

Oracle® Healthcare Foundation Installation Guide



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The Oracle logo, consisting of a solid red square with the word "ORACLE" in white, uppercase, sans-serif font centered within it.

ORACLE®

Oracle Healthcare Foundation Installation Guide, Release 8.2.1

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Preface

This preface contains the following sections:

- [Documentation accessibility](#)
- [Related resources](#)
- [Access to Oracle Support](#)
- [Additional copyright information](#)

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](#).

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- English interface of Oracle Health Sciences Customer Support Portal (<https://hsgbu.custhelp.com/>)
- Japanese interface of Oracle Health Sciences Customer Support Portal (<https://hsgbu-jp.custhelp.com/>)

You can also call our 24x7 help desk. For information, visit <http://www.oracle.com/us/support/contact/health-sciences-cloud-support/index.html> or visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs> if you are hearing impaired.

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1

Overview

This document explains the installation and initial setup of Oracle Healthcare Foundation. The user installing Oracle Healthcare Foundation (OHF) should have knowledge of Oracle, Informatica or Oracle Data Integrator, Oracle WebLogic Server, and the Linux operating system.

The Oracle Healthcare Foundation installer lets you install the components below on the Linux OS in the following order:

1. Oracle Healthcare Foundation Data Model
2. Oracle Healthcare Foundation Data Management Assembly for Oracle Data Integrator or
Oracle Healthcare Foundation Data Management Assembly for Informatica
3. Oracle Healthcare Foundation Middle-Tier



Note:

Oracle Healthcare Foundation should be installed by the same user who installed the RDBMS or Oracle WebLogic Server.

This chapter contains the following topics:

- [Software Requirements](#)
- [Media Pack Content](#)
- [General Guidelines for Installation](#)
- [Supported Upgrade Paths](#)
- [Where to Find the Product Documentation](#)

Software Requirements

Component	Software Required
Common requirements for all components	<ul style="list-style-type: none">• Oracle Linux 6.7 (64-bit) or above, or Oracle Linux 7 (64-bit) operating system (OS)• Oracle Database Enterprise Edition 19c (19.3 or above) with the latest patches• Python 2 (version 2.6.6 or above) or Python 3 (version 3.6.4 or above)
Data Model	No additional requirements

Component	Software Required
Data Management Assembly (Oracle Data Integrator)	<ul style="list-style-type: none"> Oracle Data Integrator (ODI) 12.2.1.4 Standalone or Enterprise edition Oracle Fusion Middleware Infrastructure 12.2.1.4 is required for Oracle Data Integrator Enterprise edition Java Development Kit (JDK) 1.8 Oracle WebLogic Server 12.2.1.4 (optional)
Data Management Assembly (Informatica)	<ul style="list-style-type: none"> Informatica PowerCenter 10.2 or 10.4
Middle-Tier	<p>You must install the Middle-Tier on a different Oracle WebLogic Server than the Oracle Data Integrator server.</p> <ul style="list-style-type: none"> Oracle Fusion Middleware Infrastructure 12.2.1.4.0 with Oracle WebLogic Server 12.2.1.4.0 Java Development Kit (JDK) 1.8 Update 111 (JDK 1.8 u111) or above
Self-Service Analytics (optional)	<ul style="list-style-type: none"> Oracle Analytics Server (OBIEE) 12.2.1.4.0 (Oracle Analytics Server 12.2.1.4.0 is compatible with Oracle Fusion Middleware Infrastructure 12.2.1.3.0) Oracle Analytics Developer Client Tools 12.2.1.4.0 Java Runtime Environment (JRE) 1.8 Update 111 (JRE 1.8 u111) or above

Media Pack Content

The media pack from the Oracle Software Delivery Cloud (OSDC) contains the installer for:

- Oracle Healthcare Foundation Linux (OHF_V821_Linux-x64.zip)

General Guidelines for Installation

- Linux X-windows should be used for the Linux Oracle Universal Installer (OUI) installation (Linux Graphical User Interface).
- Before running the installer, be sure to backup all existing Oracle Healthcare Foundation schemas and any customizations.
- Before running the installer, make sure that the ORACLE_HOME and PATH environment variables are setup in your session. For example,


```
export ORACLE_HOME=/u01/app/oracle/product/122010
export PATH=$PATH:$ORACLE_HOME/bin
```
- When re-executing the installer due to a failure, enter the same details in the question prompting phase at all times. Do not delete any objects in the installation folder.
- When re-executing the installer, if you receive OUI-10030 error messages, ignore the messages to continue using the existing Oracle Healthcare Foundation installation HOME path.
- Convert the installer execution shell to an SH shell as the installer script executes in the SH shell of the Linux OS.

- Text enclosed within <> in the following chapters indicate parameters and you must provide an appropriate value.

Supported Upgrade Paths

The following are the supported upgrade paths:

- HDWF 6.1/OHADI 3.1 to Oracle Healthcare Foundation 8.2.1
- Oracle Healthcare Foundation 7.0.1 to Oracle Healthcare Foundation 8.2.1
- Oracle Healthcare Foundation 7.1 to Oracle Healthcare Foundation 8.2.1
- Oracle Healthcare Foundation 7.1.x to Oracle Healthcare Foundation 8.2.1
- Oracle Healthcare Foundation 8.x to Oracle Healthcare Foundation 8.2.1
- Oracle Healthcare Translational Research 3.1.0.2/3.1.0.3/3.1.0.4 to Oracle Healthcare Foundation 8.2.1

To upgrade the OHF Middle Tier from Oracle Healthcare Foundation, uninstall the existing oh_domain and applications and install Oracle WebLogic Server 12.2.1.4.0. Then do a fresh Oracle Healthcare Foundation 8.2.1 Middle Tier installation (see [Middle-Tier Installation](#)).

Where to Find the Product Documentation

The product documentation is available from the following locations:

- My Oracle Support (<https://support.oracle.com>)
- Oracle Help Center (<https://docs.oracle.com/en/industries/health-sciences/healthcare-foundation/index.html>)

If the software is available for download, the documentation set is available from the Oracle Software Delivery Cloud (<https://edelivery.oracle.com>). All documents may not be updated for every release. Therefore, the version numbers for the documents in a release may differ.

Part I

Installation

In this chapter:

- [Data Model Installation](#)
- [Data Management Assembly for Oracle Data Integrator Installation](#)
- [Data Management Assembly for Informatica Installation](#)
- [Middle-Tier Installation](#)
- [JDBC GridLink Data Source Configuration \(optional\)](#)
- [Oracle Healthcare Foundation Omics Data Bank Loaders Installation](#)
- [Oracle Healthcare Foundation Self-Service Analytics Installation](#)
- [Oracle Healthcare Foundation Installation on ADW](#)

2

Data Model Installation

This chapter describes how to install the Oracle Healthcare Foundation Data Model. There are two ways to install the Data Model, depending on how you create the user schemas. The installer can create the user schemas during the installation or you can create them manually, prior to the installation

For more information, see:

- [Install the Data Model without Pre-created User Schemas](#)
- [Install the Data Model with Pre-created User Schemas](#)

Install the Data Model without Pre-created User Schemas

This section describes how to install the Data Model by using the installer to create fresh user schemas. Please complete the following:

- [Check Prerequisites](#)
- [Prepare the Installer](#)
- [Run the Installer](#)
- [Check the Installation](#)

Check Prerequisites

- Prerequisites

- Install Oracle Database Enterprise Edition 19c (19.3) with the latest patches.
- Make sure that the database compatible parameter is set to 19.3.0.0.0 or higher by connecting to the DBA user and running the query below:

```
select * from v$parameter where name = 'compatible';
```

Ensure the parameter is set to 19.3.0.0.0 or higher.

- Create a container database with a single pluggable database instance with the help of a Oracle Database Administrator (optional).
- Make sure the database initialization parameter `MAX_STRING_SIZE` is set to STANDARD (default value).
Note that this parameter cannot be changed to STANDARD if the database is created with `MAX_STRING_SIZE` set to EXTENDED.
- Set the `NLS_LENGTH_SEMANTICS` parameter to either CHAR or BYTE, based on your requirements.

For Oracle Healthcare Foundation Globalization Support information, see *Oracle Database Globalization Support Guide* and set your database character set accordingly.

- Prerequisites

- Make sure that the password expiry notification message does not display for the sys and system schemas.
 - To create an encrypted tablespace during the installation, set up your environment for tablespace encryption. For more information, see *Oracle Database Advanced Security Guide 12.2*. The installer only creates the tablespace and does not handle prerequisites like setting up the keystore, opening it, and so forth. The installer only checks whether the keystore is open if the sys and system passwords are provided during the installation.
 - Verify if you have a database license for Advanced Compression.
 - Set the GLOBAL_NAMES database initialization parameter to false.
 - If you are installing Oracle Healthcare Foundation on an Exadata database machine, see the **Exadata Machine** and **Exadata Implementation** sections in the *Oracle Healthcare Foundation Programmer's Guide*.
 - For remote installations, make sure the following are available on the client machine:
 - Oracle Linux 6.7 (64-bit) OS or above
 - Oracle Database Enterprise Edition 19c (19.3) with the latest patches and with the Sqlplus utility
 - Verify the database connectivity through SERVICE_NAME. Make sure that you are connecting to the pluggable database (PDB) if installing in a container-based environment.
Verify the database connectivity using the following command:
SQL>connect username@hostname:port number/service name
or
sqlplususername@'(DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=dbhost)(PORT=dbport))
(CONNECT_DATA=(SERVICE_NAME=dbservicename)))'
 - The installer does not validate the tablespace data files location. If the database server is on the remote server, make sure the location physically exists or the installer will fail.
-

Prepare the Installer

- Steps

- The Oracle Healthcare Foundation 8.2.1.0.0 software is available for download from the Oracle Software Delivery Cloud (<https://edelivery.oracle.com>). Search for Oracle Healthcare Foundation 8.2.1.0.0
 - Extract the contents of the Oracle Healthcare Foundation media pack to your system.
 - Open the **media_pack_location** folder.
 - Unzip the OHF_V821_Linux-x64.zip file where you want to launch the installer using the following command:
unzip -a OHF_V821_Linux-x64.zip
 - Open the **Disk1/install** folder.
 - Change the protection on the files as follows:
chmod 755 *
-

Run the Installer

Start the Oracle Universal Installer (OUI) using the following command:

- If the database server (Exadata or non-Exadata) is on the machine where the installer is running, execute:

```
sh runInstaller.sh -local
```
- If the database server is on a different machine, execute:

```
sh runInstaller.sh -local remote_installation=true
```

where the `-local` option is to install on the local node irrespective of the cluster nodes specified on the installer machine.

- Screen	Action
<input type="checkbox"/> Welcome	Click Next .
<input type="checkbox"/> Select a Product to Install	Select the Oracle Healthcare Foundation Data Model 8.2.1.0.0 option.
<input type="checkbox"/> Specify Home Details	Enter the installation home name and location.
<input type="checkbox"/> Verify Installation Prerequisites	Verify if all the prerequisites are met before proceeding.
<input type="checkbox"/> Oracle Client Home Configuration	Specify the Oracle (version 19.3.0.0.0) client home path.
<input type="checkbox"/> Database Configuration	Enter values for the following fields: <ul style="list-style-type: none">• Hostname - By default, the system host name appears. For remote installations, set this value to the host name of the remote machine.• Port - By default, the port number is 1521. You can edit this field if required.• Service name• System user password• Sys user password

- Screen	Action
<input type="checkbox"/> Table Compression	<p>On an Exadata setup, use the following compression options:</p> <p>Interface Tables schema</p> <ul style="list-style-type: none"> • Hybrid columnar compression (default) • No Compression <p>Data Warehouse schema</p> <ul style="list-style-type: none"> • No Compression (default) • Advanced Compression: Preferred if updates are high. If you don't have a license for Advanced Compression, select Hybrid Columnar Compression. • Hybrid Columnar Compression <p>Common Data Mart schema</p> <ul style="list-style-type: none"> • No Compression (default) • Advanced Compression <p>Cohort Data Mart schema</p> <ul style="list-style-type: none"> • No Compression (default) • Advanced Compression <p>Omics Data Bank schema</p> <ul style="list-style-type: none"> • Hybrid columnar compression (default) <p>On a non-Exadata setup, for each of the above schemas, choose either No Compression (default) or Advanced Compression if it is licensed.</p>
<input type="checkbox"/> Data Model Configuration	<p>Enter values for the following fields:</p> <ul style="list-style-type: none"> • Interface Tables schema name • Interface Tables schema password • Data Warehouse schema name • Data Warehouse schema password • Common Data Mart schema name • Common Data Mart schema password • Omics Data Bank schema name • Omics Data Bank schema password
<input type="checkbox"/> Data Model Configuration	<p>Enter values for the following fields:</p> <ul style="list-style-type: none"> • Cohort Data Mart schema name • Cohort Data Mart password • Enterprise schema name • Enterprise schema password • Job Engine schema name • Job Engine schema password • Services schema name • Services schema password
<input type="checkbox"/> Data Model Configuration	<p>Enter values for the following fields:</p> <ul style="list-style-type: none"> • Clinical Genomics (cga) schema name • Clinical Genomics (cga) schema password
<input type="checkbox"/> Data Model Configuration Verification	<p>Click Next.</p>

- Screen	Action
<input type="checkbox"/> Tablespace Data File Location	<p>Specify the location of the Tablespace data files. This is the directory on the database server where the data files are created during the installation.</p> <p>For example,</p> <p>Unix: /u01/oradata/dbname</p> <p>ASM: +DATA_EX02/hashas01/datafile</p> <p>Note:</p> <ul style="list-style-type: none"> • The ASM location must always start with +. • The path should not end with /.
<input type="checkbox"/> Tablespace Details	<p>The installer creates the following tablespaces. Make sure that these tablespaces do not exist in the database.</p> <ul style="list-style-type: none"> • hdi_ts - Default tablespace used for Interface tables (hdi) schema • hdm_ts - Default tablespace used for Data Warehouse (hdm) schema • hcd_ts - Default tablespace used for Common Data Mart (hcd) schema • odb_data_ts - Default tablespace used for Omics Data Bank (odb) schema • odb_index_ts - Tablespace used for indexes of the Omics Data Bank (odb) schema • odb_lob_ts - Tablespace used for LOB columns in the Omics Data Bank (odb) schema • cdm_data_ts - Default tablespace used for Cohort Data Mart (cdm) schema • cdm_index_ts - Tablespace used for indexes of the Cohort Data Mart (cdm) schema • ent_ts - Default tablespace used for Enterprise (ent) schema • job_data_ts - Default tablespace for Job Engine (job) schema • job_index_ts - Tablespace used for indexes of the Job Engine (job) schema • job_store_ts - Database File System (DBFS) store is created as part of the Job Engine installation • job_lob_ts - Tablespace used to store LOB data in the DBFS store created for the JOB_ENGINE schema user • job_tbs_ts - Tablespace used for the DBFS store created for the JOB_ENGINE schema • svc_ts - Default tablespace used for services schema (svc) • api_ts - Default tablespace used for Clinical Genomics schema (cga) <p>For each schema, you can edit the default tablespace name, initial size, max size, and tablespace encryption.</p>

- Screen	Action
<input type="checkbox"/> Temporary Tablespace Details	<p>The installer creates the following temporary tablespaces. Make sure that these tablespaces do not exist in the database.</p> <ul style="list-style-type: none"> • hdi_temp - Temporary tablespace for the Interface tables schema (hdi) • hdm_temp - Temporary tablespace for the Data Warehouse schema (hdm) • hcd_temp - Temporary tablespace for the Common Data Mart schema (hcd) • odb_temp - Temporary tablespace for the Omics Data Bank schema (odb) • cdm_temp - Temporary tablespace for the Cohort Data Mart schema (cdm) • ent_temp - Temporary tablespace for the Enterprise schema (ent) • job_temp - Temporary tablespace for the Job Engine schema (job) • svc_temp - Temporary tablespace for the Services schema (svc) • api_temp - Temporary tablespace used for Clinical Genomics schema (cga) <p>For each schema, you can edit the temporary tablespace name, initial size, and max size.</p>
<input type="checkbox"/> Omics Data Bank and Cohort Data Mart Parameters	<p>Enter values for the following fields:</p> <ul style="list-style-type: none"> • Result Partition - Used to partition result tables in the ODB schema. The available options are: <ul style="list-style-type: none"> – GENE (Default) • Promoter Offset - Numerical value to specify a portion of the gene used as a promoter in the ODB schema. The default value is 200. • Flanking Offset - Numerical value to specify the region before and after a gene to link results to a gene in the ODB schema. The default value is 200. • Max Parallel Degree - An option to specify the maximum degree of parallelism to be set on tables or used in the SQL statements for the CDM or ODB schema. It is dependent on the machine configuration of the database server. The default value is 2. • Job Store Name - If you are using the same database instance for multiple environments, enter a unique job store name for each job schema.
<input type="checkbox"/> Summary	Click Install .
<input type="checkbox"/> End of Installation	Click Exit after reviewing the installation information. At the confirmation prompt, click Yes to exit the installer.

Check the Installation

- Steps
<input type="checkbox"/> Review the generated installation log files for errors. For details, see Installation Log Files .
<input type="checkbox"/> Contact Oracle support, if necessary, to resolve any errors.

Install the Data Model with Pre-created User Schemas

This section describes how to install the Data Model by creating Oracle Healthcare Foundation user schemas and tablespaces outside the installer, then using the installer to create database objects in the respective user schemas. Please complete the following:

- [Check Prerequisites](#)
- [Oracle Healthcare Foundation Tablespaces](#)
- [Temporary Tablespaces](#)
- [Prepare the Installation Files](#)
- [Create Database Roles](#)
- [Create User Schemas](#)
- [Run the Installation Scripts](#)
- [Start the Installer](#)
- [Run the Installer](#)
- [Check the Installation](#)
- [Revoke Privileges](#)

Check Prerequisites

- Prerequisites

- Make sure Oracle Database Enterprise Edition 19c (19.3 or above) with the latest patches is installed.
- Make sure that the database compatible parameter is set to 19.3.0.0.0 by connecting to the DBA user and running the query below:

```
select * from v$parameter where name = 'compatible';
```

If the parameter is not set to 19.3.0.0.0, ask your database administrator to set it.

- If you are installing Oracle Healthcare Foundation on an Exadata environment, apply the Oracle database patch 19562381 (Doc ID [19562381.8](#)) and patch 31182793.
- Make sure the database initialization parameter `MAX_STRING_SIZE` is set to `STANDARD` (default value). This parameter cannot be changed to `STANDARD` if the database was created with `MAX_STRING_SIZE` set to `EXTENDED`.
- Set the `NLS_LENGTH_SEMANTICS` parameter to either `CHAR` or `BYTE`, based on your requirements.
For Oracle Healthcare Foundation Globalization Support information, see *Oracle Database Globalization Support Guide* and set your database character set accordingly.
- Make sure that the password expiry notification message does not display for the `sys` and `system` schemas.
- To create an encrypted tablespace during the installation, set up your environment for tablespace encryption. For more information, see *Oracle Database Advanced Security Guide 12.2*. The installer only creates the tablespace and does not handle prerequisites like setting up the keystore, opening it, and so forth. The installer only checks whether the keystore is open if the `sys` and `system` passwords are provided during the installation.

- Prerequisites

- Verify if you have a database license for Advanced Compression.
 - Set the GLOBAL_NAMES database initialization parameter to false.
 - If you are installing Oracle Healthcare Foundation on an Exadata database machine, see the **Exadata Machine** and **Exadata Implementation** sections in the *Oracle Healthcare Foundation Programmer's Guide*.
 - For remote installations, make sure the following are available on the client machine:
 - Oracle Linux 6.7 (64-bit) OS or above
 - Oracle Database Enterprise Edition 19c (19.3) with the latest patches
 - Enable a database connection through SERVICE_NAME. Make sure that you are connecting to the pluggable database (PDB) if you are installing in a container-based environment. Verify the database connectivity using the following commands:


```
SQL>connect username@hostname:port number/service name
```

or

```
sqlplus username@'(DESCRIPTION=(ADDRESS=(PROTOCOL=TCP)(HOST=dbhost)(PORT=dbport))(CONNECT_DATA=(SERVICE_NAME=<dbservername>)))'
```
 - Make sure that the Sqlplus utility is available in the installation server.
-

Oracle Healthcare Foundation Tablespaces

Create the following default tablespaces. You can use different tablespace names than the ones listed below.

- Tablespace Name	Big File Tablespace	Description
<input type="checkbox"/> hdi_ts	Yes	Default tablespace for the Interface Tables (hdi) schema
<input type="checkbox"/> hdm_ts	Yes	Default tablespace for the Data Warehouse (hdm) schema
<input type="checkbox"/> hcd_ts	Yes	Default tablespace for the Common Data Mart (hcd) schema
<input type="checkbox"/> odb_data_ts	Yes	Default tablespace for the Omics Data Bank (odb) schema
<input type="checkbox"/> odb_index_ts	Yes	Used for indexes of the Omics Data Bank (odb) schema
<input type="checkbox"/> odb_lob_ts	Yes	Used for LOB columns in the Omics Data Bank (odb) schema
<input type="checkbox"/> cdm_data_ts	Yes	Default tablespace for the Cohort Data Mart (cdm) schema
<input type="checkbox"/> cdm_index_ts	Yes	Used for indexes of the Cohort Data Mart (cdm) schema

Tablespace Name	Big File Tablespace	Description
<input type="checkbox"/> ent_ts	No	Default tablespace for the Enterprise (ent) schema
<input type="checkbox"/> job_data_ts	No	Default tablespace for the Job Engine (job) schema
<input type="checkbox"/> job_index_ts	No	Used for indexes of the Job Engine (job) schema
<input type="checkbox"/> job_store_ts	No	Database File System (DBFS) store created as part of the Job Engine installation
<input type="checkbox"/> job_lob_ts	No	Name of the tablespace to store LOB data in the DBFS store created for the JOB ENGINE schema user
<input type="checkbox"/> job_tbs_ts	No	Name of the tablespace to be used for the DBFS store created for the JOB_ENGINE schema
<input type="checkbox"/> svc_ts	No	Default tablespace used for the Services (svc) schema
<input type="checkbox"/> api_ts	No	Default tablespace for the Clinical Genomics (cga) API schema.

Temporary Tablespaces

Oracle Healthcare Foundation loaders and ETLs require a large temporary tablespace for sorting. A dedicated bigfile temporary tablespace or a single temporary tablespace group should be assigned to all Oracle Healthcare Foundation schemas.

Prepare the Installation Files

Preparations
<input type="checkbox"/> Extract the contents of the Oracle Healthcare Foundation media pack to your system.
<input type="checkbox"/> Open the media_pack_location folder.
<input type="checkbox"/> Unzip the <code>OHF_V821_Linux-x64.zip</code> file where you want to launch the installer using the following command: <code>unzip -a OHF_V821_Linux-x64.zip</code>

Create Database Roles

Instructions
<input type="checkbox"/> Navigate to the directory <code><media_pack_location>/Disk1/stage/Components/oracle.hsgbu.hc.datamodel/8.2.1.0.0/1/DataFiles/Expanded/filegroup1</code> .
<input type="checkbox"/> Unzip the <code>master_install.zip</code> file.
<input type="checkbox"/> Connect to Oracle SYS from the extracted content and create database roles by executing the <code>roles.sql</code> script.

Create User Schemas

Create the following user schemas and assign the appropriate default and temporary tablespaces. Refer to [Oracle Healthcare Foundation Tablespaces](#) and [Temporary Tablespaces](#) for details. If you created tablespaces with different names, use those names instead.

-	Schema	Default Tablespace	Temporary Tablespace
<input type="checkbox"/>	Interface Tables (hdi)	hdi_ts	temp
<input type="checkbox"/>	Data Warehouse (hdm)	hdm_ts	temp
<input type="checkbox"/>	Common Data Mart (hcd)	hcd_ts	temp
<input type="checkbox"/>	Omics Data Bank (odb)	odb_data_ts	temp
<input type="checkbox"/>	Cohort Data Mart (cdm)	cdm_data_ts	temp
<input type="checkbox"/>	Enterprise (ent)	ent_ts	temp
<input type="checkbox"/>	Job Engine (job)	job_data_ts	temp
<input type="checkbox"/>	Services (svc)	svc_ts	temp
<input type="checkbox"/>	Clinical Genomics (cga)	api_ts	temp

Run the Installation Scripts

Execute the following scripts/commands as a DBA user. When prompted, enter the respective schema names.

When prompted for the application role, enter `OHF_APPLICATION_ROLE`.

-	Scripts
<input type="checkbox"/>	@hdi_install/grant_schema_priv.sql
<input type="checkbox"/>	@hdm_install/grant_schema_priv.sql
<input type="checkbox"/>	@hcd_install/grant_schema_priv.sql
<input type="checkbox"/>	@odb_install/grant_schema_priv.sql
	Execute the following commands:
	> ALTER USER odb QUOTA UNLIMITED on odb_index_ts
	> ALTER USER odb QUOTA UNLIMITED on odb_lob_ts
<input type="checkbox"/>	@cdm_install/grant_schema_priv.sql
	Execute the following command:
	> ALTER USER cdm QUOTA UNLIMITED on cdm_index_ts
<input type="checkbox"/>	@enterprise_install/grant_schema_priv.sql

- Scripts

@job_install/grant_schema_priv.sql
 Execute the following commands:

```
> ALTER USER job QUOTA UNLIMITED on job_index_ts
> ALTER USER job QUOTA UNLIMITED on job_store_ts
> ALTER USER job QUOTA UNLIMITED on job_lob_ts
> ALTER USER job QUOTA UNLIMITED on job_tbs_ts
```

@svc_install/grant_schema_priv.sql

Start the Installer

- Steps

Make sure that all the Oracle Healthcare Foundation schemas are disconnected from the database by querying gv_\$session from the sys user:

```
select * from sys.gv_$session where status <> 'KILLED' and username in
('<OHF Schemas>');
```

Navigate to the *media_pack_location/Disk1/install* folder.

Change the protection on the files as follows:
`chmod 755 *`

Start the Oracle Universal Installer (OUI) using the following command:

- If the database server is on the machine where the installer is running and is an Exadata instance:
`sh runInstaller.sh -local dba_tasks=false db_platform=exadata`
- If the database server is on the machine where the installer is running and is a non-Exadata instance:
`sh runInstaller.sh -local dba_tasks=false db_platform=default`
- If the database server is on a different machine and is an Exadata instance:
`sh runInstaller.sh -local remote_installation=true dba_tasks=false db_platform=exadata`
- If the database server is on a different machine and is a non-Exadata instance:
`sh runInstaller.sh -local dba_tasks=false db_platform=default remote_installation=true`

The `-local` option tells the installer to install on the local node, irrespective of the cluster nodes specified on the installer machine.

The `dba_tasks=false` option tells the installer not to create user schemas and tablespaces.

