Oracle® Life Sciences Data Hub

Installation Guide

Release 2.2.2

E51945-01

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ORACLE®

Oracle Life Sciences Data Hub Installation Guide Release 2.2.2

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Preface

This preface contains the following topics:

This book describes how to install Oracle Life Sciences Data Hub (Oracle LSH) Release 2.2.2.

Audience

This manual is written for people with the skill set and education described below. If your staff lacks these skills, Oracle recommends that you engage Oracle Consulting.

Required Course

Oracle recommends that you take the 5-day Oracle University course "11i Install, Patch, and Maintain Oracle Applications." This course provides students with a basic understanding of the architecture, database and file system used in Oracle Applications Release 12. Students learn about the multi-tier architecture used to provide user access over the Internet or an intranet and the relationship between Oracle Applications and the Oracle database.

Students also learn how to:

- Use Rapid Install to perform both single- and multi-node installations of Oracle Applications
- Use the AD utilities to maintain Oracle Applications
- Patch Oracle Applications using Autopatch
- Use Rapid Clone to clone an Oracle Applications system

At the time of publication of this document, further information about this course was available at:

and from Oracle University by telephone at (USA) 800 529 0165.

Recommended Course for IT System Administrators

The person responsible for installing Oracle LSH needs support from IT/System Administrators. Oracle recommends that these administrators take the 5-day Oracle University course "11i System Administrator Fundamentals." In this course students learn concepts and functions that are critical to the System Administrator role, including information useful for implementing and managing the 11i E-Business Suite. Tasks covered include setting up security and user management, concurrent processing, profiles, and workflows; students also learn how to personalize Oracle E-Business Suite Forms and HTML pages. In addition, students learn how to monitor and audit an E-Business Suite system.

The System Administrator Fundamentals course provides the foundation needed to effectively control security and ensure smooth operations for an E-Business Suite installation. Demonstrations and hands-on practice reinforce the fundamental concepts.

At the time of publication of this document, further information about this course was available at:

and from Oracle University by telephone at (USA) 800 529 0165.

Required Skills

Installing Oracle LSH requires a level of knowledge equivalent to having mastered the material in Oracle's DBA Architecture and Administration courses.

You must be able to do the following in SQL*Plus:

- Read and edit scripts
- Run scripts and review log files for Oracle errors

You must be able to do the following in UNIX:

- Install Oracle software and patches
- Identify space on a file system for Oracle database tablespaces
- Set and use environment variables
- Edit files using vi or another editor
- Run scripts and review log files

You also need expertise in:

- Network administration
- Cluster file systems—when not using Oracle Automated Storage Manager (ASM) or Oracle Cluster File System (OCFS)

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.

Access to Oracle Support

Oracle customers 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.

Finding Information and Patches on My Oracle Support

Your source for the latest information about Oracle Life Sciences Data Hub is Oracle Support's self-service Web site My Oracle Support (formerly MetaLink).

Before you install and use an Oracle software release, always visit the My Oracle Support Web site for the latest information, including alerts, release notes, white papers, and patches.

Creating a My Oracle Support Account

You must register at My Oracle Support to obtain a user name and password account before you can enter the Web site.

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To register for My Oracle Support:

1. Open a Web browser to https://support.oracle.com.

2. Click the **Register** link to create a My Oracle Support account. The registration page opens.

3. Follow the instructions on the registration page.

Signing In to My Oracle Support

To sign in to My Oracle Support:

1. Open a Web browser to https://support.oracle.com.

2. Click **Sign In.**

3. Enter your user name and password.

4. Click **Go** to open the My Oracle Support home page.

Searching for Knowledge Articles by ID

The fastest way to search for information, including alerts, White Papers, installation verification (smoke) tests, and bulletins is by the article ID number, if you know it.

To search by article ID:

1. Sign in to My Oracle Support at https://support.oracle.com.

2. Locate the Search box in the upper right corner of the My Oracle Support page.

3. Click the sources icon to the left of the search box, and then select **Article ID** from the list.

4. Enter the article ID number in the text box.

5. Click the magnifying glass icon to the right of the search box (or press the Enter key) to execute your search.

    The Knowledge page displays the results of your search. If the article is found, click the link to view the abstract, text, attachments, and related products.

In addition to searching by article ID, you can use the following My Oracle Support tools to browse and search the knowledge base:

- Product Focus — On the Knowledge page, you can drill into a product area through the Browse Knowledge menu on the left side of the page. In the **Browse any Product, By Name** field, type in part of the product name, and then select the product from the list. Alternatively, you can click the arrow icon to view the complete list of Oracle products and then select your product. This option lets you focus your browsing and searching on a specific product or set of products.

- Refine Search — Once you have results from a search, use the Refine Search options on the right side of the Knowledge page to narrow your search and make the results more relevant.

- Advanced Search — You can specify one or more search criteria, such as source, exact phrase, and related product, to find knowledge articles and documentation.

Searching by Product and Topic

You can use the following My Oracle Support tools to browse and search the knowledge base:

- Product Focus — On the Knowledge page under Select Product, type part of the product name and the system immediately filters the product list by the letters you have typed. (You do not need to type "Oracle.") Select the product you want from the filtered list and then use other search or browse tools to find the information you need.

- Advanced Search — You can specify one or more search criteria, such as source, exact phrase, and related product, to find information. This option is available from the **Advanced** link on almost all pages.

Finding Patches on My Oracle Support

Be sure to check My Oracle Support for the latest patches, if any, for your product. You can search for patches by patch ID or number, or by product or family.

To locate and download a patch:

1. Sign in to My Oracle Support at `https://support.oracle.com`.

2. Click the **Patches & Updates** tab. The Patches & Updates page opens and displays the Patch Search region. You have the following options:

   - In the **Patch ID or Number** field, enter the number of the patch you want. (This number is the same as the primary bug number fixed by the patch.) This option is useful if you already know the patch number.

   - To find a patch by product name, release, and platform, click the **Product or Family** link to enter one or more search criteria.

3. Click **Search** to execute your query. The Patch Search Results page opens.

4. Click the patch ID number. The system displays details about the patch. In addition, you can view the Read Me file before downloading the patch.

5. Click **Download.** Follow the instructions on the screen to download, save, and install the patch files.

Finding Oracle Documentation

The Oracle Web Site contains links to all Oracle user and reference documentation. You can view or download a single document or an entire product library.

Finding Oracle Health Sciences Documentation

For the latest user documentation on Oracle Life Sciences Data Hub, go to the Oracle Health Sciences—Clinical documentation page at:

http://www.oracle.com/technetwork/documentation/hsgbu-clinical-407519.html

> **Note:** Always check the Oracle Health Sciences Documentation page to ensure you have the latest updates to the documentation.

Finding Other Oracle Documentation

To get user documentation for other Oracle products:

1. Go to the following Web page:

   http://www.oracle.com/technology/documentation/index.html

   Alternatively, you can go to http://www.oracle.com, point to the Support tab, and then click **Documentation.**

2. Scroll to the product you need and click the link.

3. Click the link for the documentation you need.

How to Use AutoPatch

For complete information on using AutoPatch and an explanation of the Oracle Applications patching system and terminology, see:

- *Oracle Applications Maintenance Utilities Release 12 (12.1.1)*
- *Oracle Applications Maintenance Processes Release 12 (12.1.1)*

AutoPatch has a command prompt interface.

The basic steps required to apply a patch using AutoPatch are as follows. See the books mentioned above for detailed instructions.

1. **Set the environment**. You must set the environment to apply the configuration parameters that define your system. See *Oracle Applications Maintenance Utilities Release 12 (12.1.1)* for further information.

2. **Unzip patches**. Create a patch top directory, if it doesn't already exist. Download the patch and unzip it into this directory.

3. **Review information in the readme file**. The readme file contains instructions for applying the patch, including any prerequisite patches and/or manual steps.

4. **Shut down services**. If you are applying the patch to a node that contains the Concurrent Processing Server, Web Server, or Forms Server, you must shut down the Concurrent Managers, Web Server Listeners, or Forms Server Listeners respectively.

5. **Enable Maintenance Mode**. Use the Change Maintenance Mode option in AD Administration to enable maintenance mode. See "Change Maintenance Mode" in *Oracle Applications Maintenance Utilities*.

> **Note:** Maintenance mode enhances patching performance but restricts users' access to Oracle Applications.

6. **Start AutoPatch**. AutoPatch is located in the AD_TOP/bin directory. However, you start it from the directory that contains the unzipped patch files. Use the following command:

   ```
   $ adpatch
   ```

   You can customize the way AutoPatch runs by adding arguments to the command line. See "Command Line Arguments" in *Oracle Applications Maintenance Utilities*.

7. **Respond to prompts**. Respond to the AutoPatch prompts for information about your system.

8. **Apply driver**. Patches contain a single unified driver (u).

9. **Exit AutoPatch**. When the patching process is complete, AutoPatch displays a message informing you that the process has been completed successfully. If the process did not run to completion, check the log file(s) and determine what caused the problem.

   The primary log file is located in `APPL_TOP/admin/`*Oracle SID*`/log `*default name* `adpatch.log`. In addition, some patch tasks may create separate log files in the same directory. If the patching process used multiple workers, each worker creates its own log file.

10. **Disable Maintenance Mode**. Use the Change Maintenance Mode menu of AD Administration to disable maintenance mode. See "Change Maintenance Mode" in *Oracle Applications Maintenance Utilities*.

11. **Restart server processes**. After verifying that the patch was applied successfully, start all server processes and allow users to access the system.

12. **Pre-allocate space for packages, functions, and sequences (optional)**. If AutoPatch has modified Oracle Applications database objects, you may want to run ADXGNPIN.sql and ADXGNPNS.sql to allocate space ("pin") for new packages and sequences in the Oracle System Global Area. These scripts are located in AD_TOP/sql. See "Pre-allocating Space for Packages and Functions" in *Oracle Applications Maintenance Processes*.

13. **Delete or archive AutoPatch backup files**. Once you have tested the patched system, you can delete the backup copies of files from the patch top directories to recover disk space, as necessary. Oracle recommends archiving these files if you have space available.

Oracle CPU Security Updates

Oracle Corporation publishes a CPU Security Update patch quarterly. Install these patches on every computer with an Oracle Home. Check My Oracle Support's Oracle Clinical Knowledge page for information on the latest patch tested with Oracle Health Sciences applications.

Related Documents

This section lists the documents in the Oracle Life Sciences Data Hub documentation set, followed by their part number. The most recent version of each guide is posted on Oracle Technology Network; see "Finding Oracle Documentation" on page xii.

- *Oracle Life Sciences Data Hub Installation Guide*

- *Oracle Life Sciences Data Hub Implementation Guide*

- *Oracle Life Sciences Data Hub System Administrator's Guide*

- *Oracle Life Sciences Data Hub Application Developer's Guide*

- *Oracle Life Sciences Data Hub User's Guide*

- *Oracle Life Sciences Data Hub Adapter Toolkit Guide*

- *Oracle Life Sciences Application Programming Interface Guide*

- *Oracle Health Sciences Warehouse Security Guide*

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
Initial Capitalization for defined objects	User-defined objects in Oracle LSH such as Tables, Source Code, and Variables, have initial capitalization to distinguish them from generic tables, source code, and variables, for example.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
`monospace`	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

1

Before You Begin

This section includes the following topics:

- Section 1.1, "Check for the Most Recent Information"
- Section 1.2, "Get Your Company ID from Oracle"
- Section 1.3, "Assemble the Software"
- Section 1.4, "Assemble the Documentation"

> **Note:** If you are installing Oracle LSH for the first time, go through Chapters 1 to 5, in order.
>
> If you are upgrading from a previous release, read:
>
> - Section 1.1, "Check for the Most Recent Information"
> - Section 1.3, "Assemble the Software"
> - Chapter 7, "Upgrading to Oracle Life Sciences Data Hub Release 2.2.2"

See also:

- **Required Expertise**. For information on the expertise required to install Oracle Life Sciences Data Hub, see "Audience" on page ix.

