

Oracle® Communications MetaSolv Solution

Installation Guide



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About This Content

This guide provides the procedures and essential information for installing and initially configuring Oracle Communications MetaSolv Solution (MSS) and its utility programs. It includes third-party software details necessary for installation and setup. For further information on third-party applications, consult the documentation from the respective manufacturer.

Audience

This guide is for individuals responsible for installing or maintaining MSS and ensuring the software is operating as required. This guide assumes the installer has an Oracle DBA and WebLogic administrator background, with a working knowledge of Java JEE.

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Conventions

The following text conventions are used in this document.

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

1

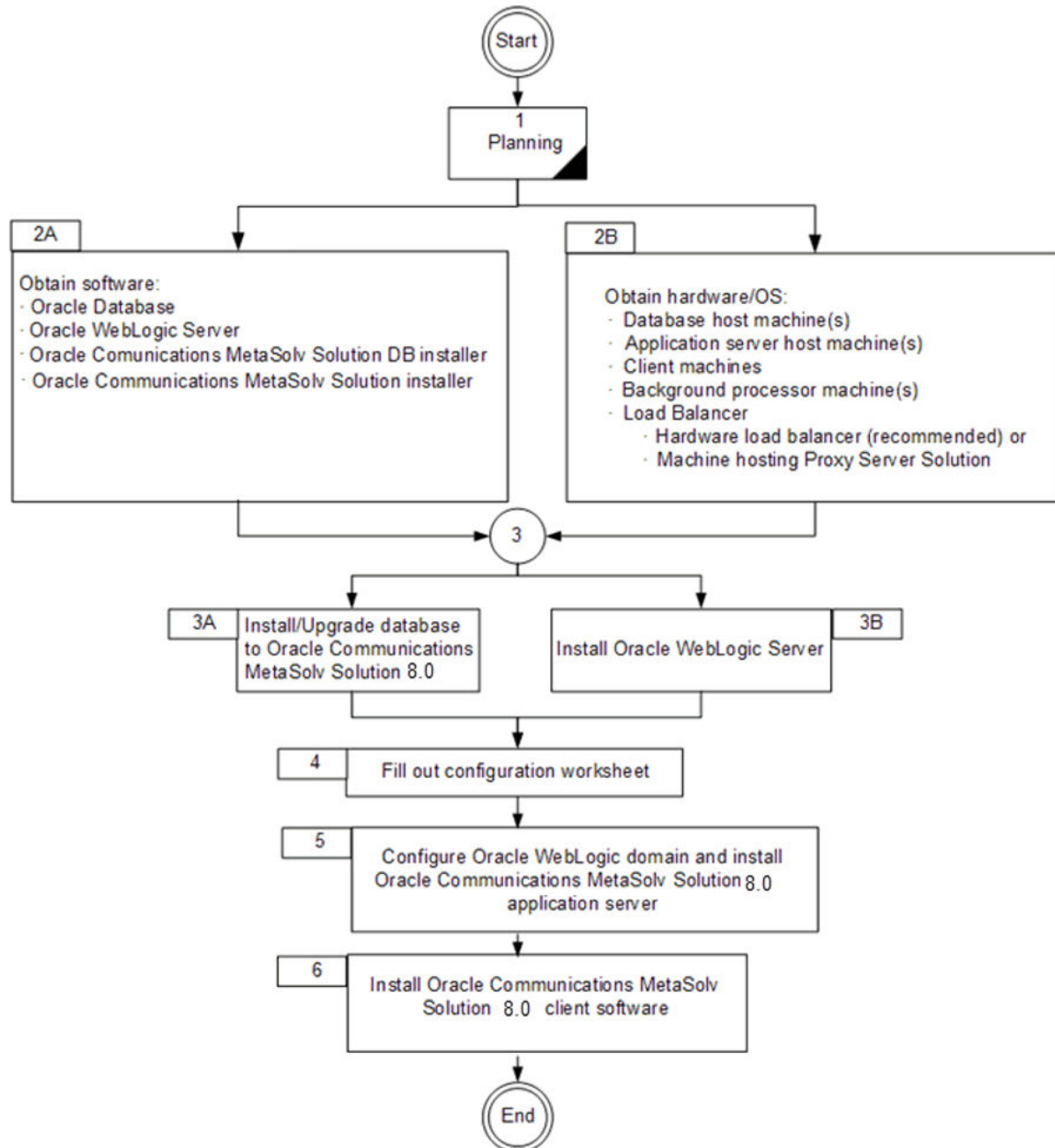
Installation Overview

This chapter provides a high-level overview of the steps needed to perform an Oracle Communications MetaSolv Solution (MSS) installation.

Installation Process

This section provides an overview of the installation process. The chapters that follow provide full information on each step. [Figure 1-1](#) shows the high-level installation process.

Figure 1-1 Overview of the MSS Installation Process



MetaSolv Solution contains three discrete software installation processes: database, application server, and client. The installation is completed in the following order:

1. Database installation

For MSS 8.0, you must install Oracle Database Enterprise Edition. See *MSS Compatibility Matrix* for information on required software versions.

2. Application server installation

The application server installation requires the most planning. You must decide which domain option you want for your installation and configure the application servers for the most benefit in terms of fail over, high availability, and scalability. Based on business and

environment requirements, you should evaluate both hardware and software options for implementing your choice of the following domain options:

- Single server
- Administration server with managed servers in a cluster
- Enable SSL

You must determine which of these options applies to your business needs and meets the most secure operational fail over requirements.

Oracle does not recommend the single server solution because it does not provide continuation of service if the server fails. There is no mechanism in this option to prevent the loss of data or service.

For information on each of these options, see the documentation at:

<https://www.oracle.com/middleware/technologies/weblogic.html>

3. Client installation

The client files are bundled with the application server files in CAB files.

The Oracle database client software is required for MSS utilities, NPA/NXX Split utility, and Location and Routing Gateway (LERG). After the Oracle WebLogic domain is configured, the MSS installer identifies the configuration and sets the appropriate parameters for the installation.

See *MSS Compatibility Matrix* for information on the required software versions.

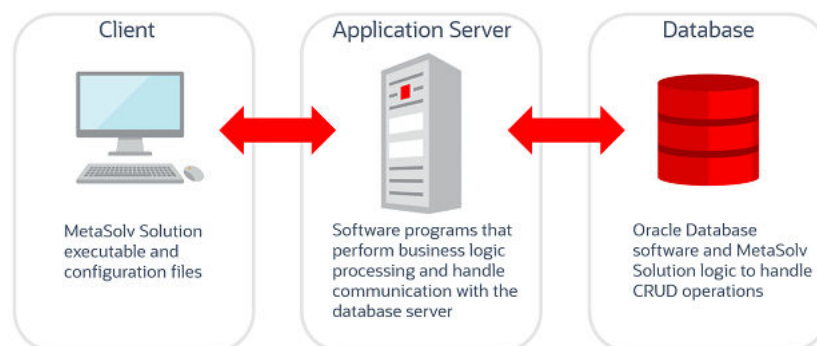
Where MetaSolv Solution Files Reside After Installation

In a MetaSolv Solution installation, application files are divided among the following locations:

- **Application server:** MetaSolv Solution software that controls business logic and processing is loaded to a designated computer or computers. This software is designed to work with the Oracle WebLogic server software and improve the speed and efficiency of the information flow between the client workstation and the MetaSolv Solution database.
- **Client workstation:** The files loaded to the client workstation include executable files that allow the operation of MetaSolv Solution for the user interface and INI files that configure the software. Initially, these files are loaded onto the application server in CAB files.
- **Citrix server (optional):** If you are using a Citrix server, the client workstation files are loaded onto the Citrix server, and the client workstations use a Citrix browser to interact with MetaSolv Solution.

[Figure 1-2](#) shows a simple MetaSolv Solution configuration.

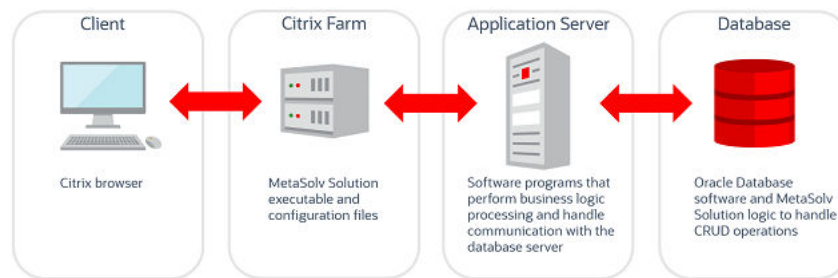
Figure 1-2 Simple MetaSolv Solution configuration, showing where files are loaded



You can use a Citrix server to increase efficiency between the client workstation and the application server. In this configuration, the client workstation files are loaded to the Citrix server and a browser allows the user to access and use the application files on the Citrix server. The Citrix configuration is a good solution in cases where a wide area network (WAN) is used and users must communicate with the application server and database over great distances.

[Figure 1-3](#) shows a MetaSolv Solution configuration with the Citrix server.

Figure 1-3 A MetaSolv Solution configuration, showing the Citrix server



If You Are a New Customer

The current release requires the following installation tasks:

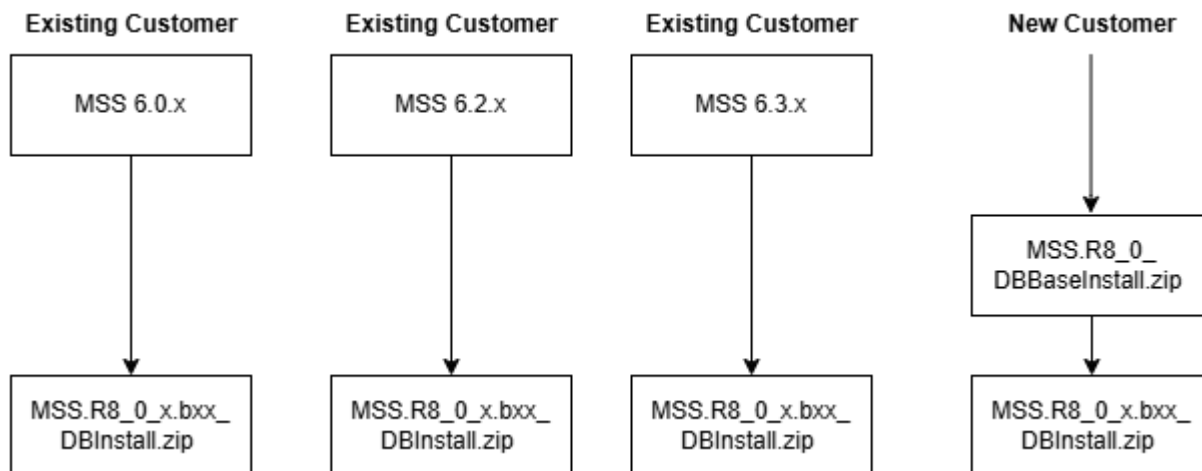
- **Database:** Install the Oracle database. See "[Setting Up The MSS Database](#)" for complete information.
- **Application Server:** Install the Oracle WebLogic application server:
For more information about the supported Oracle WebLogic Server, visit the Oracle WebLogic Server Product Documentation website at:
<https://docs.oracle.com/en/middleware/fusion-middleware/weblogic-server/index.html>
See *MSS Compatibility Matrix* for information on required software versions.
- **Client Workstation:** See "[Installing The Client Workstation](#)" for information on installing individual workstations.

If You Are an Existing Customer

The upgrade path for the MSS database differs from the path for the application server. This section explains the upgrade path for each component.

Database Upgrade Path

[Figure 1-4](#) shows the upgrade path for the MSS database if you are on a pre 8.0 version.

Figure 1-4 MSS Database Upgrade Path

Application Server Upgrade Path

For upgrading to 8.0, you can choose to perform full installation or migrate from MSS 6.3.1.

See "[Installing and Deploying MetaSolv Solution on a Single Server](#)" or "[Installing and Deploying MetaSolv Solution on a Clustered Server](#)" for more information on performing full installation. See "" for more information on migration from MSS 6.3.1.

The upgrade option in the installer can be used to install subsequent maintenance releases and patches. Refer to the specific maintenance release or patch file for detailed instructions. If you are installing a patch, refer to "[Upgrading Oracle Communications MetaSolv Solution](#)".

Related Software Dependencies

If you use ASR, you must reinstall the compatible ASR software after the new version of MSS is installed.

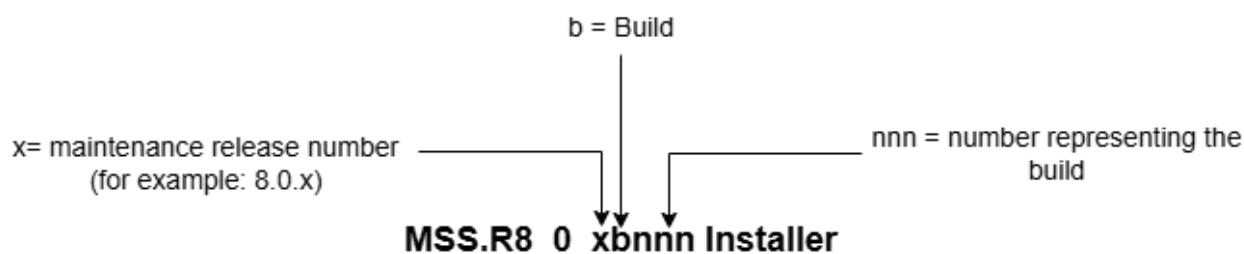
Downloading the Installation Files

Before you begin the installation, download the MSS files for the platform you are using from the Oracle software delivery website:

<http://edelivery.oracle.com>

Identifying the Installation Files

This section explains which installation files you need to download from the Oracle software delivery website. Generic file names are used to identify the files in this section. [Figure 1-5](#) shows the naming format used on the Oracle software delivery website.

Figure 1-5 File Naming Format

Where to Download the Files

Download the application server/client installation files to the appropriate platform (Windows, or Linux) directly to the application server machine you intend to install on. The client files are downloaded and installed from the application server machine.

Data Migration

If you are moving to MSS 8.0 from a pre-MSS 6.0 release, it might be necessary for you to perform a data migration. The Broadband Module available before MSS 6.0 has been discontinued, and customers who use the Broadband Module must migrate data to use Oracle's network templates, which replace the broadband functionality. Two tools are available to assist with the migration effort:

- **Pre-Migration Analysis Tool (PMAT):** This tool can be run against your pre-MSS 6.0 database to determine the amount of data that potentially may need to be converted. This includes circuits (bandwidth, virtual, facilities, specials), product catalog, and orders. This tool is located on the Oracle software delivery website.
- **Next-Generation Migration Tool:** This tool is part of MetaSolv Solution Utilities. This tool automates the process of migrating network elements, migrating network systems, migrating connections, and the circuit conversion to next gen connections and any related order conversion.

See *MetaSolv Solution 6.0 Migration Guide* on the Oracle Help Center.

Basic Installation Steps

Each of the steps shown here for installing MSS contains additional tasks and information that you must know to proceed with the installation. The chapters in this book discuss each basic step.

1. Plan the installation by completing the following tasks:
 - a. Plan for the hardware and software you will need to implement MSS.
See "[MetaSolv Solution System Requirements](#)" for hardware requirements. Also, see *MSS Compatibility Matrix* for information on software version requirements.
 - b. Complete the pre-installation checklist in this chapter.
The checklist contains planning tasks that should be done before you begin the installation process.
2. Obtain the appropriate hardware and software.

3. Prepare the database and application server environments by completing the following tasks:
 - a. Install Oracle Database. See "MSS Traditional Deployment Software Compatibility" in *MSS Compatibility Matrix* for information on required software versions.
 - b. Install the MSS database.

To complete this step, you must run the appropriate MSS database scripts. If you do not currently have the recommended release of the database installed, see "[Setting Up The MSS Database](#)" for information on getting your database to the current release level so that you can apply the current maintenance release.

See "MSS Traditional Deployment Software Compatibility" in *MSS Compatibility Matrix* for information on required software versions.
 - c. Install WebLogic server and JDK on machines that will host the application server.

To complete this step, you must install Oracle WebLogic Platform on each machine hosting MSS. You can install your system in different configurations, but each machine must have Oracle WebLogic software installed. See "MSS Traditional Deployment Software Compatibility" in *MSS Compatibility Matrix* for information on required software versions.
 4. Complete the worksheets that define properties for the installation machines.

Worksheets are included for each installation configuration type that MSS provides. The worksheets let you identify, in advance, information that is needed during the installation.
 5. Install and deploy MSS on the Oracle WebLogic application servers by completing the following tasks:
 - a. Create the Oracle WebLogic domain and define the administration server and its clustered servers, or the single server.

When you create the domain and define the servers that belong to the domain, the Oracle WebLogic software creates the necessary files on the servers you indicate.
- Note**

If you are upgrading from MSS 6.3.1 to MSS 8.0, you can migrate the WebLogic domain from MSS 6.3.1. If you are upgrading from any other version, perform a fresh installation.
- b. Install and deploy MSS.

To complete this step, you must:

 - Run the installer to copy MSS files to every machine that will host Oracle WebLogic application server(s).
 - In the situation where the administration server is on a separate machine, it is not necessary to load MSS on that machine.
 - Deploy MSS from the single server or administration server to the managed servers.
6. Install on the client workstation.

You must perform an initial client installation to perform post-installation tasks that require the use of the client.

To complete this step, you must:

 - a. Install the client on a workstation.

See "[Installing The Client Workstation](#)" for more information.

- b. Install utilities or any other MSS components.
7. Complete the post-installation tasks.

Tasks include:

- Loading graphics to the database from a utility program.
- Running a client utility to determine the health of the database.
- Customizing the application with your company logo (optional).
- Setting up user authentication.

Setting Up a Test Environment

Before you move MetaSolv Solution into production, you should run it in a test environment to ensure you understand how it works and to resolve any issues before you commit the application to your production computers. This document and other MetaSolv Solution documents explain how to set up for a production environment, but you can set up your test environment with some variations. The failover requirements are not as strict for a test environment as they are for production.

For example, you can run MetaSolv Solution 8.0 and MetaSolv Solution 6.3.x on the same test computer. You must keep each application separate and ensure that ports used for http communication, name services, and logging are unique for each instance. The Oracle client (tnsnames.ora) must be configured to connect to the appropriate database for each instance.

On LINUX, use separate users for each instance and set necessary configuration settings for each user. On Windows, you might need to alter some start scripts to ensure the correct paths are set for environment variables such as PATH, CLASSPATH, TNS.ADMIN, and so on.

To achieve optimum application server performance for individual business needs, load and performance testing in a test environment that represents your true production environment is required. The test environment should mimic how you use your production system, including the transaction mix, number of users, hardware and software infrastructures, database, network usage, and all other relevant factors. Setting up a test environment will allow you to determine the optimal application server settings that you should implement in your production environment for:

- Connection pool sizing
- Execute thread sizing
- Java memory management

Pre-installation Checklist

The following list indicates the information you need to research and understand before you start the installation process for MSS and the third-party software it requires. As you identify names, IP addresses, and so on, keep a written record of the information. You will need it during the system installation.

- See "[MetaSolv Solution System Requirements](#)" for the proper hardware for the application server, database server, and client machines.
- See MSS Traditional Deployment Software Compatibility in *MSS Compatibility Matrix* for the software required for MSS installation.

- Back up any customized reports and stored procedure exits. See the discussion on customizing the application in the *MetaSolv Solution System Administrator's Guide* for more information.
- Identify the following:
 - Application server machines, names, and IP addresses.
 - Database server machines, name, IP address, database SID name, and database port (default = 1521).
 - See "[Planning Worksheets](#)" for help identifying and completing this information for the installation type you select.
- Do a DNS and reverse DNS lookup for each application server machine from a user workstation.
 - DNS lookup: From a user workstation, use the `nslookup` command for the application server machine DNS name.
For example: `nslookup servername1`
 - Reverse DNS lookup: From a user workstation, use the `nslookup` command for the application server machine IP address.
For example: `nslookup 192.0.2.225`

If the name or IP address is not found, contact your system administrator.
- Test network connectivity between the following machines:
 - Application server machines to the database server machines.
 - Log on to the application server machine and ping the database server machine using either the DNS name or the IP address. Do this for each application server machine.
 - Database server machines to the application server machines.
 - Log on to the database server machine and ping the application server machine using either the DNS name or the IP address. Do this for each application server machine.
- (Optional) Before you install MetaSolv Solution in an IPv6 domain, ensure that your firewall configuration supports IPv6 addresses. If your firewall configuration does not support IPv6 addresses, you must enable HTTP tunneling in the WebLogic Server Remote Console. See "[Enabling HTTP Tunneling](#)" for more information.
- If your firewall does network address translation (NAT) and MSS end users reside outside the firewall, define an external DNS name for the Oracle WebLogic Server. Contact your network/transport and system administrator groups to verify and define the external DNS, if necessary.

To add an external DNS name:

1. Log in to the Oracle WebLogic Remote Server Console.
2. Navigate to the **Edit Tree** in the WebLogic Remote Console.
3. Expand Environment, then select Servers.
The Summary of Servers pane appears.
4. Click the *server_name* (admin server).
The Settings for *server_name* pane appears.
5. Click the **General** tab and then select **Show Advanced Fields**.
6. Enter the address into the **External Listen Address** field and click **Save**.
 - a. If you are using an external load balancer, the following conditions must be met:

- **Server affinity:** Sticky Session must be enabled.
 - **Cookie persistence:** The load balancer must NOT modify WebLogic cookies.
- b. Choose the installation configuration you plan to use for the application servers:
 - **Single server:** You can have multiple single server instances.
 - **Clustered servers:** This configuration provides failover benefits.
 - c. Download the MSS 8.0 files from the Oracle software delivery website.
 - d. If cluster is configured, create a DNS entry including all clustered managed servers' listening IP addresses in the same cluster. This DNS entry will be used as Cluster Address for the cluster during domain configuration in production environment.
 - e. (Optional) If you are creating the cluster in an IPv6 domain in a dual-stack machine, ensure that you specify the IPv6 address and the system name in the **etc/hosts** file, as follows:

```
IPv6address          ipv6machine@example.com    ipv6machine
```

- f. If you are connecting to an IPv6 server for accessing MSS client application, ensure that you specify the server's IPv6 address in the client machine's **etc/hosts** file, as follows:

```
IPv6address          ipv6machine@example.com    ipv6machine
```

Directory Placeholders Used in This Guide

The following placeholders are used in this guide:

Table 1-1 Placeholder Directories in This Guide

Placeholder	Directory Description
<i>MW_HOME</i>	The directory location where Oracle Fusion Middleware components are installed. This directory contains the base directory for WebLogic Server. For example: MW_HOME=/opt/Oracle/Middleware/Oracle_Home
<i>MSLV_HOME</i>	The directory location where MSS software is installed. MSS requires each server directory and its WebLogic domain directory to be placed in the MSLV_Home directory. For example: MSLV_HOME=/opt/m80Single/single
<i>mslvdomain</i>	The directory location that contains the configuration for the domain into which MSS is installed.
<i>mslv01</i>	The directory location which is the MSS server home directory.

See "[Directory Structure](#)" for additional examples of directory values.

2

Environment Planning Considerations

This chapter describes considerations for Oracle Communications MetaSolv Solution components and provides tips on how to set up for the most efficient use of the application.

Availability Requirements

Business requirements for availability, scalability, and capacity planning have important impacts on planning. This is especially true for hardware sizing, hardware and software configuration, and software use.

Availability refers to a software system's ability to service users. A system has 100 percent availability if it can service a request within a defined period of time for every single user request. In practice, 100 percent availability is difficult to achieve.

Scalability Requirements

Scalability refers to the degree to which a system can maintain acceptable response times, availability, and other performance metrics as the load on the system increases. A system is infinitely scalable if the amount of work the system completes per second increases linearly as the amount of computer resources available increases. Infinite scalability allows MetaSolv Solution to serve an ever-increasing population of users simply by increasing the computer resources available to it.

MetaSolv Solution provides high availability using Oracle WebLogic Server platform. Oracle WebLogic offers service continuity in the event of a single server failure within a cluster by allowing you to configure multiple servers as members of a single distributed server set. If one server instance within the cluster fails, other instances of the same distributed server set provide uninterrupted service.

For information on installing and deploying MetaSolv Solution as a multi-server or server cluster configuration, see "[Installing and Deploying MetaSolv Solution on a Clustered Server](#)". For supplemental information on configuring and using server clusters, see the Oracle Web page at:

<https://www.oracle.com/middleware/technologies/weblogic.html>

With MetaSolv Solution, you can manage a single network inventory using multiple application servers. The optimal number of servers that can be supported in a multi-server configuration depends on a number of interrelated conditions, including the size of the database, power of the database server computer, and number of database connections required. Conditions vary for each deployment. In a multi-server environment, all MSS servers share a single Oracle (logical) database, with each server interacting with the database concurrently. Oracle's transaction facilities maintain consistency of the data within the inventory as the database receives multiple concurrent updates from different MSS servers.

Hardware Sizing Guidelines

You must determine the number of application servers to set up and the hardware required to support your MetaSolv Solution deployment. For more information on hardware, see "[MetaSolv](#)".

[Solution System Requirements](#)". For more information on software, see "MSS Traditional Deployment Software Compatibility" in *MSS Compatibility Matrix*.

The following sections contain Oracle's recommendations for medium and large hardware configurations, based on 100, 500, and 1000 concurrent users. The N+1 industry practice is used in the configurations.

Hardware and Software Configuration

The following sections contain information on installing MetaSolv Solution components.

Database Considerations

If you have installed a version of MetaSolv Solution that is earlier than 6.0.x, you must upgrade to MSS 6.0.x before installing MSS 8.0.

Database Server Configuration

MetaSolv Solution supports the following database server configurations:

- Active/passive: In this configuration, an active cluster node performs processing while a second passive node is held in reserve to take over processing if the active node fails. This configuration provides faster failover response than traditional standby methods because the passive node is available immediately to take over processing.
- Oracle RAC: In conjunction with WebLogic JDBC multi data source failover algorithm, connection requests get routed to the first data source in the list; if the request fails, the request is sent to the next data source in the list, and so forth. MSS also supports manual configuration of WebLogic Active GridLink data sources with Fast Connection Failover.

