Oracle® Healthcare Master Person Index

Installation Guide

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Contents

Preface

This document introduces users to the Oracle Healthcare Master Person Index (OHMPI) and the OHMPI Installer. It provides important information on design-time and runtime application servers and operating systems, and supplies procedures for installing OHMPI and the Java Development Kit (JDK). You must install the JDK and set JAVA_HOME prior to installing OHMPI.

Audience

This document is intended for integration developers and system administrators.

About This Book

This document provides an overview of the OHMPI installation process, and includes the following chapters:

- Chapter 1, "Introduction and Requirements," introduces you to the Oracle Healthcare Master Person Index and describes the requirements which must be met before installing OHMPI.
- Chapter 2, "Oracle Healthcare Master Person Index Installation," provides instructions for installing OHMPI.

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Related Documents

For more information and instructions for implementing and using a master index application, see the following documents in the Oracle Healthcare Master Person Index Release 1.1 documentation set:

- *Oracle Healthcare Master Person Index Release Notes*
- *Oracle Healthcare Master Person Index User's Guide*
- *Oracle Healthcare Master Person Index Configuration Guide*
- *Oracle Healthcare Master Person Index Configuration Reference*
- *Oracle Healthcare Master Person Index Data Manager's Guide*
- *Oracle Healthcare Master Person Index Match Engine Reference*
- *Oracle Healthcare Master Person Index Standardization Engine Reference*
- *Oracle Healthcare Master Person Index Analyzing and Cleansing Data User's Guide*
- *Oracle Healthcare Master Person Index Command Line Reports and Database Management User's Guide*
- *Oracle Healthcare Master Person Index Loading the Initial Data Set User's Guide*
- *Oracle Healthcare Master Person Index Working With IHE Profiles*
- *Oracle Healthcare Master Person Index WebLogic User's Guide*

Note: These documents are designed to be used together when implementing a master index application.

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
`monospace`	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

1

Introduction and Requirements

This chapter introduces you to the Oracle Healthcare Master Person Index (OHMPI), its features, and the OHMPI Installer. It also provides a listing of what is required prior to installing OHMPI, including design-time and runtime application servers, the operating systems on which they run, and a procedure for installing the Java Development Kit (JDK) and setting JAVA_HOME.

This chapter includes the following sections:

1.1 Introducing Oracle Healthcare Master Person Index

Oracle Healthcare Master Person Index v1.1 is the release of the single person view application that was acquired from Sun Microsystems. This product has been developed over many years and is an established person identity resolution solution in the market with extensive customer base in the healthcare segment. It provides a flexible framework for you to design and create custom single-view applications, or master person indexes, which cleanse, match, and cross-reference healthcare objects across an enterprise. A master person index that contains the most current and accurate data about each healthcare object will ensure availability of unified, trusted data to all systems in the enterprise.

1.1.1 What's Included With the OHMPI Installer

The OHMPI Installer includes the following software:

- NetBeans IDE v6.9.1

> **Note:** IDE is an acronym for an Integrated Development Environment. It consists of a number of components, such as a compiler, source code editor, build tools, debugger, browser, object inspector, class hierarchy diagram, and so on. These components can be used when performing object-oriented software development. The integrated tools can also be used to build a graphical user interface (GUI).

- GlassFish Enterprise Server v2.1.1 Patch 7

Note: The Audit Record Repository (ARR) is installed with GlassFish. If you intend to use WebLogic and not GlassFish, you still need to install GlassFish if you want to use ARR. Sample files will be installed in the directory where GlassFish is installed.

- Master Person Index Plug-in
- IHE Plug-in
- Uninstallation software

1.1.2 Features of OHMPI

Oracle Healthcare Master Person Index includes the following features:

1.1.2.1 Design-time Wizard

OHMPI provides a wizard that takes you through all the steps of creating a master person index application. Using the wizard, you can define a custom master person index with a data structure, processing logic, and matching and standardization logic that are completely geared to the type of data you are indexing. OHMPI provides a graphical editor so you can further customize the business logic, including matching, standardization, queries, match weight thresholds, and so on.

- **Data Quality and Load Tools**

  By default, Master Person Index uses the OHMPI Match Engine and OHMPI Standardization Engine to standardize and match incoming data. Additional tools are generated directly from the master person index application and use the object structure defined for the master person index. These tools include the Data Profiler, Data Cleanser, and the Initial Bulk Match and Load (IBML) tool.