- **New Features and Fixes**. For information on what is included in Oracle LSH Release 2.2.2 see the Release Notes, posted at:

- **Known Installation and Configuration Issues**. For up-to-date information, see My Oracle Support article 1138053.1, *Oracle Life Sciences Data Hub and Oracle Clinical Development Analytics Known Install and Configuration Issues*; see "Searching for Knowledge Articles by ID" on page xi.

- **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.

1.1 Check for the Most Recent Information

Oracle LSH documentation is updated periodically. Therefore, it is critical that you check that you have the most current information before you begin the installation process.

To be sure you have the most recent version of the release notes, this installation guide, and all other Oracle LSH user documentation, download it from oracle.com; see "Finding Oracle Documentation" on page xii.

1.2 Get Your Company ID from Oracle

When you install the Oracle Life Sciences Data Hub (Oracle LSH Release 2.2.2), you will need to enter a parameter value for 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 meta-data are merged with the other company's, the company ID distinguishes the objects created in each original company and prevents 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. 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.

1.3 Assemble the Software

If you are using an Oracle LSH version prior to Release 2.2, you need to update your installation to Release 2.2, then upgrade it to Release 2.2.1, before installing LSH 2.2.2.

Ensure you get the technology stack products from the sources recommended in this guide and use the versions indicated. Although newer versions of the technology stack products may have become available, they may not be compatible with Oracle LSH.

1.3.1 Get the Required Oracle Life Sciences Data Hub Releases

If you are performing a fresh installation or intend to perform an upgrade from a version earlier than 2.2, download all the software below.

If you intend to perform an upgrade from a version later than 2.2, download only the releases needed.

1. Get the Oracle Life Sciences Data Hub 2.2 Media Pack.

   Oracle LSH 2.2 and its technology stack are contained on the Oracle Life Sciences Data Hub 2.2 media pack for various platforms.

   To download or receive a physical media pack with all the required DVDs, contact Oracle Support. To expedite your request you can either call Oracle Support directly or open a Service Request (SR) on My Oracle Support at https://support.oracle.com.

2. Get Oracle LSH 2.2.0.1 from My Oracle Support. The patch number is 12972887.

   For more information, see 1376926.1, *Oracle LSH 2.2.0.1 Release Notes*.

3. Get Oracle LSH 2.2.0.2 from My Oracle Support. The patch number is 13247999.

   For more information, see 1390140.1, *Oracle LSH 2.2.0.2 Release Notes*.

4. Get Oracle LSH 2.2.0.3 from My Oracle Support. The patch number is 13867144.

For more information, see 1451898.1, *Oracle LSH 2.2.0.3 Release Notes*.

5. Get Oracle LSH 2.2.0.4 from My Oracle Support. The patch number is 14708988.

   For more information, see 1534881.1, *Oracle LSH 2.2.0.4 Release Notes*.

6. Get Oracle LSH 2.2.0.5 from My Oracle Support. The patch number is 7017290.

   For more information, see 1569100.1, *Oracle LSH 2.2.0.5 Release Notes*.

7. Get Oracle LSH 2.2.1 from My Oracle Support. The patch number is 17869441.

   For more information, see 1608877.1, *Oracle LSH 2.2.1 Release Notes*.

8. Get Oracle LSH 2.2.2 from My Oracle Support. The patch number is 19310436.

   For more information, see 1924662.1, *Oracle LSH 2.2.2 Release Notes*.

   For more information, see "Finding Information and Patches on My Oracle Support" on page xi.

1.3.2 Get the Required E-Business Suite Patches

Download the following patches from My Oracle Support:

- **8855023**

- **10163753**

- **10406817**

1.3.3 Set Up a Staging Area

Creating a staging area is recommended but not required.

To download patches from My Oracle Support, see "Finding Information and Patches on My Oracle Support" on page xi.

Table 1–1   Software to Download for Oracle LSH

Disk or Patch Name	Source	ID Number
Oracle E-Business Suite Release 12.1.3 *operating_system* x86-64 Rapid Install: Databases, Tools, APPL_TOP, and documentation	LSH 2.2 Media Pack	-
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)	LSH 2.2 Media Pack or Request from Oracle Support	V20609-01
Oracle Database 11.2.0.4; for a list of patches required, see My Oracle Support article 1058763.1.	My Oracle Support	1058763.1
Oracle Thesaurus Management System 4.6.1	Request from Oracle Support	-
Oracle LSH Splicer patch for Applications R12	My Oracle Support	6114439
Oracle Life Sciences Data Hub 2.2	Request from Oracle Support	-
Oracle Life Sciences Data Hub 2.2.0.1	My Oracle Support	12972887
Oracle Life Sciences Data Hub 2.2.0.2	My Oracle Support	13247999
Oracle Life Sciences Data Hub 2.2.0.3	My Oracle Support	13867144
Oracle Life Sciences Data Hub 2.2.0.4	My Oracle Support	14708988
Oracle Life Sciences Data Hub 2.2.0.5	My Oracle Support	17017290
Oracle Life Sciences Data Hub 2.2.1	My Oracle Support	17869441
Oracle Life Sciences Data Hub 2.4 online help	My Oracle Support	18551089

Table 1–1 (Cont.) Software to Download for Oracle LSH

Disk or Patch Name	Source	ID Number
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 Applications Framework patch	My Oracle Support	10222869
Compatibility with Internet Explorer 8	My Oracle Support	12661509
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

1.4 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 whole process, but refers you to the documentation for these 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.

1.4.1 Books

The books you need to install the technology stack are included in the Oracle Life Sciences Data Hub media pack.

You can also find PDF copies online; see "Finding Oracle Documentation" on page xii.

You need the following books:

- *Oracle® Life Sciences Data Hub Installation Guide Release 2.2.2* (this book)
- *Oracle E-Business Suite Installation Guide: Using Rapid Install Release 12* (E12842-04)
- *Oracle® Warehouse Builder Installation and Administration Guide 11g Release 2 (11.2)* (E17130-03)
- *Oracle® Warehouse Builder Release Notes 11g Release 2 (11.2)* (E10585-08)
- *Oracle® Business Intelligence Publisher Installation Guide Release 10.1.3.4* (E12690-01)

In addition, if you plan to integrate Oracle Life Sciences Data Hub with any of the systems listed in Chapter 6, "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 online for the most current versions; see "Finding Oracle Health Sciences Documentation" on page xiii. For a list of the user documentation, "Related Documents" on page xiv.

1.4.2 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 "Searching for Knowledge Articles by ID" on page xi.

They are organized by the chapter where they are first required.

1.4.2.1 System Requirements and Technology

Chapter 2, "System Requirements and Technology Stack" references the following My Oracle Support articles:

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

1.4.2.2 Installing Oracle Applications and Oracle Database

Chapter 3, "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)*

- 406982.1, *Cloning Oracle Applications Release 12 with Rapid Clone*

- 455999.1, *How to Verify if OWB is Installed Correctly on RAC and Exadata*

1.4.2.3 Installing the Oracle Life Sciences Data Hub

Chapter 5, "Installing the 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*

- 164871.1, *Configuring the Workflow Notification Mailer in Oracle Applications Manager 11i*

1.4.2.4 Upgrading to Oracle Life Sciences Data Hub Release 2.2.2

Chapter 7, "Upgrading to Oracle Life Sciences Data Hub Release 2.2.2" references the following My Oracle Support articles:

- 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.*

1.4.2.5 Installing Real Application Clusters (RAC)

Appendix B, "Installing Real Application Clusters (RAC)" references the following My Oracle Support articles:

- 823587.1, *Using Oracle 11g Release 2 Real Application Clusters with Oracle E-Business Suite Release 12*

- 1331090.1, *How To Configure Oracle Warehouse Builder on RAC database for LSH 2.1.4 and Later*

- 455999.1, *How to Verify if OWB is Installed Correctly on RAC and Exadata*

1.4.2.6 Other Oracle LSH-Related Documents

The following related documents are available on My Oracle Support. See "Searching for Knowledge Articles by ID" on page xi

- *Oracle Life Sciences Data Hub 2.2 Installation Verification Test (1063225.1)*

- *Guide to Using Oracle VM Templates in an Oracle Life Sciences Data Hub 2.2 Installation (1450700.1)*

2

System Requirements and Technology Stack

This section contains the following topics:

2.1 System Requirements

This section includes some general requirements for your Oracle Life Sciences Data Hub (Oracle LSH) installation. Additional details are available in the documentation for each product you must install.

2.1.1 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*.

- Linux x86 (32-Bit)

    – Oracle Enterprise Linux 5

    – Red Hat Enterprise AS/ES 5

- Linux x86-64 (64-Bit)

    – Oracle Enterprise Linux 5

    – Red Hat Enterprise AS/ES 5

- HP Itanium 11i v3 (64-bit)

- AIX 6.1 (64-Bit)

- Oracle Solaris 10 (64-Bit)

> **Note:** Users of 64-Bit OEL 5.6 can use Oracle VM templates to install Oracle LSH 2.2.2. Find instructions in the MOS article, *Guide to Using Oracle VM Templates in an Oracle Life Sciences Data Hub 2.2 Installation (ID 1450700.1)*.

2.1.2 Hardware

Oracle Applications 12.1.3 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 TMS. You will not need this computer after installing TMS except to install any TMS patches that may be required in the future. See Chapter 4, "Installing Oracle Thesaurus Management System." 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 Section 6.5, "Integrating Oracle Business Intelligence Enterprise Editions (OBIEE) for Visualizations." You can use the same Windows computer for OBIEE and TMS.

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; see Appendix B, "Installing Real Application Clusters (RAC)" for further information.

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 Section 1.4, "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.

2.2 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.

  > **Note:** Oracle LSH Release 2.2.2 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 LSH-specific note or alert on My Oracle Support.

- **JDK** The Java Developer Kit 1.6 is shipped and installed with Oracle Applications 12.1.1.

- **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 execution system and is bundled with Oracle Database 11.2.0.4.

- **Oracle Thesaurus Management System 4.6.1** 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 12.1.3.

- A **zip utility** is required on the Oracle LSH Distributed Processing Server.

- **Winzip Pro 11.2 SR-1**, **Winzip 8.1**, or any other Winzip version that includes WZUNZIP.exe. This 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. Winzip is separately licensed and not included on the media pack.

- Web browsers:

  - **Apple Safari 7, 6, 5, 4, 3.2.1** (on Windows only)

  - **Microsoft Internet Explorer 10, 9, 8, 7, 6**

  - **Mozilla Firefox 3.6, 3.5, 24.* ESR, 2, 17.x ESR, 10.x**

2.3 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. — Optional and licensed separately.

- **SAS 8.2, SAS 9.1.3, SAS 9.2**, **SAS 9.4**

- **Informatica PowerCenter 8.6.1 with HotFix 11** or **Informatica PowerCenter 9.0.1 with HotFix 2, and Informatica PowerCenter 9.5.1** can be used to develop and run Oracle LSH Programs of type Informatica — Optional and licensed separately.

- **Oracle Business Intelligence Enterprise Edition (OBIEE) 10.1.3.4.1 with patch 7642637** or (OBIEE) 11.1.1.7.0 with patch 131017 can be used to create OBIEE visualizations of Oracle LSH data — Optional and licensed separately.

- **Oracle BI Publisher 10.1.3.4.1 and 11.1.1.7.0 with patch 140715** can be used to create Oracle LSH reporting Programs of type BI Publisher — Optional and licensed separately.

2.4 Character Encoding Settings

The data loaded into Oracle Life Sciences Data Hub (LSH) may originate in many systems, and these systems may use different encoding 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.

- Set environment variables on each computer where you install the Oracle LSH Distributed Processing (DP) Server; see Section 5.15.3, "Set NLS_LANG to UTF8".

- Add a JVM argument to the DP Server Start script; see Section 5.15.4.2, "Edit the DP Server Start Script".

- If you are running SAS programs from Oracle LSH, see Section 6.2.2.2, "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 Section 6.4.1, "Set the NLS_LANG Environment Variable to UTF8".

