

Oracle® Healthcare Precision Medicine

Installation Guide

Release 1.0

E75723-02

July 2016

Oracle Healthcare Precision Medicine Installation Guide, Release 1.0

E75723-02

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Preface

This document describes how to install and setup Oracle Healthcare Precision Medicine. The user installing Oracle Healthcare Foundation should have some knowledge of WebLogic and Linux.

Audience

This document is intended for:

- The implementation team that wants to install OHPM

Disclaimer

The Oracle Healthcare Precision Medicine software is only a search tool and is not intended to, and must not replace the clinician's judgment or experience. Furthermore, the healthcare professional using this search tool should employ their professional judgment concerning the reliability and accuracy of the information in the various knowledge databases that are employed or selected as content for reports generated using Oracle Healthcare Precision Medicine.

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

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

To register for My Oracle Support:

1. Open a Web browser to <http://support.oracle.com>.
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3. Follow the instructions on the registration page.

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To sign in to My Oracle Support:

1. Open a Web browser to <http://support.oracle.com>.
2. Click **Sign In**.
3. Enter your user name and password.
4. Click **Go** to open the My Oracle Support home page.

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2. Locate the Search box in the upper right corner of the My Oracle Support page.
3. Click the sources icon to the left of the search box, and then select Article ID from the list.
4. Enter the article ID number in the text box.
5. Click the magnifying glass icon to the right of the search box (or press the Enter key) to execute your search.

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

- **Product Focus** — On the Knowledge page, you can drill into a product area through the Browse Knowledge menu on the left side of the page. In the Browse any Product, By Name field, type in part of the product name, and then select the product from the list. Alternatively, you can click the arrow icon to view the complete list of Oracle products and then select your product. This option lets you focus your browsing and searching on a specific product or set of products.
- **Refine Search** — Once you have results from a search, use the Refine Search options on the right side of the Knowledge page to narrow your search and make the results more relevant.
- **Advanced Search** — You can specify one or more search criteria, such as source, exact phrase, and related product, to find knowledge articles and documentation.

Finding Patches on My Oracle Support

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

To locate and download a patch:

1. Sign in to My Oracle Support at <http://support.oracle.com>.
2. Click the **Patches & Updates** tab.

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

- In the Patch ID or Number is field, enter the primary bug number of the patch you want. This option is useful if you already know the patch number.
 - To find a patch by product name, release, and platform, click the Product or Family link to enter one or more search criteria.
3. Click **Search** to execute your query. The Patch Search Results page opens.
 4. Click the patch ID number. The system displays details about the patch. In addition, you can view the Read Me file before downloading the patch.
 5. Click **Download**. Follow the instructions on the screen to download, save, and install the patch files.

Finding Documentation on Oracle Technology Network

The Oracle Technology Network Web site contains links to all the latest Oracle user and reference documentation. To find user documentation for Oracle products:

1. Go to the Oracle Technology Network at <http://www.oracle.com/technetwork/index.html> and log in.
2. Mouse over the Support tab, then click the **Documentation** hyperlink.
Alternatively, go to Oracle Documentation page at <http://www.oracle.com/technology/documentation/index.html>
3. Navigate to the product you need and click the link.
For example, scroll down to the Applications section and click Oracle Health Sciences Applications.
4. Click the link for the documentation you need.

Related Documents

For more information, see the following documents:

- *Oracle Healthcare Precision Medicine Installation Guide*
- *Oracle Healthcare Precision Medicine Administrator's Guide*
- *Oracle Healthcare Precision Medicine User's Guide*
- *Oracle Healthcare Precision Medicine Security Guide*
- *Oracle Healthcare Precision Medicine Release Notes*
- *Oracle Healthcare Precision Medicine Release Content Document*
- *Oracle Healthcare Precision Medicine Electronic Technical Reference Manual*

- *Oracle Healthcare Precision Medicine Third Party Licenses and Notices*

Conventions

The following text conventions are used in this document:

boldface - Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.

italic - Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.

