Oracle® Health Sciences Data Management Workbench

Installation Guide

Release 3.0
F30271-04
February 2021

ORACLE

Oracle Health Sciences Data Management Workbench Installation Guide, Release 3.0

F30271-04

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Preface

The *Oracle Health Sciences Data Management Workbench Installation Guide* describes how to install and configure the (Oracle DMW) application for use in clinical trials.

Documentation accessibility

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

Related resources

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

Access to Oracle Support

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

1
System Requirements and Technology Stack

This section includes the following topics:

- System Requirements
- Technology Stack

1.1 System Requirements

This section includes system requirements for your Oracle Health Sciences Data Management Workbench (Oracle DMW) 3.0 installation. Oracle DMW is built on Oracle Life Sciences Data Hub (Oracle LSH). It contains the following topics:

- Operating Systems
- Hardware

1.1.1 Operating Systems

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

For details on the database and middle tier, see these topics:

- Database Tier
- Middle Tier

1.1.1.1 Database Tier

The requirements are the same as for the Oracle LSH database tier:

- Linux x86-64 (64-Bit)
  - Oracle Enterprise Linux 6.10 or later
- Oracle Solaris 10 on SPARC (64-Bit)
- Oracle Solaris 11 on SPARC (64-Bit)

1.1.1.2 Middle Tier

Oracle DMW requires both an Oracle LSH middle tier and a Oracle DMW middle tier.

Oracle LSH Middle Tier

- Linux x86-64 (64-Bit)
  - Oracle Enterprise Linux 6.10 or later
- HP Itanium 11i v3 (11.31) (64-bit)

- Oracle Solaris 10 on SPARC(64-Bit)
- Oracle Solaris 11 on SPARC (64-Bit)

Oracle DMW Middle Tier

- Linux x86-64 (64-Bit)
  - Oracle Enterprise Linux 7
  - Oracle Enterprise Linux 8
  - Red Hat Enterprise Linux 6
  - Red Hat Enterprise Linux 7
  - Red Hat Enterprise Linux 8
- Oracle Solaris 10 on SPARC (64-Bit)
- Oracle Solaris 11 on SPARC (64-Bit)

1.1.2 Hardware

You must install the WebLogic Server on a different application server from Oracle Life Sciences Data Hub. This also allows you to perform some installation steps in parallel:

- You can install JDK, WebLogic Server, and Oracle Applications Developer (up to Apply the JSF Library to the Oracle DMW Domain in this book) without dependency on any steps in the *Oracle Life Sciences Data Hub Installation Guide*.
- After you have upgraded Oracle Database to 19c (19.8) as directed in the *Oracle Life Sciences Data Hub Installation Guide*, you can follow the steps in Copy runtime12.jar into the Domain's lib Directory through Configure the DMWServer Managed Server.

Subsequent steps in this guide are dependent on completing the installation of Oracle LSH.

For additional hardware considerations, see the *Oracle Life Sciences Data Hub Installation Guide*.

1.2 Technology Stack

To get the most current information on the Oracle DMW technology stack, see My Oracle Support article 180430.1.

In addition to the Oracle Life Sciences Data Hub technology stack, Oracle DMW has the following requirements:

- Oracle Life Sciences Data Hub 3.0 and its technology stack
- Oracle WebLogic Server 12.2.1.4
- Java Development Kit (JDK) 1.8.0_211
- Oracle Application Developer 12.2.1.4
- One of the following:
  - Oracle InForm Adapter 1.3.8, 1.3.8.1, or 1.3.9* with Oracle InForm 6.1.x.

*Oracle InForm Adapter 1.3.9 is compatible only with Oracle InForm 6.1.1.5 (earlier Oracle InForm Adapter versions are not supported with Oracle InForm 6.1.1.5).

- Oracle InForm Adapter 6.2.x with Oracle InForm 6.2.x
- Oracle InForm Adapter 6.3 with Oracle InForm 6.3

For details on browsers, see the following topic:

- Supported Browsers

1.2.1 Supported Browsers

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

- Google Chrome: 85.0.4183.102 Official Build (64-bit)
- Firefox Quantum: 68.12.0 ESR (32-bit and 64-bit)
- Microsoft Edge Chromium: 85.0.564.51 Official Build (64-bit)

> **Note:**
>
> For the best performance, use a minimum screen resolution of 1024 x 768.

2

Install Oracle Life Sciences Data Hub

Oracle Health Sciences Data Management Workbench (Oracle DMW) is built on top of Oracle Life Sciences Data Hub (Oracle LSH). It uses the Oracle LSH database, processing engine, Distributed Processing (DP) Server, security system, defined objects, and adapters. The Oracle LSH installation includes everything required to support Oracle DMW's database.

Install Oracle LSH and its technology stack, including Oracle eBusiness Suite and Oracle Database, following instructions in the *Oracle Life Sciences Data Hub Installation Guide*. The original version is on the Oracle Health Sciences Life Sciences Warehouse media pack, but always check the Oracle Help Center website to see if a revised version is available: https://docs.oracle.com.

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

The *Oracle Life Sciences Data Hub Installation Guide* gives instructions for downloading the software from Oracle Software Delivery Cloud and My Oracle Support into a staging area.

> **Note:**
>
> If you only install Oracle LSH to support DMW, you do not need to follow instructions listed in the "What's Next" chapter of the *Oracle Life Sciences Data Hub Installation Guide*. See the What's Next section in this document instead.

3
Install Oracle WebLogic Server

You must install Oracle WebLogic Server on a different application server from Oracle Life Sciences Data Hub (Oracle LSH). Perform all installation tasks as the same OS user. See the *Oracle Fusion Middleware Installing and Configuring Oracle WebLogic Server and Coherence 12c (12.2.1.4)* document on Oracle Help Center.

This section contains the following topics:

3.1 Install Oracle Java Development Kit

Oracle Java Development Kit (JDK) 1.8 is also known as JDK 8. Oracle DMW 3.0 uses JDK 1.8.0_211 or higher.

To download and install JDK 1.8.0_211 (Patch 29206832):

1. Open My Oracle Support and sign in.
2. In the Search Knowledge Base field in the upper right, enter: `1439822.1`. To open the "All Java SE Downloads on MOS" page.
3. Scroll down to the list of JDK versions to **Oracle JDK 8 Update 211** (or higher).
4. Click the patch number link.
5. Select the appropriate platform and click **ReadMe** to access the Release Notes and **Download** to download the patch.
6. Follow instructions in the Release Notes to apply the patch.

3.2 Install Oracle WebLogic Server

To install Oracle WebLogic Server, you install the server and create schemas for Oracle Fusion Middleware. See the following topics for details:

- Install Oracle WebLogic Server 12.2.1.4
- Create Database Schemas to Use with Oracle Fusion Middleware

3.2.1 Install Oracle WebLogic Server 12.2.1.4

Download patch **30188255** and follow the instructions in "Installing the Infrastructure Software" from the *Oracle® Fusion Middleware Installing and Configuring the Oracle Fusion Middleware Infrastructure* to install WebLogic Server 12.2.1.4, which you can find on the media pack or at Oracle Help Center. (Do not try to upgrade an earlier version of Oracle WebLogic Server.)

See the following sections for details on customizations to the installation procedures. For example, when prompted to enter the Inventory Directory after logging in to Oracle Fusion Middleware, enter a new location to install WebLogic Server 12.2.1.4 and select **Fusion Middleware Infrastructure** to install it.

> **Note:**
>
> The WebLogic Server installation process includes specifying a JDK installation. At this point, specify the Oracle Java Development Kit (JDK) that you installed in Install Oracle Java Development Kit .

3.2.2 Create Database Schemas to Use with Oracle Fusion Middleware

Follow the instructions in "Creating Database Schemas" from the *Oracle® Fusion Middleware Installing and Configuring the Oracle Fusion Middleware Infrastructure* guide on Oracle Help Center.

Create all the schemas listed.

> **Note:**
>
> If you see the following message open while creating the schemas: "The selected Oracle database is not configured to use the AL32UTF8 character set. Oracle strongly recommends using the AL32UTF8 character set for databases that support Oracle Fusion Middleware," you can click **Ignore** to ignore it.

3.3 Create a WebLogic Server Domain for Oracle DMW

Create a WebLogic domain with the suggested name `DMWDomain` following the instructions in "Configuring Your WebLogic Domain" from the *Oracle® Fusion Middleware Installing and Configuring the Oracle Fusion Middleware Infrastructure* guide on Oracle Help Center.

During domain creation, do the following.

- Select Templates
- Select Development Mode
- Advanced Configuration
- Create a WebLogic Server "Machine"
- Create a Managed Server and Assign it to the Machine
- Deployment Targeting
- Services Targeting
- Support SSL Wildcards and SSL Web Services
- Restart the WebLogic Server

3.3.1 Select Templates

In the **Create Domain Using Product Templates** step, select the following templates:

- Basic WebLogic Server Domain - 12.2.1.4.0 (wlserver)
- Oracle Enterprise Manager - 12.2.1.4.0 (em)
- Oracle WSM Policy Manager - 12.2.1.4 (oracle_common)

3.3.2 Select Development Mode

In the **Configure Server Start Mode and JDK** step, select **Development Mode**.

You will change to Production mode later; see Change WebLogic Server to Production.

3.3.3 Advanced Configuration

The first time you run config.sh, you must select the following in the Advanced Configuration screen:

- **Administration Server**
- **Node Manager**
- **Topology**
- **Deployments and Services**

3.3.4 Create a WebLogic Server "Machine"

During domain creation, create a Machine with the suggested name `DMWMachine`. A *machine* is the logical representation of the computer that hosts one or more WebLogic Server instances. Each Managed Server must be assigned to a machine.

3.3.5 Create a Managed Server and Assign it to the Machine

During domain creation, create a Managed Server with the suggested name `DMWServer` and assign it to the DMW Machine.

> **Note:**
>
> The following instructions refer to this Managed Server as **DMWServer** and the Machine as **DMWMachine**.

3.3.6 Deployment Targeting

1. In the Deployment Targeting screen, select **AppDeployment and Library** from the Deployments column.
2. Select **DMWServer** from the Deployments Targets column.
3. Press the > button between the columns.

3.3.7 Services Targeting

1. In the Services Targeting screen, select **JDBCSystemResource** from the Services column.
2. Select **DMWServer** from the Deployments Targets column.
3. Press the > button between the columns.

3.3.8 Support SSL Wildcards and SSL Web Services

If you are using HTTPS, check the following settings and change them if necessary to support SSL wildcards. For example, use `*.company.com` instead of `server.company.com`.

1. Log in to the WebLogic Server Console and open the SSL tab.
2. Set **Hostname Verification** = `Custom Hostname Verifier`.
3. Set **Custom Hostname Verifier** = `weblogic.security.utils.SSLWLSWildcardHostnameVerifier`
4. Select **Use JSSE SSL**. This is required for HTTPS SSL web services, not specifically for wildcards. If you are using HTTP, do not select this setting.
5. Save.

