

Oracle® Communication and Mobility Server

Installation Guide

Release 10.1.3 for Linux x86 and Microsoft Windows (32-bit)

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Oracle® Communication and Mobility Server Installation Guide Release 10.1.3 for Linux x86 and Microsoft Windows (32-bit)

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A Oracle TimesTen Installation Output

Installation Output	A-1
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Preface

This preface contains the following topics:

- [Audience](#)
- [Documentation Accessibility](#)
- [Related Documents](#)
- [Conventions](#)

Audience

This guide is intended for system administrators and developers who want to install and use Oracle Communication and Mobility Server.

Documentation Accessibility

Our goal is to make Oracle products, services, and supporting documentation accessible, with good usability, to the disabled community. To that end, our documentation includes features that make information available to users of assistive technology. This documentation is available in HTML format, and contains markup to facilitate access by the disabled community. Accessibility standards will continue to evolve over time, and Oracle is actively engaged with other market-leading technology vendors to address technical obstacles so that our documentation can be accessible to all of our customers. For more information, visit the Oracle Accessibility Program Web site at

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Related Documents

For more information, see the following documents in the Oracle Communication and Mobility Server, Oracle Containers for J2EE, Oracle Application Server, and Oracle TimesTen In-Memory Database product sets:

- *Oracle Communication and Mobility Server Administrator's Guide*
- *Oracle Communication and Mobility Server Developer's Guide*
- *Oracle Containers for J2EE Configuration and Administration Guide*
- *Oracle Containers for J2EE Deployment Guide*
- *Oracle Application Server Installation Guide*
- *Oracle Application Server Administrator's Guide*
- *Oracle TimesTen Installation Guide*

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
<i>italic</i>	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.

Product and Installation Overview

This chapter describes Oracle Communication and Mobility Server (OCMS), Oracle Communication and Mobility Server Service Creation Environment (OCMS SCE) and recommended topologies:

- [Product Overview](#)
- [Installation Prerequisites](#)
- [Installation Modes](#)
- [What Components are Installed](#)
- [Typical and Custom Installations](#)

Product Overview

OCMS is a carrier grade SIP (Session Initiation Protocol) and J2EE execution platform for applications needing to send or receive messages over a SIP enabled broadband network or cellular network. This platform is referred to as a SIP Application Server.

Examples of such applications are as follows:

- IP Telephony
- Video Calling
- Instant Messaging
- Speed Dial Service
- Call Forwarding Service
- Third Party Call Control
- Emergency Call Service
- Network Gaming

OCMS can be deployed either for broadband or 3GPP IP Multimedia System (IMS) networks offering value-added services.

OCMS Service Creation Environment (OCMS SCE) is a package for third-party developers on the Microsoft Windows operating system. OCMS Service Creation Environment (SCE) consists of tools and APIs for developers to create their own services using the OCMS platform.

OCMS SCE requires the installation of the third-party tool Eclipse. Eclipse is the development environment for creating projects, writing code, and for automatically deploying applications into OCMS.

Installation Prerequisites

This section describes prerequisites for installing OCMS and for using specific OCMS functionality.

System Requirements

To install OCMS your system must meet the following requirements:

- Red Hat Enterprise Linux AS/ES 3.0 (update 3), or 4.0 (update 1)
- Recommended for development purposes only: Microsoft Windows 2000 with Service Pack 3 or above, Microsoft Windows Server 2003 (32-bit) with Service Pack 1 or above, or Microsoft Windows XP Professional with Service Pack 2
- Java 2 Platform, Enterprise Edition Software Development Kit (JDK) 5.0, (JDK version 1.5). Oracle Application Server installation mode uses the JDK 1.5 (Update 6) from the installation of Oracle Application Server. Standalone developer mode bundles JDK 1.5 (Update 6) with the OCMS installation.
- Oracle TimesTen In-Memory Database 6.0 is required when installing Subscriber Data Services and using applications that require the authentication and authorization features provided by OCMS. Oracle TimesTen is provided with the OCMS distribution.

Refer to [Additional OCMS Features](#) for more information on Subscriber Data Services.

- a LAN connection and an IP address and hostname

Note: The listed operating systems are certified and supported for Oracle Communication and Mobility Server. Other operating systems have not been certified.

Shared Memory Requirement on Linux

Before installing OCMS on Linux, make sure that you have set `shmmax` to a reasonably large value, approximately 1 GB or higher.

As root, you can query for the current value by entering the following command:

```
more /proc/sys/kernel/shmmax
```

To set the value to approximately 1 GB, enter the following command as root:

```
/sbin/sysctl -w kernel.shmmax=1073741824
```

In general, we recommend this value to be set to be half the size of your physical RAM. If you have less than 2 GB of physical RAM, set it to approximately 1 GB as described above.

Port Requirements

OCMS requires the use of ports for TCP and UDP communications for the SIP Container, Presence server, and, if installed, the Edge Proxy. You can have the InstallShield Wizard for OCMS assign default port numbers for the SIP Container and Edge Proxy ports, or use port numbers that you specify. The Presence port is not configurable during installation, but can be configured in the MBean browser. Refer to the *Oracle Communication and Mobility Server Administrator Guide* for information on how to reconfigure port numbers following installation.

During installation, the InstallShield Wizard for OCMS validates that the selected ports are available. If a port is in use by another application, the installation will not succeed, and a port conflict error message is displayed and logged in an `ocmsinstall.log` file.

[Table 1–1](#) lists the default ports used by OCMS when you install the Edge Proxy application.

Table 1–1 Default Ports: Edge Proxy Installed

SIP Port	Edge Proxy Port	Presence Port
5070	5060	5081

[Table 1–2](#) lists the default ports used by OCMS when you do not install the Edge Proxy application:

Table 1–2 Default Ports: Edge Proxy Not Installed

SIP Port	Edge Proxy Port	Presence Port
5060	N/A	5071

Checking if a Port is in Use

To check if a port is being used in Windows, you can run the `netstat` command as follows:

```
C:\> netstat -an | find "portnum"
```

Note that you need double quotes around the port number.

To check if a port is being used in Linux, you can run the `netstat` command as follows:

```
netstat -a | grep <portnum>
```

Installation Modes

Oracle Communication and Mobility Server can be installed in the following installation modes:

- [Oracle Application Server Mode \(Release 10.1.3.2 or Higher\)](#)
- [Standalone Developer Mode](#)

[Table 1–3](#) lists requirements for each installation mode.

Table 1–3 Requirements for Installation Modes

Requirement	Oracle Application Server mode	Standalone Developer mode
Oracle Containers for J2EE (OC4J)	Required before installation	Not required. Included with the installation.
Eclipse WebTools 1.5	Required if installing OCMS SCE.	Required if installing OCMS SCE.
Java Development Kit (JDK) 1.5	Provided by Oracle Application Server.	Included.
Oracle TimesTen In-Memory Database	Required if installing Subscriber Data Services.	Required if installing Subscriber Data Services.

Oracle Application Server Mode (Release 10.1.3.2 or Higher)

The recommended installation mode installs OCMS into an Oracle Application Server Release 10.1.3.2 or higher environment. This installation mode allows OCMS to use OC4J features such as Oracle High Availability (HA), clustering, and replication.

Oracle Communication and Mobility Server is deployed with an OC4J container that you manage using the Oracle 10g Enterprise Manager Application Server Control console. The Application Server Control functions enable starting, stopping, restarting, deploying, undeploying, and redeploying applications

Additionally, the Application Server Control MBean browser enables you to configure and manage the OCMS components. Configuring the attributes of the OCMS MBeans (Managed Beans) enables you to execute such administrative tasks as configuring the DNS (Domain Name System), configuring and managing Presence, and the basic configuration (port, IP, and host address) of the OCMS SIP Server itself.

For more information on managing and configuring OCMS in an Oracle Application Server environment, refer to "Managing the SIP Server" in the *Oracle Communication and Mobility Server Administrator's Guide*.

For more information on features provided by Oracle Application Server, refer to *Oracle Application Server Administrator's Guide*.

Standalone Developer Mode

The standalone developer mode allows developers to develop and test SIP applications in a minimal installation environment, without an application server. This installation mode installs Oracle Containers for J2EE (OC4J).

Standalone developer mode is not typically recommended for production deployment because of limited management capabilities.

What Components are Installed

The minimal OCMS installation consists of an OCMS SIP Servlet Container. A SIP Servlet Container extends the J2EE Application Server, providing a runtime environment for SIP applications, including services such as security, concurrency, lifecycle management, transaction, deployment, and other services. A JSR116-compliant SIP Servlet Container provides network services for sending and receiving SIP requests and responses using a combination of transport protocols, IP addresses, and port numbers to listen for incoming SIP traffic.

The OCMS SIP Servlet Container can be installed on an existing instance of Oracle Application Server, running in OC4J. Alternatively, the OCMS SIP Servlet Container can run on its own standalone instance of OC4J.

The typical OCMS SIP Servlet Container is composed of an Oracle Application Server instance with OC4J as its J2EE container, and Oracle Process Manager and Notification Server (OPMN) to monitor the server. OCMS currently supports high availability deployments in this configuration only.

Additional OCMS Features

The following applications are included in a typical installation, except the Edge Proxy which you can only install in a custom installation.

- **Subscriber Data Services:** Subscriber Data Services is installed when applications require the authentication and security services provided by OCMS.

Note: Proxy Registrar and Application Router both require Subscriber Data Services. In the case of the former, the Location Service and the registrar component of the Proxy Registrar depend on Subscriber Data Services. Subscriber Data Services also depends on the Oracle TimesTen In-Memory database for storing data and user information.

- **Proxy Registrar:** Proxy Registrar combines the functions of a SIP Proxy Server and Registrar. Its main tasks include registering subscribers, looking up subscriber locations, and proxying requests to destinations.
- **Presence:** The Presence application enables a service provider to provide Presence services to end users as well as enabling the service provider to base other services on Presence information (for example, intelligent call routing based on Presence information).
- **Application Router:** Application Router is a SIP application that routes incoming SIP requests to the correct application. It is a required component for composing applications or for deploying new applications of your own.

The Application Router routes requests by placing route headers in each SIP request it processes. A number of route headers can be placed in a request, each representing a different destination URI. The SIP request is either sent through the chain of destination URIs, or proxied to a new URI after arriving at its first destination.

