Oracle® Communications Service Broker

Installation Guide

Release 6.1

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Oracle Communications Service Broker Installation Guide, Release 6.1

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Preface

This Installation Guide describes how to install Oracle Communications Service Broker and configure a domain and is relevant to all Service Broker products.

Audience

This guide is intended for system engineers, integrators, and administrators who will install and configure Service Broker to support the desired solution architecture.

It is assumed you have advanced knowledge in the following areas: Service Broker concepts, your operator's network, system hardware and operating system. See *Oracle Communications Service Broker Concepts Guide* for more information.

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Related Documents

For more information, see the following documents in the Service Broker Release 6.1 documentation set:

- *Oracle Communications Service Broker Release Notes*
- *Oracle Communications Service Broker Concepts Guide*
- *Oracle Communications Service Broker System Administrator's Guide*
- *Oracle Communications Service Broker Subscriber Store User's Guide*
- *Oracle Communications Service Broker Online Mediation Controller Implementation Guide*
- *Oracle Communications Service Broker Security Guide*
- (Optional) *Oracle Communications Service Broker Policy Controller Implementation Guide*

- (Optional) *Oracle Communications Service Broker Service Controller Implementation Guide*
- (Optional) *Oracle Communications Service Broker VPN Implementation Guide*
- (Optional) *Oracle Communications Service Broker Social Voice Communicator Implementation Guide*

Downloading Oracle Communications Documentation

Oracle Communication Service Broker documentation is available from the Oracle software delivery Web site:

http://edelivery.oracle.com/

Additional Oracle Communication documentation is available from Oracle Technology Network:

http://www.oracle.com/technetwork/index.html

1

About Service Broker Deployments

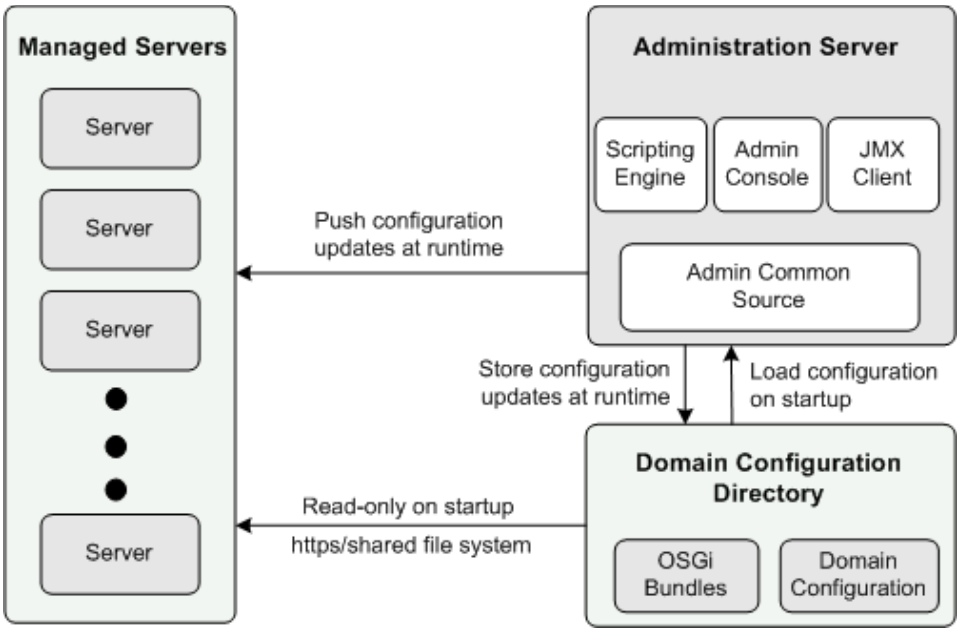
This chapter describes essential concepts for understanding Oracle Communications Service Broker deployments.

Understanding the Domain-Based Administration Model

Service Broker is implemented and administered using the concept of *domains*. A domain is a logically related group of servers.

Figure 1–1 shows domain components, which are explained in the following sections.

Figure 1–1 A Service Broker Domain



About Managed Servers

Each managed server runs on its own Java Virtual Machine (JVM). Managed servers in a domain all have the same Open Services Gateway Initiative (OSGi) software bundles installed and started.

Managed servers have read-only access to the domain configuration directory. At startup, the servers load the software bundles and the required configuration from the domain configuration directory.

Managed servers can be added and removed from the domain without service interruption while the system is running.

About the Domain Configuration Directory

Each domain has one associated domain configuration which is stored in the domain configuration directory. The domain configuration directory contains:

- The configuration details stored in XML files for all the managed servers in the domain.
- The OSGi software bundles that the managed servers run.

When a managed server starts, it retrieves configuration data from the domain configuration directory and loads it into memory. Individual servers do not store configuration locally except for the initial configuration and the security-related details they need to enable access to the domain configuration directory.

Changes in the domain configuration directory are managed by the Administration Server. The Administration Server saves all configuration updates to the domain configuration directory during runtime.

Managed servers access the domain configuration directory using either of these data sharing methods:

- Shared network file system
- Domain Configuration Web server that connects to the managed servers using HTTP or HTTPS.

> **Note:** HTTP should never be used in a production environment.

About the Administration Server

The Administration Server enables you to manage the domain servers, the OSGi software bundles installed in the domain, and the data stored in the domain configuration directory. Oracle recommends using a dedicated computer for the Administration Server.

You can access the Administration Server using these clients:

- Administration Console:

  Web access enables administrators to configure the domain from any computer with a Web browser and network access to the Administration Server.

- JConsole or Scripting Engine:

  If you want, you can interact programmatically with the Administration Server by using JMX configuration MBeans. Typically, working with MBeans involves integrating Service Broker with a JMX-enabled network management system.

  Scripts can be used if you need to repeat lengthy and complicated configuration changes. The scripting engine is a shell script that accepts an XML file argument. The XML file defines operations and attributes on Administration Server configuration MBeans.

Domain Types

The domain type reflects which sets of software bundles are run on the managed servers and which Service Broker roles they perform.

There are three domain types:

- Signaling domain:

  Managed servers in the signaling domain run the software bundles associated with the Service Broker signaling tier. These components include the various signaling server units (SSUs) that enable network connectivity. Servers in the signaling domain are often referred to as signaling servers.

- Processing domain:

  Managed servers in the processing domain run the software bundle associated with the Service Broker processing tier. These components include the Interworking Modules (IMs), an Orchestration Engine (OE), applications, and mediators that enable traffic processing and mediation functions. Servers in the processing domain are often referred to as processing servers.

- Unified domain:

  This domain combines the processing and signaling tier functions. Managed servers in the unified domain run the bundles associated with both the signaling tier and processing tier.

Deployment Topologies

This section describes the topologies you can optionally use for Service Broker deployments. The selection of a deployment topology will affect level of performance, availability, and continuity. See the description of service availability and continuity in the "About Setting the Service Availability Mode" section for more information.

Multi-Domain Topology

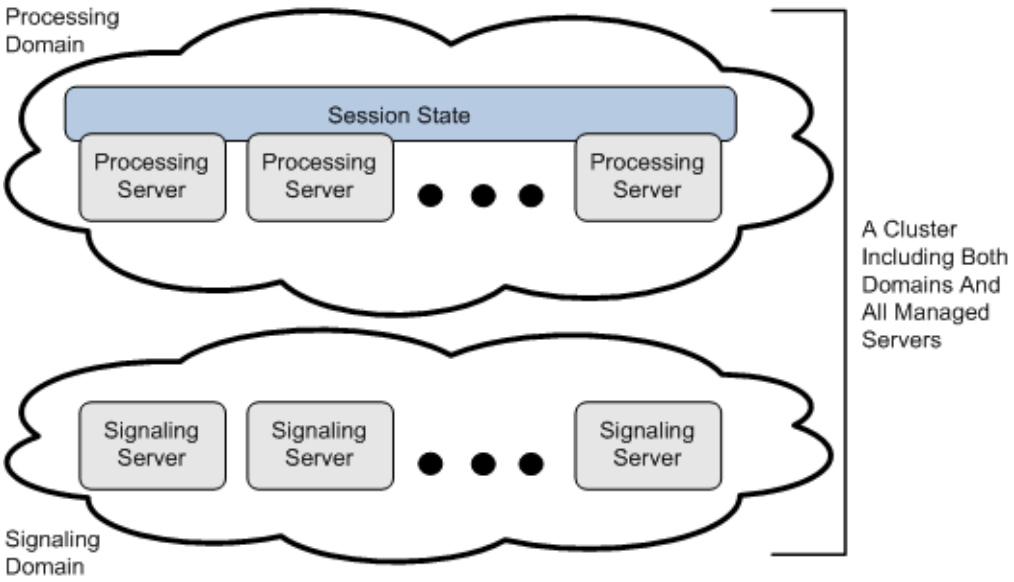
A multi-domain topology implements two distinct types of domains:

- A signaling domain
- A processing domain

State information can be shared across servers in the domain, ensuring service continuity in case of server failure. The signaling domain and processing domain interact by propagating protocol events across the tier and domain boundaries.

Figure 1–2 shows a multi-domain topology with one signaling domain and one processing domain, with the session state distributed across the processing servers.

Figure 1–2 A Multi-Domain Topology



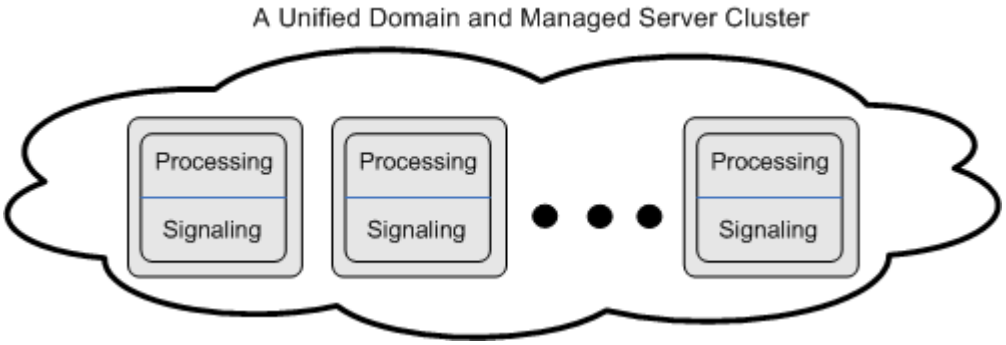
Note: If your telecom system connects to multiple networks, you should consider implementing an additional signaling domain for each network.

Unified Domain Topology

Each managed server in a unified domain performs the role of both the signaling tier and the processing tier. Multiple managed servers in the domain enable server availability following a server failure. See "About Setting the Service Availability Mode" for more information about availability and continuity options.

Figure 1–3 shows a unified domain topology with one unified domain in which servers perform the role of both the processing and signaling tiers.

Figure 1–3 A Unified Domain Topology



About Clusters

Service Broker creates managed server clusters using the *Oracle Coherence* product technology, which provides replicated and distributed data management and caching

services. Coherence uses a highly scalable peer-to-peer clustering protocol. See the Oracle Coherence product documentation for an introduction to this technology.

Oracle Coherence automatically and transparently fails over and redistributes its clustered data management services. When a new managed server is added, or when a failed managed server is restarted, it automatically joins the cluster.

A Service Broker cluster provides the following additional services:

- Interprocess communication
- Persistence

Managed servers in all domains (processing, signaling, and unified) distribute events among each other across domain boundaries.

