IDE, Oracle LSH uses the Distributed Processing Server to download the current data in the Table

instances mapped to source Table Descriptors in the Program into the Definer's local SAS environment, creating data sets with the same structure as the Oracle LSH Table Descriptors. The Definer's SAS program can read from and write to local SAS data sets. When the SAS program is ready, the Definer goes into the Oracle LSH Program and uploads the SAS source code as an Oracle LSH Source Code file.

No connection other than a network is required to the Oracle LSH Distributed Processing Server.

Integrating Oracle SQL Developer or Oracle SQL*Plus with the Oracle Life Sciences Data Hub

To use Oracle SQL Developer or SQL*Plus as an IDE for Oracle LSH PL/SQL Programs, each Definer must do the following on his or her local PC:

- Install Oracle SQL Developer or SQL*Plus in the location specified by the system administrator.
- Install the Oracle LSH client plug-in by inserting the CD-ROM supplied by the system administrator. (See Install the Client Plug-In for details.)
- Ensure that **cdrconfig.xml** has the correct directory path for the Oracle SQL Developer (or SQL*Plus) executable.

> **Note:**
>
> If the Definer has both Oracle SQL Developer and SQL*Plus installed on the local computer, he or she can switch between the two IDEs by changing the executable directory path in **cdrconfig.xml**.

- Start Oracle SQL Developer or SQL*Plus and create a connection to the Oracle LSH database. The username and password for this connection must be those of an Oracle LSH database user account.
- Follow the steps in Set the NLS_LANG Environment Variable to UTF8.
- Install Winzip Pro 11.2 SR-1, Winzip 8.1, or any other Winzip that includes the WZUNZIP.exe

This section contains the following topic:

- Set the NLS_LANG Environment Variable to UTF8

Set the NLS_LANG Environment Variable to UTF8

To set an Oracle client application like SQL*Plus to use the right encoding, you must set the environment variables on the client machine to UTF8. The required settings vary, depending on the operating system.

- Windows
- UNIX

Windows

Check and set your NLS_LANG environment variable:

1. Right-click the **My Computer** icon on your desktop, then click **Properties**.
2. Click the **Advanced** tab, then click **Environment Variables**.
3. In **User Variables** and **System Variables**, check if there is a variable named NLS_LANG.
4. If there is an NLS_LANG variable, highlight it and click **Edit**.
5. Set the variable value to UTF8; for example: `AMERICAN_AMERICA.UTF8`

If you do not have the NLS_LANG environment variable, change your registry settings:

1. Click **Start**, then **Run**.
2. In the Run window, enter `regedit` and click **OK**.
3. Locate one of the following registry key entries:
   - HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE
   - HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\HOME*x*

     where *x* is the unique number identifying the Oracle home
4. Add a new key named NLS_LANG with a value including UTF8; for example:

   ```
   NLS_LANG=AMERICAN_AMERICA.UTF8
   ```

UNIX

Do the following:

1. Check the environment variable NLS_LANG:

   ```
   echo $NLS_LANG
   ```
2. Set the environment variable NLS_LANG to UTF8; for example:

   ```
   % setenv NLS_LANG American_America.UTF8
   ```

Integrating Oracle Business Intelligence Enterprise Editions (OBIEE) for Visualizations

You can create Oracle LSH Business Areas of type OBIEE to make data available to visualizations in OBIEE Answers. Definers can install the Administrator's Tool on their PC to develop more complex OBIEE Repository (.rpd) files to support more complex data visualizations. Users can then launch the Oracle Business Intelligence Dashboard either through Oracle LSH or through a URL to see data visualizations.

> **Note:**
>
> Additional configuration is required. See the chapter on Oracle Business Intelligence visualizations in the *Oracle Life Sciences Data Hub System Administrator's Guide*.

Oracle LSH supports using OBIEE 10.1.3.4.1 for both programs and visualizations and OBIEE 11.1.1.3.0, 11.1.1.5.0, 11.1.1.6.4, 11.1.1.7, or 11.1.1.7.131017 for visualizations only.

You can use both OBIEE 10g and OBIEE 11g for visualizations if you want. For example, if you are using Oracle Clinical Development Analytics you may want to dedicate one OBIEE installation to Oracle OCDA and have another for Oracle LSH OBIEE visualizations. You can install both on the same computer or different ones, but even if they are on the same computer Oracle recommends defining a different service location and services for each. You must install the DP Server on each machine where the Oracle BI Server is installed.

Do one of the following:

- Install OBIEE 11.1.1.x for Visualizations
- Install OBIEE 10.1.3.4.1 for Visualizations

Install OBIEE 11.1.1.x for Visualizations

Install OBIEE 10.1.3.41, 11.1.1.3.0, 11.1.1.5.0 or 11.1.1.6.4 to support visualizations as described in the following topics:

- Install OBIEE
- Install the Oracle LSH DP Server
- Set Up OBIEE Visualizations

Install OBIEE

Install Oracle Business Intelligence Enterprise Edition 11.1.1.x using *Oracle Fusion Middleware Installation Guide for Oracle Business Intelligence 11g Release 1 (11.1.1) (E10539-01)*.

> **Note:**
>
> As noted in *Oracle Fusion Middleware Installation Guide for Oracle Business Intelligence 11g Release 1 (11.1.1)*, you need to install Oracle Fusion Middleware Repository Creation Utility 11g (11.1.1.3.3) before installing OBIEE 11g.

Install the Oracle LSH DP Server

You must install the Oracle LSH DP Server on the same machine; see Set Up the Distributed Processing Server.

Set Up OBIEE Visualizations

See Chapter 11, "Setting Up Oracle Business Intelligence Visualizations" in the *Oracle Life Sciences Data Hub System Administrator's Guide*, for instructions.