Application Server Considerations

The following section details application server considerations. Considerations include the following: connection pooling, clustering, clients, if your plan includes a background processor, if your plan includes a Citrix server, security, and performance and tuning.

Connection Pooling

Connection pools are a group of ready-to-use connections between an application server and the database dedicated to the application. The connection pool creates the specified number of database connections when the application server starts. By establishing connections at start-up and keeping them ready for an application to use, the connection pool eliminates the overhead of creating a database connection for each client request. Connections are returned to the connection pool when they are freed from use by the application.

Managing connection pools effectively can increase the efficiency of an application, especially if clustered servers are used. Therefore, as part of your environment planning, you should determine the best configuration for managing the connection pools. One factor is the size of the load (the number of concurrent users). A general rule is to provide a connection for each concurrent user you estimate will use the application, so no user waits for a connection. Another general rule is that the number of application server connection pools should be 30 to 50 percent of the number of potential users.

For assistance in determining how to size and set up connection pooling, see the Oracle WebLogic Server documentation.

When to Use Clusters

Single-server architecture is not recommended for MetaSolv Solution. There is no backup strategy if the server fails, and the result could be a loss of data and operational functionality. In addition, the architecture is not scalable. If your business needs increase, it is difficult to add more client workstations and increase the throughput of the system.

A more efficient way to deploy MetaSolv Solution is to cluster application servers. There are four basic ways to cluster application servers:

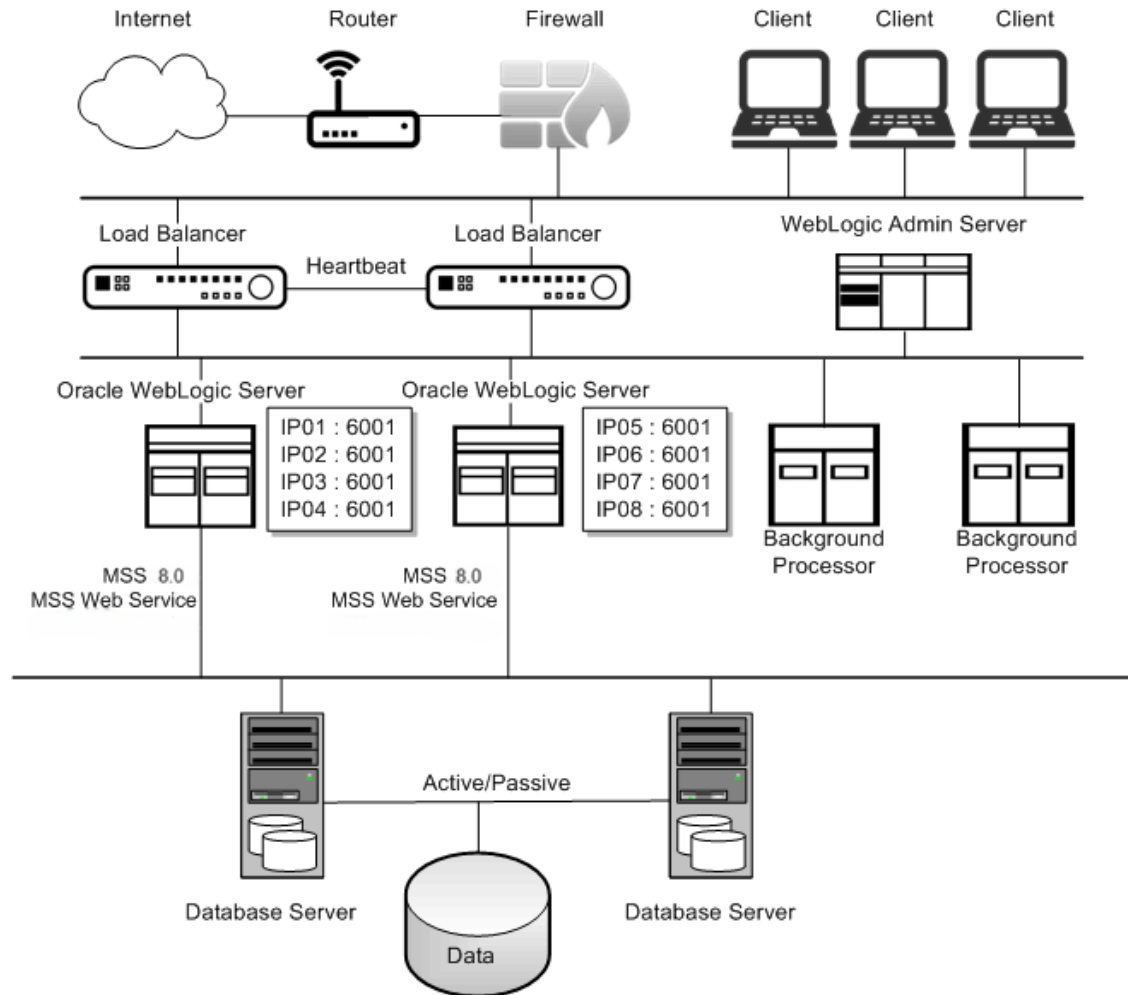
- Oracle proxy server with clustered servers on a single host
- Oracle proxy server with clustered servers on multiple hosts
- External load balancer with clustered servers on a single host

For an external load balancer solution, failover support depends on the vendor solution. A deployment architecture that clusters all servers on one host is not recommended because hardware failure can cause an outage and nullify the benefits of clustering.

- External load balancer with clustered servers on multiple hosts (recommended)

You can use external load balancers and place some application servers on the same host computer and some on different hosts. The configuration of session replication prevents the drawback of the single host approach.

[Figure 2-1](#) shows a 4-node cluster with eight servers and failover load balancers.

Figure 2-1 Server Cluster with Load Balancing in Oracle WebLogic Domain

Recommendations for load balancing:

- If you have more than 250 concurrent users, Oracle recommends using an external load balancer to ensure system performance and response time.
- If you choose an Oracle proxy solution, Oracle recommends placing the proxy server on a separate computer. The Oracle proxy server in this case becomes a single point of failure.

If Your Plan Includes a Background Processor

The MetaSolv Solution Background Processor consists of the following applications that can be distributed between a remote server and a system administrator's workstation:

- Job Master (JMASTER.EXE)
- Job Worker (JWKR.EXE)
- Job Manager (JMANAGER.EXE)

The Background Processor includes a job queue that consists of user-initiated jobs or scheduled jobs sent to the background to be processed. Job Master checks the queue periodically and schedules them immediately or at a predefined time by spawning a Job

Worker client for each job. The Job Manager enables you to review and administer the job queue.

Oracle recommends running the Background Processor on a separate server, but the application can also be run on the client workstation. The number of background tasks handled by the Background Processor should be considered before you set it up in either configuration. If the Background Processor will handle a high volume of tasks, it is more efficient to put it on a separate server. See "[Background Processor](#)" for complete information on the Background Processor's technical requirements.

If Your Plan Includes a Citrix Server

Citrix and Windows Server with Remote Desktop Services allow you to install MetaSolv Solution in one place and have all the clients access the software. You install the application as you would on a server, but it behaves as if you installed on the client. A Citrix server setup resolves performance issues that you get when you install MetaSolv Solution on a server and have everyone access through a shortcut. Citrix also resolves logistical issues of installing on individual clients.

Microsoft Windows Server with Remote Desktop Services is an operating system that allows multiple, simultaneous clients access to sessions in a server environment. Each session is a private, protected memory space in which users can run applications.

Citrix is server-based software that provides:

- A wider range of clients and protocols
- Enterprise-scale management tools
- Integration of local and remote resources with bandwidth independent performance

User Authentication

Users are authenticated by the database server when logging in by default. For other authentication methods, see "[User Authentication](#)".

Data Migration

This section is applicable only if you are upgrading from a pre-6.0.x version (for example, MSS 5.2) to 8.0. If you are moving to 8.0 from a pre-6.0.x release, it may be necessary for you to perform a data migration especially if you used the Broadband Network Design module to design and provision ATM/Frame Relay and DSL. The Broadband module is obsolete as of 6.0, and customers who use the Broadband module must migrate using this migration utility or if you need the ability to set up your network elements and associate equipment to them. If you have already completed the migration when upgrading to 6.0.x, you do not need to do this migration.

Planning Tips

- Your production application server and database server should be two different physical servers for the following reasons:
 - Two systems on the same computer can lead to performance issues and prevent both from operating at their optimum capacity.
 - If hardware issues are encountered, you must rebuild both the database and the application server before production activity is restored.

- It is difficult to diagnose performance and network problems when both are on the same computer.
- All client traffic, with the exception of client utilities, is routed through the application server. Therefore, to ensure continuous availability, Oracle recommends an environment that has a minimum of two production application servers. This configuration enables you to implement failover and load balancing functionality. See "[Hardware Sizing Guidelines](#)" for additional details based on users and transactions.
- For non-production environments like training, testing, or development, it is possible to place multiple application servers on one physical server. This will reduce the overall cost of maintaining the MetaSolv Solution environment.
- Consider the application server environment in your normal production maintenance plan. It should be customized, tuned, backed up, and monitored on a regular basis to ensure optimal performance. Make plans to archive logs and re-evaluate your configuration on an ongoing basis. If you leave the system running without oversight and maintenance, you will not get optimal performance.
- The MetaSolv Solution client contains some functionality that is subject to network delays when run across a WAN. Where possible, end users should be located near the database and application servers.
- Oracle systems can operate over a LAN or a WAN. The software initiates a significant amount of network traffic between the database server, the application server, and the Oracle client. In a LAN configuration, a Gigabit Ethernet network delivers the best performance. If a WAN implementation is necessary, consider using a Citrix Terminal Server solution to reduce the amount of data being transmitted to and from the client.
- Separate the Oracle database files from the operating system files. Place Oracle program files and Oracle archive log files on different disks.
- Do not allocate so much memory to the Oracle database and other applications that the operating system has to perform memory/disk swapping or paging. A good rule is to not allocate over half the amount of the computer's available physical memory.
- Limit the database server to database-only use. If the operating system is being taxed by other resources, the Oracle database runs slowly no matter how well tuned your instance is.
- For production, run only one instance of the Oracle database per computer. The more instances running on a computer, the harder it is to tune the instance with system resources.

3

MetaSolv Solution System Requirements

This chapter provides the minimum MetaSolv Solution hardware and software requirements. See "[Deployment Configuration Examples](#)" for Oracle's recommendations on deploying to small, medium, and large environments for the application server and the database server.

Because each business differs in factors like size, use of the application, and performance desired, each installation of MetaSolv Solution has different hardware and software requirements. For each piece of hardware listed in the requirements, the estimated number of users the hardware can support is listed.

Before you make hardware decisions, contact Oracle to ensure you have the right equipment and software to achieve the system performance required for your business needs.

For a complete list of supported software versions used with MetaSolv Solution, see "MSS Traditional Deployment Software Compatibility" in *MSS Compatibility Matrix*.

MetaSolv Solution Installation Components

[Table 3-1](#) identifies the required and optional software components of the MetaSolv Solution environment.

Table 3-1 MetaSolv Solution Components

Component	Required or Optional
Database Server	Required
Application Server	Required
MetaSolv Solution Rich Client	Required
MetaSolv Solution Utilities	Required
Background Processor	Optional
Location and Routing Gateway	Optional
NPA Split Utility	Optional
Data Selection Tool	Optional

Recommended Actions for Best Performance

Every MetaSolv Solution environment is different. The environment is affected by the product functionality being used, mix of transactions, API usage, hardware capacity, network speed and capacity, how the servers are tuned, and so on. For best results using each software component, Oracle recommends that you take the following actions:

- Stay abreast of notices on products referenced in this section that are no longer supported to ensure your software environment is fully supported.
- To upgrade outside the supported versions, contact Oracle Support to determine available options. Recommendations may include migrating to a newer version of MetaSolv Solution.

Database Server

The following provides information on the MetaSolv Solution database server.

Software requirements:

- **Operating system:** See the Oracle Database documentation for information on supported OS versions.
- **Database:** Oracle Database Enterprise Edition. See "MSS Traditional Deployment Software Compatibility" in *MSS Compatibility Matrix* for information on required software versions.

Storage: A high performance, fault tolerant disk subsystem should be used.

Fault tolerance: Fault tolerance is important when provisioning the database server. If this server fails, the MetaSolv Solution software cannot function. There are several commercial clustering solutions available for Oracle servers. Oracle recommends that you work with its hardware vendor to implement a clustering solution.

Scalability: Scalability is achieved through the use of a server with multiple and/or faster processors.

Sizing for existing customers: See "[Deployment Configuration Examples](#)" for sizing information that includes examples for small, medium, and large deployments.

Additional information:

- Because disk sizing is approximate, adjust sizing based on your data requirements.
- MetaSolv Solution is certified to work with Oracle's Dictionary Managed Storage.
- Required tablespaces are DATA and INDEXES, which can be either Dictionary or Locally Managed. These are required as default tablespaces for creating new objects.
- This release of MetaSolv Solution is certified to work with the version of Oracle Enterprise Edition listed. Work with Oracle Global Customer Support to determine the recommended patch level for your intended platform/version combination.
- Ensure that you set the recommended database initialization parameters for the Oracle Database version that you are using. [Table 3-2](#) lists the recommended initialization parameter settings and these Initialization Parameters ensure that the install script completes successfully.

Table 3-2 Oracle Database Recommended Initialization Parameter Settings

Oracle Database Version	Initialization Parameter	Recommended Value	Example
19c	_grant_secure_role	TRUE	_grant_secure_role=TRUE
	_enable_secure_sub_role	TRUE	_enable_secure_sub_role=TRUE

Note

Oracle recommends the default values for all other initialization parameters that are not listed.

Application Server

The MetaSolv application server supports the MetaSolv Solution application code running in the middle tier. Clients connect to the application server using HTTP or IIOP (both over TCP/IP), and the application server connects to the database server using JDBC connection pools. The MetaSolv Solution APIs also run on the application server.

Fault Tolerance: Fault tolerance is provided by clustering multiple application servers together. Because the application server is a critical component, Oracle recommends multiple application servers be implemented in a clustered configuration in a production environment. Oracle WebLogic software provides clustering mechanisms, although other load balancing/high availability solutions may be used. Oracle recommends the application servers and database servers run on separate computers in a production environment.

Scalability: Scalability is achieved by running multiple application server processes or using more powerful servers. Performance levels in the application server tier is heavily dependent on tuning the environment and configuring to optimize communication between the database, application server, and client. The sizing numbers shown in this section provide a general guideline for determining hardware requirements. Customers should follow installation and configuration guidelines available from the application server vendor.

Software: See "MSS Traditional Deployment Software Compatibility" in *MSS Compatibility Matrix* for the list of software that are supported by MetaSolv Solution. MetaSolv Solution supports HTTP(s) and IIOP over TCP/IP

Additional information:

- The application server supports 64-bit Java Virtual Machine (JVM). It is possible that 64-bit JVM may support a large number of users per application instance as a sizable amount of memory can be allocated to the java heap. An individual application server instance using the 64-bit JVM can support 80 or 120 users if 8 GB or 12 GB of memory is allocated to the java heap.
- Sizing of the application server should be based on the expected maximum number of requests, or concurrent transactions, sent to the application server at the same time. This number is considerably less than the number of clients using the application server, typically 15-20 percent of the total number of users logged on to the system. For more specific sizing and configuration guidelines, see "[MetaSolv Solution System Requirements](#)".
- More servers may be employed in a software- or hardware-based cluster. This approach provides more redundancy and reduced impact if a server in the cluster fails. However, the dispatcher functionality should be run on multiple servers to ensure redundancy.
- Oracle does not support running the application server on Citrix.
- If you plan to use an external load balancing mechanism, it must support sticky sessions, and it cannot modify WebLogic cookies. In addition, the network configuration needs to support requests from the application server to the load balancer.
- The application server must be able to obtain graphics settings from the host to provide graphics functionality in the application. Oracle does not endorse or certify the functionality of the third-party packages.

MetaSolv Solution Rich Client

Software: See *MSS Compatibility Matrix* for information on software that are supported by MetaSolv Solution.

Storage: 0.5 GB. No persistent user data is stored.

Fault Tolerance: No special requirements are needed. Should any client fail, a user may resume work on any client computer.

Scalability: A faster processor in the client computer will improve performance. Increased memory often has a significant improvement on desktop performance, especially if multiple applications are used simultaneously. Additional clients may be added as needed, and the servers may need to be scaled to handle the additional load, as noted in each of the server descriptions. Specific sizing recommendations are shown below.

Sizing (client computer):

CPU:

- 2.6 GHz (minimum)
- 3.4 GHz (recommended for Inventory Management users)

Memory: 8 GB

Colors: True color (24 bit)

Resolution: 1024 x 768

Disk: 0.5 GB

Additional information:

- CPU and memory requirements assume other applications will be running on the client computer. Client hardware configuration will impact general performance of MetaSolv Solution client applications. If the client hardware has only the minimum configuration, processes may take significantly longer to run than they would on a computer with the higher recommended configuration.

Customers need to determine optimal requirements based on how MetaSolv Solution is used in their business.

- Only the Small Fonts setting for Font Size in the Display Properties is supported.
- The Text Size setting in the browser must be set to Medium.
- Select the following check boxes for the HTTP 1.1 settings on the **Advanced** tab of the Internet Options window:
 - **Use HTTP 1.1**
 - **Use HTTP 1.1 through proxy connections**

Background Processor

The Background Processor processes MetaSolv Solution user work in the background when the option is available and a user selects it. Users place tasks in a queue and the background processor pulls requests from it. Results are available to users through another table. There is no direct communication between the users and the Background Processor. The Background Processor runs the same code as the end user clients, but it does not have an interactive user interface.

Software: See *MSS Compatibility Matrix* for information on software that are supported by MetaSolv Solution.

Storage: Disk requirements are minimal. No persistent user data is stored.

Fault Tolerance: Fault tolerance is achieved with multiple computers. Each computer can process the same work queue, and in the case of a failure, the surviving computer continues processing the work queue.

Scalability: Scalability is achieved with multiple computers (horizontal scaling) or the use of more powerful servers.

Sizing: [Table 3-3](#) describes the background processor sizing requirements:

Table 3-3 Background Processor sizing requirements

Number of concurrent background jobs	CPU	Memory	Disk
0-10	2.6 GHz (minimum)	8 GB	0.5 GB

Additional information:

- Hardware sizing is not directly affected by the number of users. User behavior affects the load placed upon these servers and subsequent hardware requirements.

Citrix

Description: Citrix executes the MetaSolv Solution client software for the end user, transmits screen updates to a thin client, and receives mouse and keyboard data from the thin client. Use of Citrix is recommended for any customer with end users running across a WAN. Citrix minimizes the response time delays caused by network latency. Other benefits include ease of software distribution, reduction of WAN bandwidth requirements, and reduced client specifications.

Software: See *MSS Compatibility Matrix* for information on software that are supported by MetaSolv Solution.

Sizing: For information on sizing a Citrix configuration, see the Citrix documentation or contact Citrix Systems, Inc.

Storage: Disk requirements are minimal. No persistent user data is stored.

Fault Tolerance: Fault tolerance is achieved with multiple computers in a farm. Citrix provides the capability to direct client requests to one of many servers in a farm.

Scalability: Scalability is achieved with multiple computers (horizontal scaling), or the use of more powerful servers. Generally, better results are obtained by limiting the server size to two CPUs.

Additional information:

- This software runs on Windows platforms only. Other platforms are not supported.
- Citrix is optional.

Location and Routing Gateway Client

Description: This is one of three optional peripheral applications that require client computers to execute special activities.

Software: See *MSS Compatibility Matrix* for information on software that are supported by MetaSolv Solution.

Sizing (client computer):*CPU:*

- 2.6 GHz (minimum)
- 3.4 GHz (recommended for Inventory Management users)

Memory: 8 GB*Colors:* 256*Resolution:* 1024 x 768*Disk:* 0.5 GB

MetaSolv Solution Utilities Client

Description: This is one of three optional peripheral applications that require client computers to execute special activities. The MetaSolv Solution Utilities client enables you to do various maintenance and setup activities for MetaSolv Solution.

Software: See *MSS Compatibility Matrix* for information on software that are supported by MetaSolv Solution.

Sizing (client computer):*CPU:*

- 2.6 GHz (minimum)
- 3.4 GHz (recommended for Inventory Management users)

Memory: 8 GB*Colors:* 256*Resolution:* 1024 x 768*Disk:* 0.5 GB

4

Setting Up The MSS Database

This chapter assumes that you already have Oracle Database installed on the database server. Consult the Oracle Database online documentation for questions on how to install the database software.

Oracle Communications MetaSolv Solution (MSS) supports the Oracle Database multitenant architecture, which enables you to run the MSS database instance as a pluggable database (PDB) within a container database (CDB). For information about the Oracle Database multitenant architecture, see *Oracle Database Administrator's Guide*.

This chapter explains how to install a new database or bring your existing database to the 8.0 GA level. Specifically, the chapter covers how to:

- Extract the database scripts.
- Create tablespaces (only for new users).
- Run the upgrade or installation scripts to make specific changes to bring the database structure to the Oracle Communications MetaSolv Solution (MSS) 8.0 level.
- Drop the **app_data** tablespace (only for users who are upgrading).

Some sections apply to new customers who have never installed an MSS database before, and some apply to existing customers who have previously installed the database but need to bring the database up to the current level.

Getting the Database to the Current GA Level

The MSS database upgrade and installation files enable you to get the database to the current MSS GA level.

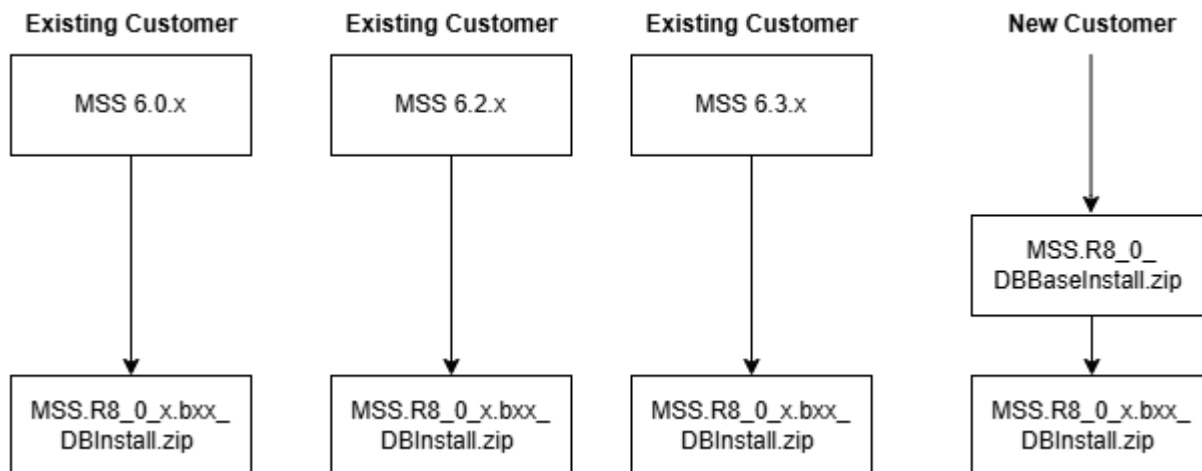
If you are currently at MSS 6.0.x or MSS 6.2.x, you are required to extract and run only the MSSR8_0_x.byyy_DBInstall.zip script.

If you are installing MSS 8.0 for the first time, you must extract and run the MSS R8_0_DBBaseInstall.zip script first, and then extract and run the MSS.R8_0_x.byyy_DBInstall.zip script.

The MSS R8_0_DBBaseInstall.zip script sets up the database structure and the MSS.R8_0_x.byyy_DBInstall.zip script installs the MSS 8.0 database.

[Figure 4-1](#) depicts the upgrade and installation paths for setting up an MSS 8.0 database.

Figure 4-1 MSS Database Upgrade and Installation Paths



Database Space Requirements

The database installation requires approximately 2.5 GB of free space. This default size is based on a production database supporting 100,000 circuits. The specific space requirements are shown in [Table 4-1](#).

Table 4-1 Space Requirements for Installation Files

File Name	Size
DATA	1325 MB
INDEXES	700 MB
SYSTEM	200 MB
TEMP	100 MB
SYS_AUX	200 MB
INTDATA	1500MB
Total Size	4 GB

Prerequisites

- Ensure that you have installed Oracle Database on the database server machine. Work with Oracle Global Customer Support to determine the recommended Oracle database software patch level for your intended platform and version combination.

See "MSS Traditional Deployment Software Compatibility" in *MSS Compatibility Matrix* for information on required software versions.

- Ensure that you set the recommended database initialization parameters for the Oracle Database version that you are using. [Table 3-2](#) lists the recommended initialization parameter settings.
- For technical bulletins that pertain to this release, click the **Knowledge** tab on the My Oracle Support website:

<https://support.oracle.com>

Extracting the MSS Database Scripts

The first set of scripts that need to be run reside in the **MSS.R8_0_DBBaseInstall.zip** file. You can extract the contents of this ZIP file to the directory of your choice. This ZIP file contains database scripts used to set up the structure for an MSS 8.0 database.

See "[Getting the Database to the Current GA Level](#)" for information about which MSS database scripts you need to run and in what sequence, depending on the MSS version you are currently at.

To extract the MSS database scripts to the database server machine, do the following:

1. Extract the **MSS.R8_0_DBBaseInstall.zip** file into a directory. Oracle recommends extracting the scripts to a directory on your database server.

The second set of scripts that you must run reside in the **MSS.R8_0_x.byyy_DBInstall.zip** file (where yyy is the build number). This ZIP file contains database scripts used to upgrade an existing MSS 6.0.2 or higher database to MSS 8.0.

2. Extract the **MSS.R8_0_x.byyy_DBInstall.zip** file into a directory. Oracle recommends extracting the scripts to a directory on your database server.

Creating Tablespaces (New Customers Only)

If you are setting up your database for the first time, you must create tablespaces using the scripts extracted from the **MSS.R8_0_DBBaseInstall.zip** file.