- **Presence Web Services:** Presence Web Services provides support for the Parlay X Presence Web Services. This is an implementation of the Parlay X Web Services interface. Refer to Chapter 6, OCMS Parlay X Web Services in the *Oracle Communication and Mobility Server Developer's Guide* for more information.
- **STUN Server:** The STUN server implements the STUN (Simple Traversal of User Datagram Protocol (UDP) Through Network Address Translators) server protocol. This acts as a NAT traversal mechanism to allow clients to find out the external IP address and port that the client is represented by.
- **Edge Proxy:** Edge Proxy provides a SIP distribution for routing requests, proxying SIP requests to a particular OCMS SIP Server instance. The Edge Proxy forms logical pathways between individual clients and SIP servers, such that SIP traffic sent from a particular client session is always handled by the same server. As the number of SIP clients increases, additional Edge Proxy servers can be added, providing highly scalable handling of SIP clients.
- **Aggregation Proxy:** Aggregation Proxy authenticates any XCAP requests and Web Services calls. The XCAP requests and Web Services calls are then proxied to their respective servers. For more information, refer to Oracle Communication and Mobility Server Developer's Guide , and the *Oracle Communication and Mobility Server Administrator's Guide*.
- **Service Creation Environment (SCE) Eclipse Plugin:** OCMS SCE is the development environment for OCMS. SCE allows the developer to create and build applications in Eclipse, and to deploy them to OCMS.
- **Diameter Libraries:** Installing the Diameter libraries allows you to use the Diameter protocol for Diameter client development. Diameter is an AAA (Authentication, Authorization, and Accounting) protocol. Oracle provides support for the Diameter Base Protocol as defined by RFC 3588, and APIs for

developing base Diameter applications, as well as IMS applications leveraging the Sh, Ro, and Rf interfaces. Note that Diameter is only available for Linux.

For more description and configuration information on these features, refer to *Oracle Communication and Mobility Server Administrator's Guide*.

Typical and Custom Installations

You can install OCMS as a typical installation that includes a set of certain installation components (Subscriber Data Services, Proxy Registrar, and Presence) or you can perform a custom installation of specific features. Certain components can only be installed through a custom installation.

OCMS provides a SIP Container, a Presence server, a Proxy Registrar, Presence Webservices, a STUN Server, an Application Router, an Edge Proxy, an Aggregation Proxy, and a tool for developing third party applications, OCMS Service Creation Environment. Refer to [Additional OCMS Features](#) for more information on these features. OCMS also provides a framework for applications requiring user authentication and authorization called Subscriber Data Services. In a typical installation, the SIP Container is installed with an Application Router, Subscriber Data Services, Proxy Registrar, and Presence.

Custom Installation Requirements

When you only plan to use certain OCMS functionality and do not require all the provided functionality, you can perform a custom installation. [Table 1-4](#) lists requirements for installing OCMS applications in a custom installation.

Table 1-4 Application Requirements for Custom Installations

OCMS Application	Requirements
Subscriber Data Services	Requires Oracle TimesTen In-Memory Database, with data access control enabled.
Proxy Registrar	Requires Subscriber Data Services.
Presence	None
Presence Webservices	None
STUN Server	None
Application Router	Requires Subscriber Data Services.
Edge Proxy	Requires installing in Oracle Application Server mode.
Aggregation Proxy	Requires Subscriber Data Services.
Service Creation Environment (SCE)	Requires Eclipse WebTools 1.5.

Oracle Times Ten In-Memory Database

Subscriber Data Services (and applications that depend on Subscriber Data Services including Proxy Registrar, Application Router, and Aggregation Proxy) require Oracle TimesTen In-Memory Database, with data access control enabled. The OCMS installer automatically creates a data source for Oracle Times Ten during installation and sets permsize to 256MB.

Installing Oracle Communication and Mobility Server

This chapter describes how to perform an installation of Oracle Communication and Mobility Server (OCMS) and Oracle Communication and Mobility Server Service Creation Environment (OCMS SCE). It describes the following topics:

- [Installing a Cluster of OCMS Instances in a High Availability Environment](#)
- [Performing Pre-installation Procedures for Oracle Communication and Mobility Server Service Creation Environment](#)
- [Installing Oracle TimesTens In-Memory Database](#)
- [Installing Oracle Communication and Mobility Server](#)
- [Installing Diameter Libraries](#)
- [Starting and Stopping Oracle Communication and Mobility Server](#)
- [Performing Post-Installation Procedures for Oracle Communication and Mobility Server Service Creation Environment](#)

Installing a Cluster of OCMS Instances in a High Availability Environment

You can install OCMS either as a single node for evaluation or development, or you can install OCMS to multiple nodes for a high availability production topology. For a high availability production topology you will need one or more Edge Proxies nodes along with the other OCMS nodes. Edge Proxies provide scalability and high availability. Edge Proxies are required for advanced production level topologies, and are usually used to provide SIP distribution. The Edge Proxy distributes incoming SIP traffic among OCMS SIP application servers when used between a SIP unaware load balancer and an OCMS cluster.

For information on recommended deployment topologies and configuring high availability see the "Deployment Topologies" and "Configuring High Availability" chapters in the *Oracle Communication and Mobility Server Administrator's Guide*.

Configuring OCMS in a Clustered Environment with Edge Proxies

An administrator typically installs Edge Proxies on separate nodes. The installation of an Edge Proxy as part of an OCMS installation is supported only in Oracle Application Server installation mode. An Edge Proxy is aware of multiple OCMS instances through OPMN clustering. This requires a clustered Oracle Application Server 10.1.3 environment where each OCMS instance references a unique Oracle Home.

Sizing the Installation

The number of Edge Proxies recommended for an OCMS installation depends on scalability and high availability requirements for the installation and on the number of SIP clients and OCMS instances. A minimum of two Edge Proxies is recommended to guarantee high availability in a clustered environment. As the number of SIP clients or OCMS instances grows, additional Edge Proxy servers can be added. Refer to the *Oracle Communication and Mobility Server Administrator's Guide* for more information.

In OCMS installations with three or more OCMS instances, Edge Proxies are typically separately installed OCMS instances that consists of only the Edge Proxy application (that is, only Edge Proxy is selected for installation from the Custom Installation window). For OCMS installations with not more than two instances, Edge Proxies can be installed concurrently with the OCMS instances.

Assigning Ports in a Multi-Instance Installation

After you have decided on the number of OCMS instances and Edge Proxy-only instances in the OCMS installation, you must decide what ports will be assigned to each instance. For single machine installations, each instance in the OCMS installation must have uniquely defined ports. The OCMS installer verifies that ports are available at the time of installation. [Example 2-1](#) shows how to assign ports in a multi-instance OCMS installation with an Edge Proxy server.

Example 2-1 Assigning Ports in a Multi-Instance OCMS Installation with an Edge Proxy

OCMS instance 1: Custom installation consisting of Edge Proxy only
Edge Proxy Port: 5060 (default)

OCMS instance 2: Typical installation
SIP Port: 5080 (user-configured during installation)

OCMS instance 3: Typical installation
SIP Port: 5090 (user-configured during installation)

OCMS instance 4: Typical installation
SIP Port: 5100 (user-configured during installation)

Installing Edge Proxies

Perform the following steps to install Edge Proxies into an OCMS installation:

1. Select the **Custom installation** type, select only **Edge Proxy** for installation.
2. Click **Next**.
3. Configure the *Edge Proxy port* and click **Next**.
4. Complete the OCMS installation.
5. Perform an **opmnctl status** command to see the status of the Edge Proxy.
The Edge Proxy runs automatically after being installed and reports a status of "Alive."
6. Run the OCMS installer and repeat the steps above to configure additional Edge Proxies.
7. Perform the following additional procedures in the *Oracle Communication and Mobility Server Administrator's Guide*:
 - "Configuring the OCMS SIP Containers for High Availability"

- "Configuring the Edge Proxy Nodes for High Availability"
 - "Configuring Highly Available SIP Servlet Applications"
8. Install the non-Edge Proxy OCMS instances using the procedures in this guide.

After installation of all the Edge Proxies and OCMS instances you will be able to view the topology of the OCMS installation through Enterprise Manager from the Oracle Application Server instance where "Start AS Control" was selected during Oracle Application Server installation.

Performing Pre-installation Procedures for Oracle Communication and Mobility Server Service Creation Environment

The OCMS Service Creation Environment (OCMS SCE) component is a package for third-party developers on the Microsoft Windows operating system. OCMS Service Creation Environment (SCE) consists of tools and APIs for developers to create their own services using the OCMS platform.

Installing OCMS SCE consists of three procedural tasks:

- Performing the pre-installation steps described in this section.
- Installing the OCMS Service Creation Environment through the OCMS InstallShield wizard by selecting the Custom installation mode and selecting the "SCE Eclipse Plugin" for installation, as described in [Installing Oracle Communication and Mobility Server](#).
- Performing the post-installation procedure described in [Performing Post-Installation Procedures for Oracle Communication and Mobility Server Service Creation Environment](#).

Perform the following pre-installation steps if installing OCMS Service Creation Environment:

1. Install the prerequisite software tools:
 - Download and install the Eclipse Web Tools Platform 1.5 from <http://download.eclipse.org/webtools/downloads>. Select the kit entitled "All-in-one". This kit includes the Eclipse Software Development Kit 3.2.

Tip: To avoid problems with extracting files with long names when using the utility Winzip to extract the Eclipse WebTools files, use the Winzip option "Extract to here" rather than "Extract to folder"

2. Configure environmental variables required for OCMS SCE.
 - Configure JAVA_HOME to the Java 2 Platform, Standard Edition 5.0 installation directory. For example, C:\j2sdk1.5.0\jre.
 - Add %JAVA_HOME%\bin to the PATH environment variable.
3. Start Eclipse by executing eclipse.exe from the Eclipse installation directory.

Configure the following items in Eclipse:

- Select the location for storing your developing artifacts in Eclipse. For example, C:\workspace.
- Verify in Eclipse that the selected Java Runtime Environment is version 5.0 (1.5.0) by selecting **Window, Preferences, Java, Installed JRE**. The *Name* and

Location must specify the JDK 1.5 that you previously installed. If not, configure the version 5.0 (1.5.0) JRE to be the installed JDK 1.5.

- Verify in Eclipse that the compiler compliance level is 5.0 by selecting **Window, Preferences, Java, Compiler**.
- Configure a proxy host for Eclipse downloads by selecting **Window, Preferences, Internet**. Select **Enable Proxy** and provide the hostname or IP address for the **Proxy Host**.