To make the domains aware of each other, you need to group them in a cluster using either of these two methods, which are mutually exclusive:

- Using IP multicast: In this case, you need to specify a single IP address. All servers use this address to send and receive broadcast messages. Multicast is the default option when you use the domain creation script.
- Using IP unicast: In this case, you need to specify IP addresses of all servers in both domains.

For more information on how to set up IP multicast and IP unicast, see the discussion on configuring coherence in *Oracle Communications Service Broker System Administrator's Guide*.

About Setting the Service Availability Mode

The components running in the processing tier are stateful; that is, they maintain session information. They retrieve and store session state using in-memory storage to maintain service availability.

When creating a domain, whether you create a unified or a multi-domain, you can select the desired service availability mode:

- **Availability**: Service availability is maintained and continuity is turned off.
- **Continuity**: Service availability is maintained and continuity is turned on.

Important: Turning service continuity off improves performance significantly. However, calls on a failed managed server are not saved.

Service availability ensures that if a managed server fails, other managed servers in that domain will handle all new incoming traffic. Service continuity ensures that if a managed server fails, functioning servers continue to retrieve and process all messages, including those stored in the failed server.

About Deploying Service Broker Products

Service Broker software installation and domain creation involve two separate procedures. After you run the installer, you are required to run a domain creation script. This script displays many prompts including one requesting that you select from a list of available product domains. The list of available domains depends on the products you installed.

Whether you select a multi-domain or a unified domain Service Broker deployment, you can implement a single Service Broker product or any combination of the following products:

- Service Controller
- Online Mediation Controller
- Policy Controller

Note:

- The Social Voice Communicator and Virtual Private Network applications can be installed only if you install Service Controller.
- If you deploy the Social Voice Communicator, the service availability mode for that domain will always be **Availability**.

If you install all Service Broker products and applications, you will be presented with a prompt similar to this.

```
Available Domains:

[0] Online Mediation Controller Domain
[1] Policy Controller Domain
[2] Service Controller Domain
[3] Social Voice Communicator Domain
[4] Virtual Private Network Domain
```

You can select one, or any combination, of the product domains.

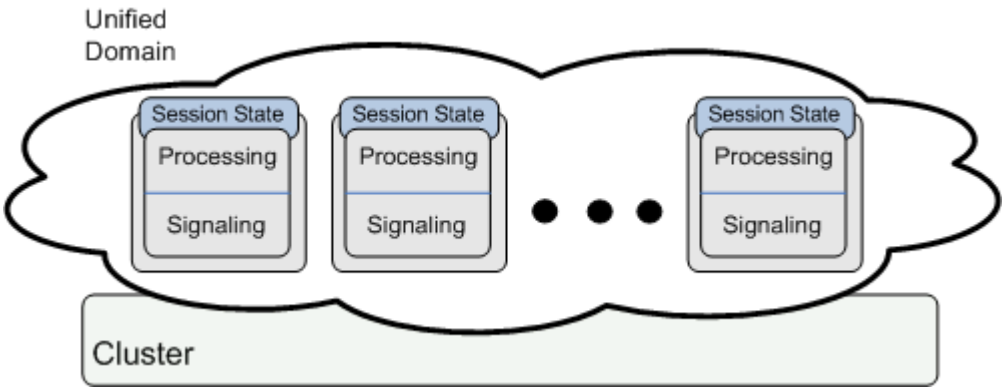
If you run the script twice to create a multi-domain with separate signaling and processing tiers, be sure to choose the same product domains for each tier.

About Production Environments

For best performance in production environments, Oracle recommends using a unified domain topology with one domain in which servers perform the role of both the processing and signaling tiers as shown in Figure 1–4.

In this type of deployment, managed servers maintain state information but the state information is not distributed across the servers. Existing calls on a failed server will be dropped. However, another server in the domain will implement service availability and handle new incoming calls.

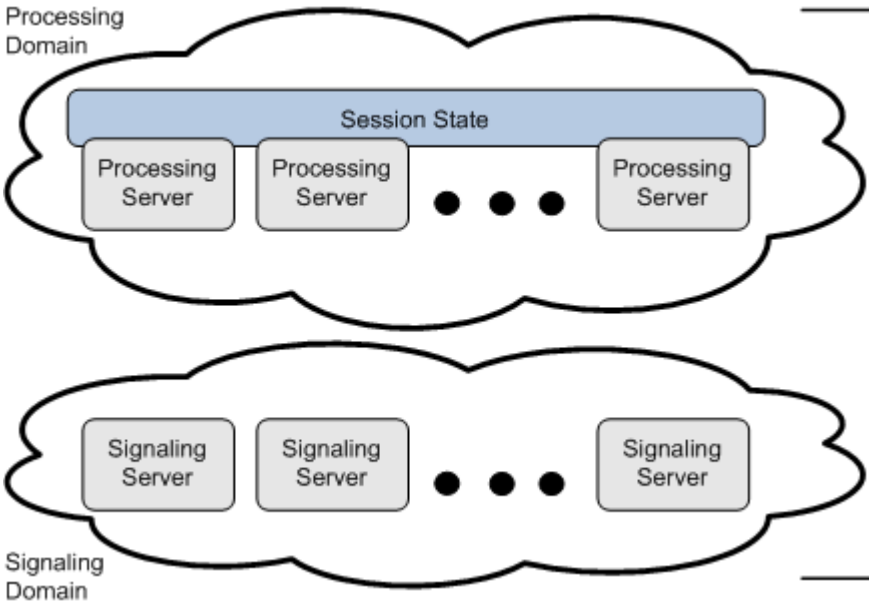
Figure 1–4 A Production Environment Unified Domain



An alternative is to use a multi-domain topology (described in "Multi-Domain Topology") that implements service continuity, as shown in Figure 1–5.

For complex Service Broker deployments, you can optionally create multiple signaling domains (each connecting to a different network), and multiple processing domains (each supporting a different processing functionality).

Figure 1–5 A Production Multi-Domain Deployment



Note: In a production environment, each domain should always include at least two servers for server failover availability.

About Test and Evaluation Systems

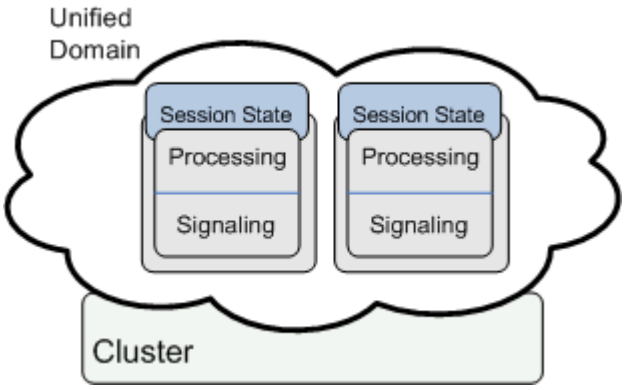
You can use a test and evaluation system to familiarize yourself with Service Broker, for integrations, for proof of concept labs, and for training. A test and evaluation system does not have the same requirements that a production system has for performance, availability, service continuity, and tier redundancy.

A test and evaluation system can be deployed as a unified domain with a single managed server, or two managed servers at most, with each server preforming the role of both signaling tier and processing tier.

WARNING: Never convert a test and evaluation system to a production system. A production system should be created independently with the highest degree of care.

Figure 1–6 shows a test and evaluation deployment with one domain. Each server performs the role of both the processing and signaling tiers. In this figure, service continuity is turned off. However, you can also deploy a system with service continuity turned on.

Figure 1–6 Test and Evaluation Deployment



Scaling the Deployment

Scalability is the ability of the Service Broker to handle increasing numbers of requests without adversely affecting performance.

Scaling options differ according to whether you are scaling the processing tier or the signaling tier.

Scaling the Processing Tier

The processing tier of a Service Broker deployment includes two or more processing managed servers that together provide high availability and load balancing. The Service Broker processing tier can increase its throughput by adding additional processing servers to the processing domain.

You can add new processing servers by using these scaling options:

- Vertical scaling: You can add to a single physical computer on its processing domain more processing servers.
- Horizontal scaling: You can add a physical computer and deploy processing servers to the same processing domain. The additional processing servers will balance the workload with the processing servers on the other physical computer.

Scaling the Signaling Tier

The signaling tier can also be scaled both vertically and horizontally. You can add signaling servers to the signaling domain on a single computer or by adding new server host computers. However, there are a few additional items to consider when implementing connectivity to SS7 networks:

- When implementing SIGTRAN-based SS7 connectivity, the signaling tier can include up to sixteen servers whether the servers are administered in a unified domain or in a separate signaling domain.
- When implementing TDM-based SS7 connectivity, the signaling tier can include up to two servers whether the servers are administered in a unified domain or in a separate signaling domain.

Note: Note that in a unified domain, your processing tier is limited to the same number of servers.

To maximize scalability, Oracle recommends that you deploy a separate signaling domain to connect to the SS7 network. By doing this, connectivity to other signaling networks is not affected and servers can be added to the other signaling domains as needed.

To increase throughput of SS7 connectivity in the case of TDM, you can add another pair of signaling servers in a separate signaling domain.

2

System Requirements

This chapter describes the hardware and software requirements for Oracle Communications Service Broker.

Hardware Requirements

This section describes the hardware requirements for Service Broker.

Managed Servers

You can deploy managed servers on the following CPU architectures:

- x86 64-bit
- Oracle SPARC 64-bit

Each server should have redundant network interface cards.

The following are recommendations for each physical server in a production system. These are guidelines only:

- Dual quad core processors with 16 GB of RAM
- 2 GB of free disk space for the installation

The following requirements apply to specific managed server tiers:

- Processing servers:

  Extra disk space is required for processing servers if you store Service Data Records (SDRs) in files on the server. In general, 10 GB is sufficient for handling SDRs. However, the actual disk space you need depends on the server's capacity, the amount of traffic, and how many SDR files are stored on the server.

  See information about configuring SDR logging in *Oracle Communications Service Broker System Administrator's Guide*.

- Signaling servers:

  A Dialogic TDM signaling board and Dialogic software are required for signaling servers that run in a TDM-based network.

  See "Installing Dialogic Hardware and Software for TDM Networks" for more information.

Administration Server

The Administration Server can be installed on the same physical server as the managed servers; however, Oracle recommends that you install it on its own physical server.

You can deploy the Administration Server on the following CPU architectures:

- x86 64-bit
- Oracle Sun SPARC 64-bit

The following are recommendations for each physical computer that hosts an Administration Server. These are guidelines only:

- Quad core processors with 8 GB of RAM
- 300 MB of free disk space for the installation

Software Requirements

The following list describes the software requirements for Service Broker:

- Network Time Protocol (NTP) client

  Service Broker requires that all servers accurately synchronize their system clocks to a common time source, to within one or two milliseconds. Oracle recommends using an NTP client or daemon and synchronizing all Service Broker servers to a common NTP server.

  Caution: Synchronizing system clocks to within one or two milliseconds is critical for the system to function properly. If you do not synchronize server clocks, the system may display unexpected behavior.

- Service Broker relies upon a shared library of the underlying operating system to provide Stream Control Transmission Protocol (SCTP) support.

  If you are implementing a solution that uses Diameter over SCTP, you need to ensure that the operating system includes the following library:

  libsctp.so.1

  If needed, install the shared library on the operating system of each managed server host machine.