Run the Installer

Screen	Action
<input type="checkbox"/> Welcome	Click Next .
<input type="checkbox"/> Select a Product to Install	Select the Oracle Healthcare Foundation Data Model 8.2.1.0.0 option.

- Screen	Action
<input type="checkbox"/> Specify Home Details	Enter the installation home name and location.
<input type="checkbox"/> Verify Installation Prerequisites	Verify if all the prerequisites are met before proceeding.
<input type="checkbox"/> Oracle Client Home Configuration	Specify the Oracle (version 19.3.0.0.0) client home path. The installer validates this path.
<input type="checkbox"/> Database Configuration	<p>Enter values for the following fields:</p> <ul style="list-style-type: none"> • Hostname - By default, the system host name appears. For remote installations, set this value to the host name of the remote machine. • Port - By default, the port number is 1521. You can edit this field if required. • Service name <p>The installer will not validate the database connectivity. Make sure that you are able to connect to the database from SQLPlus.</p>
<input type="checkbox"/> Table Compression	<p>On an Exadata setup, use the following compression options:</p> <p>Interface Tables schema</p> <ul style="list-style-type: none"> • Hybrid columnar compression (default) • No Compression <p>Data Warehouse schema</p> <ul style="list-style-type: none"> • No Compression (default) • Advanced Compression: Preferred if updates are high. If you don't have a license for Advanced Compression, select Hybrid Columnar Compression. • Hybrid Columnar Compression <p>Common Data Mart schema</p> <ul style="list-style-type: none"> • No Compression (default) • Advanced Compression <p>Cohort Data Mart schema</p> <ul style="list-style-type: none"> • No Compression (default) • Advanced Compression <p>Omics Data Bank schema</p> <ul style="list-style-type: none"> • Hybrid columnar compression (default) <p>On a non-Exadata setup, for each of the above schemas, choose either No Compression (default) or Advanced Compression.</p>
<input type="checkbox"/> Data Model Configuration	<p>Enter values for the pre-created schemas:</p> <ul style="list-style-type: none"> • Interface Tables schema name • Interface Tables schema password • Data Warehouse schema name • Data Warehouse schema password • Common Data Mart schema name • Common Data Mart schema password • Omics Data Bank schema name • Omics Data Bank schema password

- Screen	Action
<input type="checkbox"/> Data Model Configuration	Enter values for the pre-created schemas: <ul style="list-style-type: none"> • Cohort Data Mart schema name • Cohort Data Mart password • Enterprise schema name • Enterprise schema password • Job Engine schema name • Job Engine schema password • Services schema name • Services schema password
<input type="checkbox"/> Data Model Configuration	Enter values for the pre-created schemas: <ul style="list-style-type: none"> • Clinical Genomics (cga) schema name • Clinical Genomics (cga) password
<input type="checkbox"/> Data Model Configuration Verification	Click Next .
<input type="checkbox"/> Tablespace Details	Click Next .
<input type="checkbox"/> Temporary Tablespace Details	Click Next .
<input type="checkbox"/> Omics Data Bank and Cohort Data Mart Parameters	Enter values for the following fields: <ul style="list-style-type: none"> • Result Partition - Used to partition result tables in the ODB schema. The available options are: <ul style="list-style-type: none"> – GENE (Default) • Promoter Offset - Numerical value to specify a portion of the gene used as a promoter in the ODB schema. The default value is 200. • Flanking Offset - Numerical value to specify the region before and after a gene to link results to a gene in the ODB schema. The default value is 200. • Max Parallel Degree - An option to specify the maximum degree of parallelism to be set on tables or used in the SQL statements for the CDM or ODB schema. It is dependent on the machine configuration of the database server. The default value is 2. • Job Store Name - Use the job schema name. Execute the following query to find all store names in the database (created by all previous installations) by connecting to the SYS user: <pre>SELECT DISTINCT owner,object_type,object_name,created FROM all_objects WHERE object_name LIKE '%JOB_STORE%';</pre> <p>Note: If you have store names in the database that do not match the %JOB_STORE% pattern, run the following query to find the correct names:</p> <pre>SELECT DISTINCT owner,object_type,object_name,created FROM all_objects WHERE owner =Job Username/schemaname AND object_type IN ('TABLE','VIEW');</pre>

- Screen	Action
<input type="checkbox"/> Tablespace Parameters	Enter values for the fields below from the existing or pre-created CDM, ODB, and Job engine schemas. Make sure that these tablespaces exist or were created before the installation. Refer to Oracle Healthcare Foundation Tablespaces for the tablespace names to be used. <ul style="list-style-type: none">• cdm_index_ts_name• odb_index_ts_name• odb_lob_ts_name• job_index_ts_name• job_lob_ts_name• job_tbs_ts_name
<input type="checkbox"/> Summary	Click Install .
<input type="checkbox"/> End of Installation	Click Exit after reviewing the installation information. At the confirmation prompt, click Yes to exit the installer.

Check the Installation

- Steps
<input type="checkbox"/> Review the generated installation log files for errors. For details, see Installation Log Files .
<input type="checkbox"/> Contact Oracle support, if necessary, to resolve any errors.

Revoke Privileges

After the Cohort Data Mart (CDM) and Omics Data Bank (ODB) data model installation, connect to the database user with the DBA privilege, and execute the following scripts to revoke privileges:

```
REVOKE CREATE ANY DIRECTORY FROM odb user
```

```
REVOKE CREATE ANY CONTEXT FROM cdm user
```

where,

odb_user is the ODB schema name.

cdm_user is the CDM schema name.

3

Data Management Assembly for Oracle Data Integrator Installation

This chapter describes how to install the Oracle Healthcare Foundation Data Management Assembly for Oracle Data Integration (ODI). There are two ways to install the Data Management Assembly for ODI, depending on how you create the user schemas. The installer can create the user schemas during the installation or you can create them manually, prior to the installation. The two methods are described below:

- [Installing the Data Management Assembly without Pre-Created User Schemas](#)
- [Installing the Data Management Assembly with Pre-Created User Schemas](#)

Installing the Data Management Assembly without Pre-Created User Schemas

Complete the following:

- [Check Prerequisites](#)
- [Prepare the Installer](#)
- [Run the Installer](#)
- [Check the Installation](#)
- [Create a New Oracle Data Integrator Repository Login](#)

Check Prerequisites

- Steps

- The user is familiar with Oracle Database (DB), Oracle Data Integrator, and Linux OS.
- The Oracle Healthcare Foundation Data Model is installed.
Follow the instructions in [Data Model Installation](#) or [Data Model Upgrade](#).
- The Data Management Assembly installer is run on the system where the Oracle Data Integrator server is installed.
- Make sure that the database compatible parameter is set to 19.3.0.0.0 by connecting to the DBA user and running the query below:

```
select * from v$parameter where name = 'compatible';
```


If the parameter is not set to 19.3.0.0.0, ask your database administrator to set it.
- Oracle Data Integrator services can connect to the Data Model 8.2.1 database mentioned in the Oracle TNS file (TNS entries of the required database must be available in the installation server tnsnames.ora file).
- The password expiry notification message does not display for the system user.

- Steps

- Check write permissions on oraInventory is granted to "others". If write permissions are not granted then add the user that the oracle software being installed to the group of the inventory owner (for instance - oinstall) as root:

```
usermod -a -G <ORA inventory owner> <installation_user>
```

- The terminology loaders source file location exists. The installer creates an archive directory. For example,
/scratch/home/oemora/TL_Source is the source file location specified during installation, which already exists.
/scratch/home/oemora/TL_Archive_Files is created by the installer as the archive directory.
- The path of the data file (Configuration schema/Repository schema tablespace) mentioned when creating the tablespace is correct. Make sure that the database user has write privileges.
- Enough space is available in the installation directory and the Oracle Home directory.
- The Sqlplus utility is available on the installation server.
- The impdp utility is available on the repository database server.
- The installation user has read, write, and execute privileges to the \$ODI_HOME/odi/agent/bin folder. The installer creates product specific files under this location.
- For remote installations, where the installation server and the Oracle Data Integrator Repository Database server are different machines, make sure that:
 - A directory from the remote database server is mounted to the installation server with appropriate read and write privileges.
 - The remote directory is accessible from the installation server on mounting.
 - The user that owns Oracle db services on the remote server has privilege 755 for the directory that was mounted on the installation server.
 - If the database is on an Exadata machine, provide the database single node (the node which is mounted) as the host name when prompted during installation.
- GLOBAL_NAMES database initialization parameter is set to false.
- In case of an Oracle Healthcare Foundation upgrade, back up the following csv files under \$ODI_HOME/odi/agent/bin if it exists:
 - bus_susp_day.csv
 - daylight_svngs_day.csv
 - hosp_hol_day.csv
 - time_odi.csv

- Steps

In case of an Oracle Healthcare Foundation upgrade, if the Terminology Loaders source folder is shared, make a backup of the following files:

- Code Axes.txt
- Code Descriptions.txt
- Code Hierarchy.txt
- Code.txt
- Related Entity.txt
- Relations Type.txt
- Relations.txt
- Relationship Type.txt
- time.txt

The installer will overwrite any existing files from the list above.

**Note:**

The installer auto-populates some of the user parameters and lets you edit them.

Prepare the Installer

- Steps

Extract the contents of the Oracle Healthcare Foundation media pack to your system.

Navigate to the **media_pack_location** folder.

Unzip the `OHF_V821_Linux-x64.zip` file where you want to launch the installer using the following command:

```
unzip -a OHF_V821_Linux-x64.zip
```

Navigate to the **Disk1/install** folder.

Change the protection on the files as follows:

```
chmod 755 *
```

Run the Installer

Start the Oracle Universal Installer by running the following command:

- If the Oracle Data Integrator repository schemas (master and work) to be created are on the database instance of the installation server, execute:

```
sh runInstaller.sh -local
```

- If the Oracle Data Integrator repository database or Oracle Healthcare Foundation data model database is on the database instance of another server, execute:

```
sh runInstaller.sh -local remote_installation=true
```

where, the `-local` option is to install on the local node irrespective of the cluster nodes specified on the installer machine.

- Screen	Action
<input type="checkbox"/> Welcome	Click Next .
<input type="checkbox"/> Select a Product to Install	Select the Oracle Healthcare Foundation Data Management Assembly for ODI 8.2.1.0.0 option.
<input type="checkbox"/> Specify Home Details	Enter the installation home path.
<input type="checkbox"/> Verify Installation Prerequisites	Verify if all the prerequisites are met before proceeding.
<input type="checkbox"/> Select the Oracle Home Configuration	Specify the Oracle client home path.
<input type="checkbox"/> Select the Oracle Data Integrator Home Location	Specify the Oracle Data Integrator home location. The Oracle Data Integrator home should be one level above the /oracle_common directory. For example: /u01/app/oracle/Oracle_ODI1.
<input type="checkbox"/> Select the Database Server for the Oracle Data Integrator Repository Schemas	Select one of the following options for the Oracle Data Integrator repository schemas: <ul style="list-style-type: none"> • If the Oracle Data Integrator repository database server is on the installation server, select the Installation database server option. • Else, select the Remote database server option.
<input type="checkbox"/> Specify Mount Path Details (applicable only for remote installations)	Enter the configuration details for the mounted remote server directory: <ul style="list-style-type: none"> • Mounted directory path on the remote server • Mount path on the installation server <p>To obtain the available storage drives, on the Linux machine, execute the <code>df -h</code> command. If the remote server directory is mounted on the installation server, the mounting is displayed as follows:</p> <pre style="margin-left: 20px;">Remote Server name:Remote server path total size used up space Available space use% Path in installation server where mounting was done</pre> <p>For example,</p> <pre style="margin-left: 20px;">abc:/scratch/dump 191G 138G 44G 76% /installation server</pre> <p>Note:</p> <ul style="list-style-type: none"> • The directory of the remote database server should be mounted to the installation server with appropriate read and write privileges for the IMPDB utility. • If the remote server mounted path is displayed as /, provide the absolute mounted path of the remote server.

- Screen	Action
<input type="checkbox"/> Specify Healthcare Data Model Database Instance Details	Enter values for the following fields: <ul style="list-style-type: none"> • Host name - By default, the system host name appears. For remote installations, set this value to the host name of the remote machine. • Port number • Service name • System user password • Select this database instance for repository schema creation. If you select Yes, the installer uses the same Data Model database instance for Oracle Data Integrator repository schema creation.
<input type="checkbox"/> Specify Oracle Data Integrator Repository Database Instance Details (applicable only if you selected No in the previous screen for Select this database instance for repository schema creation)	Enter values for the following fields: <ul style="list-style-type: none"> • Host name - By default, the system host name appears. For remote installations, set this value to the host name of the remote machine. • Port • Service name • System user password
<input type="checkbox"/> Specify Oracle Data Integrator Supervisor Password	Specify the supervisor password used for the Oracle Data Integrator console login.
<input type="checkbox"/> Select Terminology Loaders Source Location	Specify the Terminology loaders source file location. This location is used to read the terminology loaders source data files. You can change this location when required. The installer creates an archive directory at the same level as the source directory. Make sure that the create directory privileges exist for the installation user.
<input type="checkbox"/> Specify Healthcare Data Model Schema Details	Enter values for the following fields: <ul style="list-style-type: none"> • Interface table schema name • Interface table schema password • Data warehouse schema name • Data warehouse schema password • Common data mart (hcd) schema name • Common data mart (hcd) schema password • Cohort data mart (cdm) schema name • Cohort data mart (cdm) schema password
<input type="checkbox"/> Specify Healthcare Data Model Schema Details	Enter values for the following fields: <ul style="list-style-type: none"> • Enterprise schema name • Enterprise schema password.
<input type="checkbox"/> Specify Warehouse Integration Loader Details	Enter values for the following fields: <ul style="list-style-type: none"> • Configuration schema name • Configuration schema password: Specify WIL configuration schema user and password details. Installer creates new schema for a fresh installation. Specify existing schema user and password details for upgrade.

- Screen	Action
<input type="checkbox"/> Specify OHF Repository Schema Details	<ul style="list-style-type: none"> • Specify OHF repository schema details • OHF ODI repository schema name • OHF ODI repository schema password <p>Specify the OHF Repository schema user and password details. The Installer creates new Repository schema.</p>
<input type="checkbox"/> Specify Healthcare Cohort Data Mart Loader Details	<p>Enter values for the following fields:</p> <ul style="list-style-type: none"> • Configuration schema name • Configuration schema password <p>Specify the new schema names for the HCD configuration schema, for upgrade specify the existing HCD configuration schema name.</p>
<input type="checkbox"/> Specify RCU Prefix and Password	<p>Specify an RCU prefix to be appended to the schemas created by the Oracle Data Integrator Repository Creation Utility (RCU). The RCU creates 3 schemas:</p> <ul style="list-style-type: none"> • <i>RCU prefix_STB</i> • <i>RCU prefix_WLS</i> • <i>RCU prefix_WLS_RUNTIME</i> <p>Note: The RCU Prefix must be unique. The prefix should be alphabetic only. It cannot have special characters and cannot start with a number. The length of the prefix must not exceed 8 characters.</p> <p>Specify a password for schemas created using the Oracle Data Integrator Repository Creation Utility (RCU).</p> <p>Note: The password must be between 8 and 12 alphanumeric characters long and must include at least one number. The password cannot start with a number.</p>
<input type="checkbox"/> Specify the Tablespace Details	<p>Specify the tablespace names for the configuration schemas. The installer creates these tablespaces if they do not exist.</p> <ul style="list-style-type: none"> • Configuration schema default tablespace name • Configuration schema temporary tablespace name
<input type="checkbox"/> Specify the Tablespace Details	<p>Specify the tablespace names for repository schemas:</p> <ul style="list-style-type: none"> • <i>wil_odi_ts</i> - Default tablespace for Oracle Data Integrator temporary objects for Warehouse Integration Loaders • <i>hcd_odi_ts</i> - Default tablespace for Oracle Data Integrator temporary objects for Healthcare Common Data mart Loaders • <i>cdm_odi_ts</i> - Default tablespace for Oracle Data Integrator temporary objects for Cohort Data mart Loaders • <i>tl_odi_ts</i> - Default tablespace for Oracle Data Integrator temporary objects for Terminology Loaders
<input type="checkbox"/> Specify Tablespace for Creation of Oracle Data Integrator Temporary Objects	<p>Specify tablespace names for the creation of temporary objects used by the Oracle Data Integrator Loaders. The installer creates these tablespaces if they do not exist.</p> <ul style="list-style-type: none"> • Warehouse Integration Loaders • Healthcare Common Data mart Loaders • Cohort Data mart Loaders • Terminology Loaders <p>Oracle recommends that you provide different tablespace names for each component.</p>
<input type="checkbox"/> Specify Tablespace Location for Configuration Schemas	<p>Specify the tablespace location for configuration schemas.</p> <p>The location should be present in the data model database server with write privileges.</p> <p>If the Oracle Healthcare Foundation data model database is not on the installation server, you must enter the location manually.</p>

Screen	Action
<input type="checkbox"/> Specify Tablespace Location for Repository Schemas	Specify the tablespace location for the Oracle Data Integrator repository schema. The location should be present in the repository database server with write privileges. If the repository database is not on the installation server, you must enter the location manually.
<input type="checkbox"/> Verify Configuration Parameters	Click Next .
<input type="checkbox"/> Summary	Click Install .
<input type="checkbox"/> End of Installation	Click Exit after reviewing the installation information. At the confirmation prompt, click Yes to exit the installer.

Check the Installation

Steps
<input type="checkbox"/> Review the generated installation log files for errors. For details, see Installation Log Files .
<input type="checkbox"/> Contact Oracle support, if necessary, to resolve any errors.

Create a New Oracle Data Integrator Repository Login

Perform the following steps to create a new Oracle Data Integrator repository login:

Steps
<input type="checkbox"/> Navigate to ODI > File > New > Create a New ODI Repository Login .
<input type="checkbox"/> Click OK . The Repository Connection Information screen is displayed.
<input type="checkbox"/> Enter the following values: <ul style="list-style-type: none"> • Login Name - For example, OHF_REPOSITORY_LOGIN • User - SUPERVISOR • Password - Provide the Oracle Data Integrator Login password entered during installation (see Run the Installer) • User - <i>database schema created for the master repository</i> • Password - <i>database schema password created for the master repository</i> • Driver List - Select OracleJDBC Driver from the drop-down list • Driver Name - oracle.jdbc.oracledriver • Url - Set appropriate values based on your database details • Work Repository - Select the Work Repository option, browse to select the work repository shown (for example, for Warehouse Integration loader, select OHF_WORK_REPOSITORY), and click OK.
<input type="checkbox"/> Click OK . The login name is created with the name specified in the previous step.
<input type="checkbox"/> Navigate to ODI > Connect > ODI Studio .

- Steps

Enter the following details:

- Login Name - Select **OHF_REPOSITORY_LOGIN**
 - User - Supervisor
 - Password - Provide the Oracle Data Integrator login password that was entered during installation (see [Run the Installer](#)).
-

Similarly, follow the above steps to create the login for the Terminology loaders, Common Data Mart loader, and Cohort Data Mart loader.

Installing the Data Management Assembly with Pre-Created User Schemas

Complete the following:

- [Check Prerequisites](#)
- [Create Default and Temporary Tablespaces](#)
- [Create User Schemas](#)
- [Prepare the Installer](#)
- [Run the Installer](#)
- [Check the Installation](#)
- [Revoke Privileges](#)

Check Prerequisites

- Steps

The user is familiar with Oracle Database (DB), Oracle Data Integrator, and Linux OS.

The Oracle Healthcare Foundation Data Model is installed.

Follow the instructions in [Data Model Installation](#) or [Data Model Upgrade](#).

The Data Management Assembly installer is run on the system where the Oracle Data Integrator server is installed.

Make sure that the database compatible parameter is set to 19.3.0.0.0 by connecting to the DBA user and running the query below:

```
select * from v$parameter where name = 'compatible';
```

If the parameter is not set to 19.3.0.0.0, ask your database administrator to set it.

Oracle Data Integrator services can connect to the Data Model 8.2.1 database mentioned in the Oracle TNS file (TNS entries of the required database must be available in the installation server `tnsnames.ora` file).

The password expiry notification message does not display for the pre-created schemas or system user.

- Steps

- The terminology loaders source file location exists. The installer creates an archive directory. For example,
 - `/scratch/home/oemora/TL_Source` is the source file location specified during installation, which already exists.
 - `/scratch/home/oemora/TL_Archive_Files` is created by the installer as the archive directory.
- The path of the data file (Configuration schema/Repository schema tablespace) mentioned when creating the tablespace is correct. Make sure that the database user has write privileges.
- Enough space is available in the installation directory and the Oracle Home directory.
- The Sqlplus utility is available on the installation server.
- The impdp utility is available on the repository database server.
- Check write permissions on `oralnventory` is granted to "others". If write permissions are not granted then add the user that the oracle software being installed to the group of the inventory owner (for instance - `oinstall`) as root:

```
usermod -a -G <ORA inventory owner> <installation_user>
```

- The installation user has read, write, and execute privileges to the `$ODI_HOME/odi/agent/bin` folder. The installer creates product specific files under this location.
- For remote installations, where the installation server and the Oracle Data Integrator Repository Database server are different machines, make sure that:
 - A directory from the remote database server is mounted to the installation server with appropriate read and write privileges.
 - The remote directory is accessible from the installation server upon mounting.
 - The user that owns Oracle Database services on the remote server has privilege 755 for the directory that has been mounted on the installation server.
 - If the database is on an Exadata machine, provide the database single node (the node which is mounted) as the host name when prompted during installation.
- `GLOBAL_NAMES` database initialization parameter is set to false.
- In the case of an Oracle Healthcare Foundation upgrade, back up the following csv files under `$ODI_HOME/odi/agent/bin` if it exists:
 - `bus_susp_day.csv`
 - `daylight_svngs_day.csv`
 - `hosp_hol_day.csv`
 - `time_odi.csv`

- Steps

In the case of an Oracle Healthcare Foundation upgrade, if the Terminology Loaders source folder is shared, make a backup of the following files:

- Code Axes.txt
- Code Descriptions.txt
- Code Hierarchy.txt
- Code.txt
- Related Entity.txt
- Relations Type.txt
- Relations.txt
- Relationship Type.txt
- time.txt

The installer will overwrite any existing files from the list above.



Note:

The installer auto-populates some of the user parameters and lets you edit them.

Create Default and Temporary Tablespaces

Create the following default and temporary tablespaces with appropriate quotas. You can use different tablespace names than the ones listed below.



Note:

The hmc_ts and hmc_temp tablespaces must be created in the Data Model database instance.

- Tablespace Name	Big File Tablespace	Description
<input type="checkbox"/> odirep_ts	Yes	Default tablespace for the Repository schema.
<input type="checkbox"/> odirep_temp	Yes	Temporary tablespace for the Repository schema.
<input type="checkbox"/> hmc_ts	Yes	Default tablespace for the Configuration schema.
<input type="checkbox"/> hmc_temp	Yes	Temporary tablespace for the Configuration schema.
<input type="checkbox"/> wil_odi_ts	Yes	Default tablespace for Oracle Data Integrator temporary objects for Warehouse Integration loaders.
<input type="checkbox"/> hcd_odi_ts	Yes	Default tablespace for Oracle Data Integrator temporary objects for Healthcare Common Data mart loaders.
<input type="checkbox"/> cdm_odi_ts	Yes	Default tablespace for Oracle Data Integrator temporary objects for Cohort Data mart loaders.

- Tablespace Name	Big File Tablespace	Description
<input type="checkbox"/> tl_odi_ts	Yes	Default tablespace for Oracle Data Integrator temporary objects for terminology loaders.

Create User Schemas

Create the following user schemas and assign the appropriate default and temporary tablespaces. Refer to [Create Default and Temporary Tablespaces](#) for details. If you created tablespaces with different names, use those instead.

- Schema Name	Schema Description	Default Tablespace	Temporary Tablespace
<input type="checkbox"/> wil_hmc	Warehouse Integration Loader Configuration schema	hmc_ts	hmc_temp
<input type="checkbox"/> hcd_hmc	Healthcare Common Data Mart Configuration schema	hmc_ts	hmc_temp
<input type="checkbox"/> ohf_master_rep_80	Warehouse Integration Loader Master Repository schema	odirep_ts	odirep_temp
<input type="checkbox"/> ohf_work_rep_80	Warehouse Integration Loader Work Repository schema	odirep_ts	odirep_temp

Prepare the Installer

- Steps

- Extract the contents of the Oracle Healthcare Foundation media pack to your system.
- Navigate to **media_pack_location/** folder.
- Unzip the `OHF_V821_Linux-x64.zip` file where you want to launch the installer using the following command:


```
unzip -a OHF_V821_Linux-x64.zip
```
- Navigate to the `media_pack_location/Disk2/stage/Components/oracle.hsgbu.hc.dma.odi/8.2.1.0.0/1/DataFiles/Expanded/filegroup1` directory.
- Unzip the **dma_odi_master_install.zip** file.
- Navigate to the **dma_odi_master_install/hmc_odi_install/** directory.
- Connect to the system user and execute the following scripts:
 - `@odi_hdi_user_privilege.sql HDI_SCHEMA_NAME`
 - `@odi_hmc_user_privilege.sql WIL_HMC_SCHEMA_NAME HCD_HMC_SCHEMA_NAME`
 - `@odi_rep_user_privilege.sql HLI_MASTER_REP_USR WIL_MASTER_REP_USR AT_MASTER_REP_USR HLI_WORK_REP_USR WIL_WORK_REP_USR AT_WORK_REP_USR CDM_MASTER_REP_USR CDM_WORK_REP_USR`
- Navigate to the **media_pack_location/Disk1/install** folder.

- Steps

Change the protection on the files as follows:

```
chmod 755 *
```

Run the Installer

Start the Oracle Universal Installer by running the following command:

- If the Oracle Data Integrator repository schemas (master and work) to be created are on the database instance of the installation server, execute:

```
sh runInstaller.sh -local dba_tasks=false
```
- If the Oracle Data Integrator repository database or Oracle Healthcare Foundation data model database is on the database instance of another server, execute:

```
sh runInstaller.sh -local remote_installation=true dba_tasks=false
```

where, the `-local` option is to install on the local node irrespective of the cluster nodes specified on the installer machine.

- Screen	Action
<input type="checkbox"/> Welcome	Click Next .
<input type="checkbox"/> Select a Product to Install	Select the Oracle Healthcare Foundation Data Management Assembly for ODI 8.2.1.0.0 option.
<input type="checkbox"/> Specify Home Details	Enter the installation home path.
<input type="checkbox"/> Verify Installation Prerequisites	Verify if all of the prerequisites are met before proceeding.
<input type="checkbox"/> Select the Oracle Home Configuration	Specify the Oracle client home path.
<input type="checkbox"/> Select the Oracle Data Integrator Home Location	Specify the Oracle Data Integrator home location. The Oracle Data Integrator home should be one level above the <code>/oracle_common</code> directory. For example, <code>/u01/app/oracle/Oracle_ODI1</code> .
<input type="checkbox"/> Select Database Server for Oracle Data Integrator Repository Schemas	Select one of the following options for the Oracle Data Integrator repository schemas: <ul style="list-style-type: none"> • If the Oracle Data Integrator repository database server is on the installation server, select the Installation database server option. • Else, select the Remote database server option.