You have completed the pre-installation requirements for OCMS SCE.

Next install OCMS SCE through Custom installation mode in the OCMS InstallShield wizard as described in [Installing Oracle Communication and Mobility Server](#). After that, to complete the installation perform the procedures described in [Performing Post-Installation Procedures for Oracle Communication and Mobility Server Service Creation Environment](#).

Installing Oracle TimesTens In-Memory Database

Both Oracle TimesTen and OCMS must be installed as the same user, and that user should not be root. Depending on whether you have an existing non-root user defined for installing Oracle TimesTen and OCMS, you must perform one of the following procedures:

- [Creating a Non-Root User for Installing Oracle TimesTen and OCMS](#)
- [Installing Oracle TimesTen by an Existing Non-Root User](#)

When you have completed one of these procedures, perform the steps in [Installing Oracle TimesTen on Linux](#) or [Installing Oracle Times Ten on Windows](#).

Creating a Non-Root User for Installing Oracle TimesTen and OCMS

If a non-root user does not exist, perform the following procedure as a root user in Linux:

1. Create the Oracle TimesTen group if it does not already exist using the following command:

```
/usr/sbin/groupadd timesten
```

2. Create a non-root user (e.g. ocmsuser) and add the user as a member of the timesten group using the following command:

```
/usr/sbin/adduser -d </location of home directory of user ocmsuser> -G timesten ocmsuser
```

3. Change or set the password for user ocmsuser using the following command:

```
passwd ocmsuser
```

Enter the password twice.

4. Create the directory `/etc/TimesTen`, if it does not already exist, using the following command:

```
mkdir /etc/TimesTen
```

5. Assign ownership and permission to this directory using the following commands:

```
chmod 775 /etc/TimesTen  
chgrp timesten /etc/TimesTen
```

Next perform the procedures described in [Installing Oracle TimesTen on Linux](#).

Installing Oracle TimesTen by an Existing Non-Root User

As root, perform the following steps if you already have a non-root user for installing Oracle TimesTen and OCMS:

1. Create the timesten group, if it does not already exist, using the following command:

```
/usr/sbin/groupadd timesten
```

All users who install Oracle TimesTen need to be in this group.

2. Create the directory /etc/TimesTen if it does not already exist, using the following command:

```
mkdir /etc/TimesTen
```

3. Assign ownership and permission to this directory using the following commands:

```
chmod 775 /etc/TimesTen
chgrp timesten /etc/TimesTen
```

Next perform the procedures described in [Installing Oracle TimesTen on Linux](#).

Installing Oracle TimesTen on Linux

Perform the following steps as a non-root user on Linux:

1. Execute setup.sh and complete the interactive installation.
2. Select the default value of "tt60" for the instance name.
3. Select Oracle TimesTen In-Memory Database (first option: we do not require the cache connect feature).
4. Install the Client/Server and Data Manager.
5. Accept the default values until you get to enabling access control. Select "yes" to enable access control.
6. For the hostname running the Oracle TimesTen server, enter the fully qualified domain name of your host.
7. Accept the default values and finish the installation.

A screen log, provided in Appendix A, [Oracle TimesTen Installation Output](#), shows a typical installation.

Installing Oracle Times Ten on Windows

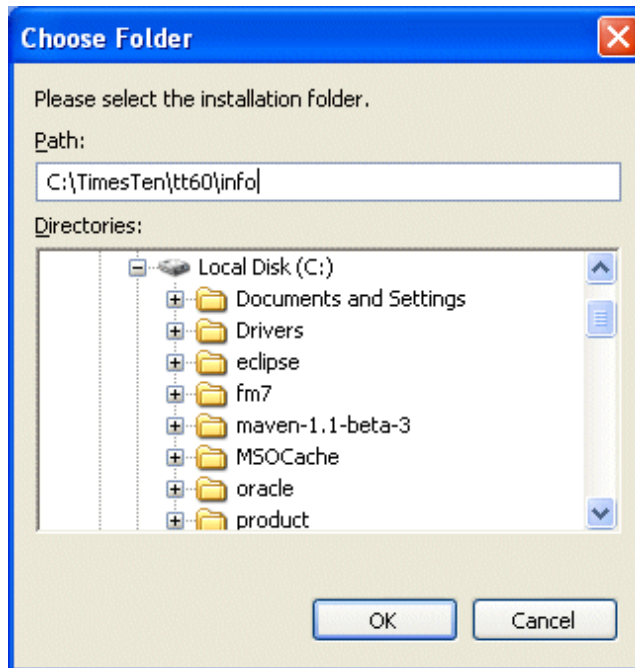
Perform the following steps to install Oracle TimesTen on Windows:

1. Launch setup.exe (On the OCMS CD, you can find this file at Oracle TimesTen\Windows).
2. When the Welcome screen appears, click **Next** to proceed.
3. Select either the default destination location (C:\TimesTen\tt60) or select **Browse** to pick a different location.

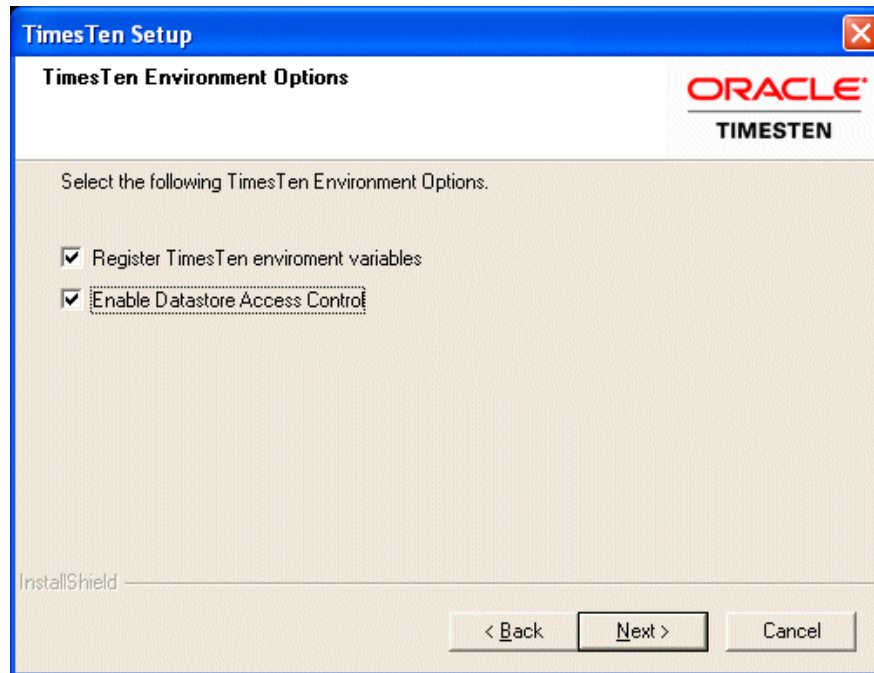
Make sure that your destination path does not contain any folders with spaces in their names.

4. Select "Typical" for the installation type.
5. Do not install Cache Connect to Oracle. Select "No."
6. Do not select the default data store location. Click **Browse**.
7. Enter <TimesTen Home>\info, where <TimesTen Home> is what you selected in step 3 above and click **OK** (Figure 2-1).

Figure 2-1 Selecting an Oracle TimesTen Data Store Location



8. Click **Next** in the dialog that appears and proceed with the installation.
9. Select the default Program Folder location.
10. Register environment variables and also make sure to enable datastore access control (Figure 2-2).

Figure 2–2 Registering Environment Variables and Enabling Access Control

11. Select "JDK 1.5" for the Java version
12. Verify the installation information and click **Next** to proceed.
You can monitor the progress of the installation.
13. Click **Finish** to complete the TimesTen installation.

Verifying Oracle Times Ten In-Memory Database Installation

Ensure that OracleTimes In-Memory database is installed and running by performing the following tests:

1. After installing TimesTen, please verify that TimesTen is up and running by performing the following command: `<TimesTen_Home>/bin/ttstatus`
If you receive the following error, TimesTen is not up:
`ttStatus: Could not connect to TimesTen daemon: Connection refused`
2. Start TimesTen with the following command:
`<TimesTen_Home>/bin/ttdaemonadmin -start`
3. Verify that you receive the following output:
`TimesTen Daemon startup OK.`
4. Issue the `ttstatus` command again to verify that TimesTen is up and running.

Installing Oracle Communication and Mobility Server

You can install OCMS on the Microsoft Windows or Linux operating systems. Normally OCMS is installed through an InstallShield wizard. OCMS may also be installed through a silent installation mode.

Perform the following steps to install OCMS:

1. Close any SIP client applications that are running.
2. Configure JAVA_HOME to the Java 2 Platform, Standard Edition 5.0 installation directory.

For example, C:\j2sdk1.5.0\jre.

3. Add %JAVA_HOME%\bin to the PATH environment variable.
4. Run the installation executable for your operating system:
 - For Microsoft Windows operating systems, run **setupwin32.exe**.
 - For Linux operating systems, run **setuptoolslinux.bin**.

After running the OCMS executable, the InstallShield Wizard for OCMS searches for a Java 2 Platform, Standard Edition Development Kit (JDK) 1.5. If the InstallShield Wizard for OCMS is unable to automatically find the JDK 1.5, you must specify its location.