- Some Service Broker features require a database to store persistent information and two network applications require an Oracle database. See "Choosing a Database" on page 4-2 for more information. Service Broker is compatible with these databases:
  - Oracle Database 11*g* release 2
  - Berkeley DB 4.1.21
- Oracle Universal Installer imposes additional system requirements and library dependencies. For example, it requires 500 MB of swap space to be available on the installation target system.

  For more information about Oracle Universal Installer, see *Oracle Universal Installer and OPatch User's Guide*.

Supported Operating Systems and JDKs

Service Broker can be installed on any of these 64-bit Unix/Linux operating systems:

- Oracle Solaris 11
- Oracle Linux 6
- Red Hat Enterprise Linux 6

Two compatible Java SE JDKs are bundled with the Service Broker installer:

- Oracle JDK 64-bit version 1.6.0_37, 1.7.0_9, or later
- Oracle JRockit JDK R28.2.5, or later

The Java JDK versions bundled with the product will vary according to the versions available near the time of product release.

Table 2–1 lists supported combinations of CPU type and JDK along with the name of the installer setup file.

Table 2–1 Supported Configurations and Corresponding Installation Archive

CPU	JDK	Installer Archive
x86 64-bit	Java JDK 64-bit and JRockit 64-bit	**`ocsb6100-linux_x86-64.zip`**
Oracle Sun SPARC 64-bit	Java JDK 64-bit and JRockit 64-bit	**`ocsb6100-sparc64.zip`**

For information on other third-party products and their version numbers that are integrated with Service Broker, see *Oracle Communications Service Broker Security Guide*.

Supported Web Browsers

The Administration Console can be displayed using any of the following Web browsers:

- Mozilla Firefox
- Google Chrome

3

Pre-Installation Tasks

This chapter describes the tasks you need to perform before installing Oracle Communications Service Broker.

Installing Dialogic Hardware and Software for TDM Networks

This task is required only if you intend to run Service Broker in a TDM-based network.

To use Service Broker in a TDM-based network, you must install the following components on any signaling server that will run a Service Broker SS7 Signaling Server Unit (SSU):

- Dialogic TDM signaling board (with a license button) and the card driver
- The following software related to the Dialogic Distributed Signaling Interface (DSI):
  - DSI DevPak
  - DSI MTP3 (needed only if the MTP3 stack is required on the host rather than on the board)
  - DSI SCCP

Information about Dialogic products is on the Dialogic Web site:

http://www.dialogic.com

See the associated installation guides for information on installing and using the board and software.

Downloading the Service Broker Software

You can download the Service Broker software from the Oracle software delivery Web site:

http://edelivery.oracle.com

To download the Service Broker software:

1. In a Web browser, navigate to the Oracle software delivery Web site and follow the instructions.
2. When prompted to select a product pack, select **Oracle Communications Applications** and select the platform for your system configuration.

   See "System Requirements" for a description of supported configurations.
3. Select **Oracle Communications Service Broker** media pack and click **Continue**.

4. Follow the instructions to complete the download of the Service Broker media pack.
5. When the download completes, extract the contents of the media pack.

The Service Broker media pack contains installation archives that are named after the system configuration for which it is intended. See "System Requirements" for a list of the archive file names.

Unpacking the Installer

The installation files for each supported operating system are delivered in their own archive file. To unpack the archive:

1. Open a command-line shell and navigate to the directory to which you extracted the Service Broker media pack.
2. Enter the following command to unzip the installation archive appropriate for your system:

   `unzip` *install_file*

   Where *install_file* is the path and name of the installation archive file. Example on an Intel x86 Linux system:

   ```
   unzip ./ocsb6100-linux_x86-64.zip
   ```

The installer setup files are unpacked to the following directory:

installer_directory`/`*operating_system*`/Disk1/install`

where *operating_system* is sparc64 or linux64.

Example of unpacked install directory for Solaris 10 64-bit SPARC:

installer_directory`/sparc64/Disk1/install`

Setting Socket Buffer Sizes

To help minimize packet loss, the operating system socket buffers need to be large enough to handle the garbage collection of incoming network traffic.

Service Broker uses Oracle Coherence as its in-memory data grid caching manager. By default, Coherence attempts to allocate a socket buffer of 2 MB. If your operating system is not configured to allow buffers this large, Coherence will utilize smaller buffers. Most versions of Unix have a very low default buffer limit, which you should increase to at least 2 MB.

Coherence will display a warning similar to the following if the buffer size is not set to at least 2 MB:

```
UnicastUdpSocket failed to set receive buffer size to 1428 packets
(2096304 bytes); actual size is 89 packets (131071 bytes). Consult your OS
documentation regarding increasing the maximum socket buffer size.
Proceeding with the actual value may cause sub-optimal performance.
```

It is safe to operate with the smaller socket buffer size, but Oracle recommends that you increase it to 2 MB.

To change the socket buffer size to 2 MB on a Linux or Solaris system:

1. Log in as root.
2. Open a command shell, if necessary.

3. Run the command appropriate for your operating system:
   - On Linux:

     ```
     /sbin/sysctl -w net.core.rmem_max=2096304
     ```

     ```
     /sbin/sysctl -w net.core.wmem_max=2096304
     ```

     The first command sets the read memory size, and the second sets the write memory size.
   - On Solaris:

     ```
     ndd -set /dev/udp udp_max_buf 2096304
     ```

4. (Linux only) Add the Linux **rmem_max** and **wmem_max** name-value pairs as shown in the previous step to the **/etc/sysctl.conf** file to make the configuration change permanent.

4

Installing the Software

Oracle Communications Service Broker uses Oracle Universal Installer. This chapter describes how to use the Oracle Universal Installer to install Service Broker with either the graphical installation wizard or in silent mode.

About the Service Broker Installer

The installation procedures provide options to install all Service Broker products and components. These procedures also enable you to install a compatible JDK, and Berkeley or Oracle Enterprise database.

You must run the installer as a non-root user. The Service Broker software is installed to the Oracle home directory. See "Choosing an Oracle Home" for more information.

For more information about using Oracle Universal Installer, see *Oracle Universal Installer and OPatch User's Guide*.

Choosing an Oracle Home

An Oracle home (referred to as *Oracle_home* in all Service Broker documentation) is the parent directory on a host computer into which the Service Broker software is installed.

The *Oracle_home* location is defined in an environment variable.

Each *Oracle_home* has a name and a directory path associated with it that you set during installation:

- The name identifies the program group associated with a particular home and the Oracle services installed on this home. The Oracle home name must be between 1 to 128 characters long, and can include only alphanumeric characters and underscores.
- The path is the full path to an *Oracle_home* directory where products are installed.

If you run the installer for the first time on a host, Oracle recommends that you designate an *Oracle_home* location that is either an empty directory or a non-existing directory for the installer to create.

Oracle Universal Installer supports the installation of multiple *Oracle_home* directories on the same host. However, if you run the installer multiple times, Oracle recommends that you choose the same *Oracle_home* directory for the additional installations to prevent installing multiple versions of the same administrative software.

An *Oracle_home* inventory or local inventory directory contains only information relevant to a particular *Oracle_home*. Each *Oracle_home* directory contains an **inventory** subdirectory. See "Choosing an Oracle Central Inventory" for more information.

For information on securing the *Oracle_home* directory, see the *Oracle Communications Service Broker Security Guide*.

Choosing an Oracle Central Inventory

The Oracle central inventory directory contains installation logs corresponding to all installations performed on a particular host. The installation logs for an installation are identified by the timestamp in the log file names.

When you install the first Oracle product on a host, the installer prompts you to specify the location of the central inventory directory:

- Linux:

  /etc/oraInst.loc

- Solaris:

  /var/opt/oracle/oraInst.loc

Choosing an Installation Mode

You can run the Service Broker installer using a graphical installation wizard, or in silent mode using a response file.

In graphical mode, you step through the installation GUI screens, providing information in the dialog boxes when prompted. This method is useful when performing a small number of installations.

In silent mode, your installation choices are determined beforehand in a response file, so you can automate the process of installing multiple servers on multiple hosts. Silent mode is also useful for installing on a host that cannot display the graphical installer.

Choosing a Database

Some Service Broker features require a database for storing persistent data. Service Broker supports either an Oracle 11*g* DB or a Berkeley DB. See "Software Requirements" on page 2-2 for more information.

If you already have either database installed, you can use it. Otherwise, you can install the Berkeley database that is bundled with the installer, or you can provide a compatible Oracle database.

The following Service Broker products and applications require a database.

- Online Mediation Controller Degraded Mode and Subscriber Store: Require either an Oracle or a Berkeley Database.
- Policy Controller: Subscriber Store Requires either an Oracle or a Berkeley Database.
- Social Voice Communicator: Requires an Oracle Database.
- Virtual Private Network: Requires an Oracle Database.

Choosing a JDK

You must have a compatible JDK installed on every host that runs a server. During installation you can select one of these certified JDKs that are included with the installer:

- Oracle JRockit JDK (64-bit)

- Oracle JDK (64-bit)

> **Note:** JRockit includes a high-performance JVM, profiling, monitoring and diagnostics tools, and predictable latency.

You can instead choose to use a compatible JDK that you have already installed. However, for production environments Oracle recommends that you install one of the bundled JDKs.

See "Supported Operating Systems and JDKs" for information about supported JDKs.

Installing Service Broker Products in Graphical Mode

To install the Service Broker family of products using Oracle Universal Installer in graphical mode:

1. In a command shell, as a non-root user, navigate to the installer directory:

   installer_directory`/`*operating_system*`/Disk1/install`

   Where:

   - *installer_directory* is the directory to which you extracted the product installation archive.
   - *operating_system* is the identifier for the operating system you are using, such as **sparc64** or **linux64**.

2. Enter the following command to start the installer:

   ```
   ./runInstaller
   ```

   The Oracle Universal Installer wizard appears in graphical mode.

3. The installer displays a series of screens that prompt you for information that is described in Table 4–1. Follow the instructions in the table.

Table 4–1 Installer Screens in Graphical Mode

In this screen	Perform the following action
Welcome	Click **Next** to proceed with the installation. You may cancel the installation at any time by clicking **Cancel**.

Table 4–1 (Cont.) Installer Screens in Graphical Mode

In this screen	Perform the following action
Specify Home Details	Specify the name for the installation. For example: ocsb61 Specify the *Oracle_home* directory that will serve as the parent directory for all Service Broker products installed on the target system. See "Choosing an Oracle Home" for details about the *Oracle_home* directory. Make sure that the *Oracle_home* directory has read and write privilleges. If you already have a home directory on your system, you can select that directory (recommended) or create a new home directory. To select an existing home directory: ■ Select the *Oracle_home* name from the **Name** list. The path to the *Oracle_home* directory is automatically entered in the **Path** field. To create a new *Oracle_home* directory: ■ Enter a name for the installation in the **Name** field. ■ Enter the path to home directory in the **Path** field. The installer will create the directory for you. You can alternatively click **Browse** to select a directory from the Choose Directory dialog box. Click **Next** to continue.
Product update registration page	(Optional) Register your installation with My Oracle Support. By registering, Oracle Support notifies you immediately of any security updates that are specific to your installation. To register your installation: ■ In the **Email** field, enter the email address where you wish to be notified of updates. ■ Select the **I wish to receive security updates via My Oracle Support** check box. ■ In the **My Oracle Support Password** field, enter the password for your Oracle support account. If you have not registered with Oracle Support, go to the following My Oracle Support Web site and register to obtain a My Oracle Support account: `https://support.oracle.com/CSP/ui/flash.html` To decline registration: ■ Deselect **I wish to receive security updates via My Oracle Support**. For more information about the advantages of registering your installation with My Oracle Support, see *Oracle Configuration Manager Installation and Administration Guide*. Click **Next** to continue.