- Screen	Action
<input type="checkbox"/> Specify Mount Path Details (applicable only for remote installations)	<p>Enter the configuration details for the mounted remote server directory:</p> <ul style="list-style-type: none"> Mounted directory path on the remote server. Mount path on the installation server. <p>To obtain the available storage drives, on the Linux machine, execute the <code>df -h</code> command. If the remote server directory is mounted on the installation server, the mounting is displayed as follows:</p> <pre>Remote Server name:Remote server path total size Available space use% Path in installation server where mounting was done</pre> <p>For example:</p> <pre>abc:/scrath/dump 191g 138g 44g 76% / installation server</pre> <p>Note:</p> <ul style="list-style-type: none"> The directory of the remote database server should be mounted to the installation server with appropriate read and write privileges for the IMPDB utility (folder with dba group). If the remote server mounted path is displayed as <code>/</code>, provide the absolute mounted path of the remote server.
<input type="checkbox"/> Specify Healthcare Data Model Database Instance Details	<p>Enter values for the following fields:</p> <ul style="list-style-type: none"> Host name - By default, the system host name appears. For remote installations, set this value to the host name of the remote machine. Port number Service name Select this database instance for repository schema creation. If you select Yes, the installer uses the same Data Model database instance for Oracle Data Integrator repository schema creation.
<input type="checkbox"/> Specify Oracle Data Integrator Repository Database Instance Details (applicable only if you selected No in the previous screen for Select this database instance for repository schema creation)	<p>Enter values for the following fields:</p> <ul style="list-style-type: none"> Host name - By default, the system host name appears. For remote installations, set this value to the host name of the remote machine. Port Service name
<input type="checkbox"/> Specify Oracle Data Integrator Supervisor Password	<p>Specify the supervisor password used for the Oracle Data Integrator console login.</p>

- Screen	Action
<input type="checkbox"/> Select Terminology Loaders Source Location	<p>Specify the Terminology loaders source file location.</p> <p>This location is used to read the terminology loaders source data files. You can change this location when required.</p> <p>The installer creates an archive directory at the same level as the source directory. Make sure that the create directory privileges exist for the installation user.</p>
<input type="checkbox"/> Specify Healthcare Data Model Schema Details	<p>Enter values for the pre-created schemas:</p> <ul style="list-style-type: none"> • Interface table schema name • Interface table schema password • Data warehouse schema name • Data warehouse schema password • Common data mart (hcd) schema name • Common data mart (hcd) schema password • Cohort data mart (cdm) schema name • Cohort data mart (cdm) schema password
<input type="checkbox"/> Specify Healthcare Data Model Schema Details	<p>Enter values for the pre-created schemas:</p> <ul style="list-style-type: none"> • Enterprise schema name • Enterprise schema password.
<input type="checkbox"/> Specify Warehouse Integration Loader Details	<p>Enter values for the pre-created schemas:</p> <ul style="list-style-type: none"> • Configuration schema name • Configuration schema password • Master repository schema name • Master repository schema password • Work repository schema name • Work repository schema password <p>The installer imports loaders into the pre-created warehouse integration loaders repository schemas.</p>
<input type="checkbox"/> Specify Healthcare Common Data Mart Loader Details	<p>Enter values for the pre-created schemas:</p> <ul style="list-style-type: none"> • Configuration schema name • Configuration schema password • Master repository schema name • Master repository schema password • Work repository schema name • Work repository schema password <p>The installer imports loaders into the pre-created common data mart loaders repository schemas.</p>
<input type="checkbox"/> Specify Healthcare Cohort Data Mart Loader Details	<p>Enter values for the pre-created schemas:</p> <ul style="list-style-type: none"> • Master repository schema name • Master repository schema password • Work repository schema name • Work repository schema password <p>The installer imports loaders into the pre-created cohort data mart loaders repository schemas.</p> <p>The configuration schema is not required for CDM.</p>

Screen	Action
<input type="checkbox"/> Specify RCU Prefix and Password	<p>Specify an RCU prefix to be prepended to the schemas created by the Oracle Data Integrator Repository Creation Utility (RCU). The RCU creates 3 schemas:</p> <ul style="list-style-type: none"> <i>RCU Prefix_STB</i> <i>RCU Prefix_WLS</i> <i>RCU Prefix_WLS_RUNTIME</i> <p>Note: The RCU Prefix must be unique. The prefix should be alphabetic only. It cannot have special characters and cannot start with a number. The length of the prefix must not exceed 8 characters.</p> <p>Specify a password for schemas created using the Oracle Data Integrator Repository Creation Utility (RCU).</p> <p>Note: The password must be between 8 and 12 alphanumeric characters long and must include at least one number. The password cannot start with a number.</p>
<input type="checkbox"/> Specify Tablespace for Creation of Oracle Data Integrator Temporary Objects	<p>Specify tablespace names for the creation of temporary objects used by the Oracle Data Integrator loaders. The installer creates the following tablespaces if they do not exist:</p> <ul style="list-style-type: none"> Warehouse Integration Loaders Healthcare Common Datamart Loaders Cohort Datamart Loaders Terminology Loaders <p>Oracle recommends that you provide different tablespace names for each component.</p>
<input type="checkbox"/> Verify Configuration Parameters	Click Next .
<input type="checkbox"/> Summary	Click Install .
<input type="checkbox"/> End of Installation	Click Exit after reviewing the installation information. At the confirmation prompt, click Yes to exit the installer.

Check the Installation

Steps
<input type="checkbox"/> Review the generated installation log files for errors. For details, see Installation Log Files .
<input type="checkbox"/> Contact Oracle support, if necessary, to resolve any errors.

Revoke Privileges

After the Data Management Assembly for Oracle Data Integrator installation, run the following scripts from a user with DBA privileges:

```
@OHF_Install_Home/dma_odi_master_install/hmc_odi_install/dma_directory_drop.sql
```

```
@@OHF_Install_Home/dma_odi_master_install/hmc_odi_install/
dma_revoke_privilege.sql WIL_MASTER_REP_USR HCD_MASTER_REP_USR
CDM_MASTER_REP_USR HLI_MASTER_REP_USR
```

where,

OHF_Install_Home - Oracle Healthcare Foundation installation home directory

WIL_MASTER_REP_USR - Warehouse integration loader master repository schema name

HCD_MASTER_REP_USR - Healthcare common data mart loader master repository schema name

CDM_MASTER_REP_USR - Cohort data mart loader master repository schema name

HLI_MASTER_REP_USR - Terminology loader master repository schema name

4

Data Management Assembly for Informatica Installation

This chapter describes how to install the Oracle Healthcare Foundation Data Management Assembly for Informatica. There are two ways to install the Data Management Assembly for Informatica, depending on how you create the user schemas. The installer can create the user schemas during the installation or you can create them manually, prior to the installation. After the installation is complete, you must assign the integration service to the workflows:

- [Installing the Data Management Assembly without Pre-Created User Schemas](#)
- [Installing the Data Management Assembly with Pre-Created User Schemas](#)
- [Assigning the Integration Service](#)

Installing the Data Management Assembly without Pre-Created User Schemas

Complete the following:

- [Check Prerequisites](#)
- [Prepare the Installer](#)
- [Run the Installer](#)
- [Check the Installation](#)

Check Prerequisites

- Steps

The user is familiar with Oracle Database (DB), Informatica, and Linux OS.

The Oracle Healthcare Foundation Data Model is installed.
Follow the instructions in [Data Model Installation](#) or [Data Model Upgrade](#).

Make sure that the database compatible parameter is set to 19.3.0.0.0 by connecting to the DBA user and running the query below:

```
select * from v$parameter where name = 'compatible';
```

If the parameter is not set to 19.3.0.0.0, ask your database administrator to set it.

The Informatica domain is running and no user is connected to the Informatica Admin Console.

Informatica services can connect to the Data Model 8.2.1 database mentioned in the Oracle TNS file (TNS entries of the required database must be available in the installation server `tnsnames.ora` file).

- Steps

- You can connect the database using EZCONNECT syntax. For example, `sqlplus user/password@hostname:port/service name`.
- The password expiry notification message does not display for the system user.
- The installer is run on the system where the Informatica server is installed.
- The terminology loaders source file location exists. The installer creates an archive directory. For example,
`/scratch/home/oemora/TL_Source` is the source file location specified during installation, which already exists.
`/scratch/home/oemora/TL_Archive_Files` is created by the installer as the archive directory.
- The path of the data file (Configuration schema/Repository schema tablespace) mentioned when creating the tablespace is correct. Make sure that the database user has write privileges.
- Enough space is available in the installation directory and the Oracle Home directory.
- The Sqlplus utility is available on the installation server.
- The impdp utility is available on the repository database server.
- Check write permissions on `oralInventory` is granted to "others". If write permissions are not granted then add the user that the oracle software being installed to the group of the inventory owner (for instance- `oinstall`) as root:

```
usermod -a -G <ORA inventory owner> <installation_user>
```

- The installation user has read, write, and execute privileges to the `$INFA_HOME/server` folder. The installer creates product specific folders and parameter files under this location.
- For remote installations, where the installation server and the Informatica Repository Database are on different machines, make sure that:
 - The remote database server directory is mounted to the installation server with appropriate read and write privileges.
 - The remote directories are accessible after mounting from the installation server.
 - The Linux user of the remote server, who executes the Oracle process, has privilege 755 for the directory (datapump).
 - The Oracle user has privileges for the mount path directory.
 - If the repository DB is on an Exadata machine, the repository DB single node (the node which is mounted) `TNSENTRY` should be added to the `tnsnames.ora` file on the installation server. After installation, revert `TNSENTRY` to the original entry.
- `GLOBAL_NAMES` database initialization parameter is set to false.
- Back up the following csv files under `$INFORMATICA_HOME/server/infa_shared/SrcFiles` if it exists:
 - `bus_susp_day.csv`
 - `daylght_svngs_day.csv`
 - `hosp_hol_day.csv`
 - `time_am.csv`
 - `time_pm.csv`

- Steps

If the Terminology Loaders source folder is shared, make a backup of the following files:

- Code Axes.txt
- Code Descriptions.txt
- Code Hierarchy.txt
- Code.txt
- Related Entity.txt
- Relations Type.txt
- Relations.txt
- Relationship Type.txt
- time.txt

The installer will overwrite any existing files from the list above.

Prepare the Installer

- Steps

Extract the contents of the Oracle Healthcare Foundation media pack to your system.

Navigate to **media_pack_location/** folder.

Unzip the `OHF_V821_Linux-x64.zip` file where you want to launch the installer using the following command:

```
unzip -a OHF_V821_Linux-x64.zip
```

Navigate to the **Disk1/install** folder.

Change the protection on files as follows:

```
chmod 755 *
```

Run the Installer

Start the Oracle Universal Installer by running the following command:

- If the Informatica repository schemas to be created are on the database instance of the installation server, execute:
`sh runInstaller.sh -local`
- If the Informatica repository database or Oracle Healthcare Foundation data model database is on the database instance of another server, execute:
`sh runInstaller.sh -local remote_installation=true`

where, the `-local` option is to install on the local node irrespective of the cluster nodes specified on the installer machine.

Screen	Action
<input type="checkbox"/> Welcome	Click Next .
<input type="checkbox"/> Select a Product to Install	Select the Oracle Healthcare Foundation Data Management Assembly for Informatica 8.2.1.0.0 option.

- Screen	Action
<input type="checkbox"/> Specify Home Details	Enter or select the installation home path.
<input type="checkbox"/> Verify Installation Prerequisites	Verify if all of the prerequisites are met before proceeding.
<input type="checkbox"/> Oracle Home Configuration	Specify the Oracle client home path.
<input type="checkbox"/> Select the Informatica Home Location	Specify the Informatica home location. The Informatica home should be one level above the /server directory. For example, <i>path/Informatica/961/</i> .
<input type="checkbox"/> Informatica Shared Path	The Informatica Shared Path should be one level above the SrcFiles folder. For example, <i>path/Informatica/961/server/infa_shared</i> .

 **Note:**

Before starting installation ensure that all required subfolders are created under `infa_shared` folder.

For example: `SrcFiles`, `TgtFiles`, `SessLogs`, `WorkflowLogs`, and so forth.

- | | |
|--|---|
| <input type="checkbox"/> Select Database Server for Informatica Repository Schemas | Select one of the following options for the Informatica repository schemas: <ul style="list-style-type: none"> • If the Informatica repository database server is on the installation server, select the Installation database server option. • For remote installations, select the Remote database server option. |
|--|---|

- Screen	Action
<input type="checkbox"/> Specify Mount Path Details (applicable only for remote installations)	<p>Enter the following mounted directory configuration details in which the remote server directory is mounted:</p> <ul style="list-style-type: none"> • Mount path in the repository database server - Remote server path • Mount path in the installation server - Path on the installation server where the mounting is performed <p>To obtain the available storage drives, on the Linux machine, execute the <code>df -h</code> command. If the remote server directory is mounted on the installation server, the mounting is displayed as follows:</p> <pre>Remote Server name:Remote server path total size used up space Available space use% Path in installation server where mounting was done</pre> <p>For example,</p> <pre>abc:/scratch/dump 191G 138G 44G 76% /installation server</pre>
<input type="checkbox"/> Specify Healthcare Data Model Database Instance Details	<p>Note:</p> <ul style="list-style-type: none"> • The (datapump) directory of the remote database server should be mounted to the installation server with appropriate read and write privileges for the IMPDB utility (folder with dba group). • Make sure that the remote directories are accessible after mounting from the installation server. • If the remote server mounted path is displayed as <code>/</code>, provide the absolute mounted path of the remote server. • The remote server Linux user that executes the Oracle process must have the minimum privilege of 755 to the directory. <p>Enter values for the following fields:</p> <ul style="list-style-type: none"> • Host name - By default, the system host name appears. For remote installations, set this value to the host name of the remote machine. • Port number • Service name • System user password • Select this database instance for repository schema creation If you select Yes, the installer uses the same Data Model database instance for Informatica repository schema creation.
<input type="checkbox"/> Specify Informatica Repository Database Instance Details (applicable only if you selected No in the previous screen for Select this database instance for repository schema creation)	<p>Enter values for the following fields:</p> <ul style="list-style-type: none"> • Host name - By default, the system host name appears. For remote installations, set this value to the host name of the remote machine. • Port • Service name • System user password
<input type="checkbox"/> Select Terminology Loaders Source Location	<p>Specify the Terminology loaders source file location.</p> <p>This location is used to read the terminology loaders source data files. You can change this location when required.</p> <p>The installer creates an archive directory at the same level as the source directory. Make sure that the create directory privileges exist for the installation user.</p>

- Screen	Action
<input type="checkbox"/> Specify Healthcare Data Model Schema Details	Enter values for the following fields: <ul style="list-style-type: none"> • Interface table schema name • Interface table schema password • Data warehouse schema name • Data warehouse schema password • Common data mart (hcd) schema name • Common data mart (hcd) schema password • Cohort data mart (cdm) schema name • Cohort data mart (cdm) schema password
<input type="checkbox"/> Specify Healthcare Data Model Schema Details	Enter values for the following fields: <ul style="list-style-type: none"> • Enterprise schema name • Enterprise schema password.
<input type="checkbox"/> Specify Warehouse Integration Loader Details	Enter values for the following fields: <ul style="list-style-type: none"> • Configuration schema name • Configuration schema password • Repository name • Repository schema name • Repository schema password The installer creates a configuration schema if it does not exist. Provide the new Repository schema name.
<input type="checkbox"/> Specify Healthcare Common Data Mart Loader Details	Enter values for the following fields: <ul style="list-style-type: none"> • Configuration schema name • Configuration schema password • Repository name • Repository schema name • Repository schema password The installer creates a configuration schema if it does not exist. Provide the new Repository schema name. If you provide an existing repository name, the installer removes the repository and the corresponding integration service (<i>Is_Repository name</i>). It creates a repository service (<i>Repository name</i>) and integration service (<i>Is_Repository name</i>). The installer creates a repository schema if it does not exist in the database. If you enter an existing repository schema, the installer overwrites the content with the new one, and you will lose all existing objects.
<input type="checkbox"/> Specify Healthcare Cohort Data Mart Loader Details	Enter values for the following fields: <ul style="list-style-type: none"> • Repository name • Repository schema name • Repository schema password The configuration schema is not required for CDM. Provide the new Repository schema name.
<input type="checkbox"/> Specify Tablespace Details (if prompted)	Specify the tablespace names for the configuration schemas. The installer creates these tablespaces if they do not exist. <ul style="list-style-type: none"> • Configuration schema default tablespace name • Configuration schema temporary tablespace name

- Screen	Action
<input type="checkbox"/> Specify Tablespace Details (if prompted)	Specify the tablespace names for repository schemas. The installer creates these tablespaces if they do not exist in the database. <ul style="list-style-type: none"> • Repository schema default tablespace name • Repository schema temporary tablespace name
<input type="checkbox"/> Specify Tablespace Location for Configuration Schema (if prompted)	Specify the tablespace location for the Configuration schema. The location should be present in the Oracle Healthcare Foundation data model database server with write privileges. If the Oracle Healthcare Foundation data model database is not on the installation server, you must enter the location manually.
<input type="checkbox"/> Specify Tablespace Location for Repository Schema (if prompted)	Specify the tablespace location for the repository schemas. When the repository database is not on the installation server, you must enter the location manually. The location should be present on the repository database server with write privileges.
<input type="checkbox"/> Specify Informatica Domain Details	Specify the following parameters: <ul style="list-style-type: none"> • Domain name • Domain code page ID • Node name • License name • Informatica host name • Informatica port number • Informatica administrator user name • Informatica administrator password Contact your Informatica Administrator for the Domain Code Page ID and provide a valid Code Page ID. Make sure that the code page is compatible with the domain code page for creating the Integration Service. For a domain compatible code page, see any existing and active integration service code pages from the Informatica admin console. A list of sample code pages and their IDs are as follows: <ul style="list-style-type: none"> • US-ASCII (ID 1) - 7-bit ASCII • Latin1 (ID 4) - ISO 8859-1 Western European • JapanEUC (ID 18) - Japanese Extended Unix Code (including JIS X 0212) • UTF-8 (ID 106) - Unicode Transformation Format, multibyte • MS932 (ID 2024) - MS Windows Japanese, Shift-JIS • MS1252 (ID 2252) - MS Windows Latin1 (ANSI), superset of Latin1
<input type="checkbox"/> Verify Configuration Parameters	Click Next .
<input type="checkbox"/> Summary	Click Install .
<input type="checkbox"/> End of Installation	Click Exit after reviewing the installation information. At the confirmation prompt, click Yes to exit the installer.

Check the Installation

- Steps
<input type="checkbox"/> Review the generated installation log files for errors. For details, see Installation Log Files .

- **Steps**

- Contact Oracle support, if necessary, to resolve any errors.
-

Installing the Data Management Assembly with Pre-Created User Schemas

Complete the following:

- [Check Prerequisites](#)
- [Create Default and Temporary Tablespaces](#)
- [Create User Schemas](#)
- [Prepare the Installer](#)
- [Run the Installer](#)
- [Check the Installation](#)
- [Revoke Privileges](#)

Check Prerequisites

- **Steps**

- The user is familiar with Oracle Database (DB), Informatica, and Linux OS.
- The Oracle Healthcare Foundation Data Model is installed.
Follow the instructions in [Data Model Installation](#) or [Data Model Upgrade](#).
- Make sure that the database compatible parameter is set to 19.3.0.0.0 by connecting to the DBA user and running the query below:

```
select * from v$parameter where name = 'compatible';
```

If the parameter is not set to 19.3.0.0.0, ask your database administrator to set it.

- The Informatica domain is running and no user is connected to the Informatica Admin Console.
- Informatica services can connect to the Data Model 8.2.1 database mentioned in the Oracle TNS file (TNS entries of the required database must be available in the installation server tnsnames.ora file).
- You can connect the database using EZCONNECT syntax. For example, `sqlplus user/password@hostname:port/service name`.
- The password expiry notification message does not display for the system user or pre-created schemas.
- The installer is run on the system where the Informatica server is installed.

- Steps

- The terminology loaders source file location exists. The installer creates an archive directory. For example,
 - `/scratch/home/oemora/TL_Source` is the source file location specified during installation, which already exists.
 - `/scratch/home/oemora/TL_Archive_Files` is created by the installer as the archive directory.
- The path of the data file (Configuration schema/Repository schema tablespace) mentioned when creating the tablespace is correct. Make sure that the database user has write privileges.
- Enough space is available in the installation directory and the Oracle Home directory.
- The Sqlplus utility is available on the installation server.
- The impdp utility is available on the repository database server.
- Check write permissions on `oralnventory` is granted to "others". If write permissions are not granted then add the user that the oracle software being installed to the group of the inventory owner (for instance- `oinstall`) as root:

```
usermod -a -G <ORA inventory owner> <installation_user>
```

- The installation user has read, write, and execute privileges to the `$INFA_HOME/server` folder. The installer creates product-specific folders and parameter files under this location.
- For remote installations, where the installation server and the Informatica Repository Database are on different machines, make sure that:
 - The remote database server directory is mounted to the installation server with appropriate read and write privileges.
 - The remote directories are accessible after mounting from the installation server.
 - The Linux user of the remote server, who executes the Oracle process, has privilege 755 for the directory (`datapump`).
 - The Oracle user has privilege for the mount path directory.
 - If the repository DB is on an Exadata machine, the repository DB single node (the node which is mounted) `TNSENTRY` should be added to the `tnsnames.ora` file on the installation server. After installation, revert `TNSENTRY` to the original entry.
- `GLOBAL_NAMES` database initialization parameter is set to false.
- Back up the following csv files under `$INFORMATICA_HOME/server/infa_shared/SrcFiles` if it exists:
 - `bus_susp_day.csv`
 - `daylght_svngs_day.csv`
 - `hosp_hol_day.csv`
 - `time_am.csv`
 - `time_pm.csv`

- Steps

If the Terminology Loaders source folder is shared, make a backup of the following files:

- Code Axes.txt
- Code Descriptions.txt
- Code Hierarchy.txt
- Code.txt
- Related Entity.txt
- Relations Type.txt
- Relations.txt
- Relationship Type.txt
- time.txt

The installer will overwrite any existing files from the list above.

Create Default and Temporary Tablespaces

Create the following default and temporary tablespaces with appropriate quotas. You can use different tablespace names than the ones listed below.



Note:

The hmc_ts and hmc_temp tablespaces must be created in the Data Model database instance.

- Tablespace Name	Big File Tablespace	Description
<input type="checkbox"/> infarep_ts	Yes	Default tablespace for the Repository schema
<input type="checkbox"/> infarep_temp	Yes	Temporary tablespace for the Repository schema
<input type="checkbox"/> hmc_ts	Yes	Default tablespace for the Configuration schema
<input type="checkbox"/> hmc_temp	Yes	Temporary tablespace for the Configuration schema

Create User Schemas

Create the following user schemas and assign the appropriate default and temporary tablespaces. Refer to [Create Default and Temporary Tablespaces](#) for details. If you created tablespaces with different names, use those instead.

- Schema Name	Schema Description	Default Tablespace	Temporary Tablespace
<input type="checkbox"/> wil_hmc	Warehouse Integration Loader Configuration schema	hmc_ts	hmc_temp
<input type="checkbox"/> hcd_hmc	Healthcare Common Data Mart Configuration schema	hmc_ts	hmc_temp

Schema Name	Schema Description	Default Tablespace	Temporary Tablespace
<input type="checkbox"/> wil_rep_82	Warehouse Integration Loader Repository schema	infarep_ts	infarep_temp
<input type="checkbox"/> hcd_rep_82	Healthcare Common Data Mart Repository schema	infarep_ts	infarep_temp
<input type="checkbox"/> cdm_rep_82	Healthcare Cohort Data Mart Repository schema	infarep_ts	infarep_temp

Prepare the Installer

Steps

- Extract the contents of the Oracle Healthcare Foundation media pack to your system.
- Navigate to the *media_pack_location* folder.
- Unzip the `OHF_V821_Linux-x64.zip` file where you want to launch the installer using the following command:


```
unzip -a OHF_V821_Linux-x64.zip
```
- Navigate to the `<media_pack_location>/Disk3/stage/Components/oracle.hsgbu.hc.dma.infa/8.2.1.0.0/1/DataFiles/Expanded/filegroup1` directory.
- Unzip the `dma_infa_master_install.zip` file.
- Navigate to the `dma_infa_master_install/hmc_infa_install/` directory.
- Connect to the system user and execute the following scripts:
 - `@infa_hdi_user_privilege.sql HDI_SCHEMA_NAME`
 - `@infa_hmc_user_privilege.sql WIL_HMC_SCHEMA_NAME HCD_HMC_SCHEMA_NAME`
 - `@infa_rep_user_privilege.sql WIL_INFA_REP_DB_USER HCD_INFA_REP_DB_USER CDM_INFA_REP_DB_USER`
- Navigate to the *media_pack_location/Disk1/install* folder.
- Change the protection on files as follows:


```
chmod 755 *
```

Run the Installer


Start the Oracle Universal Installer by running the following command:

- If the Informatica repository database or the Oracle Healthcare Foundation data model database is on the database instance of the installation server, execute:


```
sh runInstaller.sh -local dba_tasks=false
```
- If the Informatica repository schemas to be created are on the database instance of another server, execute:


```
sh runInstaller.sh -local remote_installation=true dba_tasks=false
```

where, the `-local` option is to install on the local node irrespective of the cluster nodes specified on the installer machine.

- Screen	Action
<input type="checkbox"/> Welcome	Click Next .
<input type="checkbox"/> Select a Product to Install	Select the Oracle Healthcare Foundation Data Management Assembly for Informatica 8.2.1.0.0 option.
<input type="checkbox"/> Select the Informatica Home Location	Enter or select the installation home path.
<input type="checkbox"/> Verify Installation Prerequisites	Verify if all the prerequisites are met before proceeding.
<input type="checkbox"/> Oracle Home Configuration	Specify the Oracle client home path.
<input type="checkbox"/> Specify the Informatica Home Location.	Specify the Informatica home location. The Informatica home should be one level above the /server directory. For example, <code>path/Informatica/961/</code> .
<input type="checkbox"/> Specify the Informatica Shared Path	The Informatica Shared Path should be one level above the SrcFiles folder. For example, <code>path/Informatica/961/server/infa_shared</code> .
<div style="border-left: 2px solid #0070C0; padding-left: 10px; margin-top: 10px;"> <p> Note:</p> <p>Before starting installation ensure that all required subfolders are created under <code>infa_shared</code> folder.</p> <p>For example: <code>SrcFiles</code>, <code>TgtFiles</code>, <code>SessLogs</code>, <code>WorkflowLogs</code>, and so forth.</p> </div>	
<input type="checkbox"/> Select Database Server for Informatica Repository Schemas	<p>Select one of the following options for the Informatica repository schemas:</p> <ul style="list-style-type: none"> • If the Informatica repository database server is on the installation server, select the Installation database server option. • For remote installations, select the Remote database server option.