For Linux installations, perform the following command

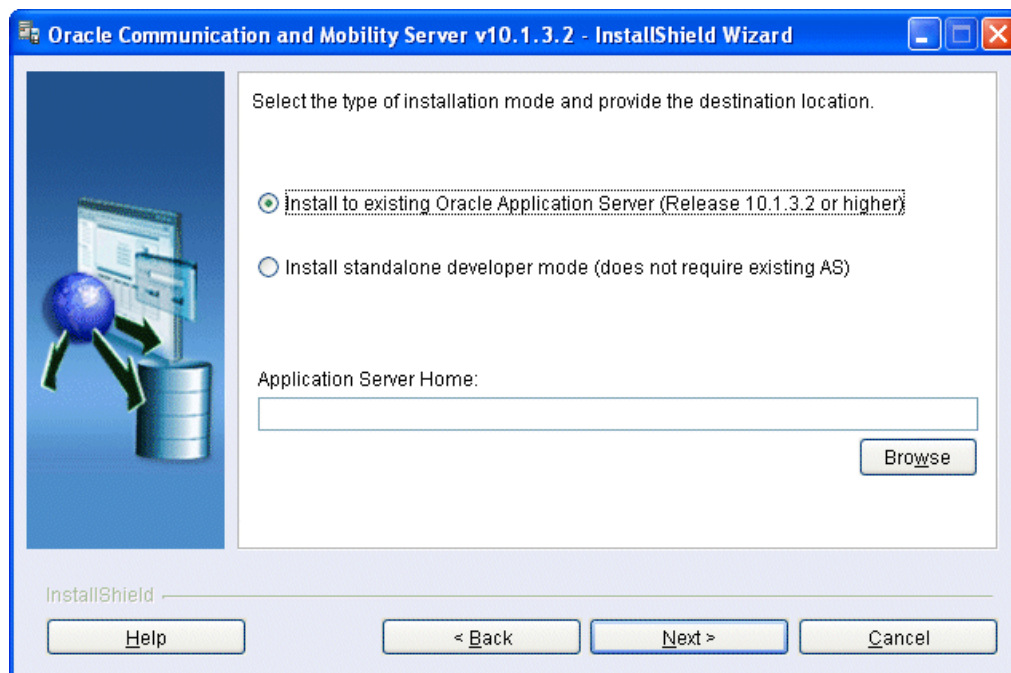
```
-is: javahome <JAVA_HOME>
```

When the InstallShield Wizard for OCMS locates the JDK 1.5, it starts and displays the Welcome screen.

5. Click **Next** to continue.
6. Select the IP address of the system for the OCMS deployment from the list. Record this IP address for later access to OCMS through Enterprise Manager.

Selecting an Installation Mode

After selecting the installation type (and after configuring Custom Installation and Edge Proxy, if selected), the OCMS Installation Mode window appears ([Figure 2-3](#)).

Figure 2-3 OCMS Installation Mode Window

Select one of the following installation modes. For more information on these installation modes see "[Installation Modes](#)" in the Product and Installation Overview chapter.

- **Install to existing Oracle Application Server, Release 10.1.3.2 or higher:** This installation mode is the default selection and it is also the recommended selection for production deployments. The InstallShield for OCMS verifies if the provided Application Server Home contains an Oracle Application Server installation.
- **Install in standalone developer mode:** The standalone developer mode is recommended for development users only due to limited management capabilities. This option installs Oracle Containers for J2EE (OC4J) software, Release 10.1.3.2, and does not require an application server.

Specifying the Application Server Home

The Application Server Home is the installation directory for Oracle Application Server, or the installation directory for a standalone developer mode OC4J installation.

To specify the Application Server Home:

1. Specify an installation directory in the *Application Server Home* field.

For Oracle Application Server installation mode, specify the application server home.

For standalone developer mode enter the path of an empty or non-existent directory. The default directory will work correctly. You can use the **Browse** button to navigate to a directory. You can also create a new directory.
2. Click **Next** to continue.

Specifying Oracle Application Server Username and Password

For installation to an existing Oracle Application Server home, enter the administrator username and password for your installation of the Oracle Application Server. These credentials will be used to connect to the Oracle Application Server instance and deploy applications to it. The username and password provided will be validated before you can continue with the installation.

For installation in standalone developer mode, the username and password are for the standalone OC4J which will be installed along with OCMS. You cannot change the default username of "oc4jadmin." Your standalone installation of OC4J will be protected with these credentials. No validation of credentials is performed in this installation mode.

Selecting the Installation Type

A typical installation includes the SIP Container, Proxy Registrar, Presence, Subscriber Data Services, and Application Router. Features that can only be installed in a custom installation include Presence Web Services, STUN Server, Aggregation Proxy, Edge Proxy, and the Service Creation Environment (SCE) Eclipse Plugin.

Select whether to perform a typical or custom installation and click **Next**. Select the custom installation type if you do not require all the applications provided in the typical installation mode. If you selected a custom installation, select the features to be installed (for more information refer to Chapter 1, "Overview") and click **Next**.

Specifying the Eclipse Home

If you selected SCE Eclipse Plugin for installation in Custom installation mode, you will be prompted to enter the directory for the Eclipse Home.

To specify the Eclipse Home

1. Specify the directory where Eclipse is installed in the *Eclipse Home* field.
You can use the **Browse** button to navigate to the Eclipse Home directory.
2. Click **Next** to continue.

The OCMS SCE Plugin for Eclipse is installed in the \plugins directory under the Eclipse home directory.

Specifying the STUN Server Primary and Secondary Addresses

If you selected STUN Server for installation in Custom installation mode, you will be prompted to enter the host and port for the primary and secondary STUN servers. Configuring both primary and secondary STUN servers is required.

To specify the STUN Server hosts and ports:

1. Enter the hostname or IP address of the primary STUN server in the *Primary Host Address* field.
2. Enter the hostname or IP address of the secondary STUN server in the *Secondary Host Address* field.
3. Verify that the primary and secondary ports (default values of 3478 and 3479) are available, or enter available port numbers.
4. Click **Next** to continue.

Specifying Oracle TimesTen In-Memory Database Location

You must install and configure an Oracle TimesTen In-Memory Database if you install the Subscriber Data Services component of OCMS.

To specify the TimesTen database location:

1. Enter the TimesTen database location in the *TimesTen Home* field. You can use the **Browse** button to navigate to the directory.

On a Windows operating systems, the installer prepopulates the field with the TimesTen location from the Windows registry.

2. Click **Next** to continue.

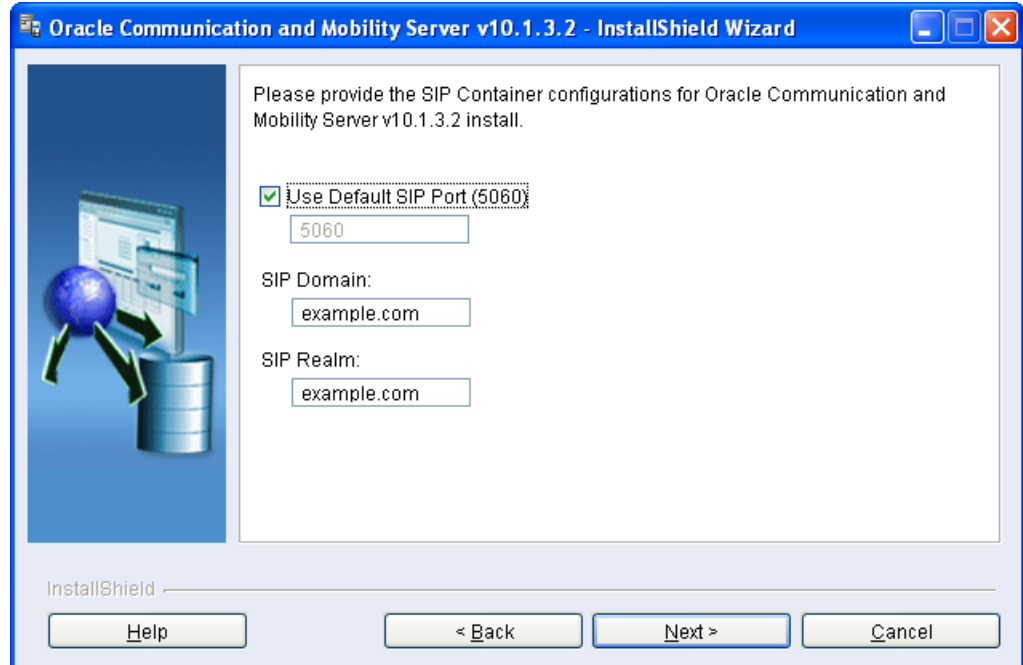
The message "Checking TimesTen Requirements. Please Wait." is displayed. The InstallShield Wizard for OCMS verifies that the TimesTen directory is valid, and that it can connect to it.

Note: If Oracle TimesTen is not correctly configured, the installation will fail. Refer to *Oracle TimesTen Installation Guide* for information on configuring these parameters.

Configuring the SIP Container

After the InstallShield Wizard for OCMS verifies the TimesTen requirements, it displays the SIP Container configuration window (Figure 2–4).

Figure 2–4 OCMS SIP Servlet Container Configuration Window



To configure the SIP Container:

1. Select or configure the following options:

- **Use Default SIP Port** (selected by default): The InstallShield for OCMS displays the default SIP port. The port used is 5070 in an installation with Edge Proxy, and is port 5060 in an installation without Edge Proxy.

If you receive a message that the SIP port is in use, exit all client applications, select Back, and return to this window.

To provide a different port number, deselect this option and enter the port number. This port can be reconfigured later through a JMX console. Refer to the *Oracle Communication and Mobility Server Administrator's Guide* for configuration details.

- **SIP Domain:** Specifies the domain or hostname of the machine where OCMS is being installed. The default is example.com.
 - **SIP Realm:** Specifies the SIP realm used for authentication. This is also the domain or hostname of the machine where OCMS is being installed. The default is example.com.
2. Click **Next** to continue.

Note: InstallShield for OCMS enables configuration of only one SIP domain and one SIP realm. You can configure additional SIP domains and SIP realms after the installation using the Domains and Realms attribute of the SIP Servlet Container MBean. Multiple SIP domains can exist in a SIP realm. Refer to *Oracle Communication and Mobility Server Administrator's Guide* for more information.

Configuring Test Users

When installing OCMS you can create a number of predefined test users. To create test users:

1. Select the **Number of Test Users** from 0-12.

Selecting 0 will not create any test users.

2. Enter the **Username Prefix** for the test users.

The default prefix is "test.user". The username for each test user will be prefixed by this string.

For example, if you select 3 for Number of Test Users and "test.user" for Username Prefix, the following test users will be created:

```
test.user1@sip-domain
test.user2@sip-domain
test.user3@sip-domain
```

WARNING: This release of OCMS supports lowercase usernames. Only use lowercase usernames for the Username Prefix.

3. Enter **Password** for the test users.
Each test user will have this password.
4. Confirm the **Password** for the test users.
5. Click **Next**.

Recording Installation Summary Information

The OCMS installation summary screen displays the installation environment, the components to be installed, and the settings and port numbers that you configured.

1. Record the installation summary information in the "Installation Configuration" section, including port numbers, for your later reference.

This information is required when configuring the SIP client.

2. Ensure that all the installation summary information is correct, and the correct OCMS applications will be installed.
3. Click **Next** to begin installing the OCMS components.