The **a_tblspc.sql** file, located in the directory where you installed the database scripts, creates tablespaces. You must modify the file and run it to create tablespaces. Make sure you have write privileges for the file and modify the following information:

- Path to the datafile
- Tablespace size

Note

All tablespace sizes must be equal to or greater than the space requirements listed in [Table 4-1](#).

The following UNIX/Linux example shows the line you must modify.

```
REM * Create a table space for DATA.  
create tablespace DATA datafile '...' size 1325M  
create management local SEGMENT SPACE MANAGEMENT AUTO;
```

To run **a_tblspc.sql**, do the following:

1. Log on to the database server as a sys user with sysdba privileges and start SQL*Plus.

User ID: sys as SYSDBA

Password:

Host String: *Database_name_of_the_Oracle_instance*

2. Run **a_tblspc.sql**.

INTDATA tablespace is created using APP_USERS.sql

Running the Installation Scripts (New Customers Only)

Each script writes an audit log to a subdirectory called **Audits**. The **Audits** subdirectory is located in the same directory as the database installation scripts.

Prerequisites

Before running the installation scripts, extracted from the **MSS.R8_0_DBBaseInstall.zip** file:

- The script file **_instmss.sql** is for new installations only. You must use sys user with sysdba privileges to complete this procedure.
- The following script files create database users and you need to supply passwords for these application users. Modify the script files by replacing occurrences of <PASSWORD HERE> with a password.
 - db/inst_80/app_users.sql
 - db/inst_80/a_users.sql

Note

In Oracle Database 19c, the passwords are case-sensitive.

- Edit APP_USERS.sql for INTDATA tablespace path.

To begin the installation, do the following:

1. In SQL*Plus, run **_instmss.sql** and complete the following information:
 - a. Enter the operating system for the SQL*Plus client (the machine you are running the scripts from) and press ENTER.

This value is either **UNIX/Linux** or **Windows**. **Windows** is the default.
 - b. Enter the full directory path for the SQL script files.

The path must include the trailing virgule (/ for UNIX and Linux or \ for Windows), and you must be able to write to the directory. If you enter an invalid path or a protected directory, SQL*Plus exits.

The path length is limited by SQL*Plus and the operating system.
 - c. Enter the database name.
 - d. Enter each of the following passwords and press ENTER after each one:
ASAP, EBOND, EDI, JOB, and SYS_ERROR

If a password fails, SQL*Plus exits. If this happens, review **a_getpas.log** for errors.

This step initiates the installation process. When the installation is complete, you receive an **Install Complete** message.

If this message does not appear, the installation process was not successful and must be restarted beginning with step [1](#). Prior to restarting, back up the Audits directory. If you restart the installation process, ORA- messages appear for every item that failed.
2. Search the files in the **Audits** directory for **ORA-**.
3. When the installation is complete, run the **mdl_cur.sql** script also using sys user with sysdba privileges.

This process can take up to 30 minutes to complete. The **mdl_cur.sql** spools a report in the **Audits** directory called **mdl_cur.txt**. The report verifies the database structure by identifying missing tables or columns, extra tables or columns, and differences with column data types as compared to the database. If no ORA- messages are found and the **mdl_cur.txt** file is clean, the installation completed successfully.

4. Run the **mdl_cmp.sql** script also using sys user with sysdba privileges.

This script spools a report in the **Audits** subdirectory called **mdl_cmp.txt**. The report indicates extra or missing indexes, primary keys, foreign keys, and sequences. This script gives the option to fix problems or only report the differences. When you run the script, you can compare the differences for individual sections or for all sections. The default is to compare all sections.

5. Install the MSS 8.0 database, using the scripts extracted from the **MSS.R8_0_x.byyy_DBInstall.zip** file.

For complete instructions on installing the MSS 8.0 database, refer to the following sections, in "[Upgrading Oracle Communications MetaSolv Solution](#)" of this guide:

- [Upgrading Oracle Communications MetaSolv Solution](#)
- [Updating Stored Procedures](#)
- [Running Reports](#)

Database Post-Installation Tasks

You must complete the following tasks to ensure that the database operates properly:

- Load a set of graphics to the database
- Check the database using the Oracle Communications MetaSolv Solution feature called DB Health.
- Unlock the users that are locked during upgrade by running the following command:

```
ALTER USER <username> ACCOUNT UNLOCK;
ALTER USER <username> IDENTIFIED BY <password>;
```

- Change the role passwords.

Only the database administrator can change passwords for the roles ADMIN_ROLE and WOTSTWTW00 by running the following stored procedure:

=====pl/sql should be run by dba for changing role's password=====

```
DECLARE
    C_NAME VARCHAR2(200);
    C_PASSWORD VARCHAR2(200);
BEGIN
    C_NAME := 'role_name'; /*specify the role name, ADMIN_ROLE OR WOTSTWTW00*/
    C_PASSWORD := ''; /*specify the password*/
    SP_CREDSTORE_CHG_ROLE_PWD(C_NAME, C_PASSWORD);
END;
```

If you do not change the role passwords, then the following error message is displayed:

```
ORA-01979: missing or invalid password for role WOTSTWTW00 or ADMIN_ROLE
```

See "[Troubleshooting Database Issues](#)" for more information.

Ensure that you have installed the appropriate files on the client workstation to successfully complete the database post-installation tasks. See "[Performing Post-Installation Tasks](#)" for information.

5

Preparing For the Application Server Installation

This chapter explains the tasks that you must do before installing the Oracle Communications MetaSolv Solution (MSS) application server.

About Required Software Installation

MSS requires Oracle database software and Oracle WebLogic application server software. This document does not explain how to install the software for either of these products. "[Setting Up The MSS Database](#)" describes how to install or upgrade your Oracle database. [Table 5-1](#) shows where to find information for configuring Oracle WebLogic application server for MSS.

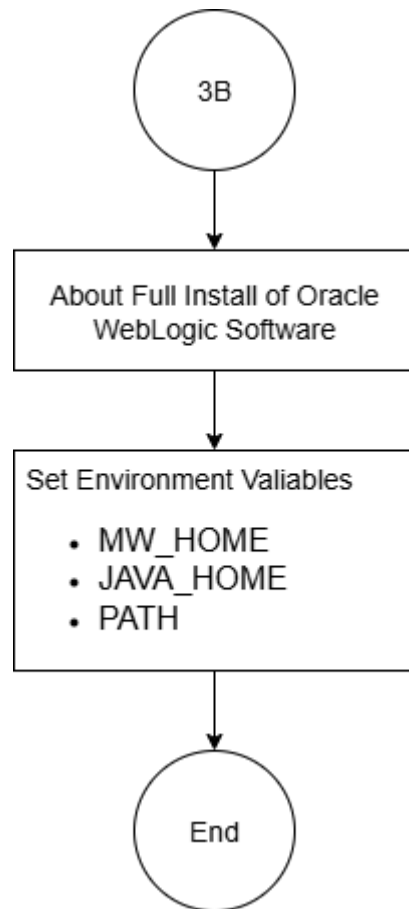
Table 5-1 Setting Up The MSS Application Server

If you are setting up:	Find information on how to do it here:
An application server for MSS with Web Services.	In this guide: "Installing and Deploying MetaSolv Solution on a Single Server " or "Installing and Deploying MetaSolv Solution on a Clustered Server"

Oracle WebLogic Software Installation on an MSS Host Machine

[Figure 5-1](#) shows the steps involved in installing Oracle WebLogic software on a machine that will host MSS. The figure describes step 3B in [Figure 1-1](#).

See "MSS Traditional Deployment Software Compatibility" in *MSS Compatibility Matrix* for information on required software versions.

Figure 5-1 Installing Oracle WebLogic Software on an Application Server Machine

About the Oracle WebLogic Installation

This document does not explain how to install the Oracle WebLogic software, but it does provide basic information on how to set up and configure the Oracle WebLogic domain for MSS.

Setting the MW_HOME Environment Variable

Once you have installed WebLogic Server on a machine, add the environment variable for MW_HOME that points to the WebLogic directory.

For example:

For UNIX/Linux:

```
MW_HOME=/Oracle/Middleware/Oracle_Home
```

For Windows:

```
MW_HOME=C:\Oracle\Middleware\Oracle_Home
```

This step is mandatory and you must set the environment variable MW_HOME before the installation process of MSS.

Installing WebLogic Patches

After you install WebLogic Server, you must download any required patches from the My Oracle Support website and apply patches using the WebLogic Opatch tool.

For information about downloading and applying private patches, see *Knowledge Article 1302053.1 - How to Locate and Download Patches for WebLogic Server Using My Oracle Support* and *Knowledge Article 1075833.1 - Primary Note on WebLogic Server (WLS) Patches, Upgrade Installers, and Full Installers*.

About JacORB

JacORB is installed automatically during the MSS installation. Do *not* install JacORB manually.

How the Installer Works

You must download the installer with the following filename:

MSS.RreleaseNumber.bbuild_AppServerInstaller.jar

where *releaseNumber* is the MSS software release version and *bbuild* is the build number. You find this on the Oracle software delivery website, then copy or FTP the installer into a temporary directory on each machine on which you intend to install MSS.

Two options are available in the installer:

- **Full installation:** Select this option for new installations of any 8.0 release. This option is also used when upgrading to 8.0 from a pre-6.3.1 release.
- **Reconfigure WebLogic Domain:** Select this option for upgrading from 6.3.1 release.
- **Upgrade installation:** Select this option for subsequent MSS 8.0 maintenance releases and patches.

The installer is delivered in a jar file. You only have to run the installer on each physical machine in a domain one time, regardless of the number of Oracle WebLogic application server instances and/or clusters running on the machine. The following actions are automated by the installer:

- **Parameter configuration:** Default parameters are entered for logging, threads, JDBC pool creation and sizing, reload, JMS/Bridge, memory GC, and SSL.
- **Deployment:** You can deploy to both clustered and non-clustered configurations from the installer.

The program validates the database connection and creates custom scripts for starting JacORB and WebLogic application server.

Directory Structure

MSS requires each server directory and its WebLogic domain directory to be placed in the *MSLV_Home* directory. This directory is a location on the server under which the MSS software will be installed.

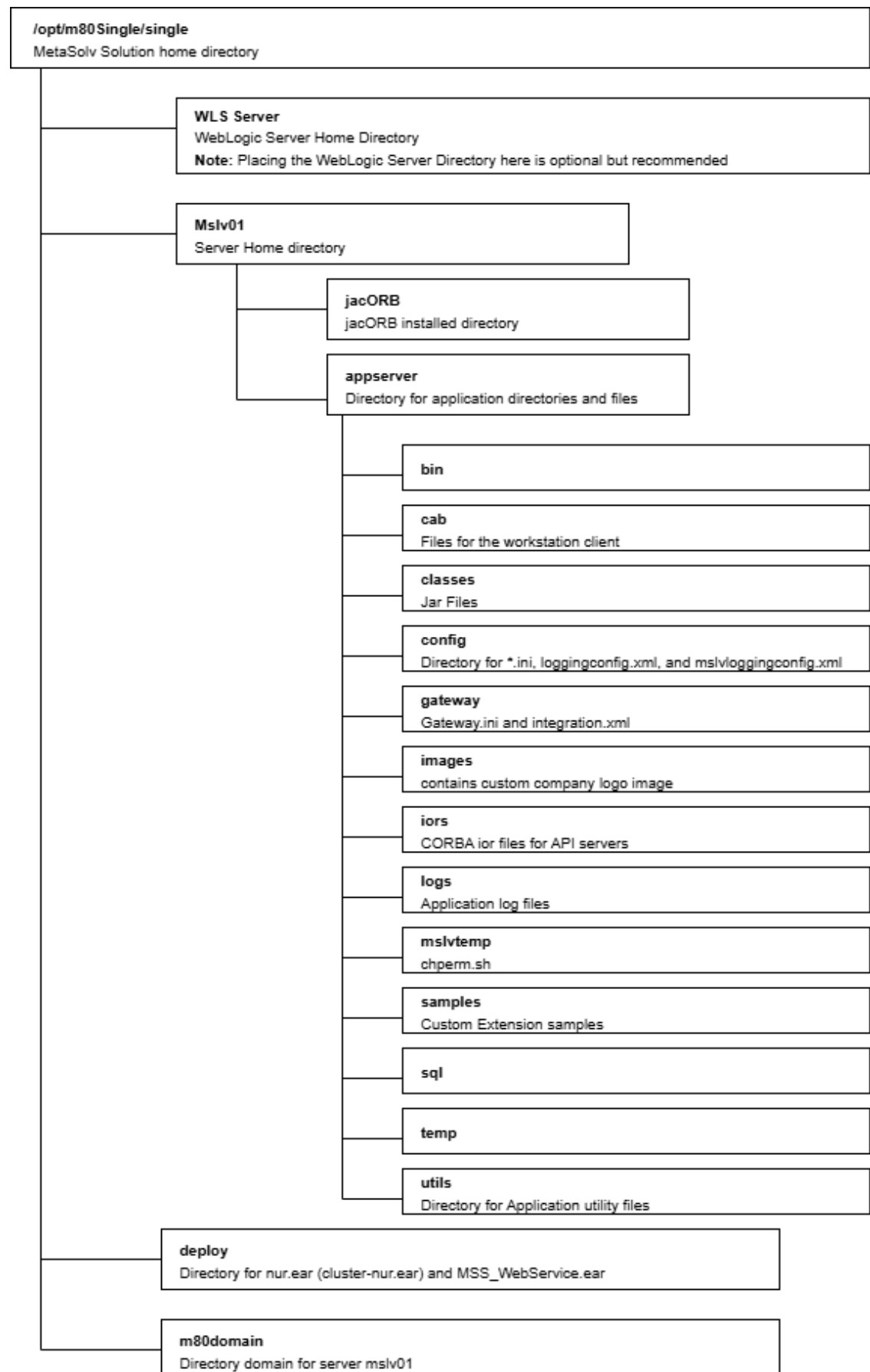
In the example shown in [Figure 5-2](#), the following structure exists:

- MetaSolv home (*MSLV_Home*) directory: **/opt/m80Single/single**

- Server directory: **`/opt/m80Single/single/mslv01`**
- Server domain directory: **`/opt/m80Single/single/mslv_domain`**

[Figure 5-2](#) shows an example of a typical MSS directory structure.

Figure 5-2 Example of an MSS Directory Structure



Using Worksheets to Plan Your Installation

Before you begin to install MSS, it is prudent to plan the installation on paper. This is important if you have a number of machines on which to install. In this case, the assignment of names, port numbers, and other information is critical so that contention issues do not arise when you try to run the system for the first time.

The WebLogic application server domain that you plan to create dictates how you install MSS and what information you need to know beforehand. A sample worksheet is provided in Appendix C to help you plan out the information required at installation time. The worksheet indicates the information you need to create the Oracle WLS domain and provide examples of the expected values. Included in the worksheet is:

- Common installation information
- Single server environment information
- Clustered server environment information

Pre-requisites for the Latest MSS Release

The following are the pre-requisites for the latest MSS release. See "MSS Traditional Deployment Software Compatibility" in *MSS Compatibility Matrix* for information on the required software versions.

- Upgrade to the current version of the MSS database.
- Install Oracle WebLogic software for the environment you need for MSS.
- Do not need to install the Oracle client on the server machine. The Oracle thin client for these versions is supplied through Oracle. The API startup detects the database information from the WebLogic Server connection pool. This removes the need to store any of the database information in non-Oracle configuration files. It also prevents the API connections from being configured to connect to a different database.
- Resolve the DNS name of the database host machine. This means you must be able to ping the database server. If you cannot, add the IP address and host machine's name to the `/etc/hosts` file.
- Make sure the database users `APP_MSLV`, `APP_API`, and `APP_INT` exist. If they do not exist, ask your database administrator to create them before you proceed. These users should have been created during the database installation.
- Read the section entitled "[Pre-installation Checklist](#)".
- Make sure the user running the installer has write permissions in the MetaSolv home directory and WebLogic home directory of the machine on which the installation is performed.
- After installing Oracle WebLogic on all target application server machines, verify that the `PATH` environment variable is set with the JDK directory defined as the first entry. See the following example:

```
PATH=/opt/jdkVersion/bin:$PATH; export PATH
```

where *Version* is the version portion of the JDK path. Run the command

```
java -version
```

to verify that you have the correct version of the Java in the `PATH`.

- Download the MSS release files from the Oracle software delivery website to an application server. Download the following files for the appropriate platform: Oracle WebLogic files (if you purchased them as part of MSS) and

MSS.RreleaseNumber.bbuid_AppServerInstaller.jar

where *releaseNumber* is the MSS software release version and *build* is the build number.

- Make sure the person installing has appropriate rights on the application server installation file. If you are using UNIX/Linux, use the `chmod` command to change permissions if this is necessary.
- If you are a UNIX/Linux user using an X-Windows emulator, set the `DISPLAY` environment variable to send the graphical display to your workstation by typing the following:
`$DISPLAY=mymachinename:0.0;export DISPLAY` and pressing ENTER.
- Verify the `MW_Home` environment variables have been set. The following is an example entry in a **.profile** file for UNIX/Linux users:

```
MW_HOME=/opt/Oracle/Middleware/Oracle_Home; export MW_HOME
```

6

Installing and Deploying MetaSolv Solution on a Single Server

This chapter describes how to perform a full installation of the Oracle Communications MetaSolv Solution (MSS) release and explains how to set up the MSS application server for a single server installation. This chapter covers the Oracle WebLogic Server domain configuration, including the installation and deployment of the MSS application server.

About Single Server Installation

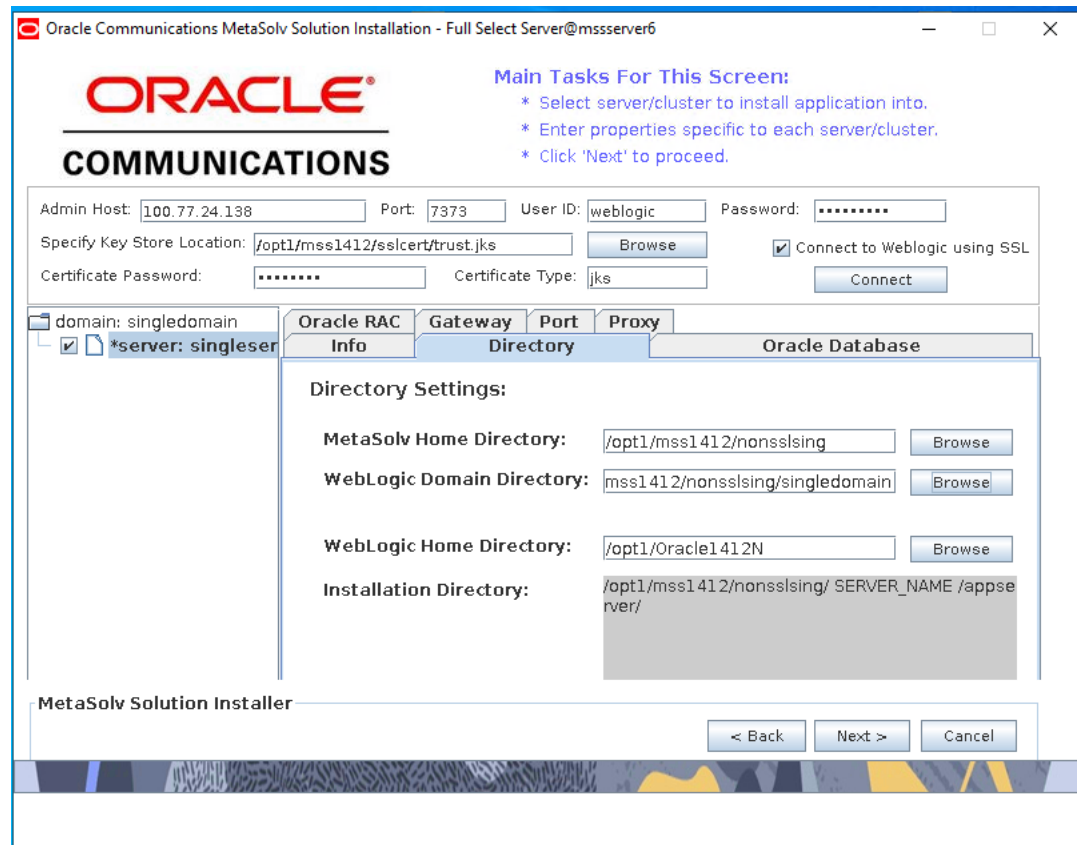
A single server installation is one in which a single WebLogic Server instance hosts the MSS application server process.

This section describes how to:

- Create a WebLogic domain for a single server.
- Install the MSS application server software.
- Deploy MSS to the single server.

[Figure 6-1](#) shows the basic steps for installing MSS on a single server. The figure is an expansion of step 5 of the basic installation process shown in [Figure 1-1](#).

Figure 6-1 Single Server Installation



Before You Start

- Print and complete the following planning worksheets:
 - Application server common installation worksheet. See [Table C-1](#).
 - Single server installation worksheet. See [Table C-2](#).
 - Some steps in the procedures for the WebLogic domain configuration and the MSS installation refer to the worksheets. Each value that you are asked to enter has a worksheet reference number.
- Review "[Pre-requisites for the Latest MSS Release](#)" and make sure all tasks listed that apply to your installation are completed.

Creating a Single Server WebLogic Domain

To create a single server domain, perform the following:

1. From the Administration Server, start the **Fusion Middleware Configuration Wizard** by doing one of the following:
 - For UNIX/Linux platforms, this program (**config.sh**) is located in the following directory: `MW_HOME\oracle_common\common\bin`.
 - For Windows platforms, this program (**config.cmd**) is located in the following directory: `MW_HOME\oracle_common\common\bin`.

The Configuration Type window appears.

2. Select **Create a new domain** and in the **Domain location** field, enter the full path for the domain or click **Browse** to navigate to the domain home directory (for example, `/opt/m80Single/single/mslvdomain/`), and then click **Next**.

The Templates window appears.

3. Click **Next**.

The Administrator Account window appears.

4. Enter a user name and password and verify the password by retyping, then click **Next**.

Worksheet references and example values:

Field name	Worksheet reference number	Example value
User name	COMM-0020	weblogic
User password	COMM-0030	Specify the WebLogic password

You need to make a note of the user name and password. You need them for the remote console login.

The Domain Mode and JDK window appears.

5. Do one of the following:
 - If you are installing for company operations, select **Production Mode**, select **Enable Listen Ports (non-SSL Ports)**, and then deselect **Enable Administration Port (SSL Port)**.
 - If you are installing to do integration development or testing, select **Development Mode**.
6. Select the **Other JDK Location** option, browse to the location of another JDK, select the JDK version, and then click **Next**. See "MSS Traditional Deployment Software Compatibility" in *MSS Compatibility Matrix* for the information on the required software versions.

The **Other JDK Location** option is supported for both UNIX/Linux and Windows platforms.

The Advanced Configuration window appears.

7. Select **Administration Server** and click **Next**.

The Administration Server window appears.

8. Do the following:

- a. In the **Server Name** field, enter the Administration Server name.

This single server serves as the MSS domain Administration Server.

- b. In the **Listen Address** field, select a DNS or an IP address.

If you are creating an IPv6 domain, you must specify the IPv6 address in the **Listen Address** field.

(Optional) If your firewall configuration does not support IPv6 addresses, you must enable HTTP tunneling in the WebLogic Server Remote Console. See "[Enabling HTTP Tunneling](#)" for more information.

- c. In the **Listen Port** field, accept the default.
- d. Select the **Enable SSL** check box if you want to enable SSL.

It is not a requirement to either enable or disable SSL.

If you decide to enable SSL, ensure that you configure SSL for WebLogic Server. See "[Configuring SSL for WebLogic Server](#)" for more information.

- e. In the **SSL Listen Port** field, enter a port that is not used by another domain.

This field is enabled only if you selected the **Enable SSL** check box.

Worksheet references and example values:

Field name	Worksheet reference number	Example value
Name	Single-0150	mslv01
Listen address	Single-0160	listenaddress
Listen port	Single-0170	7001
SSL Listen port Note: If using SSL, use this parameter.	Single-0180	7002

9. Click **Next**.

The Configuration Summary window appears.

10. Review the summary to verify the contents of your domain and click **Create** to create the domain.

The Configuration Progress screen appears, which displays the progress of the domain creation process.

11. After the progress indicator shows the percentage completion of the process as 100%, click **Next**.

The Configuration Success screen appears.

12. Click **Finish**.

13. From the Administration Server, start the WebLogic Configuration Wizard again by doing one of the following:

- For UNIX/Linux platforms, run the program **config.sh** located in the directory: *MW_Home/oracle_common/common/bin*.
- For Windows platforms, run the program **config.cmd** located in the directory: *MW_Home\oracle_common\common\bin*.

The Configuration Type window appears.

14. Select **Upgrade an existing domain**. In the **Domain location** field, enter the full path for the domain or click **Browse** to navigate to the created domain, for example in the */opt/m80single/single/mslvdomain* directory.

15. Click **Next**.

The Templates window appears.

16. Select the **Update Domain Using Product Templates** option and then the appropriate items from the provided list. You must select **WebLogic Advanced Web Services for JAX-WS Extension**, and the **WebLogic JAX-WS SOAP/JMS Extension** is optional depending on your requirements.

- **WebLogic Advanced Web Services for JAX-WS Extension - Version [oracle_common]** - You must select this JAX-WS template for MSS Web Services as it is mandatory during the creation of an MSS domain.

- **WebLogic JAX-WS SOAP/JMS Extension - Version [oracle_common]** - You select this template for SOAP over JMS Web Services or if you built custom web services that are SOAP over JMS.

where *Version* is the Oracle WebLogic version.

See "MSS Traditional Deployment Software Compatibility" in *MSS Compatibility Matrix* for information on required WebLogic software version.

See *Oracle Fusion Middleware Domain Template Reference* for more information on WebLogic templates.

17. Click *Next*.

The Advanced Configuration window appears.

18. Keep the options the same as the default values, and click *Next*.

The Configuration Summary window appears.

19. Click *Update*.

The Configuration Progress window appears.

20. When the upgrade process reaches 100% completion, click *Next*.

The End of Configuration window appears.