- Screen	Action
<input type="checkbox"/> Specify Mount Path Details (applicable only for remote installations)	<p>Enter the following mounted directory configuration details in which the remote server directory is mounted:</p> <ul style="list-style-type: none"> • Mount path in the repository database server - Remote server path • Mount path in the installation server - Path on the installation server where the mounting is performed <p>To obtain the available storage drives, on the Linux machine, execute the <code>df -h</code> command. If the remote server directory is mounted on the installation server, the mounting is displayed as follows:</p> <pre>Remote Server name:Remote server path total size used up space Available space use% Path in installation server where mounting was done</pre> <p>For example,</p> <pre>abc:/scratch/dump 191G 138G 44G 76% /installation server</pre> <p>Note:</p> <ul style="list-style-type: none"> • The (datapump) directory of the remote database server should be mounted to the installation server with appropriate read and write privileges for the IMPDB utility (folder with dba group). • Make sure that the remote directories are accessible after mounting from the installation server. • If the remote server mounted path is displayed as <i>/</i>, provide the absolute mounted path of the remote server. • The remote server Linux user that executes the Oracle process must have minimum privileges of 755 to the directory.
<input type="checkbox"/> Specify Healthcare Data Model Database Instance Details	<p>Enter values for the following fields:</p> <ul style="list-style-type: none"> • Host name - By default, the system host name appears. For remote installations, set this value to the host name of the remote machine. • Port number • Service name • Select this database instance for repository schema creation. If you select Yes, the installer uses the same Data Model database instance for Informatica repository schema creation.
<input type="checkbox"/> Specify Informatica Repository Database Instance Details (applicable only if you selected No in the previous screen for Select this database instance for repository schema creation)	<p>Enter values for the following fields:</p> <ul style="list-style-type: none"> • Host name - By default, the system host name appears. For remote installations, set this value to the host name of the remote machine. • Port number • Service name

- Screen	Action
<input type="checkbox"/> Select Terminology Loaders Source Location	<p>Specify the Terminology loaders source file location.</p> <p>This location is used to read the terminology loaders source data files. You can change this location when required.</p> <p>The installer creates an archive directory at the same level as the source directory. Make sure that the create directory privileges exist for the installation user.</p>
<input type="checkbox"/> Specify Healthcare Data Model Schema Details	<p>Enter values for the following fields:</p> <ul style="list-style-type: none"> • Interface table schema name • Interface table schema password • Data warehouse schema name • Data warehouse schema password • Common data mart (hcd) schema name • Common data mart (hcd) schema password • Cohort data mart (cdm) schema name • Cohort data mart (cdm) schema password
<input type="checkbox"/> Specify Healthcare Data Model Schema Details	<p>Enter values for the following fields:</p> <ul style="list-style-type: none"> • Enterprise schema name • Enterprise schema password
<input type="checkbox"/> Specify Warehouse Integration Loader Details	<p>Enter values for the following fields:</p> <ul style="list-style-type: none"> • Configuration schema name • Configuration schema password • Repository name • Repository schema name • Repository schema password <p>Provide the pre-created hmc schema details.</p> <p>If you enter an existing repository name, the installer removes the repository and the corresponding integration service (<i>Is_Repository name</i>). It creates a repository service (<i>Repository name</i>) and integration service (<i>Is_Repository name</i>).</p> <p>If you enter an existing repository schema name, the installer overwrites the content with the new one, and you will lose the existing objects.</p>
<input type="checkbox"/> Specify Healthcare Common Data Mart Loader Details	<p>Enter values for the following fields:</p> <ul style="list-style-type: none"> • Configuration schema name • Configuration schema password • Repository name • Repository schema name • Repository schema password <p>Provide the pre-created hmc schema details.</p> <p>If you enter an existing repository name, the installer removes the repository and the corresponding integration service (<i>Is_Repository name</i>). The installer creates a repository service (<i>Repository name</i>) and integration service (<i>Is_Repository name</i>).</p> <p>If you create an existing repository schema name, the installer overwrites the content with the new one, and you will lose the existing objects.</p>

Screen	Action
<input type="checkbox"/> Specify Healthcare Cohort Data Mart Loader Details	<p>Enter values for the following fields:</p> <ul style="list-style-type: none"> Repository name Repository schema name Repository schema password <p>The configuration schema is not required for CDM. If you enter an existing repository name, the installer removes the repository and the corresponding integration service (<i>Is_Repository name</i>). The installer creates a repository service (<i>Repository name</i>) and integration service (<i>Is_Repository name</i>).</p> <p>If you enter an existing repository schema, the installer overwrites the content with the new one, and you will lose the existing objects.</p>
<input type="checkbox"/> Specify Informatica Domain Details	<p>Specify the following parameters:</p> <ul style="list-style-type: none"> Domain name Domain code page ID Node name License name Informatica host name Informatica port number Informatica administrator user name Informatica administrator password <p>Contact your Informatica Administrator for the Domain Code Page ID and provide a valid Code Page ID. Make sure that the code page is compatible with the domain code page for creating the Integration Service. For a domain compatible code page, see any existing and active integration service code pages from the Informatica admin console. A list of sample code pages and their IDs are as follows:</p> <ul style="list-style-type: none"> US-ASCII (ID 1) - 7-bit ASCII Latin1 (ID 4) - ISO 8859-1 Western European JapanEUC (ID 18) - Japanese Extended Unix Code (including JIS X 0212) UTF-8 (ID 106) - Unicode Transformation Format, multibyte MS932 (ID 2024) - MS Windows Japanese, Shift-JIS MS1252 (ID 2252) - MS Windows Latin1 (ANSI), superset of Latin1
<input type="checkbox"/> Verify Configuration Parameters	Click Next .
<input type="checkbox"/> Summary	Click Install .
<input type="checkbox"/> End of Installation	Click Exit after reviewing the installation information. At the confirmation prompt, click Yes to exit the installer.

Check the Installation

Steps
<input type="checkbox"/> Review the generated installation log files for errors. For details, see Installation Log Files .
<input type="checkbox"/> Contact Oracle support, if necessary, to resolve any errors.

Revoke Privileges

After the Data Management Assembly for Informatica installation, run the following scripts from System user:

```
@OHF_Install_Home/dma_infa_master_install/hmc_infa_install/  
dma_directory_drop.sql
```

```
@OHF_Install_Home/dma_infa_master_install/hmc_infa_install/  
dma_revoke_privilege.sql WIL_INFA_REP_DB_USER HCD_INFA_REP_DB_USER  
CDM_INFA_REP_DB_USER
```

where,

OHF_Install_Home - Oracle Healthcare Foundation installation home directory

WIL_INFA_REP_DB_USER - Warehouse integration loader repository schema name

HCD_INFA_REP_DB_USER - Healthcare common data mart loader repository
schema name

CDM_INFA_REP_DB_USER - Cohort data mart loader repository schema name

Assigning the Integration Service

You must assign the integration service manually after the installation is complete. You can assign the integration service for all the workflows from the Workflow Manager:

- Steps

- Open the Workflow Manager.
 - Connect to the repository.
 - Click on any folder in the repository.
 - Under **Menu**, click on **Service** and select **Assign Integration Service**.
 - In the dialog box that opens, choose **Integration Service** from the drop-down list.
 - Select all the folders and check **Select all displayed workflows**.
 - Click **Assign**.
-

5

Middle-Tier Installation

The Oracle Healthcare Foundation (OHF) Middle-Tier installs the following Web application:

- Administration Console

The Oracle Healthcare Foundation Middle-Tier installs the following REST services:

- Data Pipeline Service
- File Upload Service

First, you must install the Middle-Tier on a primary node. This creates a WebLogic domain named **oh_domain** with a cluster named **oh_cluster**.

After you install the Middle-Tier on the primary node, you can optionally extend **oh_cluster** on secondary nodes, by running the installer on their corresponding machines.

This chapter contains the following sections:

- [Installing the Middle-Tier on the Primary Node](#)
- [Installing the Middle-Tier on a Secondary Node](#)

Installing the Middle-Tier on the Primary Node

Complete the following:

- [Check Prerequisites](#)
- [Prepare the Installer](#)
- [Run the Installer](#)
- [Check the Installation](#)

Check Prerequisites

- Steps

- Oracle Fusion Middleware Infrastructure 12.2.1.4 is installed on the machine (see [Software Requirements](#)).
 - There is no Oracle WebLogic Server domain named "oh_domain" on the machine.
 - All of the Oracle Healthcare Foundation Data Model schemas exist.
 - The Oracle external table DIRECTORY object is created for Omics Data Bank.
 - If you have already installed Oracle Healthcare Foundation 7.0.1 or 7.1 Middle-Tier components on Oracle WebLogic Server 12.1.3, uninstall the existing oh_domain and applications and install Oracle WebLogic Server 12.2.1.4.
-

Prepare the Installer

- Steps

- Extract the contents of the Oracle Healthcare Foundation media pack to your system.
- Open the *media_pack_location* folder.
- Unzip the `OHF_V821_Linux-x64.zip` file where you want to launch the installer using the following command:

```
unzip -a OHF_V821_Linux-x64.zip
```
- Open the **Disk1/install** folder.
- Change the protection on the files as follows:

```
chmod 755 *
```

Run the Installer

Start the Oracle Universal Installer (OUI) by running the following command.

```
./runInstaller
```

Screen	Action
<input type="checkbox"/> Welcome	Click Next .
<input type="checkbox"/> Select a Product to Install	Select the Oracle Healthcare Foundation Middle-Tier 8.2.1.0.0 option
<input type="checkbox"/> Specify Home Details	Enter the Middle-Tier install home name and location.
<input type="checkbox"/> Choose Install Type	Select Yes to perform a fresh installation.
<input type="checkbox"/> Verify Install Prerequisites	Verify if all of the prerequisites are met.
<input type="checkbox"/> Java Home	Specify the JDK installation path. The installer validates this path.
<input type="checkbox"/> Fusion Middleware Home	Specify the Oracle WebLogic Server with ADF installation path. The installer validates this path.
<input type="checkbox"/> Cluster Configuration	Select Yes to create a domain and make the machine a primary node where the Oracle WebLogic Server AdminServer is located.
<input type="checkbox"/> AdminServer Configuration	Enter values for the following fields: <ul style="list-style-type: none"> • Listen address • Listen port • SSL listen port • User name - Oracle WebLogic Server administrator user • Password - Oracle WebLogic Server administrator password

- Screen	Action
<input type="checkbox"/> NodeManager Configuration	Enter values for the following fields: <ul style="list-style-type: none"> • Listen address • Listen port • User name - Node manager administrator user • Password - Node manager administrator password • Verify password
<input type="checkbox"/> Managed Server Configuration	Enter values for the following fields: <ul style="list-style-type: none"> • Number of Managed Servers on this machine • Managed Servers listen port start index - This is used as a starting point for incrementing the port numbers. For example, if the number of managed servers is 3, and the listen port start index is 8081, three managed servers with listen ports 8081, 8082, and 8083 are created.
<input type="checkbox"/> FMW Repository Creation Utility (RCU) Configuration	The Fusion Middleware (FMW) RCU requires an Oracle Database user with DBA or SYSDBA privileges. Using the installer, you can create new RCU repositories, or use pre-created repositories using the WebLogic RCU utility. If you want to create RCU schemas outside installer refer to: https://docs.oracle.com/middleware/1213/core/RCUUG/rcu.htm#RCUUG325 for more details. <ul style="list-style-type: none"> • Database host • Database port • Service name • Schema prefix • DBA user name - This field is optional if the RCU repositories are pre-created using the RCU utility • DBA password - This field is optional if the RCU repositories are pre-created using the RCU utility • Schemas common password
<input type="checkbox"/> Oracle Healthcare Foundation Data Model Configuration - part 1	Enter values for the following fields: <ul style="list-style-type: none"> • Database host name - By default, the system host name appears. For remote installations, set this value to the host name of the remote machine. • Database port • Service name
<input type="checkbox"/> Oracle Healthcare Foundation Data Model Configuration - part 2	Enter values for the following fields: <ul style="list-style-type: none"> • Omics Data Bank schema name • Omics Data Bank schema password • Services schema name • Services schema password • HDM schema name • HDM schema password • Enterprise schema name • Enterprise schema password
<input type="checkbox"/> Oracle Healthcare Foundation Data Model Configuration - part 3	Enter values for the following fields: <ul style="list-style-type: none"> • Cohort Data Mart (CDM) schema name • Cohort Data Mart (CDM) schema password • Clinical Genomics (cga) schema name • Clinical Genomics (cga) schema password

Screen	Action
<input type="checkbox"/> Service Configuration	<ul style="list-style-type: none"> To provide the service configuration now, select Yes and click Next to go to the next step (File Upload Service Configuration). To provide the service configuration after the installation, select No and click Next to proceed to the Summary screen.
<input type="checkbox"/> File Upload Service Configuration	Enter values for the following fields: <ul style="list-style-type: none"> File retention period in days File storage location Max file size in MB Max zip extract size in MB Simultaneous upload limit
<input type="checkbox"/> Omics Loader Service Configuration	Enter values for the following fields: <ul style="list-style-type: none"> Oracle data directory object Ensembl and SwissProt directory
<input type="checkbox"/> Summary	Click Install .
<input type="checkbox"/> End of Installation	Click Exit after reviewing the installation information. At the confirmation prompt, click Yes to exit the installer.

Check the Installation

Steps
<input type="checkbox"/> Check the log file located in <code>ORACLE_BASE/oraInventory/logs</code> .
<input type="checkbox"/> Review the generated installation log files for errors. For details, see Middle-Tier Troubleshooting .
<input type="checkbox"/> Contact Oracle support, if necessary, to resolve any errors.

Installing the Middle-Tier on a Secondary Node

Complete the following:

- [Check Prerequisites](#)
- [Prepare the Installer](#)
- [Run the Installer](#)
- [Check the Installation](#)

Check Prerequisites

- **Steps**

- Make sure that the database compatible parameter is set to 19.3.0.0.0 by connecting to the DBA user and running the query below:

```
select * from v$parameter where name = 'compatible';
```

If the parameter is not set to 19.3.0.0.0, ask your database administrator to set it.

- Oracle Fusion Middleware Infrastructure is installed on the machine in the same file system location as on the primary node.
 - There is no Oracle WebLogic Server domain named "oh_domain" on the machine.
 - All Oracle Healthcare Foundation Data Model schemas exist.
 - The Oracle external table DIRECTORY object is created for Omics Data Bank.
-

Prepare the Installer

- **Steps**

- Extract the contents of the Oracle Healthcare Foundation media pack to your secondary node system.
 - Open the *media_pack_location* folder.
 - Unzip the `OHF_V821_Linux-x64.zip` file where you want to launch the installer using the following command:

```
unzip -a OHF_V821_Linux-x64.zip
```
 - Open the **Disk1/install** folder.
 - Change the protection on the files as follows:

```
chmod 755 *
```
-

Run the Installer

Start the Oracle Universal Installer (OUI) by running the following command.

```
./runInstaller -local
```

where, the `-local` option is to install on the local node irrespective of the cluster nodes specified on the installer machine.

Follow the instructions below for each screen in the installation wizard:

- Screen	Action
<input type="checkbox"/> Welcome	Click Next .
<input type="checkbox"/> Select a Product to Install	Select the Oracle Healthcare Foundation Middle-Tier 8.2.1.0.0 option.

Screen	Action
<input type="checkbox"/> Specify Home Details	Enter the Middle-Tier install home name and location.
<input type="checkbox"/> Choose Install Type	Select Yes to perform a fresh installation.
<input type="checkbox"/> Verify Install Prerequisites	Verify if all the prerequisites are met.
<input type="checkbox"/> Java Home	Specify the JDK installation path. The installer validates this path.
<input type="checkbox"/> Oracle Fusion Middleware Home	Specify the WebLogic with ADF installation path. The installer validates this path.
<input type="checkbox"/> Cluster Configuration	Select No to migrate an existing domain created by running this installer on the primary node to scale the cluster and add more machines to the domain.
<input type="checkbox"/> AdminServer Configuration	Enter values for the following fields: <ul style="list-style-type: none"> Listen address - Running AdminServer listen address provided as part of the primary node installation Listen port - Running AdminServer listen port provided as part of the primary node installation SSL listen port - Running AdminServer SSL listen port provided as part of the primary node installation User name - Oracle WebLogic Server administrator user Password - Oracle WebLogic Server administrator password
<input type="checkbox"/> NodeManager Configuration	Enter values for the following fields: <ul style="list-style-type: none"> Listen address Listen port User name Password Verify password
<input type="checkbox"/> Managed Server Configuration	Enter values for the following fields: <ul style="list-style-type: none"> Number of Managed Servers on this Machine Managed Servers listen port start index - This is used to increment the port number. For example, if the number of managed servers is 3, and the listen port start index is 8081, three managed servers with listen ports 8081, 8082, and 8083 are created.
<input type="checkbox"/> Summary	Click Install .
<input type="checkbox"/> End of Installation	Click Exit after reviewing the installation information. At the confirmation prompt, click Yes to exit the installer.

Check the Installation

Steps
<input type="checkbox"/> Check the log file located in <code>ORACLE_BASE/oraInventory/logs</code> .
<input type="checkbox"/> Review the generated installation log files for errors. For details, see Table 19-1 .
<input type="checkbox"/> Contact Oracle support, if necessary, to resolve any errors.

6

JDBC GridLink Data Source Configuration (optional)

You can optionally configure the Oracle WebLogic Server GridLink data source to distribute database connections to Oracle RAC instances.

Before you create a multi-data source, edit the existing generic data source, create the generic data sources that the multi-data source will manage, and deploy them to the same targets where you want to deploy the multi-data source. You can create data sources and multi-data sources in a single edit session.

- [Edit the Existing Generic Data Source](#)
- [Create the JDBC GridLink Data Source](#)

Edit the Existing Generic Data Source

- Steps

- Navigate to **Administration Console > Change Center**, click **Lock & Edit**.
 - In the **Domain Structure** tree, expand **Services** and select **Data Sources**.
 - Select the desired data source and, under the **Configuration** tab, select **General**.
 - Change **JNDI Name** to a unique value.
Note: You can use a numeric suffix, like -1, to make a value unique. For instance, you can change "jdbc/OHF-ODB" to "jdbc/OHF-ODB-1"..
 - Click **Save** to save the JDBC data source changes.
 - Navigate to **Administration Console > Change Center** then click **Activate Changes**.
Note: Not all changes take effect immediately. Some changes can require a restart.
-

Create the JDBC GridLink Data Source

Follow the instructions described in <https://support.oracle.com/epmos/faces/DocumentDisplay?id=1382656.1>, using the following parameters:

- Steps

- The data source **Name** and **JNDI Name** must be unique.
- Use the **JNDI Name** used by the application. For OMICS, this is jdbc/OHF-ODB.

- **Steps**

- Use the following default values for Oracle Healthcare Foundation Data Source creation:
- Add the following value to Properties: oracle.jdbc.defaultRowPrefetch=100
 - Initial Capacity: 10
 - Maximum Capacity: 10
 - Minimum Capacity: 10
 - Wrap Data Types: Unchecked for Omics Data Source
-

7

Oracle Healthcare Foundation Omics Data Bank Loaders Installation

You can load Omics data files by using REST APIs or PL/SQL loaders.

For information on how to load Omics data files using REST APIs, see the *Oracle Healthcare Foundation Application Programming Interface Guide*.

For information on how to load Omics data files using PL/SQL loaders, follow the instructions below:

- [Prerequisites](#)
- [Installing the Oracle Healthcare Foundation Omics Data Bank Loaders](#)
Copy Omics Data Bank loaders from the data model folder to the ODB loaders folder.

Prerequisites

To install Omics Data Bank Loaders, the Data Model must be installed. For Data Model installation instructions, see [Data Model Installation](#).

Installing Java

1. Download the JRE 1.8 from <http://www.oracle.com/technetwork/java/javase/downloads/index-jsp-138363.html>
2. Install the JRE on the system that you will use as the client tier. The EMBL and Swissprot loaders require JRE 1.8 to be installed on the machine from where they will be run.
3. Make sure that the path for Java 1.8 is set in the environment variable.

Note:

If you plan to execute multiple loaders, make sure that you execute each loader from a separate directory. You must copy .sh/.bat files to another directory to execute the loaders in parallel.

Installing the Oracle Healthcare Foundation Omics Data Bank Loaders

Copy Omics Data Bank loaders from the data model folder to the ODB loaders folder.

1. Copy the ODB Loaders folder or ODB_Loaders.zip file from `OHF_DATA_MODEL_INSTALL_HOME/` to `ODBLoaders_Home`.

For example:

```
[<OHF-Install-Directory>/DataModel_Home]$ cp ODB_Loaders.zip /<OHF-Install-Directory>/ODBLoaders_Home
```

2. To execute the loaders on an operating system that supports the bash shell command language, make sure that the .sh files have execute privileges.

For example:

```
chmod +x filename
```

For more details, refer to the Omics Data Bank chapter in the *Oracle Healthcare Foundation Programmer's Guide*.

8

Oracle Healthcare Foundation Self-Service Analytics Installation

This chapter describes how to install the Oracle Healthcare Foundation (OHF) Self-Service Analytics:

- [Installation Overview](#)
- [Prerequisites](#)
- [Install the Oracle Healthcare Foundation Self-Service Analytics](#)
- [Deploy the Oracle Healthcare Foundation Catalog in Oracle Analytics Server](#)

Installation Overview

Oracle Healthcare Foundation Self-Service Analytics (SSA) is available in the media pack. It is an optional component that can be installed to perform Self Service Analytics using Oracle Analytics Server.

Oracle Healthcare Foundation SSA consists of the following components:

- Oracle Analytics Server RPD file for the Healthcare Common Data Mart, which is used for Self-Service Analytics.
- Oracle Analytics Server Catalog File with reports and dashboards built using the Oracle Analytics Server RPD file for the Healthcare Common Data Mart, covering various subject areas.
- Self-Service Analytics tool, to generate an Oracle Analytics Server RPD file for data marts built based on the Healthcare Common Data Mart.

Prerequisites

Oracle Healthcare Foundation Data Model must be installed. For other prerequisites, see [Software Requirements](#).

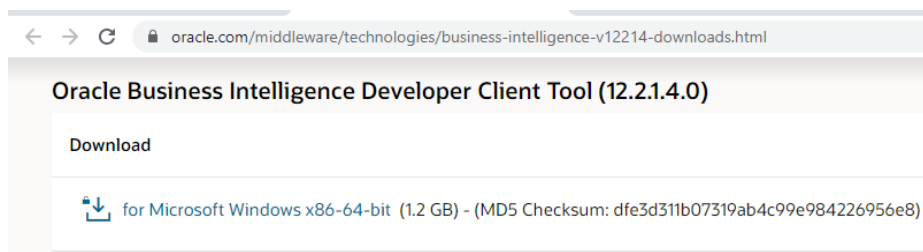
Install the Oracle Healthcare Foundation Self-Service Analytics

Oracle Healthcare Foundation Self-Service Analytics (SSA) is available in the media pack at this location: `/selfserviceanalytics/hcd_rpd/ohf_ssa_hcd.rpd`. It is an optional component that can be installed to perform Self-Service Analytics using Oracle Analytics Server (OBIEE).

 **Note:**

A default password is required to open the `ohf_ssa_hcd.rpd` file from the Oracle Business Intelligence Developer Client Tool (12.2.1.4.0). If you do not have the default password, raise a Service Request with the Oracle Healthcare Foundation support team and request the default password. Remember to change the password after you access the file with the default password.

1. Download and install the Oracle Analytics Developer Client Tool (12.2.1.4.0):
 - a. From your browser, click [Oracle Business Intelligence 12c \(12.2.1.4.0\) Downloads](#) to go to the downloads page.
 - b. Scroll down and select the link under **Oracle Business Intelligence Developer Client Tool** to download the tool.



- c. Unzip `bi_client_12.2.1.4.0_Windows.X64.zip`.
- d. Open `bi_client_12.2.1.4.0_Windows.X64` in your download folder.
- e. Run `setup_bi_client-12.2.1.4.0-win64.exe` and follow the prompts to install the software.

The Oracle Business Intelligence Client Tool is now installed.

2. Navigate to the **selfserviceanalytics** folder in the media pack and copy the `ohf_ssa_hcd.rpd` file from your Linux environment to your client desktop.

The structure of the Self-Service Analytics directory:

```

/selfserviceanalytics
  /hcd_rpd
    ohf_ssa_hcd.rpd
    obieeIds.csv
  /hcd_catalog
    Oracle Healthcare Foundation.catalog
    Oracle Healthcare Foundation Images.catalog
  /software
    ohf_ssa_tool.zip
  
```

3. From the **Windows Start** menu, select **Oracle Business Intelligence Client > Administration**.
4. Select **File > Open** and select the `ohf_ssa_hcd.rpd` file.
5. Enter the default password.
6. Complete the following steps:

- a. Navigate to **Manage > Variables**, update the default value of the puser variable to point to the HCD schema name, and click **OK**.
 - b. In the Physical layer, expand **localhost** and double-click **Relation Connection**.
 - Update the Data source name with the database host name, port number, and service name where the HCD schema is installed.
 - Update the HCD schema password and confirm.
 - c. In the Physical layer, expand **localhost** and double-click **Initialization Block Connection**.
 - Update the Data source name with the database host name, port number, and service name where the HCD schema is installed.
 - Update the HCD schema password and confirm.
 - d. In the Physical layer, expand **OHF Data Lineage** and double-click **OHF Data Lineage Connection Pool**.
 - Update the Data source name with the database host name, port number, and service name of the Enterprise Schema (ENT).
 - Update the ENT schema password and confirm.
7. Select **File > Change Password** and enter a new password for the repository file.
 8. Save the **ohf_ssa_hcd.rpd** file and select **No** when prompted for a consistency check.
 9. Deploy RPD on the Oracle Analytics Server server:
 - a. Create an Oracle Analytics Server domain. For details, see: <https://docs.oracle.com/middleware/1221/core/BIEIG/GUID-4F0BD89A-C8BE-4851-8D0C-422779D5BC1D.htm#INSOA375>.
 - b. Navigate to the `[OBIEE_HOME]/user_projects/domains/bi/bitools/bin` folder.
 - c. Use the `datamodel.sh` command line utility to upload the RPD file to the Oracle Analytics Server server (look in the `OBIEE Home/user_projects/domains/bi/bidata/service_instances` directory to find the service instance name):


```
./datamodel.sh uploadrpd -I location of rpd file to be uploaded -W RPDpwd
-SI service instance name -U weblogic user -P weblogic password
```
 10. Create a folder **OHF_SSA_HOME** in a preferred drive.
 11. Copy the **ohf_ssa_tool.zip** file available in the `selfserviceanalytics\software` folder to the **OHF_SSA_HOME** folder.
 12. Extract the contents of the **ohf_ssa_tool.zip** file in the **OHF_SSA_HOME** folder.
The Self-Service Analytics tool is now available in the `OHF_SSA_HOME\ohf_ssa_tool` folder.