The InstallShield Wizard for OCMS displays messages to inform you about the installation progress. The following events occur during installation:

- The InstallShield Wizard for OCMS deletes all existing OCMS Oracle TimesTen In-Memory database tables, and creates new, empty tables. The messages "Configuring OCMS datastores", "Dropping Tables under OCMSDB", "Creating Tables under OCMSDB", and "Creating OCMS datastores" are displayed.
- In Oracle Application Server mode and standalone developer mode installations, the message "Starting Oracle Communication and Mobility Server" is displayed. After you press the Finish button, you are prompted to start Oracle Communication and Mobility Server.
- One or more of the following messages are displayed for the installation of each OCMS application: "Deploying Subscriber Data Services Application", "Deploying Proxy Registrar Application", "Deploying Presence Application", and "Deploying Application Router Application."

Note: If you encountered any errors during the installation, look at the installation log file at \$ORACLE_HOME/ocmsinstall.log

Selecting Whether to Start OCMS

After OCMS is successfully installed, you are prompted to start OCMS (this is the default selection). To exit the installer and start OCMS click **Finish**. To select not to start OCMS you must uncheck the "Start OCMS server before exiting" box, then click **Finish**.

Note: The installation summary is available at the following HTML file:

\$ORACLE_HOME/sdp/install/InstallSummary.htm

In addition, if you choose to start the server at the conclusion of the installation, your Web browser is launched and displays InstallSummary.htm.

The configuration options you selected during installation are available at:

\$ORACLE_HOME/sdp/install/installconfig.xml

Running OPMN and OCMS on Microsoft Windows OS

When Oracle Application Server is installed on a Microsoft Windows OS, OPMN is registered as a service and runs as the SYSTEM user by default. For OCMS to work, both Oracle Application Server and Oracle TimesTen have to be running as the same user. We recommend performing the following procedure:

1. Open the Services control panel by selecting **Control Panel, Administrative Tools, and Services**.
2. Find the entry that corresponds to your installation:
Oracle-iasxxxxxxProcessManager.
3. Right click on the entry and select **Properties**.
4. Click the **Log On** tab.
5. Select the *This account* radio button.
6. Enter the *username* and *password* of the non-system user who has installed both Oracle TimesTen and OCMS.
7. Click **OK** and restart the service.

Listing the Oracle Remote Method Invocation (RMI) Port

Oracle Application Server Containers for J2EE (OC4J) provides support for allowing EJBs to invoke one another across OC4J containers using the proprietary Remote Method Invocation (RMI)/Oracle RMI (ORMI) protocol. For more information on Oracle RMI, refer to *Oracle Application Server Containers for J2EE Services Guide*.

If a particular JMX application requires connecting to the Oracle RMI port, then you will need to know what port is assigned for RMI. The RMI port is dynamically assigned by OPMN (Oracle Process Management and Notification).

The following command lists the latest port assignments:

```
opmnctl status -l
```

For example (some columns omitted for clarity):

Figure 2–5 Output from opmnctl command

```
Processes in Instance: <instancename>_<myhost>.com
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
ias-component | process-type | pid | ... | ports
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
OC4JGroup:default | OC4J:ocms | 7156 | ... | jms:12603,ajp:12503,rmis:12703,sip:5060,rmi:12403
OC4JGroup:default | OC4J:OC4J_webCent | N/A | ... | N/A
OC4JGroup:default | OC4J:home | 7154 | ... | jms:12601,ajp:12501,rmis:12701,rmi:12401
HTTP_Server | HTTP_Server | 7153 | ... | https1:4443,http2:7200,http1:7777
ASG | ASG | N/A | ... | N/A
TIMESTEN | TIMESTEN | 7152 | ... | N/A
```

The ports column of the table lists the ports selected by opmn. The following example corresponds to the OCMS instance of OC4J ("OC4J: ocms"):

```
jms:12603,ajp:12503,rmis:12703,sip:5060,rmi:12403
```

Verifying the OCMS Installation

Perform the following steps to verify that OCMS has been successfully installed and is running:

1. With the OCMS server up and running, perform the following command to make sure that the SIP container is listening for SIP traffic on port 5060 (default SIP port):

```
netstat -a | grep 5060
```

Replace "5060" with the port number you chose during installation. You should see the following output:

```
tcp      0      0 <hostname>:5060  *:*      LISTEN
udp      0      0 <hostname>:5060  *:*
```

2. Navigate to the Oracle Enterprise Manager Web page at http://<ip_address>:<port_number>/em.

For port number, use one of the following values:

- Use 8888 for standalone developer mode installation.
 - Use the HTTP server port for an Oracle AS installation with an HTTP server.
 - Use 7785 for an Oracle AS installation without an HTTP server.
 - For HTTPS, use the HTTPS port for the Oracle AS installation.
3. Enter the OC4J administrator *username* and *password*.
 4. Verify that Oracle Home specifies the OCMS installation directory.
 5. Verify that server Status is "Up."
 6. Select the **Applications** tab.
 7. Verify that the applications you installed are deployed and are all up and running. You may notice that one or more applications are deployed as a child application of subscriberdataservices.

For a typical installation, you should see `ocmsrouteladerear`, `proxyregistrar`, `subscriberdataservices`, and `presence`.

8. Return to the home page and select the **Administration** tab. In the left margin, expand `SipContainer` and click on `SipServletContainer` and verify the MBean property values

The verification of OCMS is complete.

Installing Diameter Libraries

Installing the Diameter libraries allows you to use the Diameter protocol for Diameter client development. Diameter is an AAA (Authentication, Authorization, and Accounting) protocol. Oracle provides support for the Diameter Base Protocol as defined by RFC 3588, and APIs for developing base Diameter applications, as well as IMS applications leveraging the Sh, Ro, and Rf interfaces. Note that Diameter is only available for Linux.

Diameter Components

The Oracle distribution of Diameter consists of a runtime environment, an SDK, and emulators. The SDK includes the runtime environment and code examples. Developers should install the SDK for development purposes. If developing and testing the Sh interface, HSS and SLF emulators are needed as well. For production, only the runtime environment is needed.

Home Subscriber Server (HSS) Emulator

HSS is the master user database that supports IMS network entities that handle calls and sessions. It stores subscription-related information such as user profiles, performs user authentication and authorization, and provides information about the physical location of users.

Subscriber Location Function (SLF) Emulator

SLF maps user addresses when multiple HSSs are used.

Installing Diameter Runtime

Perform the following steps to install the Diameter runtime for production deployments:

1. Create the Diameter installation directory (`$DIAMETER_HOME`) at `$ORACLE_HOME/sdp/diameter`.
2. On Linux, copy `OracleAS-diameter-runtime-1.0.0-Linux-intel.tgz` from the CD `Disk1/Diameter/Linux` into `$DIAMETER_HOME`.
3. On HP-UX copy `OracleAS-diameter-runtime-1.0.0-HP-UX-11iv1-PA` from the CD `Disk1/Diameter/HPUX` into `$DIAMETER_HOME`.
4. Decompress the SDK files into `$DIAMETER_HOME`. It will be decompressed into a subdirectory called `OracleAS-diameter-runtime-1.0.0-Linux-intel` (`$DIAM_RUNTIME_HOME`) for Linux, or `OracleAS-diameter-runtime-1.0.0-HP-UX-11iv1-PA` for HP-UX.

For example:

- `gunzip OracleAS-diameter-runtime-1.0.0-Linux-intel.tgz`
 - `tar xvf OracleAS-diameter-runtime-1.0.0-Linux-intel.tar`
5. Copy or perform a symbolic link to `mdiameter.jar` from `$DIAM_RUNTIME_HOME/lib` to the `applib` directory.

For a standalone developer mode installation perform the following commands:

- `cp $DIAM_SDK_HOME/lib/mdiameter.jar $ORACLE_HOME/j2ee/home/applib`

For an Oracle Application Server mode installation perform the following commands:

- `cp $DIAM_SDK_HOME/lib/mdiameter.jar $ORACLE_HOME/j2ee/ocms/applib`

6. In Linux, add a shared library path to `LD_LIBRARY_PATH`. In HP-UX, add a shared library path to `SHLIB_PATH`.

For standalone developer mode installation perform the following commands:

- Edit the file `$ORACLE_HOME/sdp/bin/startocms.sh`
- Add `$DIAM_SDK_HOME/lib` to `LD_LIBRARY_PATH` (or `SHLIB_PATH` in HP-UX)

For an Oracle Application Server mode installation perform the following commands:

- Edit the file `$ORACLE_HOME/opmn/conf/opmn.xml`.
- Modify the following line:

```
<variable append="true" id="LD_LIBRARY_PATH"
value="/scratch/ocmsuser/TimesTen/tt60/lib"/>

to:

<variable append="true" id="LD_LIBRARY_PATH"
value="/scratch/ocmsuser/TimesTen/tt60/lib:$DIAM_SDK_
HOME/lib"/>
```

Installing Diameter for Development

Perform the following procedures to install Diameter for development.

- [Updating CLASSPATH to Include Diameter Java Library](#)
- [Installing the Diameter SDK](#)
- [Installing the HSS and SLF Emulators](#)
- [Importing the Diameter Packages into Your Servlet](#)

Updating CLASSPATH to Include Diameter Java Library

There is one Java library that exposes all the Diameter APIs. This library is installed in the applib directory. You must include this library in your CLASSPATH.

Installing the Diameter SDK

Perform the following steps to install the Diameter SDK for development purposes:

1. Create the Diameter installation directory (\$DIAMETER_HOME) at \$ORACLE_HOME/sdp/diameter.
2. On Linux, copy OracleAS-diameter-sdk-1.0.0-Linux-intel.tgz from the CD Disk1/Diameter/Linux into \$DIAMETER_HOME.
3. On HP-UX, copy OracleAS-diameter-runtime-1.0.0-HP-UX-11iv1-PA from the CD Disk1/Diameter/HPUX into \$DIAMETER_HOME.
4. Decompress the SDK files into \$DIAMETER_HOME. It will be decompressed into a subdirectory called OracleAS-diameter-sdk-1.0.0-Linux-11iv1-PA (\$DIAM_SDK_HOME), or OracleAS-diameter-runtime-1.0.0-HP-UX-11iv1-PA on HP-UX.

For example:

- gunzip OracleAS-diameter-sdk-1.0.0-Linux-intel.tgz
 - tar xvf OracleAS-diameter-sdk-1.0.0-Linux-intel.tar
5. Copy or perform a symbolic link to mdiameter.jar from \$DIAM_SDK_HOME/lib to the applib directory.