- **OHMPI Standardization Engine**

  The OHMPI Standardization Engine is built on a highly configurable and extensible framework to enable standardization of multiple types of data originating in various languages and counties. It performs parsing, normalization, and phonetic encoding of the data being sent to the master person index or being loaded in bulk to the master person index database. Parsing is the process of separating a field into individual components, such as separating a street address into a street name, house number, street type, and street direction. Normalization changes a field value to its common form, such as changing a nickname like Bob to its standard version, Robert. Phonetic encoding allows queries to account for spelling and input errors. The standardization process cleanses the data prior to matching, providing data to the match engine in a common form to help provide a more accurate match weight.

- **OHMPI Match Engine**

  The OHMPI Match Engine provides the basis for deduplication with its record matching capabilities. The OHMPI Match Engine compares the match fields in two records and calculates a match weight for each match field. It then totals the weights for all match fields to provide a composite match weight between records. This weight indicates how likely it is that two records represent the same entity. The OHMPI Match Engine is a high-performance engine, using proven algorithms and methodologies based on research at the U.S. Census Bureau. The engine is built on an extensible and configurable framework, allowing you to customize existing comparison functions and to create and plug in custom functions.

1.1.2.2 Runtime

Runtime features a number of data independent management tools.

- **Data Profiler**

  When gathering data from various sources, the quality of the data sets is unknown. You need a tool to analyze, or profile, legacy data in order to determine how it needs to be cleansed prior to being loaded into a master person index database. It uses a subset of the Data Cleanser rules to analyze the frequency of data values and patterns in bulk data. The Data Profiler performs a variety of frequency analyses. You can profile data prior to cleansing in order to determine how to define cleansing rules, and you can profile data after cleansing in order to fine-tune query blocking definitions, standardization rules, and matching rules.

- **Data Cleanser**

  Once you know the quality of the data to be loaded to a master person index database, you can clean up data anomalies and errors as well as standardize and validate the data. The Data Cleanser validates, standardizes, and transforms bulk data prior to loading the initial data set into a master person index database. The rules for the cleansing process are highly customizable and can easily be configured for specific data requirements. Any records that fail validation or are rejected can be fixed and put through the cleanser again. The output of the Data Cleanser is a file that can be used by the Data Profiler for analysis and by the Initial Bulk Match and Load Tool. Standardizing data using the Data Cleanser aids the matching process.

- **Initial Bulk Match and Load Tool (IBML Tool)**

  Before your Master Data Manager (MDM) solution can begin to cleanse data in real time, you need to seed the master person index database with the data that currently exists in the systems that will share information with the master person index. The IBML tool can match bulk data outside of the master person index environment and then load the matched data into the master person index database, greatly reducing the amount of time it would normally take to match and load bulk data. This tool is highly scalable and can handle very large volumes of data when used in a distributed computing environment. The IBML Tool loads a complete image of processed data, including potential duplicate flags, assumed matches, and transaction information.

1.1.2.3 Master Index Data Manager (MIDM)

The Master Index Data Manager is your primary tool to view and maintain the data stored in a master person index database and cross-referenced by a master person index application. The web-based interface allows you to access, monitor, and maintain the data stored by the master person index applications you create using OHMPI. The MIDM provides the ability to search for, add, update, deactivate, merge, unmerge, and compare object profiles. It also enables you to view and correct potential duplicate profiles, view transaction histories, view an audit log, and print reports.

1.1.2.4 Integrating the Healthcare Enterprise

Integrating the Healthcare Enterprise (IHE) has created a number of standards and profiles that help create, process, and manage electronic health records in secure patient cross-reference applications. They work in conjunction with native Health Level 7 (HL7) v2 and v3 messaging and transport standards, which define how the information is packaged and shared between systems. OHMPI has incorporated a number of the IHE profiles (listed below), as they increase the efficiency of sharing

trusted cross-references of healthcare person entities. A number of the IHE profiles function with HL7 v2 and v3 encoding standards to integrate healthcare networks.

With OHMPI R1.1 you have the capability to create an IHE project that contains a pre-configured master person index project. See "IHE-MPI Projects" in *Oracle Healthcare Master Person Index Working With IHE Profiles* (Part Number E18591-01).