For details on how to generate the Oracle Analytics Server RPD using the Self-Service Analytics tool, see the *Oracle Healthcare Foundation Programmer's Guide*.

For details on how to set up the Usage Tracking feature, see the *Oracle Healthcare Foundation Dashboards User's Guide*.

Deploy the Oracle Healthcare Foundation Catalog in Oracle Analytics Server

1. Open the Oracle Analytics Server Analytics Page in a Web browser. For example:
`http://obiee host name:port number/analytics.`
2. Navigate to the **Catalog** menu and, under **Shared Folders**, click **Unarchive**.
3. Specify the path to the Oracle Healthcare Foundation catalog file:
`OHF Media Pack/selfserviceanalytics/hcd_catalog/ Oracle Healthcare Foundation.catalog`
4. In the Unarchive pop-up window, select **None** in the Replace field and select **Preserve** in the ACL field. Click **OK**.
5. Under the Catalog Menu, select **Shared Folders**. Click **Unarchive**.
6. Specify the path to the Oracle Healthcare Foundation images catalog file:
`OHF Media Pack/selfserviceanalytics/hcd_catalog/ Oracle Healthcare Foundation Images.catalog`
7. In the Unarchive pop-up window, select **None** in the Replace field and select **Preserve** in the ACL field. Click **OK**.

The Oracle Healthcare Foundation catalog is now deployed in the Oracle Analytics Server shared folders location as Oracle Healthcare Foundation.

To test if the catalog has been deployed successfully, see if the Oracle Healthcare Foundation entry is available under **Dashboards > My Dashboards**.

9

Oracle Healthcare Foundation Installation on ADW



Note:

For information on Middle tier installation on Weblogic Market place, refer to [Oracle Healthcare Translational Research Installation Guide](#).

This chapter includes installation information for the following:

- [Data Model Installation on ADW](#)
- [Data Management Assembly for OCI Marketplace Oracle Data Integrator Installation](#)

Data Model Installation on ADW

This section includes the following topics:

- [Prerequisites](#)
- [Prepare the Installer](#)
- [Run the Installer](#)
- [Check the Installation](#)

Prerequisites

- Prerequisites

- ADW instance up and running. Database version 19c.



Note:

This feature is not supported on database 12c.

-
- OCI VM instance with Oracle Client credentials of ADW connections updated.
-

- Create OHF schemas with the `ohf_dm_schemas.sql` script.
-

Prepare the Installer

- Prepare the Installer

Extract the contents of the OHF media pack to any OCI VM instance or to ODI VM instance itself.

Make a new directory OHF installation home -<OHF_INSTALL_HOME>.

Copy the OHF media pack to <OHF_INSTALL_HOME>/.

Unzip the OHF_821_Linux-x64.zip file where you want to launch the installer using the following command:

```
unzip -a OHF_821_Linux-x64.zip
```

Open the Disk1/stage/Components/oracle.hsgbu.hc.datamodel/8.2.1.0.0/1/DataFiles/Expanded/filegroup1 folder.

There are two zip files in this folder:

- master_install.zip
 - ODB_Loaders.zip
-

Copy the master_install.zip file to OHF installation home.

```
cp master_install.zip <OHF_INSTALL_HOME>/
```

Unzip master_install.zip in the <OHF_INSTALL_HOME>/master_install folder.

```
unzip -a master_install.zip
```

Change the protection on files as follows:

```
chmod 755 *
```

Update user parameters with the OHF pre-created schema in the <OHF_INSTALL_HOME>/master_install/ohf_dm_installer.sh script.

```
db_conn (ADW service name)
hdi_schema
hdm_schema
hcd_schema
cdm_schema
odb_schema
enterprise_schema
job_schema
svcs_schema
cga_schema
```

The remaining parameters have fixed values and Oracle recommends that you do not change these values. Schema passwords are prompted while running the script.

- **Prepare the Installer**

- Before running the installer, make sure that the ORACLE_HOME, PATH and LD_LIBRARY_PATH environment variables are setup in your session.

For example:

```
export ORACLE_HOME=/u01/app/oracle/product/122010
export PATH=$PATH:$ORACLE_HOME/bin
export LD_LIBRARY_PATH=$ORACLE_HOME/lib
```

-
- Verify the database connectivity through the ADW service name. For example:

```
sqlplus admin/<admin_pwd>@<ADW-servicename>
```

Run the Installer

Run the following script from <OHF_INSTALL_HOME>/master_install folder:

```
sh OHF_DM_INSTALLER.sh
```

Check the Installation

Check the ohf_install_log.log under <OHF_INSTALL_HOME>/master_install folder.

If there are install errors, ohf_install_log.err is generated in this location.

Data Management Assembly for OCI Marketplace Oracle Data Integrator Installation

This section includes the following topics:

- [Prerequisites](#)
- [Prepare the Installer](#)
- [Run the Installer](#)
- [Check the Installation](#)
- [Post-DMA Installation Steps](#)

Prerequisites

- Prerequisites

- Install ODI from OCI marketplace by selecting option - Create new ODI Repository in an Autonomous Database (such as OHADW00) and provide schema prefix as OHF. This creates a default empty ODI repository and a default standalone agent.
This is required to install the OHF DMA components. Refer to: <https://docs.oracle.com/en/middleware/fusion-middleware/data-integrator/12.2.1.4/dimgs/getting-started-oracle-cloud-marketplace.html#GUID-1793F6A6-8581-465D-BBE3-8F0C8ADD6536>
- Log in to the ODI marketplace VM instance and Install Oracle instant client (including Basic Package (ZIP), SQL*Plus Package (ZIP), Tools Package (ZIP)).
 1. Copy `tnsnames.ora` and `sqlnet.ora` from wallet location (for example: `/u01/oracle/mwh/wallets/wallet_OHADW00/`) to `<Oracle Client Home>/network/admin/` location.
 2. Update `sqlnet.ora` file in the `<Oracle Client Home>/network/admin/` with the wallet directory (for example: `/u01/oracle/mwh/wallets/wallet_OHADW00`).

Note:

If ODI repositories and OHF schemas resides in different autonomous datawarehouse then add OHF ADW wallet file (for e.g. `wallet_OHFADW01.zip`) to `/u01/oracle/mwh/wallets/` location and unzip the wallet to its corresponding folder `/wallet_OHFADW01`.

Add `tns` entry of OHF schemas ADW connections in `<Oracle Client Home>/network/admin/tnsnames.ora` and update the wallet directory in the TNS entry as below.

For example:

```
ohadw01_low = (description= (retry_count=20)
(retry_delay=3)
(address=(protocol=tcps) (port=1522)
(host=adb.uk-london-1.oraclecloud.com))
(connect_data=(service_name=xyzxyzzyzhhyh_oh
adw00_low.adb.oraclecloud.com))
(security=(ssl_server_cert_dn="CN=adwc.eucom-
central-1.oraclecloud.com,
OU=Oracle BMCS FRANKFURT,O=Oracle
Corporation,L=Redwood
City,ST=California,C=US"))
(MY_WALLET_DIRECTORY=/u01/oracle/mwh/wallets/
wallet_OHADW01))
```

- Prerequisites

- Log in to the ODI marketplace VM instance as the **opc** user and install the ksh and oci cli using **opc** as the root user if these are not already installed.

```
yum install ksh
yum install python36-oci-cli (check the latest version)
```

- Log in to the ODI marketplace VM instance as the **oracle** user and perform oci config by running below command:

```
oci setup config
```

Refer to the following: <https://docs.oracle.com/en-us/iaas/Content/API/SDKDocs/cliinstall.htm>

Prepare the Installer

- Steps

- Extract the contents of the OHF media pack to ODI VM instance.

- Make a new directory for the OHF installation home, <OHF_INSTALL_HOME>.

- Copy the OHF media pack to <OHF_INSTALL_HOME>/.

- Unzip the OHF_821_Linux-x64.zip file where you want to launch the installer using the following command:

```
unzip -a OHF_821_Linux-x64.zip
```

- The following zip is available:

```
dma_odi_master_install_adw.zip
```

- Copy the dma_odi_master_install_adw.zip file to OHF installation home.

```
cp dma_odi_master_install_adw.zip <OHF_INSTALL_HOME>/
dma_odi_master_install_adw
```

- Unzip dma_odi_master_install_adw.zip in the <OHF_INSTALL_HOME>/dma_odi_master_install_adw folder:

```
unzip -a dma_odi_master_install_adw.zip
```

- Change the protection on files as follows:

```
chmod 755 *
```

- Steps

- Update the following user parameters in the <OHF_INSTALL_HOME>/
dma_odi_master_install_adw/ODI_SETENV_CREATE.ksh script.

ORAHOME

Oracle home directory

BASEDIR

Installation home directory

ODIHOME

ODI home directory

ODICREDFILE

ODI ADW wallet credential file location

ODIDBSRVNM

OHF data model ADW service name

HDIUSR

HDI schema name

HDMUSR

HDM schema name

HCDUSR

HCD schema name

CDMUSR

CDM schema name

ENTUSR

ENT schema name

WILHMCUSR

WIL_HMC schema name

ATHMCUSR

AT_HMC schema name

OHFODIREPUSR

ODI repository schema created during ODI marketplace installation

NAMESPACE

OCI Namespace

OCIOBJSTRSHORTURL

OCI Object Storage short URI

OHFBUCKETNAME

OCI Bucket name to upload ODI repository dump

OHFCREDNAMEUnique name for credential to store your Cloud Object Storage credential by using
DBMS_CREDENTIAL.CREATE_CREDENTIAL**CREDUSERNAME**

Credential user name for object storage access. Refer to:

- **Steps**

<https://docs.oracle.com/en/cloud/paas/autonomous-database/adbbk/#articletitle>

The remainder of the parameters have fixed values and Oracle recommends that you do not change these values. Schema passwords are prompted while running the script.

- Apply the following grants to the ODI repository schema (created during the ODI marketplace installation):

```
grant execute on DBMS_CLOUD to <OHFODIREPUSR>;  
grant read, write on directory data_pump_dir to <OHFODIREPUSR>;
```

- Before running the installer, make sure that the ORACLE_HOME, PATH and LD_LIBRARY_PATH environment variables are setup in your session. For example:

```
export ORACLE_HOME=/u01/app/oracle/product/122010  
export PATH=$PATH:$ORACLE_HOME/bin  
export LD_LIBRARY_PATH=$ORACLE_HOME
```

- Verify the database connectivity through the adw service names, such as:

```
sqlplus admin/<admin_pwd>@<ADW-servicename>
```

Run the Installer

Run the following script from the <OHF_INSTALL_HOME>/dma_odi_master_install_adw folder:

```
sh OHF_DMA_INSTALLER.ksh
```

Check the Installation

Review the generated installation log files for errors.

Check the DMA HMC install log file hmc_install_log.log and error file hmc_install_log.err under the <OHF_INSTALL_HOME>/dma_odi_master_install_adw/hmc_odi_install folder.

Check the DMA ODI install log file dma_etl_install.log under the <OHF_INSTALL_HOME>/dma_odi_master_install_adw/dmalogs folder.

The .done and .err files are generated under the following directory:

```
<OHF_INSTALL_HOME>/dma_odi_master_install_adw/dmalogs/tmplogs
```

Post-DMA Installation Steps

- Steps

Log in to the ODI marketplace VM instance.

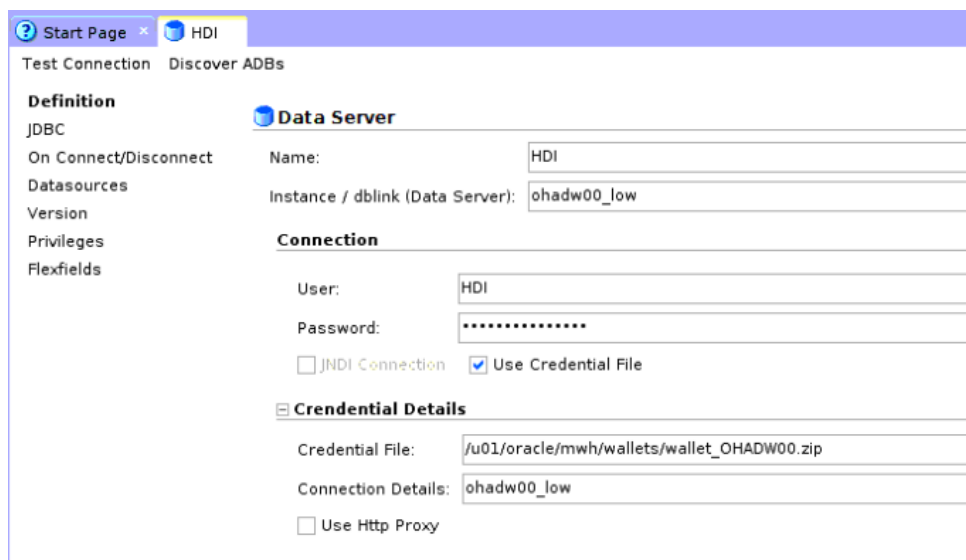
Restart the ODI agent (/u01/oracle/mwh/odi/common/scripts) from the root user.

```
sudo systemctl stop agentodi.service
sudo systemctl start agentodi.service
sudo systemctl status agentodi.service
```

Launch the ODI studio and create a connection to the ODI repository, for example, OHF_ODI_REPO.

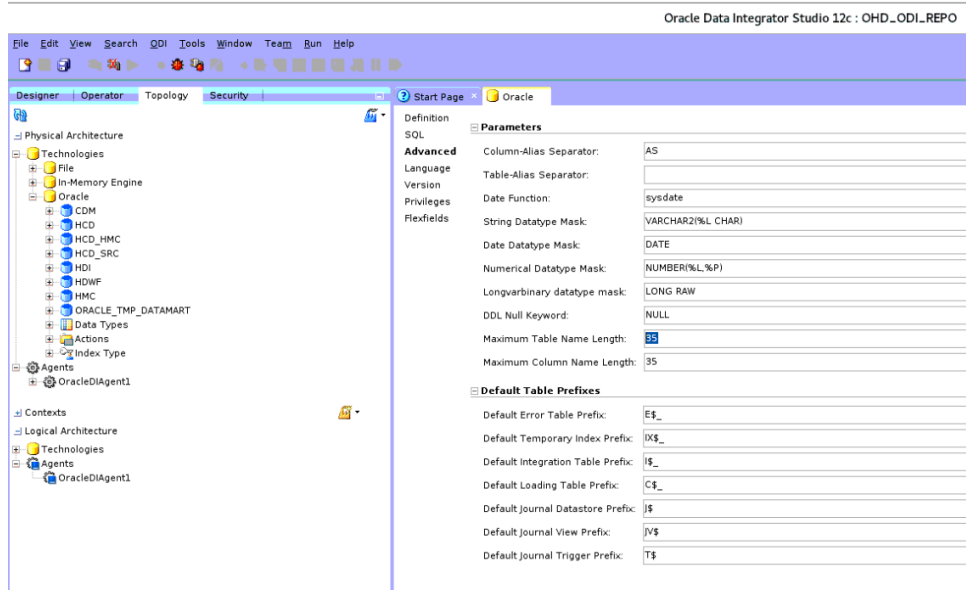
Connect to the Master Repository and update the work repository connection information from Topology > Repositories > Work Repositories > OHF_WORKREP Update schema password of OHF_ODI_REPO and Connection Details (ADW service name as either low, medium, or high).

Connect to the Work Repository (OHF_WORKREP) and update the OHF Schema connection information from Topology > Technologies > Update Schema password and Connection Details (ADW service name as either low, medium, or high) for the Schemas shown.



- Steps

- Update the Max Table and Column length to 35 in ODI Studio > Topology > Oracle.
Maximum Table Name Length = 35
Maximum Column Name Length = 35



Part II

Upgrade

In this chapter:

- [Data Model Upgrade](#)
- [Data Management Assembly for Oracle Data Integrator Upgrade](#)
- [Data Management Assembly for Informatica Upgrade](#)
- [Middle-Tier Upgrade on the Primary Node](#)
- [Upgrade for ADW](#)

10

Data Model Upgrade

For a list of the supported upgrade paths, see [Supported Upgrade Paths](#).

To upgrade the Oracle Healthcare Foundation (OHF) Data Model, follow the instructions below:

- [Check Prerequisites](#)
- [Upgrading from Healthcare Data Warehouse Foundation or a Previous Oracle Healthcare Foundation Version](#)
- [Data Migration](#)

Check Prerequisites

- Steps

- Make sure the Oracle Analytics Server service is shut down.
- Make sure Oracle Database 19.3.0.0.0 Enterprise Edition is installed.
- Make sure that the database compatible parameter is set to 19.3.0.0.0 by connecting to the DBA user and running the query below:

```
select * from v$parameter where name = 'compatible';
```

If the parameter is not set to 19.3.0.0.0, ask your database administrator to set it.

- If you are upgrading Oracle Healthcare Foundation on an Exadata environment, make sure the Oracle database patch 19562381 (Doc ID [19562381.8](#)) is applied.
- Create a container database with a single pluggable database instance with the help of a Database Administrator.
- Make sure the database initialization parameter `MAX_STRING_SIZE` is set to `STANDARD` (default value). This parameter cannot be changed to `STANDARD` if the database is created with `MAX_STRING_SIZE` set to `EXTENDED`.
- Set the `NLS_LENGTH_SEMANTICS` parameter to either `CHAR` or `BYTE` based on your requirements.
For Oracle Healthcare Foundation Globalization Support information, see *Oracle Database Globalization Support Guide* and set your database character set accordingly.
- Verify if you have a database license for Advanced Compression.
- Make sure the password expiry notification message does not display for the Sys, system and all Oracle Healthcare Foundation schemas.

- Steps

- During upgrade, shutdown weblogic server, Node Manager, refer to <https://docs.oracle.com/en/middleware/fusion-middleware/weblogic-server/12.2.1.4/start/index.html>

If you have Oracle Healthcare Translational Research (OHTR) 3.1.x installed, make backups of the CDM, Oracle Database, Enterprise, Job Engine and Apps schemas. Import CDM, ODB, Enterprise, Job Engine, and Apps schemas in the database instance created for Oracle Healthcare Foundation (PDB or non-container database).

The CDM, Oracle Database, Enterprise, and Job Engine schemas are updated as part of the Oracle Healthcare Foundation 8.2.1 upgrade. The Apps schema is upgraded during the Oracle Healthcare Translational Research 4.0 upgrade.

If you are importing existing Oracle Healthcare Translational Research CDM schema into different named CDM schema, update the table below after importing the dump. Connect to the Oracle Database schema and run the following commands:

1.

```
select * from W_EHA_DATASOURCE
```

In this table, update the CDM schema name to the new CDM schema name.

- Before you upgrade to Oracle Healthcare Foundation 8.2.1, back up the data model schemas of the existing Oracle Healthcare Data Warehouse Foundation (HDWF) environment and the Oracle Healthcare Translational Research schemas (if you have installed older versions of Oracle Healthcare Translational Research).
- Identify the manually updated seed data and inconsistent terminology records using the below query and revert the Oracle Healthcare Foundation seed data.

```
select crct.cd_id,cr.CD_ID,
       CR.INTEGRATION_ID,
       CRCT.INTEGRATION_ID
from
       HDM_CD_REPOSITORY_CD_TYP CRCT,
       HDM_CD_REPOSITORY CR
where

SUBSTR(CRCT.INTEGRATION_ID,1,INSTR(CRCT.INTEGRATION_ID,'~',- 1)- 1)=
       CR.INTEGRATION_ID
and CRCT.CD_ID <> CR.CD_ID
and CRCT.CD_REPOSITORY_CD_TYP_ID <= 50000;
```

- During the upgrade, certain objects are dropped irrespective of prefixes or naming conventions. This includes objects such as packages, stored procedures, views, materialized views, scheduler jobs, and synonyms.
Make a backup of the custom scripts before the upgrade and re-execute the custom scripts for all custom objects after the upgrade.

- Steps

- During the upgrade, HCD materialized views will be dropped to replace the underlying sql logic , this requires all the dependent objects to be dropped. Any custom/peer objects referencing the Oracle Healthcare Foundation HCD materialized views will not be dropped by the installer.

Make sure to drop the custom referential integrity constraints before starting the upgrade. Identify the custom objects using the below query:

```
select uc.table_name,
       uc.constraint_name,
       o.object_type
       from user_constraints uc,
           user_objects o
       where uc.table_name=o.object_name
           and o.object_type in ('TABLE','VIEW')
           and uc.constraint_type in ('R') -- R =
Referential integrity; U = Unique key; P = Primary key; C = Check
constraint
           and r_constraint_name in
(select constraint_name from user_constraints
 where table_name in (select object_name
 from user_objects
 where object_type in ('MATERIALIZED VIEW')
 and object_name like 'W\HCD\_%' ESCAPE '\')
 and not REGEXP_LIKE(object_name, '_X+')));
```

- Set the GLOBAL_NAMES database initialization parameter to false.
- For remote upgrades, make sure the following are available on the client machine:
- Oracle Linux 6.7 (64-bit) OS or above
 - Oracle Database 19.3.0.0.0 client with the sqlplus utility
- Before you run the Oracle Healthcare Foundation installer to upgrade the existing schema, execute the following query as a SYSTEM user to validate if the data model user has OHF_APPLICATION_ROLE as the default role.

```
select grantee, DEFAULT_ROLE from dba_role_privs where
granted_role='OHF_APPLICATION_ROLE' AND DEFAULT_ROLE='NO';
```

Data model users are schema users that are used during the installation of the Oracle Healthcare Foundation Data Model. If this is not a default role, execute the following command as a SYSTEM user to set this as a default role:

```
alter user data_model user default role all;
```

Where *data_model user* should be assigned to each of the following users:

- Data warehouse schema name (HDM)
- Interface tables schema name (HDI)
- Common data mart schema name (HCD)
- Cohort data mart schema name (CDM)
- Job engine schema name (JOB)
- Services schema name (SVC)
- Omics data bank schema name (ODB)

Note: If you don't have Oracle Healthcare Translational Research products installed, assign *data_model_user* only to the HDM, HDI, and HCD schemas.

- Steps

- Make sure that the SELECT privilege on the ALL_TAB_COLS view is granted to the PUBLIC role. Log in as a SYS user and execute the following query:

```
select * from dba_tab_privs where table_name = 'ALL_TAB_COLS';
```

If the privilege is not found, execute the below query as SYS user to grant the privileges to the PUBLIC role:

```
grant select on SYS.ALL_TAB_COLS to PUBLIC with grant option;
```

- The installer does not validate the tablespace data files location. If the database server is on the remote server, make sure the location physically exists or the installer will fail.
-

Upgrading from Healthcare Data Warehouse Foundation or a Previous Oracle Healthcare Foundation Version

For the list of supported upgrade paths, see [Supported Upgrade Paths](#).

If you are upgrading from Healthcare Data Warehouse Foundation (HDWF) 6.1 to Oracle Healthcare Foundation, you must install Oracle Healthcare Analytics Data Integration (OHADI) 3.1.

 **Note:**

After upgrading, continue to [Data Migration](#) for instructions on how to migrate data from Healthcare Data Warehouse Foundation to Oracle Healthcare Foundation.

To upgrade from HDWF 6.1 to Oracle Healthcare Foundation, upgrade the Healthcare Data Warehouse Foundation 6.1 database instance to Oracle Database 19c (version 19.3) Enterprise Edition.

- [Prepare the Installer](#)
- [Run the Installer](#)
- [Check the Installation](#)

Prepare the Installer

- Steps

- Make sure that all the Oracle Healthcare Foundation schemas are disconnected from the database by querying `gv_$session` from the sys user:

```
select * from sys.gv_$session where status <> 'KILLED' and username in
('<OHF Schemas>');
```

- Extract the contents of the Oracle Healthcare Foundation media pack to your system.
 - Open the *media_pack_location* folder.
 - Unzip the `OHF_V821_Linux-x64.zip` file where you want to launch the installer using the following command:


```
unzip -a OHF_V821_Linux-x64.zip
```
 - Open the **Disk1/install** folder.
 - Change the protection on files as follows:


```
chmod 755 *
```
-

Run the Installer

Start the Oracle Universal Installer (OUI) using the following command:

- If the database server (Exadata or non-Exadata) is on the machine where the installer is running, execute:


```
sh runInstaller.sh -local
```
- If the database server is on a different machine, execute:


```
sh runInstaller.sh -local remote_installation=true
```

where, the `-local` option is to install on the local node irrespective of the cluster nodes specified on the installer machine.

- Screen	Action
<input type="checkbox"/> Welcome	Click Next .
<input type="checkbox"/> Select a Product to Install	Select the Oracle Healthcare Foundation Data Model 8.2.1.0.0 option.
<input type="checkbox"/> Specify Home Details	Enter the installation home name and location.
<input type="checkbox"/> Verify Installation Prerequisites	Verify if all of the prerequisites are met before proceeding.
<input type="checkbox"/> Oracle Client Home Configuration	Specify the Oracle (version 19.3.0.0.0) client home path. The installer validates this path.