For a standalone developer mode installation enter the following command:

- cp \$DIAM_SDK_HOME/lib/mdiameter.jar \$ORACLE_HOME/j2ee/home/applib

For an Oracle Application Server mode installation enter the following command:

- cp \$DIAM_SDK_HOME/lib/mdiameter.jar \$ORACLE_HOME/j2ee/ocms/applib

6. Add a shared library path to LD_LIBRARY_PATH. In HP-UX add a shared library path to SHLIB_PATH.

For a standalone developer mode installation enter the following commands:

- Edit the file `$ORACLE_HOME/sdp/bin/startocms.sh`
- Add `$DIAM_SDK_HOME/lib` to `LD_LIBRARY_PATH` (or `SHLIB_PATH` in HP-UX)

For an Oracle Application Server mode installation perform the following steps:

- Edit the file `$ORACLE_HOME/opmn/conf/opmn.xml`.
- Modify the following line:

```
<variable append="true" id="LD_LIBRARY_PATH" value="/scratch/ocmsuser/TimesTen/tt60/lib"/>
```

to:

```
<variable append="true" id="LD_LIBRARY_PATH" value="/scratch/ocmsuser/TimesTen/tt60/lib:$DIAM_SDK_HOME/lib"/>
```

Installing the HSS and SLF Emulators

Perform the following steps to install the HSS and SLF emulators:

1. Create the Diameter installation directory (`$DIAMETER_HOME`) at `$ORACLE_HOME/sdp/diameter`.
2. Copy the `SLF_HSS_Emulator.tar.gz` from the CD Disk1/Diameter/Linux into `$DIAMETER_HOME`.
3. Decompress the SDK files into `$DIAMETER_HOME`. It will be decompressed into a subdirectory called `SLF_HSS_Emulator`.

For example:

- `gunzip OracleAS-diameter-runtime-1.0.0-Linux-intel.tgz`
- `tar xvf OracleAS-diameter-runtime-1.0.0-Linux-intel.tar`

Importing the Diameter Packages into Your Servlet

The base package name, `oracle.sdp.diameter`, must be known to import the packages into your servlet. You can perform an `import oracle.sdp.diameter.*` to import all packages.

Starting and Stopping Oracle Communication and Mobility Server

After installation, you are prompted to start Oracle Communication and Mobility Server. You can manually start or stop OCMS as described in the following procedures.

Standalone Developer Mode or Oracle Application Server Mode

In standalone developer mode or in Oracle Application Server mode perform the following procedures to start or stop OCMS:

To start OCMS in a Linux operating system, enter the following commands:

- `cd $ORACLE_HOME/sdp/bin`
`./startocms.sh`

To stop OCMS in a Linux operating system, enter the following commands:

- `cd $ORACLE_HOME/sdp/bin`
`./stopocms.sh`

To start OCMS in a Windows operating system, enter the following command:

- Select **Start, Program Files, Oracle Communication and Mobility Server, Start OCMS**.

Another method is running the `startocms.bat` file from the `<ocms_directory>\sdp\bin` directory.

To stop OCMS in a Windows operating system, enter the following command:

- Select **Start, Program Files, Oracle Communication and Mobility Server, Stop OCMS**.

Another method is running the `stopocms.bat` file from the `<ocms_directory>\sdp\bin` directory.

Performing Post-Installation Procedures for Oracle Communication and Mobility Server Service Creation Environment

Perform the following steps to complete the installation of OCMS SCE:

1. If OCMS is running, stop it by selecting **Start, Program Files, Oracle Communication and Mobility Server, Stop OCMS**.

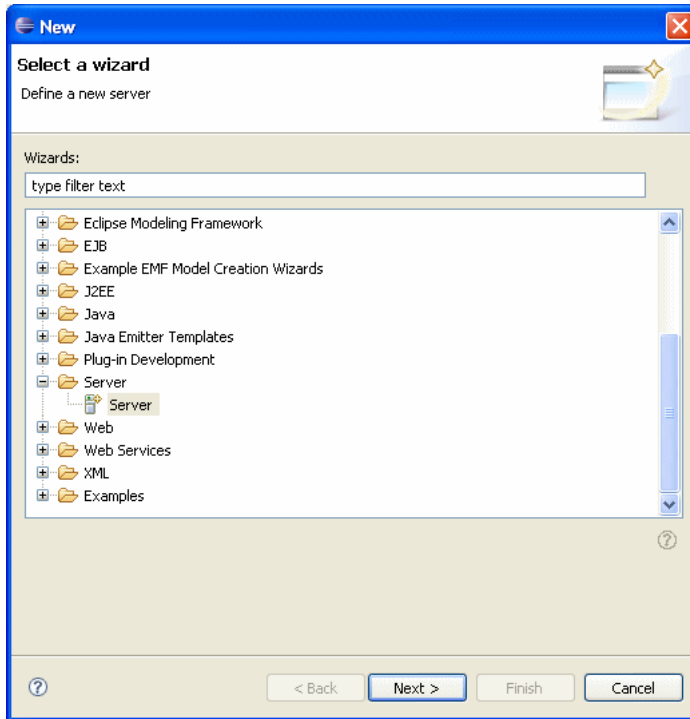
When completing the installation of OCMS the InstallShield wizard prompts you to start OCMS. If you selected to start OCMS, the server is running and will need to be stopped so that you can start the server through Eclipse.
2. Close and restart Eclipse by entering `eclipse.exe -clean` from the command line.

This allows Eclipse to load OCMS SCE.
3. Define OCMS as a new server in Eclipse by selecting, **File, New, Other**.

The Define a New Server wizard appears (Figure 2-6).
4. Select **Server** under the **Server** folder.
5. Click **Next**.
6. Navigate to the **Oracle** folder and select the following application server.
 - *OCMS SipAS/OC4J 10.1.3.x*: this refers to an installation of OCMS in an Oracle Application Server environment or standalone developer mode OC4J environment.
7. Click **Next**.
8. Specify the path for the OCMS instance, and specify the same path for the Classpath Variable. Continue and complete the wizard.

You can now start OCMS by opening the Servers view.
9. Select **Window, Show view, and Other**. Select **Server, Servers** and click **OK** (Figure 2-6).

Figure 2–6 Defining OCMS as a New Server in Eclipse



You can now start and stop OCMS from the Servers view by selecting **Window, Show View, Server, Servers**. The server status is indicated in the Status column.

The OCMS installation is complete. Perform the procedures in the Verification chapter to verify that OCMS has been installed correctly and that you can establish communication between two SIP clients.

Verifying the OCMS Installation and Features

This chapter describes how to verify the installation of Oracle Communication and Mobility Server (OCMS). It contains the following topics:

- [Installing Oracle Communicator and Verifying the OCMS Installation](#)
- [Performing Required Post-Installation Administrative Tasks](#)

Installing Oracle Communicator and Verifying the OCMS Installation

Before deploying an application, verify that you can connect to Oracle Communication and Mobility Server by provisioning two users, and installing a SIP client, Oracle Communicator, to perform a connectivity test. Oracle Communicators clients listen on the destination IP address and port configured in the deployment descriptor.

You can use Oracle Communicator to test the following:

- Interaction with the Presence Server—Subscribe to and publish a user's Presence, receive event notifications, for example watch for a popup indicating that a user has come online.
- Voice communication—Place a call from one user to another to verify VoIP functionality.
- Instant Messaging—Send a message from one user to another to verify the functionality of instant messaging.

Perform the following tasks to set up the Oracle Communicator client and test OCMS:

- [Provisioning Sample Users](#)—Each sample user is used to login to an instance of the Oracle Communicator client.
- [Setting the Log Level](#)—Setting the log level to "info" to enable viewing all SIP traffic in real time.
- [Installing and Configuring Oracle Communicator](#)—Installing two instances of the Oracle Communicator client in order to test the functionality of the core OCMS SIP servlets. Each instance should be installed and run on a different computer.
- [Verifying Servlet Registration](#)—Verifying that the servlet has been registered correctly.
- [Testing the Presence Server](#)—Testing publication and subscription to a user's Presence, and receipt of event notifications.
- [Making a SIP Test Call](#)—Establishing a call through the SIP network.
- [Making a SIP to PSTN Test Call](#)—Establishing a call from a test user to a telephone in the public switched telephone network (PSTN).

Provisioning Sample Users

If you created test users during installation, you are ready to connect to your installation of OCMS using Oracle Communicator. You can install and configure Oracle Communicator and sign-in as one of the test users you created during installation.

Otherwise if you did not create any test users, you must first provision two users using SASH in order to test the SIP servlet by navigating to the following directory and launching SASH: `cd $ORACLE_HOME/sdp/sash/sbin.`

For information on provisioning users, refer to "Provisioning Users and Applications" in *Oracle Communication and Mobility Server Administrator's Guide*.

WARNING: This release of OCMS supports lowercase usernames. Only use lowercase usernames.

Setting the Log Level

Set the log level to `info` to log all traffic. Watch the log while registering the servlet and communicating with the clients. For more information, refer to "Setting the Log Levels for Core Components" in the *Oracle Communication and Mobility Server Administrator's Guide*.

Keep an open logger window so as to monitor the tests conducted in this chapter.

Installing and Configuring Oracle Communicator

If two different computers are available, you can install and configure two instances of the Oracle Communicator client on two different computers. If two computers are not available, you can start two instances of Oracle Communicator on the same computer. In that case, you must make sure that OCMS is running first, provision two accounts, then start two instances of Oracle Communicator on the same computer.

To install and configure the Oracle Communicator client:

1. Ensure that Oracle Communication and Mobility Server is running.
2. Launch the installation file and follow the on-screen instructions.
 - Click **Next** at the Welcome screen.
 - Select the installation directory for Oracle Communicator and click **Next**.
 - Select the installation preference and click **Next**.
 - Click **Next** to begin the installation.
 - Click **Finish** when the installation is complete.
3. Run the Oracle Communicator client by selecting **Start > Programs > Oracle > Oracle Communicator** and complete the Audio Setup wizard.

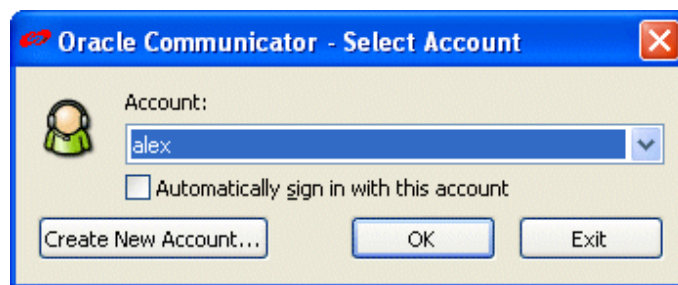
The AudioSetup wizard allows you to configure and test your computer's audio hardware, and configure sound devices. Perform the following configuration:

- Connect a headset to your computer and click **Next**.
- Read the test paragraph aloud. To adjust the volume click the **Volume** button and make any necessary changes.