3

Installing and Patching Oracle Applications and Oracle Database

This section includes the following topics:

- Section 3.1, "Install Oracle Applications 12.1.1"

- Section 3.2, "Upgrade Oracle Applications to Release 12.1.3"

- Section 3.3, "Upgrade the Oracle Database and Oracle Warehouse Builder to 11.2.0.4"

- Section 3.4, "Edit listener_ifile.ora"

- Section 3.5, "Change Default Password Settings"

- Section 3.6, "Increase JVM Memory"

- Section 3.7, "Clone the Environment (Optional)"

- Section 3.8, "Install Oracle Warehouse Builder on Oracle Database 11g Release 2"

- Section 3.9, "Create an Oracle Warehouse Builder Repository"

3.1 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.

> **Note:** 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.

3.2 Upgrade Oracle Applications to Release 12.1.3

Install the following patches using Autopatch (see "How to Use AutoPatch" on page xiii) to upgrade from Release 12.1.1 to Release 12.1.3:

- 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

> **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. See "Searching for Knowledge Articles by ID" on page xi.

> **Note:**   Oracle recommends taking a full backup at this point.

3.3 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 Release 2.2.2, 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 11g Release 2* 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**.

> **Note:**   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.

> **Note:** Oracle recommends performing a full backup after the upgrade.

3.4 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 ABC123:

```
SID_LIST_dbsid =
  (SID_LIST =
    (SID_DESC =
      (GLOBAL_DBNAME = ABC123)
      (ORACLE_HOME= /slot/ems6636/oracle/ABC123db/11.2.0)
      (SID_NAME = ABC123)
    )
    (SID_DESC =
      (GLOBAL_DBNAME = ABC123.us.oracle.com)
      (ORACLE_HOME= /slot/ems6636/oracle/ABC123db/11.2.0)
      (SID_NAME = ABC123)
    )
    (SID_DESC =
      (SID_NAME = PLSExtProc)
      (ORACLE_HOME = /slot/ems6636/oracle/ABC123db/11.2.0)
      (PROGRAM = extproc)
    )
  )
```

3.5 Change Default Password Settings

Change the following 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;
  ```

3.6 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://hsdevlv0066.us.oracle.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.

3.7 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*.

3.8 Install Oracle Warehouse Builder on Oracle Database 11g Release 2

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.

3.9 Create an Oracle Warehouse Builder Repository

Oracle Warehouse Builder 11.2.0.4 is required for Oracle LSH's execution system and 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 2.2.2 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 Oracle Thesaurus Management System

This section includes the following topics:

The Oracle Life Sciences Data Hub (Oracle LSH) uses the Oracle Thesaurus Management System (TMS) Release 4.6.1 database server code internally for its classification system.

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.

4.1 Set Up a Windows Computer for Launching the TMS Installation

Oracle LSH uses only the database portion of TMS, which you must install into the same database as Oracle LSH. However, you must install TMS using the Oracle Universal Installer from a Windows computer. You will not need this computer to run Oracle LSH, but you should maintain it for the purpose of applying any patches to TMS that may be required in the future.

The Windows computer should have Windows 2003 or 2008.

The Windows computer must have a 11g Oracle Home. When you install almost any Oracle product, you establish an Oracle Home and SQL*Plus. If you already have a

Windows computer with an Oracle Home directory and SQL*Plus at Release 11g, you can proceed directly to Section 4.4, "Install the TMS Server".

If not, install the Oracle Database 11g Release 2 Client for Microsoft Windows, listed as V20606-01 Oracle Database 11g Release 2 Client (11.2.0.1.0) for Microsoft Windows (32-bit) in the media pack.

4.2 Setting up the SQL*Net Connections for Existing Databases

Ensure that SQL*Net connections exist between the TMS Application Server computer and any Oracle LSH databases you have already created by modifying the file tnsnames.ora to include entries for all the databases and TMS Application Servers. The tnsnames.ora file for the 11g Client Oracle Home is located at oracle_home\network\admin.

Network Troubleshooting

If the system returns a connection error, you must resolve this problem before continuing. Possible causes of error include:

- The computer is not physically connected to the network.
- The network protocol software is not loaded on the computer (try a remote log-in to check).
- The SQL*Net software is not loaded on the computer.
- The database or SQL*Net listener process is not started on the server.
- An incorrect connect string, userID or password, was entered.
- The tnsnames.ora file is not present in the correct directory or does not contain the correct entries.

4.3 Set Up Compatibility Mode

Do the following to run Oracle Universal Installer in compatibility mode:

1. Log on as a user with system administrative privileges.
2. On media pack disk V17174-01, locate tms\install\setup.exe.
3. Right-click setup.exe and then click **Properties**.
4. In the Properties window, click the Compatibility tab.
5. Select **Run this program in compatibility mode for:** and select **Windows 2000** from the drop-down list.

4.4 Install the TMS Server

Follow instructions in the *TMS Release 4.6.1 Installation Guide* (Part A83780-11) section specified below with the Oracle LSH specification noted.

1. Install the Oracle TMS Release 4.6.1 Server; see Section 4.5, *Installing the TMS Database Server Code*.

   Specify the ORACLE_HOME you created in Section 4.1, "Set Up a Windows Computer for Launching the TMS Installation" (or the most recent Oracle Home, if you are using an existing Oracle Home).

2. At the end of the installation, click **Exit** (not **Next Install**).

> **Note:** Do not follow the instructions in the other sections of this chapter.

4.5 Install the TMS Database

Install the TMS database wherever you have installed the Oracle LSH database. To install the TMS database, do the following:

1. On the Windows server add the environment variable USE_DEFAULT_OUI_OH with a value of 1.

2. Add an initialization parameter db_domain to the database with a value of *your_company_name*.com.

   > **Note:** To integrate TMS with Oracle LSH, 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 ABC123, the short global name must also be set to ABC123.

   > **Note:** You must also add the database's tnsname (which is the same as its Oracle SID) to the tnsnames.ora file on the current server.

3. Install the Oracle TMS 4.6.1 database; in the *TMS Release 4.6.1 Installation Guide* follow instructions in Section 5.2 only.

   > **Note:** You are prompted to enter passwords for various accounts. Make a note of these passwords.

   If you are installing on Linux, follow the UNIX-specific instructions where they are provided.

4.6 Apply TMS Patch

Apply TMS patch 4.6.1.7 (patch number 9728948) using instructions in the patch release notes.

4.7 Check the def_instance_name Column Value

Check the value of the def_instance_name column in the tms_def_instances table. It must have a value in all UPPERCASE in the form of *DB_NAME.DOMAINNAME*.

If necessary, in SQL*Plus, enter the following:

```
update tms_def_instances set def_instance_name='DB_NAME.DOMAIN_NAME'
```

For example, where the database name is **LSHX2R10** and the domain name is **us.oracle.com**:

```
update tms_def_instances set def_instance_name='LSHX2R10.US.ORACLE.COM'
```

5

Installing the Oracle Life Sciences Data Hub

This section lists the steps required to perform a fresh installation of LSH Release 2.2.2.

If you are upgrading from a previous version, see Chapter 7, "Upgrading to Oracle Life Sciences Data Hub Release 2.2.2".

This section includes the following topics:

- Section 5.1, "Apply the Oracle Life Sciences Data Hub AD Splicer Patch"
- Section 5.2, "Install Oracle LSH Release 2.2"
- Section 5.3, "Install Online Help"
- Section 5.4, "Grant Execute Privileges to the APPS Schema"
- Section 5.5, "Integrate Oracle LSH with the Oracle Warehouse Builder"
- Section 5.6, "Create System Administrator and Security Administrator Users"
- Section 5.7, "Run Script"
- Section 5.8, "Run the Post-Installation Programs"
- Section 5.9, "Gather Statistics on Schemas"
- Section 5.10, "Schedule the Context Index Refresh Program"
- Section 5.11, "Start Journaling Internal Tables"
- Section 5.12, "Increase Memory Available for MetaData Reports"
- Section 5.13, "Grant Security Rights to Seeded Adapters"
- Section 5.14, "Set Up the Notification Mailer"
- Section 5.15, "Set Up the Distributed Processing Server"
- Section 5.16, "Set Up Client Computers"
- Section 5.17, "Install Oracle LSH Release 2.2.2"

> **Note:** $APPL_TOP, $CDR_TOP, and $JAVA_TOP are all on the middle tier. <OWB_HOME> is on the database server. The 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.

5.1 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 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.

5.2 Install Oracle LSH Release 2.2

Download the Oracle LSH Release 2.2 media pack and install LSH 2.2. See Section 1.3.1, "Get the Required Oracle Life Sciences Data Hub Releases".

For more information, see 1376927.1, *Oracle LSH 2.2 Release Notes*.

5.3 Install Online Help

Install the 2.4 online help as a patch to Oracle Applications using AutoPatch. The patch number is 18551089.

See "How to Use AutoPatch" on page xiii for instructions.

5.4 Grant Execute Privileges to the APPS Schema

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

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

5.5 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:

- Section 5.5.1, "Set Up Your Environment"
- Section 5.5.2, "Create Directories and Copy Files"
- Section 5.5.3, "Disable Application Server Authentication"

- Section 5.5.4, "Edit run_service.sh"

- Section 5.5.5, "Edit Runtime.properties"

- Section 5.5.6, "Edit owb.classpath"

- Section 5.5.7, "Edit Shell Scripts to Match Directory Structure"

- Section 5.5.8, "Run OWB Shell Scripts"

- Section 5.5.9, "Restart the OWB Service"

- Section 5.5.10, "Edit listener_ifile.ora"

5.5.1 Set Up Your Environment

You must set up your environment as follows.

5.5.1.1 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 ABC123, the short global name must also be set to ABC123.

5.5.1.2 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, `initABC123.ora` where the database Oracle SID is ABC123.

The required parameter values are:

Compatible   This value must match the database release number; for example, in Oracle LSH 2.2.2:

```
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=apx208rt.us.oracle.com)(PORT=4321))"
```

where the hostname is apx208rt, the domain is us.oracle.com, and the port is 4321.

Service Names   Set as follows:

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

For example:

```
service_names=ABC123, ABC123.us.oracle.com
```

where the Oracle SID is ABC123 and the domain is us.oracle.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 Section 3.6, "Increase JVM Memory."

```
 oa_var=s_applptmp
```

5.5.1.3 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.

5.5.1.4 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

5.5.2 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**, **installOwbBIPAdapter.sh**, and **installOwbBIP11GAdapter.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

- cdr_owb_bip11g_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

5.5.3 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.

5.5.4 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.

5.5.5 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.

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
   ```