- Screen	Action
<input type="checkbox"/> Database Configuration	Enter values for the following fields: <ul style="list-style-type: none"> • Host name - By default, the system host name appears. For remote installations, set this value to the host name of the remote machine. • Port - By default, the port number is 1521. You can edit this field if required. • Service name • System user password • Sys user password
<input type="checkbox"/> Table Compression	On an Exadata setup, use the following compression options: <p>Interface Tables schema</p> <ul style="list-style-type: none"> • Hybrid columnar compression (default) • No Compression <p>Data Warehouse schema</p> <ul style="list-style-type: none"> • No Compression (default) • Advanced Compression: Preferred if updates are high. If you don't have a license for Advanced Compression, select Hybrid Columnar Compression. • Hybrid Columnar Compression <p>Common Data Mart schema</p> <ul style="list-style-type: none"> • No Compression (default) • Advanced Compression <p>Cohort Data Mart schema</p> <ul style="list-style-type: none"> • No Compression (default) • Advanced Compression <p>Omics Data Bank schema</p> <ul style="list-style-type: none"> • Hybrid columnar compression (default) On a non-Exadata setup, for each of the above schemas, choose either No Compression (default) or Advanced Compression.
<input type="checkbox"/> Data Model Configuration	Enter values for the pre-created schemas: <ul style="list-style-type: none"> • Interface Tables schema name • Interface Tables schema password • Data Warehouse schema name • Data Warehouse schema password • Common Data Mart schema name • Common Data Mart schema password • Omics Data Bank schema name • Omics Data Bank schema password
<input type="checkbox"/> Data Model Configuration	Enter values for the pre-created schemas. If Oracle Healthcare Translational Research schemas exist, provide the existing schema names, otherwise provide new schema names. <ul style="list-style-type: none"> • Cohort Data Mart schema name • Cohort Data Mart password • Enterprise schema name • Enterprise schema password • Job Engine schema name • Job Engine schema password • Services schema name • Services schema password

Screen	Action
<input type="checkbox"/> Data Model Configuration	Enter values for the following fields: <ul style="list-style-type: none"> Clinical Genomics (cga) schema name Clinical Genomics (cga) schema password
<input type="checkbox"/> Data Model Configuration Verification	Click Next .
<input type="checkbox"/> Omics Data Bank and Cohort Data Mart Parameters	Enter values for the following fields. Make sure you use the same values you are currently using for: Result Partition, Promoter Offset, Flanking Offset, and Job Store Name. If you don't have existing Oracle Healthcare Translational Research schemas, then choose appropriate options. <ul style="list-style-type: none"> Result Partition - Used to partition result tables in the Oracle Database schema. The available options are: <ul style="list-style-type: none"> GENE (Default) STUDY Promoter Offset - Numerical value to specify a portion of the gene used as a promoter in the Oracle Database schema. The default value is 200. Flanking Offset - Numerical value to specify the region before and after a gene to link results to a gene in the Oracle Database schema. The default value is 200. Max Parallel Degree - An option to specify the maximum degree of parallelism to be set on tables or used in the SQL statements for the CDM or Oracle Database schema. It is dependent on the machine configuration of the database server. The default value is 2. Job Store Name Use the job schema name. <p>Note: If you are using the same database instance for multiple environments, enter a unique job store name for each job schema.</p>
<input type="checkbox"/> Summary	Click Install .
<input type="checkbox"/> End of Installation	Click Exit after reviewing the installation information. At the confirmation prompt, click Yes to exit the installer.

Check the Installation

Steps
<input type="checkbox"/> Review the generated installation log files for errors. For details, see Installation Log Files .
<input type="checkbox"/> Contact Oracle support, if necessary, to resolve any errors.

Data Migration

To upgrade from a previous Oracle Healthcare Foundation version or to migrate the data from Healthcare Data Warehouse Foundation 6.1, follow the steps below:

- [Check the Migration Scripts](#)
- [Execute Schema Migration Scripts After Modifications](#)

Check the Migration Scripts

Data migration for interface tables and data warehouse schema is not performed by the installer. You need to review the data migration scripts in `INSTALL_HOME/dm/hdi_install/post_ddl_upgrade.sql` and `INSTALL_HOME/dm/hdm_install/post_ddl_upgrade.sql` (note that there are references to other scripts within the main script). You can modify the scripts before executing them.

 **Note:**

Migration scripts execution is mandatory and needs to be completed before the ETL execution.

 **Note:**

Both sections below ([Upgrading from Oracle Healthcare Foundation versions earlier than 7.0.1](#) and [Upgrading from an Oracle Healthcare Foundation Version before 7.1](#)) are applicable for migrating from Healthcare Data Warehouse 6.1 to Oracle Healthcare Foundation 8.2.1.

- [Upgrading from Oracle Healthcare Foundation versions earlier than 7.0.1](#)
- [Upgrading from an Oracle Healthcare Foundation Version before 7.1](#)
- [Upgrading from Oracle Healthcare Foundation Versions Earlier than 8.0](#)

Upgrading from Oracle Healthcare Foundation versions earlier than 7.0.1

 **Note:**

Not Applicable when upgrading from Oracle Healthcare Foundation 7.1.

- Specimen.Intervention ID/VN is deprecated and data is migrated to Intervention Specimen.
- Specimen Processing Procedure. Specimen Processing Procedure Subtype is added as a mandatory attribute to the Specimen Processing Procedure. This is initialized with the appropriate seed data coded value 'SPP_SUBTYP_GEN' during the migration.
- Schedule Block.Schedule Block Subtype is added as a mandatory attribute to Schedule Block. This is initialized with the appropriate seed data coded value 'SCH_BLKCK_SUBTYP_GEN' during the migration.
- Schedule.Service Provider is deprecated and data is transferred to Schedule Service Provider.
- Observation. Specimen ID/VN is deprecated and data is transferred to Observation Specimen. On the interface tables schema, data is transferred from Observation, Assessment, and Image Instance to Observation Specimen.

- Data is migrated from Encounter Service Provider to Encounter. Responsible Service Provider for Encounter Service Provider Relationship Type="Responsible Service Provider". If the same encounter is associated to multiple service providers for a given value of Encounter and Relationship Type="Responsible Service Provider", the service provider that was inserted last is migrated to Encounter.
- The integration ID of the parent table is used wherever a new table is populated based on an existing table.
- The migration scripts use the seed data values given below provided by Oracle. If you have used a different set of seed data values in Encounter Service Provider to represent a Responsible Service Provider relationship, change it in the migration script for both Interface Tables and Data Warehouse schema, and run `post_ddl_upgrade.sql`.
- The following are the seed data values that are used for filtering Encounter Service Provider. Encounter Service Provider Relationship Type in the migration scripts:
 - `HDI_ENC_SVCPRV.ENC_SVCPRV_RLTYP_CD='ENC_SVCPRV_RLSHTYP_RSPNSBL_SVCPRV' (CD_NM='Responsible Service Provider' AND INTEGRATION_ID='ENC_SVCPRV_RLSHTYP_RSPNSBL_SVCPRV-EHA_CUSTOM_CD_SYS~1.0' AND SYS_INT_ID='EHA_CUSTOM_CD_SYS~1.0' AND SYS_DAT_SRC_NUM_ID=1 AND CREATED_BY_USER_ID='EHA_USER' AND CREATED_BY_USER_DS_NUM_ID=1)`
 - On the Data Warehouse schema, it corresponds to `HDM_ENC_SVCPRV.ENC_SVCPRV_RLSHTYP_ID/VN` resolving to the following code:
`CD='ENC_SVCPRV_RLSHTYP_RSPNSBL_SVCPRV' AND CD_NM='Responsible Service Provider' AND INTEGRATION_ID='ENC_SVCPRV_RLSHTYP_RSPNSBL_SVCPRV-EHA_CUSTOM_CD_SYS~1.0'`

The values mentioned above are presented in a logical way and are not the exact physical representation of the values present in the migration scripts. See sql files `INSTALL_HOME/dm/hdi_install/pkb/hdi_upgrade_7_0.pkb` and `INSTALL_HOME/dm/hdm_install/pkb/hdm_upgrade_7_0.pkb` for the exact seed data values.
- Key steps related to data migration are logged into the `HDI_RSLT_LOG` and `HDM_RSLT_LOG` tables in the respective schemas.

Upgrading from an Oracle Healthcare Foundation Version before 7.1

Note:

Not applicable when upgrading from Oracle Healthcare Foundation 7.1.

- Bill Line Item.Bill Diagnosis ID/VN is deprecated and the corresponding data is migrated to Bill Diagnosis as new records.
- Claim Line Item.ClaimDiagnosis ID/VN is deprecated and the corresponding data is migrated to Claim Diagnosis as new records.
The values mentioned above are presented in a logical way and are not the exact physical representation of the values in the migration scripts. For exact details, see the SQL files:

INSTALL_HOME/dm/hdi_install/pkb/hdi_upgrade_7_1.pkb and
INSTALL_HOME/dm/hdm_install/pkb/hdm_upgrade_7_1.pkb.

- HDM_INTVN_SPCMN. INTVN_SPCMN_RLSHTYP_ID/VN is populated with the value -1 corresponding to the default value of CODEID_NAV configured in the HMC schema. If you have modified the seed data, change the script *INSTALL_HOME*/dm/hdm_install/post_ddl_upgrade.sql accordingly.
- Review the integration ID pattern for records populated using the migration scripts and change it accordingly if needed.
- It is assumed that the time stamps for SRC_CHANGED_ON_DT, match from the parent to the child reference on the interface schema. For example, the value of HDI_ENC_SVCPRV. ENC_SRC_CHANGED_ON_DT should be the same as that of the parent. That is, HDI_ENC.SRC_CHANGED_ON_DT for the same record being referred in both tables right up to the seconds. If it is not the same, change the migration script accordingly.

Upgrading from Oracle Healthcare Foundation Versions Earlier than 8.0

- Bill Line Item.Service Provider ID/VN is deprecated and the corresponding data is migrated to Bill Line Item Service Provider as new records.

The values mentioned above are presented in a logical way and are not the exact physical representation of the values in the migration scripts. For exact details, see the SQL files: <*INSTALL_HOME*>/dm/hdi_install/pkb/hdi_upgrade_8_0.pkb and <*INSTALL_HOME*>/dm/hdm_install/pkb/hdm_upgrade_8_0.pkb.

- Review the integration ID pattern for records populated using the migration scripts and change it accordingly if needed.
- It is assumed that the time stamps for SRC_CHANGED_ON_DT match from the parent to the child reference on the interface schema. For example, the value of HDI_ENC_SVCPRV. ENC_SRC_CHANGED_ON_DT should be same as that of the parent, that is, HDI_ENC.SRC_CHANGED_ON_DT for the same record being referred in both tables right up to the seconds. If it is not the same, change the migration script accordingly.

Execute Schema Migration Scripts After Modifications

Follow the instructions below to migrate the Interface Tables schema:

- Steps

- Open the command prompt and navigate to the *INSTALL_HOME*/dm/hdi_install/ folder.
- Connect to the interface tables schema using the SQL*Plus utility.
- Execute the script using the command '@post_ddl_upgrade.sql'.

Follow the instructions below to migrate the Data Warehouse schema:

- Steps

- Open the command prompt and navigate to the *INSTALL_HOME*/dm/hdm_install/ folder.

- Steps

- Connect to the Data Warehouse schema using the SQL*Plus utility.
 - Execute the script using the command '@post_ddl_upgrade.sql'.
-

11

Data Management Assembly for Oracle Data Integrator Upgrade

For a list of the supported upgrade paths, see [Supported Upgrade Paths](#).

To upgrade the Oracle Healthcare Foundation Data Management Assembly for Oracle Data Integrator (ODI), follow the instructions below:

- [Check Prerequisites](#)
- [Prepare the Installer](#)
- [Run the Installer](#)
- [Check the Installation and Delete E\\$_tables](#)
- [Create a New Oracle Data Integrator Repository Login](#)

Check Prerequisites

-	Steps
<input type="checkbox"/>	The user is familiar with Oracle Database (DB), Oracle Data Integrator, and Linux OS.
<input type="checkbox"/>	The Oracle Healthcare Foundation Data Model is installed. Follow the instructions in Data Model Installation or Data Model Upgrade .
<input type="checkbox"/>	The Data Management Assembly installer is run on the system where the Oracle Data Integrator server is installed.
<input type="checkbox"/>	Make sure that the database compatible parameter is set to 19.3.0.0.0 by connecting to the DBA user and running the query below: <pre>select * from v\$parameter where name = 'compatible';</pre> If the parameter is not set to 19.3.0.0.0, ask your database administrator to set it.
<input type="checkbox"/>	Be sure to backup all custom database objects and custom ETL objects before initiating the Oracle Healthcare Foundation upgrade. Import the custom database objects and custom ETLs into the upgraded environment.
<input type="checkbox"/>	Oracle Healthcare Foundation uses separate HMC schemas for the WIL and HCD loaders. If you have a common HMC schema for OHADI (WIL) and HCD, designate different HMC schemas for WIL (the existing HMC) and HCD (the new HMC_HCD) by performing the following steps: <ol style="list-style-type: none">1. Create a new HMC schema for HCD loaders. For example: HMC_HCD.2. Provide the newly created HMC_HCD schema with the same privileges as the existing HMC schema.3. Move the HCD* tables from the existing HMC schema to the new HMC_HCD schema and remove them from the existing HMC schema.

- Steps

- Oracle Data Integrator services can connect to the Data Model 8.2.1 database mentioned in the Oracle TNS file (TNS entries of the required database must be available in the installation server `tnsnames.ora` file).
- The password expiry notification message does not display for the system user or existing schemas.
- The terminology loaders source file location exists. The installer creates an archive directory. For example,
`/scratch/home/oemora/TL_Source` is the source file location specified during installation, which already exists.
`/scratch/home/oemora/TL_Archive_Files` is created by the installer as the archive directory.
- The path of the data file (Configuration schema/Repository schema tablespace) mentioned when creating the tablespace is correct. Make sure that the database user has write privileges.
- Enough space is available in the installation directory and the Oracle Home directory.
- The `Sqlplus` utility is available on the installation server.
- The `impdp` utility is available on the repository database server.
- The installation user has read, write, and execute privileges to the `$ODI_HOME/odi/agent/bin` folder. The installer creates product-specific files under this location.
- For remote installations, where the installation server and the Oracle Data Integrator Repository Database server are different machines, make sure that:
 - A directory from the remote database server is mounted to the installation server with appropriate read and write privileges.
 - The remote directory is accessible from the installation server upon mounting.
 - The user that owns Oracle db services on the remote server has privilege 755 for the directory that has been mounted on the installation server.
 - If the database is on an Exadata machine, provide the database single node (the node which is mounted) as the host name when prompted during installation.
- `GLOBAL_NAMES` database initialization parameter is set to false.
- Back up the following csv files under `$ODI_HOME/odi/agent/bin` if it exists:
 - `bus_susp_day.csv`
 - `daylght_svngs_day.csv`
 - `hosp_hol_day.csv`
 - `time_odi.csv`
- If the Terminology Loaders source folder is shared, make a backup of the following files:
 - `Code Axes.txt`
 - `Code Descriptions.txt`
 - `Code Hierarchy.txt`
 - `Code.txt`
 - `Related Entity.txt`
 - `Relations Type.txt`
 - `Relations.txt`
 - `Relationship Type.txt`
 - `time.txt`The installer will overwrite any existing files from the list above.

- Steps

- If any previous ETLs are in the failed status, make sure that they execute successfully before upgrading.
 - Make sure that the data models are upgraded to Oracle Healthcare Foundation 8.2.1.
 - The OUI displays default configuration schema (hmc) names. You must change these schema names to the existing hmc schema names.
The installer upgrades the configuration schemas to Oracle Healthcare Foundation 8.2.1.
 - Back up the existing hmc schemas.
-

**Note:**

The installer auto-populates some of the user parameters and lets you edit them.

Prepare the Installer

- Steps

- Extract the contents of the Oracle Healthcare Foundation media pack to your system.
 - Navigate to the *media_pack_location* folder.
 - Unzip the `OHF_V821_Linux-x64.zip` file where you want to launch the installer using the following command:

```
unzip -a OHF_V821_Linux-x64.zip
```
 - Navigate to the **Disk1/install** folder.
 - Change the protection on files as follows:

```
chmod 755 *
```
-

Run the Installer

Start the Oracle Universal Installer by running the following command:

- If the Oracle Data Integrator repository schemas (master and work) to be created are on the database instance of the installation server, execute:

```
sh runInstaller.sh -local
```
- If the Oracle Data Integrator repository database or Oracle Healthcare Foundation data model database is on the database instance of another server, execute:

```
sh runInstaller.sh -local remote_installation=true
```

where, the `-local` option is to install on the local node irrespective of the cluster nodes specified on the installer machine.

- Screen	Action
<input type="checkbox"/> Welcome	Click Next .

Screen	Action
<input type="checkbox"/> Select a Product to Install	Select the Oracle Healthcare Foundation Data Management Assembly for ODI 8.2.1.0.0 option.
<input type="checkbox"/> Specify Home Details	Enter the installation home path.
<input type="checkbox"/> Verify Installation Prerequisites	Verify if all of the prerequisites are met before proceeding.
<input type="checkbox"/> Select the Oracle Home Configuration	Specify the Oracle client home path.
<input type="checkbox"/> Select the Oracle Data Integrator Home Location	Specify the Oracle Data Integrator home location. The Oracle Data Integrator home should be one level above the /oracle_common directory. For example: /u01/app/oracle/Oracle_ODI1.
<input type="checkbox"/> Select Database Server for Oracle Data Integrator Repository Schemas	Select one of the following options for the Oracle Data Integrator repository schemas: <ul style="list-style-type: none"> • If the Oracle Data Integrator repository database server is on the installation server, select the Installation database server option. • Else, select the Remote database server option.
<input type="checkbox"/> Specify Mount Path Details (applicable only for remote installations)	Enter the configuration details for the mounted remote server directory: <ul style="list-style-type: none"> • Mounted directory path on the remote server • Mount path on the installation server <p>To obtain the available storage drives, on the Linux machine, execute the <code>df -h</code> command. If the remote server directory is mounted on the installation server, the mounting is displayed as follows:</p> <pre>Remote Server name:Remove server path total size used up space Available space use% Path in installation server where mounting was done</pre> <p>For example:</p> <pre>abc:/scratch/dump 191G 138G 44G 76% / installation server</pre> <p>Note: If the remote server mounted path is displayed as /, provide the absolute mounted path of the remote server.</p>
<input type="checkbox"/> Specify Healthcare Data Model Database Instance Details	Enter values for the following fields: <ul style="list-style-type: none"> • Host name - By default, the system host name appears. For remote installations, set this value to the host name of the remote machine. • Port number • Service name • System user password • Select this database instance for repository schema creation If you select Yes, the installer uses the same Data Model database instance for Oracle Data Integrator repository schema creation.

- Screen	Action
<input type="checkbox"/> Specify Oracle Data Integrator Repository Database Instance Details (applicable only if you selected No in the previous screen for Select this database instance for repository schema creation)	Enter values for the following fields: <ul style="list-style-type: none"> • Host name - By default, the system host name appears. For remote installations, set this value to the host name of the remote machine. • Port • Service name • System user password
<input type="checkbox"/> Specify Oracle Data Integrator Supervisor Password	Specify the supervisor password used for the Oracle Data Integrator console login.
<input type="checkbox"/> Select Terminology Loaders Source Location	Specify the Terminology loaders source file location. This location is used to read the terminology loaders source data files. You can change this location when required. The installer creates an archive directory at the same level as the source directory. Make sure that the create directory privileges exist for the installation user.
<input type="checkbox"/> Specify Healthcare Data Model Schema Details	Enter values for the pre-created schemas: <ul style="list-style-type: none"> • Interface table schema name • Interface table schema password • Data warehouse schema name • Data warehouse schema password • Common data mart (hcd) schema name • Common data mart (hcd) schema password • Cohort data mart (cdm) schema name • Cohort data mart (cdm) schema password
<input type="checkbox"/> Specify Healthcare Data Model Schema Details	Enter values for the pre-created schemas: <ul style="list-style-type: none"> • Enterprise schema name • Enterprise schema password.
<input type="checkbox"/> Specify Terminology Loader Details	Enter values for the following fields: <ul style="list-style-type: none"> • Master repository schema name • Master repository schema password • Work repository schema name • Work repository schema password Specify the new schema names for the Master and Work repositories. The installer creates the Master and Work repository schemas, and imports loaders into them.
<input type="checkbox"/> Specify Warehouse Integration Loader Details	Enter values for the following fields: <ul style="list-style-type: none"> • Configuration schema name • Configuration schema password • Master repository schema name • Master repository schema password • Work repository schema name • Work repository schema password Enter the existing Configuration schema name to upgrade it. Specify the new schema names for the Master and Work repositories. The installer creates the Master and Work repository schemas, and imports loaders into them.

- Screen	Action
<input type="checkbox"/> Specify Healthcare Common Data Mart Loader Details	<p>Enter values for the following fields:</p> <ul style="list-style-type: none"> • Configuration schema name • Configuration schema password • Master repository schema name • Master repository schema password • Work repository schema name • Work repository schema password <p>Enter the existing Configuration schema name to upgrade it.</p> <p>Specify the new schema names for the Master and Work repositories. The installer creates the Master and Work repository schemas, and imports loaders into them.</p>
<input type="checkbox"/> Specify Healthcare Cohort Data Mart Loader Details	<p>Enter values for the following fields:</p> <ul style="list-style-type: none"> • Master repository schema name • Master repository schema password • Work repository schema name • Work repository schema password <p>Specify the new schema names for the Master and Work repositories. The installer creates the Master and Work repository schemas, and imports loaders into them.</p> <p>The configuration schema is not required for CDM.</p>
<input type="checkbox"/> Specify RCU Prefix and Password	<p>Specify an RCU Prefix to be prepended to the schemas created by the Oracle Data Integrator Repository Creation utility (RCU). The RCU creates 3 schemas:</p> <ul style="list-style-type: none"> • <i>RCU Prefix_STB</i> • <i>RCU Prefix_WLS</i> • <i>RCU Prefix_WLS_RUNTIME</i> <p>Note: The RCU Prefix must be unique. The prefix should be alphabetic only. It cannot have special characters and cannot start with a number. The length of the prefix must not exceed 8 characters.</p> <p>Specify a password for RCU schemas created using the Oracle Data Integrator Repository.</p> <p>Note: The password must be between 8 and 12 alphanumeric characters long and must include at least one number. The password cannot start with a number.</p>
<input type="checkbox"/> Specify the Tablespace Details	<p>Specify the tablespace names for the configuration schemas. The installer creates these tablespaces if they do not exist.</p> <ul style="list-style-type: none"> • Configuration schema default tablespace name • Configuration schema temporary tablespace name
<input type="checkbox"/> Specify the Tablespace Details	<p>Specify the tablespace names for the repository schemas:</p> <ul style="list-style-type: none"> • wil_odi_ts - Default tablespace for Oracle Data Integrator temporary objects for Warehouse Integration Loaders • hcd_odi_ts - Default tablespace for Oracle Data Integrator temporary objects for Healthcare Common Data mart Loaders • cdm_odi_ts - Default tablespace for Oracle Data Integrator temporary objects for Cohort Data mart Loaders • tl_odi_ts - Default tablespace for Oracle Data Integrator temporary objects for Terminology Loaders

Screen	Action
<input type="checkbox"/> Specify Tablespace for Creation of Oracle Data Integrator Temporary Objects	<p>Specify tablespace names for the creation of temporary objects used by the Oracle Data Integrator Loaders. The installer creates the following tablespaces if they do not exist:</p> <ul style="list-style-type: none"> Warehouse Integration Loaders Healthcare Common Datamart loaders Cohort Datamart loaders Terminology loaders <p>Oracle recommends that you provide different tablespace names for each component.</p>
<input type="checkbox"/> Specify Tablespace Location for Configuration Schemas	<p>Specify the tablespace location for the configuration schemas. The location should be present in the data model database server with write privileges. If the Oracle Healthcare Foundation data model database is not on the installation server, you must enter the location manually.</p>
<input type="checkbox"/> Specify Tablespace Location for Repository Schemas	<p>Specify the tablespace location for the Oracle Data Integrator repository schema. The location should be present in the repository database server with write privileges. If the repository database is not on the installation server, you must enter the location manually.</p>
<input type="checkbox"/> Verify Configuration Parameters	Click Next .
<input type="checkbox"/> Summary	Click Install .
<input type="checkbox"/> End of Installation	Click Exit after reviewing the installation information. At the confirmation prompt, click Yes to exit the installer.

Check the Installation and Delete E\$_tables

Steps
<input type="checkbox"/> Review the generated installation log files for errors. For details, see Installation Log Files .
<input type="checkbox"/> Contact Oracle support, if necessary, to resolve any errors.
<input type="checkbox"/> Delete all E\$_tables under the HCD schema.

Create a New Oracle Data Integrator Repository Login

Perform the following steps to create a new Oracle Data Integrator repository login:

Steps
<input type="checkbox"/> Navigate to ODI > File > New > Create a New ODI Repository Login .
<input type="checkbox"/> Click OK . The Repository Connection Information screen is displayed.

- Steps

- Enter the following values:
 - Login Name - For example, WIL_REPOSITORY_LOGIN
 - User - SUPERVISOR
 - Password - Provide the Oracle Data Integrator Login password entered during installation (see [Run the Installer](#))
 - User - <database schema created for the master repository>
 - Password - <database schema password created for the master repository>
 - Driver List - Select **OracleJDBC Driver** from the drop-down list
 - Driver Name - oracle.jdbc.oracledriver
 - Url - Set appropriate values based on your database details
 - Work Repository - Select the **Work Repository** option, browse to select the work repository shown (for example, for the Warehouse Integration loader, select **WIL_WORK_REPOSITORY**), and click **OK**.
 - Click **OK**. The login name is created with the name specified in the previous step.
 - Navigate to **ODI > Connect > ODI Studio**.
 - Enter the following details:
 - Login Name - Select **WIL_REPOSITORY_LOGIN**
 - User - Supervisor
 - Password - Provide the Oracle Data Integrator login password entered during installation (see [Run the Installer](#)).
-

Similarly, follow the above steps to create the login for the Terminology loaders, Common Data Mart loader, and Cohort Data Mart loader.

12

Data Management Assembly for Informatica Upgrade

For a list of the supported upgrade paths, see [Supported Upgrade Paths](#).

To upgrade the Oracle Healthcare Foundation Data Management Assembly for Informatica, follow the instructions below:

- [Check Prerequisites](#)
- [Prepare the Installer](#)
- [Run the Installer](#)
- [Check the Installation](#)

Check Prerequisites

- **Steps**

- The user is familiar with Oracle Database (DB), Informatica, and Linux OS.
- The Oracle Healthcare Foundation Data Model is installed.
Follow the instructions in [Data Model Installation](#) or [Data Model Upgrade](#).
- Make sure that the database compatible parameter is set to 19.3.0.0.0 by connecting to the DBA user and running the query below:


```
select * from v$parameter where name = 'compatible';
```


If the parameter is not set to 19.3.0.0.0, ask your database administrator to set it.
- Be sure to backup all custom database objects and custom ETL objects before initiating the Oracle Healthcare Foundation upgrade. Import the custom database objects and custom ETLs into the upgraded environment.
- Oracle Healthcare Foundation uses separate HMC schemas for the WIL and HCD loaders. If you have a common HMC schema for OHADI (WIL) and HCD, designate different HMC schemas for WIL (the existing HMC) and HCD (the new HMC_HCD) by performing the following steps:
 1. Create a new HMC schema for HCD loaders. For example: HMC_HCD.
 2. Provide the newly created HMC_HCD schema with the same privileges as the existing HMC schema.
 3. Move the HCD* tables from the existing HMC schema to the new HMC_HCD schema and remove them from the existing HMC schema.
- The Informatica domain is running and no user is connected to the Informatica Admin Console.