3.3.9 Restart the WebLogic Server

For information on starting and stopping the WebLogic Server, see the *Oracle® Fusion Middleware Managing Server Startup and Shutdown for Oracle WebLogic Server 12.2.1.4.0* at:

- HTML: Administering Server Startup and Shutdown for Oracle WebLogic Server
- PDF: You can download a PDF version of the same document in the same location by right-clicking the **PDF** link and selecting **Save Target As**.

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

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

and

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

3.4 Copy runtime12.jar into the Domain's lib Directory

The Oracle Database file runtime12.jar is included in $ORACLE_HOME/sqlj/lib on the Oracle LSH database server computer.

Using SFTP, copy it from there to the WebLogic Server computer, to the lib directory of the domain created when you installed the WebLogic Server.

3.5 Edit setDomainEnv.sh

Modify the setDomainEnv.sh to configure the WebLogic Administration Server and DMWServer. Oracle recommends the following settings for production use. Be careful to **insert text as directed before or after the located sections**.

1. Stop the Administration Server.
2. Log in to the system, change to the domain\bin directory, and open setDomainEnv.sh in an editing tool.
3. Add a parameter named `-DdmwWebService` to JAVA_OPTIONS and set its value to:
   - `SSL` if you plan to use HTTPS for InForm adapter web service calls.
   - `NONSSL` if you plan to use HTTP for InForm adapter web service calls.

   Search for the following text:

   ```
   JAVA_OPTIONS="${JAVA_OPTIONS}"
   ```

   Add the parameter and value within the quotes. For example:

   ```
   if [ "${WEBLOGIC_EXTENSION_DIRS}" != "" ] ; then
   JAVA_OPTIONS="${JAVA_OPTIONS} -Dweblogic.ext.dirs=${WEBLOGIC_EXTENSION_DIRS}"
   export JAVA_OPTIONS

   fi

   JAVA_OPTIONS="${JAVA_OPTIONS} -DdmwWebService=SSL"
   ```

```
export JAVA_OPTIONS

# SET THE CLASSPATH
```

4. On one and only one application server, add a parameter named `-DhandleDiscEvent` to JAVA_OPTIONS and set its value to `TRUE`, following the instructions in the previous step.

   This is required to support multiple middle tiers pointing to the same database. Only the server with this parameter set to True will be able to send data from Oracle Thesaurus Management System (TMS) to InForm.

5. Synchronize the DMW WebLogic server clock with the InFormAdapter server clock by adding a parameter named `user.timezone` to JAVA_OPTIONS and set its value to the same timezone used by the InForm Adapter server, using a valid format supported by Java 8; for example:

   ```
   -Duser.timezone=GMT
   ```

   or

   ```
   -Duser.timezone=EST
   ```

   Make sure this parameter is contained within the quotes:

   ```
   JAVA_OPTIONS="${JAVA_OPTIONS} -Duser.timezone=VALID_TIMEZONE"
   export JAVA_OPTIONS
   ```

6. Locate the following section:

   ```
   if [ "${USER_MEM_ARGS}" != "" ] ; then
       MEM_ARGS="${USER_MEM_ARGS}"
       export MEM_ARGS
   fi
   ```

   and add the following text (which may continue to the next page) **BEFORE** the text shown above:

> **Note:**
>
> If you are using names other than "AdminServer" and "DMWServer," change the text accordingly.
>
> ```
> # Set 1024MB for AdminServer
> if [ "${SERVER_NAME}" == "AdminServer" ] ; then
>       USER_MEM_ARGS="-Xms512m -Xmx1024m -XX:MetaspaceSize=256m -
> XX:MaxMetaspaceSize=512m "
>       export USER_MEM_ARGS
> fi
> #Set 4G for Managed Server
> if [ "${SERVER_NAME}" == "DMWServer" ] ; then
>       USER_MEM_ARGS="-Xms8192m -Xmx8192m -XX:MetaspaceSize=1024m
> -XX:MaxMetaspaceSize=1024m -XX:NewSize=1024m -XX:MaxNewSize=1024m -
> XX:SurvivorRatio=8"
>       export USER_MEM_ARGS
> fi
> ```

> **Note:**
>
> Earlier Oracle DMW releases required different arguments: XX:PermSize instead of XX:MetaspaceSize and XX:MaxPermSize instead of XX:MaxMetaspaceSize. JDK 8 ignores the PermSize arguments and requires the MetaspaceSize arguments.

7. Locate the first occurrence of POST_CLASSPATH and add the following after it:

```
if [ "${POST_CLASSPATH}" != "" ] ; then
      POST_CLASSPATH="${DOMAIN_HOME}/lib/fndext.jar${CLASSPATHSEP}$
{DOMAIN_HOME}/lib/runtime12.jar${CLASSPATHSEP}${POST_CLASSPATH}"
      export POST_CLASSPATH
else
      POST_CLASSPATH="${DOMAIN_HOME}/lib/fndext.jar${CLASSPATHSEP}$
{DOMAIN_HOME}/lib/runtime12.jar"
      export POST_CLASSPATH
fi
```

8. Set `PRODUCTION_MODE=true` to run in Server mode.

9. If you want to use a date format other than the default format, dd-MMM-yyyy (01-JAN-2016), in the Listings pages, add the parameter `-DlistingDateFormat` to JAVA_PROPERTIES and set it to one of the supported values found in http://docs.oracle.com/javase/8/docs/api/java/text/SimpleDateFormat.html.

   If the date format has space character in it, you must replace the space with an underscore (_) character because WebLogic Server on Linux will not start with spaces in a parameter. For example, the following value:

   ```
   -DlistingDateFormat=yyyy.MM.dd_G_'at'_HH:mm:ss_z"
   ```

   displays dates as:

   ```
   2001.07.04 AD at 12:08:56 PDT
   ```

10. To be ready to integrate DMW with an electronic data capture system other than InForm, add parameter `-DUseSunHttpHandler` to JAVA_PROPERTIES and set it to True. For example:

    ```
    JAVA_PROPERTIES="-Dplatform.home=${WL_HOME} -Dwls.home=${WLS_HOME} -
    Dweblogic.home=${WLS_HOME} -DUseSunHttpHandler=true"
    ```

11. Locate the first occurrence of EXTRA_JAVA_PROPERTIES and add the following to enable huge pages after it.

    ```
    EXTRA_JAVA_PROPERTIES="${EXTRA_JAVA_PROPERTIES} -XX:+UseLargePages"
    export EXTRA_JAVA_PROPERTIES
    ```

12. Set application module properties:

> **Note:**
>
> The setting `-Djbo.ampool.maxinactiveage=1200000"` creates a session timeout value of 20 minutes. If you prefer a different timeout period, see Change the Default Timeout Period (Optional).

```
EXTRA_JAVA_PROPERTIES="${EXTRA_JAVA_PROPERTIES}
-Djbo.ampool.doampooling=true
-Djbo.ampool.maxavailablesize=expected_maximum_number_of_concurrent_users

-Djbo.ampool.initpoolsize=10
-Djbo.ampool.minavailablesize=10
-Djbo.recyclethreshold=same_as_maximum_number_of_concurrent_users
-Djbo.ampool.timetolive=-1
-Djbo.ampool.maxinactiveage=1200000"
export EXTRA_JAVA_PROPERTIES
```

3.6 Change the Default Timeout Period (Optional)

The default timeout period is 20 minutes. It is set in both setDomainEnv.sh and plan.xml. The values in each place must be equal.

> **Note:**
>
> If you change these settings after deploying Oracle DMW, you must redeploy it, following instructions in Deploy Oracle DMW on the WebLogic Server.

To set a different timeout value:

1. Edit plan.xml, which is located in the top level of the DMW release .zip file. Open plan.xml in an editor, search for SessionTimeout, then change its value, which is **in minutes**, from 20 to the number of minutes you want.

   ```
   <variable>

   <name>SessionTimeout</name>

   <value>number_of_minutes</value>

   </variable>
   ```

2. Edit setDomainEnv.sh, which is located in the domain\bin directory, to add a value **in milliseconds** equal to the number of minutes you entered in plan.xml. For example, 20 minutes is 1200000 milliseconds. Find:

   ```
   EXTRA_JAVA_PROPERTIES="${EXTRA_JAVA_PROPERTIES}
   ```

   and add or edit the line:

   ```
   -Djbo.ampool.maxinactiveage=number_of_milliseconds
   ```

3.7 Restart the WebLogic Server

For information on starting and stopping the WebLogic Server, see the *Oracle® Fusion Middleware Managing Server Startup and Shutdown for Oracle WebLogic Server 12.2.1.4.0* at:

- HTML: Administering Server Startup and Shutdown for Oracle WebLogic Server
- PDF: You can download a PDF version of the same document in the same location by right-clicking the **PDF** link and selecting **Save Target As**.

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

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

and

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

3.8 Start the Node Manager and Check Settings

You can use the Node Manager to start and stop the Administration Server and the Managed Server and to start the server. If the following settings are not correct, change them manually.

1. Start the node manager; see "Starting and Stopping Node Manager" in the *Oracle Fusion Middleware Administering Oracle Fusion Middleware* guide on Oracle Help Center.
2. In the nodemanager.properties file, located at $DOMAIN_HOME/nodemanager, set:
   `StartScriptEnabled = TRUE`
3. The Managed Server listener address must be correct for your environment. It defaults to localhost, which causes problems when restarting the Node Manager.
   a. Log in to the WebLogic Server Console, then click **Environment**, then **Machines**. Select **DMWMachine**, then **Node Manager**.
   b. Change the value for **Listen Address** to the correct hostname for your environment.

3.9 Restart WebLogic Server and Check Settings

For the new setEnvDomain.sh settings take effect:

1. Restart the WebLogic Server.
2. Open the log file at *domain_home*/servers/DMWServer/logs/DMWServer.log.
3. Check that the new user memory settings `-Xms512m` and `-Xmx1024m` appear in the log file.

3.10 Change WebLogic Server to Production

You installed WebLogic Server in Development mode. Change WebLogic Server to Production mode, following instructions in "Change to Production Mode" in the *Oracle Fusion Middleware Administration Console Online Help for Oracle WebLogic Server*.

3.11 Enable E-Business Suite User Authentication

Oracle DMW uses the user authentication feature of Oracle E-Business Suite, not the Oracle WebLogic Server. To enable Oracle DMW and Oracle WebLogic Server to communicate with the E-Business Suite, you must build a desktop database connection file and fndext.jar using the Oracle E-Business Suite Software Development Kit (SDK) for Java, a library of lightweight E-Business Suite APIs. SDK is not required after this initial setup.

- Prepare the Oracle Applications Server to Receive Messages from Oracle DMW

- Configure AppDataSource on the WebLogic Server
- Prepare a Security Realm on the WebLogic Server

3.11.1 Prepare the Oracle Applications Server to Receive Messages from Oracle DMW

Instructions in this section are in the guide *Oracle® E-Business Suite Software Development Kit for Java*, which you can find on the media pack and on My Oracle Support, ID 974949.1 at `https://support.oracle.com/epmos/faces/DocumentDisplay?_afrLoop=455292524919907&id=974949.1&_adf.ctrl-state=1a8dpgv5nt_57`.