Table 4–1 (Cont.) Installer Screens in Graphical Mode

In this screen	Perform the following action
Available Product Components	Choose the Service Broker products and components to install. You can install any combination of products and components: **Products (Choose at least one)** ■ **Online Mediation Controller 6.1.0.0.0** ■ **Online Mediation Controller Samples 6.1.0.0.0** ■ **Policy Controller 6.1.0.0.0** ■ **Service Controller 6.1.0.0.0** ■ **Service Controller Samples 6.1.0.0.0** **Network Applications** ■ **Social Voice Communicator 6.1.0.0.0** ■ **Virtual Private Network 6.1.0.0.0** **Components (Choose at least one)** ■ **Administration Console 6.1.0.0.0** ■ **Managed Server 6.1.0.0.0** **Java** ■ **Java JDK - Linux 64-bit 6.1.0.0.0** ■ **JRockit JDK - Linux 64-bit 6.1.0.0.0** ■ **Existing JDK 6.1.0.0.0** **Optional Components** ■ **Oracle Berkeley DB 6.1.0.0.0**
Available Product Components, continued	**Java**. Select a certified JDK to install for use in your production environment or provide a path to your own existing JDK to use in a test and evaluation environment. For test and development environments, multiple Service Broker installations can share a single JDK if they reside on the same machine. See "System Requirements" for details about supported JDKs. **Oracle Berkeley DB.** If the Service Broker deployment does not require a Berkeley, database clear this option. See "Choosing a Database" for more information. **Online Mediation Controller samples:** Provides an example integration between a (third-party) Media Server that has IVR functionality and the Online Mediation Controller top-up Web Services API. **Service Controller samples:** Provides example NGIN (Next Generation Intelligent Network) applications for integration with Oracle Converged Application Server. Example applications include: Ringback Tones, Local Number Portability, Location Service, Presence (state/location of a mobile device), and screening according to the calling and called numbers. Click **Next**. The Summary screen appears. See *Oracle Communications Service Broker Concepts Guide* for information about each product option.
Choose Existing JDK Installation	This screen is only displayed if you selected an existing JDK instead of installing a new one. Use your own JDK in a test and evaluation environment only. Specify the path to the JDK in the **Base directory:** field. Click **Next** to continue.

Table 4–1 (Cont.) Installer Screens in Graphical Mode

In this screen	Perform the following action
Specify Inventory directory and credentials	This screen is displayed only during the first installation of Oracle products on a system. Specify the full path of the Oracle inventory directory. Choose the operating system group that has write permissions to the inventory directory. Click **Next** to continue.
Summary	This screen displays a summary of the installation, including general information about the installation type, directories, the product components to be installed, the approximate installed size of each component, and the total size of all components to be installed. Click **Install**.
Install	This screen is displayed while the components are being installed. The screen displays the status of the installation. You can cancel the installation at any time by clicking the **Stop installation** button.
Execute Configuration scripts	This screen is displayed only during the first installation of Oracle products on a system. As indicated, run the configuration script, **oraInstRoot.sh**, in a new console as the root user. The script configures permissions for the Oracle inventory directory. When the script completes the configuration, click the **OK** button in the Execute Configuration scripts screen.
End of Installation	This screen describes the outcome of the installation. Click **Exit** to exit the installation program. Click **Yes** to confirm your choice.

When the installation is completed, the directory structure described in "Directory Structure After Installation" is created on your server.

Installing Service Broker Products in Silent Mode

This section explains how to install the Service Broker family of products using Oracle Universal Installer in silent mode.

Before you run the installer, specify the installation parameters you want to use, such as the *Oracle_home* directory path and the products and components you want to install, by editing parameters in the **silentInstall.properties** file.

To learn about the parameters, see the descriptions in the "Installation Parameters in the silentInstall.properties File" section.

> **Note:** The installer validates format and platform compatibility where applicable. However, it will not check spelling so be sure to enter values into the properties file carefully.

If you omit any required value in the properties file, the installer will prompt you to enter the value at the command prompt.

To install Service Broker in silent mode:

1. In a command shell, navigate to the following directory:

installer_directory/*operating_system*/Disk1/install/

2. Open the **silentInstall.properties** file for editing, and modify the installation parameters as required. Table 4–2 lists and describes the installation parameters.
3. Save and close the file.
4. As a non-root user, enter the following command to start the installer:

   ```
   ./silentInstaller.sh
   ```

   The installation progress is output to the console.
5. If this is the first Oracle product installation on this machine, when prompted, follow the on-screen instructions to run the **oraInstRoot.sh** script located in your `/oraInventory` directory. You must run the script as the root user.

The directory structure described in "Directory Structure After Installation" is created on your server.

Installation Parameters in the silentInstall.properties File

Table 4–2 lists the installation parameters in **silentInstall.properties** file that the silent installer uses.

Table 4–2 Parameters in the silentInstall.properties File

Parameter	Description
JAVA_HOME	The path to the directory of your Java JDK. If you are installing a JDK with this property file, it is installed in this directory. If you are using your own pre-installed JDK, then reference its path here. The path should be the same as the **JAVA_HOME** environment variable for your Java installation. No default value is specified. Example: **JAVA_HOME=/usr/local/java/jdk**
ORACLE_HOME_ NAME	The name of the installation directory. Mandatory Example: **ORACLE_HOME_NAME=ocsb6.1**
ORACLE_HOME	The full path to your installation directory. Mandatory This path is from / to and including the parent directory of **ORACLE_HOME_NAME**. If you have previously installed an Oracle product using Oracle Universal Installer, you already have an *Oracle_home* defined. If you want to reuse the existing *Oracle_home*, enter its name here. Example: **ORACLE_HOME=/usr/local/oracle_home**

Table 4–2 (Cont.) Parameters in the silentInstall.properties File

Parameter	Description
DEPENDENCY_LIST	Specifies the Service Broker products to install. Mandatory Components to install using the syntax: {"*component:version*","*component:version*"} Where *component* is the Service Broker product to install and *version* is its version. The *component* may be one of the following: ■ **onlinemediation_controller** for the Online Mediation Controller ■ **onlinemediation_controller.samples** samples for the Online Mediation Controller ■ **service_controller.samples** samples for the Service Controller ■ **policy_controller** for the Policy Controller ■ **service_controller** for the Service Controller ■ **socialvoice_communicator** for the Social Voice Communicator ■ **virtualprivate_network** for the Virtual Private Network ■ **ocsb_admin_server** for the Administration Server ■ **ocsb_managed_server** for a managed server ■ **jdk_linux64** to install the Oracle Java JDK 64-bit ■ **jrrt_linux64** to install the Oracle JRockit JDK 64-bit ■ **existingjdk** to specify the location of your own JDK ■ **berkeley_db** to specify a Berkeley database Default value: **DEPENDENCY_LIST={"onlinemediation_controller:6.1.0.0.0","ocsb_admin_server:6.1.0.0.0","ocsb_managed_server:6.1.0.0.0","jrrt_linux64:6.1.0.0.0","berkeley_db:6.1.0.0.0"}** Example **DEPENDENCY_LIST={"service_controller:6.1.0.0","virtualprivate_network:6.1.0.0","socialvoice_communicator:6.1.0.0","ocsb_admin_server:6.1.0.0.0","ocsb_managed_server:6.1.0.0.0","jrrt_linux64:6.1.0.0.0"}**
DECLINE_SECURITY_UPDATES	Indicates whether you want to receive security updates related to Oracle products. Boolean. Mandatory Enter **true** to decline security updates, or **false** to receive security updates. No default value is specified. Example: **DECLINE_SECURITY_UPDATES=false**
SECURITY_UPDATES_VIA_MYORACLESUPPORT	Indicates whether you want to receive security updates through your Oracle My Oracle Support account. Boolean. Mandatory Enter **true** to receive security updates using My Oracle Support, or **false** to decline security updates. If you have not registered with Oracle Support, go to the following My Oracle Support Web site and register to obtain a My Oracle Support account: https://support.oracle.com/CSP/ui/flash.html No default value is specified. Example: **SECURITY_UPDATES_VIA_MYORACLESUPPORT=true**

Table 4–2 (Cont.) Parameters in the silentInstall.properties File

Parameter	Description
MYORACLESUPPORT_USERNAME	Specifies your My Oracle Support email address or other email address where you wish to be notified of updates. Mandatory if **DECLINE_SECURITY_UPDATES** is **false** or **SECURITY_UPDATES_VIA_MYORACLESUPPORT** is **true**. No default value is specified. Example: **MYORACLESUPPORT_USERNAME=user@example.com**
MYORACLESUPPORT_PASSWORD	Specifies the password for your Oracle support account. Mandatory if **DECLINE_SECURITY_UPDATES** is **false** or **SECURITY_UPDATES_VIA_MYORACLESUPPORT** is **true**. No default value is specified. Example: **MYORACLESUPPORT_PASSWORD=***password*

Directory Structure After Installation

Figure 4–1 illustrates the high-level directory structure that is created during installation.

Figure 4–1 Installed Directory Hierarchy

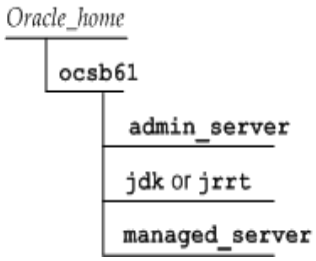


Table 4–3 describes each directory and its contents.

Table 4–3 Installed Directories and Content Descriptions

Directory	Description
Oracle_home/**ocsb61**	Base directory for your installation. *Oracle_home* is specified during the installation.
Oracle_home/**ocsb61/admin_server**	Contains binaries for the Administration Server, and the start scripts and modules related to the Administration Console.
Oracle_home/**ocsb61/managed_server**	Contains binaries for the processing server or signaling server, and the start scripts and modules related to the server.
Oracle_home/**ocsb61/jdk**	Contains the Java JDK (with the HotSpot JVM). This directory is created only if you specified to install the Java JDK during the installation.

Table 4–3 (Cont.) Installed Directories and Content Descriptions

Directory	Description
Oracle_home`/ocsb61/jrrt`	Contains the Oracle JRockit JDK. This directory is created only if you specified to install the Oracle JRockit JDK during the installation.
Oracle_home`/ocsb61/samples`	Contains the Service Controller and Online Mediation Controller samples. This directory is created only if you specified to install the samples during the installation.

Deinstalling Service Broker

You can deinstall Service Broker or any of its components by running the Oracle Universal Installer. When you deinstall, the installer removes all files and folders that it originally installed. It does not remove any files and folders you created or modified such as domain directories and configuration files.

See "Deinstalling Using Graphical Mode" for instructions on deinstalling Service Broker or one of its components using Oracle Universal Installer in graphical mode.

See "Deinstalling Service Broker Products Using Silent Mode" for instructions on deinstalling Service Broker or one of its components using Oracle Universal Installer in silent mode.

Deinstalling Using Graphical Mode

To deinstall Service Broker or any of its components using the Oracle Universal Installer in graphical mode:

1. In a command shell, navigate to the installer directory:

   installer_directory`/`*operating_system*`/Disk1/install`

2. Enter the following command to start the installer:

   ```
   ./runInstaller
   ```

   Oracle Universal Installer appears in graphical mode.