Install OBIEE 10.1.3.4.1 for Visualizations

Install Oracle Business Intelligence Enterprise Edition 10.1.3.4.1 to support OBIEE visualizations as described in the following topics:

- Install Oracle Business Intelligence Publisher 10.1.3.4.1
- Apply Patch 12613341
- Apply Patch 7642637 for Visualizations
- Install the Oracle LSH DP Server
- Set Up OBIEE Visualizations

Install Oracle Business Intelligence Publisher 10.1.3.4.1

Install Oracle Business Intelligence Enterprise Edition 10.1.3.4.1 using the *Oracle® Business Intelligence Publisher Installation Guide Release 10.1.3.4*.

Apply Patch 12613341

If you have not already done so, apply patch 12613341 to enable OBIEE 10.1.3.4.1 compatibility with Oracle LSH 2.4; see Install Oracle LSH 2.5 .

Apply Patch 7642637 for Visualizations

If you plan to use OBIEE 10.1.3.4.1 for visualizations, apply patch 7642637.

Install the Oracle LSH DP Server

You must install the Oracle LSH DP Server on the same machine. See Set Up the Distributed Processing Server for details.

Set Up OBIEE Visualizations

See Chapter 11, "Setting Up Oracle Business Intelligence Visualizations" in the *Oracle Life Sciences Data Hub System Administrator's Guide*, for instructions.

Integrating Oracle Business Intelligence Publisher for Programs

You can create Oracle LSH Programs of type Oracle Business Intelligence Publisher (BIP) to generate reports on Oracle LSH data. Install Oracle Business Intelligence Publisher 10.1.3.4.1 to support BIP Programs and/or OBIEE visualizations.

This section includes the following topics:

Install Oracle Business Intelligence Publisher 10.1.3.4.1

Install Oracle Business Intelligence Publisher 10g using *Oracle® Business Intelligence Publisher Installation Guide Release 10.1.3.4*.

The software and documentation are not included in the Oracle LSH media pack, but you can download them from the Oracle LSH Release 2.1.4 media pack.

Set Up Oracle Business Intelligence Publisher Programs

On the Oracle BIP Server, do the following after installing OBIEE:

Enable Program Execution

To enable running Oracle Business Intelligence Publisher Programs from Oracle LSH, you must:

- Install the Oracle LSH Distributed Processing (DP) Server on the computer where the Oracle Business Intelligence Server is installed. See the Set Up the Distributed Processing Server for instructions.
- Define a service location in Oracle LSH for Oracle BIP. See "Defining Service Locations" in the *Oracle Life Sciences Data Hub System Administrator's Guide* for instructions.
- Define one or more BIP-type services for each service location. See "Defining Service Locations" in the *Oracle Life Sciences Data Hub System Administrator's Guide* for instructions.
- Define a remote location and remote connection in Oracle LSH for Oracle BIP. See "Setting Up Security for Oracle Business Intellignece Publisher" in the *Oracle Life Sciences Data Hub System Administrator's Guide* for instructions.

Set Up Security

You must complete a number of security-related tasks, including creating an Oracle Applications responsibility for each person who will use BIP with Oracle LSH. See "Setting Up Security for Oracle Business Intellignece Publisher" in the *Oracle Life Sciences Data Hub System Administrator's Guide*.

Set Up Business Intelligence Publisher Definer Tools

Oracle BIP has two tools that Definers may need in order to work on BIP Programs. The integrated development environment (IDE) for report logic design is web-based. The Template Builder for Word is used for developing layout templates. Definers can download this tool the first time they launch Oracle BIP or later from the web-based integrated development environment (IDE).

7

Upgrading to Oracle Life Sciences Data Hub Release 2.5

This section includes the following topics:

Supported Upgrade Path

Upgrading to Oracle Life Sciences Data Hub (Oracle LSH) is supported from Oracle LSH Release 2.4.8 or 2.4.9.

Upgrade to Oracle LSH 2.4, then 2.4.7, then 2.4.8 or 2.4.9

To upgrade to Oracle LSH 2.5, your Oracle LSH system must use 2.4.8 or Oracle LSH 2.4.9. See the following steps for details.

> **Note:**
>
> All procedures in this chapter are required for each upgrade path (if not done already).

1. If using Oracle LSH 2.1.x, 2.2.x, or 2.3.x, upgrade to Oracle LSH 2.4 by following instructions in the upgrade chapter of the Release 2.4 *Oracle Life Sciences Data Hub Installation Guide*. If you use Oracle Health Sciences Data Management Workbench (Oracle DMW) 2.3.1, upgrade to Oracle DMW 2.4 by following the upgrade instructions in *Oracle Health Sciences Data Management Workbench Installation Guide*. See the Oracle Health Sciences Life Sciences Warehouse site to access the guides: `http://docs.oracle.com/cd/E54418_01/index.htm`
2. Once you upgrade to 2.4, upgrade to 2.4.7 following the instructions in document **2137430.1** on My Oracle Support (with the exceptions noted in the Oracle LSH 2.4.8 installation instructions, document **2383498.1** on My Oracle Support). If you use Oracle DMW 2.4, upgrade to Oracle DMW 2.4.7 by following the instructions in document 2137432.1 on My Oracle Support.
3. OnceOracle LSH and Oracle DMW use release 2.4.7, upgrade Oracle LSH to release 2.4.8 or 2.4.9. For 2.4.8, follow the steps in document **2383498.1** on My Oracle Support. For 2.4.9, follow the steps in document **2429893.1**.

Stop Server Processes

This step is required for all upgrade paths.

Before you begin the upgrade, stop the following servers:

- Oracle Life Sciences Data Hub (Oracle LSH) Distributed Processing (DP) Server. (See Start the DP Server for details.)
- Application Server

Upgrade and Configure Oracle Database and Oracle Warehouse Builder 11.2.0.4

Follow My Oracle Support document 1058763.1, *Interoperability Notes EBS 12.0 and 12.1 with Database 11gR2* to upgrade Oracle Database to 11.2.0.4.