- Copy the Database Connection File
- Download and Install the Software Development Kit for Java
- Register the External Node and Generate the Desktop DBC File
- Create the Required User dmwebs@oracle.com

3.11.1.1 Copy the Database Connection File

1. Create a directory on the WebLogic Server.
2. On the Oracle Applications Server that you installed for Oracle Life Sciences Data Hub, from $FND_SECURE copy the .dbc Oracle Applications database connection file to the directory.

3.11.1.2 Download and Install the Software Development Kit for Java

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

The ZIP file contains:

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

1. Extract fndext.jar.
2. Copy the extracted fndext.jar file and the txkEbsSdkConfig.xml file to a directory such as/home/user1/ebssdk on the WebLogic server.
3. Copy the Javadoc to any appropriate location for convenient reference.

3.11.1.3 Register the External Node and Generate the Desktop DBC File

Follow instructions in Section 2.1.2, "Register the External Node and Generate the Desktop DBC File," in the *Oracle® E-Business Suite Software Development Kit for Java.*

3.11.1.4 Create the Required User dmwebs@oracle.com

Follow instructions in Section 2.1.3, "Set Up Necessary Oracle E-Business Suite Users" in *Oracle® E-Business Suite Software Development Kit for Java* to create a user named dmwebs@oracle.com user with the role UMX|APPS_SCHEMA_CONNECT.

This is the proxy user required to pass authentication messages.

3.11.2 Configure AppDataSource on the WebLogic Server

See Section 2.1.5, "Configuring AppsDataSource on Oracle WebLogic server (WLS)" in *Oracle® E-Business Suite Software Development Kit for Java* for detailed instructions for **only** the following steps.

- Rebuild the fndext.jar file file for Oracle WebLogic Server on UNIX/LINUX
- Deploy AppsDataSource Code on the Oracle WebLogic Server
- Configure the AppsDataSource in the Administration Console
- Enable CLOB Support

3.11.2.1 Rebuild the fndext.jar file file for Oracle WebLogic Server on UNIX/LINUX

Follow instructions for Step 2.1.5.1 in *Oracle® E-Business Suite Software Development Kit for Java*. Use the new .dbc file created in Register the External Node and Generate the Desktop DBC File.

3.11.2.2 Deploy AppsDataSource Code on the Oracle WebLogic Server

Follow instructions for Step 2.1.5.3 in *Oracle® E-Business Suite Software Development Kit for Java*.

3.11.2.3 Configure the AppsDataSource in the Administration Console

Follow instructions for Step 2.1.5.4 in *Oracle® E-Business Suite Software Development Kit for Java* with the following requirements specific to Oracle DMW for these data sources: lswdbBC4JDS, lswdbDS, lswExtSysDS, lswdbRestDS. See the following sections for details.

- Create Data Source lswdbBC4JDS
- Create Data Source lswdbDS
- Create Data Source lswExtSysDS
- Create Data Source lswdbRestDS
- Run the Script to Create User CDRBC4JINTERNAL
- Run the Script to Grant Rights to the DMWMON User

3.11.2.3.1 Create Data Source lswdbBC4JDS

Create data source lswdbBC4JDS as described. (For more information, see *Oracle® E-Business Suite Software Development Kit for Java*.)

> **Note:**
>
> The .dbc file referenced in the procedure came from the file you copied in Copy the Database Connection File.

To create data source lswdbBC4JDS:

In Step 5, enter values **exactly** as follows:

- Name for the datasource: `lswdbBC4JDS`
- JNDI Name: `jdbc/lswdbBC4JDS`
- Database Driver: `Oracle's Driver (Thin) for Instance connections.` (Note that this driver is a non-XA driver.)
- Driver ClassName: Accept the default name.

In Step 8, enter values for your environment:

- Database name: dmwebspr (example name)
- Hostname: *your_hostname*
- Port: 1521
- DB User Name: CDRBC4JINTERNAL
- Password: *your_password*

In Step 10, enter values **exactly** as follows:

- Driver Class Name: `oracle.jdbc.OracleDriver` (default)
- Database User Name:

  `dmwebs@oracle.com`

Create data source lswdbDS, lswExtSysDS, and lswdbRestDS as described in the following topics.

3.11.2.3.2 Create Data Source lswdbDS

Create data source lswdbDS as described. (For more information, see *Oracle® E-Business Suite Software Development Kit for Java*.)

> **Note:**
>
> The .dbc file referenced in the procedure came from the file you copied in Copy the Database Connection File.

To create data source lswdbDS:

In Step 5, enter values **exactly** as follows:

- Name for the datasource: `lswdbDS`
- JNDI Name: `jdbc/lswdbDS`
- Database Driver: `Oracle's Driver (Thin) for Instance connections` (Note that this driver is a non-XA driver.)
- Driver Class Name: `oracle.apps.fnd.ext.jdbc.datasource.AppsDataSource`

In Step 8, enter values for your environment:

- Database name: dmwebspr (example name)
- Hostname: *your_hostname*
- Port: *database_port_number*
- DB User Name: Enter the username your created in Create the Required User dmwebs@oracle.com
- Password: Enter the password created for that user.

In Step 10, enter values **exactly** as follows:

- Driver Class Name: `oracle.apps.fnd.ext.jdbc.datasource.AppsDataSource`

In Step 11, enter the full path of the desktop dbc file in the Properties field. For example:

- user=dmwebs@*domain.com*
- dbcFile=dbcFile=/scratch/u02/app/oracle/ebssdkwork/lsw250ug_DEN00RDG.dbc

Create data source lswExtSysDS and lswdbRestDS as described in the following topics.

3.11.2.3.3 Create Data Source lswExtSysDS

Create data source lswExtSystDS as described. (For more information, see *Oracle® E-Business Suite Software Development Kit for Java*.)

> **Note:**
>
> The .dbc file referenced in the procedure came from the file you copied in Copy the Database Connection File.

To create data source lswExtSysDS:

In Step 5, enter values **exactly** as follows:

- Name for the datasource: `lswExtSysDS`
- JNDI Name: `jdbc/lswExtSysDS`
- Database Driver: `Oracle's Driver (Thin) for Instance connections` (Note that this driver is a non-XA driver.)

- Driver Class Name: `oracle.apps.fnd.ext.jdbc.datasource.AppsDataSource`

In Step 8, enter values for your environment:

- Database name: dmwebspr (example name)
- Hostname: *your_hostname*
- Port: *database_port_number*
- DB User Name: Enter the username your created in Create the Required User dmwebs@oracle.com
- Password: Enter the password created for that user.

In Step 10, enter values **exactly** as follows:

- Driver Class Name: `oracle.apps.fnd.ext.jdbc.datasource.AppsDataSource`

In Step 11, enter the full path of the desktop dbc file in the Properties field. For example:

- user=dmwebs@*domain.com*
- dbcFile=/scratch/u02/app/oracle/ebssdkwork/lsw250ug_DEN00RDG.dbc

Create data source lswdbRestDS as described in the following topic.

3.11.2.3.4 Create Data Source lswdbRestDS

Create data source lswdbRestDS as described. (For more information, see *Oracle® E-Business Suite Software Development Kit for Java*.)

> **Note:**
>
> The .dbc file referenced in the procedure came from the file you copied in Copy the Database Connection File.

To create data source lswdbRestDS:

In Step 5, enter values **exactly** as follows:

- Name for the datasource: `lswdbRestDS`
- JNDI Name: `jdbc/lswdbRestDS`
- Database Driver: `Oracle's Driver (Thin) for Instance connections` (Note that this driver is a non-XA driver.)
- Driver Class Name: `oracle.apps.fnd.ext.jdbc.datasource.AppsDataSource`

In Step 8, enter values for your environment:

- Database name: dmwebspr (example name)
- Hostname: *your_hostname*
- Port: *database_port_number*
- DB User Name: Enter the username your created in Create the Required User dmwebs@oracle.com

- Password: Enter the password created for that user.

In Step 10, enter values **exactly** as follows:

- Driver Class Name:
`oracle.apps.fnd.ext.jdbc.datasource.AppsDataSource`

In Step 11, enter the full path of the desktop dbc file in the Properties field. For example:

- user=dmwebs@*domain.com*
- dbcFile==/scratch/u02/app/oracle/ebssdkwork/lsw250ug_DEN00RDG.dbc

3.11.2.3.5 Run the Script to Create User CDRBC4JINTERNAL

Oracle DMW requires the CDRBC4JINTERNAL user for version 2.4.8 and later.

To run the script and create the user:

1. On the computer with the database, create or select the directory where you plan to copy and run the script.
2. Copy the file `cdrcreatebc4ji.sql` from `$CDR_TOP/patch/115/sql/` on the computer where you installed Oracle Life Sciences Data Hub to the directory you chose in the previous step.
3. Change to the directory where you copied `cdrcreatebc4ji.sql.`
4. Log in to SQL*Plus with the SYSTEM account.
5. Run `cdrcreatebc4ji.sql.`
6. When prompted, enter a password for the new account.

3.11.2.3.6 Run the Script to Grant Rights to the DMWMON User

To run the script and grant rights to the DMWMON user:

1. Log in to SQL*Plus as the APPS user.
2. At the SQL prompt, invoke the script: `@$CDR_TOP/patch/115/sql/cdrgrantdmwmongrants.sql`

3.11.2.4 Enable CLOB Support

You must enable CLOB Support for Oracle DMW in the WebLogic Server:

1. Navigate to Home, then Data Sources, then `lswdbDS`.
2. Click the **Connection Pool** tab.
3. Click **Advanced**.
4. Uncheck the property **Wrap Data Types**.
5. Restart the WebLogic server; see `https://docs.oracle.com/en/middleware/fusion-middleware/weblogic-server/12.2.1.4/start/index.html`. Log files for the AdminServer and the DMWServer are located in:

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

   and

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

6. Repeat these steps for these data sources: lwsdbDS (if not done already), lswExtSysDS, and lswdbRestDS. (Do not perform this task for the lswdbBC4JDS data source.)

3.11.3 Prepare a Security Realm on the WebLogic Server

This section describes how to create users and groups in the realm and set the default realm. You can find more details in the *Oracle® E-Business Suite Software Development Kit for Java* guide.

In addition to the following procedures, complete the procedures in these sections in the *Oracle® E-Business Suite Software Development Kit for Java* guide (previously downloaded as described in Download and Install the Software Development Kit for Java).

Follow instructions in:

- Section 3.3.2, "Set Up Security Realm." For the Realm Name, enter EbsRealm (Step 6).
- Section 3.3.3, "Set Up Providers"

Then see the following sections:

- Create Users and Assign Groups in the Realm
- Set the Default Realm

3.11.3.1 Create Users and Assign Groups in the Realm

1. Go to **EbsRealm**, then **Users and Groups**, then **Users**.
2. Click **New**.
3. Enter each of the following users, enter a password for each one and click **OK**:
   a. `LCMUser`
   b. `OracleSystemUser`
   c. `weblogic`
4. Assign `LCMUser` and `weblogic` to the Administrators group:
   a. Click the user name.
   b. Navigate to Groups.
   c. Assign the Administrators group.
5. Assign `OracleSystemUser` to the OracleSystemGroup:
   a. Click the user name `OracleSystemUser`.
   b. Navigate to Groups.
   c. Assign the OracleSystemGroup group.
6. Restart the WebLogic server; see Restart the WebLogic Server.