21. Click *Finish*.

22. To verify the domain setup, start the server by completing the following steps:

- a. Run **startWebLogic.sh** (UNIX/Linux) or **startWebLogic.cmd** (Windows) in the domain directory.

The domain directory is the name you specified during configuration.

For example: `/opt/m80Single/single/mslvdomain`

- b. Type your administrator user name and password, when prompted, to start the server.

The server takes a few moments to start. You will see information scroll on the screen. When the server has successfully started, you will see the words **RUNNING** mode at the prompt.

Configuring SSL for WebLogic Server

For information about public and private keys, about identity and trust keystores, and how to create and configure them in the WebLogic Remote Console, see the *Fusion Middleware Administering Security for Oracle WebLogic Server*.

To configure SSL for WebLogic Server:

1. Log in to the Oracle WebLogic Server Remote Console and navigate to the *Edit Tree*.

2. Expand *Environment*, then select *Servers*, and then *AdminServer*.

The Settings for AdminServer screen appears.

3. Click the *Security* tab, then the *Keystores* tab.

4. From the *Keystores* list, select *Custom Identity and Custom Trust*.

5. Do the following:

- Under the Identity section, do the following:

- a. In the **Custom Identity Keystore** field, enter the full path for the identity keystore. For example, `/opt/stores/identity.jks`.

- b. In the **Custom Identity Keystore Type** field, enter the type of the keystore. Typically, this attribute is Java KeyStore (JKS); if you leave this field blank, it defaults to jks.
 - c. In the **Custom Identity Keystore Passphrase** field, enter the password you will enter when reading or writing to the keystore.
- Under the Trust section, do the following:
 - a. In the **Custom Trust Keystore** field, enter the full path for the trust keystore. For example, /opt/stores/trust.jks
 - b. In the **Custom Trust Keystore Type** field, enter the type of the keystore. Typically, this attribute is JKS; if you leave this field blank, it defaults to jks.
 - c. In the **Custom Trust Keystore Passphrase** field, enter the password you will enter when reading or writing to the keystore.
- 6. Click **Save**.
- 7. Click the **SSL** tab and do the following:
 - a. In the **Private Key Alias** field, enter the private key for WebLogic Server from the keystore. For example, mycert.
 - b. In the **Private Key Passphrase** field, enter the password you specified when loading the private key for WebLogic Server into the keystore.
 - c. Click **Show Advanced Fields** and turn on **Disable Hostname Verification**.
- 8. Click **Save**.

Note

Before you install MetaSolv Solution in an IPv6 domain, ensure that your firewall configuration supports IPv6 addresses. If your firewall configuration does not support IPv6 addresses, you must enable HTTP tunneling in the WebLogic Server Remote Console. See "[Enabling HTTP Tunneling](#)" for more information.

- 9. Click **Shopping Cart**, and then click **Commit Changes**, which activates these changes.
- 10. (Optional) After updating the demo certificate to custom certificate, if the managed server that you are starting still points to the demo certificate, update the **startMSLVsingle.sh** or **startMSLVsingle.cmd** file to include the following Java options:

```
set JAVA_OPTIONS=%JAVA_OPTIONS%
-Dweblogic.security.SSL.trustedCAKeyStore=/opt/stores/trust.jks
set JAVA_OPTIONS=%JAVA_OPTIONS%
-Dweblogic.security.SSL.ignoreHostNameVerification=true
```

- 11. To call MSS Web services using the HTTPS port in an SSL environment (where the HTTP port is disabled), do the following:
 - a. Log in to the WebLogic Remote Console and navigate to the **Edit Tree**.
 - b. Expand **Services**, then select **JTA**
 - c. Click **Show Advanced Fields** to display advanced configuration options.
 - d. From the **Web Service Transactions Transport Security Mode** list, select **SSL Required**.
 - e. Click **Save**.

- f. Click **Shopping Cart**, and then click **Commit Changes**, which activates these changes.

You can now call MSS Web services using the HTTPS port:

```
https://hostname:https_port/MssWS/customer/CustomerAccount?WSDL
```

Installing the Self-Signed Certificate on the Client Machine

To install the self-signed certificate on the client machine:

1. Click the **Start** menu, and then click **Settings** (gear icon).
2. Enter **Internet Options** in the search bar.
3. Click **Internet Options** from the search results to open the **Internet Properties** window.
4. Select **Content** tab and click **Certificates** button.

The Certificates window appears.

5. Select the **Trusted Root Certification Authorities** tab.
6. Click **Import...** button to import the root certificate for the server.

The Certificate Import Wizard appears.

7. Complete the installation of the certificate.
8. Close all the instances of the web browser and start the MSS client.

Installing and Deploying MSS

This section explains how to install and deploy MSS.

Prerequisites

- The instructions for creating the domain configuration included starting the server after the configuration was complete. Leave the server running until you are instructed to shut it down.
- Ensure that the following environmental variables are set:

```
JAVA_HOME=/opt/jdkVersion
PATH=JAVA_HOME/jdkVersion/bin:$PATH
MW_HOME=/opt/Oracle/Middleware/Oracle_Home
```

where *Version* is the JDK software version. To install and deploy MSS, do the following:

1. From directory where the file was downloaded, enter the following command:

```
java -jar MSS.RreleaseNumber.bbuild_AppServerInstaller.jar
```

where *releaseNumber* is the MSS software release version and *build* is the build number. For example:

```
java -jar MSS.R8_0_0.bxx_AppServerInstaller.jar
```

The Select MetaSolv home directory window appears.

2. From the **Look In** list, click the down arrow and select a directory in which the installer files can be stored and used during the installation process, then click **Select**.

A directory named **installer** is automatically created in the selected directory. Oracle recommends choosing your *MSLV_Home* directory for this task.

The installer auto-launches the installation process by invoking **setup.sh** (UNIX/Linux) or **setup.cmd** (Windows) in the *MSLV_Home/installer* directory.

Worksheet references and example values:

Field name	Worksheet reference number	Example value
File Name (<i>MSLV_Home</i>)	COMM-0090	/opt/m80Single/single

The Oracle Communications MetaSolv Solution Installation window appears.

3. Click **Next**.

The Oracle Communications MetaSolv Solution Installation - Choose Install Type window appears.

4. Select **Full Installation on WebLogic Server with JAX-WS Domain** and click **Next**.

The Oracle Communications MetaSolv Solution Installation - Full Select Server window appears.

5. Do the following:

- a. In the **Admin Host** field, enter the host name or the IP address of the administration server.

If you are creating an IPv6 domain, you must specify the IPv6 address in the **Admin Host** field.

(Optional) If you are creating the cluster in an IPv6 domain in a dual-stack machine, ensure that you specify the IPv6 address and the system name in the **etc/hosts** file, as follows:

```
IPv6address          ipv6machine@example.com    ipv6machine
```

Note

The MetaSolv Solution installer does not support the use of virtual IP address during installation. If you specify a virtual IP address during installation, the installer does not display the following:

- The check box to select the server you want MSS installed on.
- The following configuration tabs:

Directory

Oracle Database

Oracle RAC

Gateway

Port

Proxy

If your configuration requires the use of virtual IP address, you must specify the physical IP address during installation. After the installation is complete, you can change the server's listen address to the virtual IP address, and then restart the WebLogic Server. See "[Changing an IP Address](#)" for more information.

- b. In the **Port#** field, enter the port number of the administration server.
- c. In the **User ID** field, enter the user name for the administration server.
- d. In the **Pass** field, enter the password for the administration server.

Worksheet references and example values:

Field name	Worksheet reference number	Example value
Admin Host	Admin-0250	Host_address
Port#	Admin-0260, Admin-0270	7001 (HTTP port), 7002 (HTTPS port)
User ID	COMM-0020	weblogic
Pass	COMM-0030	Specify the Administration server password

- e. (Optional) If you want to install and deploy MSS using the SSL port, leave the **Connect to WebLogic using SSL** check box selected (which the installer selects by default).

See the Oracle WebLogic Server documentation for information about configuring keystores.

- f. In the **Key Store Location** field, enter the path for the keystore or click **Browse** to navigate to the keystore location. The keystore should be referred to in the **trust.jks** file.

6. Click **Connect**.

The installer queries the Admin Host machine and returns with values you entered during the configuration of the WebLogic domain. This process can take a few moments.

If the domain does not have a JAX-WS template applied, then the following message is displayed:

Please update the domain with the required JAX-WS Extension template and restart the installation.

Exit the installer and upgrade the domain by applying the **WebLogic Advanced Web Services for JAX-WS Extension** template and optionally the **WebLogic JAX-WS SOAP/JMS Extension** template. Retry the installation again after selecting the appropriate template(s):

- WebLogic Advanced Web Services for JAX-WS Extension Template (Required)
- WebLogic JAX-WS SOAP/JMS Extension Template (Optional)

The Oracle Communications MetaSolv Solution Installation window appears with the domain and any servers in the domain appearing in the left pane.

- 7. In the tree view on the left, select the check box next to the single server you want MSS installed on.

Tabs appear in the right pane for information to be entered for the selected server.

- 8. Complete domain information by selecting and completing the following tabs:

- a. Click the **Directory** tab and enter the path and name of the MetaSolv home directory, WebLogic domain directory, and WebLogic Home directory or click **Browse** to search for the directories.

Worksheet references and example values:

Field name	Worksheet reference number	Example value
MetaSolv Home Directory	COMM-0090	/opt/m80Single/single
WebLogic Domain Directory	COMM-0110	/opt/m80Single/single/ mslvdomain

- b. Depending on your database configuration, do one of the following (Option 1 or Option 2):

Option 1:

Click the **Oracle Database** tab and do one of the following:

In the **Oracle Server Name**, **Oracle Port#**, and **Oracle Service Name** fields, enter the relevant values, and select the **Pluggable DB** check box if you are running the MSS database instance as a pluggable database (PDB).

OR

In the **JDBC URL** field, enter your own free-form JDBC connect string.

Example of a JDBC URL string:

```
jdbc:oracle:thin:@//localhost:1521/myervice
```

Example of a JDBC URL string for a pluggable database:

```
jdbc:oracle:thin:@localhost:1521/myervice
```

Worksheet references and examples values:

Field name	Worksheet reference number	Example value
Oracle Database Server Name	COMM-0130	localhost
Oracle Database Port	COMM-0140	1521
Oracle Database Service Name	COMM- 0150	myervice
APP_MSLV Password	COMM-0040	Specify the APP_MSLV password
APP_API Password	COMM-0050	Specify the APP_API password
APP_INT Password	COMM-0055	Specify the APP_INT password

Option 2:

Click the **Oracle RAC** tab. The **Remote Listener** check box is selected by default. Deselect this check box if remote listener is turned off in the Oracle RAC database. In the **Number of RAC Nodes** field, specify the number of RAC nodes and click **Connect**.

Do one of the following (Option A or Option B):

Option A:

Enter the relevant values in the following fields: **Oracle DBService Name**, **Oracle Server1**, **Oracle Port#1**, **Oracle Instance name1**, **Oracle Server2**, **Oracle Port#2**, **Oracle Instance name2.....Oracle Servern**, **Oracle Port#n**, **Oracle Instance namen**, where *n* is the number of nodes specified in the **Number of RAC Nodes** field, and select the **Pluggable DB** check box if you are running the MSS database instance as a pluggable database (PDB).

Option B:

Specify the JDBC URLs in the following fields:

JDBC URL#1

(Remote listener turned off)

```
jdbc:oracle:thin:@v-ip1:port1/dbservice1
```

(Remote listener turned on)

```
jdbc:oracle:thin:@(DESCRIPTION= (ADDRESS= (PROTOCOL=TCP)(HOST=v-ip1)
(PORT=port1))(CONNECT_DATA= (SERVICE_NAME=dbservice1)
(INSTANCE_NAME=instance1)))
```

(Remote listener turned on for a pluggable database)

```
jdbc:oracle:thin:@(DESCRIPTION= (ADDRESS= (PROTOCOL=TCP)(HOST=v-ip1)
(PORT=port1))(CONNECT_DATA= (SERVICE_NAME=pdbservice1)
(INSTANCE_NAME=instance1)))
```

JDBC URL#2

(Remote listener turned off)

```
jdbc:oracle:thin:@v-ip2:port2/dbservice2
```

(Remote listener turned on)

```
jdbc:oracle:thin:@(DESCRIPTION= (ADDRESS= (PROTOCOL=TCP)(HOST=v-ip2)
(PORT=port2))(CONNECT_DATA= (SERVICE_NAME=dbservice2)
(INSTANCE_NAME=instance2)))
```

(Remote listener turned on for a pluggable database)

```
jdbc:oracle:thin:@(DESCRIPTION= (ADDRESS= (PROTOCOL=TCP)(HOST=v-ip2)
(PORT=port2))(CONNECT_DATA= (SERVICE_NAME=pdbservice2)
(INSTANCE_NAME=instance2)))
```

JDBC URL#n

(Remote listener turned off)

```
jdbc:oracle:thin:@v-ipn:portn/db servicen
```

(Remote listener turned on)

```
jdbc:oracle:thin:@(DESCRIPTION= (ADDRESS= (PROTOCOL=TCP)(HOST=v-ipn)
(PORT=portn))(CONNECT_DATA= (SERVICE_NAME=db servicen)
(INSTANCE_NAME=instancen)))
```

(Remote listener turned on for a pluggable database)

```
jdbc:oracle:thin:@(DESCRIPTION= (ADDRESS= (PROTOCOL=TCP)(HOST=v-ipn)
(PORT=portn))(CONNECT_DATA= (SERVICE_NAME=pdb servicen)
(INSTANCE_NAME=instancen)))
```

Where:

n is the number of nodes specified in the **Number of RAC Nodes** field.

v-ip is the IP address of the node.

port is the port address of the node.

dbservice is the database service name.

pdbservice is the pluggable database service name.

instance is the instance name.

Note

You must specify values in either the **Oracle Database** tab or the **Oracle RAC** tab. If you specify values in both the **Oracle Database** and the **Oracle RAC** tabs, you get an error message.

If you specify the incorrect number of nodes in the **Number of RAC Nodes** field and click **Connect** on the **Oracle RAC** tab, do the steps in "[Correcting the Specified Number of RAC Nodes](#)".

Worksheet references and example values for a two-node RAC:

Field name	Worksheet reference number	Example value
Oracle Database Service Name	COMM- 0150	my service
Oracle Database Server Name1	COMM-0160	local host1
Oracle Database Port#1	COMM-0165	1521
Oracle Instance Name1	COMM-0170	drac1
Oracle Database Server Name2	COMM-0175	loal host2
Oracle Database Port#2	COMM-0180	1521
Oracle Instance Name2	COMM-0185	drac2
APP_MSLV Password	COMM-0040	Specify the APP_MSLV password
APP_API Password	COMM-0050	Specify the APP_API password
APP_INT Password	COMM-0055	Specify the APP_INT password

- c. Click the **Gateway** tab, check the default selections for event servers that are to be activated, and make any necessary changes.

If you are unsure, leave the default settings. You can manually edit these settings through the **gateway.ini** file. The check boxes that appear on the tab are for APIs. When you select a check box, modifications are made to the **gateway.ini** file used to configure MSS APIs. See *MetaSolv Solution System Administrator's Guide* for more information on the **gateway.ini** file.

- d. Click the **Port** tab and enter values in the **Log Port** and **CORBA Port** fields

Worksheet references and example values:

Note

Default port assignments appear and may be replaced with the available port values.

Field name	Worksheet reference number	Example value
Log Port	Single-0190	4501
CORBA Port	Single-0200	2507
Debug Port	Single-0205	8453

- e. Click the **Proxy** tab and enter the URL of the proxy server.

Worksheet reference and example value:

Field name	Worksheet reference number	Example value
Proxy Server URL	Single-0210	http://server_name:7070, https://server_name:7071 (when using the SSL port)

- f. Click the **Info** tab to see a summary of the selected server's properties.
9. When all tabs have correct information for the single server, click **Next**.
The installation summary appears.
10. After checking the information in the summary for accuracy, click **Install**. When the files are installed, the location of the startup file created for the server is displayed.

Note

Do not exit the installer.

11. Note the location of the startup file for the application server.
12. (Optional) Do this step only if you create the domain using SSL. Open the *MSLV_Home\mslv01\jacORB\orb.properties* file (where *MSLV_Home* is the directory in which the MSS software is installed and *mslv01* is the server home directory) and provide the appropriate values for the following properties:

```
jacorb.security.keystore=/opt1/stores/identity.jks
jacorb.security.keystore_password=
jacorb.security.default_user=
jacorb.security.default_password=
```

Required/Optional	Field name	Worksheet reference number	Example value
Required (Only if SSL is enabled)	jacorb.security.keystore	Single-2015	/opt1/stores/identity.jks
Required (Only if SSL is enabled)	jacorb.security.keystore_password	Single-2020	Specify the keystore password
Required (Only if SSL is enabled)	jacorb.security.default_user	Single-2025	mycert
Required (Only if SSL is enabled)	jacorb.security.default_password	Single-2030	Specify the default password

13. Shut down the server, and restart it using the custom script installed by the installer and listed on the window.

To start the servers, navigate to the *MSLV_Home\mslvdomain* directory (where *mslvdomain* is the domain directory for the server) directory and entering the following command at a command prompt:

- For UNIX/Linux:

```
startmslv01.sh
```

- For Windows:

```
startmslv01.cmd
```

To shut down the server, navigate to the *mslvdomain* directory. At the command prompt, enter the command:

- For UNIX or Linux:

```
stopmslv01.sh certificate_passphrase
```

- For Windows:

```
stopmslv01.cmd certificate_passphrase
```

14. Log in to the WebLogic Remote console.

You can monitor the deployment from the remote console. To check the servers, click **Servers** in **Environment** in the **Monitoring Tree** of the Remote Console.

15. After the start up commands have been run and the application server has been started, maximize the installer window and click **Deploy Application**.

The Oracle Communications MetaSolv Solution Installation window appears listing the server you can select for deployment.

This process can take a few moments. If the server is not started, a status appears on the window indicating the installer is waiting for the server to be in running mode. When the server is in running mode, you can begin the deployment.

16. Select a server in the Target Servers list box, and click **Deploy**.

The deployment process begins. You can follow the progress of the deployment by viewing the text that appears in the right pane of the installation window.

When the deployment is complete, the Deployment Completed window appears.

17. Click **OK**.

18. Click **Exit**.

The **Exit?** window appears.

19. Click **OK** to exit.

Correcting the Specified Number of RAC Nodes

To correct the specified number of RAC nodes:

1. On the **Oracle RAC** tab, click **Connect** beside the **Password** field.
2. Select the check box for the server.
3. Specify correct values in all the fields on the **Info**, **Directory**, **Oracle Database**, **Oracle RAC**, **Gateway**, **Port**, and **Proxy** tabs.

Verifying the Installation

Verification is done from the WebLogic Remote Console on a client workstation.

To verify the installation, do the following:

1. From a client workstation, close all open applications.
2. Log in to the Remote Console using your user name and password.
The WebLogic Remote Console window appears.
3. In the **Monitoring Tree**, click **Deployments** and then **Application Runtimes**.
The list of available applications appears.
4. Verify that the following applications appear in the list:
 - nur
 - MSS_WebService
5. In the **Edit Tree**, expand **Services**, and then click **Data Sources**.
The list of available data sources and connection pools appears in the pane on the right of the screen.
6. Compare the values, shown in [Table 6-1](#), to your installation screen to make sure you have configured WebLogic correctly for your installation.

Table 6-1 Data Sources and Connection Pools

Data Sources	Connection Pools
mslvDataSource	MSLVPool
mslvDbTraceDataSource	MSLVDbTracePool
mslvNoneTxDataSource	MSLVNonTxPool
mslvProcDataSource	MSLVProcPool
mslvPSDataSource	MSLVpsPool
mslvWSDataSource	MSLVwsPool

7. In the **Edit Tree**, expand **Services**, then click **JMS Modules**.
The list of available JMS modules appears in the pane on the right of the screen.
8. In the right pane, click **mssJMSModule**.
The list of available resources appears in the pane on the right of the screen.
9. Verify that the following JMS connection factory is present in the list of resources:
 - MSS.QueueConnectionFactory
10. Verify that mss.external.event.queue is included in the list of resources.
11. From the web browser, enter the following information into the **Address** field:
`http://host_admin:port number/main`

The MetaSolv Solution AppServer Runtime Information page appears.
12. Install the client application manually and start the MSS client.
The MetaSolv Solution login window is displayed.

7

Installing and Deploying MetaSolv Solution on a Clustered Server

This chapter describes how to perform a full installation of the Oracle Communications MetaSolv Solution (MSS) 8.0, if you are a new customer or upgrading from a pre-6.3 release, and explains how to set up the MSS application server for clustered server installations. The chapter covers the Oracle WebLogic Server domain configuration and the installation and deployment of the MSS application server.

About Clustered Server Installation

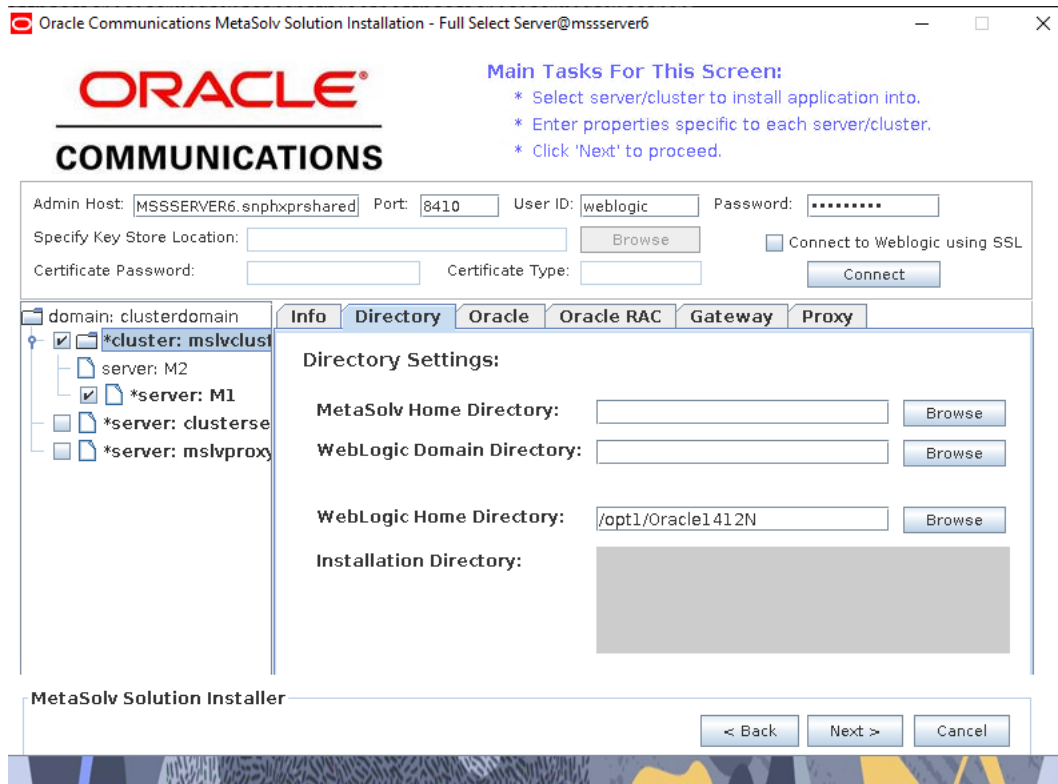
A clustered server installation (also called an administration server with cluster-managed servers installation) is one in which one or more WebLogic Server instances are managed by a separate administration server. In this arrangement, clustering the managed servers in WebLogic allows the servers to work together as one unit, rather than several independent processing units. This is the configuration Oracle recommends because it provides protection in the event a server fails.

This section describes how to:

- Create a WebLogic domain for clustered servers
- Install MSS
- Deploy MSS to the cluster

[Figure 7-1](#) shows the detailed process for a clustered server installation.

Figure 7-1 Installing a Cluster-Managed Server



Before You Start

- Print and complete the following planning worksheets:
 - Application server common installation worksheet. See [Table C-1](#).
 - Admin server installation worksheet. See [Table C-3](#).
 - Clustered server general installation worksheet. See [Table C-4](#).
 - Clustered server installation worksheet. See [Table C-5](#).

Complete a worksheet for each managed server in the cluster. In the example configuration used for the installation, two worksheets must be filled out, one for mslv01 and the other for mslv02.

- WebLogic proxy server installation worksheet. See "[Proxy Server Setup](#)" for a complete description of the proxy server installation.

Some steps in the procedures for the WebLogic domain configuration and the MSS installation refer to the worksheet.

- Review "[Pre-requisites for the Latest MSS Release](#)" and make sure all tasks listed there that apply to your installation are completed.
- You may need assistance from your system administrator or network engineering team to perform the following tasks:
 - Set up a DNS entry to include all clustered servers' listening IP addresses for cluster address during cluster domain configuration in production environment.

- In production environment, all clustered servers must listen on the same port. If there are multiple clustered servers running on the same machine in the same cluster, the machine must have multiple network interface cards (NICs).
 - Set up a load balancer
 - Acquire the multicast IP address and port for the cluster
 - Define and verify a range of ports for each machine hosting cluster-managed servers and administration servers.
- See "[Load Balancer Configuration Example](#)" if you are using a load balancer in your clustered server installation.

Creating the Clustered Server WebLogic Domain

To create the domain, perform the following:

1. From the Administration Server, start the WebLogic Configuration Wizard by doing one of the following:
 - For UNIX/Linux platforms, run the program **config.sh** located in the directory: *MW_Home/oracle_common/common/bin*.
 - For Windows platforms, run the program **config.cmd** located in the directory: *MW_Home\oracle_common\common\bin*.

The Configuration Type window appears.

2. Select **Create a new domain** and in the **Domain location** field, enter the full path for the domain or click **Browse** to navigate to the domain home directory (for example, */opt/m80Cluster/cluster/mslvdomain/*).

Oracle recommends that you specify the values for domain name and domain location as shown below.

Worksheet references and example values:

Field name	Worksheet reference number	Example value
Domain name	COMM-0010	mslvdomain
Domain location	COMM-0110	/opt/m80Cluster/cluster

3. Click **Next**.

The Templates window appears.