5.5.6 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/cdr/cdr_owb_bip11g_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
```

5.5.7 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 Section 5.5.8, "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)

5.5.8 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.

5.5.9 Restart the OWB Service

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

5.5.9.1 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.

5.5.9.2 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.

5.5.10 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 Section 3.4, "Edit listener_ifile.ora".

5.6 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 Section 5.8, "Run the Post-Installation Programs" and Section 5.15.5, "Define Service Locations and Services").

- 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 Implementation Guide* includes information on designing an object security system for your organization.

5.6.1 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://oraapps1.oracle.com:8000/OA_HTML/AppsLogin

    The Applications Login screen appears.

3. Log in as sysadmin.

    An E-Business Suite screen opens.

5.6.2 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.

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.

5.6.3 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 "Setting Up the Security System" in 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 Section 5.6.3, "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.

5.7 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

5.8 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.

5.8.1 Check That OWB Is Running Without Errors

You must have OWB running to run the post-installation programs; see Section 5.5.9, "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.

5.8.2 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://oraapps1.oracle.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**.

5.8.3 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 Section 5.8.2, "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.

5.8.4 Set the Tech Type Value

In a fresh install of Oracle LSH 2.2.2, you need to set the Tech Type value as described below:

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

2. Run the following SQL statement:

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

5.8.5 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.**

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.

- Starts and enables the job queue. (Information on explicitly stopping and starting the job queue is available in the "Troubleshooting" chapter 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.

> **Note:** 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 Section 5.5.1.2, "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 Section 5.8.2, "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 Section 5.8.5.1, "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 is 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 Section 1.2, "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 number. The system will end all object IDs with this digit to further distinguish objects created in this Oracle LSH instance.
- **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.

5.8.5.1 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.

5.8.6 Synchronize the OWB Password

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

1. Login 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

5.9 Gather Statistics on Schemas

1. Connect to the database as apps.

2. Enter the following commands:

   ```
   EXEC DBMS_STATS.gather_schema_stats('CDR');
   EXEC DBMS_STATS.gather_schema_stats('APPS');
   EXEC DBMS_STATS.gather_schema_stats('OWBSYS');
   ```

5.10 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 Section 5.8.2, "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**.

5.11 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.

5.11.1 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 Section 5.6.1, "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).

5.11.2 Define the Audit Installation

To start journaling, do the following:

1. Log on as sysadmin; see Section 5.6.1, "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:
   >
   > 1. In the **Navigator - System Administrator** window, **Functions** tab, expand the **Security** node.
   >
   > 2. Expand the **Audit Trail** node.
   >
   > 3. 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**.

5.11.3 Run the Audit Trail 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.

5.12 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 Section 5.6.1, "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 meta-data 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 setting(s) for all meta-data report sets.

5.13 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

5.14 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*.

5.15 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 Chapter 6, "Integrating Other Systems."

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

1. Section 5.15.1, "Create the Distributed Processing Server User Account"

2. Section 5.15.2, "Install the Distributed Processing Server"

3. Section 5.15.3, "Set NLS_LANG to UTF8"

4. Section 5.15.4, "Copy and Edit Files"

5. Section 5.15.5, "Define Service Locations and Services"

6. Section 5.15.6, "Start the DP Server"

5.15.1 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. You need to use this account to start the DP Server. Information about the Distributed Processing (DP) Server is included in "Setting Up Services" in the *Oracle Life Sciences Data Hub System Administrator's Guide*.

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.

5.15.2 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 the DPServer.jar from the zip file into the lib directory.

6. Copy **nls_charset12.zip** from the $COMMON_TOP/java/lib directory to the lib directory.

7. Copy **jmscommon.jar** from the $ORACLE_HOME/rdbms/jlib directory to the lib directory.

8. Change directories to the DP Server Home directory.

9. 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 (see Section 5.15.5, "Define Service Locations and Services") specify that you want the DP Server to create these job directories in the working directories you have created.

10. 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.

    > **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.

11. 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
    ```

5.15.3 Set NLS_LANG to UTF8

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

5.15.3.1 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
```

5.15.3.2 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
```

5.15.4 Copy and Edit Files

This section contains the following topics:

- Section 5.15.4.1, "Copy DP Server Files"
- Section 5.15.4.2, "Edit the DP Server Start Script"
- Section 5.15.4.3, "Copy RTF Template Files for XML Publisher"
- Section 5.15.4.4, "Copy and Edit Execution Command Files for Processing Engines"

5.15.4.1 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.

5.15.4.2 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 (see Section 5.15.5, "Define Service Locations and Services" in the Service Location subtab for the Service Location that corresponds to this computer. The name is case-sensitive. For example:

  ```
  SVC=JS_OPASUN4
  ```

- **JDK Location (JDK_LOC)**. Enter the full path to the JDK 1.5 executable.

  For example:

  ```
  JDK_LOC=/u01/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.

5.15.4.3 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

5.15.4.4 Copy and Edit 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 Section 5.15.5, "Define Service Locations and Services.".

   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

   - **sqlplus** for PL/SQL Programs

- **txtNormal** for Text Load Sets

- **xmlprunner.sh** for post-processing Report Sets

- **xmlprerunner.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.

- **infarunner.sh** for Informatica Programs

Note: For Informatica programs, copy the script infa.env to the same location as infarunner.sh and edit it to include the location of the Informatica Home and the Informatica executables on the same computer. Refer Section 6.3.1, "Install Informatica PowerCenter" for details.

- **infa.env** for Informatica Programs. Copy this script to the same location as **infarunner.sh** and edit it to include the location of the Informatica Home and the Informatica executables on the same computer.

2. Edit each script with information specific to the computer, for example:

   - the Oracle SID

   - the location of the technology server

   - the 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 Section 6.2.2.2, "Start SAS in UTF8 Mode." In addition, include the DP Server Home path in the environment variable as shown below:

```
PATH=$ORACLE_HOME/bin:$ORACLE_HOME/lib32:DP_Server_Home_Path:$PATH
export PATH
```

5.15.5 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 Section 5.6, "Create System Administrator and Security Administrator Users."

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://oraapps1.oracle.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 instructions in "Setting Up Services" in the *Oracle Life Sciences Data Hub System Administrator's Guide*.

5.15.6 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:

   `./cdr_apps_dpserver.sh ORACLE_SID DB_HOST DB_PORT RAC_TNS RAC_FLAG`

   or for Windows:

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

   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.

- 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.

Example when RAC_FLAG is set to NO-RAC:

```
./cdr_apps_dpserver.sh CDRD6X10 ad986sdb.us.oracle.com 20502 NA NO-RAC
```

where:

- `CDRD6X10` is the Oracle SID

- ` ad986sdb.us.oracle.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

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=AP6010RAC.us.oracle.com)(PORT=1521))(ADDRESS=
(PROTOCOL=tcp)(HOST=AP6009RAC.us.oracle.com)(PORT=1521)))(CONNECT_
DATA=(SERVICE_NAME=CDRXXX)))'  RAC
```

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=AP6010RAC.us.oracle.com)(PORT=152`
  `1))(ADDRESS=(PROTOCOL=tcp)(HOST=AP6009RAC.us.oracle.com)(PORT=1521)`
  `))(CONNECT_DATA=(SERVICE_NAME=CDRXXX)))` is the JDBC connection string of
  the database server

- RAC is the setting for RAC_FLAG

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.

5.16 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*.

5.16.1 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)

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.

5.16.2 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)

- 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 Section 5.16.2.1, "Install the Client Plug-In")

- NLS_LANG environment variable set to UTF8 (see Section 5.16.2.2, "Set NLS_LANG to UTF8")

- One or more IDE clients (see Section 5.16.2.3, "Set Up Development Environments")

5.16.2.1 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 Chapter 6, "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.

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.

Oracle LSH 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.

5.16.2.2 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

5.16.2.3 Set Up Development Environments

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

- Section 6.2.4, "Set Up SAS as an Integrated Development Environment"

- Section 6.3.5, "Set Up Informatica PowerCenter Designer as an Integrated Development Environment (IDE)"

- Section 6.4, "Integrating Oracle SQL Developer or Oracle SQL*Plus with the Oracle Life Sciences Data Hub"

- Section 6.6.2.3, "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*.

5.17 Install Oracle LSH Release 2.2.2

Install the following patches and patch sets, in order:

5.17.1 Install Prerequisite Patches for Oracle LSH 2.2.1

Download and install the following patches to Oracle Applications, in order, using AutoPatch:

1. Oracle LSH 2.2.0.1. The patch number is 12972887.

   For more information, see 1376926.1, *Oracle LSH 2.2.0.1 Release Notes*.

2. Oracle LSH 2.2.0.2. The patch number is 13247999.

   For more information, see 1390140.1, *Oracle LSH 2.2.0.2 Release Notes*.

3. Oracle LSH 2.2.0.3. The patch number is 13867144.

   For more information, see 1451898.1, *Oracle LSH 2.2.0.3 Release Notes*.

4. Oracle LSH 2.2.0.4. The patch number is 14708988.

   For more information, see 1534881.1, *Oracle LSH 2.2.0.4 Release Notes*.

5. Oracle LSH 2.2.0.5. The patch number is 7017290.

   For more information, see 1569100.1, *Oracle LSH 2.2.0.5 Release Notes*.

5.17.2 Install Oracle LSH Release 2.2.1

Install Oracle Life Sciences Data Hub Release 2.2.1 as a patch to Oracle Applications using AutoPatch. The patch number is 17869441.

1. Unzip the patch to $APPL_TOP/patches.

2. Run AutoPatch. See "How to Use AutoPatch" on page xiii for instructions.

For more information, see 1608877.1, *Oracle LSH 2.2.1 Release Notes*.

5.17.3 Install Oracle LSH Release 2.2.2

You must install the Oracle Life Sciences Data Hub Release 2.2.2 as a patch to Oracle Applications using AutoPatch. The LSH Release 2.2.2 patch number is 19310436.

1. Unzip the patch to $APPL_TOP/patches.

2. Run AutoPatch. See "How to Use AutoPatch" on page xiii for instructions.

For more information, see 1924662.1, *Oracle LSH 2.2.2 Release Notes*

6

Integrating Other Systems

This section contains the following topics:

- Section 6.1, "Integrating Oracle Clinical with the Oracle Life Sciences Data Hub"
- Section 6.2, "Integrating SAS with the Oracle Life Sciences Data Hub"
- Section 6.3, "Integrating Informatica with the Oracle Life Sciences Data Hub"
- Section 6.4, "Integrating Oracle SQL Developer or Oracle SQL*Plus with the Oracle Life Sciences Data Hub"
- Section 6.5, "Integrating Oracle Business Intelligence Enterprise Editions (OBIEE) for Visualizations"
- Section 6.6, "Integrating Oracle Business Intelligence Publisher for Programs"

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 Section 5.8.3, "Load the Adapter Files" and Section 5.13, "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 Section 2.3, "Integrated External Systems" or for the most current information, see My Oracle Support article 180430.1, *Oracle Life Sciences Applications Supported Technology Stacks*.

6.1 Integrating Oracle Clinical with the Oracle Life Sciences Data Hub

Oracle LSH 2.2.2 is compatible with the following Oracle Clinical releases:

- Oracle Clinical 4.5.1 or Oracle Clinical 4.5.3 with Oracle Clinical patch 4.5.1.14 or its successor, 4.5.1.75
- Oracle Clinical 4.6

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 Application Programming Interface Guide*. In addition, see "Using APIs" in the *Oracle Life Sciences Data Hub Application Developer's Guide*.

6.2 Integrating SAS with the Oracle Life Sciences Data Hub

This section includes the following topics:

- Section 6.2.1, "SAS Compatibility"

- Section 6.2.2, "Set Up SAS Job Execution"

- Section 6.2.3, "Set Up Loading Data from SAS"

- Section 6.2.4, "Set Up SAS as an Integrated Development Environment"

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 8.2, SAS 9.1.3, SAS 9.2, and SAS 9.4.

6.2.1 SAS Compatibility

SAS with connectivity to Oracle LSH requires an Oracle 9i library. Oracle recommends that the Oracle 9i Client resides 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 a 9*i* Oracle Home by installing the Oracle Client 9*i*.

2. Install SAS.

3. Set the UNIX environment variable LD_LIBRARY_PATH to *9i_ORACLE_HOME*/lib.

6.2.2 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.

6.2.2.1 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 Section 5.15, "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 Services" in the *Oracle Life Sciences Data Hub System Administrator's Guide* for instructions.

6.2.2.2 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 Section 5.15.4.4, "Copy and Edit Execution Command Files for Processing Engines".

- **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  $*
  ```

  For further information, see SAS Paper 1036, *Multilingual Computing with the 9.1 SAS Unicode Server* on the SAS Support Site.

- **If you are using SAS 9.2**, 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.
    >
    > You can use the example above for SAS 9.4, provided you change the SAS version number to 9.4.

6.2.3 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 Section 6.2.2, "Set Up SAS Job Execution" above.

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 Section 5.8.3, "Load the Adapter Files."

3. Make sure that you have followed instructions in Section 5.13, "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*.

6.2.4 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 Section 5.16.2.1, "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 Section 5.16, "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 Section 6.4.1, "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 Release 2.2.2 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.

6.3 Integrating Informatica with the Oracle Life Sciences Data Hub

This section includes the following topics:

You can use Informatica PowerCenter as an integrated development environment (IDE) and processing engine for Oracle LSH Programs of type Informatica. Informatica is required if you are installing Oracle Clinical Development Analytics with Oracle LSH.

Informatica is licensed separately. You must buy it from Informatica and follow installation instructions from Informatica.