3.11.3.2 Set the Default Realm

Follow instructions for Step 3.3.4, "Set Default Realm" in the *Oracle® E-Business Suite Software Development Kit for Java* guide. Restart the WebLogic Server as described in Restart the WebLogic Server.

3.12 Configure the DMWServer Managed Server

Make the following changes on the DMWServer Managed Server.

- Apply the JRF Template to DMWServer
- Apply the JSF Library to the Oracle DMW Domain
- Change the Connection Pool Maximum Capacity on DMWServer
- Clear the Listen Address
- Change Targets for "em" Deployment
- Open port 47632

3.12.1 Apply the JRF Template to DMWServer

1. Log in to Enterprise Manager.
2. Select the managed server DMWServer from the left pane.
3. Click the **Apply JRF Template** button at the top of the right pane.

3.12.2 Apply the JSF Library to the Oracle DMW Domain

In the WebLogic Server Console:

1. Click **Deployments**.
2. If not assigned to DMWServer and AdminServer, select **jsf(2.0,1.0.0.0_2-2-8)** under **Name**.
3. Select the **Targets** tab.
4. Select the **DMWServer** and **AdminServer** check boxes if they are not already selected.
5. Save your changes.

3.12.3 Change the Connection Pool Maximum Capacity on DMWServer

In the WebLogic Server Console:

1. Navigate to **Services**, then **Data Sources**, then **lswdbDS**, then the **Connection Pool** tab.
2. Change the **Maximum Capacity** setting from 15 to the number you entered (Edit setDomainEnv.sh, Step 12) for the maximum number of concurrent users during peak time plus 15%.

3. Repeat these steps for these data sources: lwsdbDS (if not done already), lswExtSysDS, and lswdbRestDS. (Do not perform this task for the lswdbBC4JDS data source.)

3.12.4 Clear the Listen Address

In the WebLogic Server Console:

1. Under Settings for DMWServer, select **Configuration**, then **General**.
2. Clear the value in the **Listen Address** field.
3. Save.

3.12.5 Change Targets for "em" Deployment

1. Click **Deployments** in Domain Structure.
2. Click **em** deployment.
3. Click the **Targets** tab.
4. Click **Lock & Edit**.
5. Select the **em** checkbox in the Targets Assignments table and click **Change Targets**.
6. Clear **DMWServer** and click **Yes**. (Leave **AdminServer** selected.)
7. Click **Activate Changes**.

3.12.6 Open port 47632

Port 47632 on the Oracle Life Sciences Data Hub (Oracle LSH) database server must be open and the WebLogic Server must have access to it. If not done already, open port 47632 bidirectionally between:

- **Source**: Oracle LSH database host or all hosts in an Oracle Real Application Clusters (RAC) setup.
- **Destination**: WebLogic Server where Oracle DMW runs.

4

Deploy Oracle DMW on the WebLogic Server

Before you deploy Oracle DMW, make sure the WebLogic Server clock is synchronized with the InForm Adapter server clock by modifying the setDomainEnv.sh file. (For more details, see Edit setDomainEnv.sh in this guide.)

This section contains the following topics:

4.1 Download the Oracle DMW Folder

Follow these steps to download the Oracle DMW folder from Oracle Software Delivery Cloud:

1. Go to Oracle Software Delivery Cloud, http://edelivery.oracle.com, click **Sign In**, and log in with your user ID.
2. Select **Download Package** from the **All Categories** drop-down list (or leave All Categories selected). Enter **Oracle Health Sciences Data Management Workbench** in the Search field and click **Search**.
3. Select **DLP: Oracle Health Sciences Data Management Workbench 3.0.0.0.0** and click **Add to Cart**.
4. Click **Checkout**. You see a list of the selected software:
    - Oracle Health Sciences Data Management Workbench 3.0.0.0.0 (Oracle Standard Terms and Conditions)
    - Oracle Life Sciences Data Hub 3.0.0.0.0
    - Oracle Health Sciences Data Management Workbench 3.0.0.0.0
5. From the Platform drop-down list, select the appropriate operating system.
6. Click **Continue**.
7. Review the Terms and Restrictions and select **I accept the terms in the license agreement** to continue. (Click **Print** from the top-right corner of the screen to print the agreement.) Click **Continue**. You see a list of zipped files for the Oracle Life Sciences Data Hub <*your operating system*> 3.0 release and Oracle Health Sciences Data Management Workbench <*your operating system*> 3.0 release:
    - Oracle Life Sciences Data Hub 3.0.0 (V988589-01.zip)
    - Oracle Health Sciences Data Management Workbench 3.0.0 (V986465-01.zip)

- Oracle Thesaurus Management System 5.3.1 (V988638-01.zip)

8. Leave the list of zipped files selected to download the package of Oracle Health Sciences Data Management Workbench 3.0.0.0.0 files or only select the files you need.
9. Click **Download**. Then browse to the location where you want to save the Oracle executable.
10. Double-click the Oracle executable (Oracle_SSN_DLM_02251701.exe). Leave the default destination or click **Browse** to select another one. Click **Next**. Oracle downloads the zipped files.
11. Move the zipped files to a staging area and unzip them.
    The full release contains a software folder for Oracle DMW (**p30798416_30000_Generic.zip**), Oracle LSH (**p6114439_R12_GENERIC.zip**, **p17269917_R12_GENERIC.zip**, **p28529507_R12_GENERIC.zip**) and Oracle TMS (**p30717198_53100_Generic.zip**).
12. Unzip the Oracle DMW 3.0 ZIP file (**p30798416_30000_Generic.zip**) to a temporary directory on the Weblogic Server, creating the software directory containing the dmwapp.ear and plan.xml files.

> **Note:**
>
> For details on installing Oracle LSH and Oracle TMS, see the *Oracle Life Sciences Data Hub Installation Guide*.

13. Deploy the patch, which contains the entire application. Depending if you use HTTPS or HTTP, following one of the following procedures:
    - To use HTTPS, follow the steps in Deploy Oracle DMW with Default Support for HTTPS. By default, Oracle DMW supports and requires HTTPS.
    - To use HTTP, follow the steps in Deploy Oracle DMW and Disable HTTPS Support

4.2 Deploy Oracle DMW with Default Support for HTTPS

Deploy the Oracle DMW application tier on the WebLogic Server.

1. After you perform the steps listed in Deploy Oracle DMW on the WebLogic Server, log in as the admin user to the WebLogic Administration Console. The URL is: http(s)://*host_name.company_domain*.com:*port*/console/

   for example:

   http(s)://machine.example.com:1234/console

> **Note:**
>
> **If you have an earlier version of Oracle DMW deployed**, stop it and delete it before deploying the new version.
> In the Weblogic Administration Console, select **Deployments** from **Domain Structure**. A list of all deployed applications appears.
>
> If `dmwapp` is included in the list, select its check box and:
>
> a. Stop it by selecting Force Stop Now from the Stop drop-down list.
>
> b. Delete it by clicking **Delete**. It no longer appears in the list.

2. Click **Install**. The Install Application Assistant opens.
3. In the paragraph beginning with **Locate deployment to install and prepare for deployment**, click **upload your file(s)**.
4. In the Deployment Archive line, click **Browse** and select dmwapp.ear from your local computer and click **Open**. The system returns to Install Application Assistant.
5. In the Install Application Assistant, click **Next**. This uploads dmwapp.ear to a server directory. This may take some time. When the process completes, the system displays the path to the server directory.
6. In Install Application Assistant, click **Next**.
7. Select **Install this deployment as an application** and click **Next**. The system displays a list of servers.
8. Select the managed server where you want to install the application (DMWServer) and click **Next**. Optional settings appear.
9. Under General, in the Name field, enter `dmwapp` and click **Finish**. The system displays a summary of your selections.
10. Click **Finish**. The system deploys the Oracle DMW middle tier on the managed server. After a successful deployment ta new page called **Settings for dmwapp** appears with the Overview tab displayed.
11. Click **Deployments** under **Domain Structure** to verify that dmwapp is included in the Deployments list and its state is Active.
12. Go to the login screen to check that the application is running. The URL is: http://*host_name.company_domain*.com:*port*/lsw/dme/faces/DmeLogin.jsf

    For example:

    http://srv123.example.com:1234/lsw/dme/faces/DmeLogin.jsf

4.3 Deploy Oracle DMW and Disable HTTPS Support

By default, Oracle DMW uses HTTPS. If you intend to use HTTP, you can deploy Oracle DMW 3.0 using the deployment plan (Plan.xml) that disables HTTPS for Oracle DMW. For further information, see the Oracle® Fusion Middleware Deploying Applications to Oracle WebLogic Server 12c (12.2.1.4) at https://docs.oracle.com/en/middleware/fusion-middleware/weblogic-server/12.2.1.4/depgd/index.html.

1. After you perform the steps listed in Deploy Oracle DMW on the WebLogic Server, log in to the WebLogic Server.

2. Open the software directory.
3. Copy the dmwapp.ear file and the plan.xml file to the tmp directory and delete the software directory. The tmp directory now contains only the dmwapp.ear and plan.xml files.
4. Open a shell window and set up the environment:
   `source WL_HOME/server/bin/setWLSEnv.sh`

   for example:

   ```
   source /app/oracle/product/middleware/wlserver_10.3/server/bin/setWLSEnv.sh
   ```
5. Change directory to the tmp directory.
6. If you have an earlier version of Oracle DMW deployed, stop it and delete it before deploying the new version by entering the following commands.

   > **Note:**
   >
   > If you want to store the username and password in a WebLogic configuration file, omit the username and password parameters in the following commands. For more information, see the WebLogic Scripting Tool Command-Line Reference in the Oracle® Fusion Middleware Deploying Applications to Oracle WebLogic Server 12c (12.2.1.4) at https://docs.oracle.com/en/middleware/fusion-middleware/12.2.1.4/use-weblogic-scripting-tool-tasks.html

   ```
   java weblogic.Deployer -adminurl t3://
   host_name.your_company_domain.com:port_number  -username WLS_USER  -password
   WLS_PASSWORD  -stop  -targets  DMW_SERVER_NAME -name dmwapp


   java weblogic.Deployer -adminurl t3://
   host_name.your_company_domain.com:port_number  -username WLS_USER  -password
   WLS_PASSWORD  -undeploy  -targets DMW_SERVER_NAME  -name dmwapp
   ```
7. Deploy the new Oracle DMW release by entering the following command. If you stored the username and password in a configuration file, omit the username and password parameters.

   ```
   java weblogic.Deployer -adminurl t3://
   host_name.your_company_domain.com:port_number -username WLS_USER -password
   WLS_PASSWORD -targets DMW_SERVER_NAME -deploy dmwapp.ear -name dmwapp -
   upload -plan Plan.xml
   ```
8. Exit the shell by entering:

   ```
   exit
   ```
9. Go to the login screen to check that the application is running. The URL is:
   http://*host_name.company_domain*.com:*port*/lsw/dme/faces/DmeLogin.jsf

   For example:

   http://srv123.example.com:1234/lsw/dme/faces/DmeLogin.jsf

4.4 Check for and Install Any Oracle DMW 3.0.x Patches

Oracle strongly advises that you immediately install any patches that have been released since the full release (if available).