Upgrade Oracle Thesaurus Management System Database to 5.3

Upgrade the TMS database components required to support the Oracle LSH classification system. See the following section for details:

- Upgrade the TMS Database to Release 5.3

Upgrade the TMS Database to Release 5.3

To upgrade to TMS 5.3:

1. Upgrade the TMS Database Server Code on a Windows computer as described in *Oracle Thesaurus Management System Release 5.3 Installation Guide*, which is on the media pack. For more details, see https://docs.oracle.com/health-sciences/tms-53/install/toc.htm.
2. Upgrade the TMS Database to 5.3 as described in *Oracle Thesaurus Management System Release 5.3 Installation Guide*, which is on the media pack. For more details, see section 6.5, "Upgrade a TMS Database," at https://docs.oracle.com/health-sciences/tms-53/install/toc.htm.

OBIEE 10g and 11g Options

To support OBIEE Business Areas and data visualizations, Oracle LSH is compatible with both OBIEE 10g and OBIEE 11g; see Integrated External Systems for the exact versions.

You can use both OBIEE 10g and OBIEE 11g if you want. For example, if you are using Oracle Clinical Development Analytics you may want to dedicate one OBIEE installation to OCDA on 10g and have another for Oracle LSH OBIEE visualizations. You can install both on the same computer or different ones, but even if they are on the same computer you must define a different service location and services for each. You must install the DP Server on each machine where the Oracle BI Server is installed.

To install OBIEE 10.1.3.4.1, see Install OBIEE 10.1.3.4.1 for Visualizations. To install OBIEE 11g, see the following section.

- OBIEE 11g

OBIEE 11g

If you want to upgrade to OBIEE 11g for data visualizations, you must install OBIEE 11g and upgrade the RPD file.

- Install the Software
- Copy and Edit Revised Execution Command Scripts
- Upgrade and Deploy the Master Repository File
- Set the Default Authenticator to Optional
- Starting the WebLogic Server
- Migrate Repository Files for Individual Business Areas

Install the Software

To upgrade, you must install OBIEE 11g in an Oracle Fusion Oracle Home following instructions the *Oracle Fusion Middleware Installation Guide for Oracle Business Intelligence 11g Release 1 (11.1.1) (E10539-01)* (Part E 10539-01).

Use the correct settings for an upgrade as outlined in Section 4.4 of the *Oracle Fusion Middleware Upgrade Guide for Oracle Business Intelligence 11g Release 1 (11.1.1)* (Part E16452-01).

> **Note:**
>
> As noted in *Oracle Fusion Middleware Installation Guide for Oracle Business Intelligence 11g Release 1 (11.1.1)*, you need to install Oracle Fusion Middleware Repository Creation Utility 11g (11.1.1.3.3) before installing OBIEE 11g.

Copy and Edit Revised Execution Command Scripts

The obieedeploy.cmd and obieeinstall.cmd command script files changed for the OBIEE 11g integration.

1. Copy the Oracle LSH versions of obieedeploy.cmd and obieeinstall.cmd from $cdr/admin/templates to the Oracle LSH Distributed Processing Server location.
2. Edit obieedeploy.cmd, which has a RPD_DIR environment variable that indicates the path where the LSH master RPD will reside. Unlike OBIEE 10g, in the OBIEE 11g integration, this can be any folder path on the BI Server machine's file system.

   ```
   set RPD_DIR=absolute_path
   ```

   For example:

   ```
   set RPD_DIR=C:\RPD
   ```

3. Edit obieeinstall.cmd, which has new environment variables. Provide local values as follows:

   ```
   set PATH=E:\Oracle\fmw\Oracle_BI1\bifoundation\server\bin;%PATH%
   set ORACLE_BI_APPLICATION=coreapplication
   set ORACLE_BI_INSTANCE=E:\Oracle\fmw\instances\instance1
   set COMPONENT_NAME=coreapplication_obis1
   set COMPONENT_TYPE=OracleServerComponent
   set ORACLE_INSTANCE=E:\Oracle\fmw\instances\instance1
   ```

Upgrade and Deploy the Master Repository File

If you have a master RPD file containing the source code for multiple Business Areas, follow instructions in this section to upgrade your master repository (RPD) file from 10g to 11g and then manually deploy it.

Copy the Master RPD File to a New Location

The 10g master RPD file is located under Server\Repository in the Oracle Business Intelligence installation directory. Copy it from there to the location you specified in the obieedeploy.cmd file; see Copy and Edit Revised Execution Command Scripts.

Migrate the Master RPD File to 11g

You must migrate your master OBIEE 10g RPD to OBIEE 11g by running the Upgrade Assistant (ua.bat) available under E:\oracle\fmw\Oracle_BI1\bin.

If you are using Oracle Clinical Development Analytics, you must upgrade the Web Catalog as well as the RPD.

Follow instructions in Section 4.4 of the *Oracle Fusion Middleware Upgrade Guide for Oracle Business Intelligence 11g Release 1 (11.1.1)* (Part E16452-01).

Edit Before Query Block in Connection Scripts

On the Oracle BI Server, open the Oracle BI Administration Tool and:

1. In the Physical tab, navigate to the migrated RPD, expand its node, and click **Connection Pool**. The Connection Pool window opens.
2. Click the Connection Scripts tab.
3. Expand the **Execute before query** node.
4. Select the **call** script. The Physical SQL window opens.
5. Change the first word, "begin," with "call" and remove the semicolon (;) from the end of the script. The default script is:

   ```
   begin cdr_obiee_security.syncLSHSecurity(271201,1,upper(':USER')) end;
   ```

   Edit it to:

   ```
   call cdr_obiee_security.syncLSHSecurity(271201,1,upper(':USER'))
   ```

6. Click **OK** and exit.

Manually Add the InitGroup Initialization Block

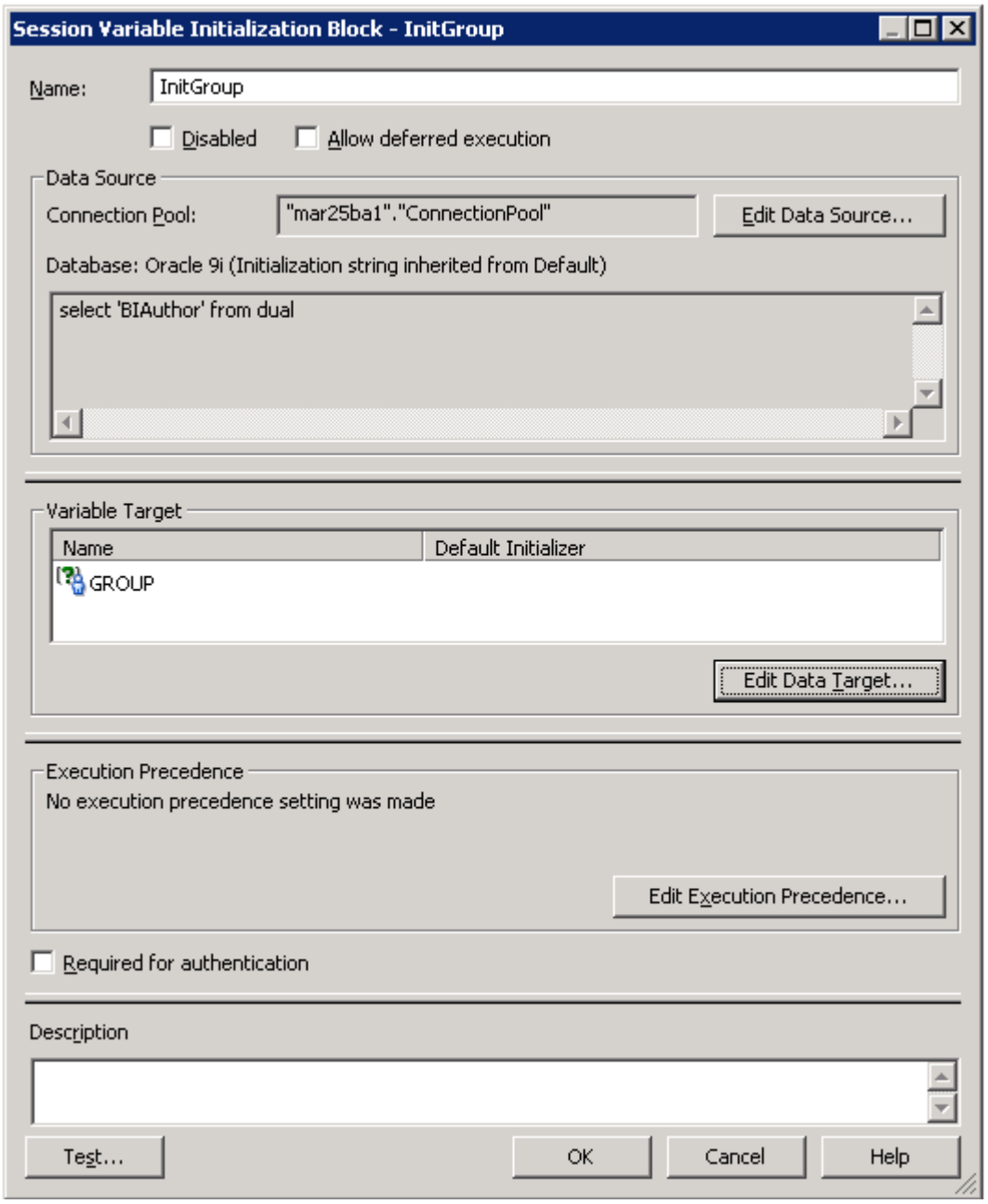
The InitGroup initialization block is required for OBIEE 11g RPDs. To add it:

1. Open the upgraded 11g RPD in Administrator's Tool.
2. Navigate to the Session Initialization Blocks from the top Menu >Manage > Variables > Session > Initialization Blocks. Add a new initialization block named `InitGroup` as shown in the following screenshot.
3. Click Edit Data Source and select the available ConnectionPool.
4. Enter the following query:

   ```
   select 'BIAuthor' from dual
   ```

5. Click Edit Data Target and create a new Target Variable called `GROUP`.

Figure 7-1 Adding the InitGroup Initialization Block



Manually Deploy the Master RPD File

Manually deploy the new 11g version of the master RPD file on your OBIEE 11g BI Server using the Oracle Enterprise Manager. This step is now required every time a Definer installs a Business Area.

> **Note:**
>
> Oracle Enterprise Manager automatically edits the NQSConfig.ini file, which was a manual step when installing OBIEE for use with Oracle LSH in previous releases. **In Oracle LSH 2.4, do not edit the NQSConfig.ini file**.

1. Open the Oracle Enterprise Manager using the URL specific to your environment.

   > **Note:**
   >
   > If the URL does not work, you may need to restart the WebLogic Server; see Starting the WebLogic Server.

2. In the left-hand panel, navigate to Farm_bifoundation_domain, then Business Intelligence, then coreapplication in the left pane. Then click the **Deployment** tab, and then the **Repository** subtab.
3. Click **Lock and Edit Configuration** near the top. A confirmation message appears.
4. Under Upload BI Server Repository, click the **Browse** button for the Repository File field and select the master RPD file.

   > **Note:**
   >
   > The location of the master RPD file is determined by the obieedeploy.cmd file; see Copy and Edit Revised Execution Command Scripts.

5. Enter the repository password and confirm password. The password **must** be same as the administrator password stored in LSH under Remote Location Connections. This is very important for the integration. Click **Apply**.
6. Click **Activate Changes** and confirm that Activate Changes is successful
7. Click **Restart** and confirm.
8. Ensure that Restart All completed successfully. This indicates the successful deployment of the RPD on the BI Server and a successful restart of the BI Server services. The Business Area RPD is now ready to be used through the OBIEE Presentation Service (BI Answers).

Set the Default Authenticator to Optional

OBIEE 11g has a DefaultAuthenticator provider to handle authentication. Since LSH RPDs have their own SQL authentication block configured, the DefaultAuthenticator should be made OPTIONAL in OBIEE 11g.

After the master RPD has been successfully deployed and the BI Server services successfully restarted, do the following:

1. Open the Weblogic Server Administration Console using the URL specific to your environment.

> **Note:**
>
> If the URL does not work, you may need to restart the WebLogic Server; see Starting the WebLogic Server.