6.3.1 Install Informatica PowerCenter

Requirements   The following are requirements for using Informatica with Oracle LSH:

- The LSH System Admin user must have administration rights on the Informatica integration services used for Oracle LSH during installation and setup.

- The Informatica repository used for LSH must be used only for LSH or LSH/OCDA.

- When you create the Informatica repository to be used for Oracle LSH, set the following two parameters to False: Versioning and Global Repository.

- Point the following Informatica integration service properties to valid directories on which the operating system account that starts the Informatica integration service has read/write permissions:

```
$PMSessionLogDir
$PMBadFileDir
$PMCacheDir
$PMTargetFileDir
$PMSourceFileDir
$PMExtProcDir
$PMTempDir
$PMWorkflowLogDir
$PMLookupFileDir
$PMStorageDir
```

> **Tip:**   Find the Informatica environment file, infaenv.sh, which contains information on the locations of your Oracle Home, Informatica Home, and other information about this computer. When you set up the Oracle LSH Distributed Processing Server you will need this information.

To install and patch Informatica PowerCenter.

1. Install Informatica PowerCenter using Informatica installation documentation.

2. Apply Informatica PowerCenter 8.6.1 HotFix 11, Informatica PowerCenter 9.0.1 with HotFix 2, or Informatica PowerCenter 9.5.1.

> **Note:** Apply patch 17432328 before installing or upgrading to Informatica PowerCenter 9.5.1.

> **Note:** Oracle LSH 2.2.2 has been tested ONLY with **Informatica PowerCenter 8.6.1 with HotFix 11, Informatica PowerCenter 9.0.1 with HotFix 2**, and **Informatica PowerCenter 9.5.1**. If more recent releases become available, do NOT install them unless explicitly instructed to do so by an Oracle LSH-specific note or alert on My Oracle Support.
>
> If a particular HotFix version is superseded by a later version, you can log a Service Request with Informatica to obtain it.

3. Create an environment file infa.env under $INFA_HOME (Informatica Installation Directory) and set the following environment variables:

```
INFA_HOME=<Informatica Installation Directory>

LANG=C

LD_LIBRARY_PATH=$LD_LIBRARY_PATH:<Informatica Installation

Directory>/server/bin
```

On a Linux platform, add this extra line to the file:

```
unset LD_ASSUME_KERNEL
```

6.3.2 Set Up Informatica Job Execution

To enable running Informatica Programs from Oracle LSH, integrate Informatica PowerCenter with Oracle LSH:

- Install the Oracle LSH Distributed Processing (DP) Server on the computer where the Informatica server is installed. See Section 5.15, "Set Up the Distributed Processing Server" for instructions.

- Create a symbolic link to the file **impcntl.dtd** and place it in the DP Server's Informatica working directory (for instructions on setting up this directory see Section 5.15.2, "Install the Distributed Processing Server"). This file is typically located in the **server/bin** directory of the Informatica installation.

- Define a service location in Oracle LSH for the computer where the Informatica server is installed. See "Defining Service Locations" in the *Oracle Life Sciences Data Hub System Administrator's Guide* for instructions.

- Define one or more services for the Informatica service type in the service location. See "Defining Services" in the *Oracle Life Sciences Data Hub System Administrator's Guide* for instructions.

6.3.3 Set Up User Accounts

Set up an Informatica administrator account and accounts for each Oracle LSH Definer who needs to work in Informatica, following instructions in the Informatica chapter of the *Oracle Life Sciences Data Hub System Administrator's Guide*.

> **Note:** The administrator account name must be exactly `LSHAdmin`, **including upper- and lowercase** as written. For more information on all the required accounts, see the *Oracle Life Sciences Data Hub System Administrator's Guide*.

6.3.4 Create a Remote Location and Connection for the LSHAdmin User

Define a Remote Location and Remote Connection for Informatica, following instructions in the Informatica chapter of the *Oracle Life Sciences Data Hub System Administrator's Guide*.

6.3.5 Set Up Informatica PowerCenter Designer as an Integrated Development Environment (IDE)

To use Informatica PowerCenter Designer as an IDE for creating mappings and workflows from within Oracle LSH, each Oracle LSH Definer must do the following on his or her local PC:

- Install the Informatica client 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 Section 5.16.2.1, "Install the Client Plug-In").

- Ensure that **cdrconfig.xml** has the correct directory path for the Informatica executable.

- Create a system environment variable in Windows with the name INFA_DOMAINS_FILE and set its value to the full path of the Informatica Home.

- Set up a user Data Source Name (DSN) with the name **LSHModel** for the Definer's Oracle LSH database account. See Microsoft Windows online help or documentation on setting up ODBC Data Source Names.

- Install Winzip Pro 11.2 SR-1, Winzip 8.1, or any other Winzip that includes the WZUNZIP.exe

6.4 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 Section 5.16.2.1, "Install the Client Plug-In").

- 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.

- 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

6.4.1 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.

6.4.1.1 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`

6.4.1.2 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`

6.5 Integrating Oracle Business Intelligence Enterprise Editions (OBIEE) for Visualizations

This section includes the following topics:

- Section 6.5.1, "Install OBIEE 11.1.1.7.0 for Visualizations"

- Section 6.5.2, "Install OBIEE 10.1.3.4.1 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 Release 2.2.2 supports using OBIEE 10.1.3.4.1 for both programs and visualizations and OBIEE 11.1.1.7.0 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.

6.5.1 Install OBIEE 11.1.1.7.0 for Visualizations

Install OBIEE 11.1.1.7.0 to support visualizations.

6.5.1.1 Install OBIEE 11.1.1.7.0

Install Oracle Business Intelligence Enterprise Edition 11.1.1.7.0 using *Oracle Fusion Middleware Installation Guide for Oracle Business Intelligence 11g Release 1 (11.1.1) (E10539-01)*. The software and documentation are included in the Oracle LSH Release 2.2 media pack.

> **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. This software is included in the Oracle LSH 2.2 media pack.

6.5.1.2 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" on page 5-20.

6.5.1.3 Set Up OBIEE 11.1.1.7.0 Visualizations

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

6.5.2 Install OBIEE 10.1.3.4.1 for Visualizations

Install Oracle Business Intelligence Enterprise Edition 10.1.3.4.1 to support OBIEE visualizations.

6.5.2.1 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*.

You can download software and documentation from the Oracle LSH Release 2.1.4 media pack.

6.5.2.2 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 2.2.2; see Section 5.17.3, "Install Oracle LSH Release 2.2.2".

6.5.2.3 Apply Patch 7642637 for Visualizations

If you plan to use OBIEE 10.1.3.4.1 for visualizations, apply patch 7642637. This patch is available on the Oracle LSH 2.1.4 media pack.

6.5.2.4 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" on page 5-20.

6.5.2.5 Set Up OBIEE 10.1.3.4.1 Visualizations

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

6.6 Integrating Oracle Business Intelligence Publisher for Programs

This section includes the following topics:

- Section 6.6.1, "Install Oracle Business Intelligence Publisher 10.1.3.4.1 or Oracle Business Intelligence Publisher 11.1.1.7.0"

- Section 6.6.2, "Set Up Oracle Business Intelligence Publisher Programs"

You can create Oracle LSH Programs of type Oracle Business Intelligence Publisher (BIP) to generate reports on Oracle LSH data. Install BIP 10.1.3.4.1 or 11.1.1.7.0 to support BIP Programs and/or OBIEE visualizations.

6.6.1 Install Oracle Business Intelligence Publisher 10.1.3.4.1 or Oracle Business Intelligence Publisher 11.1.1.7.0

Install Oracle Business Intelligence Publisher 10g using *Oracle® Business Intelligence Publisher Installation Guide Release 10.1.3.4*, or Oracle Business Intelligence Publisher 11g using *Oracle® Business Intelligence Publisher Installation Guide Release 11.1.1.7.0*.

You can download the software and documentation from My Oracle Support.

6.6.2 Set Up Oracle Business Intelligence Publisher Programs

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

- Section 6.6.2.1, "Enable Program Execution"

- Section 6.6.2.2, "Set Up Security"

- Section 6.6.2.3, "Set Up Business Intelligence Publisher Definer Tools"

6.6.2.1 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 Section 5.15, "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 Services" 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 Intelligence Publisher" in the *Oracle Life Sciences Data Hub System Administrator's Guide* for instructions.

6.6.2.2 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 Intelligence Publisher" in the *Oracle Life Sciences Data Hub System Administrator's Guide*.

6.6.2.3 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 2.2.2

This section lists the steps required to upgrade from a previous LSH release to Oracle LSH Release 2.2.2.

If you are performing a fresh installation of LSH 2.2.2, see Chapter 5, "Installing the Oracle Life Sciences Data Hub".

This section includes the following topics:

- Section 7.1, "Supported Upgrade Paths"
- Section 7.2, "Stop Server Processes"
- Section 7.3, "Recommended Steps for a Smoother Upgrade Process"
- Section 7.4, "Install and Upgrade Oracle Applications"
- Section 7.5, "Upgrade and Configure the Oracle Database"
- Section 7.6, "Upgrade Informatica PowerCenter to 8.6.1 with HotFix 11, or to Informatica PowerCenter 9.0.1, or to Informatica PowerCenter 9.5.1"
- Section 7.7, "Oracle Business Intelligence Publisher Options"
- Section 7.8, "OBIEE Options"
- Section 7.9, "Migrate the Oracle Warehouse Builder Repository (Conditional)"
- Section 7.10, "Upgrade Oracle Life Sciences Data Hub"
- Section 7.11, "Integrate Oracle LSH with the 11g Release 2 Oracle Warehouse Builder (Conditional)"
- Section 7.12, "Upgrade the OWB Repository (Conditional)"
- Section 7.13, "Migrate the Oracle Warehouse Builder Stores (Conditional)"
- Section 7.14, "Upgrade the Distributed Processing Server"
- Section 7.15, "Perform the Remaining Post-Installation Tasks"
- Section 7.16, "Start Server Processes"

7.1 Supported Upgrade Paths

Upgrading to Oracle Life Sciences Data Hub (Oracle LSH) Release 2.2.2 is only supported from Oracle LSH Release 2.2.1.

7.2 Stop Server Processes

Before you begin the upgrade, stop the following servers:

- Oracle Life Sciences Data Hub (Oracle LSH) Distributed Processing (DP) Server (see Section 5.15.6, "Start the DP Server").

- Application Server.

7.3 Recommended Steps for a Smoother Upgrade Process

The following steps are not required by Oracle LSH, but doing them before you begin will minimize stoppages of the lengthy upgrade process. See "Finding Information and Patches on My Oracle Support" on page xi to find the My Oracle support articles referenced below.

Before the upgrade:

- **Install/verify OLAP**; see My Oracle Support article ID 1054417.1 to verify that the OLAPSYS user is set up correctly and create the analytic workspace (AW) odpcode. See My Oracle Support article ID 1314218.1 for information about other errors caused by OLAP's not being installed. If you need to install OLAP, follow instructions in My Oracle Support article ID 296187.1.

  > **Note:** Article 1314218.1 says you have the option not to install OLAP and instead skip every failing worker with this error. However, about 900 jobs fail with this error.

- **Install a Korean language dictionary**, which is available on the Oracle Database Examples media; see My Oracle Support Articles ID 1333659.1 and 877235.1 for information.

- **Clean or Back Up oraInventory** if it exists.

- **Run all statistics at the database level**. See My Oracle Support article ID 1281478.1 to upgrade table APPLSYS.FND_STATTAB.

7.4 Install and Upgrade Oracle Applications

This step is required for all upgrade paths.

7.4.1 Install Oracle Applications Release 12.1.1

Follow instructions in *Oracle E-Business Suite Upgrade Guide, Release 11i to 12.1.3* (Part E16342-03).

> **Note:** In *Oracle E-Business Suite Upgrade Guide, Release 11i to 12.1.3*, Chapter 3, "Upgrading to Release 12.1.1," the section "Disable AOL Audit Trail (conditional)" says, "If you plan to re-enable auditing after the upgrade, then **archive and purge the shadow tables now**. Data changes made after implementing this step are not audited." **You can safely skip this step**.