For example, if you installed 3.0 and there are two 3.0 patches (3.0.1 and 3.0.2) install 3.0.1 first and then 3.0.2, following instructions in their release notes.

1. Check My Oracle Support article 1558745.1, *Oracle Health Sciences Data Management Workbench (DMW) Summary of Patches Available* at `https://support.oracle.com`.
2. If any patches have been released on top of the release you installed, download and install all of them, in order, following instructions in their Release Notes.

4.5 Run the Health Check Scripts

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

5
Integrate Oracle Health Sciences InForm

This section contains the following topics:

5.1 Get a CA Certificate if You Use HTTPS

To support HTTPS, you need to request a certificate from a Certificate Authority (CA) vendor such as Thawte, Entrust, or Verisign. Allow some time for the certificate to be issued.

5.2 Use Character Semantics

Set the Oracle Applications profile **LSH: Use Character Semantics for Workarea Installation** to **Yes** on each computer where you install Oracle DMW is required for integration with InForm. See the *Oracle Health Sciences Data Management Workbench Administration Guide*.

5.3 Create Oracle Accounts for the Oracle DMW InForm Connector

The InForm Connector is a component of Oracle DMW. It is required to import study data and metadata from InForm. On each InForm study database, run scripts to create a read-only user account for Oracle DMW to use to access data and metadata in InForm.

The account has Select privileges on all tables and views in study accounts referenced by the InForm Connector, including metadata views, operational data views, and RDE views. This schema also has packages that facilitate the data load process.

Use the credentials of this account when you set up a database connection (remote location) in the Oracle DMW InForm configuration for each study using the InForm database. See the *Oracle Health Sciences Data Management Workbench Administration Guide*.

This contains topics to do the following:

5.3.1 Create Directory on Each InForm Database

On each InForm database with a study that you plan to use in Oracle DMW, create one OS directory using the `mkdir` command to hold the scripts that you must copy and run.

You need one directory per database. (You do not need one directory per study.)

5.3.2 Copy Scripts

Copy the following files from the directory $CDR_TOP/patch/115/sql/ on the computer where you installed Oracle Life Sciences Data Hub to each InForm database directory you created in Create Directory on Each InForm Database:

- **DMWInFormInstall.sql**—the driver script
- **DMWInFormUser.sql**—creates new users or confirms existing users
- **DMWInFAdms.pls**—installs a package specification into the Oracle DMW administration account
- **DMWInFAdmb.pls**—installs a package body into the Oracle DMW administration account
- **DMWInFormROAccessObjs.sql**—installs a table into the Oracle DMW read-only access account
- **DMWInFroas.pls**—installs a package specification into the Oracle DMW read-only access account
- **DMWInFroab.pls**—installs a package body into the Oracle DMW read-only access account

5.3.3 Run the Driver Script

The driver prompts for all required input parameter values and calls the other scripts as required.

1. Log into SQL*Plus with an account with DBA privileges.
2. Go to the directory that contains the downloaded scripts.
3. Execute DMWInFormInstall.sql. The script prompts for:
   - A name to give the log file.
   - TNS name **or** connect string for the InForm database. If you enter the connect string, do not enter any spaces.
   - `system` or other DBA username and password.
   - Name of the Oracle DMW Admin account to be used or created for the purpose of giving privileges to the Oracle DMW read-only access account. The system creates the account if it does not already exist.
   - Name of the Oracle DMW read-only access account to be used or created. The system creates the account if it does not already exist.

> **Note:**
>
> Do not use spaces or special characters other than underscore (_) in the username or password.

- Passwords for both accounts. If the accounts are new, the script prompts you to confirm each password. If the accounts already exist, you must enter a password, but the system does not change the existing password. It proceeds to create or update the packages owned by the schema.
- If the read-only access account is new, the script also prompts for a tablespace name. It then creates a tablespace on the InForm database to be used for the integration with Oracle DMW and creates or updates all Oracle DMW objects in this tablespace.

5.4 Set Up the InForm Adapter

The InForm Adapter is an Oracle Health Sciences InForm component. Oracle DMW uses it to send discrepancies to InForm.

This section contains the following topics:

5.4.1 Install the Oracle InForm Adapter

Install the appropriate version of the Oracle InForm Adapter for the version of InForm you are using:

- If you are using Oracle InForm 6.1.x, install Oracle InForm Adapter Release 1.3.8, 1.3.8.1, or 1.3.9*.

  *Oracle InForm Adapter 1.3.9 is compatible only with Oracle InForm 6.1.1.5 (earlier Oracle InForm Adapter versions are not supported with Oracle InForm 6.1.1.5).
- If you are using Oracle InForm 6.2.x or 6.3, install Oracle InForm Adapter Release 6.2.x or 6.3.

Oracle Health Sciences InForm Adapter 1.3.x Release Notes (with installation and upgrade instructions) are available on My Oracle Support. You can find the Oracle Health Sciences InForm Adapter Installation Guides for 6.2.x and 6.3 on Oracle Help Center.

You can install the Discrepancy Enhanced interface, Adapter Admin interface and RegisterTrialTool on a dedicated computer—the most common configuration—or on the InForm application server computer with the InForm Server Adapter (ISA).

The InForm Server Adapter (ISA) must be available on the InForm application server to invoke the "Issue" and "Update" methods in the Discrepancy Enhanced interface, and the ISA Windows service must be running.

> **Note:**
>
> Make sure that all the clocks are synchronized on the machines where you plan to install the InForm Adapter interfaces, InForm server, database server, and the Oracle DMW application tier.

5.4.2 Register the InForm Server Adapter

To register the InForm Server Adapter (ISA) using the SetServer command in the Register Trial Tool, see the installation guide for your version of InForm Adapter.

Oracle Health Sciences InForm Adapter 1.3.x Release Notes (with installation and upgrade instructions) are available on My Oracle Support. You can find the Oracle Health Sciences InForm Adapter Installation Guides for 6.2.x and 6.3 on Oracle Help Center.

5.4.3 Register Each Trial

To register each trial using the SetTrial command in the Register Trial Tool, see the installation guide for your version of InForm Adapter.

Oracle Health Sciences InForm Adapter 1.3.x Release Notes (with installation and upgrade instructions) are available on My Oracle Support.

You can find the Oracle Health Sciences InForm Adapter Installation Guides for 6.2.x and 6.3 on Oracle Help Center.

5.4.4 Check the InForm Integration

1. Verify that the ISA URL opens correctly in the browser from your local machine.
2. To verify that it is accessible from DMW server and there are no network connectivity issues, execute the wget command:
   `wget your_ISA_URL`

   It should return a message ending in "...connected."

5.4.5 Create InForm Users

On each InForm database with a study you plan to use Oracle DMW:

1. Log in to UMT using an account that can create new users, such as `system`.
2. Create a user with a **suggested username DMW_AUTH** to be used for authentication purposes by the web service connection. This user does not need any privileges. Its username and password will be used within Oracle DMW when creating web service locations.
3. Create a user with the **required name DMW_QUERY** to be used for sending and updating discrepancies in InForm.

- Make DMW_QUERY a sponsor user
- Assign the DMW_QUERY user to a query group.

It is not required to give the DMW_QUERY user access to sites or even be part of a rights group that can manipulate discrepancies. The password for this user is not used in Oracle DMW.

4. Activate both accounts.

6

Configure File Watcher Support

The File Watcher utility checks a file system location that you specify for data files whose name matches a pattern you specify and loads them into DMW for use in a particular study.

File Watcher can detect and load two types of files:

- SAS—including CPort or XPort formats, a single dataset, or a single dataset in a .zip file.
- Text—including .txt or .csv files that may be contained in a .zip file.

This section contains the following topics:

6.1 Set Up the Distributed Processing Server

The Oracle LSH Distributed Processing (DP) Server is required for File Watcher. Following instructions in the *Oracle Life Sciences Data Hub Installation Guide*, you have already set up the Distributed Processing (DP) Server, including:

- Installed the DP Server where it has access to Oracle SQL*Loader. It must also have access to the directories where you will put text data files to be loaded into Oracle DMW; see Create Directories for details.
- Installed the DP Server where it has access to the SAS processing engine and the directories where you will put SAS data files to be loaded into Oracle DMW.
  If the same DP Server has the access required for both SAS and text files, you need only one DP Server.
- Started the DP Server with the File Watcher service enabled. The File Watcher service detects files to be loaded.
- Defined a Service Location in the Oracle LSH user interface for each computer where the DP Server is installed.

> **Note:**
>
> The system populates the list of values in Oracle DMW's Watcher Listing for the Text and SAS DP Servers with the Service Locations you define.

- Defined a **Text for SQL*Loader** service on the Service Location that has access to Oracle SQL*Loader and the text files to be loaded. This service loads data from text files into the Oracle DMW database.
- Defined a **SAS** service on the Service Location that has access to SAS and the SAS files to be loaded. This service loads data from SAS files into the Oracle DMW database.

See the *Oracle Life Sciences Data Hub System Administrator's Guide* for more information on Service Locations and services.

6.2 Create Directories

You must create the directories to serve as the Watched Folders that File Watcher monitors for data files. You can choose to archive loaded data files. If you want to archive loaded data files, you must create directories where you want the archived files placed.

This section contains topics to do the following:

- Create Watched Folders
- Create Archive Folders (Optional)

6.2.1 Create Watched Folders

Create nested directories on one or more computers that the DP Server can access. The folders are:

- A root folder on each computer where files load into Oracle DMW.
- Subfolders
  - Six folders: one for each combination of the two file types (SAS and text) and the three lifecycle areas (Development, Quality Control, and Production). These folders can be on different computers, but there can be only six across the installation. Oracle recommends using a naming convention that includes the file type and lifecycle mode.
  - Alternatively, you can use just three folders, one for each lifecycle area and both file types.

  A DP Server must have access to each of these folders; for example, you can set up an NSF mount of the file system to each computer where a DP Server is installed.

  All studies in this Oracle DMW instance must use the same three or six root folders for their input data files. The system creates a study-specific subfolder in each root folder using the name you specify. (See the *Oracle Health Sciences Data Management Workbench Administration Guide* for details.) The study-specific subfolders become the *watched locations* for the study.

  You must enter the location of these folders as system profile values; see "Registering Folder Locations" in the Administration chapter of the *Oracle Health Sciences Data Management Workbench Administration Guide*.

> **Note:**
>
> If the study will use only SAS files or only Text files for data loading, you do not need to create subfolders for the other file type. If you do not plan to use the Quality Control/UAT lifecycle area, you do not need to create subfolders for that lifecycle area.

6.2.2 Create Archive Folders (Optional)

If you want to archive data files after their data has been loaded, create directories in which to archive them. They must have the same structure as the watched folders—either six or three folders. Oracle recommends creating them on the same UNIX file system as the watched folders.