The hardware wizard indicates whether or not your voice was detected.

- Click **Finish** to complete the audio configuration.
The Oracle Communicator Create Account Wizard is displayed, prompting you to create a new account.
- 4. Enter a name for the account to be created and click **Next**. This account name must be one you provisioned using the Sash command line.
- 5. Enter a SIP address for the first user in the form `username@example.com`.
- 6. Enter the full name of the user.
This is the name that is sent with each message.
- 7. Click **Finish** to exit the wizard.
The Select Account window is displayed (Figure 3-1).

Figure 3-1 Selecting an Oracle Communicator Account

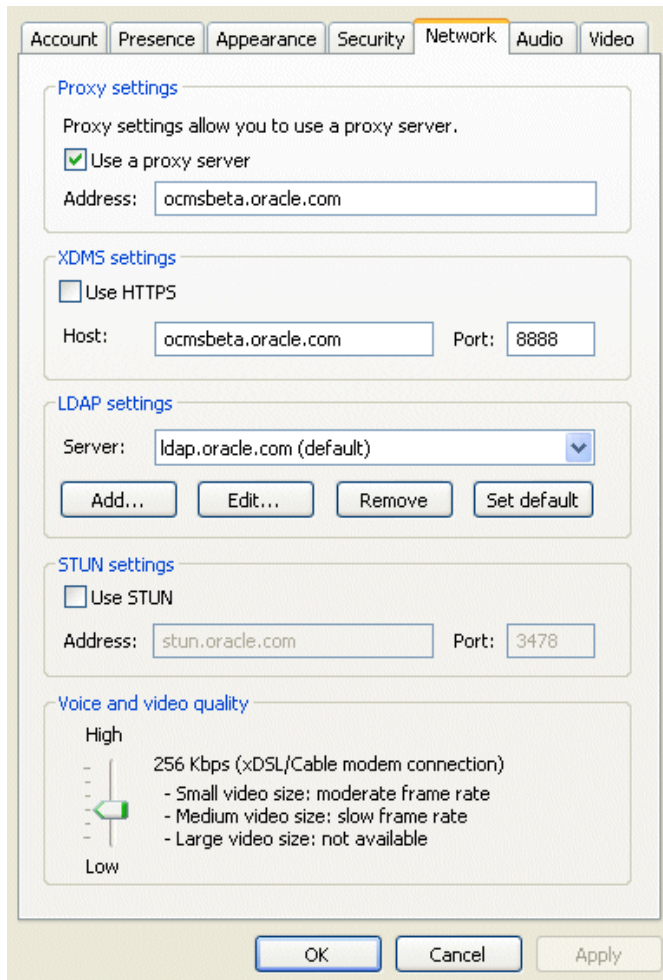


- 8. From the drop-down list, select the account you have just defined and click **OK**.
- 9. Enter your user name and password.
- 10. Click the settings icon and select **Preferences > Network**.
- 11. Check **Use a proxy server** and fill in the address of your SIP proxy server in the space provided (Figure 3-2) and click **OK**.
- 12. Check "Use HTTPS" if Oracle Application Server is configured with an HTTPS server.
- 13. Modify the default value under the section "XDMS Settings" from `xcap.<machine>.<domain>` to a valid value.

For port, use one of the following values:

- Use 8888 for standalone developer mode installation.
- Use the HTTP server port for an Oracle AS installation with an HTTP server.
- Use 7785 for an Oracle AS installation without an HTTP server.
- For HTTPS, use the HTTPS port for the Oracle AS installation.

This configuration allows Oracle Communicator clients to see each other's Presence information and to make calls.

Figure 3–2 Configuring a Proxy Server

14. Sign out of the Oracle Communicator client by right-clicking the client icon in the task bar and selecting **Sign Out**.
15. Log into Oracle Communicator with both clients and verify that you can send and receive messages between the clients.

When you see a message in a client "Connected to example.com" accompanied by a green status LED, you are successfully connected.

Verifying Servlet Registration

The first interaction between a SIP client and the SIP servlet container is registration. Upon its first attempt to connect to the SIP servlet container, the SIP client sends a REGISTER message to the server. If the SIP servlet container is correctly configured, it responds with 200 OK, a standard message indicating that all is well.

If the SIP servlet container responds with 401 Unauthorized this results in Oracle Communicator displaying a pop-up box for entering username and password. Upon entering the credentials, another REGISTER message is sent to the server, this time with authentication information.

You can watch this exchange by setting the log level to `info` (see ["Setting the Log Level"](#)) and watching the log as you run the SIP client.

To verify servlet registration:

1. Open a log window (make sure you have set the log level).
2. Select **Start > Programs > Oracle > Oracle Communicator**.
3. At the prompt, enter a user name and password (to provision a user, refer to "Provisioning Users and Applications" in the *Oracle Communication and Mobility Server Administrator's Guide*).
4. Run a separate instance of the SIP client (preferably on another computer) and login with a different user name and password.

A sample log showing the REGISTER method and the SIP servlet container's response is as follows:

```
DEBUG [traffic] (NetworkEventWorker-11@) < REGISTER sip:example.com SIP/2.0
Call-ID: 77c49573-572e-46cc-893c-dc3b693eec90 CSeq: 1 REGISTER To:
<sip:alice@example.com> From: "alice@example.com"
<sip:alice@example.com>;tag=16feb568-cb96-4349-a825-a401e8189753 Max-Forwards:
70 User-Agent: OCMS-CallTron/4.5.7.1445 Contact:
<sip:alice@10.0.0.10:5062;transport=TCP>;q=1.00;agentid="4960c58b-286c-4426-bc3
7-b5c6d91dcd7d";methods="INVITE, NOTIFY, MESSAGE, ACK, BYE, CANCEL";expires=600
Content-Length: 0 Via: SIP/2.0/TCP
10.0.0.10:5062;branch=z9hG4bK-1b9f16b3-10f9-44eb-8d50-dedd2cda5ed3.1;rport

DEBUG [traffic] (NetworkEventWorker-13@) > SIP/2.0 200 OK Via: SIP/2.0/TCP
10.0.0.10:1267;received=10.0.0.10;branch=z9hG4bK-eb1c7aba-7aa6-44fc-98e8-e36567
13e09c.1;rport=1267 To: <sip:alice@example.com>;tag=6ed1a858-1083331acac--7ffa
From: "alice@example.com"
<sip:alice@example.com>;tag=89f9161e-762e-4750-9cea-970825f67848 Call-ID:
77c49573-572e-46cc-893c-dc3b693eec90 CSeq: 2 REGISTER Server:
OCMS-transactron/3.2.0-48 Content-Length: 0
```

Testing the Presence Server

Oracle Communicator enables testing the main functionalities of the Presence server. By running two instances of the SIP client with a different user logged into each, you can:

- Subscribe to a user's Presence by requesting permission to view the user's online status ("[Subscribing to a User's Presence](#)")
- Publish a user's Presence ("[Testing Publication of a User's Presence](#)")
- Receive notifications of events, for example when a user logs on ("[Testing Receipt of Event Notifications](#)")

Subscribing to a User's Presence

A Presence subscription is a document that defines which users have access to a given user's Presence data, such as user status ("Available," "Away," and so on) or a "Gone fishing" message. A user must request permission to subscribe to a given user's Presence data. Once permission is granted, the subscription is saved and stored as a document.

In this section, you use two instances of Oracle Communicator client to request and grant subscription to a user's Presence.

To subscribe to a user's Presence:

1. Make sure that each test user is logged into a separate instance of the Oracle Communicator client, preferably on different computers.

- In the Oracle Communicator client where the first test user is logged in, click the **Contacts** button and select **Add Contact** (Figure 3-3).

Tip: For more information on how to add a contact in Oracle Communicator refer to the Oracle Communicator online help.

Figure 3-3 Adding an Oracle Communicator Contact

- In the Contact Properties tab that displays, enter the SIP address of the second test user you defined earlier in the space provided.
- Click **Add Contact**.
- Observe the second Oracle Communicator client instance. A message is displayed in which test user one requests permission to subscribe to the Presence of test user two.
- In test user two's Oracle Communicator client, click **OK** to grant Presence subscription permissions to test user one and add the user to the contact list of test user two.

Testing Publication of a User's Presence

Oracle Communicator enables users to change their Presence from "Available" to "Away," for example. Once the selected Presence status is saved to the server, it is effectively published, enabling users subscribed to the publisher's Presence to view his Presence data.

To publish a user's Presence:

1. In the first test user's Oracle Communicator client, click the Presence Status drop-down list at the bottom of the client.
2. From the drop-down list, select **Away**.
3. Observe the second test user's Oracle Communicator client. The status of test user one should display as Away.

Testing Receipt of Event Notifications

You can test whether OCMS sends event notifications by logging off one of the test users and then logging the test user back in. As the second test user comes back online, a message displays on the first test user's computer, notifying the user that test user two is online.

To receive notification of an event:

1. Add test user two to test user one's contact list (see "[Subscribing to a User's Presence](#)" for details on how to add a user to the contacts list).
2. Log out test user two by clicking the settings icon and selecting **Sign out**.
3. Wait a moment, and then log test user two back in by selecting the user's account from the drop-down list and clicking **OK**.
4. Observe the computer running the Oracle Communicator client with test user one logged in.

Oracle Communicator displays a message indicating that test user two has come online.

Making a SIP Test Call

Test the functionality of OCMS by establishing a call from one test user to another. Run each instance of Oracle Communicator on a separate computer equipped with speakers and a microphone, or a multimedia headset.

To place a call:

1. In the first Oracle Communicator client, right-click test user two and click **Call**.
2. Answer the call from the second Oracle Communicator client by clicking **Answer Call**.
3. Begin talking to verify that the other party can hear you.

Making a SIP to PSTN Test Call

If a SIP to PSTN gateway has been installed to route calls from the SIP network to the public switched telephone network (PSTN) you can make a test call from Oracle Communicator to a telephone number in the PSTN.