3. In the Welcome screen, click **Deinstall Products**.

   The Inventory screen displays all Oracle homes on the host.

4. In the **Contents** tab, select the Oracle home or product within the Oracle home that you want to deinstall.

   Selecting the Oracle home removes all products within that Oracle home. Alternatively, expand the Oracle home and select individual components within that home to deinstall.

   > **Tip:** To save a text copy of the inventory tree and selected components before you remove components, click **Save As**. Navigate to a directory where you want to save the tree, enter the file name to use, and click **Save**.

5. Click **Remove**.

   The Confirmation screen opens.

6. Click **Yes** to confirm your selection.

   The installer deinstalls the selected components.

7. Click **Close** to close the Inventory screen.

Deinstalling Service Broker Products Using Silent Mode

To deinstall Service Broker or one of its components in silent mode, you run the **runInstaller** utility specifying the **-deinstall** and **-silent** options.

You can supply deinstallation parameters either at the command line or in a response file. If you want to use a response file, you must prepare the deinstall response file before you run the silent deinstall. The response file is located in the installation directory for your platform:

installer_directory/*operating_system*/**Disk1/stage/Response/ocsb.Complete.rsp**

Table 4–4 describes the parameter-value pairs that you need to set in the installer response file.

Table 4–4 Parameters for Deinstalling Components

Name	Description
DEINSTALL_LIST	Specify the component to deinstall. Mandatory Use the following syntax: {"*component*","*version*"} where *component* is the Service Broker product to remove and *version* is its version. The *component* value may be one of the following: ▪ **policy_controller** for Policy Controller ▪ **service_controller** for Service Controller ▪ **onlinemediation_controller** for the Online Mediation Controller ▪ **socialvoice_communicator** for Social Voice Communicator ▪ **virtualprivate_network** for Virtual Private Network Examples: **DEINSTALL_LIST={"policy_controller","6.1.0.0.0"}**
ORACLE_HOME_NAME	The name of the installation directory. Mandatory Example: **ORACLE_HOME_NAME=ocsb6.1**
ORACLE_HOME	The full path to your installation directory. This path is from / to and including the parent directory of **ORACLE_HOME_NAME** Mandatory Example: **ORACLE_HOME=/usr/local/oracle_home**

Table 4–4 (Cont.) Parameters for Deinstalling Components

Name	Description
REMOVE_HOMES	**Caution:** If you use this parameter, it will remove the entire installation directory. Specify the full path to the Oracle home directory to remove. Optional Use the following syntax: {*path_to_Oracle_home*} Example: **REMOVE_HOMES={/usr/local/oracle_home}**

You can use the **runInstaller** script to display a list of the installed components and their versions:

1. In a command shell, navigate to the installer directory:

   installer_directory/*operating_system*/**Disk1/install**

2. Enter the following command:

   ./runInstaller -deinstall

   The installed components are listed in the output.

To deinstall Service Broker or one of its components:

1. In a command shell, navigate to the installer directory:

   installer_directory/*operating_system*/**Disk1/install**

2. Enter one of the following commands to run the installer.

   - To specify components to deinstall on the command line, enter:

     ./runInstaller -deinstall -silent DEINSTALL_LIST='{"*component***","***version***"}' ORACLE_HOME=**{*path_to_Oracle_home*} **ORACLE_HOME_NAME=**{*name_of_installation_directory*}

     where *component*, *version*, and *ORACLE_HOME* and *ORACLE_HOME*_NAME are specified as described in Table 4–4, " Parameters for Deinstalling Components".

     Important:

     – The curly brackets surrounding the DEINSTALL_LIST must be enclosed by single quotes (') on the command line, but do not use single quotes (') if you use the deinstall response file.

     – If you use the REMOVE_HOMES parameter, the entire installation directory is removed.

     For example:

     ./runInstaller -deinstall -silent DEINSTALL_LIST='{"service_controller","6.1.0.0.0"}' ORACLE_HOME=/home/oracle/OHome1 ORACLE_HOME_NAME=ocsb61

   - To use an installer response file on the command line in which the components to deinstall are specified, enter:

     ./runInstaller -deinstall -silent -responseFile *full_path_to_response_file*

5

Setting Up a Domain

This chapter describes how to set up an Oracle Communications Service Broker domain. Before you perform the procedures described in this chapter, you must install Service Broker.

About Domain Setup

Whether a domain is a signaling domain, a processing domain, or a unified domain, setting up a domain requires the following steps:

1. Understanding the Domain Configuration Directory
2. Installing the Administration Server and Managed Servers
3. Securing Domains
4. Creating a Domain in Interactive Mode
5. Creating a Domain in Silent Mode
6. Starting the Domain Web Server
7. Configuring Security for the Administration Server
8. Starting The Administration Console
9. Adding a Managed Server to The Domain
10. Configuring Data Storage
11. Starting the Managed Server

Understanding the Domain Configuration Directory

Configuration data and software bundles are located in the domain configuration directory. The domain configuration directory is referred to as the *domain_home*.

The domain configuration directory is created when you run the domain creation script to create the domain. You define the method that servers use to access the directory when you create the domain.

The Administration Server and all managed servers in the domain require access to the domain configuration directory.

The Administration Server requires read and write access to the domain configurations. The managed servers require read-only access to the domain configuration.

The Administration Server and managed servers can access the domain configuration directory by using either a hosted or a nonhosted domain. You select either method when you run the domain creation script:

- **Hosted domain:** Uses a Web server to provide managed servers with HTTP or HTTPS access to the domain configuration directory. See "Starting the Domain Web Server" for more information.

  If you use a Web server to provide the domain configuration files, set up the Web server with read access to the domain configuration directory and map the directory to a URL.

  > **Note:** The Administration Server requires local file system access to the domain directory because it needs write access to configuration, bundles, credential store and domain lock files.

  In a production environment be sure to enable HTTPS, provide redundancy for the Web server, and make backups of the domain configuration directory.

  A Web server does not provide any redundancy support by default. A Web server that fails will not impact managed servers that are running, but new managed servers cannot be started until the Web server is back online.

  See the discussion on considerations for using Credential Store with hosted domains in the *Oracle Communications Service Broker Security Guide* for additional information about working with hosted domains securely.

- **Nonhosted domain:** Connects to the domain configuration directory and the software bundles using a shared file system, not using a Web server.

  If you use a shared file system, set up all servers so that they can access the domain configuration directory.

Whether you use a hosted or a nonhosted domain, be certain that all of your restore procedures are rapid to ensure minimal service down time. A recommended solution for high availability is to provide a backup Service Broker installation with a mirrored copy of the domains.

See "Understanding the Domain-Based Administration Model" for more information about domains.

See *Oracle Communications Service Broker Security Guide* for information on securing a domain.

Installing the Administration Server and Managed Servers

You can use the Service Broker installer to install the Administration Server and managed servers on a single computer or on multiple computers. Oracle recommends that you install the Administration Server on its own physical server from where it manages the domain remotely.

> **Note:** Only one Administration Console can be used to manage a domain at a time.

In a unified domain deployment, if you want to install multiple managed server instances on the same physical host, you can do either of the following:

- Run the installer once and then copy the contents of the **managed_server** directory to a new directory for each server you want to add. See "Creating Multiple Managed Servers by Copying Them" for more information.
- Run the installer multiple times, and other than for the first installation, clear the check box for installing the Administration Server when you select which products and components to install.

> **Note:** Copying the **managed_server** directory is faster than running the installer multiple times.

Installing managed servers on a host and adding them to a domain are separate procedures. After you install the managed server instances, you must use the Administration Console to add the managed servers to a domain. See "Adding a Managed Server to The Domain" for more information.

Creating Multiple Managed Servers by Copying Them

This section describes how to create multiple servers on a single physical host by copying the managed server directory:

1. Run the installer on the physical host. See "Installing the Software" for instructions.

   The default installed Administration Server directory is:

   Oracle_home`/ocsb61/admin_server`

   The default installed managed server directory is:

   Oracle_home`/ocsb61/managed_server`

2. Create a new managed server directory for each additional managed server.

   To simplify your directory structure, you may choose to create the directories alongside the existing server directory in an existing Oracle home. For example:

   Oracle_home`/ocsb61/`*new_server_directory*

3. Copy the contents of the installed server directory to each new server directory that you added.

To create additional servers on another host, repeat this procedure on a different host.

At a later stage, after creating the domain and starting the Administration Server, you must define each managed server in the domain configuration by specifying its name and listening ports.

Table 5–1 illustrates a sample domain with one Administration Server and four managed servers on two physical hosts. The table outlines the directory structure for the example domain.

> **Tip:** To increase availability, you can install the Administration Server on a separate physical host.

Table 5–1 Example Directory Structure

Physical Host	Directory Path	Description
sb_01	*oracle_home*`/ocsb61/admin_server`	Administration Server
sb_01	*oracle_home*`/ocsb61/managed_server`	Default managed server installation directory Used as the source when creating the directories for the new servers on the sb_01 host.
sb_01	*oracle_home*`/ocsb61/managed_1`	First managed server instance directory
sb_01	*oracle_home*`/ocsb61/managed_2`	Second managed server instance directory
sb_02	*oracle_home*`/ocsb61/managed_server`	Default managed server installation directory Use as the source when creating the directories for the new servers on the sb_02 host.
sb_02	*oracle_home*`/ocsb61/managed_3`	Third managed server instance directory
sb_02	*oracle_home*`/ocsb61/managed_4`	Fourth managed server instance directory

Securing Domains

By default, the setting that controls security in the domain is enabled. This setting applies to the connections between the Administration Server and the managed servers in a domain.

Before you run the domain creation script, you must either disable the setting or, if you want to retain security for the domain, set up the client and server certificate keystores on the host system.

For a non-production system intended for test, instructional, or evaluation purposes only, you may choose to disable security between the components, as follows:

1. Open the following document for editing:

   Oracle_home/**ocsb61/admin_server/properties/common.properties**

2. Set the axia.ssl property to false:

   axia.ssl=false

   For more information on the properties in the file, see *Oracle Communications Service Broker System Administrator's Guide*.

3. Save and close the file.

For information on setting up a secure domain, see the discussion on configuring security between Service Broker components in *Oracle Communications Service Broker Security Guide*. For information on the property file entries, see the *Oracle Communications System Administrator's Guide*.

Creating a Domain in Interactive Mode

The domain creation script can operate interactively or in silent mode. The following instructions describe how to use the script interactively. See "Creating a Domain in Silent Mode" for information about running the script in silent mode.

Important: If you choose to create separate signaling and processing domains, that is a multi-domain topology, you must run the script separately for each domain.

When you run the script, be sure to make the same selections for both the signaling and processing domains. Select the same combination of 1) Available Domains (Policy Controller, Service Controller, Online Mediation Controller), and the same 2) Service Mode (Continuity, Availability).

Data Storage options for persistence: If you are deploying either the Social Voice Communicator or Virtual Private Network, note that you must use an Oracle Database and cannot operate using a Berkeley Database. See "Configuring Data Storage".

To create a domain using the domain creation script in interactive mode:

1. In a command shell, navigate to the admin_server directory:

   Oracle_home/**ocsb61/admin_server**

2. Run the create domain script, as follows:

   ./script.sh scripts/create_domain_interactive.xml

3. Enter the number corresponding to the domain type you want to create.

   The options are:

   - `[0] Unified`
   - `[1] Processing`
   - `[2] Signaling`

4. When prompted for the index of the available product domain types, enter the number corresponding to the product domain you want to create.