`monospace` - Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

Installation Overview

This chapter describes the installation requirements for OHPM. It contains the following topics:

- [Section 1.1, "Supported Browser"](#)
- [Section 1.2, "Technology Stack"](#)
- [Section 1.3, "Before You Begin"](#)

1.1 Supported Browser

The supported browsers for OHPM are:

- Internet Explorer v11
- Google Chrome v49
- Mozilla Firefox v38
- Safari v9

1.2 Technology Stack

Following is the list of the required technology stack for OHPM:

- Oracle Linux 6.5 or 6.6 (64-bit) operating system (OS)
- Oracle Database 12.1.0.2.0 Enterprise Edition
- Oracle Fusion Middleware Infrastructure 12.1.3 with Oracle WebLogic server 12.1.3
- Oracle Application Development Framework (ADF) Runtime 12.1.3
- Java Development Kit (JDK) 1.7 for middleware
- Python 2.6.6

1.3 Before You Begin

OHPM requires the following pre-installation tasks to be completed:

1. Linux X-windows should be used for the Linux Oracle Universal Installer (OUI) installation (Linux Graphical User Interface).

Installation on the Database Tier

This chapter describes security considerations and the installation process for the database tier. It contains the following topics:

- [Section 2.1, "Prerequisites"](#)
- [Section 2.2, "Installing Oracle Healthcare Precision Medicine on the Database Tier"](#)

2.1 Prerequisites

The following list mentions the prerequisites for installing OHPM on the database tier:

1. Make sure that Oracle® Healthcare Foundation 7.0.1 Data Model is installed on the database server where you will be installing OHPM. For details on installing the OHF Data Model, see the *Oracle Healthcare Foundation Installation Guide 7.0.1*.
2. Apply patch 19710102 available on My Oracle Support.

2.2 Installing Oracle Healthcare Precision Medicine on the Database Tier

Perform the following steps to install OHPM in Typical Mode on the database tier:

1. Download the OHPM installation package from the Media Pack and extract the files into a directory.
2. Navigate to the `<media_pack_location>/` folder.
3. Using the following command, unzip the `opm_Linux-x64.zip` file to the folder where you want to launch the installer:

```
unzip -a OPM_Linux-x64.zip
```

4. Navigate to the `Disk1/install` folder.
5. Change the protection on files using the following command:

```
chmod 755 *
```

6. Start the Oracle Universal Installer (OUI) using the following command:
 - If the database server 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.

The Welcome screen appears.

7. Click **Next**. The Select a Product to Install screen appears.
8. Select the **Oracle Healthcare Precision Medicine DB Tier 1.0.0.0.0** option and click **Next**.

The Specify Home Details screen appears.
9. Enter the installation home name and location.
10. Click **Next**. The Verify Installation Prerequisites screen appears.
11. Verify if all the prerequisites are met before proceeding.
12. Click **Next**. The Oracle Client Home Configuration screen appears.
13. Specify the Oracle client home path. The installer validates this path.
14. Click **Next**. The DB Connection screen appears.
15. Enter values for the following fields:
 - Hostname - By default, the system host name appears
 - Port - By default, the port number is 1521. You can edit this field if required.
 - Service name
 - System user password
 - Sys user password
16. Click **Next**. The Schema Details screen appears.
17. Enter values for the following fields:
 - Omics data bank schema name (odb)
 - Omics data bank schema password
 - Cohort data mart schema name (cdm)
 - Cohort data mart schema password
 - Enterprise schema name
 - Enterprise schema password
18. Click **Next**. The Job Engine and Service Schema details screen appears.
19. Enter values for the following fields:
 - Job engine schema name
 - Job engine schema password
 - Services schema name
 - Services schema password
20. Click **Next**. The OPM Database Details screen appears.
21. Enter values for the following fields:
 - OPM schema name
 - OPM schema password
 - APP schema name
 - APP schema password

- Default tablespace for OPM schema
 - LOB tablespace for OPM schema
 - Index tablespace for OPM schema
 - Temp tablespace for OPM schema
22. Click **Next**. The OPM Database Verification screen appears.
 23. Verify all the details. To make any changes, click **Back**.
If all the details are correct, click **Next**. The Tablespace Data File Location screen appears.
 24. Specify the location of the tablespace data files. This is the directory on the database server where data files are created during installation.
 25. Click **Next**. The Summary screen appears.
 26. Click **Install**.
 27. After the installation is complete, the End of Installation screen appears.
 28. Click **Exit** after reviewing the installation information.
 29. At the confirmation prompt, click **Yes** to exit the installer.
 30. Review the generated installation log files for errors. Contact Oracle support, if necessary, to resolve any errors.