6.3 Secure Files in Folders

On the computers where labs or other data sources will post data files, restrict access to data files to prevent investigators and others from seeing data they should not see, such as blinded data and data from other sources.

1. Set up a secure file transfer method:
   - Transfer files using a secure system process such as SFTP or a secure file synchronization service.
   - Isolate the file share from direct user access by using an indirect method of conveying files to the file share such as a dropbox.
2. Use UNIX/Linux file system security by creating a UNIX/Linux file system *group* and assigning user IDs that require access to the group:
   - The OS user ID that executes the DP Server that is running File Watcher. You set up this account during Oracle LSH installation.
   - OS user IDs that place files in the file share (using SFTP, for example).
   - The OS user ID that executes a program that places files in the file share (an automated file transfer or file synchronization program).
3. Restrict access to the file share. Only the file *owner* and *group* should have any permissions. The *other* permissions should be empty. If the user ID running the DP Server is the same as the user ID used to transfer all files, then only *owner* file permissions are needed. Assuming this is not the case, grant permissions to both the file *owner* and *group* as follows.
   In **/etc/bashrc** or **/etc/profile**, set umask:

   ```
   umask 007
   ```

   This has the same effect as the following settings:

Table 6-1 Recommended Operating System Permissions

File Type	Description	Symbolic	Numeric
Directory	Owner and Group have Read, Write, and Execute; others have no permissions.	drwxrwx---	770

Table 6-1 (Cont.) Recommended Operating System Permissions

File Type	Description	Symbolic	Numeric
File	Owner and Group have Read and Write; others have no permissions.	-rw-rw----	660

6.4 Configure Server Time Zone Settings

For File Watcher to load the data files it detects in a timely manner, the date and time settings on your servers—database server, the middle tier server where the WebLogic Server is installed, and the middle tier server(s) where the Oracle LSH Distributed Processing (DP) Server is installed—must all have the same date and time setting.

If your servers are located in different time zones, set the time zone manually or automatically. Then verify the setting used by the Java Virtual Machine (JVM). See the following topics for details:

- Set the TZ Environment Variable Manually
- Set the TZ Environment Variable Automatically
- Use the tzselect Utility
- Verify the Time Zone Setting Used by Java Virtual Machine (JVM)

6.4.1 Set the TZ Environment Variable Manually

You can set the TZ environment variable as follows:

```
TZ='<correct timezone>'export TZ
```

For example, to set the time zone to the US Pacific time zone:

```
TZ='America/Los_Angeles'export TZ
```

To determine a valid TZ value, see Use the tzselect Utility.

6.4.2 Set the TZ Environment Variable Automatically

You can set the TZ environment variable automatically by one of the following methods:

- Set the TZ variable in the startup configuration file (.profile or .cshrc file) for the operating system user that runs the DP Server process or the Web Logic Server process on the respective middle tier.
- Set the TZ variable in the shell script that starts the process:
  - For the DP Server, set the TZ variable in the *DP Server Home*/cdr_apps_dpserver.sh shell script, or in a shell script that invokes cdr_apps_dpserver.sh; see the *Oracle Life Sciences Data Hub Installation Guide* for information
  - For the Web Logic Server, set the TZ variable in the setDomainEnv.sh script from your Web Logic installation in a full path similar to *middleware_home*/user_projects/domains/base_domain/bin/setDomainEnv.sh.

To determine a valid TZ value, see Use the tzselect Utility.

6.4.3 Use the tzselect Utility

Many UNIX systems provide the tzselect utility to aid in selecting a Posix standard time zone format. You enter this command at the UNIX command prompt with no arguments and it prompts you to select a continent or ocean and then a time zone region. It returns the string to use in the TZ command.

See your operating system documentation for more information about this command in your specific environment.

6.4.4 Verify the Time Zone Setting Used by Java Virtual Machine (JVM)

On the middle tier servers DMW is implemented using Java, and you must confirm that the Java Virtual Machine (JVM) is using the correct time zone

Note that a correct return from the UNIX date command does NOT mean that the Java Virtual Machine (JVM) is using the correct time zone. The JVM looks for the time zone settings as follows. This can vary in different implementations of UNIX/Linux, so check your operating system documentation for further information:

1. JVM uses the environment variable TZ if it is set.
2. If TZ is not set, then JVM looks for the file /etc/sysconfig/clock and finds the ZONE entry.
3. If neither TZ nor ZONE is set, JVM compares the contents of /etc/localtime to the files in /usr/share/zoneinfo looking for a match. The matching path and filename under /usr/share/zoneinfo provides the time zone.

Check the time zone that the DP Server and Web Logic Server are actually using by reading the time zone information displayed at the beginning of most lines in their log files:

- **DP Server**: The log file is located in the directory: *DP Server Home*/log.
- **Web Logic Server**: The log file is located in a full path similar to: /app/product/middleware/user_projects/domains/base_domain/servers/DMWServer/logs.

6.5 Complete Your File Watcher Configuration

Complete your File Watcher configuration for the instance and for studies in the Administration page of Oracle DMW. For each data source in each study, you must define a File-type input clinical data model.

On the Administration page of Oracle DMW, you can monitor study File Watchers and start and stop them. For details on the File Watcher configuration, see the *Oracle Health Sciences Data Management Workbench Administration Guide* on Oracle Help Center.

7

Install Oracle Thesaurus Management System (Optional)

Oracle Thesaurus Management System (TMS) can be integrated with Oracle Health Sciences Data Management Workbench for use in coding clinical patient data to standard dictionary terms.

See the following topics for details to:

- Install Oracle Thesaurus Management System
- Edit setDomainEnv.sh
- Run Script dmetmsseeddata.sql

7.1 Install Oracle Thesaurus Management System

Oracle DMW supports Oracle Thesaurus Management System (TMS) 5.3.1. To install TMS 5.3.1, see *Oracle Thesaurus Management System Installation Guide* at `https://docs.oracle.com/health-sciences/tms-53/install/toc.htm`.

7.2 Edit setDomainEnv.sh

As directed in Edit setDomainEnv.sh add the parameter `-DhandleDiscEvent` set to `True` on one and only one application server.

This is required to support multiple middle tiers pointing to the same database. Only the server with this parameter set to True will be able to send data from TMS to InForm.

7.3 Run Script dmetmsseeddata.sql

Run dmetmsseeddata.sql to populate TMS-related seed data required for Oracle DMW.

1. Make sure that no LSH session is up and running.
2. Log in to SQL*Plus as tms. (You created a password for this account when you ran the Installer for the TMS database.)
3. Go to $CDR_TOP/patch/115/sql.
4. Run dmetmsseeddata.sql.

8
Upgrade to Release 3.0

To upgrade Oracle Health Sciences Data Management Workbench (Oracle DMW) from Release 2.4.8.x or later, see the following topics:

- Upgrade Oracle Life Sciences Data Hub
- Upgrade Oracle WebLogic Server
- Run the Oracle DMW Scripts
- Apply WLS Patch 12.2.1.4
- Restart WebLogic Server
- Run the Health Check Scripts
- Deploy Oracle DMW to the WebLogic Server
- Upgrade File Watcher to Support Archiving Files (Optional)
- Install Oracle Thesaurus Management System (Optional)

8.1 Upgrade Oracle Life Sciences Data Hub

Follow instructions in the *Oracle Life Sciences Data Hub Installation Guide* chapter on upgrading to Release 3.0. The process includes upgrading Oracle Database.

8.2 Upgrade Oracle WebLogic Server

Before you upgrade to Oracle DMW 3.0, you need to upgrade Oracle WebLogic Server by completing the following tasks:

- Create a Backup of the Existing Environment
- Install Oracle Java Development Kit
- Install Oracle WebLogic Server 12.2.1.4
- Run the Upgrade Assistant for Readiness Check
- Run the Upgrade Assistant to Upgrade Database Schemas
- Run the Reconfiguration Wizard
- Run the Upgrade Assistant to Upgrade Domain Configurations
- Perform the Post-Upgrade Tasks
- Restart the Administration and Managed Servers
- Verfiy the Upgrade
- Support SSL Wildcards and SSL Web Services

8.2.1 Create a Backup of the Existing Environment

Before you upgrade the WebLogic Server, complete these steps to create a complete backup of the existing environment.

1. Log in to the Oracle WebLogic server as a WebLogic Install user.
2. Stop the Administration Server and all Managed Servers.
3. Back up the environment. For example, enter:

   ```
   cd /scratch
   ```

   Then enter:

   ```
   nohup cp -R u02 u02_bkpbfrupg &
   ```

8.2.2 Install Oracle Java Development Kit

Oracle Java Development Kit (JDK) 1.8 is also known as JDK 8. Oracle DMW 3.0 uses JDK 1.8.0_211 or higher.

To download and install JDK 1.8.0_211 (Patch 29206832):

1. Open My Oracle Support and sign in.
2. In the Search Knowledge Base field in the upper right, enter: `1439822.1`. To open the "All Java SE Downloads on MOS" page.
3. Scroll down to the list of JDK versions to **Oracle JDK 8 Update 211** (or higher).
4. Click the patch number link.
5. Select the appropriate platform and click **ReadMe** to access the Release Notes and **Download** to download the patch.
6. Follow instructions in the Release Notes to apply the patch.

8.2.3 Install Oracle WebLogic Server 12.2.1.4

Download patch **30188255** and follow the instructions in "Installing the Infrastructure Software" from the *Oracle® Fusion Middleware Installing and Configuring the Oracle Fusion Middleware Infrastructure* to install WebLogic Server 12.2.1.4, which you can find on the media pack or at Oracle Help Center. (Do not try to upgrade an earlier version of Oracle WebLogic Server.)

See the following sections for details on customizations to the installation procedures. For example, when prompted to enter the Inventory Directory after logging in to Oracle Fusion Middleware, enter a new location to install WebLogic Server 12.2.1.4 and select **Fusion Middleware Infrastructure** to install it.

> **Note:**
>
> The WebLogic Server installation process includes specifying a JDK installation. At this point, specify the Oracle Java Development Kit (JDK) that you installed in Install Oracle Java Development Kit .

8.2.4 Run the Upgrade Assistant for Readiness Check

Follow these steps to perform a readiness check on the server.

1. Log in to Oracle Fusion Middleware as a WebLogic Install user.
2. Enter:

   ```
   cd $ORACLE_HOME/oracle_common/upgrade/bin
   ```

3. Enter:

   ```
   ./ua -readiness
   ```

4. At the Welcome dialog box, click **Next**.
5. At the Schemas and Configurations dialog box, select **Domain Based**.
6. At the **Domain Directory** field, click **Browse** to browse to the domain directory and click **Next**.
7. At OPSS Schema [DEV_OPSS] dialog box, enter DBA account information and click **Connect**.
8. Enter the Schema account information and click **Next**.
9. Continue to click **Next** to check for a successful connection to the components. You see a "success" message at the bottom of each dialog box.
10. Click **Continue** to see the Readiness Check list. Successful connections appear with a green checkmark.
11. Click **Close**.

8.2.5 Run the Upgrade Assistant to Upgrade Database Schemas

Follow these steps to update the database schemas.