- **Patient Identifier Cross Referencing** (**PIX**) allows cross-referencing of patient identifiers across a network of healthcare sites.
- **Patient Demographics Query** (**PDQ**) queries and retrieves patient demographics.
- **Audit Record Repository** (**ARR**) includes an audit server and an audit repository. It also supports **ATNA** (see below).
- **Audit Trail and Node Authentication** (**ATNA**) uses certificates and transmits and receives audit events to a secure repository to maintain patient confidentiality, and is built on top of **Security Audit and Access Accountability Message XML Data Definitions for Healthcare Applications**, the **Syslog Protocol**, **Transmission of Syslog Messages over Transport Layer Security** (**TLS**), and **Transmission of Syslog Messages over User Datagram Protocol** (**UDP**).
- **Consistent Time** (**CT**) synchronizes time stamps and system clocks on computers functioning within a healthcare network.
- **Patient Identity Management** (**PIM**) under Patient Administration Management (PAM) creates a patient record, updates the record, links the record to another patient record, and if the records represent the same patient, merges the records (these records can be unlinked if the records do not represent the same patient).
- **Patient Identifier Cross-Reference** and **Patient Demographics Query for HL7v3** (**PIX/PDQ/v3**) leverages HL7 version 3 to extend the capability of these profiles.

1.2 Hardware Requirements

Oracle Healthcare Master Person Index requires that the computer on which you plan to install it already has an appropriate Java Development Kit with JAVA_HOME set prior to beginning the process. See "Installing JDK Software and Setting JAVA_HOME" on page 1-6.

OHMPI can be installed on PC and UNIX computers; see "Supported IDE, Application Servers, and Operating Systems" for details about the supported platforms.

A typical PC running Microsoft Windows might have the following:

- 4 GB of RAM
- 2.8 GHz processor
- 40 GB of disk space

1.2.1 Installation Requirements

Installation requirement vary depending upon the operating system on which you are installing. For example:

- On Window you need 1.5 GB of free storage space
- On Solaris you need 1.5 GB of free storage space

Note: The OHMPI Installer informs you how much free storage space is required.

1.2.2 Supported IDE, Application Servers, and Operating Systems

OHMPI supports the following application servers:

- Integrated Design-time Environment (IDE)

  NetBeans IDE 6.9.1 is a design-time application used to create, generate, and build OHMPI applications.

  Note: Table 1-1 lists the design-time operating systems that are compatible with Master Person Index design-time components and NetBeans IDE v6.9.1.

- Runtime Application Servers

  The following runtime application servers support the IHE interface and run an OHMPI application after it has been created and built.

  – GlassFish Server 2.1.1 Patch 7

  – Oracle Web Logic Server 11gR1

  Note: Table 1-1 lists operating systems that are compatible with Master Person Index runtime components and the GlassFish Server 2.1.1 Patch 7 or the Oracle Web Logic Server 11gR1.

Table 1–1 Design-Time and Runtime Supported Platforms

Platform[1]	Design-time NetBeans IDE	Runtime GlassFish	Runtime WebLogic	Runtime JVM
IBM AIX 6.1	---	32 & 64 bit	64 bit	32 & 64 bit
IBM AIX 5.3	---	32 bit	64 bit	32 & 64 bit
Microsoft Windows 2008	---	32 bit	32 & 64 bit	32 & 64 bit
Microsoft Windows 2008 R2	---	64 bit	32 & 64 bit	32 & 64 bit
Microsoft Windows 7 Professional	32 bit	---	32 & 64 bit	32 bit
Microsoft Windows Vista SP1+	32 bit	32 bit	32 bits	32 bit
Microsoft Windows XP SP3	32 bit	32 bit	32 bit	32 bit
Microsoft Windows 2003 R2 SP2	---	32 bit	32 & 64 bit	32 & 64 bit
Oracle Enterprise Linux 5	32 & 64 bit		32 & 64 bit	32 & 64 bit
Red Hat Linux 5.4	32 & 64 bit	32 & 64 bit	32 & 64 bit	
Red Hat Linux 5.3	32 & 64 bit	32 & 64 bit	32 & 64 bit	32 & 64 bit
Solaris 10 SPARC	64 bit	64 bit	64 bit	32 & 64 bit
Solaris 10 x86	32 & 64 bit	32 & 64 bit	--	32 bit

[1] The supported bits for the platforms are noted in the table.