4. Click **Next**.

The Administrator Account window appears.

5. Enter a user name and password and verify the password by retyping, then click **Next**.

Worksheet references and example values:

Field name	Worksheet reference number	Example value
User name	COMM-0020	weblogic
User password	COMM-0030	Specify the password.

The Domain Mode and JDK window appears.

6. Do one of the following:

- If you are installing for company operations, select **Production Mode**, select **Enable Listen Ports (non-SSL Ports)**, and then deselect **Enable Administration Port (SSL Port)**.
 - If you are installing to do integration development or testing, select **Development Mode**.
7. Select the **Other JDK Location** option, browse to the location of another JDK, select the JDK version, and then click **Next**. See "MSS Traditional Deployment Software Compatibility" in *MSS Compatibility Matrix* for information on required software versions.

The **Other JDK Location** option is supported for both UNIX/Linux and Windows platforms.

The Advanced Configuration window appears.

8. Select **Administration Server, Topology** and click **Next**.

The Administration Server window appears.

9. Do the following:

- a. In the **Server Name** field, enter the Administration Server name.

This single server serves as the MSS domain Administration Server.

- b. In the **Listen Address** field, select a DNS or an IP address.

If you are creating an IPv6 domain, you must specify the IPv6 address in the **Listen Address** field.

- c. In the **Listen Port** field, accept the default.

- d. Ensure that the **Enable SSL** is selected.

If you decide to enable SSL, ensure that you configure SSL for WebLogic Server. See "[Configuring SSL for WebLogic Server](#)" for more information.

- e. In the **SSL Listen Port** field, enter a port that is not used by another domain.

This field is enabled only if the **Enable SSL** check box is selected.

- f. In the **Server Groups** list, accept the provided default value.

Worksheet references and example values:

Field name	Worksheet reference number	Example value
Name	Admin-0240	mslvadmin
Listen address	Admin-0250	host address
Listen port	Admin-0260, Admin-0270	7001 (HTTP port), 7002 (HTTPS port)

10. Click **Next**.

The Managed Servers window appears.

11. Do the following:

- a. Click **Add** to add a managed server to the cluster.

- b. In the **Server Name** field, enter a name for the managed server.

- c. In the **Listen Address** field, enter the host, or IP address of the machine where the managed server is running.

If you are creating an IPv6 domain, you must specify the IPv6 address in the **Listen Address** field.

Note

Use listener addresses that are equal to a resolvable DNS host or IP address. Do not use **localhost** or **127.0.0.1**. Those addresses interfere with clustered servers.

- d. In the **Listen Port** field, enter the number of the port where the managed server will listen for incoming messages.
- e. Ensure that the Enable SSL is selected
- f. In the **SSL Listen Port** field, enter the appropriate value only if SSL is selected.

Note

You can also add a proxy server at this point, if the WebLogic proxy is used.
For example:

- Name: **M80Proxy**;
- Listen address: **servrchosal**;
- Listen port: **7001**.

Field name	Worksheet reference number	Example value
Name	Cluster-0520	mslv01, mslv02
Listen address	Cluster-0550	hostaddress1, hostaddress2
Listen port	Cluster-0570, Cluster-0580	6001, 6001 (HTTP port); 6002, 6002 (HTTPS port) (2-node cluster)

- g. (Optional) Click **Add** to add more managed servers or proxy servers as required on your MSS deployment.
- h. Click **Next**.
The Clusters screen appears.

12. Do the following:

- a. Click **Add** to start configuring the cluster.
- b. In the **Cluster Name** field, enter the name for the cluster.
- c. In the **Cluster Address** field, provide the cluster address information.

The cluster address contains each managed server along with the managed server's port separated by a comma. Separate the managed server and the port number by a colon.

(Optional) If you are creating the cluster in an IPv6 domain, you must specify the IPv6 addresses in the **Cluster Address** field, as follows:

[IPv6_address1]:port1, [IPv6_address2]:port2

For example:

[2606:b400:2010:484b:f13b:4672:38b7:5af9]:9083,
[2606:b400:2010:484b:f13b:4672:38b7:5af9]:9084

- d. In the **Frontend Host** field, enter the IP address of the frontend host for the cluster.
(Optional) If you are creating the cluster in an IPv6 domain, you must specify the IPv6 address in the **Frontend Host** field.

For example:

[2606:b400:2010:484b:f13b:4672:38b7:5af9]

- e. In the **Frontend HTTP Port** field, enter the port number of the frontend host for the cluster.

Field name	Worksheet reference number	Example value
Name	Cluster-0410	MSLVCluster
Frontend Host	Cluster-0430	hostIPAddress
Frontend HTTP Port	Cluster-0440	6060
Cluster address	Cluster-0420	Test/development environment: hostaddress1:6001 (HTTP port), hostaddress2:6002 (HTTPS port) hostaddress1:6001 (HTTP port), hostaddress2:6002 (HTTPS port) (2-node cluster). Production environment requires a DNS entry: m80luster: ipaddress1(hostaddress1), ipaddress2(hostaddress2)

- f. Click **Next**.

The Server Template screen appears.

13. Click **Next** on Server Templates screen.

The Dynamic Servers screen appears.

14. Click **Next** on Dynamic Servers screen.

The Assign Servers to Clusters screen appears.

15. Assign the servers to the cluster by moving the managed servers in the left pane to the required cluster in the right pane. Ensure that the proxy server remains in the **Servers** list.

16. Click **Next**.

The HTTP Proxy Applications window appears.

17. (Optional) Select the **Create HTTP Proxy** check box to create an HTTP proxy application for each cluster, and from the **Proxy Server** list, select the managed server on which the proxy application must be deployed.

18. Click **Next**.

19. Click the **Machine** tab, and do the following:

- Click **Add** to create the first machine.
- In the **Name** field, enter a name for the machine.

- c. In the **Node Manager Listen Address** field, enter the host, or IP address of the node manager.
(Optional) If you are creating the cluster in an IPv6 domain, you must specify the IPv6 address in the **Node Manager Listen Address** field.
- d. In the **Node Manager Listen Port**, enter the port number for the node manager.
- e. (Optional) Create further machines as required on your MSS deployment.
- f. Click **Next**.
The Assign Servers to Machines screen appears.
20. Assign the servers to the machines by moving the servers in the left pane to the required machine in the right pane.
21. Click **Next**.
The Virtual Targets screen appears.
22. Click **Next** on Virtual Targets Screen.
The Partitions screen appears.
23. Click **Next** on Partitions Screen.
The Configuration Summary screen appears.
24. Review the summary to verify the contents of your domain and click **Create** to create the domain.
The Configuration Progress screen appears, which displays the progress of the domain creation process.
After the domain is created successfully, the Configuration Success screen appears.
25. Click **Finish**.
26. From the Administration Server, start the WebLogic Configuration Wizard again by doing one of the following:
 - For UNIX/Linux platforms, run the program **config.sh** located in the directory:
MW_Home/oracle_common/common/bin.
 - For Windows platforms, run the program **config.cmd** located in the directory:
MW_Home\oracle_common\common\bin.The Configuration Type window appears.
27. Select **Upgrade an existing domain**. In the **Domain location** field, enter the full path for the domain or click **Browse** to navigate to the created domain, for example in the **/opt/m80Cluster/cluster/msl/domain** directory.
28. Click **Next**.
The Templates window appears.
29. Select the **Update Domain Using Product Templates** option and then the appropriate items from the provided list. You must select **WebLogic Advanced Web Services for JAX-WS Extension**, and the **WebLogic JAX-WS SOAP/JMS Extension** is optional depending on your requirements.
 - **WebLogic Advanced Web Services for JAX-WS Extension - Version [oracle_common]** - You must select this JAX-WS template for MSS Web Services as it is mandatory during the creation of an MSS domain.

- **WebLogic JAX-WS SOAP/JMS Extension - Version [oracle_common]** - You select this template for SOAP over JMS Web Services or if you built custom web services that are SOAP over JMS.

where *Version* is the Oracle WebLogic version.

See "MSS Traditional Deployment Software Compatibility" in *MSS Compatibility Matrix* for information on required WebLogic software version.

See *Oracle Fusion Middleware Domain Template Reference* for more information on WebLogic templates.

30. Click *Next*.

The Advanced Configuration window appears.

31. Keep the options the same as the default values, and click *Next*.

The Configuration Summary window appears.

32. Click *Update*.

The Configuration Progress window appears.

33. When the upgrade process reaches 100% completion, click *Next*.

The End of Configuration window appears.

34. Click *Finish*.

Then continue through the steps in the section "[Verifying the Clustered WebLogic Domain Setup](#)".

See Oracle Fusion Middleware documentation for more information on creating a clustered WebLogic Server domain.

Verifying the Clustered WebLogic Domain Setup

To verify the domain, perform the following:

1. To verify the domain setup, start the server by completing the following steps:

- a.** Run **startWebLogic.sh** (UNIX/Linux) or **startWebLogic.cmd** (Windows) in the domain directory.

The domain directory is the name you specified during configuration.

For example: **/opt/m80Cluster/cluster/msl/domain**

- b.** Enter your administrator user name and password, when prompted.

The server takes a few moments to start. You will see information scroll on the screen. When the server has successfully started, you will see the words **RUNNING** mode at the prompt.

2. (Optional) If you are creating the cluster in an IPv6 domain, you must modify the **web.xml file of the proxy web application, as follows:**

```
<servlet-name>HttpClusterServlet</servlet-name>
<servlet-class>weblogic.servlet.proxy.HttpClusterServlet</servlet-class>
<init-param>
  <param-name>WebLogicCluster</param-name>
  <param-value> [IPv6_address1]:port1|[IPv6_address2]:port2</param-value>
</init-param>
```

Configuring SSL for WebLogic Server

For information about public and private keys, about identity and trust keystores, and how to create and configure them in the WebLogic Remote Console, see the following website:

Oracle WebLogic Server: https://docs.oracle.com/en/middleware/fusion-middleware/weblogic-server/14.1.2/secmg/identity_trust.html

For information about how the WebLogic Server locates trust keystores, see the "How WebLogic Server Locates Trust" section at the following website:

Oracle WebLogic Server : https://docs.oracle.com/en/middleware/fusion-middleware/weblogic-server/14.1.2/secmg/identity_trust.html#GUID-20279E2E-E6DE-45D6-BD0C-B13E6EA23DE2

To configure SSL for WebLogic Server:

1. Log in to the Oracle WebLogic Remote Console.
2. In the **Edit Tree**, expand **Environment**, and then click **Servers**.
The Summary of Servers screen appears.
3. Click the **AdminServer** link.
The Settings for AdminServer screen appears.
4. Click the **Security** tab, and then click the **Keystores** tab.
5. From the **Keystores** list, select **Custom Identity and Custom Trust**.
6. Do the following:
 - Under the Identity section, do the following:
 - a. In the **Custom Identity Keystore** field, enter the full path for the identity keystore. For example, /opt/stores/identity.jks.
 - b. In the **Custom Identity Keystore Type** field, enter the type of the keystore. Typically, this attribute is Java KeyStore (JKS); if you leave this field blank, it defaults to jks.
 - c. In the **Custom Identity Keystore Passphrase** field, enter the password you will enter when reading or writing to the keystore.
 - Under the Trust section, do the following:
 - a. In the **Custom Trust Keystore** field, enter the full path for the trust keystore. For example, /opt/stores/trust.jks
 - b. In the **Custom Trust Keystore Type** field, enter the type of the keystore. Typically, this attribute is JKS; if you leave this field blank, it defaults to jks.
 - c. In the **Custom Trust Keystore Passphrase** field, enter the password you will enter when reading or writing to the keystore.
7. Click **Save**.
8. Click the **SSL** tab and do the following:
 - a. In the **Private Key Alias** field, enter the private key for WebLogic Server from the keystore. For example, mycert.
 - b. In the **Private Key Passphrase** field, enter the password you specified when loading the private key for WebLogic Server into the keystore.

- c. Click **Show Advanced Fields** and turn on **Disable Hostname Verification**.
9. Click **Save**.

Note

Before you install MetaSolv Solution in an IPv6 domain, ensure that your firewall configuration supports IPv6 addresses. If your firewall configuration does not support IPv6 addresses, you must enable HTTP tunneling for the Administration Server, proxy server, and all the managed servers in the WebLogic Server Remote Console. See "[Enabling HTTP Tunneling](#)" for more information.

10. Click **Shopping Cart**, and then click **Commit Changes**, which activates these changes.
11. Repeat steps [1](#) through [10](#) for the proxy and for each of the managed servers.
12. (Optional) This step is applicable only if you are using HTTP Cluster Servlet as the proxy server. If the domain is created for a cluster that has SSL enabled, add the following two init-parameters in the **WEB-INF\web.xml** file of the proxy application.

```

<!--The following two init-parameter tags are required if the proxy server is set up
using SSL in a clustered environment-->
<init-param>
  <param-name>SecureProxy</param-name>
  <param-value>ON</param-value>
</init-param>
<init-param>
  <param-name>DebugConfigInfo</param-name>
  <param-value>ON</param-value>
</init-param>

```

13. (Optional) If you have created the cluster in an IPv6 domain, add the following init-parameters in the **WEB-INF\web.xml** file of the proxy application.

```

<init-param>
  <param-name>WebLogicCluster</param-name>
  <param-value> [IPv6_address1]:port1|[IPv6_address2]:port2</param-value>
</init-param>

```

14. (Optional) If you have created the SSL cluster with proxy, change the HTTP port to HTTPS port in the **WEB-INF\web.xml** file of the proxy application.

```

<init-param>
  <param-name>WebLogicCluster</param-name>
  <param-value> [IP Address]:HTTPS_port1|[IP Address]:HTTPS_port2</param-value>
</init-param>

```

15. To call MSS Web services using the HTTPS port in an SSL environment (where the HTTP port is disabled), do the following:
 - a. Log in to the WebLogic Remote Console and navigate to the **Edit Tree**.
 - b. Expand **Services**, then select **JTA**
 - c. Click **Show Advanced Fields** to display advanced configuration options.
 - d. From the **Web Service Transactions Transport Security Mode** list, select **SSL Required**.
 - e. Click **Save**.
 - f. Click **Shopping Cart**, and then click **Commit Changes**, which activates these changes.

You can now call MSS Web services using the HTTPS port:

`https://hostname:https_port/MssWS/customer/CustomerAccount?WSDL`

Installing the Self-Signed Certificate on the Client Machine

To install the self-signed certificate on the client machine:

1. Click the **Start** menu, and then click **Settings** (gear icon).
2. Enter **Internet Options** in the search bar.
3. Click **Internet Options** from the search results to open the **Internet Properties** window.
4. Select **Content** tab and click **Certificates** button.
The Certificates window appears.
5. Select the **Trusted Root Certification Authorities** tab.
6. Click **Import...** button to import the root certificate for the server.
The Certificate Import Wizard appears.
7. Complete the installation of the certificate.

Installing and Deploying MSS

You must run the installer and install MSS on each machine that will host a clustered server.

Prerequisites

- The instructions for creating the domain configuration included starting the server after the configuration was complete. Leave the server running until you are instructed to shut it down.
- Ensure that the following environmental variables are set:

```
JAVA_HOME=/opt/jdkVersion
PATH==JAVA_HOME/jdkVersion/bin:$PATH
MW_HOME=/opt/Oracle/Middleware/Oracle_Home
```

where *Version* is the JDK version portion of the directory.

To install and deploy MSS, do the following:

1. From *MSLV_Home*, enter the following command:

```
java -jar MSS.RreleaseNumber.bbuild_AppServerInstaller.jar
```

where *releaseNumber* is the MSS software release version and *build* is the build number.
For example:

```
java -jar MSS.R8_0.bxx_AppServerInstaller.jar
```

The Select MetaSolv home directory window appears.

2. From the **Look In** list, select a directory in which to store the installer files then click **Select**.

A directory named **installer** is automatically created in the selected directory. Oracle recommends choosing your *MSLV_Home* directory for this task.

The installer auto-launches the installation process by invoking **setup.sh** (UNIX/Linux) or **setup.cmd** (Windows) in the *MSLV_Home/installer* directory.

Worksheet reference and example value:

Field name	Worksheet reference number	Example value
File Name (<i>MSLV_Home</i>)	COMM-0090	/opt/m80Cluster/cluster

The Oracle Communications MetaSolv Solution Installation window appears.

3. Click **Next**.

The Oracle Communications MetaSolv Solution Installation - Choose Install Type window appears.

4. Select **Full Installation on WebLogic Server with JAX-WS Domain** and click **Next**.

The Oracle Communications MetaSolv Solution Installation - Full Select Server window appears.

5. Do the following:

- a. In the **Admin Host** field, enter the host name or the IP address of the administration server.

If you are using an SSL cluster, enter the host name in the **Admin Host** field.

If you are creating an IPv6 domain, you must specify the IPv6 address in the **Admin Host** field.

(Optional) If you are creating the cluster in an IPv6 domain in a dual-stack machine, ensure that you specify the IPv6 address and the system name in the **etc/hosts** file, as follows:

IPv6address	ipv6machine@example.com	ipv6machine
-------------	-------------------------	-------------

Note

The MetaSolv Solution installer does not support the use of virtual IP address during installation. If you specify a virtual IP address during installation, the installer does not display the following:

- The check box to select the server you want MSS installed on.
- The following configuration tabs:
Directory
Oracle Database
Oracle RAC
Gateway
Port
Proxy

If your configuration requires the use of virtual IP address, you must specify the physical IP address during installation. After the installation is complete, you can change each managed server's listen address and port to the virtual IP address, and then restart the WebLogic Server. See "[Changing an IP Address](#)" for more information.

- In the **Port#** field, enter the port number of the administration server.
- In the **User ID** field, enter the user name for the administration server.
- In the **Pass** field, enter the password for the administration server.

Worksheet references and example values:

Field name	Worksheet reference number	Example value
Admin Host	Admin-0250	<i>host_admin</i>
Port#	Admin-0260, Admin-0270	7001 (HTTP port), 7002 (HTTPS port)
User ID	COMM-0020	weblogic
Pass	COMM-0030	Specify the administration server password.

- (Optional) If you want to install and deploy MSS using the SSL port, leave the **Connect to WebLogic using SSL** check box selected (which the installer selects by default).
See the Oracle WebLogic Server documentation for information about configuring keystores.
 - In the **Key Store Location** field, enter the path for the keystore or click **Browse** to navigate to the keystore location. The keystore should be referred to in the **trust.jks** file.
 - In the **Custom Identity Keystore Type** field, select the key store type such as **jks**.
 - In the **Custom Identity Keystore PassPhrase** field, type the password you created when creating the Keystore
6. Click **Connect**.

The installer queries the Admin Host machine and returns with values you entered during the configuration of the WebLogic domain. This process can take a few moments.

If the domain does not have a JAX-WS template applied, then the following message is displayed:

Please update the domain with the required JAX-WS Extension template and restart the installation.

Exit the installer and upgrade the domain by applying the **WebLogic Advanced Web Services for JAX-WS Extension** template and optionally the **WebLogic JAX-WS SOAP/JMS Extension** template. Retry the installation again after selecting the appropriate template(s):

- WebLogic Advanced Web Services for JAX-WS Extension Template (Required)
- WebLogic JAX-WS SOAP/JMS Extension Template (Optional)

The Oracle Communications MetaSolv Solution Installation window appears with the domain and any servers in the domain appearing in the left pane.

7. In the tree view on the left, select the check box next to the server you want MSS installed on.

Tabs appear in the right pane for information to be entered for the selected cluster.

8. Complete domain information by selecting and completing the following tabs:

- a. Click the **Directory** tab and type the path and name of the MetaSolv home directory, WebLogic Domain directory, and WebLogic Home directory or click **Browse** to search for the directories.

Worksheet references and example values:

Field name	Worksheet reference number	Example value
MetaSolv Home Directory	COMM-0090	/opt/m80Cluster/cluster
WebLogic Domain Directory	COMM-0010	/opt/m80Cluster/cluster/mslvdomain

- b. Depending on your database configuration, do one of the following (Option 1 or Option 2):

Option 1:

Click the **Oracle Database** tab and do one of the following:

In the **Oracle Server Name**, **Oracle Port#**, and **Oracle Service Name** fields, enter the relevant values, and select the **Pluggable DB** check box if you are running the MSS database instance as a pluggable database (PDB).

OR

In the **JDBC URL** field, enter your own free-form JDBC connect string.

Example of a JDBC URL string:

```
jdbc:oracle:thin:@//mydbhost:1521/mybservice
```

Example of a JDBC URL string for a pluggable database:

```
jdbc:oracle:thin:@//mydbhost:1521/mybservice
```

Worksheet references and example values:

Field name	Worksheet reference number	Example value
Oracle Database Server Name	COMM-0130	Oracle SID
Oracle Database Port	COMM-0140	1521
Oracle Database Service Name	COMM- 0150	myservice
APP_MSLV Password	COMM-0040	Specify the APP_MSLV password.
APP_API Password	COMM-0050	Specify the APP_API password.
APP_INT Password	COMM-0055	Specify the APP_INT password.

Option 2:

Click the **Oracle RAC** tab. The **Remote Listener** check box is selected by default. Deselect this check box if remote listener is turned off in the Oracle RAC database. In the **Number of RAC Nodes** field, specify the number of RAC nodes and click **Connect**.

Do one of the following (Option A or Option B):

Option A:

Enter the relevant values in the following fields: **Oracle DBService Name**, **Oracle Server1**, **Oracle Port#1**, **Oracle Instance name1**, **Oracle Server2**, **Oracle Port#2**, **Oracle Instance name2**.....**Oracle Server n** , **Oracle Port# n** , **Oracle Instance name n** , where n is the number of nodes specified in the **Number of RAC Nodes** field, and select the **Pluggable DB** check box if you are running the MSS database instance as a pluggable database (PDB).

Option B:

- Specify the JDBC URLs in the following fields:

JDBC URL#1

(Remote listener turned off)

```
jdbc:oracle:thin:@v-ip1:port1/dbservice1
```

(Remote listener turned on)

```
jdbc:oracle:thin:@(DESCRIPTION= (ADDRESS= (PROTOCOL=TCP)(HOST=v-ip1)
(PORT=port1))(CONNECT_DATA= (SERVICE_NAME=dbservice1)
(INSTANCE_NAME=instance1)))
```

(Remote listener turned on for a pluggable database)

```
jdbc:oracle:thin:@(DESCRIPTION= (ADDRESS= (PROTOCOL=TCP)(HOST=v-ip1)
(PORT=port1))(CONNECT_DATA= (SERVICE_NAME=pdbservice1)
(INSTANCE_NAME=instance1)))
```

JDBC URL#2

(Remote listener turned off)

```
jdbc:oracle:thin:@v-ip2:port2/dbservice2
```

(Remote listener turned on)

```
jdbc:oracle:thin:@(DESCRIPTION= (ADDRESS= (PROTOCOL=TCP)(HOST=v-ip2)
(PORT=port2))(CONNECT_DATA= (SERVICE_NAME=dbservice2)
(INSTANCE_NAME=instance2)))
```

(Remote listener turned on for a pluggable database)

```
jdbc:oracle:thin:@(DESCRIPTION= (ADDRESS= (PROTOCOL=TCP)(HOST=v-ip2)
(PORT=port2))(CONNECT_DATA= (SERVICE_NAME=pdbservice2)
(INSTANCE_NAME=instance2)))
```

JDBC URL#n

(Remote listener turned off)

```
jdbc:oracle:thin:@v-ipn:portn/db servicen
```

(Remote listener turned on)

```
jdbc:oracle:thin:@(DESCRIPTION= (ADDRESS= (PROTOCOL=TCP)(HOST=v-ipn)
(PORT=portn))(CONNECT_DATA= (SERVICE_NAME=db servicen)
(INSTANCE_NAME=instancen)))
```

(Remote listener turned on for a pluggable database)

```
jdbc:oracle:thin:@(DESCRIPTION= (ADDRESS= (PROTOCOL=TCP)(HOST=v-ipn)
(PORT=portn))(CONNECT_DATA= (SERVICE_NAME=pdb servicen)
(INSTANCE_NAME=instancen)))
```

Where:

n is the number of nodes specified in the **Number of RAC Nodes** field.

v-ip is the IP address of the node.

port is the port address of the node.

dbservice is the database service name.

instance is the instance name.

Note

You must specify values in either the **Oracle Database** tab or the **Oracle RAC** tab. If you specify values in both the **Oracle Database** and the **Oracle RAC** tabs, you get an error message.

If you specify the incorrect number of nodes in the **Number of RAC Nodes** field and click **Connect** on the **Oracle RAC** tab, do the steps in "[Correcting the Specified Number of RAC Nodes](#)".

Worksheet references and example values for a two-node RAC:

Field name	Worksheet reference number	Example value
Oracle Database Service Name	COMM- 0150	myservice
Oracle Database Server Name1	COMM-0160	dbServer1
Oracle Database Port#1	COMM-0165	1521
Oracle Instance Name1	COMM-0170	drac1

Field name	Worksheet reference number	Example value
Oracle Database Server Name2	COMM-0175	dbServer2
Oracle Database Port#2	COMM-0180	1521
Oracle Instance Name2	COMM-0185	drac2
APP_MSLV Password	COMM-0040	Specify the APP_MSLV password.
APP_API Password	COMM-0050	Specify the APP_API password.
APP_INT Password	COMM-0055	Specify the APP_INT password.

- c. Click the **Gateway** tab, check the default selections for event servers that are to be activated, and make any necessary changes.

If you are unsure, leave the default settings. You can manually edit these settings through the **gateway.ini** file. The check boxes that appear on the tab are for APIs. When you select a check box, modifications are made to the **gateway.ini** file used to configure MSS APIs. See *MetaSolv Solution System Administrator's Guide* for more information on the **gateway.ini** file.

- d. Click the **Proxy** tab if you use a proxy server or an external load balancer and provide the URL of the proxy server in the **Proxy Server URL** field.

If the installation type is SSL, specify the host name in the **Proxy Server URL** field.