- **Steps**

- Informatica services can connect to the Data Model 8.2.1 database mentioned in the Oracle TNS file (TNS entries of the required database must be available in the installation server `tnsnames.ora` file).
- You can connect the database using EZCONNECT syntax. For example, `sqlplus user/password@hostname:port/service name`.
- The password expiry notification message does not display for the system user or the existing schemas.
- The installer is run on the system where the Informatica server is installed.
- The terminology loaders source file location exists. The installer creates an archive directory. For example,
 - `/scratch/home/oemora/TL_Source` is the source file location specified during installation, which already exists.
 - `/scratch/home/oemora/TL_Archive_Files` is created by the installer as the archive directory.
- The path of the data file (Configuration schema/Repository schema tablespace) mentioned when creating the tablespace is correct. Make sure that the database user has write privileges.
- Enough space is available in the installation directory and the Oracle Home directory.
- The Sqlplus utility is available on the installation server.
- The impdp utility is available on the repository database server.
- The installation user has read, write, and execute privileges to the `$INFA_HOME/server` folder. The installer creates product-specific folders and parameter files under this location.
- For remote installations, where the installation server and the Informatica Repository Database are on different machines, make sure that:
 - The remote database server directory is mounted to the installation server with appropriate read and write privileges.
 - The remote directories are accessible after mounting from the installation server.
 - The Linux user of the remote server, who executes the Oracle process, has privilege 755 for the directory (datapump).
 - The Oracle user has privileges for the mount path directory.
 - If the repository DB is on an Exadata machine, the repository DB single node (the node which is mounted) TNSENTRY should be added to the `tnsnames.ora` file on the installation server. After installation, revert TNSENTRY to the original entry.
- GLOBAL_NAMES database initialization parameter is set to false.
- Back up the following csv files under `$INFORMATICA_HOME/server/infa_shared/SrcFiles` if it exists:
 - `bus_susp_day.csv`
 - `daylight_svngs_day.csv`
 - `hosp_hol_day.csv`
 - `time_am.csv`
 - `time_pm.csv`

- Steps

If the Terminology Loaders source folder is shared, make a backup of the following files:

- Code Axes.txt
- Code Descriptions.txt
- Code Hierarchy.txt
- Code.txt
- Related Entity.txt
- Relations Type.txt
- Relations.txt
- Relationship Type.txt
- time.txt

The installer will overwrite any existing files from the list above.

If any previous ETLs are in the failed status, make sure that they execute successfully before upgrading.

Make sure that the data models are upgraded to Oracle Healthcare Foundation 8.2.1.

The OUI displays default configuration schema (hmc) names. You must change these schema names to the existing hmc schema names.

The installer upgrades the configuration schemas to Oracle Healthcare Foundation 8.2.1.

Back up the existing hmc schemas.

Prepare the Installer

- Steps

Extract the contents of the Oracle Healthcare Foundation media pack to your system.

Navigate to the **media_pack_location** folder.

Unzip the `OHF_V821_Linux-x64.zip` file where you want to launch the installer using the following command:

```
unzip -a OHF_V821_Linux-x64.zip
```

Navigate to the **Disk1/install** folder.

Change the protection on the files as follows:

```
chmod 755 *
```

Run the Installer

Start the Oracle Universal Installer by running the following command:

- If the Informatica repository schemas to be created are on the database instance of the installation server, execute:

```
sh runInstaller.sh -local
```

- If the Informatica repository database or Oracle Healthcare Foundation data model database is on the database instance of another server, execute:

```
sh runInstaller.sh -local remote_installation=true
```

where, the `-local` option is to install on the local node irrespective of the cluster nodes specified on the installer machine.

Screen	Action
<input type="checkbox"/> Welcome	Click Next .
<input type="checkbox"/> Select a Product to Install	Select the Oracle Healthcare Foundation Data Management Assembly for Informatica 8.2.1.0.0 option.
<input type="checkbox"/> Select the Informatica Home Location	Enter or select the installation home path.
<input type="checkbox"/> Verify Installation Prerequisites	Verify if all the prerequisites are met before proceeding.
<input type="checkbox"/> Oracle Home Configuration	Specify the Oracle client home path.
<input type="checkbox"/> Select the Informatica Home Location	Specify the Informatica home location. The Informatica home should be one level above the /server directory. For example, <code>path/Informatica/961/</code> .
<input type="checkbox"/> Specify the Information Shared Path location	The Informatica Shared Path should be one level above the SrcFiles folder. For example, <code>path/Informatica/961/server/infa_shared</code> .



Note:

Before installation ensure that all required subfolders are created under `infa_shared` folder.

For example: `SrcFiles`, `TgtFiles`, `SessLogs`, `WorkflowLogs`, and so forth.

- | | |
|--|---|
| <input type="checkbox"/> Select Database Server for Informatica Repository Schemas | <p>Select one of the following options for the Informatica repository schemas:</p> <ul style="list-style-type: none"> • If the Informatica repository database server is on the installation server, select the Installation database server option, and skip the next step. • For remote installations, select the Remote database server option, and go to the next step. |
|--|---|

- Screen	Action
<input type="checkbox"/> Specify Mount Path Details (applicable only for remote installations)	<p>Enter the following mounted directory configuration details in which the remote server directory is mounted:</p> <ul style="list-style-type: none"> • Mount path in the repository database server - Remote server path • Mount path in the installation server - Path on the installation server where the mounting is performed <p>To obtain the available storage drives, on the Linux machine, execute the <code>df -h</code> command. If the remote server directory is mounted on the installation server, the mounting is displayed as follows:</p> <pre>Remote Server name:Remote server path total size used up space Available space use% Path in installation server where mounting was done</pre> <p>For example,</p> <pre>abc:/scratch/dump 191G 138G 44G 76% /installation server</pre> <p>Note:</p> <ul style="list-style-type: none"> • The (datapump) directory of the remote database server should be mounted to the installation server with appropriate read and write privileges for the IMPDB utility (folder with dba group). • Make sure that the remote directories are accessible after mounting from the installation server. • If the remote server mounted path is displayed as <i>/</i>, provide the absolute mounted path of the remote server. • The remote server Linux user that executes the Oracle process must have minimum privileges of 755 to the directory.
<input type="checkbox"/> Specify Healthcare Data Model Database Instance Details	<p>Enter values for the following fields:</p> <ul style="list-style-type: none"> • Host name - By default, the system host name appears. For remote installations, set this value to the host name of the remote machine. • Port number • Service name • System user password • Select this database instance for repository schema creation. If you select Yes, the installer uses the same Data Model database instance for Informatica repository schema creation.
<input type="checkbox"/> Specify Informatica Repository Database Instance Details (applicable only if you selected No in the previous screen for Select this database instance for repository schema creation)	<p>Enter values for the following fields:</p> <ul style="list-style-type: none"> • Host name - By default, the system host name appears. For remote installations, set this value to the host name of the remote machine. • Port • Service name • System user password

- Screen	Action
<input type="checkbox"/> Select Terminology Loaders Source Location	Specify the Terminology loaders source file location. This location is used to read the terminology loaders source data files. You can change this location when required. The installer creates an archive directory at the same level as the source directory. Make sure that the create directory privileges exist for the installation user.
<input type="checkbox"/> Specify Healthcare Data Model Schema Details	Enter values for the following fields: <ul style="list-style-type: none"> • Interface table schema name • Interface table schema password • Data warehouse schema name • Data warehouse schema password • Common data mart (hcd) schema name • Common data mart (hcd) schema password • Cohort data mart (cdm) schema name • Cohort data mart (cdm) schema password
<input type="checkbox"/> Specify Healthcare Data Model Schema Details	Enter values for the following fields: <ul style="list-style-type: none"> • Enterprise schema name • Enterprise schema password.
<input type="checkbox"/> Specify Warehouse Integration Loader Details	Enter values for the following fields: <ul style="list-style-type: none"> • Configuration schema name • Configuration schema password • Repository name • Repository schema name • Repository schema password Provide an existing HMC schema. Provide the new Repository schema name.
<input type="checkbox"/> Specify Healthcare Common Data Mart Loader Details	Enter values for the following fields: <ul style="list-style-type: none"> • Configuration schema name • Configuration schema password • Repository name • Repository schema name • Repository schema password Specify an existing HMC schema. Provide the new Repository schema name.
<input type="checkbox"/> Specify Healthcare Cohort Data Mart Loader Details	If you are upgrading the Informatica repository schemas from Enterprise Healthcare Analytics (EHA) 6.1 and Oracle Healthcare Foundation 7.0.1 to Oracle Healthcare Foundation 8.2.1, the repository name, tablespace, and temp space name should be the same as in the previous version. Enter values for the following fields: <ul style="list-style-type: none"> • Repository name • Repository schema name • Repository schema password Provide the new Repository schema name. The configuration schema is not required for CDM.
<input type="checkbox"/> Specify Tablespace Details (if prompted)	Specify the tablespace names for the configuration schemas. The installer creates these tablespaces if they do not exist. <ul style="list-style-type: none"> • Configuration schema default tablespace name • Configuration schema temporary tablespace name

Screen	Action
<input type="checkbox"/> Specify Tablespace Details (if prompted)	Specify the tablespace names for repository schemas. The installer creates these tablespaces if they do not exist in the database. <ul style="list-style-type: none"> Repository schema default tablespace name Repository schema temporary tablespace name
<input type="checkbox"/> Specify Tablespace Location for Configuration Schema (if prompted)	Specify the tablespace location for the Configuration schema. The location should be present in the Oracle Healthcare Foundation data model database server with write privileges. If the Oracle Healthcare Foundation data model database is not on the installation server, you must enter the location manually.
<input type="checkbox"/> Specify Tablespace Location for Repository Schema (if prompted)	Specify the tablespace location for the repository schemas. When the repository database is not on the installation server, you must enter the location manually. The location should be present on the repository database server with write privileges.
<input type="checkbox"/> Specify Informatica Domain Details	Specify the following parameters: <ul style="list-style-type: none"> Domain name Domain code page ID Node name License name Informatica host name Informatica port number Informatica administrator user name Informatica administrator password Contact your Informatica Administrator for the Domain Code Page ID and provide a valid Code Page ID. Make sure that the code page is compatible with the domain code page for creating the Integration Service. For a domain compatible code page, see any existing and active integration service code pages from the Informatica admin console. A list of sample code pages and their IDs are as follows: <ul style="list-style-type: none"> US-ASCII (ID 1) - 7-bit ASCII Latin1 (ID 4) - ISO 8859-1 Western European JapanEUC (ID 18) - Japanese Extended Unix Code (including JIS X 0212) UTF-8 (ID 106) - Unicode Transformation Format, multibyte MS932 (ID 2024) - MS Windows Japanese, Shift-JIS MS1252 (ID 2252) - MS Windows Latin1 (ANSI), superset of Latin1
<input type="checkbox"/> Verify Configuration Parameters	Click Next .
<input type="checkbox"/> Summary	Click Install .
<input type="checkbox"/> End of Installation	Click Exit after reviewing the installation information. At the confirmation prompt, click Yes to exit the installer.

Check the Installation

Steps

- Review the generated installation log files for errors. For details, see [Installation Log Files](#).

- **Steps**

- Contact Oracle support, if necessary, to resolve any errors.
-

13

Middle-Tier Upgrade on the Primary Node

For a list of the supported upgrade paths, see [Supported Upgrade Paths](#).

You must run the installer on the Primary node only, WebLogic will propagate applications updates to secondary nodes on clusters. It is not required to run the Installer on secondary node.

To upgrade the Oracle Healthcare Foundation Middle-Tier, follow the instructions below:

- [Check Prerequisites](#)
- [Prepare the Installer](#)
- [Run the Installer](#)
- [Check the Installation](#)

Check Prerequisites

- **Steps**

- Oracle Fusion Middleware Infrastructure is installed on the machine (see [Software Requirements](#)).
 - The oh_domain Oracle WebLogic Server domain is present on the Oracle WebLogic Server machine.
 - All of the Oracle Healthcare Foundation Data Model schemas exist.
 - The Oracle external table DIRECTORY object is created for Omics Data Bank.
 - Ensure all servers and node managers on primary and secondary nodes.
-

Prepare the Installer

- **Steps**

- Extract the contents of the Oracle Healthcare Foundation media pack to your system
 - Open the **media_pack_location/** folder.
 - Unzip the OHF_V821_Linux-x64.zip file where you want to launch the installer using the following command:

```
unzip -a OHF_V821_Linux-x64.zip
```
 - Open the **Disk1/install** folder
 - Change the protection on the files as follows:

```
chmod 755 *
```
-

Run the Installer

Start the Oracle Universal Installer (OUI) using the following command:

```
./runInstaller.sh
```

- Screen	Action
<input type="checkbox"/> Welcome	Click Next .
<input type="checkbox"/> Select a Product to Install	Select the Oracle Healthcare Foundation Middle Tier 8.2.1.0.0 option.
<input type="checkbox"/> Specify Home Details	Enter the Middle Tier home name and location.
<input type="checkbox"/> Choose Install Type	Select No to perform an upgrade.
<input type="checkbox"/> Verify Upgrade Prerequisites	Verify if all of the prerequisites are met before proceeding.
<input type="checkbox"/> Oracle Fusion Middleware Home	Specify the WebLogic with ADF installation path. The installer validates this path.
<input type="checkbox"/> AdminServer Configuration	Enter values for the following fields: <ul style="list-style-type: none"> • Listen address • Listen port • SSL listen port • User name - Oracle WebLogic Server administrator use • Password - Oracle WebLogic Server administrator password
<input type="checkbox"/> NodeManager Configuration	Enter values for the following fields: <ul style="list-style-type: none"> • Listen address • Listen port • User name - Node manager administrator use • Password - Node manager administrator password
<input type="checkbox"/> Oracle Healthcare Foundation Data Model Configuration - part 1	Enter values for the following fields: <ul style="list-style-type: none"> • Database host name - By default, the system host name appears. For remote installations, set this value to the host name of the remote machine. • Database port • Service name
<input type="checkbox"/> Oracle Healthcare Foundation Data Model Configuration - part 2	Enter values for the following fields: <ul style="list-style-type: none"> • Omics Data Bank schema name • Omics Data Bank schema password • Services schema name • Services schema password • HDM schema name • HDM schema password • Enterprise schema name • Enterprise schema password
<input type="checkbox"/> Oracle Healthcare Foundation Data Model Configuration - part 3	Enter values for the following fields: <ul style="list-style-type: none"> • Cohort Data Mart (CDM) schema name • Cohort Data Mart (CDM) schema password • Clinical Genomics (cga) schema name • Clinical Genomics (cga) schema password

- Screen	Action
<input type="checkbox"/> Summary	Click Install .
<input type="checkbox"/> End of Installation	Click Exit after reviewing the installation information. At the confirmation prompt, click Yes to exit the installer.

Check the Installation

- Steps
<input type="checkbox"/> Check the log file located in ORACLE_BASE/oraInventory/logs.
<input type="checkbox"/> Review the generated installation files for errors. For details, see Middle-Tier Troubleshooting .
<input type="checkbox"/> Contact Oracle support, if necessary, to resolve any errors.

14

Upgrade for ADW

This chapter provides information on the following:

- [Data Model Upgrade on ADW](#)
- [Data Management Assembly for OCI Marketplace Oracle Data Integrator Upgrade](#)

Data Model Upgrade on ADW

To upgrade the data model on ADW, see the instructions in [Data Model Installation on ADW](#).

Data Management Assembly for OCI Marketplace Oracle Data Integrator Upgrade

To upgrade the data management assembly, following the instructions in [Data Management Assembly for OCI Marketplace Oracle Data Integrator Installation](#) and do the following:

- Update the `OHFCREDNAME` user parameter to a unique name for the upgrade in the `<OHF_INSTALL_HOME>/dma_odi_master_install_adw/ODI_SETENV_CREATE.ksh` script

Part III

Uninstall

Chapters in this part:

- [Data Model Uninstall](#)
- [Data Management Assembly for Oracle Data Integrator Uninstall](#)
- [Data Management Assembly for Informatica Uninstall](#)
- [Middle-Tier Uninstall](#)

Data Model Uninstall

This chapter describes how to uninstall the Oracle Healthcare Foundation Data Model.

**Note:**

Oracle recommends that you uninstall the Data Model only from the development environment. Also, make sure you have backups of the user schemas before dropping them.

Execute the following commands to drop user schemas by connecting to the system user. Replace the user schema names and tablespace names with the values provided during the installation.

```
drop user <hdi> cascade;
drop user <hdm> cascade;
drop user <hcd> cascade;
drop user <odb> cascade;
drop user <cdm> cascade;
drop user <ent> cascade;
drop user <job> cascade;
drop user <svc> cascade;
drop tablespace <hdi_temp> INCLUDING CONTENTS and datafiles;
drop tablespace <hdm_temp> INCLUDING CONTENTS and datafiles;
drop tablespace <hcd_temp> INCLUDING CONTENTS and datafiles;
drop tablespace <odb_temp> INCLUDING CONTENTS and datafiles;
drop tablespace <cdm_temp> INCLUDING CONTENTS and datafiles;
drop tablespace <ent_temp> INCLUDING CONTENTS and datafiles;
drop tablespace <job_temp> INCLUDING CONTENTS and datafiles;
drop tablespace <svc_temp> INCLUDING CONTENTS and datafiles;
drop tablespace <hdi_ts> INCLUDING CONTENTS and datafiles;
drop tablespace <hdm_ts> INCLUDING CONTENTS and datafiles;
drop tablespace <hcd_ts> INCLUDING CONTENTS and datafiles;
drop tablespace <odb_data_ts> INCLUDING CONTENTS and datafiles;
drop tablespace <odb_index_ts> INCLUDING CONTENTS and datafiles;
drop tablespace <odb_lob_ts> INCLUDING CONTENTS and datafiles;
drop tablespace <cdm_data_ts> INCLUDING CONTENTS and datafiles;
drop tablespace <cdm_index_ts> INCLUDING CONTENTS and datafiles;
drop tablespace <ent_ts> INCLUDING CONTENTS and datafiles;
drop tablespace <job_data_ts> INCLUDING CONTENTS and datafiles;
drop tablespace <job_index_ts> INCLUDING CONTENTS and datafiles;
drop tablespace <job_store_ts> INCLUDING CONTENTS and datafiles;
drop tablespace <job_lob_ts> INCLUDING CONTENTS and datafiles;
drop tablespace <job_tbs_ts> INCLUDING CONTENTS and datafiles;
drop tablespace <svc_ts> INCLUDING CONTENTS and datafiles;
```

Data Management Assembly for Oracle Data Integrator Uninstall

 **Note:**

This section is applicable only to uninstall the Data Management Assembly only from the development environment.

- Steps

- Execute the following commands to drop user schemas by connecting to the system user. If you have installed the Data Model Assembly, replace the user schema name and tablespace names with the values provided during the installation.

```
drop user <HCD_WORK_REP_80> cascade;
drop user <HCD_MASTER_REP_80> cascade;
drop user <WIL_WORK_REP_80> cascade;
drop user <TL_MASTER_REP_80> cascade;
drop user <CDM_WORK_REP_80> cascade;
drop user <TL_WORK_REP_80> cascade;
drop user <WIL_MASTER_REP_80> cascade;
drop user <CDM_MASTER_REP_80> cascade;
drop user <WIL_HMC80> cascade;
drop user <HCD_HMC80> cascade;
drop tablespace <hmc_temp80> INCLUDING CONTENTS and datafiles;
drop tablespace <odirep_temp80> INCLUDING CONTENTS and datafiles;
drop tablespace <odirep_ts80> INCLUDING CONTENTS and datafiles;
drop tablespace <hmc_ts80> INCLUDING CONTENTS and datafiles;
drop tablespace <wil_odi_ts> INCLUDING CONTENTS and datafiles;
drop tablespace <hcd_odi_ts> INCLUDING CONTENTS and datafiles;
drop tablespace <cdm_odi_ts> INCLUDING CONTENTS and datafiles;
drop tablespace <tl_odi_ts> INCLUDING CONTENTS and datafiles;
commit;
```

- Steps

Drop the RCU repository:

1. Start the RCU from the terminal:

```
cd WLS_HOME/oracle_common/bin/  
./rcu
```

2. In the Welcome screen, click **Next**.
3. Select **Drop Repository** and click **Next**.
4. Fill in the following values:
 - **Database Type:** eg. Oracle Database
 - **Host Name:** Host where the database is running
 - **Port:** Oracle Database service listener port
 - **Service Name:** Oracle Database service name
 - **User Name:** User name with SYSDBA privilege
 - **Password:** Password for the above sysdba user
 - Role: SYSDBAClick **Next**.
5. Choose the existing RCU prefix created during the Oracle Data Integrator Data Assembly Installation to drop and select all the components in the bottom table and click **Next**.
6. Click **Drop** to drop all of the schemas with the selected prefix.
7. After the drop is completed, click **Finish**.

Navigate to the Oracle Data Integrator domains directory and drop all the Oracle Healthcare Foundation domain folders created during the Oracle Healthcare Foundation installation. For example:

```
cd $ODI_HOME/user_projects/domains  
rm -rf ${RCU_PREFIX}_WIL_domain_01  
rm -rf ${RCU_PREFIX}_AT_domain_01  
rm -rf ${RCU_PREFIX}_CDM_domain_01  
rm -rf ${RCU_PREFIX}_TL_domain_01
```

Data Management Assembly for Informatica Uninstall

Note:

This section is applicable only to uninstall the Data Management Assembly only from the development environment.

- Steps

- Execute the following commands to drop user schemas by connecting to the system user.

```
drop user <WIL_HMC_USR> cascade;
drop user <WIL_INFA_REP_DB_USER> cascade;
drop user <AT_HMC_USR> cascade;
drop user <AT_INFA_REP_DB_USER> cascade;
drop user <CDM_INFA_REP_DB_USER> cascade;
drop tablespace <INFA_REP_TBSP> INCLUDING CONTENTS and datafiles;
drop tablespace <INFA_REP_TMP_TBSP> INCLUDING CONTENTS and datafiles;
drop tablespace <HMC_SCHEMA_TBSP> INCLUDING CONTENTS and datafiles;
drop tablespace <HMC_SCHEMA_TMP_TBSP> INCLUDING CONTENTS and datafiles;
commit;
```

- Log in to the Informatica Admin console and delete the following repositories and integration services:

- Repositories
 - *WIL_REP_NAME*
 - *AT_REP_NAME*
 - *CDM_REP_NAME*
- Integration Services
 - *WIL_INT_SRVC*
 - *AT_INT_SRVC*
 - *CDM_INT_SRVC*

Note:

- Ensure that there are no db (.dbf files) files in *INSTALL_HOME*. If they exist, do not execute the following command:

```
rm -r INSTAL_HOME
```

Contact the Database Administrator for guidance.

- Back up any user-specific files (apart from installer default files) in the installation directory.

Middle-Tier Uninstall

 **Note:**

In case of failure, always uninstall the middle-tier before re-running the middle-tier installer.

Steps

- On the primary node Oracle WebLogic Server machine, stop all managed servers, the node manager, and the administration server for `oh_domain`. Refer to the *Oracle Fusion Middleware Administering Server Startup and Shutdown for Oracle WebLogic Server* (<https://docs.oracle.com/en/middleware/fusion-middleware/weblogic-server/12.2.1.4/start/index.html>) for details.
- If you installed the Middle-Tier on secondary nodes, stop the node manager for `oh_domain` on these machines. Refer to the *Oracle Fusion Middleware Administering Server Startup and Shutdown for Oracle WebLogic Server* (<https://docs.oracle.com/en/middleware/fusion-middleware/weblogic-server/12.2.1.4/start/index.html>) for details.
- Make sure that no processes related to `oh_domain` are running.
- Log in to the primary node Oracle WebLogic Server machine and:
 1. Make a backup of the `WLS_HOME/user_projects` directory.
 2. Remove the `WLS_HOME/user_projects/domains/oh_domain` directory.
 3. Remove the `WLS_HOME/user_projects/applications/oh_domain` directory.
 4. Make a backup of `WLS_HOME/domain-registry.xml`.
 5. Remove the **oh_domain** entry from `WLS_HOME/domain-registry.xml`.
- On any secondary nodes where you installed the Middle Tier, log in to the Oracle WebLogic Server machine and:
 1. Make a backup of the `WLS_HOME/user_projects` directory.
 2. Remove the `WLS_HOME/user_projects/domains/oh_domain` directory.
 3. Remove the `WLS_HOME/user_projects/applications/oh_domain` directory.
 4. Make a backup of `WLS_HOME/domain-registry.xml`.
 5. Remove the **oh_domain** entry from `WLS_HOME/domain-registry.xml`.
 6. Remove the `WLS_HOME/user_projects/templates` directory.

- Steps

Drop the RCU repository:

1. Start the RCU from the terminal:

```
cd WLS_HOME/oracle_common/bin
./rcu
```

2. In the Welcome screen, click **Next**.

3. Select **Drop Repository** and click **Next**.

4. Fill in the following values:

- Database Type: eg. Oracle Database
- Host Name: Host where the database is running
- Port: Oracle Database service listener port
- Service Name: Oracle Database service name
- User Name: User name with SYSDBA privilege
- Password: Password for the above sysdba user
- Role: SYSDBA

Click **Next**.

5. Choose **Select existing prefix** for your drop and select all of the components in the bottom table. Click **Next**.
 6. Click **Drop** to drop all the schemas with the selected prefix.
 7. After the drop is completed, click **Finish**.
-

Part IV

Troubleshooting

Chapters in this part:

- [Data Model Troubleshooting](#)
- [Data Management Assembly for Oracle Data Integrator Troubleshooting](#)
- [Data Management Assembly for Informatica Troubleshooting](#)
- [Middle-Tier Troubleshooting](#)
- [Upgrade failed with "Bad version number in .class file occurred"](#)
Revise paths to resolve "bad version number" upgrade errors.
- [Troubleshooting the JAVA_HOME Error](#)

Upgrade failed with "Bad version number in .class file occurred"

Revise paths to resolve "bad version number" upgrade errors.

When attempting to install the Data Model, the following error occurs:

```
Exception java.lang.UnsupportedClassVersionError: Bad version number
in .class file occurred.
java.lang.UnsupportedClassVersionError: Bad version number in .class file at
java.lang.ClassLoader.defineClass1(Native Method)
```

To address this error :

1. Source the environment with the path to the Java Development Kit (JDK) 1.8 location.
2. Use a new Data Model Home instead of the old 8.0.x "Data Model Home" folder.
3. Create a new Home for "Data Management Assembly" and "Middle-Tier" Upgrade as well.

Troubleshooting the JAVA_HOME Error

The OHF installer gives an error indicating that the jdk is not accessible if JDK updates are applied after the Oracle Fusion Middleware applications are installed.