7.4.2 Monitor the Upgrade Process

Oracle recommends monitoring the upgrade process in case it stops, particularly at times when there have been failures in the past. Some of these failures can be avoided by following instructions in Section 7.3, "Recommended Steps for a Smoother Upgrade Process", but others cannot be avoided. Watch particularly around the following job numbers:

- Around job **127000** the program pechktsk.sql fails because **patch 8855023** is not applied. Continue and apply the patch later. See My Oracle Support article ID 1083981.1.

- Around job **42200** the program MSDODPCODE fails if OLAP is not installed; see Section 7.3, "Recommended Steps for a Smoother Upgrade Process".

- From about job **15500** to **14600** all the ZPB programs (about 900 programs) fail because ZPB is not supported in R12; see My Oracle Support article ID 1314218.1.

- Around job **14100** the program cskbcat fails if the Korean dictionary is not installed; see Section 7.3, "Recommended Steps for a Smoother Upgrade Process".

- Around job **1550** the program biv_b_age_h_sum_mv fails because **patch 10163753** is not applied. Continue and apply the patch later. See My Oracle Support article ID 1322144.1.

- Around job **1200** the program fem_bal_nacc_hier_l2_mv fails because **patch 10406817** is not applied. You can use adctrl's hidden option '8' to skip the failed worker, continue the upgrade, and apply the patch later. See My Oracle Support article ID 1284055.1 and 1322144.1 (same as for the above problem).

- Around job **310** the program czhist fails if statistics have not been updated; see Section 7.3, "Recommended Steps for a Smoother Upgrade Process".

- After the upgrade completes, check if the Oracle Home 10.1.3 was not registered properly in the inventory at the end of the install. This could happen if your upgrade was on the same application server, but with different OS users and a different OS DBA group. In that case, the new OS user cannot read oraInst.loc.

  To fix this, either rename the oraInst.loc file and the oraInventory directory or give 777 permissions to the file and directory.

- Finally, if Oracle Applications does not start after the upgrade completes, see My Oracle Support article ID 1106795.1.

7.4.3 Upgrade Oracle Applications to Release 12.1.3

Follow instructions in Section 3.2, "Upgrade Oracle Applications to Release 12.1.3" on upgrading Oracle Applications to R12.1.3.

7.4.4 Apply Patches

Apply the following patches:

- **8855023**. See My Oracle Support article ID 1083981.1.

- **10163753**. See My Oracle Support article ID 1322144.1.

- **10406817**. See My Oracle Support article ID 1284055.1.

7.5 Upgrade and Configure the Oracle Database

Follow instructions in the following sections. These steps are required for all upgrade paths:

1. Section 3.3, "Upgrade the Oracle Database and Oracle Warehouse Builder to 11.2.0.4".

2. Section 3.4, "Edit listener_ifile.ora".

3. Section 3.5, "Change Default Password Settings".

4. Section 3.6, "Increase JVM Memory".

7.6 Upgrade Informatica PowerCenter to 8.6.1 with HotFix 11, or to Informatica PowerCenter 9.0.1, or to Informatica PowerCenter 9.5.1

Before upgrading to Oracle LSH 2.2.2, ensure you are using Informatica PowerCenter 8.6.1 with HotFix 11. You could also upgrade to Informatica PowerCenter 9.0.1, or Informatica PowerCenter 9.5.1.

> **Note:** Apply patch 17432328 before installing or upgrading to Informatica PowerCenter 9.5.1.

The software is licensed separately. You must buy this software from Informatica.

To upgrade:

1. Run the installer, selecting the option to upgrade from the previous version.

> **Note:** 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.
>
> You can get HotFix 11 even if it has been superseded by a later version by logging a Service Request with Informatica.

2. Make sure the environment file infa.env exists under $INFA_HOME (Informatica Installation Directory) and has the following environment variable settings:

   INFA_HOME=<Informatica Installation Directory>

   LANG=C

   LD_LIBRARY_PATH=$LD_LIBRARY_PATH:<Informatica Installation

   Directory>/server/bin

   On a Linux platform, add this extra line to the file:

   unset LD_ASSUME_KERNEL

7.7 Oracle Business Intelligence Publisher Options

To support Oracle BIP Programs, Oracle LSH 2.2.2 supports Business Intelligence Publisher 10.1.3.4.1 and Oracle Business Intelligence Publisher 11.1.1.7.0.

If you are upgrading to Oracle LSH 2.2.2 on the same server used for your existing Oracle LSH installation, you do not need to reinstall the Oracle BIP server.

If you are upgrading to Oracle LSH 2.2.2 on a different server, you must install Oracle BI Publisher 10.1.3.4.1 and apply patch 7642637, or install Oracle Business Intelligence Publisher 11.1.1.7.0.

7.8 OBIEE Options

To support OBIEE Business Areas and data visualizations, Oracle LSH is compatible with both OBIEE 10.1.3.4.1 and OBIEE 11.1.1.7.0.

You can use both OBIEE OBIEE 10.1.3.4.1 and OBIEE 11.1.1.7.0 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.

7.8.1 OBIEE 10.1.3.4.1

If you are using OBIEE 10.1.3.4.1 for visualizations already, you do not need to reinstall OBIEE or the DP Server on the Oracle BI Server. However, you do need to install the new version of the CDR Client cdrconfig.xml on each Definer's PC, edited with the correct local patch to the Oracle BI Administration Tool; see Section 5.16.2.1, "Install the Client Plug-In".

The command files shipped with Oracle LSH 2.2.2 include a set with the string `10g` in their name (obieeinstall10g.cmd, obieedeploy10g.cmd, obieepsrestart10g.cmd and obieepsrestart10g.sh). However, these are identical in content to the ones you have already installed and edited. You do not need to change.

> **Note:** For additional information see the *Oracle Life Sciences Data Hub System Administrator's Guide*.

7.8.2 OBIEE 11.1.1.7.0

If you want to upgrade to OBIEE 11g for data visualizations, you must install OBIEE 11.1.1.7.0 and upgrade the RPD file. There are several changes required from previous releases.

7.8.2.1 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) and apply patch 140715.

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. This software is included in the Oracle LSH 2.2 media pack.

7.8.2.2 Copy and Edit Revised Execution Command Scripts

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

1. Copy the Oracle LSH 2.2.2 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
   ```

7.8.2.3 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.

7.8.2.3.1 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 Section 7.8.2.2, "Copy and Edit Revised Execution Command Scripts".

7.8.2.3.2 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).

7.8.2.3.3 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.

7.8.2.3.4 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

7.8.2.3.5   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 2.2.2, 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 Section 7.8.2.5, "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 Section 7.8.2.2, "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).

7.8.2.4 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 Section 7.8.2.5, "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.

7.8.2.5 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."

7.8.2.6 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 7.8.2.3.5, "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.

7.9 Migrate the Oracle Warehouse Builder Repository (Conditional)

The steps in this section are ONLY required if you are upgrading from Oracle LSH 2.1.3 on 10gR2 to Oracle LSH 2.2.

- Section 7.9.1, "Migrate the OWB Repository from CDR_RTREPOS to OWBSYS"
- Section 7.9.2, "Create the OWBSYS Schema and Grant Privileges"
- Section 7.9.3, "Create New OWB Workspace for CDR_RTREPOS"

7.9.1 Migrate the OWB Repository from CDR_RTREPOS to OWBSYS

Migrate the OWB repository residing in the CDR_RTREPOS schema to the 11gR2 unified repository in the OWBSYS schema. Follow instructions in Chapter 6, "Moving to Oracle Warehouse Builder 11.2 from Earlier Releases," of the *Oracle® Warehouse Builder Installation and Administration Guide 11g Release 2 (11.2),* Part Number E17130-03, which is on the media pack and at `http://download.oracle.com/docs/cd/E11882_01/owb.112/e17130.pdf`.

Perform all steps on the new 11gR2 OWB Home created during the database upgrade.

7.9.2 Create the OWBSYS Schema and Grant Privileges

Create the OWBSYS schema in the database and grant it required privileges.

7.9.2.1 Create the Schema

1. Log on to the computer where the Oracle LSH database is installed.

2. Change directories to <OWB_HOME>/owb/UnifiedRepos.

3. Log in to SQL*Plus as a database user with SYSDBA privileges.

4. Run the **cat_owb.sql** script to create the OWBSYS schema.

   Enter the tablespace name when you are prompted for it.

5. Unlock OWBSYS and OWBSYS_AUDIT accounts.

   a. At the command prompt, start SQL*Plus:

   ```
   % sqlplus

   SQL*Plus: Release 11.2 - Production on Mon July 27 13:06:27 2009

   Copyright (c) 1982, 2009, Oracle. All rights reserved.
   ```

   b. When prompted for user name, log in as a user with SYSDBA privileges.

   ```
   Enter user-name: sys as sysdba

   Enter password: password

   Connected to:

   Oracle Database 11g Enterprise Edition Release 11.2 - Production

   With the Partitioning, OLAP and Data Mining options
   ```

   c. Unlock the OWBSYS user account, and set its new password:

   ```
   SQL> alter user owbsys identified by password account unlock;
   ```
   User altered.

   d. Unlock the OWBSYS_AUDIT user account, and set its new password:

   ```
   SQL> alter user owbsys_audit identified by password account unlock;
   ```
   User altered.

> **Note:** Oracle recommends changing the default password for this account. You will need the password later.

6. Run the **reset_owbcc_home.sql** script to reset the OWB_HOME directory:

Note that this entry is case-sensitive, does not accept a trailing slash, and requires forward slashes only, regardless of the operating system.

7.9.2.2 Unlock Accounts and Change Passwords

Unlock the OWBSYS and OWBSYS_AUDIT user accounts:

1. Log in to SQL*Plus as the user SYSDBA.

2. Execute <OWB_HOME>/owb/UnifiedRepos/unlock_owbsys.sql

Change the account passwords in SQL*Plus as SYSDBA by entering the following commands:

```
ALTER USER OWBSYS identified by password;

ALTER USER OWBSYS_AUDIT identified bypassword;
```

7.9.2.3 Grant Required Privileges

1. Log in to SQL*Plus as the user CDR_RTREPOS. Check that you are properly logged in:

```
show user;
```

The system returns: CDR_RTREPOS

2. Grant privilege to owbsys:

```
grant owb_o_cdr_rtrepos to owbsys with admin option;
```

7.9.3 Create New OWB Workspace for CDR_RTREPOS

To create a new OWB Workspace for the existing user (CDR_RTREPOS):

1. Change directory to <OWB_HOME>/owb/bin/unix.

2. Run the script reposinst.sh to launch the Repository Assistant, entering information as described in the next steps.

3. Enter database connection information and click **Next**.

4. Select the **Manage Warehouse Building Workspace** option to create a new Warehouse Builder workspace for the existing user (CDR_RTREPOS), and click **Next**.

5. Select the **Create a new Warehouse Builder Workspace** option and click **Next**.

6. Select the **Create a workspace with an existing user as workspace owner** option and click **Next**.

7. Enter credentials for a database DBA account and click **Next**.

8. In the next screen, set:

- **Workspace Owner's User Name**: CDR_RTREPOS
- **Workspace Owner's Password**: CDR_RTREPOS_password

- **Workspace Name**: Enter a uniquely identifiable Workspace Name; for example, CDROWBWS. This workspace name should be different from the CDR_RTREPOS workspace name. This is the repository that is going to be migrated from the previous version of OWB as described in Section 7.12, "Upgrade the OWB Repository (Conditional)".

9. Click **Finish** and wait for the workspace to be created.

7.10 Upgrade Oracle Life Sciences Data Hub

These steps are required for all upgrade paths.

Follow the instructions in the following sections of Chapter 5, "Installing the Oracle Life Sciences Data Hub."

1. Section 5.1, "Apply the Oracle Life Sciences Data Hub AD Splicer Patch"

2. Section 5.17.3, "Install Oracle LSH Release 2.2.2"

3. Section 5.3, "Install Online Help"

4. Section 5.4, "Grant Execute Privileges to the APPS Schema"

Note: If you updated your BIP version from 10g to 11g, see Section 5.5.2, "Create Directories and Copy Files" for information on extracting the BIP 11g .jar file.

7.11 Integrate Oracle LSH with the 11g Release 2 Oracle Warehouse Builder (Conditional)

The steps below are ONLY required if you are upgrading from Oracle LSH 2.1.3 on 10gR2 to Oracle LSH 2.2.

Except for the steps in Section 7.11.10, "Stop the 10g Release 2 OWB Service", all steps must be performed on the 11g OWB Home created during the database upgrade.

This section contains the following topics:

- Section 7.11.1, "Set Up Your Environment"
- Section 7.11.2, "Create Directories and Copy Files"
- Section 7.11.3, "Disable Application Server Authentication"
- Section 7.11.4, "Edit run_service.sh"
- Section 7.11.5, "Edit Runtime.properties"
- Section 7.11.6, "Edit owb.classpath"
- Section 7.11.7, "Edit Shell Scripts to Match Directory Structure"
- Section 7.11.8, "Run OWB Shell Scripts"
- Section 7.11.9, "Restart the 11g Release 2 OWB Service"
- Section 7.11.10, "Stop the 10g Release 2 OWB Service"

Follow these steps to install OWB Adapters and Operators in the new 11gR2 OWB Home. Except for the steps in Section 7.11.10, "Stop the 10g Release 2 OWB Service", all steps must be performed on the 11gR2 OWB Home created during the database upgrade.

7.11.1 Set Up Your Environment

You must set up your environment as described in Section 5.5.1, "Set Up Your Environment".

7.11.2 Create Directories and Copy Files

Create directories for Oracle LSH in the OWB home directory and copy files into them as described in Section 5.5.2, "Create Directories and Copy Files".

7.11.3 Disable Application Server Authentication

By default when Oracle Applications 11.5.10 CU2 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** following instructions in Section 5.5.3, "Disable Application Server Authentication".

7.11.4 Edit run_service.sh

Edit the **run_service.sh** file as described in Section 5.5.4, "Edit run_service.sh".

7.11.5 Edit Runtime.properties

Edit the **Runtime.properties** file as described in Section 5.5.5, "Edit Runtime.properties".

7.11.6 Edit owb.classpath

Edit the owb.classpath file as described in Section 5.5.6, "Edit owb.classpath".

7.11.7 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 following instructions in Section 5.5.7, "Edit Shell Scripts to Match Directory Structure".

7.11.8 Run OWB Shell Scripts

Run OWB shell scripts as described in Section 5.5.8, "Run OWB Shell Scripts"after following instructions in Section 5.5.7, "Edit Shell Scripts to Match Directory Structure".

7.11.9 Restart the 11g Release 2 OWB Service

You must restart the 11gR2 OWB service following instructions in Section 5.5.9, "Restart the OWB Service".

7.11.10 Stop the 10g Release 2 OWB Service

After upgrading to 11gR2, you do not need to have the 10gR2 OWB service running.

> **Note:** These are the only steps that you perform on your 10g OWB Home. All other OWB steps, including the Export step, are on the 11gR2 Home.

To stop the 10g OWB process:

1. Go to *10g_OWB_HOME*/owb/bin/unix.

2. Rename **run_service.sh** as **run_service_temp.sh**.

3. Log in to SQL*Plus as the user CDR_RTREPOS. Check that you are properly logged in:

   ```
   show user;
   ```

   The system returns: `CDR_RTREPOS`

4. Run the Stop Service script:

   ```
   @OWB_HOME/owb/rtp/sql/stop_service.sql
   ```

7.12 Upgrade the OWB Repository (Conditional)

The instructions below are required ONLY if you are upgrading from Oracle LSH 2.1.3 on 10gR2 or 11gR2 to Oracle LSH 2.2. If this is the case, upgrade the OWB repository using the following steps.

This section contains instructions for the following upgrades:

- Upgrading OWB from Oracle LSH 2.1.3 on 10g Release 2 to Oracle LSH 2.2

- Upgrading OWB from Oracle LSH 2.1.3 on 11g Release 2 or Oracle LSH 2.1.4 on 11g Release 2 to Oracle LSH 2.2

7.12.1 Upgrading OWB from Oracle LSH 2.1.3 on 10g Release 2 to Oracle LSH 2.2

Run the OWB migration script to migrate the OWB repository residing in the CDR_RTREPOS schema to the unified repository in OWBSYS schema.

1. Run the migration scripts.

   a. Log in to the server where OWB is installed.

   b. Go to the directory <OWB_HOME>/owb/rtasst.

   c. Log in to SQL*Plus as the OWBSYS user.

   d. Run the migration scripts:

      ```
      wb_rt_upgrade_actions.pls

      wb_rt_upgrade_actions.plb

      wb_rt_upgrade.plb

      wb_rti_object_catalog.plb
      ```

2. Export the 10gR2 OWB repository.

   1. In your 11gR2 OWB Home, change directories to <OWB_HOME>/owb/bin/unix.

   2. Run the script **reposinst.sh** to launch the Repository Assistant.

      a. Choose the option Upgrade Repository to Current Release of OracleWareHouseBuilder

      b. Choose the option **Export Entire Repository to File**

      c. Enter username `CDR_RTREPOS` and its password.

      d. Export the repository.

3. Import the old OWB repository to the new unified repository.

   1. In <OWB_HOME>/owb/bin/unix, run the script reposinst.sh to launch the Repository Assistant.

      a. Select the option **Upgrade Repository to Current Release of Oracle Warehouse Builder.**

      b. Select the option **Import Entire Repository to file** and click **Next**.

      c. Enter the password for OWBSYS and click **Next**.

      d. Click **Browse**, select the OWB 10g repository export MDL that you created previously, and click **Next**.

      e. Click **Finish** and wait for the OWB 10g repository to be imported into OWB 11g with all its audit information.

   2. The system displays a message whether the import is successful or not.

      If the import is not successful:

      a. Log in to SQL*Plus as a database user with SYSDBA privileges.

      b. Change directories to <OWB_HOME>/owb/UnifiedRepos.

      c. Run the **script clean_owbsys.sql**.

      d. Repeat all the steps beginning with running cat_owb.sql in Section 7.9.2, "Create the OWBSYS Schema and Grant Privileges."

      If the import failed due to a unique constraint violation, see My Oracle Support article ID 1358564.1.

      > **Note:** This guide has been corrected so that this situation should no longer occur. In the process, section numbers have changed.

   3. If you have other LSH environments, migrate OWB there too.

7.12.2 Upgrading OWB from Oracle LSH 2.1.3 on 11g Release 2 or Oracle LSH 2.1.4 on 11g Release 2 to Oracle LSH 2.2

These steps are only required if you are upgrading from Oracle LSH 2.1.3 on 11gR2 to Oracle LSH 2.2.

Use the following steps to complete the installation of the Warehouse Builder 11.2.0.4 on the Warehouse Builder Server side:

1. Stop and exit all Warehouse Builder components, including the Control Center Service.

   To stop the Control Center, run the stop_service.sql script. In SQL*Plus, run the following command:

   sqlplus OWBSYS/OWBSYS_password @ORACLE_HOME/owb/rtp/sql/stop_service.sql

   A return value of Not Available indicates that you successfully stopped the service.

2. From a command prompt, navigate to the $ORACLE_HOME/owb/reposasst/upg directory and execute the following command:

   sqlplus /nolog @upg11201to11202.sql

3. Enter the database connection information, the Warehouse Builder repository owner credentials, and the SYS user credentials.

The upgrade utility proceeds to upgrade the Warehouse Builder objects associated with the selected repository owner.

The upgrade utility logs any errors in the file ORACLE_ HOME/owb/reposasst/upg/LOG.TXT. Note that you can ignore any creation errors reported due to objects already existing. An example of such an error is displayed below.

DROP TABLE dataflow_dependency_t;

ERROR at line 1:

ORA-00942: table or view does not exist