1.3 Software Requirements

OHMPI requires the following software:

- "Java Development Kit"

OHMPI also requires a web browser to view the Master Index Data Manager (MIDM) and a database.

- "Supported Web Browsers"
- "Supported Databases"

1.3.1 Java Development Kit

OHMPI requires that a Java Development Kit is installed, and on UNIX systems the JAVA_HOME environment variable set, on the computer on which you install a Master Person Index prior to beginning the installation.

For OHMPI Release 1.1, the supported JDK is the minimum required to run the OHMPI Installer and install the program.

- JDK 1.6.0_18

1.3.1.1 Installing JDK Software and Setting JAVA_HOME

If you do not already have the JDK software installed or if JAVA_HOME is not set, the Master Person Index installation will not be successful. The following tasks provide the information you need to install the JDK software on Windows and UNIX systems. Set JAVA_HOME on UNIX systems only if you have more than one JDK installed on your system as the installation automatically selects first installed version.

Caution: NetBeans IDE and GlassFish require the JDK for installation, in particular JDK 1.6 Update 18 or later. If you select a Java Runtime Environment (JRE) instead of a JDK, you cannot install or configure NetBeans IDE or GlassFish.

Oracle WebLogic Server, which is a separate installation, automatically installs JRockit JDK. However, if you intend to use Oracle JDK, it must be installed before you install the WebLogic Server.

1.3.1.1.1 To Install JDK Software on a Windows System

1. Go to `http://java.sun.com/javase/downloads/index.jsp`.
2. Select the appropriate JDK version and click **Download**. The JDK software is installed on your computer (for example, at C:\Program Files\Java\jdk1.6.0_18).

Note: You can change this location.

1.3.1.1.2 To Install JDK Software and Set JAVA_HOME on a UNIX System

1. Install the JDK software.
   - Go to `http://java.sun.com/javase/downloads/index.jsp`.
   - Select the appropriate JDK version and click **Download**. The JDK software is installed on your computer, for example, at /usr/jdk/jdk1.6.0_18.

Note: You can change this location.

2. Set JAVA_HOME
   - Korn and bash shells:
     - `export JAVA_HOME=<jdk-install-dir>`
     - `export PATH=$JAVA_HOME/bin:$PATH`
   - Bourne shell:
     - `JAVA_HOME=<jdk-install-dir>`
     - `export JAVA_HOME`
     - `PATH=$JAVA_HOME/bin:$PATH`
     - `export PATH`
   - C shell:
     - `setenv JAVA_HOME <jdk-install-dir>`
     - `setenv PATH $JAVA_HOME/bin:$PATH`

1.3.2 Supported Web Browsers

OHMPI supports the following web browsers:

- Firefox 3.5x or later
- Internet Explorer Version 7 or 8

Firefox is the preferred browser for the MIDM web application. Any operating system that can run on Firefox or Internet Explorer is capable of opening and using the MIDM, including Apple Macintosh.

1.3.3 Supported Databases

OHMPI supports the following databases:

- Oracle 11gR2, Oracle 10gR2
- MySQL Community Server 5.1.51
- Microsoft SQL Server 2005SP3, 2008SP1

Note: IHE Profiles Application does not support Microsoft SQL Servers.

2

Oracle Healthcare Master Person Index Installation

This chapter provides conceptual and mandatory information, as well as a procedure for installing the Oracle Healthcare Master Person Index.

This chapter includes the following sections:

2.1 Preparing for an OHMPI Installation

Before beginning the installation, read the *Oracle Healthcare Master Person Index Release Notes*, as it contains important information such as what is in the release package, a listing of new features, known issues, and so forth. This information may be pertinent for you to complete a successful installation of the Oracle Healthcare Master Person Index.

Important installation information:

- Master Person Index does not support spaces in the installation directory path.
- You must have the JDK software installed and JAVA_HOME set prior to installing Master Person Index or the OHMPI Installer will halt the installation. If you have not installed the JDK yet, see "Installing JDK Software and Setting JAVA_HOME" on page 1-6.

2.2 Installing Using the OHMPI Installer GUI

Although you can change the default installation values, accepting most of them is a good practice, especially the port numbers.