For example:

`https://example.com/9095`

Worksheet references and example values:

Field name	Worksheet reference number	Example value
Proxy Server URL	Cluster-0450	<code>http:// proxy_host_name:7001</code>

- e. Click the **Info** tab to see a summary of the selected server's properties.
9. When all tabs have correct information for the single server, click **Next**.
- The Installation Summary window appears.
10. After checking the information in the summary for accuracy, click **Install**.

The installer installs the appropriate MSS files to the server. When the files are installed, the location of the startup file created for the server is displayed.

Note

Do not exit the installer.

11. Note the location of the startup file for the application server.
- If the installation type is SSL then perform step 12 for each managed server.
12. (Optional) Do this step only if you create the domain using SSL. Open the `MSLV_Home\mslv01\jacORB\orb.properties` file (where `MSLV_Home` is the directory in

which the MSS software is installed and *mslv01* is the server home directory) and provide the appropriate values for the following properties:

```
jacorb.security.keystore=/opt1/stores/identity.jks
jacorb.security.keystore_password=<password of the identity keystore>
jacorb.security.default_user=<default user>
jacorb.security.default_password=<default password>
```

Repeat this step for each managed server.

13. Shut down the server by navigating to the *MSLV_Home\mslvdomain* directory (where *mslvdomain* is the domain directory for the server) and entering the following command at a command prompt:

- For UNIX or Linux:
`stopmslv01.sh certificate_passphrase`
- For Windows:
`stopmslv01.cmd certificate_passphrase`

14. Restart the server by entering the command:

- For UNIX or Linux:
`startmslv01.sh`
- For Windows:
`startmslv01.cmd`

15. (Optional) If you are in Development mode, you should also start the Debug Proxy server using the following command:

- For Windows:
`startDebugProxy.cmd`
- For UNIX/Linux:
`startDebugProxy.sh`

16. Start the WebLogic Server Remote Console.

You can monitor the deployment from the remote console. To check the servers, click **Servers** in **Environment** in the **Monitoring Tree** of the Remote Console.

17. After the startup commands have been run and the application server has been started, maximize the installer window and click **Deploy Application**.

The Oracle Communications MetaSolv Solution Installation window appears listing the server you can select for deployment.

This process can take a few moments. If the server is not started, a status appears on the window indicating the installer is waiting for the server to be in running mode. When the server is in running mode, you can begin the deployment.

18. From the Target Servers list, select a server and click **Deploy**.

The deployment process begins. You can follow the progress of the deployment by viewing the text that appears in the right pane of the installation window.

When the deployment is complete, the Deployment Completed window appears.

19. Click **OK**.

20. Click **Exit**.

The **Exit?** window appears.

21. Click **OK**.
22. When all clustered servers have been deployed, shut down all servers, and restart them from the locations given using the start command listed on the window.

Start the administration server first, then bring up the remaining servers using the commands listed in the window. For example, using the servers from the procedures, the first server to be started would be `mslvadmin`, then `mslv01`, and then `mslv02`.

To shut down the admin, manage, and proxy servers, use the stop server scripts in the `mslvdomain` directory.

For example:

For Linux:

```
stopmslv01.sh certificate_passphrase
stopmslv02.sh certificate_passphrase
stopProxyAndAdmin.sh certificate_passphrase
```

For Windows:

```
stopmslv01.cmd certificate_passphrase
stopmslv02.cmd certificate_passphrase
stopProxyAndAdmin.cmd certificate_passphrase
```

23. (Optional) Configure the load balancer.
See "[Load Balancer Configuration Example](#)" for more information.
24. (Optional) Configure the proxy server set up.
See "[Proxy Server Setup](#)" for more information.
25. (Optional) Do performance tuning on the servers.
See "[Tuning Servers For Performance](#)" for more information.

Verifying the Deployment and Configuration

To verify deployment:

1. From a client workstation, start the web browser.
2. Enter the following information into the **Address** field:

```
http://host_admin:port number/main
```

The MetaSolv Solution AppServer Runtime Information page appears, indicating that the deployment was successful.

To verify the configuration:

1. Start the WebLogic Remote Console.
2. In the **Edit Tree**, expand **Services**, and then click **Data Sources**.

The list of available data sources and connection pools appears in the pane on the right of the screen.

3. Compare the values shown in [Table 7-1](#) to your installation screen to make sure you have configured WebLogic correctly for your installation.

Table 7-1 Data Sources and Connection Pools

Data Sources	Connection Pools
mslvDataSource	MSLVPool
mslvDbTraceDataSource	MSLVDbTracePool
mslvNoneTxDataSource	MSLVNonTxPool
mslvProcDataSource	MSLVProcPool
mslvPSDataSource	MSLVpsPool
mslvWSDDataSource	MSLVwsPool

JMS Connection Factories and Distributed Destinations

To view the JMS connection factories and distributed destinations:

1. Log in to the WebLogic Server Remote Console.
2. In the **Edit Tree**, expand **Services**, and then select **JMS Modules**

The Summary of JMS Modules page appears.

3. Click **mssJMSModule**.

The Settings for mssJMSModule page appears. The resources for the mssJMSModule are listed under the Summary of Resources section.

Connection Factories:

- MSS.QueueConnectionFactory

Distributed Destinations

Note

The following queues in the list of Distributed Destinations have a separate queue configured for each clustered server for load balancing.

- mss.external.event.queue

JMS Servers

To view JMS Servers:

1. Log in to the WebLogic Remote Console.
2. In the **Edit Tree**, expand **Services**, and then select **JMS Servers**

The Summary of JMS Servers page appears.

The installer creates queues under each JMS server. For example, mssJMSServer_auto_1, pluginJMSServer_auto_1.

8

Upgrading Oracle Communications MetaSolv Solution

This chapter explains how to upgrade Oracle Communications MetaSolv Solution (MSS) to a newer version. The topics in the chapter cover downloading and installing a maintenance release or patch to the following MSS components:

- Database
- Application server
- Client workstation

Note

This chapter focuses on upgrading to a future maintenance release or patch of MSS 8.0, using the Upgrade option of the MSS Installer.

If MSS 8.0 has not been previously installed, refer to "[Installing and Deploying MetaSolv Solution on a Single Server](#)" or "[Installing and Deploying MetaSolv Solution on a Clustered Server](#)" to install MSS and then return to this chapter to perform subsequent maintenance release or patch installations.

If MSS 8.0 has been previously installed, you can install the maintenance release or patch using the *Upgrade* option of the MSS Installer. Refer to "[Installing and Deploying MSS](#)" in "[Installing and Deploying MetaSolv Solution on a Single Server](#)" or "[Installing and Deploying MSS](#)" in "[Installing and Deploying MetaSolv Solution on a Clustered Server](#)" to install the maintenance release or patch using this option.

Upgrade Impacts

When upgrading to MSS 8.0, you must consider the following upgrade impacts:

- [Database Software Changes](#)
- [WebLogic Server Changes](#)

Database Software Changes

The MSS database upgrade and installation files enable you to get the database to the current MSS GA level. The **MSS.R8_0_DBBaseInstall.zip** script sets up the database structure and the **MSS.R8_0x.byyy_DBInstall.zip** script installs the MSS 8.0 database.

The following are the supported database upgrade paths:

- If you are currently at MSS 6.0.x, MSS 6.2.x, or MSS 6.3.x, you are required to extract and run only the **MSS.R8_0_x.byyy_DBInstall.zip** script.

- If you are installing MSS 8.0 for the first time, you must first extract and run the **MSS.R8_0_DDBaseInstall.zip** script, and then extract and run the **MSS.R8_0_x.byyy_DBInstall.zip** script.

WebLogic Server Changes

If you are installing MSS 8.0 for the first time, or if you are upgrading from MSS 6.0.x, MSS 6.2.x, or MSS 6.3.0, you must do a full installation of Oracle WebLogic Server and the application server. If you are upgrading from MSS 6.3.1, you can use the Reconfiguration Wizard to upgrade the WebLogic domain.

MSS Application Server Upgrade Process

The high-level application server upgrade process is described below:

- Undeploy MSS 8.0-related applications.
- Install MSS 8.0.
- Install/deploy MSS 8.0-related applications.
- Update/restore configuration files.

Downloading the Maintenance Release or Patch Software

Software for MSS patches is downloaded from the My Oracle Support website. For information on downloading product software, see "[Downloading the Installation Files](#)".

Download the file for the appropriate patch you are installing. The following bullet shows how the download link for the file appears on the Oracle software delivery website.

- **MSS.RreleaseNumber.bbuild_AppServerInstaller:** This file contains an installer for application server machines where *releaseNumber* is the MSS software release version and *build* is the build number. The files it installs on the application server include both the application server software and the client software, which is distributed from the application server. An example filename is in the following format:

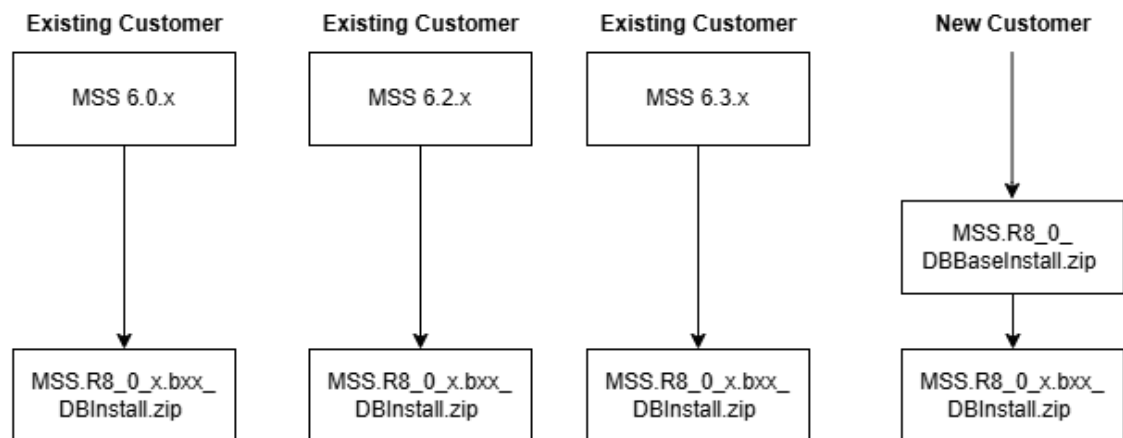
MSS.R8.0.0_b1_AppServerInstaller.jar

Installing a Maintenance Release or Patch on the Database

Your database must be at least at the 8.0 release level to install a 8.0.x maintenance release or patch. See "[Setting Up The MSS Database](#)" for steps on how to upgrade the database to MSS 8.0.x. Then, follow the steps in this chapter to apply a subsequent maintenance release or patch.

To learn about database changes included in a given release, see *MetaSolv Solution Database Change Reference*. This document can be downloaded from the Oracle software delivery website.

[Figure 8-1](#) shows the upgrade path for the database.

Figure 8-1 MSS Database Upgrade Path**Note**

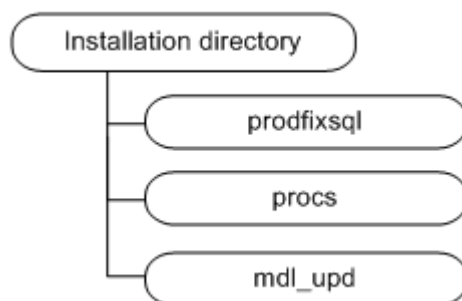
Before upgrading your database to MSS 8.0.x, ensure that you grant the `SELECT ON` privileges to ASAP user ID by running the following `GRANT` statement using a user ID other than ASAP (for example, SYS) that has database administrator privileges:

```
GRANT SELECT ON sys.user$ TO asap WITH GRANT OPTION;
```

Extracting the MSS Database Scripts

Extracting the contents of the `MSS.R8_0_x.byyy_DBInstall.zip` file copies SQL scripts, procs, and reports to a directory you choose on a client machine or on the database server.

[Figure 8-2](#) shows the directory structure that results from the extract, based on the paths specified in the ZIP file.

Figure 8-2 Structure of Database Upgrade File

The MSS database scripts reside in the `MSS.R8_0_x.byyy_DBInstall.zip` file (where yyy is the build number). This zip file contains database scripts used to upgrade an existing MSS 6.0.2 or higher database to MSS 8.0.

To extract the MSS database scripts to the database server machine:

1. Locate and select the **MSS.R8_0_x.byyy_DBInstall.zip** file.
2. Right-click the file, select **Open With**, then select **WinZip Executable**.
3. From the main menu bar, select **Actions** and then select **Select All**.
4. From the main menu bar, select **Actions** and then select **Extract**.
5. Browse to the directory to which you want to extract the database scripts. Oracle recommends extracting the scripts to a directory on your database server.

To successfully install a maintenance release or patch on the database, you must run the two following primary SQL files:

- **prefixSQL_Master** located in the **prodfixsql** directory
- **master** located in the **procs** directory.

All 8.0 maintenance releases carry cumulative changes from previous maintenance releases. That means you only have to run the **prefixSQL_Master** and **master** SQL files for the maintenance release you are installing to get all changes since the 6.0.2 GA release.

Updating the Database by Running SQL Scripts

The **prodfixsql** directory has a number of SQL scripts that update your database.

To update the database:

1. Change your **Start in:** directory to the location where you want the audit logs to appear and connect (from that location) to SQL*Plus using the ASAP user ID.
2. At the prompt, enter:

```
@driveletter:installation_directory/prodfixsql/prefixSQL_Master.sql
```

The SQL scripts run against the database and make the appropriate changes for the maintenance release or patch. When the prompt reappears, the contents of the **prodfixsql** directory where the SQL files were stored have been applied.

3. Verify that the contents of the **prodfixsql** directory have been applied to your database correctly, review the log file for each **prodfixsql** file that was applied.

The log files reside in the **Start in:** directory. Search the files in the directory for **ORA-**.

4. Open the **dm_rprt.txt** file and look for processes that have passed, failed, or not run.

If you find processes that failed or did not run, contact Oracle Global Customer Support.

Granting Required Privileges for ASAP

This is a one time task. Ignore this step if it has been run already. You can verify this by querying DM tables (**dm_procedure_run**, **dm_procedure**, **dm_process**, and **dm_procedure_error**).

Before updating the stored procedures, ensure that you run the **30056241.sql** using SYS user with sysdba privileges.

```
@driveletter:installation_directory/prodfixsql/30056241.sql
```

Updating Stored Procedures

Use SQL*Plus to apply the contents of the *install_directory*\procs directory to the database. These steps update the stored procedures for your database.

To update stored procedures:

1. Set the current directory to:
`drive_letter:\install_directory\procs`
2. Connect to SQL*Plus using the ASAP user ID.
3. At the prompt, enter:

```
spool master.log  
@master
```

The stored procedures have been applied when the **<SQL>** prompt reappears.

4. Enter:
`spool offrun`

Running Reports

The **mdl_upd** directory contains SQL files that include any modifications to the database structure in a service pack. To apply these updates to the reports, copy the contents of this directory into either the **db/inst_80** or **db/upg_80** directory. After applying the files in the **prodfixsql** directory, you can validate the database structure by running the **mdl_upd_cur.sql** or **mdl_upd_cmp.sql** file, or both. These processes provide the reports **mdl_upd_cur.txt** and **mdl_upd_cmp.txt** identical to the **mdl_cur.sql** and **mdl_cmp.sql** files. See *MetaSolv Solution System Administrator's Guide* for more information on reports.

Note

This task is not required. If you choose not to apply updates to the reports before you run them, extra database objects can appear in the reports.

Upgrading the MSS Application Server

The installer JAR file for the application server portion of MSS is the same for both maintenance release and patch installations. Download the installer for the appropriate platform and the appropriate upgrade type (maintenance release or patch) from the Oracle software delivery website.

See "[Downloading the Maintenance Release or Patch Software](#)" for more information on the JAR file name.

Installation Options for the Application Server

Oracle recommends the following for the application server installation of the MSS 8.0 release and patches:

- **First time installing or upgrading the MSS 8.0 release stream:** Select the MSS 8.0 **Full Installation** option in the application installer. Significant changes were made in the WebLogic Server configuration for these maintenance releases, and using the full installation guarantees that all changes are installed on your machine. Refer to "[Installing and Deploying MetaSolv Solution on a Single Server](#)" or "[Installing and Deploying MetaSolv Solution on a Clustered Server](#)" to install the latest version of MSS.

The files in the following directories (under the *MSLV_Home/server_name/appserver* directory) are updated if you select the **Full Installation** option and it will be necessary to backup the following files and directories:

- bin
- cab
- classes
- config
- samples
- samples/customExtensions
- utils

- **Patches and Subsequent Maintenance Releases:** Select the MSS 8.0 **Upgrade** option when you install a patch or subsequent maintenance release. Review the **ReadMe** file and manually apply any required configuration changes.

The following application server configuration files are updated if you select the **Upgrade** option and it will be necessary to backup these files:

- jmaster.ini
- lerg.ini
- loggingconfig.xml
- mslvloggingconfig.xml
- npasplit.ini
- mss.ini
- mss_util.ini

The following files are not updated if you select the **Upgrade** option:

- Application server start up files:
 - * **startMSLVmanaged.sh** or **startMSLVmanaged.cmd**
 - * **startMSLVsingle.sh** or **startMSLVsingle.cmd**
 - * **startservername.sh** or **startservername.cmd**
- Gateway configuration files
 - * **gateway.ini**
 - * **integration.xml**
- WebLogic Server configuration parameters
- JacORB configuration parameters
- **Upgrade from MSS 6.3.1:** If you are upgrading from MSS 6.3.1, you can utilize the Reconfiguration Wizard to upgrade any WebLogic domain that was originally created with Oracle WebLogic Server.

When employing this wizard to reconfigure your WebLogic Server domain, the following items are automatically updated, depending on the specific applications within the domain:

- WLS core infrastructure
- Domain version

After you upgrade the WebLogic domain, you have to manually update the following files in single and cluster server upgrades:

- startMSLVorb.sh
- orb.properties
- metasolv.properties
- startMSLVsingle.sh or startMSLVsingle.cmd (for single server upgrade)
- startAdminServer.sh or startAdminServer.cmd (for cluster server upgrade)
- startProxyServer.sh or startProxyServer.cmd (for cluster server upgrade)
- startMSLVmanaged.sh or startMSLVmanaged.cmd (for cluster server upgrade)
- startservername.sh or startservername.cmd

For example, startmslv01.sh.

- stopservername.sh or stopservername.cmd
- For example, stopmslv01.sh.
- stopProxyAndAdmin.sh or stopProxyAndAdmin.cmd (for cluster server upgrade)
- Config.xml

Single Server Upgrade Basic Steps

To upgrade the single server:

1. Prepare for the upgrade. This includes downloading files and collecting information.
2. Install /Deploy MSS 8.0.
3. Complete post-upgrade tasks.
 - a. (Optional) Tune the server.
 - b. (Optional) Make changes to the configuration files.

Single Server Upgrade

Follow the procedures in this section to upgrade the server.

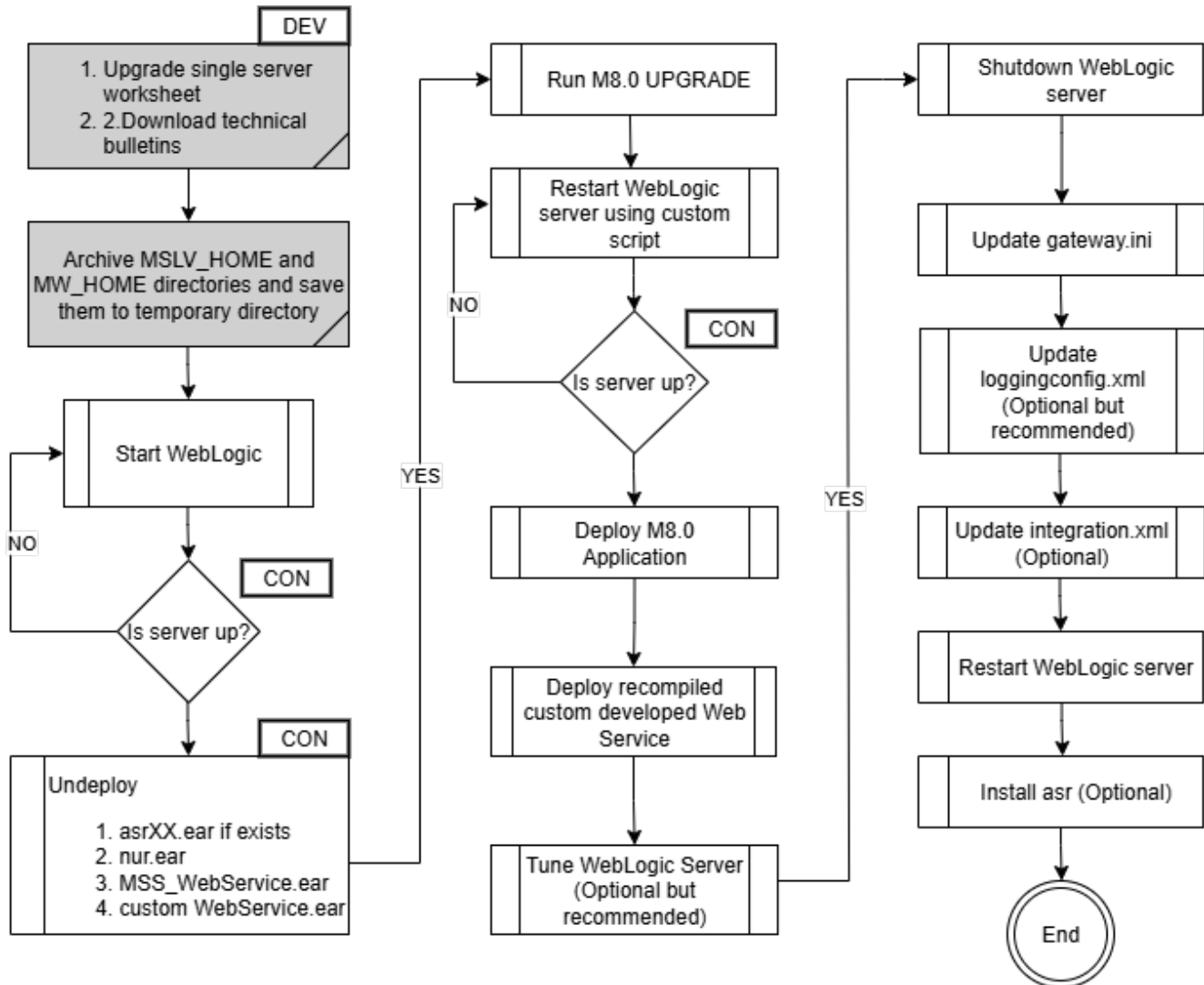
Note

- You will need to manually modify the **loggingconfig.xml** and the **integration.xml** files or you will receive an error on your appserver console. Additionally, if using custom extensions, you will need to manually modify the **gateway.ini** file. For information on custom extensions, see *MetaSolv Solution Custom Extensions Developer's Reference*.
- When upgrading from 6.3.1.587 or earlier, re-encrypt the passwords in the **gateway.ini** file which had an underlying password length greater than 8 characters prior to the upgrade. See "Copying Encrypted Passwords to gateway.ini" in System Administrator's Guide on how to copy the encrypted passwords to the *gateway.ini* file. All configuration changes to the *gateway.ini* file require a restart of the AppServer.

Preparing for the Upgrade

The highlighted sections of [Figure 8-3](#) show the steps for preparing for the upgrade.

Figure 8-3 Preparing for the Upgrade



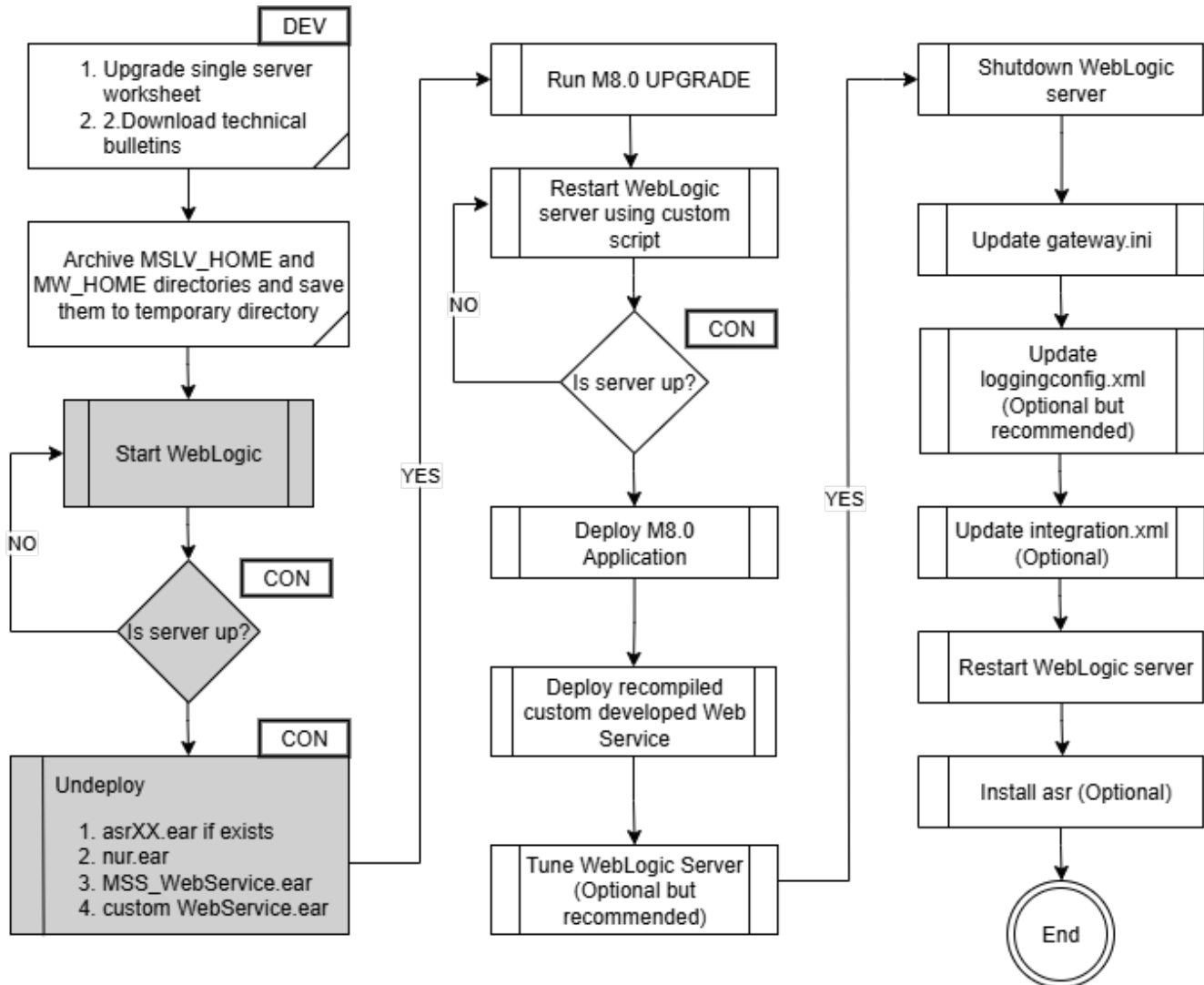
To prepare for the upgrade:

1. Download the MSS upgrade (either a maintenance release or a patch) from the Oracle software delivery website.
2. FTP the MSS upgrade file to the target server machine.
3. Complete the appropriate single server worksheets in Appendix C.
4. Archive the *MSLV_Home* and *MW_Home* directories and save the archive file to a temporary directory.