Installation on the Middle Tier

This section describes the installation and configuration steps for the middle tier. This chapter includes the following topics:

- [Section 3.1, "Prerequisites"](#)
- [Section 3.2, "Installation Log Files"](#)
- [Section 3.3, "Installing on the Primary Node"](#)
- [Section 3.4, "Installing on Secondary Node"](#)
- [Section 3.5, "Installing Oracle Healthcare Precision Medicine on the Middle Tier"](#)
- [Section 3.6, "Upgrading Oracle Healthcare Precision Medicine on the Middle Tier"](#)
- [Section 3.7, "Troubleshooting"](#)
- [Section 3.8, "Uninstalling Oracle Healthcare Precision Medicine"](#)

3.1 Prerequisites

The following list points out the prerequisites for installing OHPM on the middle tier. Check that these are completed before you start installation.

- JDK 1.7 is installed.
- Java Cryptography Extension (JCE) Unlimited Strength Jurisdiction Policy Files 7 are installed in JDK 1.7.
- Oracle Fusion Middleware Infrastructure (FMW) 12.1.3 is installed using JDK 1.7.
- Oracle Fusion Middleware is installed in the same system path on all machines in a distributed domain configuration.
- Patch 21983457—WebLogic Patch set update 12.1.3.0.6—is applied.
- WebLogic domain named `ohf_opm_domain` does not exist.
- OHPM database schemes are installed.

3.2 Installation Log Files

While installing Oracle Healthcare Foundation Data pipeline services, the installer generates the following log files:

- `installActions<timestamp>.log` - this log file records the action of the installer and can be used to diagnose any installer issues.

- `oraInstall<timestamp>.out` - this file records the output of all the scripts run by the installer.
- `oraInstall<timestamp>.err` - this file records the errors from all the 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`.

The installation summary with all parameters provided for the installer will be available at:

```
<INSTALL_HOME>/opmnt/ Oracle_Healthcare_Precision_Medicine_Middle_Tier_1.0.0.0_install_<timestamp>.html
```

While reporting any problems that might occur during OHPM installation, make sure that you include all the above log files in your report.

3.3 Installing on the Primary Node

The installer must be run first in the primary node configuration to create a new WebLogic domain named `ohf_opm_domain` with a cluster named `ohf_opm_cluster`. All managed servers that the installer creates will be part of this cluster. The installer deploys and configures the OHPM application.

3.4 Installing on Secondary Node

After the primary node installation is successful, you can run the installer in the secondary node configuration on different machines other than the primary node machine to scale the cluster `ohf_opm_cluster`.

However, this node is optional and required only if you want to create a WebLogic domain spread across multiple machines. The installer can be run in this node at any time to add more machines to the WebLogic domain.

3.5 Installing Oracle Healthcare Precision Medicine on the Middle Tier

Perform the following steps to install OHPM on the middle tier.

1. Download the OHPM installation package from the Media Pack and extract the files into a directory.
2. Navigate to the `<media_pack_location>/` folder.
3. Using the following command, unzip the `opm_Linux-x64.zip` file to the folder where you want to launch the installer:

```
unzip -a opm_Linux-x64.zip
```
4. Navigate to the `Disk1/install` folder.
5. Change the protection on files using the following command:

```
chmod 755 *
```
6. Start the Oracle Universal Installer (OUI) using the following command. WebLogic should be installed on the same machine where installer is running.

```
./runInstaller
```


The Welcome screen appears.

7. Click **Next**. The Select a Product to Install screen appears.
8. Select the **Oracle Healthcare Precision Medicine Middle Tier 1.0.0.0.0** option and click **Next**.

The Specify Home Details screen appears.

9. Enter the installation home name and location.
10. Click **Next**. The Choose Install Type screen appears.
11. Select **Yes** for a new install.

Select **No** and upgrade your existing installation. You can only upgrade from a successful installation. If the installation fails, follow the instructions in [Section 3.8, "Uninstalling Oracle Healthcare Precision Medicine"](#) and restart installation.

12. Click **Next**. The Verify Install Prerequisites screen appears.
13. Verify if all the prerequisites are met before proceeding.
14. Click **Next**. The Java Home configuration screen appears.
15. Specify the Java home path. The installer validates this path.
16. Click **Next**. The Oracle Fusion Middleware Home screen appears.
17. Specify the Fusion Middleware path. The installer validates this path.
18. Click **Next**. The Cluster Configuration screen appears.
19. Select **Yes** to create a domain and make the machine as primary node where the WebLogic AdminServer is located.