> **Caution:** Master Person Index does not support spaces in the installation directory path.

Before You Begin

When installing Master Person Index on UNIX systems, such as Solaris machines, you need to set the **DISPLAY** variable to install in GUI mode. How you do this depends on how you connect to your system.

- If you receive the error message "No X11 DISPLAY variable was set, but this program performed an operation which requires it" and you use the SSH

command to connect to your system from another UNIX machine, you need to set the DISPLAY variable.

- C shell with localhost the host name: `setenv DISPLAY localhost:0.0`
- Korn shell with localhost the host name: `DISPLAY=localhost:0.0; export DISPLAY`
- Bash shell with localhost the host name: `DISPLAY=localhost:0.0; export DISPLAY`
- Bourne shell with localhost the host name: `DISPLAY=localhost:0.0; export DISPLAY`
- If you use X Windows software, such as Exceed, the DISPLAY variable is set for you automatically and can be referenced as a macro, **@d&@**, when issuing the xterm command.

2.2.1 To Install Master Person Index Components Using the OHMPI Installer

1. Download the installation executable file for your platform from the link supplied to you through eDelivery.
2. Extract the installer file for your platform to a temporary directory.

Platform	Installer File
Windows	OracleHealthcareMPlv1_1-full-installer-windows.exe
Solaris SPARC	OracleHealthcareMPlv1_1-full-installer-solaris-sparc.sh
Solaris x86	OracleHealthcareMPlv1_1-full-installer-solaris-x86.sh
Linux	OracleHealthcareMPlv1_1-full-installer-linus.sh
AIX	OracleHealthcareMPlv1_1-full-installer-aix.sh

3. Exit from all programs prior to beginning the installation.

   Note: You can cancel the installation at any time during the process.

4. To start the installation, initiate the appropriate executable file:
   - For Linux or Solaris, change the execution mode with the command, `chmod a+x <installer-file>.sh`; and then start the installation with the command, `./<installer-file>.sh`.
   - For Windows, double-click the file, <*installer-file*>**.exe**.
5. When the OHMPI Installer wizard appears you have two choices on how to begin the installation, and they are based upon which application server you want to use with OHMPI.
   - To install GlassFish, click **Next**.

     Note: The Audit Record Repository (ARR) is installed in a directory parallel to the directory where GlassFish is installed.

   - To not install GlassFish and install Oracle WebLogic Server in a separate installation after you complete this installation, click **Customize**. See *Oracle*

Healthcare Master Person Index WebLogic User's Guide (part number E18593-01) for installation instructions.

– On the Customize Installation window un-check **Oracle Healthcare Master Person Index Runtime** and then click **OK**.

Note: You cannot un-check **Oracle Healthcare Master Person Index Design-time**, as it is required to install OHMPI, IHE, and Netbeans IDE.

Tip: Use the **Next** and **Previous** buttons to navigate forward and backward in the installation.

6. On the NetBeans IDE Installation window, do the following:
   - Verify or modify the location for the NetBeans IDE.
   - Verify or modify the location of the associated JDK.
   - Click **Next**.

Note: NetBeans IDE and GlassFish require the JDK for installation, in particular JDK 1.6 Update 18 or later.

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7. On the GlassFish Installation window, do the following:
   - Verify or modify the location for GlassFish.
   - Verify or modify the location of the associated JDK.

Caution: In this step, if you previously selected a JRE instead of a JDK, NetBeans IDE and GlassFish will not install.

   - If there are no port conflicts with any other system applications, accept the default server properties.
   - Click **Next**. The default GlassFish properties are described below.

Setting	Description	Default
Admin user name	The name you use when you log in as administrator.	**admin**
Admin password	The password you use when you log in as administrator.	**adminadmin**
HTTP port number	The port on which GlassFish listens for HTTP requests for web applications that you deploy.	**8080**
Secure HTTPS port number	The port on which GlassFish listens for HTTPS requests for web applications that you deploy.	**8181**
Admin port number	The port on which GlassFish listens for administrative HTTP requests.	**4848**

8. When the Summary page appears, verify each component of the installation and click **Install**. If you need to make changes, click **Previous** to return to a previous screen.
9. Click **Finish**.

OHMPI is configured for your system. For additional details about the installation, see the installation logs.