1. Launch an Oracle Communicator client.
2. In the Quickcall field, enter the calling information as follows:

```
sip:<phone number>@<IP address of SIP to PSTN gateway>
```

Note: You can substitute a hostname for an IP address if a DNS server is configured.

Monitoring OCMS Network Traffic with Ethereal

Ethereal® is a network protocol analyzer that you can use to monitor OCMS network traffic. Specifically you can monitor the TCP and UDP traffic (SIP clients use TCP or UDP to transport SIP messages) on the ports used for SIP, Presence, and Edge Proxy traffic.

Perform the following procedure to monitor OCMS network traffic with Ethereal:

1. Download and install Ethereal according to the instructions at the Ethereal website, <http://www.ethereal.com/>.

When installing Ethereal you must also install the software package WinPcap for capturing live network data.

Ethereal requires approximately 55 MB of hard disk storage to install.

2. Select **Start, Program Files**, and run **Ethereal**.
3. Configure Ethereal to monitor TCP and UDP traffic on the ports being used by OCMS. Typically you want to monitor ports 5060 through 5080. Refer to "Capture Filters" in the Ethereal help documentation.
4. Configure the capture output file.
5. Start capturing network traffic by selecting **Start** from the **Capture** menu.
6. View the captured data.

When troubleshooting OCMS network traffic issues, analyzing captured data by Ethereal is the primary method of analysis. A second source of data are the application server logs.

Performing Required Post-Installation Administrative Tasks

You have installed OCMS and verified the installation by using Oracle Communicator to connect to the OCMS SIP Server Container. The OCMS installation is now complete.

However, before applications can be deployed on OCMS, the OCMS administrator must perform the following administrative tasks described in *Oracle Communication and Mobility Server Administrator's Guide*:

- Configure the SIP Servlet Container and the Application Router. Refer to "Configuring the SIP Servlet Container" in *Oracle Communication and Mobility Server Administrator's Guide*.
- Perform required configuration for Presence, Proxy-Registrar, Edge Proxy, and Aggregation Proxy if these applications were installed. Refer to "Configuring SIP Applications" in the "Managing SIP Applications" chapter in *Oracle Communication and Mobility Server Administrator's Guide*.
- Provision OCMS users to the Oracle TimesTen In-Memory database using the Sapphire Shell (Sash) command-line utility. Refer to the "Provisioning Users and Applications" chapter in *Oracle Communication and Mobility Server Administrator's Guide*.
- Configure how authorization and authentication are performed for SIP applications and how security is set for SIP servlets. Refer to the "OCMS Security" chapter in *Oracle Communication and Mobility Server Administrator's Guide*.
- Configure Apache log4j-based logging for OCMS. Refer to the "Logging" chapter in *Oracle Communication and Mobility Server Administrator's Guide*.

Troubleshooting

This chapter describes typical installation and configuration problems and their solution. It includes the following topics:

- [Port Conflicts](#)
- [Loss of Network Connection During Installation](#)
- [Garbage Collection Performance Issues](#)
- [Cleanly Uninstalling OCMS and Correcting Problems from Manually Uninstalling OCMS](#)

Port Conflicts

As described in "[Port Requirements](#)" in the Product and Installation Overview chapter of this guide, OCMS requires the use of specific ports for SIP, Presence, and Edge Proxy communications.

The InstallShield for OCMS performs a check of the SIP port during installation to make sure it is not being used by another application.

If any other ports required for OCMS are already being used by another application, the OCMS installation fails, and the port conflicts are logged in the ocmsinstall.log file as "Address in Use." Examine the ocmsinstall.log file to determine the port conflicts. Reconfigure the ports used by your existing applications.

Loss of Network Connection During Installation

During the OCMS installation, an active network connection is required.

In the uncommon event that a network connection is lost during installation, the installation can fail. Examine the ocmsinstall.log file to see a log of this event.

Garbage Collection Performance Issues

Using the default Java Virtual Machine (JVM) settings provided in the OCMS installation can create garbage collection performance issues for some large installations. If you experience these issues, evaluate and configure the following parameters:

- Set the PermSize of the Oracle TimesTen database according to how many users you want to support. 720,000 users require about 768MB of PermSize. OCMS is installed with a default value of 256 MB.

- Set the heap size and other parameters accordingly. With an Oracle TimesTen PermSize setting of 768 MB, change the JVM startup parameters in \$ORACLE_HOME/opmn/conf/opmn.xml to include the following:
-XX:PermSize=128m -XX:MaxPermSize=128m -Xss128k -Xmx1280M -Xms1280M
- To run the OCMS SIP Servlet Container without Oracle TimesTen In-Memory Database, set the JVM startup parameters in \$ORACLE_HOME/opmn/conf/opmn.xml to include the following:
-XX:PermSize=128m -XX:MaxPermSize=128m -Xss128k -Xmx1536M -Xms1536M

Cleanly Uninstalling OCMS and Correcting Problems from Manually Uninstalling OCMS

You should always use the uninstaller to cleanly uninstall an OCMS installation since manually deleting OCMS can result in problems if OCMS is to be installed again.

Cleaning Uninstalling OCMS

In Windows XP you can uninstall OCMS by running *uninstaller.exe* located in the `_uninst` folder in the OCMS installation directory. In Linux you can uninstall OCMS by running *uninstaller.bin* located in the `_uninst` folder in the OCMS installation directory. In standalone installation mode, complete the uninstallation by deleting the entire installation home directory, if it exists. For an Oracle Application Server installation, also delete the `ocms` and `sdp` directories from the installation home directory.

Correcting Problems from Manually Uninstalling OCMS

If you have manually deleted folders or files and receive an error message indicating that OCMS cannot be installed because it is already installed, perform the following procedure to clean the machine:

1. Locate the following directory:
 - For Windows XP operating systems, navigate to the `<COMMONFILES>\InstallShield\Universal\common\Gen1_vpddb` directory. Typically `<COMMONFILES>` is located at `C:\Program Files\Common Files`.

For Linux operating systems, navigate to the `<USERHOME>/Installshield/Universal/common/Gen1/_vpddb` directory. Typically the `<USERHOME>` location is located at `/home/<username>`.
2. Open the `vpd.script` file and search for "SIP Container."
3. Delete all "INSERT INTO INSTALL_SOFTWARE_OBJECT" lines related to your previous installation of OCMS from the `vpd.script` file.
4. Delete all persisted variables from the `vpd.script` file. Search for "INSERT INTO PERSISTED_VARIABLES_TABLE" and "LOCAL_PERSISTED_VARIABLES".

Oracle TimesTen Installation Output

This appendix lists output from a successful installation of Oracle TimesTen In-Memory Database.

Installation Output

```
$ ./setup.sh
```

```
NOTE: Each TimesTen installation is identified by a unique instance name.
       The instance name must be a non-null alphanumeric string, not longer
       than 255 characters.
```

```
Please choose an instance name for this installation? [ tt60 ]
Instance name will be 'tt60'.
Is this correct? [ yes ]
```

```
Please select a product :
```

- [1] Oracle TimesTen In-Memory Database
- [2] Oracle TimesTen In-Memory Database with Cache Connect to Oracle

```
Which product would you like to install? [ 1 ]
```

```
Of the three components:
```

- [1] Client/Server and Data Manager
- [2] Data Manager Only
- [3] Client Only

```
Which would you like to install? [ 1 ]
Where would you like to install the tt60 instance of TimesTen? [ /home/ocmsuser ]
Where would you like to create the daemon home directory? [
/home/ocmsuser/TimesTen/tt60/info ]
The directory /home/ocmsuser/TimesTen/tt60/info does not exist.
Do you want to create it? [ yes ]
Installing into /home/ocmsuser/TimesTen/tt60 ...
Uncompressing ...
```

```
The TimesTen Demo applications can take up to 64 Mbytes of disk space.
Depending on how your system is configured, you may not want to create the
DemoDataStore directory in the default location,
/home/ocmsuser/TimesTen/tt60/info/DemoDataStore
```

```
WARNING: It is advised that you do not install the DemoDataStore directory
```

onto a networked drive. Please see the TimesTen install guide for more info.

Where would you like to create the DemoDataStore directory? [/home/ocmsuser/TimesTen/tt60/info]
Creating /home/ocmsuser/TimesTen/tt60/info/DemoDataStore ...

NOTE: All installations that replicate to each other must use the same daemon port number that is set at installation time. The daemon port number can be verified by running 'ttVersion'.

The default port number is 16000.

Do you want to use the default port number for the TimesTen daemon? [yes]
The daemon will run on the default port number (16000).

Processing /home/ocmsuser/TimesTen/tt60/PERL/perl.tar ...

Would you like to enable datastore access control? [no] yes

System logging appears to be configured correctly.
(TimesTen syslog messages should be recorded in the file '/var/log/messages')

Would you like to specify a different location for TimesTen syslog messages? [no]

NOTE: It appears that you are running version 3.2 or higher of the g++ compiler. TimesTen ships with two sets of client libraries and server binaries : one built with g++ 2.9.6 and one with g++ 3.2.3. The installer has created links to the 3.2.3 library in the /home/ocmsuser/TimesTen/tt60/lib directory and to the 3.2.3 server binary in the /home/ocmsuser/TimesTen/tt60/bin directory. If you want to use a different compiler, please modify the links to point to the desired library and server binary.

Installing server components ...

Would you like to log all server Connects/Disconnects? [yes]
What is the TCP/IP port number that you want the TimesTen Server to listen on? [16002]
Starting the daemon ...
TimesTen Daemon startup OK.

Installing client components ...

What is the name of the host running the TimesTen server? [stbcz13]
stbcz13.us.oracle.com
What is the TCP/IP port number that the TimesTen server on stbcz13.us.oracle.com is listening on? [16002]
What is the name of the instance running the TimesTen server on stbcz13.us.oracle.com? [tt60]
Creating new /home/ocmsuser/TimesTen/tt60/info/sys.ttconnect.ini
Extracting 3rd party tools ...
Would you like to install the documentation? [yes]
Where would you like to create the doc directory (q=quit)? [/home/ocmsuser/TimesTen/tt60]
Creating /home/ocmsuser/TimesTen/tt60/doc ...

NOTE: The TimesTen daemon startup/shutdown scripts have not been installed.

As root, run the script 'setuproot', located in /home/ocmsuser/TimesTen/tt60/bin, to move the TimesTen startup script into its appropriate location.

The startup script is currently located here :
'/home/ocmsuser/TimesTen/tt60/startup/tt_tt60'.

End of TimesTen installation.

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