To address this error:

1. For information on working around this error, see: <https://docs.oracle.com/en/middleware/fusion-middleware/12.2.1.4/infup/shared-updating-jdk-installing-and-configuring-oracle-fusion-middleware-product.html#GUID-4230A928-7BE8-4D23-B8F9-1CB2D4EDEC33>

2. If the OHF installer is not launching due to a JDK not found error, then run OHF installer with this command:

```
./runInstaller.sh jreLoc <jre_home directory path>
```

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Data Model Troubleshooting

Review the following:

- [Installation Log Files](#)

Installation Log Files

While installing the Data Model, the installer generates the following log files:

Table 19-1 Installation Log Files

File Name	Description
<code>installActionstimestamp.log</code>	Records the actions of the installer and can be used to diagnose issues with the installer.
<code>oralInstalltimestamp.out</code>	Records the output of the SQL scripts run by the installer. Oracle Database objects are installed using the Python framework.
<code>oralInstalltimestamp.err</code>	Records the errors from the SQL scripts run by the installer. You can ignore the following error: <pre>java.io.FileNotFoundException: /INSTALL_HOME/ inventory/Components21/ oracle.hsgbu.hc.datamodel/8.2.1.0.0/ context.xml</pre>
<code>INSTALL_HOME/dm/install.err</code>	The log files are time stamped and each installation session creates a new log file. On a Linux machine, the log files are located at <code>\$ORACLE_BASE/oraInventory/logs</code> . For example, <code>/u01/app/oraInventory/logs</code> . Contains any SQL errors. Oracle Database objects are installed using the Python framework and the error logging is redirected to this location.
<code>INSTALL_HOME/reports/dm_install<timestamp>.html</code>	Contains the installation summary for the Data Model installation.

If the installation fails, check the log files for errors. You must fix the issues and rerun the installer from the installation home location.

While reporting any problems that occur during installation, make sure that you include all the above log files. Check which components were installed successfully using the following query by connecting to the enterprise schema:

```
Select * from W_EHA_PRODUCT_VERSION
```

Send the result of the query when reporting any problems to Oracle support.

Data Management Assembly for Oracle Data Integrator Troubleshooting

Review the following:

- [Installation Log Files](#)
- [Troubleshooting Timezone Errors](#)
- [Troubleshooting Guidelines](#)

Installation Log Files

While installing the Data Management Assembly, the installer generates the following log files. When the installer is running the python script, the execution log is redirected to the below log files:

Table 20-1 Installation Log Files

File Name	Description
<code>installActiontimestamp.log</code>	Records the action of the installer and can be used to diagnose issues with the installer.
<code>oraInstalltimestamp.out</code>	Records the output of SQL scripts run by the installer.
<code>oraInstalltimestamp.err</code>	Records the errors from the SQL scripts run by the installer.
	The log files are time stamped and each installation session creates a new log file.
	On a Linux machine, the log files are located at <code>\$ORACLE_BASE/oraInventory/logs</code> .
	For example, <code>/u01/app/oraInventory/logs</code> .

When the installer runs the `ksh` script, the execution log is redirected to the below log files:

- `INSTALL_HOME/dma_odi_master_install/dmalogs/tmplogs/script_name.error` = Contains an error file if the script is not executed successfully.
- `INSTALL_HOME/dma_odi_master_install/dmalogs/dma_etl_install.log` = Contains a consolidated log file that is archived to **`INSTALL_HOME/dma_odi_master_install/dmalogs/tmplogs/`** with the time stamp for next execution of the installer. In case of restart, logs are appended to the existing `dma_etl_install.log` file.
- `INSTALL_HOME/dma_odi_master_install/dmalogs/tmplogs/script_name.done` = Indicates that the script is executed successfully.

The installer generates the following report:

- `INSTALL_HOME/reports/dma_odi_installtime_stamp.html` = Contains the installation summary of the Data Management Assembly for Oracle Data Integrator installation.

Troubleshooting Timezone Errors

If you encounter the following error during installation:ORA-39367: Statistics are being skipped. Cannot locate the time zone version 26 file. Refer to the workaround mentioned on My Oracle Support (MOS):

<https://support.oracle.com/epmos/faces/DocumentDisplay?id=1614247.1>

Troubleshooting Guidelines

- The OUI installer does not fix any issues automatically. If the installation fails, you must verify and fix the issues before restarting the installer.
- You must provide unique repository schema names. The installer imports the ETL metadata into these schemas. However, upon restarting the installer for any failures, you must specify the same values that were entered for the previous execution.
- When reporting any problems that occur during installation, make sure that you include all the above log files. Check which components were installed successfully using the following query by connecting to the enterprise schema:

```
Select * from W_EHA_PRODUCT_VERSION
```

Send the result of the query when reporting any problems to Oracle support.

21

Data Management Assembly for Informatica Troubleshooting

Review the following:

- [Installation Log Files](#)
- [Troubleshooting Timezone Errors](#)
- [Troubleshooting Guidelines](#)
- [Troubleshooting](#)

Installation Log Files

While installing Data Management Assembly, the installer generates the following log files. When the installer is running the python script, the execution log is redirected to the below log files:

Table 21-1 Installation Log Files

File Name	Description
<code>installActiontimestamp.log</code>	Records the action of the installer and can be used to diagnose issues with the installer.
<code>oraInstalltimestamp.out</code>	Records the output of SQL scripts run by the installer.
<code>oraInstalltimestamp.err</code>	Records the errors from the SQL scripts run by the installer.

The log files are time stamped and each installation session creates a new log file.

On a Linux machine, the log files are located at `$ORACLE_BASE/oraInventory/logs`.

For example, `/u01/app/oraInventory/logs`.

When the installer is running the ksh script, the execution log is redirected to the below log files:

- `INSTALL_HOME/dma_infa_master_install/dmalogs/dma_etl_install.log` = Contains a consolidated log file that is archived to `INSTALL_HOME/dma_infa_master_install /dmalogs/tmplogs/` with the time stamp for next execution of the installer. In case of restart, logs are appended to the existing `dma_etl_install.log` file.
- `INSTALL_HOME/dma_infa_master_install/dmalogs/tmplogs/script_name.error` = Contains an error file if the script is not executed successfully.
- `INSTALL_HOME/dma_infa_master_install/dmalogs/tmplogs/script_name.done` = Indicates that the script is executed successfully.

The installer generates the following reports:

- `ORACLE_HOME/reports/dma_infa_installtimestamp.html` = Contains the installation summary of the Data Management Assembly for Informatica installation.

Troubleshooting Timezone Errors

If you encounter the following error during installation:ORA-39367: Statistics are being skipped. Cannot locate the time zone version 26 file. Refer to the workaround mentioned on My Oracle Support (MOS):

<https://support.oracle.com/epmos/faces/DocumentDisplay?id=1614247.1>

Troubleshooting Guidelines

- The OUI installer does not fix any issues automatically. If the installation fails, you must verify and fix the issues before restarting the installer.
- You must provide unique repository schema names. The installer imports the ETL metadata into these schemas. However, upon restarting the installer for any failures, you must specify the same values that were entered for the previous execution.
- When reporting any problems that occur during installation, make sure that you include all the above log files. Check which components were installed successfully using the following query by connecting to the enterprise schema:

```
Select * from W_EHA_PRODUCT_VERSION
```

Send the result of the query when reporting any problems to Oracle support.

Troubleshooting

- If the installer fails while executing the python script:
 1. Review the logs.
 2. Analyze and fix the issue.
 3. Restart the installer with same installation home parameters.

For example, if the password expiry notification is displayed, reset the password and restart the installer.
- If the installer fails while executing the ksh script:
 1. Review the logs.
 2. Analyze and fix the issue.
 3. Restart the installer with same installation home parameters.

For example, if a particular directory does not have the write permission, provide the permission and restart the installer.
- To skip any execution process, create a zero byte **done** file in the temp directory using the following steps:
 1. Navigate to the following folders and select the appropriate script:
`INSTALL_HOME/dma_infa_master_install/dmascripts/`

2. Remove **.ksh** from the file, append **.done** to the file, and place a zero byte file in the temp log folder.
`INSTALL_HOME/dma_infa_master_install/dmalogs/tmplogs`
- Unable to upgrade INFA repository without being in exclusive mode
 1. Connect to the Informatica Admin console.
 2. Connect to repository services.
 3. Select the **Properties** tab, then **Repository Properties update** and then **Operating Mode as Normal**.
 4. Refresh the repository services.

Middle-Tier Troubleshooting

Review the following:

- [Installation Log Files](#)
- [Troubleshooting the Primary Node Installation](#)
- [Troubleshooting the Secondary Node Installation](#)
- [Troubleshooting Coherence Cluster Errors](#)
- [Troubleshooting the JAVA_HOME Error](#)

Installation Log Files

The installation log files are located at `$ORACLE_BASE/oraInventory/logs`. For example: `/u01/app/oraInventory/logs`.

When installing the Oracle Healthcare Foundation Middle-Tier, the installer generates the following installation log files:

Log File	Description
<code>installActiontimestamp.log</code>	Records the actions of the installer and can be used to diagnose issues with the installer.
<code>oralInstalltimestamp.out</code>	Records the outputs of all the scripts run by the installer.
<code>oralInstalltimestamp.err</code>	Records the errors from all the scripts run by the installer.

The log files are time stamped and each installation session creates a new set of log files.

An installation summary with all of the parameters provided for the installer is saved at:

`INSTALL_HOME/reports/dps_install_timestamp.html`



Note:

When reporting any problems that occur during Middle-Tier installation, make sure that you include all the above log files.

Troubleshooting the Primary Node Installation

Issue	Fix
The installer fails due to the time taken by the node manager process to start.	Check the machine network configuration to make sure that other processes are listening on same port, and that the user running the installer has the required file system permissions.

Issue	Fix
The AdminServer fails to start because the node manager process is not available.	Verify if the node manager process is still running.
A wrong database configuration is provided.	Modify the database configuration from the Oracle WebLogic Server Admin console.

Troubleshooting the Secondary Node Installation

Issue	Fix
The installer fails to connect to the AdminServer	Verify if the AdminServer is running on the primary node by accessing the Oracle WebLogic Server Admin console from the secondary node.
The installer fails due to a wrong FMW path.	Make sure Oracle WebLogic Server is installed in the same file system location as on the primary node.

Troubleshooting Coherence Cluster Errors

Sometimes, a primary or secondary node may not start due to one of the following errors in the Oracle WebLogic Server log files:

- `Warning (thread=Cluster, member=n/a): Received a discovery message that indicates the presence of an existing cluster that does not respond to join requests; this is usually caused by a network layer failure.`
- `Warning (thread=Cluster, member=n/a): Delaying formation of a new cluster; IpMonitor failed to verify the reachability of senior Member...`
`...`
`If this persists it is likely the result of a local or remote firewall rule blocking either ICMP pings, or connections to TCP port 7.`

To overcome these errors, make sure that the DNS resolutions for the primary and secondary node machines lead to the same IP address when you ping the machines from the local system or from other systems.

Troubleshooting the JAVA_HOME Error

The OHF installer gives an error indicating that the jdk is not accessible if JDK updates are applied after the Oracle Fusion Middleware applications are installed.

To address this error:

1. For information on working around this error, see: <https://docs.oracle.com/en/middleware/fusion-middleware/12.2.1.4/infup/shared-updating-jdk-installing-and-configuring-oracle-fusion-middleware-product.html#GUID-4230A928-7BE8-4D23-B8F9-1CB2D4EDEC33>

2. If the OHF installer is not launching due to a JDK not found error, then run OHF installer with this command:

```
./runInstaller.sh jreLoc <jre_home directory path>
```

A

Configuration Guide for Exadata

This guide describes the Exadata configuration for Oracle Healthcare Foundation. It contains minimum parameter requirements for a large deployment of about 10 million patients.

The contents of this guide apply only to the Oracle Healthcare Foundation ETL platform and does not consider any application stack.

This guide contains the following sections:

- [System Configuration](#)
- [Application Considerations](#)

System Configuration

Review the following:

- [Exadata Component Configuration](#)
- [Database Configuration](#)

Exadata Component Configuration

Table A-1 Exadata Components and Configuration

Component	Configuration
Exa check	Run the Exachk utility and verify the adherence to the recommended Exadata best practices. For more information, see article ID 1070954.1 on My Oracle Support (https://support.oracle.com).
RAC	Use defaults and native load balance.
High performance disks	We recommend 15000 revolutions per minute (RPM) high performance disks.

Database Configuration

Review the following:

- [Database I/O Calibration](#)
- [Resource Manager](#)
- [Database Parameters](#)
- [Parallel Degree Policy](#)
- [Oracle Automatic Stats Job](#)
- [Tablespace and Redo Log Recommendations](#)

- [ASM Recommendations](#)
- [Maximum Availability Recommendations](#)

Database I/O Calibration

Run the I/O calibration tool for each database to set the automatic degree of parallelism.

For more information on I/O calibration and automatic degree of parallelism, see the *I/O Calibration Inside the Database* section in the *Oracle 12.2 Database Performance Tuning Guide* as well as article IDs 727062.1 and 1269321.1 on My Oracle Support (<https://support.oracle.com>).

Resource Manager

Use the Oracle Resource Manager to manage and prioritize the resource allocation for different applications, databases, instances, users, and so on.

For more information, see article ID 1339769.1 on My Oracle Support (<https://support.oracle.com>) and the White Paper *Using Oracle Database Resource Manager*.

Database Parameters

Table A-2 Recommended Settings for Database Parameters

Database Parameter	Recommended Settings
processes	1500
parallel_max_servers	500-1280
parallel_min_servers	128
parallel_degree_policy	LIMITED
parallel_adaptive_multi_user	TRUE
parallel_degree_limit	CPU
parallel_force_local	FALSE
sga_target	40 GB
sga_max_size	40 GB
pga_aggregate_target	If HugePages is used, set this parameter to 20 GB. Else, set it to 12 GB.
memory_target	If HugePages is used, set this parameter to 0. Else, set it to 60 GB.
memory_max_target	If HugePages is used, set this parameter to 0. Else, set it to 60 GB.
db_block_size	8192
workarea_size_policy	AUTO
db_cache_size	2 GB
shared_pool_size	2 GB
optimizer_secure_view_merging	False
_px_join_skew_handling	FALSE

Table A-2 (Cont.) Recommended Settings for Database Parameters

Database Parameter	Recommended Settings
result size max	0
_optimizer_dsdire_usage_control	0

Parallel Degree Policy

Set the `parallel_degree_policy` parameter to `LIMITED` to use the automatic degree of parallelism and smart scans.

- The Omics Data Bank (ODB) application uses Exadata SQL processing innovations. Setting this parameter to `LIMITED` disables the in-memory parallel execution that leads to better use of smart scans.
- Statement queuing is disabled to avoid any waits under heavy load where there are chances of draining all PX servers thereby impacting response times.

Parallel Degree Limit

Set the `parallel_degree_limit` parameter to `CPU` or below to improve the response time. A resource-intensive query may request too many PX servers, draining available resources. Use the Resource Manager to limit the resource allocation to intensive or long running processes.

Adaptive Tuning

Set the `parallel_adaptive_multi_user` parameter to `TRUE`, which lets Oracle downgrade PX requests under stress. You should not over-burden the database CPUs by allocating all requested PX servers, especially when the database nodes are running at over 80% CPU load.

Alternatively, you can use the Resource Manager to control resources.

Parallel Max Servers

Set the `parallel_max_servers` parameter between 500-1280 to make sure that there are enough PX server processes to allocate to concurrent user requests. In benchmark tests, this was set to 512.

Parallel Min Servers

Set the `parallel_min_servers` parameter to `CPU` to ensure the availability of a specific number of PX server processes at startup.

Memory Settings

Set the Automatic Memory Management (AMM) using the `memory_target` parameter to 60 GB.

Also, you have to set the Program Global Area (PGA) (`pga_aggregate_target` parameter) to a minimum of 20/10 GB depending upon whether HugePages is used and the System Global Area (SGA) (`sga_max_size` parameter) to a minimum of 40 GB.

 **Note:**

If you use HugePages, set all DB memory parameters appropriately as AMM does not work with HugePages. If you encounter any shared pool issues with HugePages, switch to alternate recommended settings.

Processes

Set the processes parameter to a sizeable number based on the expected concurrency. The minimum value should be 1024. In internal benchmarks, it was set to 2000 based on concurrent loads.

Oracle Automatic Stats Job

Disable the Oracle Automatic Stats job if it is configured.

Automatic statistics scheduler jobs run under different maintenance windows (such as daily, weekly, and so on). This may potentially generate bad statistics due to data availability (for example, the application may have transient data or no data in stage tables).

Tablespace and Redo Log Recommendations

Table A-3 Tablespace Recommendations

Tablespace	Recommended
TEMP	500 GB across all nodes.
UNDO	500 GB per instance.

 **Note:**

Use the BigFile tablespace for TEMP, UNDO, and user (HDI, HDM, HCD, CDM, and ODB) tablespaces to ease tablespace maintenance.

Configure the redo logs to have at least five groups per instance with each member having a size of 500 MB or higher.

ASM Recommendations

Redundancy - Oracle uses NORMAL redundancy for all benchmarks. You can use HIGH redundancy as per the data mirroring requirements. However, note that the usable storage is lower when using ASM with HIGH redundancy disk groups.

ASM AU Size - We recommend you use the default setting for the disk sequential reads.

Maximum Availability Recommendations

You may want to consider the recommendations in the White Paper *Best Practices for Database Consolidation on Exadata Database Machine*.

Application Considerations

Review the following:

- [General Recommendations](#)
- [Oracle Healthcare Foundation](#)
- [Cohort Data Model](#)
- [Omics Loaders](#)

General Recommendations

- **Oracle Table or Schema Statistics:**
Configure the scheduled jobs to collect the Oracle statistics using the following method. This should be configured after the initial load is complete.

```
eBEGINDBMS_SCHEDULER.create_job ( job_name => 'OWNER_STATS', job_type =>
'PLSQL_BLOCK', job_action => q'[BEGIN dbms_stats.gather_schema_stats
(ownname=> 'OWNER', method_opt=> 'for all columns size auto',
estimate_percent=> dbms_stats.auto_sample_size, cascade=>true,
block_sample => true, options => 'GATHER STALE'); END;]', start_date =>
sysdate, repeat_interval => 'FREQ=DAILY;BYHOUR=0', end_date => NULL, enabled
=> TRUE, comments => 'Table stats gathering job for OWNER.'];END;/
```

- **Data files or flat files** (for example, Oracle Database result and reference data files) should be staged on Database File System (DBFS) as the Oracle Database provides much better security, availability, robustness, transactions, and scalability than the traditional file systems. For setting up DBFS, see article ID 1054431.1 on My Oracle Support (<https://support.oracle.com>).

Oracle Healthcare Foundation

- **Oracle Table or Schema Statistics:**
HDI source tables should have proper table statistics before the initial load. See *Oracle Healthcare Foundation Administrator's Guide* for details on gathering statistics and for ETL-specific recommendations regarding parallel options.
- **Oracle Healthcare Foundation Data loads:**
 - When you load HDI data, make sure that you load data using the direct path insert to obtain a high compression ratio. For more information about improving INSERT performance with Direct-Path INSERT, see the *Oracle Argus Insight Database Administrator's Guide*, and implement accordingly for your ETL loads to HDI.
 - If direct path insert is not possible due to code or ETL limitations, rebuild the tables or partitions using the `alter table .. move ..` SQL command (indexes on these tables should be rebuilt) to achieve better compression. However, this leads to regular maintenance of these tables to achieve maximum compression. Oracle recommends that you create scripts or ETL to support direct path insert rather than

resorting to regular maintenance. For more details, see *Oracle Healthcare Foundation Programmer's Guide*.

Cohort Data Model

See *Oracle Health Sciences Translational Research Center Installation Guide* for Exadata-specific configurable partitioning and parallel options.

Omics Loaders

- Run the result files in parallel to achieve maximum throughput.

 **Note:**

You can execute maximum 4gVCF loaders on a single Exa node.

- See [Data Model Installation](#) for Exadata-specific configurable partitioning and parallel options.

B

Configuration Guide for Non-Exadata

This guide details the Non-Exadata configuration for the Oracle Healthcare Foundation. It contains minimum parameter requirements for a medium deployment (about 3 million patients).

The contents of this guide apply only to the Oracle Healthcare Foundation ETL platform and does not consider any application stack.

This guide contains the following sections:

- [Database Configuration](#)
- [Application Considerations](#)

Database Configuration

Review the following:

- [Database I/O Calibration](#)
- [Resource Manager](#)
- [Database Parameters](#)
- [Parallel Degree Policy](#)
- [Oracle Automatic Stats Job](#)
- [Tablespace and Redo Log Recommendations](#)
- [ASM Recommendations](#)

Database I/O Calibration

Run the I/O calibration tool for each database to set the automatic degree of parallelism.

For more information on I/O calibration and automatic degree of parallelism, see the *I/O Calibration Inside the Database* section in *Oracle 12.2 Database Performance Tuning Guide* as well as article IDs 727062.1 and 1269321.1 on My Oracle Support (<https://support.oracle.com>).

Resource Manager

Use the Oracle Resource Manager to manage and prioritize the resource allocation for different applications, databases, instances, users, and so on.

For more information, see article ID 1339769.1 on My Oracle Support (<https://support.oracle.com>) and the White Paper *Using Oracle Database Resource Manager*.

Database Parameters

Table B-1 Recommended Settings for Database Parameters

Database Parameter	Recommended Settings
processes	2000
parallel_max_servers	384
parallel_min_servers	32
parallel_degree_policy	LIMITED
parallel_adaptive_multi_user	TRUE
parallel_degree_limit	16
sga_target	20 GB
sga_max_size	20 GB
pga_aggregate_target	If HugePages is used, set this parameter to 20 GB. Else, set it to 10 GB.
memory_target	If HugePages is used, set this parameter to 0. Else, set it to 40 GB.
memory_max_target	If HugePages is used, set this parameter to 0. Else, set it to 60 GB.
db_block_size	8000
workarea_size_policy	AUTO
db_cache_size	2 GB
shared_pool_size	2 GB
optimizer_secure_views_merging	FALSE
_px_join_skew_handling	FALSE
result_size_max	0
_optimizer_dskdir_usage_control	0

Parallel Degree Policy

Set the `parallel_degree_policy` parameter to `LIMITED` to use the automatic degree of parallelism.

Statement queuing is disabled to avoid any waits under heavy load where there are chances of draining all PX servers, thereby impacting response times.

- [Parallel Degree Limit](#)

- [Adaptive Tuning](#)
- [Parallel Max Servers](#)
- [Parallel Min Servers](#)
- [Memory Settings](#)
- [Processes](#)

Parallel Degree Limit

Set the `parallel_degree_limit` parameter to 16 or below to improve the response time. A resource intensive query may request too many PX servers, draining available resources. Use the Resource Manager to limit the resource allocation to intensive or long running processes.

Adaptive Tuning

Set the `parallel_adaptive_multi_user` parameter to TRUE, which lets Oracle downgrade PX requests under stress. You should not over-burden the database (DB) CPUs by allocating all requested PX servers, especially when the DB nodes are running over 80% CPU consumption.

Alternatively, you can use the Resource Manager to control resources.

Parallel Max Servers

Set the `parallel_max_servers` parameter to 384 or less to make sure that there are enough PX server processes to allocate to concurrent user requests.

Parallel Min Servers

Set the `parallel_min_servers` parameter to 32 to ensure the availability of a specific number of PX server processes at startup.

Memory Settings

Set the Automatic Memory Management (AMM) using the `memory_target` parameter to 40 GB.

You should also set the Program Global Area (PGA) (`pga_aggregate_target` parameter) to a minimum of 20/10 GB depending on whether HugePages is used and the System Global Area (SGA) (`sga_max_size` parameter) to a minimum of 20 GB.



Note:

If you use HugePages, set all DB memory parameters appropriately as AMM does not work with HugePages. If you encounter any shared pool issues with HugePages, switch to alternate recommended settings.

Processes

Set the processes parameter to a sizeable number based on the expected concurrency. In internal benchmarks, it was set to 2000 based on concurrent loads.

Oracle Automatic Stats Job

Disable the Oracle Automatic Stats Job if it is configured.

Automatic statistics scheduler jobs run under different maintenance windows (such as daily, weekly, and so on). This may potentially generate bad statistics due to data availability (for example, an application may have transient data or no data in stage tables).

Tablespace and Redo Log Recommendations

Table B-2 Tablespace Size Recommendations

Tablespace	Recommended Size
TEMP	500 GB per RAC node
UNDO	500 GB per RAC node



Note:

Use the BigFile tablespace for TEMP, UNDO, and user (HDI, HDM, HCD, CDM, and ODB) tablespaces to ease tablespace maintenance.

Configure the redo logs to have at least five groups per instance with each member having a size of 500 MB or higher.

ASM Recommendations

Redundancy - Oracle uses NORMAL redundancy for all benchmarks. You can use HIGH redundancy as per the data mirroring requirements. However, note that the usable storage is lower when using ASM with HIGH redundancy disk groups.

ASM AU Size - We recommend you use the default setting for the disk sequential reads.

Application Considerations

Review the following:

- [General Recommendations](#)
- [Oracle Healthcare Foundation](#)
- [Cohort Data Model](#)
- [Omics Loaders](#)

General Recommendations

- Oracle Table or Schema Statistics:
Configure the scheduled jobs to collect the Oracle statistics using the following method. This should be configured after the initial load is complete.

```
BEGINDBMS_SCHEDULER.create_job ( job_name => 'OWNER_STATS', job_type =>
'PLSQL_BLOCK', job_action => q'[BEGIN dbms_stats.gather_schema_stats
(ownname=> 'OWNER', method_opt=> 'for all columns size auto',
estimate_percent=> dbms_stats.auto_sample_size, cascade=>true,
block_sample => true, options => 'GATHER STALE'); END;]', start_date =>
sysdate, repeat_interval => 'FREQ=DAILY;BYHOUR=0', end_date => NULL, enabled
=> TRUE, comments => 'Table stats gathering job for OWNER.');
```

- Data files or flat files (for example, ODB result and reference data files) should be staged on Database File System (DBFS) as the Oracle Database provides much better security, availability, robustness, transactions, and scalability than the traditional file systems. For setting up DBFS, see article ID 1054431.1 on My Oracle Support (<https://support.oracle.com>).

Oracle Healthcare Foundation

Oracle Table or Schema Statistics:

HDI source tables should have proper table statistics before the initial load. See *Oracle Healthcare Foundation Administrator's Guide* for ETL-specific recommendations regarding parallel options.

Cohort Data Model

See *Oracle Healthcare Translational Research Installation Guide* for Non-Exadata specific configurable partitioning and parallel options.

Omics Loaders

- Run the result files in parallel to achieve maximum performance.
- See [Data Model Installation](#) for Non-Exadata specific configurable partitioning and parallel options.