1. Log in to Oracle Fusion Middleware as a WebLogic Install user.
2. Enter:

   ```
   cd $ORACLE_HOME/oracle_common/upgrade/bin
   ```

3. Enter:

   ```
   ./ua
   ```

4. At the Welcome dialog box, click **Next**.

5. At the All Schemas dialog box, select **All Schemas Used by a Domain** and click **Next**.
6. At the **Prerequisites** dialog box, select all the checkboxes and click **Next**.
7. Enter the appropriate information and continue to click **Next** to check for a successful connection to the components. You see a "success" message at the bottom of each dialog box.
8. Click **Continue** to see the examination list. Successful connections appear with a green checkmark.
9. Click **Finish**.

8.2.6 Run the Reconfiguration Wizard

Follow these steps to reconfigure the Domain and Node Manager.

1. Log in to Oracle Fusion Middleware as a WebLogic Install user.
2. Enter:

   ```
   cd $DOMAIN_HOME/config
   ```

3. Enter:

   ```
   cp config.xml config.xml_orig<date>
   ```

4. Enter:

   ```
   vi config.xml
   ```

5. Remove lines 43 to 71 (EbsRealm Section) and update the "default-realm" parameter in the config.xml file as shown:<*default-realm*>EbsRealm</*default-realm*> to <*default-realm*>myrealm</*default-realm*>.

   ```
   From:
   <default-realm>EbsRealm</default-realm>

   To:
   <default-realm>myrealm</default-realm>
   ```

6. Enter:

   ```
   cd $ORACLE_HOME/oracle_common/common/bin
   ```

7. Enter:

   ```
   ./reconfig.sh
   ```

8. At the **Existing Domain Location** field, leave the default and click **Next**.
9. At the Reconfiguration Setup Progress dialog box, click **Next**.
10. Enter the appropriate information and continue to click **Next** until you reach the Database Configuration Type dialog box. Then click **Get RCU Configuration** and click **Next**.

11. Continue to click **Next** until you reach the Advance Configuration dialog box. Then select the following options:
    - **Adminstration Server**
    - **Topology**
    - **Deployments and Services**
12. Continue to click **Next** until you reach the Deployments Targeting dialog box. Then expand AppDeployment and select **wsm-pm** from the Deployments column. From the Deployment Targets column, expand Admin Server and select **AdminServer**. Click **Next**.
13. At the Configuration Summary dialog box, click **Reconfig** and then click **Next**.
14. Click **Finish**.

8.2.7 Run the Upgrade Assistant to Upgrade Domain Configurations

Follow these steps to upgrade the domain configurations.

1. Log in to Oracle Fusion Middleware as a WebLogic Install user.
2. Enter:

   ```
   cd $DOMAIN_HOME/config
   ```

3. Enter:

   ```
   mv config.xml config.xml_mod
   ```

4. Enter:

   ```
   cp config.xml_orig<date> config.xml
   ```

5. Enter:

   ```
   cd $ORACLE_HOMEe/oracle_common/upgrade/bin
   ```

6. Enter:

   ```
   ./ua
   ```

7. At the Welcome dialog box, click **Next**.
8. At the All Configurations dialog box, click **All Configurations Used By a Domain**.
9. At the **Domain Directory** field, click **Browse** to browse to the domain directory and click **Next**.
10. At the **Prerequisites** dialog box, select all the checkboxes and click **Next**.
11. Enter the appropriate information and continue to click **Next** until you reach the Upgrade Summary dialog box, then click **Upgrade**.
12. Click **Close**.

8.2.8 Perform the Post-Upgrade Tasks

Complete the following tasks after you upgrade the WebLogic Server:

1. Update the setDomainEnv.sh file as described in Edit setDomainEnv.sh.
2. Remove $DOMAIN_HOME/lib/fndext.jar.
3. Remove $DOMAIN_HOME/lib/runtime12.jar
4. Copy runtime12.jar from the databse server as described in Copy runtime12.jar into the Domain's lib Directory.
5. Rebuild the fndext.jar as described in Rebuild the fndext.jar file file for Oracle WebLogic Server on UNIX/LINUX .
6. Log in to the Oracle WebLogic Server Administration Console and from the Domain Structure panel, click **Deployments**.
7. Review the list of deployments. If the wsm-pm deployment state appears as Failed, click **Lock & Edit** from the left, select the **wsm-pm** deployment checkbox, and click **Delete**.

   > **Note:**
   >
   > If the wsm-pm deployment state appears as Active and OK, skip the remaining steps.

8. From the Change Center panel, click **Activate Changes**.
9. Click **Lock & Edit** and then click **Install** from the top of the Deployments table.
10. From Oracle WebLogic Server Administration Console 12c Home, select **wsm-pm.ear** for the current location in the Install Application Assistant and click **Next**. For example, you may see a path similar to this: $ORACLE_HOME/oracle_common/modules/oracle.wsm.pm/wsm-pm.ear
11. Select **Install this deployment as an application** and click **Next**.
12. For the servers, select the **AdminServer** and **DMWServer** checkboxes and click **Next**.
13. For the Security section, leave the default of **DD Only: Use only roles and policies that are defined in the deployment descriptors** and click **Next**.
14. Click **Finish**.
15. From the Change Center panel, click **Activate Changes**.
16. Click **Control** and select the **wsm-pm** checkbox from the list of deployments. Then click **Servicing all requests** from the **Start** drop-down menu at the bottom of the Deployments table.
17. Review the list of deployments. Check that the wsm-pm deployment health appears active and **OK** in the System Status panel.

8.2.9 Restart the Administration and Managed Servers

After you complete the post-upgrade tasks, restart the Adminstration Server and all Managed Servers:

1. Log in to the Oracle WebLogic server as a WebLogic Install user.
2. Start the Administration Server and all managed servers.
3. Enter:

   ```
   cd $DOMAIN_HOME/bin
   ```

4. Start Node Manager, Administration Servers, and Managed Servers.

8.2.10 Verfiy the Upgrade

Ensure that you completed the upgrade successfully by following these steps:

1. Log in to the Oracle WebLogic server as a WebLogic Install user.
2. From the Domain Structure panel, expand Environment and select Servers.
3. Select **Admin Server** and click the **Monitoring** tab.
4. In the WebLogic Version field, verify the version shown. You should see WebLogic Server 12.2.1.4.0.
5. Verify the version on all Managed Servers. If you do not see the correct version, repeat the necessary procedures in this section.

8.2.11 Support SSL Wildcards and SSL Web Services

If you are using HTTPS, check the following settings and change them if necessary to support SSL wildcards. For example, use `*.company.com` instead of `server.company.com`.

1. Log in to the WebLogic Server Console and open the SSL tab.
2. Set **Hostname Verification** = `Custom Hostname Verifier`.
3. Set **Custom Hostname Verifier** = `weblogic.security.utils.SSLWLSWildcardHostnameVerifier`
4. Select **Use JSSE SSL**. This is required for HTTPS SSL web services, not specifically for wildcards. If you are using HTTP, do not select this setting.
5. Save.

8.3 Run the Oracle DMW Scripts

If you plan to upgrade from Oracle DMW 2.4.8.x to Oracle DMW 3.0, you must run the scripts listed in this section. If you use plan to upgrade from Oracle DMW 2.5.x to Oracle DMW 3.0, do not run these scripts. See the following topics if you use Oracle DMW 2.4.8.x:

- Run the Populate Validation Checks Script
- Run the Transformation Upgrade Script
- Run the Last Modification Column Script

8.3.1 Run the Populate Validation Checks Script

Run the dmepopenablevc.sql script to ensure that Oracle DMW 3.0 populates the new Validation check status tracking table with the status for the validation checks you created in an earlier versions of Oracle DMW. Plan a maintenance window to run the script.

> **Note:**
>
> You only need to run this script if you plan to upgrade from Oracle DMW 2.4.8.x to Oracle DMW 3.0. If you use plan to upgrade from Oracle DMW 2.5.x to Oracle DMW 3.0, do not run this script.

Follow these steps to run the script on a computer with an Oracle client that can connect to the Oracle DMW database server using SQLPlus:

1. Download the file from $CDR_TOP/patch/115/sql/dmepopenablevc.sql
2. Log in to SQLPlus (not SQLDeveloper) as the APPS database user.
3. Invoke the script from your download directory. For example:

```
<download_directory>/dmepopenable.sql
```

8.3.2 Run the Transformation Upgrade Script

Run the dmeupdxfmvalstat.sql script to ensure that Oracle DMW 3.0 populates the new status tracking table with the Validation status for Transformations created in an earlier version of Oracle DMW. Plan a maintenance window to run the script.

The script has a commit when the count of records it needs to insert or update goes beyond 500 records during the script run. If the script execution gets stopped mid-way or it loses the database connection, the next execution of this script upgrades the transformation records from where it stopped.

The script also generates a log file, for example, "dmeupdxfmvalstat_<YYYYMMDDHHMISS>.LST." The script displays the number of records in dme_xfm_val_status table after each commit statement. If it encounters any issues, you see errors display on the console. They also write to the log file.

> **Note:**
>
> You only need to run this script if you plan to upgrade from Oracle DMW 2.4.8.x to Oracle DMW 3.0. If you use plan to upgrade from Oracle DMW 2.5.x to Oracle DMW 3.0, do not run this script.

Follow these steps to run the script on a computer with an Oracle client that can connect to the Oracle DMW database server using SQLPlus:

1. Download the file from $CDR_TOP/patch/115/sql/dmeupdxfmvalstat.sql

2. Log in to SQLPlus (not SQLDeveloper) as the APPS database user.
3. Invoke the script from your download directory. For example:

```
<download_directory>/dmeupdxfmvalstat.sql
```

> **Note:**
>
> - After the script runs, it commits the records and automatically exits the database.
> - The script inserts debug messages into the cdr_exe_debug table with location = dmeupdxfmvalstat.sql. If debug was turned on, you can monitor the debug message to verify the script activity using following:
>
>   ```
>   SQL> select location, logentry from cdr_exe_debug where
>   location = 'dmeupdxfmvalstat.sql' order by seq;
>   ```
>
> - You can monitor the records in the dme_xfm_val_status table to see if the count of records increased before and after the upgrade script execution. Run the following before and after upgrade script execution:
>
>   ```
>   SQL> select count(*) from dme_xfm_val_status;
>   ```

8.3.3 Run the Last Modification Column Script

The dmeupdlastmod.sql script adds the LAST_MODIFICATION column to existing business areas created in an earlier version of Oracle DMW. Excute it for studies with business areas created in 2.4.X or earlier. (You do not need to execute it for studies created in Oracle DMW 2.5 or later or multiple times per study.) Plan a maintenance window to run the script.

> **Note:**
>
> You only need to run this script if you plan to upgrade from Oracle DMW 2.4.8.x to Oracle DMW 3.0. If you use plan to upgrade from Oracle DMW 2.5.x to Oracle DMW 3.0, do not run this script.