   The options are (example):

   - `[0] Online Mediation Controller Domain`
   - `[1] Policy Controller Domain`
   - `[2] Service Controller Domain`
   - `[3] Social Voice Communicator Unified Domain`
   - `[4] Virtual Private Network Unified Domain`

   Product domains are displayed only for products you previously installed. You can select one, or any combination, of the product domains.

5. Enter a domain path which can be any valid path to where the domain configuration will be located. Example: **/home/oracle/domains/ocsb-all-products**

   This path is referred to as *domain_home* in this document.

6. Do one of the following:

   - To create a hosted domain, enter the URL of the Web server that will provide access to the domain configuration: *http://<address>:<port>*
   - To create a nonhosted domain, do not enter any value and press **Enter**.

   If you select a hosted domain the managed servers will access the domain configuration by connecting to a Web server. If you select a nonhosted domain they will instead need to use a shared file system.

   Note that if security is enabled the URL should start with https:// and the port is defined in the **org.eclipse.equinox.http.jetty.https.port** property in the **hosting.properties** file.

If security is disabled, the port is defined in the **org.eclipse.equinox.http.jetty.http.port** property in the **hosting.properties** file.

7. Enter the IP multicast address for initial Coherence cluster configuration, which is the address on which managed servers and the Administration Server exchange certain types of internal communication within the domain. The address must be within the range 224.0.0.0 to 239.255.255.255.

   If you plan to set up additional domains that are part of the same cluster, keep a record of the value entered, and enter the same value when you create the other domains.

8. Enter the port number for initial Coherence cluster configuration on which the servers and the Administration Server listen for multicast messages. The port number must be **1024** or greater.

   If you plan to set up additional domains that are part of the same cluster, keep a record of the value entered, and enter the same value when you create the other domains.

9. Enter the time-to-live for multicast messages. The value must be **1** or greater.

10. At the prompt Enable SSL for this domain? (Yes/No) enter **Y** or **N**. In a production environment you should always use SSL. This setting controls whether Service Broker requires a secure connection between deployed domain components.

11. If you have installed the Policy Controller, enter the type of database persistence you want to use for the Subscriber Store. Select either **[0] BDB or [1] Oracle Database.**

    Note: The BDB option appears only if you installed that database.

12. If you have installed the Online Mediation Controller, enter the type of database persistence you want to use for the Degraded Mode. Select either **[0] BDB or [1] Oracle Database.**

    Note: The BDB option appears only if you installed this database.

13. At the prompt for Service Mode enter **[1] Continuity**, or **[2] Availability**. Continuity provides availability and persistent data but can reduce performance. See "About Setting the Service Availability Mode" for more information.

14. If you have installed Virtual Private Network or Social Voice Communicator, at the prompt create a new password for the built-in **RESTful Interface Admin Password** user. The **Admin** user is the administrator for the RESTful Provisioning APIs.

The following is an example of the domain creation script command and its prompts, with user input in bold:

```
./script.sh scripts/create_domain_interactive.xml
--------------------------------------------------------------------------------
Welcome, please follow the steps below to create a domain.
--------------------------------------------------------------------------------
Available Domain Types:
------------------------------------------------------------------------
[0] Unified
[1] Processing
[2] Signaling
Please enter the index of a domain type to create : 0
--------------------------------------------------------------------------------
Available Domains:
--------------------------------------------------------------------------------
```

```
[0] Online Mediation Controller Unified Domain [ ]
[1] Policy Controller Unified Domain [ ]
[2] Service Controller Unified Domain [ ]
[3] to continue
Please enter the index of a domain to create or '3' to continue : 0

[0] Online Mediation Controller Unified Domain [ ]
[1] Policy Controller Unified Domain [ ]
[2] Online Mediation Controller Unified Domain [ ]
[3] to continue
Please enter the index of a domain to create or '3' to continue : 1

[0] Online Mediation Controller Unified Domain [ ]
[1] Policy Controller Unified Domain [ ]
[2] Service Controller Unified Domain [ ]
[3] to continue
Please enter the index of a domain to create or '3' to continue : 2
--------------------------------------------------------------------------------
General Domain Properties:
--------------------------------------------------------------------------------
Please enter the Domain Path :  /home/oracle/domains/ocsb-all-products
Please enter the Hosted URL http://<address>:<port> (For non-hosted, press Enter
to skip) :
Please enter the Multicast Address : 239.255.255.255
Please enter the Multicast Port : 1034
Please enter the Multicast Time-To-Live : 2
Enable SSL for this domain? (Yes/No) : y
--------------------------------------------------------------------------------
Type Selection : Subscriber Store persistence type
--------------------------------------------------------------------------------
[0] BDB Persistence
[1] Oracle Database Persistence
Please enter the index of the selection : 1
--------------------------------------------------------------------------------
Type Selection : Degraded Mode persistence type
--------------------------------------------------------------------------------
[0] BDB Persistence
[1] Oracle Database Persistence
Please enter the index of the selection : 1
--------------------------------------------------------------------------------
Type Selection : Online Charging Server type
--------------------------------------------------------------------------------
[0] BRM Online Charging Server
[1] Elastic Charging Engine Online Charging Server
Please enter the index of the selection : 0
--------------------------------------------------------------------------------
Additional Domain Properties:
--------------------------------------------------------------------------------
Please select the Service Mode
--------------------------------------------------------------------------------
[0] Continuity
[1] Availability
Please enter the index of the selection : 0
--------------------------------------------------------------------------------
Domain Summary:
Domain Types/Names : Online Mediation Controller Unified Domain, Policy Controller
Unified Domain, Service Controller Unified Domain
Domain Path : /home/oracle/domains/ocsb-all-products
Hosted URL (null if not hosted) : null
Multicast Address : 239.255.255.255
```

```
Multicast Port : 1034
Multicast Time-To-Live : 2
Domain SSL Enabled : True
Subscriber Store persistence type : BDB Persistence
Degraded Mode persistence type : BDB Persistence
Online Charging Server type : BRM Online Charging Server
Service Mode : Continuity
--------------------------------------------------------------------------------
Proceed with the domain creation? (Yes/No) : y
```

The script creates the domain according to your selections. When the script finishes, the message **Domain created successfully** appears. You can now start the Administration Server and add managed servers to the domain.

Creating a Domain in Silent Mode

You can create a domain in silent mode two different ways:

- Specifying parameters in an XML file
- Entering command-line arguments

Specifying Parameters in an XML File

To create a domain in silent mode, before you run the domain creation script, you must replace all placeholders in the **create_domain_silent.xml** file with valid domain creation values. The XML file is located here: **admin_server/scripts/create_domain_silent.xml**.

When you run the silent install script, the XML file passes domain parameters to the script. If you do not replace any of the placeholders in the XML file with values, when you run the script you will be prompted for the value at the console.

To learn about the parameters, see the descriptions in the section "Domain Creation Parameters in the create_domain_silent.xml File".

> **Note:** The scripting engine validates format and platform compatibility where applicable. However, it will not perform any spell checking so be sure to enter values into the XML file carefully.

If you omit any required value in the properties file, the installer will prompt you to enter the value at the command prompt.

To create a domain in silent mode using an XML file:

1. In a command shell, navigate to the admin_server directory:

   *Oracle_home***/ocsb61/admin_server**

2. Open the **create_domain_silent.xml** file for editing and enter the values you want to use to create the domain. Table 5–2 lists the parameters with descriptions.
3. Save and close the file.
4. Run the create domain script, as follows:

   ./script.sh scripts/create_domain_silent.xml

   When the script finishes, **Domain created successfully** appears. You can now start the Administration Server and add managed servers to the domain.

Domain Creation Parameters in the create_domain_silent.xml File

Table 5–2 lists the installation parameters in **silentInstall.properties** file that the silent installer applies.

Table 5–2 Parameters in the create_domain_silent.xml File

Parameter	Description
domainTypes	Comma-separated list of domain types to include in the domain. Example: policycontroller-processing,onlinemediationcontroller-processing
domainPath	Absolute file path to the new domain. Example: /home/user/ocsb_home/ocsb61/pc_omc_processing_domain
multicastAddress	Multicast address for initial Coherence cluster configuration. Example: 224.0.1.123
multicastPort	Multicast port for initial Coherence cluster configuration. Example: 9876
multicastTtl	Multicast TTL for initial Coherence cluster configuration. Example: 2
properties	Comma-separated list of properties to allow the specification of default choices and template specific properties. If a property value is not supplied, the default value will be used. If domain.ssl or domain.hosted.url are not included, then the default values will apply (SSL will be enabled and the domain not hosted). Example: domain.hosted.url=http://localhost:9000/,domain.ssl=false,service.mode=availability,degraded.mode.persistence=database.persistence,database.url=jdbc:oracle:thin:@//localhost:1521/oracle

Tip: There are two additional properties that can assist you in preparing a silent configuration:

- "domain.help": If set to true, this property will cause all available options to be printed to the console. It is important that you select the domain types when using this property. The domain will not be created if this property is set to true.
- "domain.summary": If set to true, this property displays a summary of the domain parameters and values before creating the domain. This feature is similar to how the interactive mode summary precedes domain creation.

The next section describes how to create a domain in silent mode by entering arguments at the command-line.

Entering Arguments at the Command Line

To create a domain in silent mode, you must create an AXIA environment variable, assign it parameter-value pairs described in Table 5–2, and then run the silent installation script.

The following is an example of creating a domain for the Online Mediation Controller, BRM, Berkeley DB, with SSL enabled.

To create a domain in silent mode by entering arguments at a command-line:

1. In a command shell, use the export command to create an AXIA environment variable and set the parameter-value pairs as described in Table 5–2.

   Example:

   export AXIA_OPTS="-Ddomain.types=onlinemediationcontroller-processing -Ddomain.path=/home/user/domains/omc-processing -Ddomain.maddress=225.226.228.229 -Ddomain.mport=1122 -Ddomain.ttl=1 -Ddomain.properties=omc.ocs=BRM,subscriber.store.persistence=bdb.persistence,degraded.mode.persistence=bdb.persistence,service.mode=availability,domain.ssl=true"

2. Run the silent domain script, which picks up the parameter values from the AXIA_OPTS environment variable:

   ./script.sh scripts/create_domain_silent.xml

   When the script finishes, **Domain created successfully** appears. You can now start the Administration Server and add managed servers to the domain.

Starting the Domain Web Server

If you created a hosted domain, you need to start the domain Web server. If you created a non-hosted domain skip this section.

The domain Web server provides servers with secure HTTPS access to the domain configuration and to the OSGi bundles for the domain. The domain Web server's only functionality is to allow access to the domain configuration.

You specified the domain Web server port when you ran the domain creation script and indicated you wanted to use a hosted domain. The port number is located in the **hosting.properties** file **org.eclipse.equinox.http.jetty.https.port** property.

The domain Web server must be started by a user who has read privileges to the domain configuration directory. See the discussion about configuring security between Service Broker components for more information about setting up user privileges.

To start the domain Web server:

1. Open a command-line shell.

   Note: You must be logged in as a user who has read privileges on the file system where the domain configuration resides.

2. Change the directory to:

   *Oracle_home***/ocsb61/admin_server**

   Oracle_home is the Oracle Home directory you defined when you installed the product.

3. Enter:

   ./host.sh *domain_home*

   Replace *domain_home* with the path to the domain configuration directory.