CREATE TABLE

4. Start the Control Center Service using the start_service.sql script.

sqlplus OWBSYS/OWBSYS_password @ORACLE_HOME/owb/rtp/sql/start_ service.sql

A return value of Available indicates that you successfully started the service. If the service fails to start, run the start_service.sql script again.

If the service fails to start after two attempts, run the service_doctor script to determine the cause using the following command:

sqlplus OWBSYS/OWBSYS_password @ORACLE_HOME/owb/rtp/sql/service_ doctor.sql

The return value should indicate that the service script is accessible to the database server.

If you encounter an obfuscation error while attempting to start the Control Center Service, run the script OWB_HOME/owb/rtp/sql/reset_repository.sql.

5. Reset passwords for OWB stores.

    1. Log in to SQL*Plus as user APPS.

    2. Run the script $CDR_TOP/patch/115/sql/cdrresetowbstorepwd.sql. This script prompts you for the passwords to OWBSYS and APPS schema and the Database name.

Refer to *Oracle® Warehouse Builder Release Notes 11g Release 2 (11.2)* Part Number E10585-08 for any known issues. This document is available in the media pack.

7.13 Migrate the Oracle Warehouse Builder Stores (Conditional)

The steps in this section are required ONLY if you are upgrading from Oracle LSH 2.1.3 on 10gR2 to Oracle LSH 2.2.

7.13.1 Migrate the Store Passwords and Audit Task ID

No input is required to migrate the Audit Task ID.

1. Log in to the database as CDR_RTREPOS.

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

The script prompts you for the passwords to the following accounts:

- OWBSYS
- APPS

7.13.2 Upgrade the Workflow Store

Start the OWB Browser Listener

1. Log in to the computer where OWB is installed.

2. Go to the directory <OWB_HOME>/owb/bin/unix.

3. Run the script startOwbbInst.sh.

   At the prompt, enter the oc4j password.

Upgrade the Workflow Store

1. Launch the OWB repository through its URL:

   ```
   https://<DB_Host_Name>.<domain>:<port>/owbb/RABLogin.uix?mode=runtime
   ```

   For example:

   ```
   https://rws60008rems.us.oracle.com:8999/owbb/RABLogin.uix?mode=runtime
   ```

2. In the Login screen, enter:

   - User name CDR_RTREPOS and its password
   - The Host, Port, and Service Name of the database

3. Select the **Control Center** radio button and click **Login**.

4. For Workspace, select **CDR_RTREPOS.CDR_RTREPOS** and click **Go**.

5. Click **Locations Report**.

6. On the Location screen, order by store name.

7. Click on the hyperlink in the **Validation** column (the rightmost column) for the **APPS_MODULE_LOCATION1** store.

   > **Note:** It may take a long time—30 minutes or more—for the screen to refresh, depending on your system and the number of stores you have.

8. Update the Netservice name to null and click **Update**.

9. Check that the host, port and SID of the store are the same as that of the control center which is displayed at the top of the screen.

10. Enter the APPS schema password and click **Get Status**.

11. Enter the APPS schema password and click **Upgrade**.

12. Observe that the store status changes to **Valid**.

13. Repeat Steps 10 to 15 for the APPS store.

14. Close the browser.

Stop the OWB Browser Listener

1. Log in to the computer where OWB is installed.

2. Go to the directory <OWB_HOME>/owb/bin/unix.

3. Run the script stopOwbbInst.sh.

    At the prompt, enter the oc4j password.

7.13.3 Upgrade Other OWB Stores

To upgrade other OWB stores:

1. Go to the directory <OWB_HOME>/owb/bin/unix.

2. Run upgradeLoc.sh by specifying the following parameters:

    ```
    sh upgradeLoc.sh <host>.<domain> <port> <service> <wks_owner_name> <wks_owner_
    pswd> <workspace_owner.workspace_name>
    ```

    For example:

    ```
    sh upgradeloc.sh rws60160rems.us.oracle.com  1557 ildv214  CDR_RTREPOS  CDR_
    RTREPOS  CDR_RTREPOS.CDR_RTREPOS
    ```

3. Check the log file upgradeLoc.log which is created in the same directory and confirm that there are no errors.

7.13.4 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 Section 3.4, "Edit listener_ifile.ora".

7.14 Upgrade the Distributed Processing Server

This step is required for all upgrade paths.

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 the DPServer.jar from the zip file into the lib directory.

4. Copy **nls_charset12.zip** from the $COMMON_TOP/java/lib directory to the lib directory.

5. Copy **jmscommon.jar** from the $ORACLE_HOME/rdbms/jlib directory to the lib directory.

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

7.15 Perform the Remaining Post-Installation Tasks

These steps are required for all upgrade paths.

Follow the instructions in the following sections:

- Section 5.8, "Run the Post-Installation Programs"

- Section 5.11, "Start Journaling Internal Tables"

- Section 5.13, "Grant Security Rights to Seeded Adapters"

7.16 Start Server Processes

This step is required for all upgrade paths.

Start the following servers:

- Application Server

- Oracle LSH Distributed Processing (DP) Server (see Section 5.15.6, "Start the DP Server")

8

What's Next

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

- 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, classification system, and organizational domains; see "Setting Up the Security System" and "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, Oracle BIP for reports, or Informatica for data transformations, do the additional setup required for each system. See the *Oracle Life Sciences Data Hub System Administrator's Guide* for information.

A

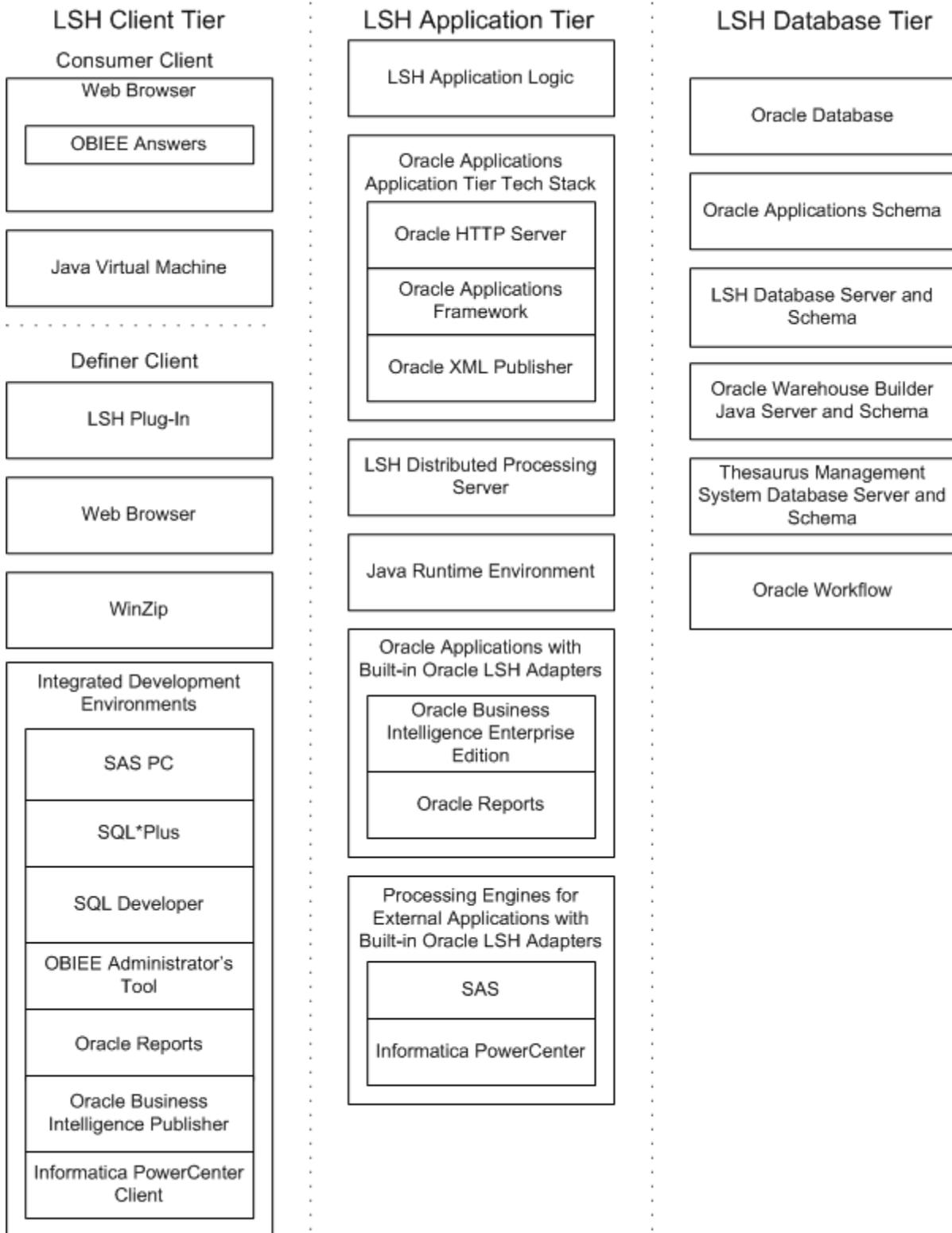# Architecture Overview

This section contains the following topics:

- Section A.1, "Client Tier"
- Section A.2, "Application Tier"
- Section A.3, "Database Tier"
- Section A.4, "Adapters to External Systems"

Figure A–1 shows the logical Oracle LSH architecture that is described in the following sections.

Figure A–1   Oracle LSH Architecture

LSH Client Tier

Consumer Client

- Web Browser
  - OBIEE Answers

- Java Virtual Machine

Definer Client

- LSH Plug-In

- Web Browser

- WinZip

- Integrated Development Environments
  - SAS PC
  - SQL*Plus
  - SQL Developer
  - OBIEE Administrator's Tool
  - Oracle Reports
  - Oracle Business Intelligence Publisher
  - Informatica PowerCenter Client

LSH Application Tier

- LSH Application Logic

- Oracle Applications Application Tier Tech Stack
  - Oracle HTTP Server
  - Oracle Applications Framework
  - Oracle XML Publisher

- LSH Distributed Processing Server

- Java Runtime Environment

- Oracle Applications with Built-in Oracle LSH Adapters
  - Oracle Business Intelligence Enterprise Edition
  - Oracle Reports

- Processing Engines for External Applications with Built-in Oracle LSH Adapters
  - SAS
  - Informatica PowerCenter

LSH Database Tier

- Oracle Database

- Oracle Applications Schema

- LSH Database Server and Schema

- Oracle Warehouse Builder Java Server and Schema

- Thesaurus Management System Database Server and Schema

- Oracle Workflow

A.1 Client Tier

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

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

- 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, Oracle Business Intelligence Publisher, Informatica PowerCenter client.

A.2 Application Tier

In addition to standard Oracle Applications components, Oracle LSH's 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.

- **Informatica PowerCenter** executes user-developed Informatica programs.

A.3 Database Tier

The Oracle LSH database tier includes the following:

- **Oracle Enterprise Edition RDBMS**. All of Oracle LSH's 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 TMS's database tier internally to run its classification system, which is a required part of Oracle LSH functionality.

A.4 Adapters to External Systems

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–2 shows the adapters that are included with Oracle LSH. Adapters to other systems may be available from third parties.

Figure A–2   Oracle LSH Adapters by Functionality

Oracle Life Sciences Data Hub Built-In Adapters
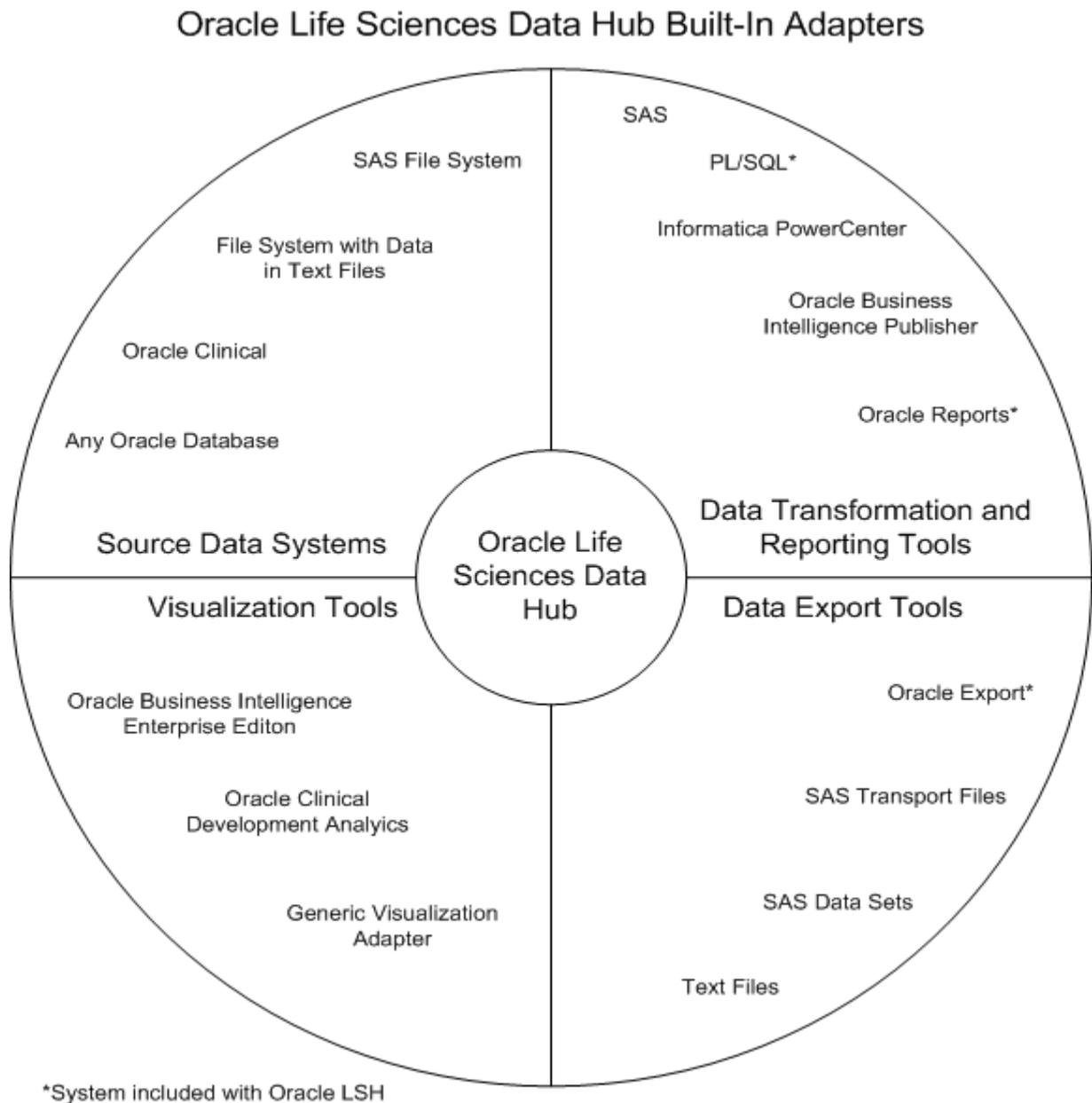
A.4.1 Source Data Systems

LSH includes adapters to external systems from which you can 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

A.4.2 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

- Informatica PowerCenter

- Oracle Reports

- Oracle Business Intelligence Publisher

A.4.3 Visualization Tools

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

- 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

A.4.4 Data Export Tools

Oracle LSH includes adapters to allow exporting Oracle LSH data:

- Oracle Export

- SAS—Transport Files and Data Sets

- Text Files

B

Installing Real Application Clusters (RAC)

Oracle Life Sciences Data Hub (Oracle LSH) Release 2.2.2 supports RAC with Oracle Database 11.2.0.4.

If you have installed Oracle LSH on a single node and want to migrate to RAC, follow these instructions:

- My Oracle Support article 1058763.1, *Interoperability Notes EBS R12 with Database 11gR2.*

- My Oracle Support article 823587.1, *Using Oracle 11g Release 2 Real Application Clusters with Oracle E-Business Suite Release 12*

- My Oracle Support article 1331090.1, *How To Configure Oracle Warehouse Builder on RAC database for LSH 2.1.4 and Later*

- My Oracle Support article 455999.1, *How to Verify if OWB is Installed Correctly on RAC and Exadata.*