Undeploy Previously Installed Applications

The highlighted sections of [Figure 8-4](#) show the steps for undeploying previously installed applications.

Figure 8-4 Undeploying Applications



To undeploy previously installed applications:

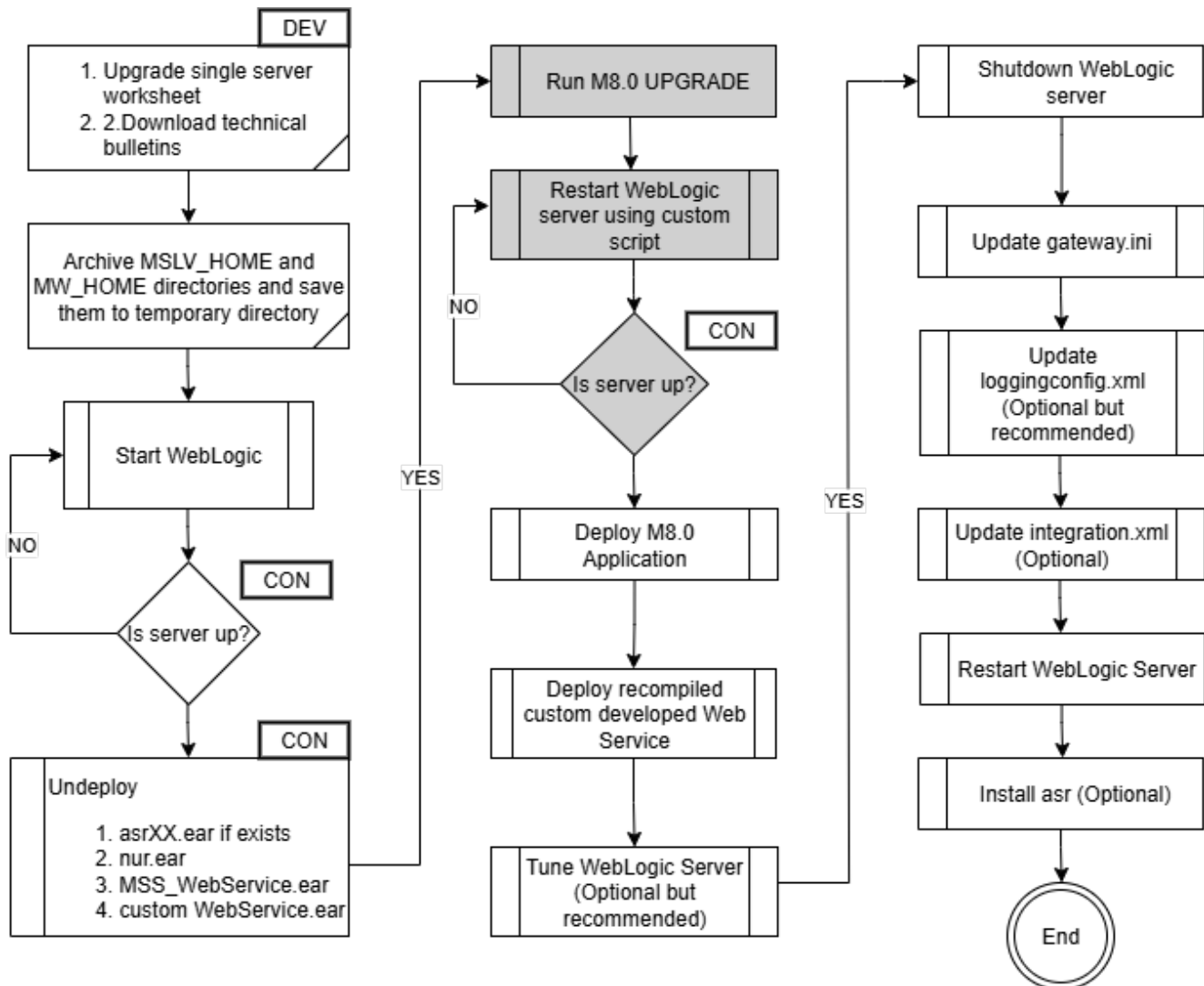
1. Start the WebLogic Server and log in to the WebLogic Remote Console.
2. To undeploy the application, do the following:
 - a. In the **Monitoring Tree**, click **Deployments** and then click **Application Management**.
 - b. Click the check box for **nur.ear**.
 - c. Click **Stop** and select **Force Stop Now**.
 - d. Click **Delete**.
 - e. Click **Yes** to delete the deployment.
 - f. Click **Shopping Cart**, and then click **Commit Changes**, which activates these changes.
3. Repeat step 2 for each application that is to be deleted, refer to the following list:
 - asrXX.ear (if deployed)

- custom Web Service EAR (if deployed)
- MSS_WebService.ear

Installing the Upgrade

The highlighted sections of [Figure 8-5](#) show the steps for installing the upgrade.

Figure 8-5 Installing the Upgrade



To install the upgrade, do the following:

1. From the directory where the maintenance release or patch file was downloaded, enter the following command:

```
java -jar MSS.RreleaseNumber.bbuild_AppServerInstaller.jar
```

where *releaseNumber* is the MSS software release version and *build* is the build number. For example:

```
java -jar MSS.R8_0_0.b74_AppServerInstaller.jar
```

The Select MetaSolv home directory window appears.

- From the **Look In** list, click the down arrow and select a directory in which the installer files can be stored and used during the installation process, then click **Select**.

A directory named **installer** is automatically created in the selected directory. Oracle recommends choosing your *MSLV_Home* directory for this task.

The installer auto-launches the installation process by invoking **setup.sh** (UNIX/Linux) or **setup.cmd** (Windows) in the *MSLV_Home/installer* directory.

Worksheet references and example values:

Field name	Worksheet reference number	Example value
File Name (MSLV_Home)	COMM-0090	/opt/m80Single/single

The Oracle Communications MetaSolv Solution Installation window appears.

- Click **Next**.

The Oracle Communications MetaSolv Solution Installation - Choose Install Type window appears.

- Select **Upgrade** and click **Next**.

The Oracle Communications MetaSolv Solution Installation - Upgrade Select Server window appears.

- In the **MetaSolv Home** field, enter the path and name of the MetaSolv home directory or click **Browse** to navigate to the directory.

All the remaining fields (except the **Pass** field) are auto-populated with the values you specified during full installation.

- In the **Pass** field, enter the password for the administration server.

Worksheet references and example values:

Field name	Worksheet reference number	Example value
Admin Host	Admin-0250	svrchscal
Port#	Admin-0260, Admin-0270	7001 (HTTP port), 7002 (HTTPS port)
User ID	COMM-0020	weblogic
Pass	COMM-0030	Specify the Administration server password.

- Click **Connect**.

The installer queries the Admin Host machine and returns with values you entered during the configuration of the WebLogic domain. This process can take a few moments.

If the domain does not have a JAX-WS template applied, then the following message is displayed:

Please update the domain with the required JAX-WS Extension template and restart the installation.

Exit the installer and upgrade the domain by applying the **WebLogic Advanced Web Services for JAX-WS Extension** template and optionally the **WebLogic JAX-WS SOAP/JMS Extension** template. Retry the installation again after selecting the appropriate template(s):

- WebLogic Advanced Web Services for JAX-WS Extension Template (Required)
- WebLogic JAX-WS SOAP/JMS Extension Template (Optional)

The Oracle Communications MetaSolv Solution Installation window appears with the domain and any servers in the domain appearing in the left pane.

8. Select the server in the left pane.

9. Click **Install**.

The Installation Summary window appears.

10. After the installation completes, the Installation Complete window appears.

The installer installs the appropriate MSS files to the server. When the files are installed, the location of the startup file created for the server is displayed.

Note

Do not exit the installer.

11. Note the location of the startup file for the application server, then minimize the installer window.

12. Shut down the server, and restart it using the custom script installed by the installer and listed on the window.

To start the servers, navigate to the *mslvdomain* directory. At the command prompt, enter the command:

For UNIX/Linux:

```
startmslv01.sh
```

For Windows:

```
startmslv01.cmd
```

To shut down the servers, navigate to the *mslvdomain* directory. At the command prompt, enter the command:

For Unix/Linux:

```
stopmslv01.sh
```

For Windows:

```
stopmslv01.cmd
```

Note

To start or stop the administration server and managed servers (in a cluster environment) using the SSL port, you must add an **s** after **http** in the ADMIN_URL argument in the startup/stop server scripts for the administration server and for each managed server. For example:

```
https://host_name:admin_sslport
```

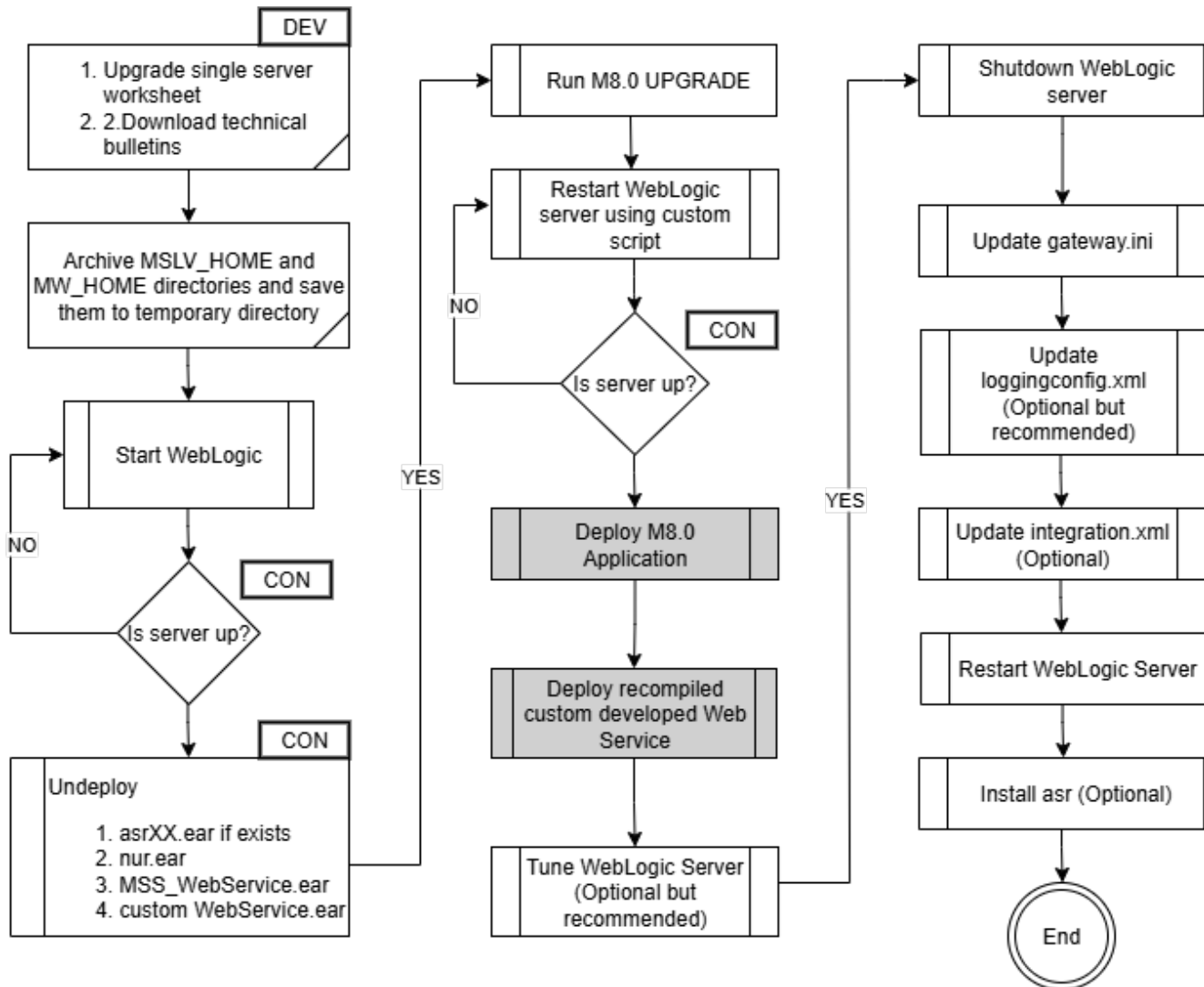
13. Start the WebLogic Remote Console.

You can monitor the deployment from the console. To check the servers, click **Servers** in **Environment** in the **Monitoring Tree** in the Console.

Deploying the Application

The highlighted sections of [Figure 8-6](#) show the steps for deploying the upgrade.

Figure 8-6 Deploying the Application



To deploy the upgrade, do the following:

1. After the startup commands have been run and the application server has been started, maximize the installer window and click **Deploy Application**.

The Oracle Communications MetaSolv Solution Installation window appears listing the server you can select for deployment.

This process can take a few moments. If the server is not started, a status appears on the window indicating the installer is waiting for the server to be in running mode. When the server is in running mode, you can begin the deployment.

2. Select a server in the Target Servers list box, and click **Deploy**.

The deployment process begins. You can follow the progress of the deployment by viewing the text that appears in the right pane of the installation window.

When the deployment is complete, the Deployment Completed window appears.

3. Click **OK**.
4. Click **Exit**.

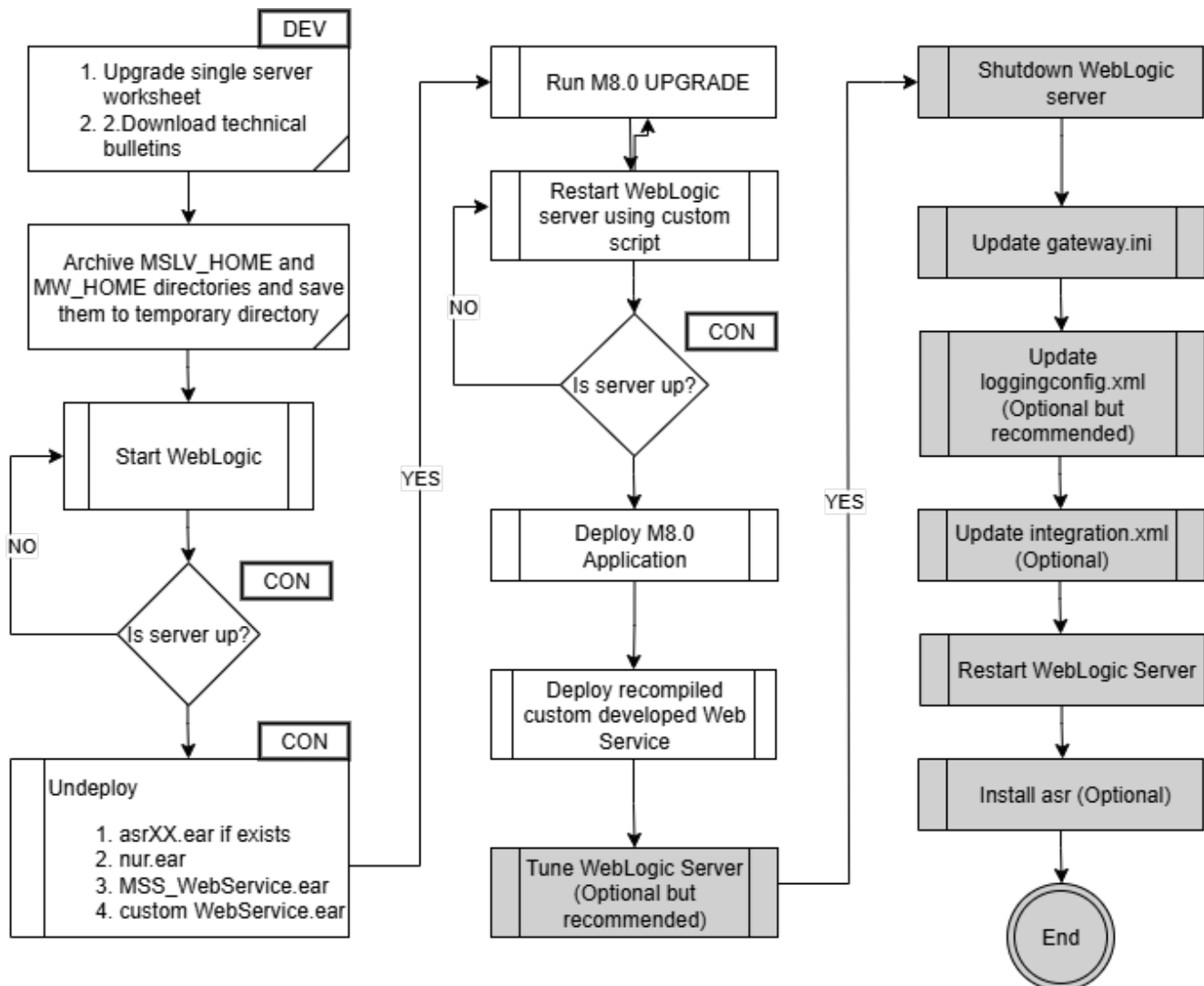
The **Exit?** window appears.

5. Click **OK** to exit.
6. Continue with the steps in "[Completing Post-Upgrade Tasks](#)".

Completing Post-Upgrade Tasks

The highlighted sections of [Figure 8-7](#) show the steps for completing post-upgrade tasks.

Figure 8-7 Completing Post-Upgrade Tasks



To complete the post-upgrade tasks, do the following:

1. Tune the Oracle WebLogic Server.
See "[Tuning Servers For Performance](#)" for information on tuning.
2. Shut down the Oracle WebLogic Server and update the following files:
 - **gateway.ini file.**
 - **integration.xml file.**
 - **loggingconfig.xml**
 - **mslvloggingconfig.xml**See "[Configuration Files](#)" for more information.
3. Start the Oracle WebLogic Server.
4. Run **TBSGraphicsLoad.exe** from a client workstation to load specific graphics to the database. See "[Loading New and Updated Graphics to the Database](#)" for more information.
5. Re-install ASR, if required.

Clustered Server Upgrade Basic Steps

To upgrade the clustered server:

1. Prepare for the upgrade, which includes downloading files and collecting information.
2. Install and deploy MSS 8.0.
3. Complete the post-upgrade tasks.

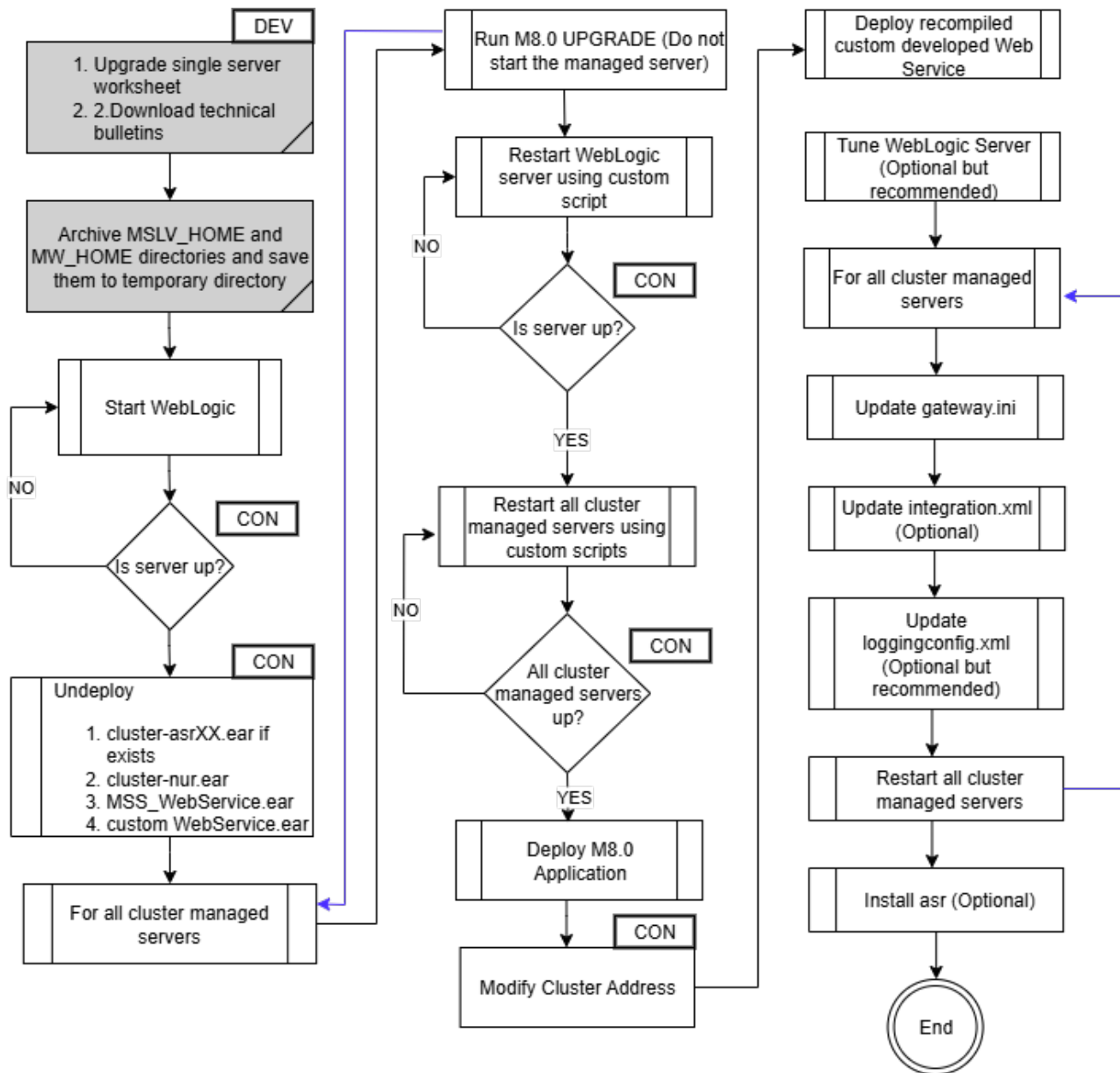
Clustered Server Upgrade

Follow the procedures in this section to upgrade the clustered servers.

Preparing for the Upgrade

The highlighted sections of [Figure 8-8](#) show the steps for preparing for the upgrade.

Figure 8-8 Preparing for the Upgrade



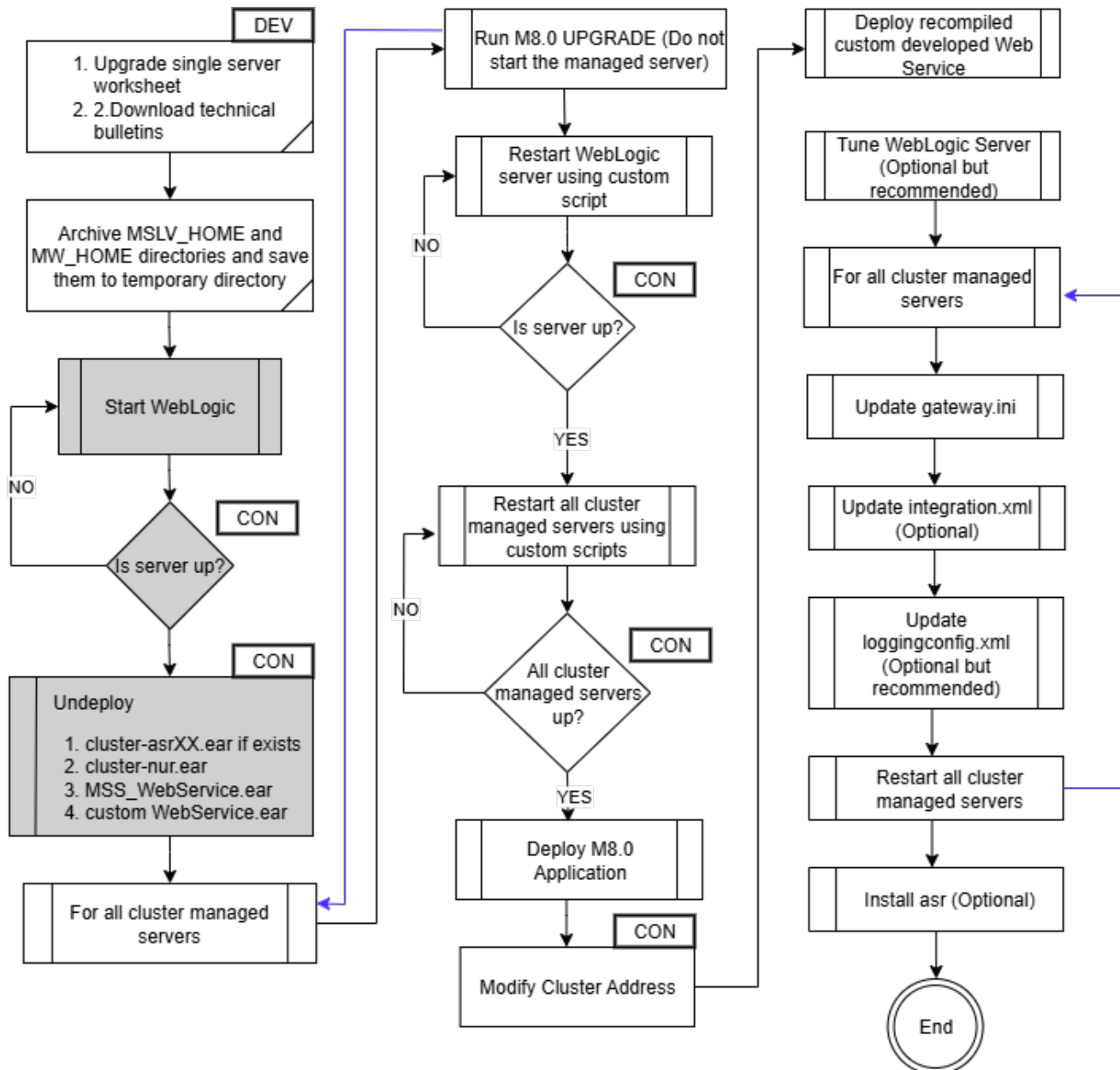
To prepare for the upgrade:

1. Download the MSS upgrade (either a maintenance release or a patch) from the Oracle software delivery website.
2. FTP the MSS upgrade file to the target server machine.
3. Complete the appropriate single server worksheets in Appendix C.
4. Archive the *MSLV_Home* and *MW_Home* directories, on the administration server and all clustered servers, and save the archive files to a temporary directory.