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.

20. Click **Next**. The AdminServer configuration screen appears.
21. Enter values for the following fields:
 - Listen address
 - Listen Port
 - SSL Listen Port
 - Username - WebLogic administrator user
 - Password - WebLogic administrator password
 - Verify password
22. Click **Next**. The Node Manager Configuration screen appears.
23. Enter values for the following fields:
 - Listen address
 - Listen port
 - Username - Node manager administrator user
 - Password - Node manager administrator password
 - Verify Password
24. Click **Next**. The Managed Server Configuration screen appears.
25. Enter values for the following fields:

- Number of servers managed 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 8001, three managed servers with listen ports 8001, 8002, 8003 are created.
26. Click **Next**. The FMW Repository Creation Utility (RCU) Configuration screen appears. Fusion Middleware (FMW) RCU requires Oracle Database user with DBA or SYSDBA. Using the installer, you can create new RCU repositories or use pre-created repositories using the WebLogic RCU utility.
27. Enter values for the following fields:
- Database host
 - Database port
 - Service name
 - Schema prefix - Should be OPM
 - DBA username - 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
 - Verify schemas password
28. Click **Next**. The OPM App Schema Configuration screen appears.
29. Enter values for the following fields using the OHPM schema details created while installing OHPM on the database tier.
- Database host name
 - Database port
 - Service name
 - OPM App schema name
 - OPM App schema password
30. Click **Next**. The EMR Keystore Configuration screen appears.
31. Select **Yes**.
- For details on EMR configuration, see the section on EMR configuration in the *Oracle® Healthcare Precision Medicine Administrator's Guide*.
32. Click **Next**.
33. Enter the location of the SSL certificate.
34. Click **Next**. The Network Proxy Configuration screen appears.
35. Select **Yes**.
36. Click **Next**. The Network Proxy Configuration details screen appears. Network proxy configuration is required to connect to OHPM Service Providers.
37. Enter values for the following fields:
- Https proxy host
 - Https proxy port

38. Click **Next**. The Summary screen appears.
39. Verify all the details. To make any changes, click **Back**.
40. Click **Install**.
41. After the installation is complete, the End of Installation screen appears.
42. Click **Exit** after reviewing the installation information.
43. At the confirmation prompt, click **Yes** to exit the installer.
44. Review the generated installation log files for errors. Contact Oracle support, if necessary, to resolve any errors.

3.6 Upgrading Oracle Healthcare Precision Medicine on the Middle Tier

The Oracle Healthcare Precision Medicine middle tier installer can be used to upgrade an existing installation to:

- set values for EMR configuration and HTTPS Proxy configuration on the primary node
- update HTTP Proxy configuration on all secondary nodes

Primary node upgrade must be run first before running upgrade on all secondary nodes.

Perform the following steps to upgrade OHPM on the middle tier:

1. Download the OHPM installation package from the Media Pack and extract the files into a directory.
2. Navigate to the `<media_pack_location>/` folder.
3. Using the following command, unzip the `opm_Linux-x64.zip` file to the folder where you want to launch the installer:

```
unzip -a opm_Linux-x64.zip
```

4. Navigate to the `Disk1/install` folder.
5. Change the protection on files using the following command:

```
chmod 755 *
```

6. Start the Oracle Universal Installer (OUI) using the following command. WebLogic should be installed on the same machine where installer is running.

```
./runInstaller
```

The Welcome screen appears.

7. Click **Next**. The Select a Product to Install screen appears.
8. Select the **Oracle Healthcare Precision Medicine Middle Tier 1.0.0.0.0** option and click **Next**.

The Specify Home Details screen appears.

9. Enter the installation home name and location.
10. Click **Next**. The Choose Install Type screen appears.
11. Select **No** to upgrade your existing installation.
12. Click **Next**. The Verify Upgrade Prerequisites screen appears.