2. On the Home page, under Your Application's Security Settings, click **Security Realms**.
3. Under Change Center in the upper left, click **Lock & Edit**.
4. Under How Do I.... click **Configure a New Security Realm** and follow instructions on screen.
5. Click the name of the new security realm. The Settings for the security realm are displayed.
6. In the top row of tabs, click the **Providers** tab.
7. If it is not already selected, click the **Authentication** subtab.
8. Click **DefaultAuthenticator**.
9. Set **Control Flag** to OPTIONAL and Save.

Starting the WebLogic Server

If the URL for either Oracle Enterprise Manager or the WebLogic Administration Console is not working, the WebLogic Server may be down. To start it:

1. On the BI Server computer, right-click Command Prompt under the Start menu and select Run as Administrator.
2. Change directory to the Domain folder under the OBIEE installation folder; for example, E:\oracle\fmw\user_projects\domains\bifoundation_domain.
3. Run the command startWeblogic.cmd under this folder. The system prompts you for the WebLogic Server username and password.
4. Check that the command window displays the message "Server started in RUNNING mode."

Migrate Repository Files for Individual Business Areas

If a Definer has modified the generated RPD file for a Business Area in the OBIEE Administrator's Tool on the Definer's PC and uploaded the RPD as the Business Area's Source Code (indicated in Oracle LSH by a setting of USER for the SAS File Reference Name property of the Source Code), the Definer should upgrade that RPD file to 11g so that, if the Business Area is reinstalled in the future, the merge with the migrated master RPD file will work.

1. Navigate to the Business Area properties page and launch the IDE. The OBIEE Administrator's Tool opens.
2. In the Administrator's Tool, navigate to the CDR Work folder (whose location is configured in the CDR Client) then navigate to the RPD that was extracted during the Admin Tool launch.

3. Run the Upgrade Assistant on the RPD, following instructions in Section 4.4 of the *Oracle Fusion Middleware Upgrade Guide for Oracle Business Intelligence 11g Release 1 (11.1.1)* (Part E16452-01).
4. In the Business Area, browse for the newly generated 11g version of the RPD and upload it as the Source Code.

The next time the Business Area is installed, LSH automatically merges the revised version of this RPD file with the 11g master RPD. The Definer does not need to manually add the initialization block. However, the Definer does need to deploy the re-merged master RPD manual and restart the services as in Section 7.7.1.3.5, "Manually Deploy the Master RPD File", every time he or she reinstalls the Business Area.

> **Note:**
>
> Additional configuration is required; see the *Oracle Life Sciences Data Hub System Administrator's Guide* for instructions.

Upgrade Integration with Oracle Business Intelligence Publisher

orareprunner.sh, the sample execution command script for Oracle Reports Programs, was modified for Release 2.3. If you use Oracle BIP to run reports and are upgrading from a version earlier than 2.3, you must copy the new version from $CDR_TOP/admin/template to the DP Server Home directory or a subdirectory of it—wherever you have the existing version.

Upgrade to Oracle Life Sciences Data Hub 2.5

These steps are required for all upgrade paths.

- Database Tier Preinstallation Steps
- Apply the Oracle Warehouse Builder (OWB) Patch
- Install Oracle Life Sciences Data Hub 2.5
- Change Your FND_Validation_Level Profile

Database Tier Preinstallation Steps

This section contains the following topics:

- Stop the Message and Job Queues
- Abort the Long-Running Jobs
- Cancel the Sessions Holding Locks on Application Objects
- Disconnect Blocking Sessions

Stop the Message and Job Queues

This procedure describes how to stop the message and job queues. If you need more details, see *How to Restart LSW Successfully (DMW/LSH)*, article 2250628.1, on My Oracle Support.

1. Log in to SQL*Plus as **apps**.
2. Stop the Oracle LSH message queue:

```
begin
cdr_exe_msg_queues_admin.stop_processing_queues;
end;
/
```

3. Make sure the queue is stopped. View the log:

```
select MESSAGE from cdr_msg_queues_log order by log_message_id;
```

   If the most recent statement is the following, the queue is stopped.

```
End Procedure cdr_exe_msg_submission.process_queues()
```

   If not, stop the queue:

```
begin cdr_exe_msg_queues_admin.stop_processing_queues; end; /
```

   Wait until you see the "End Procedure" statement in the log.
4. Stop and disable the Oracle LSH job queue:

```
begin
cdr_exe_job_queues.stop_processing_queues;
end;
/
```