4. Enter the keystore password.

When the domain Web server is running, the managed servers can access the domain configuration.

Configuring Security for the Administration Server

Starting the Administration Server enables you to start the Administration Console. You can configure the a Service Broker domain from any computer with a browser and network access to the Administration Server.

Note: The instructions below describe setting up default security for the Administration Server to Administration Console connection.

The Administration Console supports a single user. By default the security for this user includes 1) Digest Authentication and an 2) SSL connection between the Administration Console and the Administration Server.

Administration Console password is set by a startup prompt. The first time the Administration Server is started, the user needs to supply a user name and password. These login credentials must be supplied in each Administration Console session.

An alternative security method is described in the Chapter Administering Credential Stores in the *Oracle Communications Service Broker Security Guide*.

For more information about Administration Server client authentication, see the Administrator's Reference appendix in the *Oracle Communications Service Broker System Administrator's Guide*.

The Administration Console can connect to the Administration Server over (default) Secure HTTP (HTTPS) or HTTP. The following file contains the properties that control Web access, including security for the connection and the Administration Server port:

*Oracle_home***/ocsb61/admin_server/properties/admin.properties**

The default authentication method for the Administration Console is called Digest Authentication (**axia.digest.auth=true**). This setting enables digest authentication which is described in this IEEE RFC, **http://www.ietf.org/rfc/rfc2617.txt**. See the *Oracle Communications Service Broker Security Guide* for more information.

By default, the Administration Server is connected on the HTTPS port, as specified by the following setting:

org.eclipse.equinox.http.jetty.https.enabled=true

To use this port, you need to configure the SSL keystore for the Administration Server.

Set this value to **false** to disable the HTTPS. You will also need to enable the HTTP port, as in the following sample portion of the file:

```
axia.basic.auth=false

org.eclipse.equinox.http.jetty.http.enabled=true
org.eclipse.equinox.http.jetty.http.port=9000

org.eclipse.equinox.http.jetty.https.enabled=false
org.eclipse.equinox.http.jetty.https.port=9000
```

If you are using separate Processing and Signaling domains, you will need to use a separate Administration Server for each domain. Each Administration Server must be assigned a unique port number.

1. Open this file for editing: *Oracle_home*/**ocsb61/admin_server/properties/admin.properties**
2. Change the port number assigned to the following property:

   org.eclipse.equinox.http.jetty.http.port=9000
3. Save the file.

For more information on **admin.properties** and security, see *Oracle Communications Service Broker System Administrator's Guide*.

Starting The Administration Console

To start the Administration Console:

1. Open a command-line shell.
2. Change directory to *Oracle_home*/**ocsb61/admin_server**.
3. Enter the following command to start the Administration Server:

   ./start.sh *domain_home*

   where *domain_home* is the path to the domain configuration directory.
4. The first time you start the Administration Server if Digest Authentication (the default setting) is enabled in the **admin.properties** file (**axia.digest.auth=true**) you are prompted to enter a user name and password for subsequent uses of the Administration Console.

   The Administration Server enforces password complexity requirements specified in **common.properties**. By default, the password must be at least six characters in length and must contain at least one upper-case letter, lower-case letter, and digit. You can modify the requirements by editing the values of the **axia.console.password.validation** settings in the file.
5. If you starting the Administration Server for a Policy Controller domain with Digest Authentication enabled, enter a second user name and password combination when prompted. The second set of credentials are used to control access to the Policy Designer GUI.

When the script finishes it displays this message: "Administration Server started".

After starting the Administration Server, you can access the Administration Console in a browser by entering the following URL:

https://*ipadress***:9000/console**

See *Oracle Communications Service Broker System Administrator's Guide* for more information. See the *Oracle Communications Service Broker Policy Controller Implementation Guide* for more information about the Policy Designer GUI.

Adding a Managed Server to The Domain

All Managed servers and the Administration Server in a single domain are nodes in a cluster. This is true whether the domain, for example a processing or a signaling domain, exists on a single or on multiple hosts. See "About Clusters" for more information.

After creating the domain, you need to add to the domain all of the managed servers you installed. You add servers to a domain by using the Administration Console. After you add a managed server to the domain, you will be able to start the managed server,

passing it the domain configuration. See "Starting the Managed Server" for more information.

The following steps provide an overview of adding a managed server to the domain. For more information, see *Oracle Communications Service Broker System Administrator's Guide*.

To add a managed server to the domain:

1. Start the Administration Console.
2. Click the **Switch to OFFLINE mode** icon at the top of the page.

   Offline mode enables you to make changes to the configuration before adding servers to the domain or when the servers are not running. In online mode, changes are pushed to the managed servers when you commit the changes.
3. In the navigation tree, expand the **OCSB** node.
4. Expand the **Domain Management** node.
5. Click **Servers**.
6. Click the **Add Server** icon.
7. Set the following fields in the **Add Server** dialog as described in Table 5–3.

Table 5–3 Server Configuration Fields

Field	Description
Name	The name of the managed server. This name will be passed in the start command for the server. It must be unique across all domains. In a multi-domain deployment (that is, when using separate processing and signaling domains), server names should follow this format: ▪ **pn**_*number* for processing managed servers, where *number* is an integer. For example, **pn_1**, **pn_2**, and so on. ▪ **ssu**_*number* for signaling managed servers, where *number* is an integer. For example, **ssu_1**, **ssu_2**, and so on. It is possible to use custom server names, but then you must configure a mapping between the custom names to the expected names. See the discussion about mapping custom server names in *Oracle Communications Service Broker System Administrator's Guide* for more information. Format: Alpha-numeric characters. Case-sensitive. No white spaces.
Host	The host name or IP-address of the physical computer where the managed server runs. Format: alpha-numeric. IP-address format or DNS name format.
Admin Port	The IP port used by a managed server to communicate with the Administration Server. The value is assigned automatically and incremented for each managed server. Format: numeric All ports for servers need to be unique for each physical machine.
JMX JRMP port	The port to use for Java Remote Method Protocol (JRMP) invocations to the managed server. Format: numeric All ports for servers need to be unique for each physical machine.

Table 5–3 (Cont.) Server Configuration Fields

Field	Description
JMX Registry port	The port to use for the MBean Server on the server. Format: numeric All ports for servers need to be unique for each physical machine.

8. Click **OK**.

   The new server definition appears in the server list.

Repeat this procedure for each server you installed.

Table 5–4 outlines the corresponding server configurations for the example managed servers whose installation is demonstrated in Table 5–1.

Table 5–4 Example Server Configuration Settings

Server Name	Host	Admin port	JMX Port	JMX Registry
pn_1	sb_01.telco.com	8901	10003	10104
pn_2	sb_01.telco.com	8902	10005	10106
pn_3	sb_02.telco.com	8903	10007	10108
pn_4	sb_02.telco.com	8904	10009	10110

You can now start the server, passing it the identity you configured in the domain, as described in "Starting the Managed Server".

If you want to make configuration changes while the server is running, you can switch the Administration Server to online editing mode by clicking the **Switch to ONLINE mode** icon. If you intend to continue configuring the domain before starting the server (for example, to configure data store connectivity), you can keep the Administration Server in offline editing mode.

Configuring Data Storage

Certain Service Broker features generate data that must be stored in persistent storage. These features include the Online Mediation Controller Subscriber Store and Degraded Mode service, the Policy Controller Subscriber Store, and the Service Controller Social Voice Communicator and Virtual Private Network applications.

Service Broker works with the following types of storage:

- Oracle Database 11*g*
- Oracle Berkeley DB (BDB) file-based storage

> **Note:** The Social Voice Communicator and Virtual Private Network applications support only Oracle Database storage for persistence. See "Choosing a Database" for more information.

Configuring data storage requires these steps:

1. Configure the database connection or local file storage location for each server.

   See "Using Oracle Berkeley DB File-Based Storage" or "Using Oracle Database 11g Storage" for more information.

2. Specify the persistence mechanism each feature should use by installing the appropriate persistence package.

   See "Specifying the Persistence Mechanism by Feature" for more information.

The following sections contain more information on these steps.

Using Oracle Berkeley DB File-Based Storage

Oracle Berkeley DB is a file-based storage mechanism. When configured to use Berkeley DB, each processing server has its own data directory in which it stores and accesses application data. Stored data is automatically synchronized across the servers in the cluster.

> **Note:** Multiple processing servers should not be configured to share a single data directory, even if the servers reside on the same physical host computer.

Additional deployment design considerations exist for using Berkeley DB in a cluster of managed servers. When the servers in a domain cluster start, they nominate a single server to act as the master node. The data on the master node serves as the primary copy of the data, from which the other servers in the domain cluster are synchronized. The nomination and synchronization processes among the nodes occur automatically.

However, if a server that is acting as the master node subsequently becomes unavailable, the remaining nodes must nominate a new node to serve as the master. To nominate a new master node, a majority of the servers in the domain cluster must be available. If less than a majority remain, a new master cannot be nominated and data storage and synchronization will fail. Note that this scenario will always occur in a cluster of only two servers.

You can avoid this issue by increasing the number of servers in your domain cluster. This reduces the likelihood that most servers in a cluster would be unavailable at a given time. For example, the cluster should use 3 servers instead of 2, 5 servers instead of 4, and so on.

To use Berkeley DB file-based storage, follow these steps:

1. Create or identify the directory on the server host in which you want Berkeley DB to store data. Oracle recommends that you use a local disk for better performance.
2. In the Administration Console, click the **Switch to OFFLINE mode** icon at the top of the page to switch the configuration mode to offline mode, if necessary.
3. Click the **Lock & Edit** icon.
4. In the navigation tree, expand the **OCSB** node and then **Domain Management**.
5. Expand the **Data Store** node.
6. Click the **Persistent Stores** node.
7. Click the **Berkeley DB Store** tab.
8. Click the **New** button.
9. Set the following fields in the dialog box as described in Table 5–5.

Table 5–5 Berkeley DB Store Configuration Fields

Name	Description
Managed Server Name	The name of the managed server as specified in the domain configuration, such as **pn_1** or **pn_2**.
BDB Enabled	Set to **true** to direct the server to use Berkeley DB file-based storage for data persistence, or **false** to disable file-based storage.
BDB Environment Directory	The location of the data directory where the server should store persistent data. Use the full path to the directory, such as: **/home/oracle/OHOME1/bdbfiles**
Address (Host:Port)	The local IP address or host name and port of the server on which Berkeley DB service exchanges data synchronization messages with other servers in the domain cluster. By default, the port is 5001. For example: **192.168.1.10:5001**

10. Click **OK** to close the dialog box.
11. Repeat steps 8 through 10 for each managed server in your domain.
12. Click the **Commit** icon.

Using Oracle Database 11*g* Storage

To use Oracle Database 11*g* for Service Broker persistent storage, you first prepare the database, and then configure Service Broker connections to as described in the following sections.

Preparing the Database

To prepare the database for Online Mediation Controller or Policy Controller persistent storage:

1. In the database management system, create a user that Service Broker uses to access the database. Give the user permissions to create tables and add and modify data.

   You will enter this user name and password when configuring the JDBC connection information (see "Configuring the Database Connection").