13. Verify if all the prerequisites are met before proceeding.
14. Click **Next**. The Oracle Fusion Middleware Home screen appears.
15. Specify the Fusion Middleware path. The installer validates this path.
16. Click **Next**. The Cluster Configuration screen appears.
17. Select **Yes** to upgrade primary node.
Select **No** if upgrading a secondary node and only after upgrading primary node successfully.
18. Click **Next**. The AdminServer configuration screen appears.
19. Enter values for the following fields:
 - Listen address
 - Listen Port
 - SSL Listen Port
 - Username - WebLogic administrator user
 - Password - WebLogic administrator password
 - Verify password
20. Click **Next**. The Node Manager Configuration screen appears.
21. Enter values for the following fields:
 - Listen address
 - Listen port
 - Username - Node manager administrator user
 - Password - Node manager administrator password
 - Verify Password
22. Click **Next**. The EMR Keystore Configuration screen appears.
23. Select **Yes**.
For details on EMR configuration, see the section on EMR configuration in the *Oracle® Healthcare Precision Medicine Administrator's Guide*.
24. Click **Next**.
25. Enter the location of the SSL certificate.
26. Click **Next**. The Network Proxy Configuration screen appears.
27. Select **Yes**.
28. Click **Next**. The Network Proxy Configuration details screen appears. Network proxy configuration is required to connect to OHPM Service Providers.
29. Enter values for the following fields:
 - Https proxy host
 - Https proxy port
30. Click **Next**. The Summary screen appears.
31. Verify all the details. To make any changes, click **Back**.
32. Click **Install**.

33. After the installation is complete, the End of Installation screen appears.
34. Click **Exit** after reviewing the installation information.
35. At the confirmation prompt, click **Yes** to exit the installer.
36. Review the generated installation log files for errors. Contact Oracle support, if necessary, to resolve any errors.

3.7 Troubleshooting

If the status on any of the managed servers is failed due to the following errors in the log files, start it manually from the Admin Console.

- Critical subsystem DatabaseLessLeasing has failed. Setting server state to FAILED. Reason: Server is not in the majority cluster partition>
- <Server health failed. Reason: health of critical service 'DatabaseLessLeasing' failed>

Primary Node

- If the installer fails due to the time taken by the node manager process to start, check the machine network configuration to make sure other processes are listening on the same port, and the user running the installer has the required file system permissions.
- If the AdminServer fails to start due to the node manager process not being available, verify if the node manager process is still running.
- If an incorrect database configuration is provided, modify it from the WebLogic Admin console.

Secondary Node

- If the installer fails to connect to the AdminServer, verify that the AdminServer is running on the primary node by accessing the WebLogic Admin console from the Secondary node.
- If the installer fails due to an incorrect Fusion Middleware path, make sure that WebLogic is installed in the same file system location as the primary node.

3.8 Uninstalling Oracle Healthcare Precision Medicine

If the installer fails, de-install the domain ohf_opm_domain. Make sure all secondary node machines are uninstalled before uninstalling the primary node. Restart the AdminServer after every secondary node uninstall.

Frequently Asked Questions

This section deals with frequently asked questions during installation. It contains the following sections:

A.1 Increasing the Connection Pool Size

Perform the following steps to increase the connection pool size:

1. Log into the WebLogic console.
2. Navigate to **Services > Data Sources**.
3. Click the data source for which you want to increase the connection pool size.
4. Navigate to the **Connection Pool** tab.
5. Specify the number of connections in the attribute **Maximum Capacity**. Oracle recommends that you set this to at least 100.
6. For details on this configuration, click **More Info...** right across this attribute.

A.2 Application Running Out of Connections

- This issue can be resolved by increasing the number of connections as mentioned in [Section A.1](#).
- Better performance can be achieved by modifying the following attributes:
 - Initial Capacity
 - Maximum Capacity: Maximum number of connections depends on the number of users. For example, if there are 10 users the suggested number of connections should always be multiplied by 10 (that is, $10 * 10 = 100$).
 - Capacity Increment: This value depends upon the multiplication factor being used to calculate maximum capacity (as per above scenario, it is 10).

For more information, see *Tuning Data Source Connection Pools in Oracle® Fusion Middleware Configuring and Managing JDBC Data Sources for Oracle WebLogic Server*.

To optimize performance, Oracle recommends that you update the heap memory and fetch size of the WebLogic server:

- Exadata
 - Heap memory -15GB, Fetch Size- 150
- Non Exadata

Heap memory - 8 GB, Fetch Size - 100

A.3 Parallelization

For details on parallelization, see Appendix A, Parallelization in the *Oracle Health Sciences Translational Research Center Installation Guide* Release 3.1.

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