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
   ```

Apply the Oracle Warehouse Builder (OWB) Patch

The LSH and DMW 2.4.8.3 release is certified for use with OWB patch 18146494. The OWB patch 18146494 addresses the issue with OWB trace file generation when installing Transformation and Datamodel.

> **Note:**
>
> Apply OWB patch 18146494 before installing the 2.5 release for Oracle LSH and Oracle DMW. You can download the patch and access the Readme on My Oracle Support (https://support.oracle.com).

Install Oracle Life Sciences Data Hub 2.5

Follow the instructions in the Install Oracle LSH 2.5 and Install Online Help topics.

Change Your FND_Validation_Level Profile

Change the setting of the FND_Validation_Level profile. In previous releases a setting of NONE was required, but now a setting of ERROR is required.

1. Open your Oracle LSH URL.
2. Log on with the system administrator account. An E-Business Suite screen opens.
3. In the Main Menu pane, expand the System Administrator (not System Administration) node, then Profile, and then click System.

   A new browser screen opens with several windows open and the Find System Profile Values window on top.
4. In the **Profile** field, enter `FND_Validation_Level`.
5. Click **Find**.
6. In the **Site** column, use the drop-down list to set the value to **Error.**
7. In the File menu, select **Save and Proceed**. The system displays a message that the transaction is complete.
8. Click **OK**. The transaction message pop-up disappears.
9. Click the **X** in the upper right corner of the System Profile Values window to close the window.

Complete the Oracle Warehouse Builder Update

Do the following:

- Restart OWB
- Reset the Store Passwords

Restart OWB

Follow instructions in Restart the OWB Service.

Reset the Store Passwords

1. Log in to the database as CDR_RTREPOS.
2. Run the script $CDR_TOP/patch/115/sql/cdrresetowbstorepwd.sql.

   The script prompts you for the following:

   - OWBSYS password
   - APPS password
   - Database name

Upgrade the Distributed Processing Server User Account

You must run a script to upgrade the Distributed Processing (DP) Server database account `cdr_dpserver` with additional privileges required for Oracle DMW File Watcher. This is required even if you are not using Oracle DMW. You need to use this account to start the DP Server.

To run the script:

1. Go to $CDR_TOP/patch/115/sql
2. Log in to SQL*Plus as apps
3. Run the script:

   ```
   cdrcreatedpserveruser.sql
   ```

   At the prompt, enter the password you want to use for the cdr_dpserver account.
4. Exit from SQL*Plus.

Upgrade the Distributed Processing Server

Upgrade the Oracle LSH DP Server on every computer where it is installed:

1. Go to the lib directory in the DP Server Home directory on each computer where the DP Server resides.
2. Copy **DPServer.zip** from $CDR_TOP/jar to the lib directory.
3. Using GNU zip or another utility, unzip **DPServer.zip** into the lib directory. The DPServer.zip file contains the following files:

   - **DPServer.jar**
   - **fileWatcherServer.jar**
   - **xmlparserv2.zip**
   - **xmlparserv2-904.zip**
4. If any of the following files are in your lib directory, remove them:

- **nls_charset12.zip**
- **Jdbc12.zip**

5. Using SFTP, copy the following files from the $ORACLE_HOME/rdbms/jlib directory on the database server computer to the lib directory.
   - **jmscommon.jar**
   - **aqapi.jar**
6. Using SFTP, copy the following files from the $ORACLE_HOME/jlib directory on the database server computer to the lib directory:
   - **jta.jar**
   - **orai18n-mapping.jar**
7. Using SFTP, copy **ojdbc5.jar** from $ORACLE_HOME/jdbc/lib directory on the database server computer to the lib directory.
8. Using SFTP, copy **ucp.jar** from $ORACLE_HOME/ucp/lib directory on the database server computer to the lib directory.
9. On each computer where you install the DP Server, set the NLS_LANG environment variable to UTF8.
10. Save a backup of your current copy of cdr_apps_dpserver.sh as a reference, and copy the new version of the file from $CDR_TOP/admin/template to the DP Server home directory. The new version of the file includes additional parameters for the Oracle DMW File Watcher Service and changes to the CLASSPATH environment variable.
11. Edit the new version of cdr_apps_dpserver.sh to set the location variables required, using your backup copy as a reference:
    - $DPSERVER_HOME
    - SVC
    - JDK_LOC
    - JVM

    See Edit the DP Server Start Script for more information.
12. When you start up the DP Server process by running the new cdr_apps_dpserver.sh script, you must specify additional parameters. See Start the DP Server for an explanation of these parameters.

Perform the Remaining Post-Installation Tasks

These steps are required for all upgrade paths.

Follow the instructions in the following sections:

- Run the Post-Installation Programs
- Grant Security Rights to Seeded Adapters
- If you are installing Oracle LSH for use with Oracle DMW, follow instructions in Run the Audit Trail Update Tables Concurrent Program.

Run the Script for RFID 27629203

If you use Oracle DMW 2.5 with Oracle TMS and your study was created in a release prior to Oracle DMW 2.4.8.1, you must run a script to update the p-package of TMS-enabled tables to resolve bug number 27629203. Before you run the script:

- Plan a maintenance window and run the script for a select group of TMS-enabled studies, rather than all studies
- Check in work areas and data models for studies impacted by this script
- Plan to run the script on a computer with an Oracle client that can connect to the DMW database server using SQLPlus

> **Note:**
>
> If you previously installed Oracle DMW 2.4.8.1 patch or later before upgrading to Oracle DMW 2.5, you do not need to run this script. Skip this procedure.

1. Log in to SQLPlus (not SQLDeveloper) as the APPS database user.
2. To invoke the script, enter:

   ```
   <directory where the script is located>\sql>sqlplus <APPS database user name>/<APPS database user pwd>@<database name>
   ```

3. Enter the following:

   ```
   DEFINE Username = <username1>
   ```

   For <username1>, specify a valid DMW user who has permissions to install work areas and data models in all lifecycles.
4. To execute the script, enter:

   ```
   SQL> @dmeupdtmsppkg.sql
   ```

5. Specify the studies that you want to execute the script against, using one of the following options.
   - To run the script for a select group of TMS-enabled studies, enter the study names in a comma-separated list:

     ```
     DEFINE Study_Names = <Study_Name1>, <Study_Name2>
     ```

   - To run the script for all studies:

     ```
     DEFINE Study_Names = ALL
     ```

- To run the script for all but a select group of studies, enter the study names to exclude in a comma-separated list:

```
DEFINE Exclude_Study = <Study_Name1>, <Study_Name2>
```

> **Note:**
>
> Oracle recommends that you run the script for specific studies.

6. Specify the lifecycles to run the script against, using one of the following options.
   - To run the script for a single lifecycle:

```
DEFINE Lifecycle = $LIFECYCLE$<lifecycle name>
```

   - To run the script for all lifecycles:

```
    DEFINE Lifecycle
= $LIFECYCLE$DEV, $LIFECYCLE$QC, $LIFECYCLE$PROD
```

7. Optionally, for more information about the script's success or failure, see the log file DMEUpdTMSPpkg_datetime.csv, and the Install log. If the script completed successfully, it commits the transaction and closes.

> **Note:**
>
> - If you see the error message string beginning <stringtext> is too long. maximum size is 240 characters, remove some of the parameters and execute the command again. For example, if you are defining a list of study names to run the script against, run the script against a small group, and then re-run it for the remaining studies.
> - If the script's status in the DMEUpdTMSPpkg_datetime.csv log file is Failure, the work area installation failed, and the data model is not installed.
> - If the script's status in the DMEUpdTMSPpkg_datetime.csv log file is Partial, the work area installation was successful, but the data model installation failed. This could occur if:
>   - The data model is checked out during the time when you ran the script. Check in the data model and try again.
>   - Runtime or validation errors occurred. For more information on those errors, review the Install log.

Set the Profile Value for DMW_SEND_BATCHSIZE

1. In LSH, log in to Oracle Applications Profile Forms. See the *Oracle Life Sciences Data Hub Administrator's Guide* for details.
2. In the **Profile** field, search for DMW_SEND_BATCHSIZE, and click **Find**.
3. In the **Site** column, enter a value of **10**.
4. In the **File** menu, select **Save and Proceed**.
5. Click **OK**, and close the window.

Set the Required Profile Values for Sending Discrepancies to External Systems

The profiles arrive set to the default values shown in this table.

Table 7-1 Profile Default Values

Profile Option Name	Minimum Value	Maximum Value	Default Value	Allowed Set of Values
DMW_SEND_BATCHSIZE	1	200	10	All values from 1 to 200
DMW_RESEND_ONE_WAIT_IN_MINS	1	4320	30	1 & (5 to 60 , in multiples of 5), (90 to 4320, in multiples of 30)
DMW_RESEND_TWO_WAIT_IN_MINS	1	4320	240	1 & (5 to 60 , in multiples of 5), (90 to 4320, in multiples of 30)
DMW_RESEND_STUCK_WAIT_IN_MINS	120	4320	120	Starting with 120 with interval of 30 minutes
DMW_SEND_MAX_THREADS	1	30	20	All values from 1 to 30
DMW_WS_REQUEST_TIMEOUT (Applicable only for sending discrepancies to InForm external system)	2100	3600	2100 (in secs)	Starting with 2100 with interval of 10 seconds
DMW_WS_CONNECT_TIMEOUT (Applicable only for sending discrepancies to InForm external system)	300	600	300 (in secs)	300 to 450 (in multiple of 5 secs), followed by all values 451-600

See the following topic if you want to change any of the defaults:

- Change the Value of the Profile Options

Change the Value of the Profile Options

See these steps to change the default values of the profile options. For more details, see Set the Required Profile Values for Sending Discrepancies to External Systems.

1. In LSH, log in to Oracle Applications Profile Forms. See the *Oracle Life Sciences Data Hub Administrator's Guide* for details.
2. In the **Profile** field, search for the profile value your want to change and click **Find**. You can choose any of the following:
   - DMW_SEND_BATCHSIZE
   - DMW_RESEND_ONE_WAIT_IN_MINS
   - DMW_RESEND_TWO_WAIT_IN_MINS
   - DMW_RESEND_STUCK_WAIT_IN_MINS
   - DMW_SEND_MAX_THREADS
   - DMW_WS_REQUEST_TIMEOUT
   - DMW_WS_CONNECT_TIMEOUT
3. In the **Site** column, select a value within the appropriate range.
4. In the **File** menu, select **Save and Proceed**.
5. Click **OK** and close the window.

Start Queues

Start the message and job queues as described in the following topics:

- Start the Message Queue
- Restart and Enable the Job Queue

Start the Message Queue

1. Log in to SQL*Plus as **apps**.
2. Make sure the queue is stopped. View the log:

   ```
   select MESSAGE from cdr_msg_queues_log order by log_message_id;
   ```

   If the most recent statement is the following, the queue is stopped.

   ```
   End Procedure cdr_exe_msg_submission.process_queues()
   ```

   If not, stop the queue:

   ```
   begin cdr_exe_msg_queues_admin.stop_processing_queues; end; /
   ```

   Wait until you see the "End Procedure" statement in the log.

3. After the queue is stopped, start and enable the queue:

```
begin
cdr_exe_msg_queues_admin.start_processing_queues;
cdr_exe_msg_queues_admin.enable_job_processing_queue;
end;
/
```

4. Check that the queue is started and enabled:

```
select MESSAGE from cdr_msg_queues_log order by log_message_id;
```

The output should contain the following statements (there may be Submission statements after these):

```
Begin Procedure cdr_exe_msg_submission.process_queues()
dequeued from control Q: _MSGCONTROL_ENABLE
```

Restart and Enable the Job Queue

Still logged in as apps:

1. Stop and disable the Job Queue:

```
begin
cdr_exe_job_queues.stop_jobq_processing_queues;
end;
/
```

2. Start and enable the job queue:

```
begin
cdr_exe_job_queues.start_jobq_process_enabled;
end;
/
```

Start Server Processes

This step is required for all upgrade paths.

Start the following servers:

- Application Server
- Oracle LSH Distributed Processing (DP) Server (For more details, see Start the DP Server.)

Run the Health Check Scripts

Run the Health Check scripts for Oracle LSH and Oracle DMW as described in My Oracle Support Article 1983060.1 (https://support.oracle.com).

8
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):

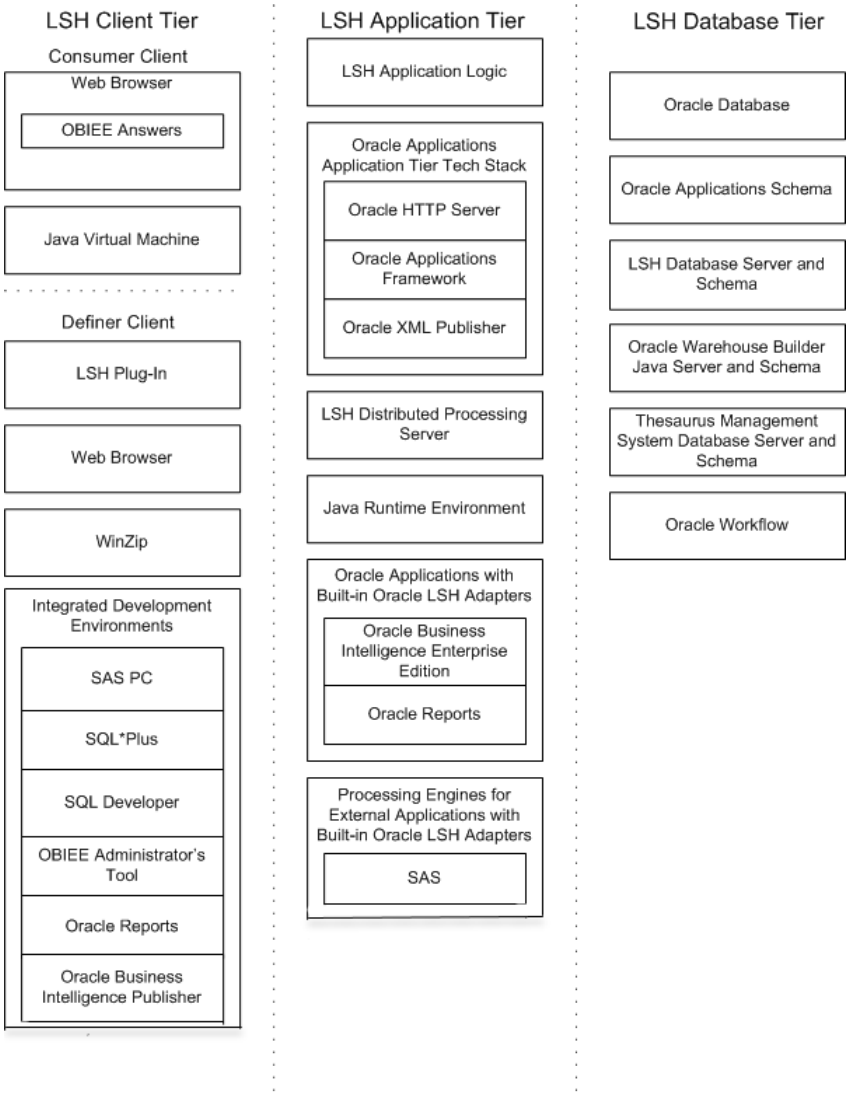
> **Note:**
>
> Oracle Health Sciences Data Management Warehouse customers can skip this section and proceed to the *Oracle Health Sciences Data Management Warehouse Installation Guide*.

- 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.

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

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 Warehouse Builder** (OWB). Oracle LSH uses the OWB Java Server and schema for running and tracking internal and external jobs.
- **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 Warehouse Builder (OWB)

Oracle LSH uses the OWB Java Server and schema for running and tracking internal and external jobs. Oracle LSH uses the following custom OWB operators:

- The OWB PL/SQL operator communicates with SQL*Plus, which runs many of the Oracle LSH internal processes as well as user-developed PL/SQL Programs.
- The OWB Workflow operator communicates with Oracle Workflow.
- The OWB Distributed Processing (DP) Server operator communicates with external processing engines to run jobs in external technologies.

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)

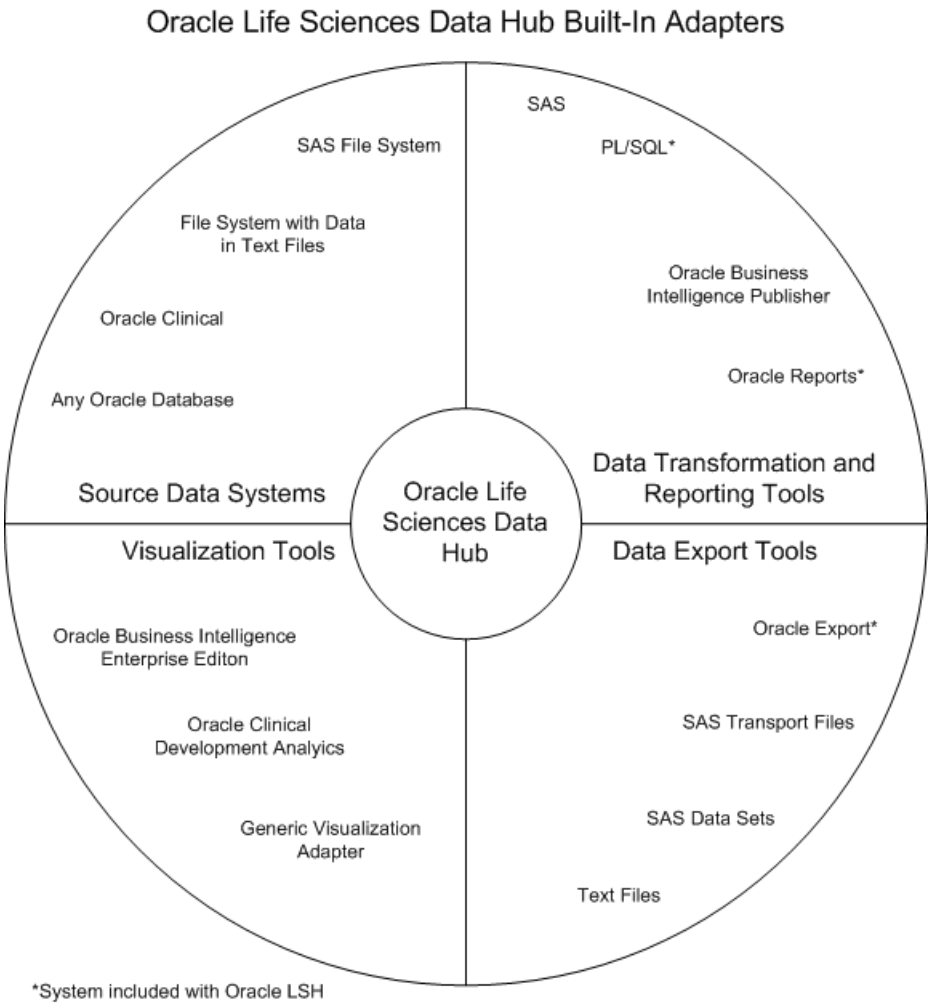
The Oracle LSH classification system is based on TMS.

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.

Figure A-1 shows the adapters that are included with Oracle LSH. Adapters to other systems may be available from third parties.

Figure A-1 Oracle LSH Adapters by Functionality



This section contains the following topics:

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