2. Run the SQL script needed for the Service Broker applications you are using.

   The SQL scripts create the database tables as required by the application. The scripts applicable to the Online Mediation Controller and Policy Controller are in the following directory:

   Oracle_home/**ocsb61/admin_server/scripts/database**

   The scripts are:

   - **degraded_mode_cdr_store.sql**: Configures the database for storing CDRs that are generated by Service Broker when it is operating in degraded mode. Use this script to configure the database for the Online Mediation Controller.
   - **subscriber_store.sql**: Configures the database for the subscriber profile storage. Use this script to configure the database for the Online Mediation Controller or Policy Controller.

For information on preparing the databases for the Service Broker Virtual Private Network and Social Voice Communicator applications, see *Oracle Communications Service Broker VPN Implementation Guide* and *Oracle Communications Service Broker Social Voice Communicator Implementation Guide*.

After preparing the database, you can configure the database connection in the Service Broker domain.

Configuring the Database Connection

Service Broker connects to external databases using the settings defined in the JDBC driver connections in the domain configuration.

The credentials used to connect to the database are stored in the Service Broker credential store. The credential store is a secure credential storage mechanism used by Service Broker applications. For complete information on the credential store, see *Oracle Communications Service Broker Security Guide*.

Creating the Database Connection

To create the database connection by using the Administration Console:

1. If the Administration Console is not already in offline mode, click the **Switch to OFFLINE mode** icon at the top of the page.
2. Click the **Lock & Edit** icon.
3. Expand the **OCSB** node and then **Domain Management**.
4. Expand the **Data Store** node.
5. Click the **Credential Store** node.
6. In the **Credential Store** tab, use the fields in the **Password** group to add the database user credentials to the Credential Store, as follows:
   a. Enter a name for the credential in the **Key** field. This value serves as an internal alias for the database user credential in the credential store.
   b. In the **Password** field, enter the password associated with the database user you created for Service Broker.
   c. Deselect the **One-way** check box so that the credential is created as a two-way credential. This allows Service Broker to retrieve the password from the credential store for submission to the external database management system.
   d. Click the **Set Password** button.
7. Click the **Persistent Stores** node.
8. Click the **JDBC Store** tab.
9. Click the **New** button.
10. Set the following fields in the dialog box:

Table 5–6 Database Connection Configuration Fields

Field	Description
URL	Connection URL to the database. For example: jdbc:oracle:thin:@//dbhost.example.com:1521/orcl
User	The user name of the database user you created that Service Broker uses to access the Oracle Database.

Table 5–6 (Cont.) Database Connection Configuration Fields

Field	Description
Password Credential Key	The identifier for the database credential in the credential store. This value should match the value you entered in the **Key** field in the Password area of the Credential Store tab when adding the database credential to the credential store.
Connection Factory	The Java class used to create connections to the database. In most cases, this should be the default, **oracle.jdbc.pool.OracleDataSource**. If you have installed a custom or third party connection class, specify its name.
Initial Pool Size	The initial number of connections in the database connection pool.
Min Pool Size	Minimum number of connections in the connection pool.
Max Pool Size	Maximum number of connections in the connection pool.
Validation SQL	A SQL command used to verify that an open connection to the database remains valid over time. A connection can become invalid, or stale, when it is open for long time without activity. Typically, the command simply reads from an empty table. For example: `"select * from dual"`
Connection Pool Name	The name of the JDBC connection. By default, the Subscriber Profile feature attempts to access storage associated with a driver named **oracle_driver**. If you do not use **oracle_driver** for this value, you need to configure the Subscriber Profile feature to use the connection identified by your custom driver name. For better control of database access, Oracle recommends that you use different driver names for the Subscriber Profile and Degraded Mode features.

11. Click **OK** to save the configuration.

    The new connection instance appears in the list of drivers.

12. Repeat steps 9 through 11 for each processing server in your domain.

13. Click the **Commit** icon.

You may choose to continue working in offline edit mode, or switch to online mode if you intend to start the managed server. If the managed servers are running when you perform the configuration, you need to restart the servers to have the changes take effect.

Specifying the Persistence Mechanism by Feature

The particular storage mechanism used by a feature is determined by the persistence package that is installed in the domain. By default, the Degraded Mode and Subscriber Store features use Berkeley DB storage. (The Virtual Private Network and Social Voice Communicator applications can use only Oracle Database.)

To modify the storage mechanism for each feature, you need to replace its persistence package in the domain.

Note: Only a single persistence package for a given feature should be installed in the domain at a time. If you install a new persistence package, be sure to remove the existing package for that feature before you attempt to restart the servers in the domain.

The following instructions describe how to install and remove packages from the domain. If servers are running, they will need to be restarted for the changes to take effect. For details on package management, see the *Oracle Communications Service Broker System Administrator's Guide*.

Also, these instructions reflect the interface presented by the Administration Console.

To apply a storage mechanism by Service Broker feature:

1. In the Administration Console, switch to offline mode.
2. Click the **Lock & Edit** icon
3. Expand the **OCSB** node.
4. Expand **Domain Management**.
5. Click **Packages**.
6. Click the **Install** button.
7. In the Install Bundle dialog box, click the **Browse** button.
8. In the Upload File dialog box, click **Browse** and navigate to the package directory:

   *oracle_home***/ocsb61/admin_server/modules**
9. Use the file chooser dialog box to select one of the following package files, depending on the persistence mechanism you want to use.

   For Subscriber Store persistence, select one of the following files:

   - oracle.ocsb.app.rcc.service.subscriber_store.providers.store.config_bdb.jar: Select this file to use Oracle Berkeley DB file-based storage. This is the default package for Subscriber Store persistence.
   - oracle.ocsb.app.rcc.service.subscriber_store.providers.store.config_db.jar: Select this file to use Oracle Database.

   For Degraded Mode persistence, select one of the following files:

   - oracle.ocsb.app.rcc.service.degraded_mode.persistence.bdb.jar: Select this file to use Oracle Berkeley DB file-based storage. This is the default package for Degraded Mode persistence.
   - oracle.ocsb.app.rcc.service.degraded_mode.persistence.database.jar: Select this file to use Oracle Database.
   - oracle.ocsb.app.rcc.service.degraded_mode.persistence.in_memory.jar: Select this file to use Oracle Coherence cache storage.
10. With the file you selected showing in the Upload File dialog box file field, click **Upload**.
11. Click the **OK** button in the File Uploaded dialog box.
12. Click **OK** in the Upload File dialog box.
13. Click **Install** in the Install Bundle dialog box.

    The package you selected appears in the package list.

14. Change the start level of the package you loaded to match the level of the following packages, depending on whether it is a Subscriber Profile or a Degraded Mode package:

    - oracle.ocsb.app.rcc.service.degraded_mode.core for the Degraded Mode persistence package
    - ocsb.app.rcc.service.subscriber_store.core for the Subscriber Profile persistence package

    To change the start level:

    a. Select the package in the list.

    b. Click the **Start Level** button.

    c. In the **Enter the start level** field, enter the new start level number. Enter 190 for the Subscriber Profile package, or 295 for the Degraded Mode package.

    d. Click **OK**.

15. Remove the previously installed persistence package (that is, the package that you are replacing) as follows:

    a. Select the package in the list.

    b. Click the **Uninstall** button.

Starting the Managed Server

After you add a managed server to the domain and configured data storage, you can start the managed server. If a domain contains several managed servers, you need to start each managed server individually.

For Service Broker controller types that rely on persistent storage, you should configure data storage before attempting to start the server. See "Configuring Data Storage" for information on setting up data storage.

For hosted domains (that is, if you configured the domain files to be exposed by a Web server), you need to start the Web server process first using the **host.sh** script. For more information on hosted domains, see the *Oracle Communications Service Broker System Administrator's Guide*.

To start the server:

1. In a command-line shell, change directories to the server directory. By default, the server is installed to the following directory:

   *Oracle_home***/ocsb61/managed_server**

2. Enter:

   ./start.sh *server_name domain_home***/initial.zip**

   where:

   server_name is the name you gave the server when you added the server to the domain.

   domain_home is the path to the domain configuration directory where the **initial.zip** file is located. The path may be in the form of a file location or URL. Specify the protocol as follows:

   - For a Web-hosted domain, add the protocol prefix **http://** or **https://** to the path, depending on your security settings.

- If your domain configuration is accessed on a shared file system, add the protocol prefix **file://** to the path.

The following is an example of how to start a server, passing it the **pn_1** identity and the configuration bundle located on the local file system:

```
./start.sh pn_1 file:///home/oracle/sc_basic_domain/initial.zip
```

3. If using HTTPS, enter the keystore password when prompted.

Table 5–7 shows the start command and parameters for each server in the example domain introduced in Table 5–1. The start script is located in the server directory.

Note that the name of the server in the domain configuration, as shown in Table 5–4, corresponds to the name given as a parameter when starting the server.

Table 5–7 Example Server Start Commands

Server Directory	Server Start Command for a Non-hosted Domain	Server Start Command for a Hosted Domain
managed_1	**start.sh pn_1 file:../domain/initial.zip**	**start.sh pn_1 http://***ipaddress***:9001/initial.zip**
managed_2	**start.sh pn_2 file:../domain/initial.zip**	**start.sh pn_2 http://***ipaddress***:9001/initial.zip**
managed_3	**start.sh pn_3 file:../domain/initial.zip**	**start.sh pn_3 http://***ipaddress***:9001/initial.zip**
managed_4	**start.sh pn_4 file:../domain/initial.zip**	**start.sh pn_4 http://***ipaddress***:9001/initial.zip**

When you start multiple servers on a single physical host, Oracle recommends that you use a separate command shell for each server.

See *Oracle Communications Service Broker System Administrator's Guide* for more information about starting servers.

6

Next Steps

This chapter provides a concise overview of the essential steps you need to perform after successfully deploying Oracle Communications Service Broker.

After completing the procedures described in the previous chapters, the initial configuration of the Service Broker deployment is complete. You can now configure the functional and operating behavior of the Service Broker, additional features, and advanced topologies.

These are the key steps to perform after installing Service Broker:

- Start the SS7 process if your deployment requires connectivity to the SS7 network
- Perform additional setup tasks required for your particular Service Broker product implementation
- Complete the security configuration for the system
- Configure SNMP

Starting the SS7 Process

If your deployment requires connectivity to an SS7 network, then you need to start the SS7 process on the signaling servers.

After you added a signaling server to a domain, you can start the SS7 process on this server. If a domain contains several servers, you need to start the SS7 process on each server individually.

See the discussion about starting the SS7 process in *Oracle Communications Service Broker System Administrator's Guide* for more information.

Performing Additional Setup Tasks for Service Broker Products

You might need to perform additional setup tasks for specific Service Broker product deployments. For example, for Virtual Private Network and Social Voice Communicator implementations, you need to set up custom attribute-value pair (AVP) definitions used for charging purposes.

See the Service Broker implementation guide applicable to your system for specific setup steps.

When you deploy and configure components in the signaling tier and processing tier as required for the sub-product that you installed and for your specific solution, use *Oracle Communications Service Broker Signaling Server Units Configuration Guide* for information about configuring SSUs, and *Oracle Communications Service Broker Modules*

Configuration Guide for information about deploying and configuring IMs, SMs, and the OE.

Completing Security Configuration for the System

It is recommended that you complete the security configuration for the system, for example, by importing the security certificates that allow secure communications with remote telecommunication network.

See the discussion on configuring security in *Oracle Communications Service Broker System Administrator's Guide* and in the *Oracle Communication Service Broker Security Guide*.

Configuring SNMP

Configure SNMP settings for sending SNMP traps to external management systems.

See SNMP and other monitoring information in *Oracle Communications Service Broker System Administrator's Guide*.