> **Note:**

Follow these steps to run the script on a computer with an Oracle client that can connect to the Oracle DMW database server using SQLPlus:

1. Download the file from $CDR_TOP/patch/115/sql/dmeupdlastmod.sql
2. Log in to SQLPlus (not SQLDeveloper) as the APPS database user.
3. Invoke the script from your download directory. For example:

   ```
   <download_directory>/dmeupdlastmod.sql
   ```

4. Provide one of the following at the `Study Names` prompt:
   - Single study name
   - Comma-delimited list of study names, for example, STUDY1,STUDY2 (240 characters maximum)
   - `ALL` (to process all studies)
5. Enter **Y** when prompted to continue. The script creates a log file (for example, dmeupdlastmod_<*currenttimestamp*>.log).
6. Review the log file and execute the script as needed for other studies.

8.4 Apply WLS Patch 12.2.1.4

Follow the instructions in the Read Me file on My Oracle Support to install Oracle WebLogic Server Patch Set Update (PSU) 12.2.1.4.0, patch **30689820**.

8.5 Restart WebLogic Server

For information on restarting the WebLogic Server, see Restart the WebLogic Server.

8.6 Run the Health Check Scripts

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

8.7 Deploy Oracle DMW to the WebLogic Server

You must deploy the new version of Oracle DMW to the WebLogic Server. Follow instructions in Deploy Oracle DMW on the WebLogic Server, including instructions for applying the latest patch set and patches.

8.8 Upgrade File Watcher to Support Archiving Files (Optional)

File Watcher now supports automatically archiving loaded data files. To archive loaded files, you must set up the folders in which to store them the same way you do the folders where you put files to be loaded: create a specified directory structure and register the path for each as Oracle LSH profile values.

To archive files in an existing, pre-Release 3.0 study, edit the study File Watcher and click the **Regenerate** button to enable archiving for the study.

See the *Oracle Health Sciences Data Management Workbench Administration Guide* for more information.

8.9 Install Oracle Thesaurus Management System (Optional)

If you plan to use Oracle Thesaurus Management System (TMS) as a coding tool integrated with Oracle DMW, follow instructions in Install Oracle Thesaurus Management System (Optional).

9 What's Next

After you have finished all the installation tasks in this book, you must do the following tasks before you can begin to use the Oracle Health Sciences Data Management Workbench (Oracle DMW).

You perform most of the following tasks in Oracle Life Sciences Data Hub (Oracle LSH):

- Set Up System Security
- Set Up User Security
- Set Up Oracle LSH Services
- Assign User Group to InForm Family Adapter
- Set Required Profile and Lookup Settings
- Create Study and Library Categories in Oracle LSH
- Set Up File Watcher
- Set Up Logging
- Integrate Other Applications (Optional)

9.1 Set Up System Security

For information on securing your system, see *Oracle Health Sciences Life Sciences Warehouse Security Guide* and the *Secure Configuration Guide for Oracle E-Business Suite Release 12* (My Oracle Support document 403537.1.)

9.2 Set Up User Security

Oracle DMW uses the Oracle LSH security system, which uses the user security features of the Oracle E-Business Suite. See the *Oracle Health Sciences Data Management Workbench Administration Guide*.

9.3 Set Up Oracle LSH Services

Define Oracle LSH service locations and service instances to support Oracle DMW features as follows, following instructions in the *Oracle Life Sciences Data Hub System Administrator's Guide*.

This section contains details to do the following:

- Distributed Processing Services for File Watcher
- PLSQL Service Instances for InForm Metadata and Data Loading and PL/SQL Jobs

9.3.1 Distributed Processing Services for File Watcher

You need the following service types to support Oracle DMW File Watcher:

- **Text for SQL Loader** if you are loading text files from labs or elsewhere.
- **SAS** if you are loading SAS files from labs or elsewhere.

9.3.2 PLSQL Service Instances for InForm Metadata and Data Loading and PL/SQL Jobs

InForm metadata and data loading use the PLSQL service. Oracle LSH installation automatically creates a service location with the database SID as its name and creates the PLSQL service under it in the Oracle LSH user interface with three service instances, which allows concurrent processing of three PL/SQL jobs.

In Oracle DMW, these jobs include:

- Loading metadata and data for an InForm study
- Executing a PL/SQL custom program for a transformation
- Executing a generated transformation
- Executing a validation check batch

Increase the number of PLSQL service instances to support the number of PL/SQL jobs you are likely to run concurrently. Oracle recommends a setting of 100.

9.4 Assign User Group to InForm Family Adapter

Assign appropriate user group(s) to the InForm Adapter familyas described in the *Oracle Life Sciences Data Hub System Administrator's Guide*.

9.5 Set Required Profile and Lookup Settings

Oracle DMW uses Oracle Applications profiles and lookups to determine some aspects of system behavior. See the *Oracle Health Sciences Data Management Workbench Administration Guide* for information.

9.6 Create Study and Library Categories in Oracle LSH

After finishing the installation, create subdomains within the shipped Oracle DMW domain to organize your company's studies and libraries. See the *Oracle Health Sciences Data Management Workbench Administration Guide* for information.

9.7 Set Up File Watcher

For details on setting up File Watcher, see the *Oracle Health Sciences Data Management Workbench Administration Guide*.

9.8 Set Up Logging

After you deploy the Oracle DMW application (dmwapp) as described in Deploy Oracle DMW on the WebLogic Server, follow these steps to enable logging for dmwapp at the INFO level.

> **Note:**
>
> Check that you perform these steps whenever you need to restart the managed server. The system you use depends on where you deployed Oracle DMW (for example, WebLogic Server or Oracle Enterprise Manager). This procedure uses Oracle Enterprise Manager (OEM).

1. Log in to the managed server where you deployed Oracle DMW (for example, OEM).
2. From the Server section, select the managed server where you deployed Oracle DMW.
3. From the **WebLogic Server** menu, select **Logs** > **Log Configuration**.
4. Expand Root Logger, locate **dmwapp**, and select **Notification: <#> (INFO)** from the Oracle Diagnostic Logging Level (Java Level) column.
5. Click **Apply**.
   If you deployed Oracle DMW to more managed servers, repeat steps 2 through 4 for each server.

9.9 Integrate Other Applications (Optional)

If you plan to use Oracle or third-party applications with Oracle DMW, follow instructions in the *Oracle Life Sciences Data Hub Installation Guide* and *Oracle Life Sciences Data Hub System Administrator's Guide* to integrate them with Oracle LSH, including defining Distributed Processing Services for them. Applications must be purchased and licensed separately.

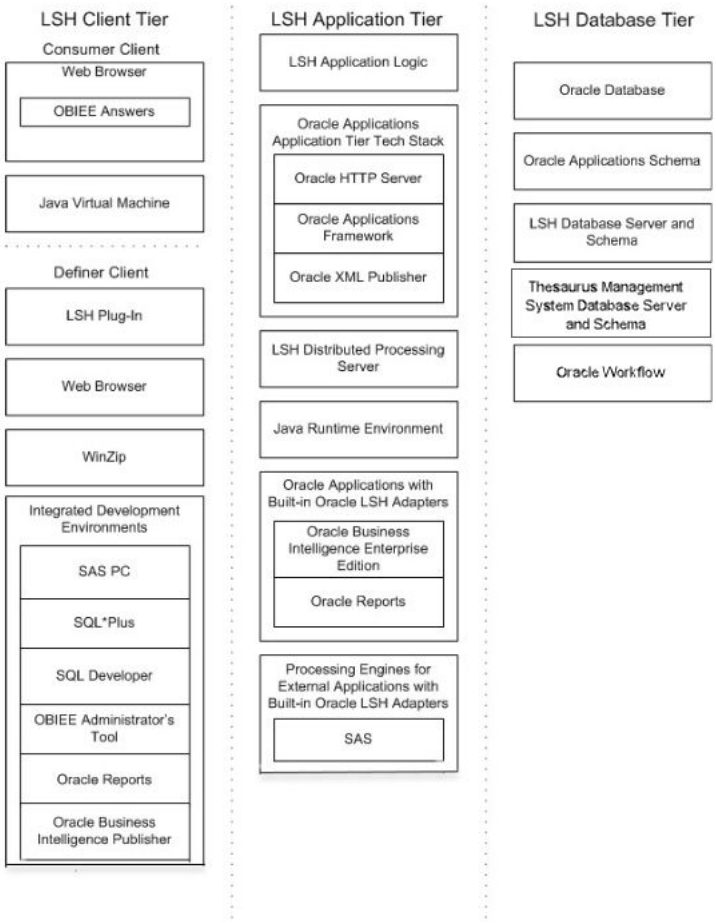
Applications you may want to use include:

- JReview or Spotfire for data visualizations
- Oracle Business Intelligence Enterprise Edition (OBIEE) for data visualizations

10
Architecture

The following figure shows the architecture described in this section.

Figure 10-1 Oracle Health Sciences Data Management Workbench Architecture



This section contains the following topics:

10.1 Client Tier

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

Most Users Oracle DMW who do not write custom programs for transformations and validation checks, require the following on their personal computers:

- A Web browser
- Java Virtual Machine (JVM)

Administrators require JVM to use any of the Oracle Forms screens related to security, including setting up user accounts, and to run the post-installation jobs.

Programmers Users who write custom programs in an integrated development environment from Oracle LSH require additional software:

- One or more integrated development environments such as SAS PC, SQL*Plus, SQL Developer, or PowerCenter client.
- Oracle LSH plug-in for launching Integrated Development Environments (IDEs)
- WinZip
- Web browser

10.2 Application Tier

Oracle DMW has two distinct application tiers:

- Oracle Life Sciences Data Hub Application Tier
- Oracle Health Sciences Data Management Workbench Application Tier

10.2.1 Oracle Life Sciences Data Hub Application Tier

In addition to standard Oracle Applications components, the Oracle LSH 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:

- **SAS** executes user-developed SAS Programs.

10.2.2 Oracle Health Sciences Data Management Workbench Application Tier

The Oracle DMW-specific application tier requires Oracle WebLogic Server and Oracle Applications Developer.

10.3 Database Tier

Oracle DMW uses the Oracle LSH database tier that includes:

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. It contains the Oracle LSH schema.

Oracle LSH Database Server and Schema: These include Oracle LSH's business logic in PL/SQL packages, internal Oracle LSH tables and views, security, adapters, and APIs; as well as Oracle LSH user-developed metadata tables and packages.

Oracle Thesaurus Management System (TMS) : Oracle LSH classification system is based on TMS.

11
Change Record

- August 2020: First version of the guide.
- November 2020: Second version of the guide.
- December 2020: Third version of the guide. In this version:
  - Added the Support SSL Wildcards and SSL Web Services section.
  - Removed sections 8.4 Install the Latest Version of JDK, 8.6 Enable WLS Policy Manager, and 8.7 Edit setDomainEnv.sh.
  - Updated the compatibility information for different versions of Oracle InForm Adapter with Oracle InForm in the Technology Stack section.
- February 2021: This is the fourth version of the guide. In this version, updated the following in the Technology Stack section:
  - Compatibility information for different versions of Oracle InForm Adapter with Oracle InForm.
  - Versions for Google Chrome, Firefox Quantum, and Microsoft Edge Chromium in the Supported Browsers section.