Undeploy Previously Installed Applications

The highlighted sections of [Figure 8-9](#) show the steps for undeploying previously installed applications.

Figure 8-9 Undeploying Applications



To undeploy previously installed applications:

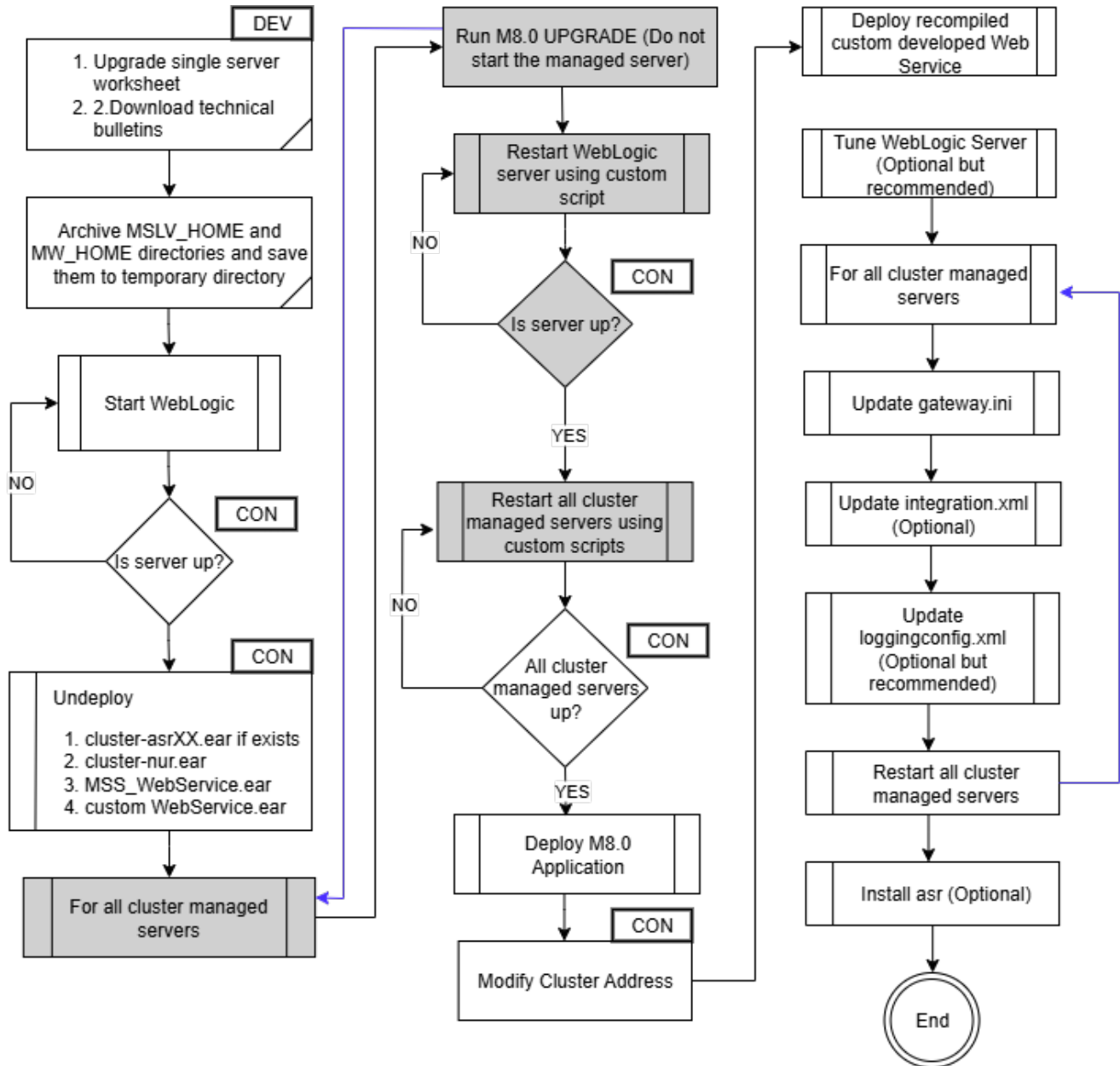
1. Start the WebLogic Server and log in to the WebLogic Server Remote Console.
2. Verify that all the clustered servers are running. In the **Monitoring Tree**, expand **Environment** and click **Servers**.

3. To undeploy the application, do the following:
 - a. In the **Monitoring Tree**, click **Deployments** and then click **Application Management**.
 - b. Click the check box for **nur.ear** (or **cluster-nur.ear**).
 - c. Click **Stop** and select **Force Stop Now**.
 - d. Click **Delete**.
 - e. Click **Yes** to delete the deployment.
 - f. Click **Shopping Cart**, and then click **Commit Changes**, which activates these changes.
4. Repeat step [3](#) for each application that is to be deleted, refer to the following list:
 - asrXX.ear (if deployed)
 - Custom Web Service EAR
 - MSS_WebService.ear

Installing the Upgrade

The highlighted sections of [Figure 8-10](#) show the steps for installing the upgrade.

Figure 8-10 Installing the Upgrade



To install the upgrade, do the following:

- For each clustered server, from the directory where the maintenance release or patch file was downloaded, enter the following command:

```
java -jar MSS.RreleaseNumber.bbuild_AppServerInstaller.jar
```

where *releaseNumber* is the MSS software release version and *build* is the build number. For example:

```
java -jar MSS.R8_0_0.b74_AppServerInstaller.jar
```

The Select MetaSolv home directory window appears.

- From the **Look In** list, click the down arrow and select a directory in which the installer files can be stored and used during the installation process, then click **Select**.

A directory named **installer** is automatically created in the selected directory. Oracle recommends choosing your *MSLV_Home* directory for this task.

The installer automatically starts the installation process by invoking **setup.sh** (UNIX/Linux) or **setup.cmd** (Windows) in the *MSLV_Home/installer* directory.

Worksheet reference and example value:

Field name	Worksheet reference number	Example value
File Name (MSLV_Home)	COMM-0090	/opt/m80Single/single

The Oracle Communications MetaSolv Solution Installation window appears.

- Click **Next**.

The Oracle Communications MetaSolv Solution Installation - Choose Install Type window appears.

- Select **Upgrade** and click **Next**.

The Oracle Communications MetaSolv Solution Installation - Upgrade Select Server window appears.

- In the **MetaSolv Home** field, enter the path and name of the MetaSolv home directory or click **Browse** to navigate to the directory.

All the remaining fields (except the **Pass** field) are auto-populated with the values you specified during full installation.

- In the **Pass** field, enter the password for the administration server.

Worksheet references and example values:

Field name	Worksheet reference number	Example value
Admin Host	Admin-0250	svrchscal
Port#	Admin-0260, Admin-0270	7001 (HTTP port), 7002 (HTTPS port)
User ID	COMM-0020	weblogic
Pass	COMM-0030	Specify the Administration server password.

- Click **Connect**.

The installer queries the Admin Host machine and returns with values you entered during the configuration of the WebLogic domain. This process can take a few moments.

If the domain does not have a JAX-WS template applied, then the following message is displayed:

Please update the domain with the required JAX-WS Extension template and restart the installation.

Exit the installer and upgrade the domain by applying the **WebLogic Advanced Web Services for JAX-WS Extension** template and optionally the **WebLogic JAX-WS SOAP/JMS Extension** template. Retry the installation again after selecting the appropriate template(s):

- WebLogic Advanced Web Services for JAX-WS Extension Template (Required)
- WebLogic JAX-WS SOAP/JMS Extension Template (Optional)

The Oracle Communications MetaSolv Solution Installation window appears with the domain and any servers in the domain appearing in the left pane.

8. Select the server in the left pane.
9. Click **Install**.

The Installation Summary window appears.

10. After the installation completes, the Installation Complete window appears.

The installer installs the appropriate MSS files to the server. When the files are installed, the location of the startup file created for the server is displayed.

Note

Do not exit the installer.

11. Note the location of the startup file for the application server, then minimize the installer window.
12. Repeat steps [1](#) through [11](#) for all clustered server machines.
13. Shut down the administration server, and restart it using the custom script installed by the installer and listed on the window.

To start the servers, navigate to the *mslvdomain* directory. At the command prompt, enter the command:

- For UNIX/Linux:
`startmslv01.sh`
- For Windows
`startmslv01.cmd`

To shut down the servers, navigate to the *mslvdomain* directory. At the command prompt, enter the command:

- For UNIX/Linux:
`stopmslv01.sh`
- For Windows
`stopmslv01.cmd`

Note

To start or stop the administration server and managed servers (in a cluster environment) using the SSL port, you must add an **s** after **http** in the ADMIN_URL argument in the startup/stop server scripts for the administration server and for each managed server. For example:

```
https://host_name:admin_sslport
```

14. Start the WebLogic Server Remote Console.

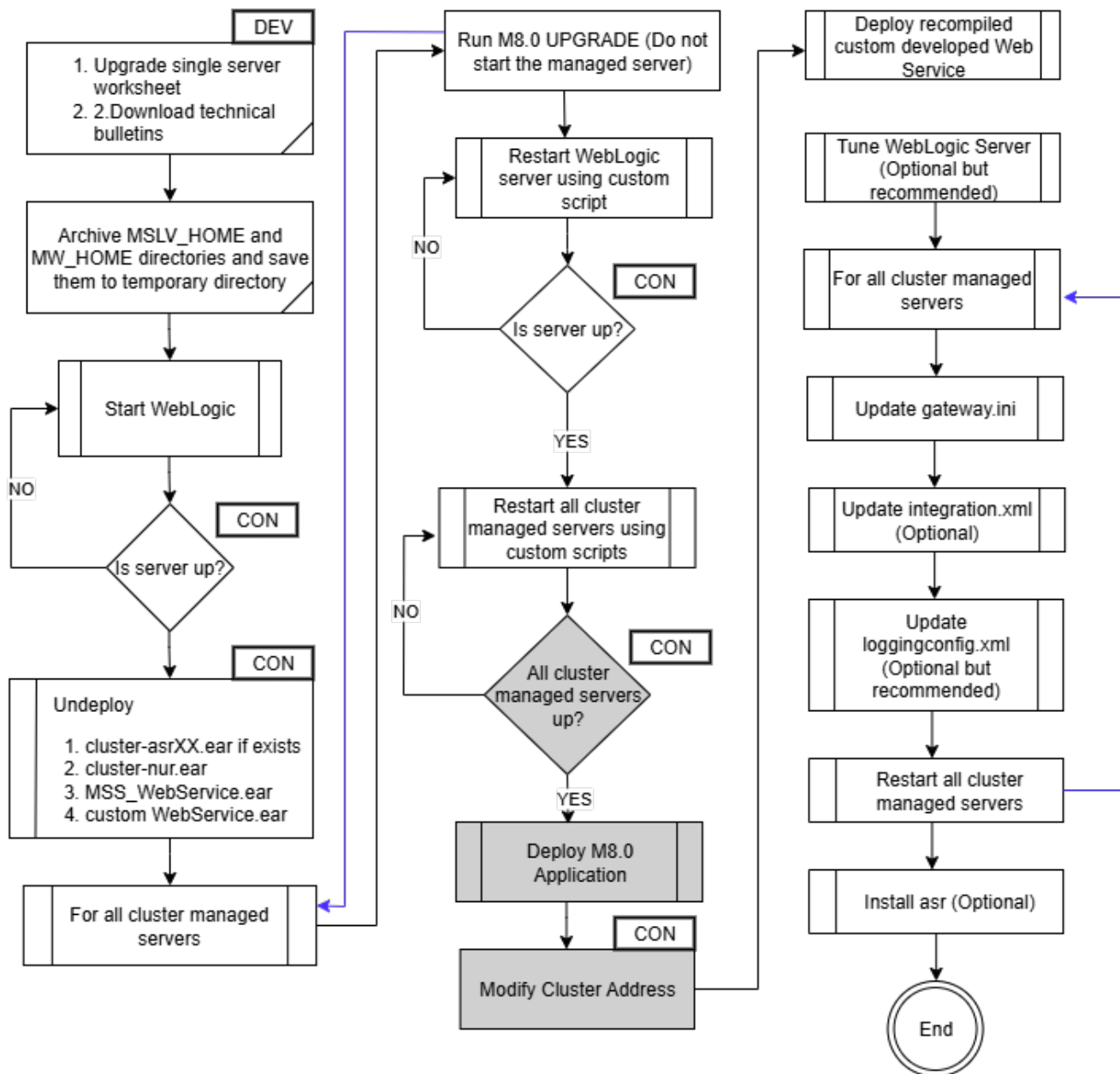
You can monitor the deployment from the console. To check the servers, click **Servers** in **Environment** in the **Monitoring Tree** in the Console.

15. Restart all the clustered servers using the custom scripts installed by the installer and listed on the window.
16. Verify that all the clustered servers are running.
 - a. To check the servers, click **Servers** in **Environment** in the **Monitoring Tree** in the Console.

Deploying the Application

The highlighted sections of [Figure 8-11](#) show the steps for deploying the upgrade.

Figure 8-11 Deploying the Application



To deploy the upgrade, do the following:

1. After the startup commands have been run and the application server has been started, maximize the installer window and click **Deploy Application**.

The Oracle Communications MetaSolv Solution Installation window appears listing the server you can select for deployment.

This process can take a few moments. If the server is not started, a status appears on the window indicating the installer is waiting for the server to be in running mode. When the server is in running mode, you can begin the deployment.
2. Select a server in the Target Servers list box, and click **Deploy**.

The deployment process begins. You can follow the progress of the deployment by viewing the text that appears in the right pane of the installation window.

When the deployment is complete, the Deployment Completed window appears.
3. Click **OK**.
4. Click **Exit**.

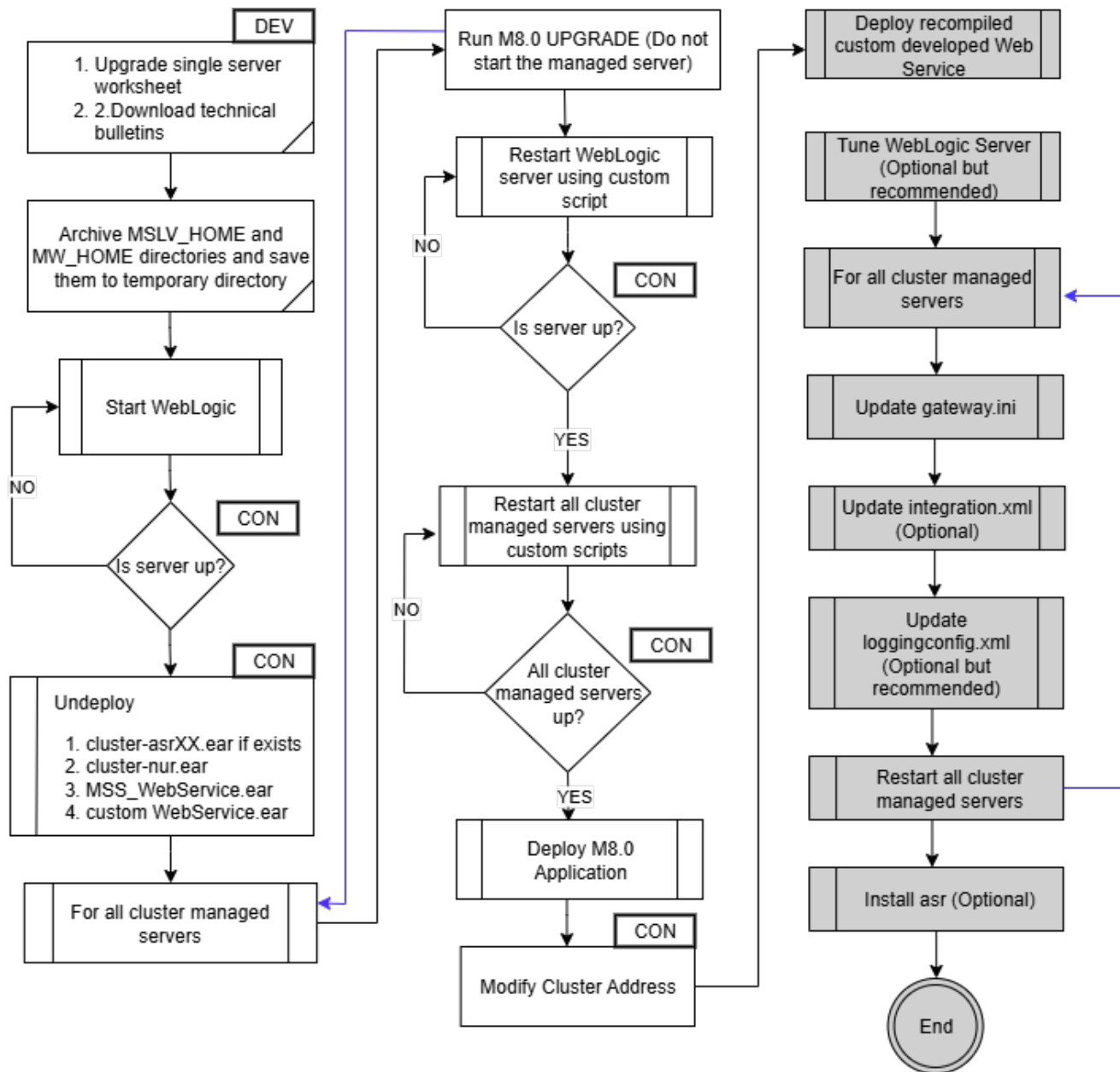
The **Exit?** window appears.
5. Click **OK** to exit.
6. From the WebLogic Server Remote Console, modify the cluster address by performing the following:
 - a. From the Domain Structure tree, expand **Environment** and click **Clusters**.
 - b. Click the cluster name.

The **Configuration** tab and the **General** tab are selected by default.
 - c. Change the SSL port for the cluster address to a DNS entry containing all clustered servers' listening IP addresses. All clustered servers in the production environment should listen on the same port. If not, navigate to **Servers**, select each clustered server, click the **Configuration** tab followed by the **General** tab, and change the **Listen Port**. Modify the **JNDI URL** in the **gateway.ini** file for each clustered server.
7. Continue with the steps in "[Completing Post-Upgrade Tasks](#)".

Completing Post-Upgrade Tasks

The highlighted sections of [Figure 8-12](#) show the steps for completing post-upgrade tasks.

Figure 8-12 Completing Post-Upgrade Tasks



To complete the post-upgrade tasks, do the following:

1. Tune the Oracle WebLogic Server.
2. See "[Tuning Servers For Performance](#)" for information on tuning.
3. Start the WebLogic Remote Console and go to **Environment**, click **Clusters**, and then click the cluster.
4. Change the cluster address to the DNS host name.

Note

Do *not* use the comma-separated list of single address host names or IP addresses in a production environment. These can be used in a development or test environment

5. Shut down the Oracle WebLogic Server and update the following files:
 - **gateway.ini file.**
 - **integration.xml file.**
 - **loggingconfig.xml**
 - **mslvloggingconfig.xml**See "[Configuration Files](#)" for more information.
6. Restart all cluster managed servers.
7. Run **TBSGraphicsLoad.exe** from a client workstation to load specific graphics to the database. See "[Loading New and Updated Graphics to the Database](#)" for more information.
8. Re-install ASR, if required.

Upgrading from MSS 6.3.1

You can upgrade from MSS 6.3.1 to MSS 8.0 using the Reconfiguration Wizard to upgrade any WebLogic domain that was created with Oracle WebLogic Server.

Note

You must upgrade the domain on every computer in the application environment.

The following are the prerequisites for reconfiguring the WebLogic domain:

- Undeploy all the MSS deployments (**nur.ear**, **cluster-nur.ear**, and so on) and custom deployments if any.
- Shutdown all the MSS 6.3.1 active servers.

To use the Reconfiguration Wizard to reconfigure WebLogic Server domains, see "[Reconfiguring WebLogic Domains](#)" in *Upgrading Oracle WebLogic Server*.

After you reconfigure the WebLogic Server domain, it may be necessary to perform tasks such as re-applying customizations to startup scripts, verifying file permissions, and more.

Reapplying Customizations in the Startup Server Scripts

You must update the customizations that are done in the MSS files as they are not updated by reconfiguring the WebLogic domain.

Note

You must reapply the customizations on every server in the cluster server upgrade.

1. Change JDK8 to JDK21 certificate in **orb.properties** and **config.xml**.

orb.properties:

```
jacorb.security.keystore=/path/to/your/JDK21/identity.jks
jacorb.security.keystore_password=
```

config.xml:

```
<server>
<name>your_server_name</name>
<key-stores>CUSTOM_IDENTITY_AND_CUSTOM_TRUST</key-stores>
<custom-identity-key-store-file-name>/path/to/your/JDK21/
custom_identity.jks</custom-identity-key-store-file-name>
<custom-identity-key-store-type>JKS</custom-identity-key-store-type>
<custom-identity-key-store-pass-phrase-
encrypted>{AES}encrypted_passphrase_here</custom-identity-key-store-pass-
phrase-encrypted>
<custom-trust-key-store-file-name>/path/to/your/JDK21/TrustStore.jks</
custom-trust-key-store-file-name>
<custom-trust-key-store-type>JKS</custom-trust-key-store-type>
<custom-trust-key-store-pass-phrase>{AES}encrypted_passphrase_here</custom-
trust-key-store-pass-phrase>
</server>
```

2. In the **metasolv.properties** file:
 - Update the `keystore_location` to the JDK21 certificate.
 - Update `bea_home_dir` to `MW_HOME` WebLogic 14.1.2 path.
3. In **starMSLVorb.sh**:
 - Update `BEA_HOME` variable with `MW_HOME` of WebLogic 14.1.2.
 - Update `JAVA_HOME` variable with JDK21 path.
4. In **startAdminServer.sh** or **startAdminServer.cmd**, add a slash '/' at the end of the values for the `BEA_HOME` and `DOMAIN_NAME` parameters.
5. In **startProxyServer.sh** or **startProxyServer.cmd**:
 - Add a slash '/' at the end of the value for the `BEA_HOME` parameter.
 - Update the `SERVER_NAME` to the proxy server name. For example, `SERVER_NAME = mslvProxyServer`.
 - Ensure that the port address is correct in the `ADMIN_URL` parameter.
6. In **startservername.sh** or **startservername.cmd**:
 - Add a slash '/' at the end of the value for the `DOMAIN_HOME` parameter.
 - Update the `SERVER_NAME` to the manages server name. For example, `SERVER_NAME = mslv01`.
 - Ensure that the port address is correct in the `ADMIN_URL` parameter.
7. In **startMSLVmanaged.sh** or **startMSLVmanaged.cmd**, remove the `-d64` argument in the `MEM_ARGS` parameter.
8. In **stopProxyAndAdmin.sh** or **stopProxyAndAdmin.cmd**:

- Remove the following JAVA_OPTIONS parameters:

```

JAVA_OPTIONS="${JAVA_OPTIONS} -
Dweblogic.security.SSL.ignoreHostnameVerification=true"
export JAVA_OPTIONS
JAVA_OPTIONS="${JAVA_OPTIONS} -
Dweblogic.security.SSL.trustedCAKeyStore=/path/to/trust.jks"
export JAVA_OPTIONS

```

- Add the following:

```

if [ -z "$1" ] ; then
    echo "Custom Certificate PassPhrase not provided."
    echo "Usage: $0 <CustomTrustKeyStorePassPhrase>"
    exit
fi
passPhrase="$1"
JAVA_OPTIONS="${JAVA_OPTIONS} -
Dweblogic.security.SSL.ignoreHostnameVerification=true"
export JAVA_OPTIONS
JAVA_OPTIONS="${JAVA_OPTIONS} -
Dweblogic.security.TrustKeyStore=CustomTrust"
export JAVA_OPTIONS
JAVA_OPTIONS="${JAVA_OPTIONS} -
Dweblogic.security.CustomTrustKeyStoreFileName=/path/to/jdk21/trust.jks"
export JAVA_OPTIONS
JAVA_OPTIONS="${JAVA_OPTIONS} -
Dweblogic.security.CustomTrustKeyStoreType=jks"
export JAVA_OPTIONS
JAVA_OPTIONS="${JAVA_OPTIONS} -
Dweblogic.security.CustomTrustKeyStorePassPhrase=${passPhrase}"
export JAVA_OPTIONS

```

- Add a slash '/' at the end of the value for the BEA_HOME and DOMAIN_NAME parameters.
- Ensure that the port address is correct in the ADMIN_URL parameter.

- Rename **tbs.ini** and **tbs_util.ini** to **mss.ini** and **mss_util.ini** in the **/appserver/config** directory.

After you make the necessary changes, follow the steps:

- Restart all the servers.
- Upgrade to the latest version of MSS application.
- Update the database by running SQL scripts. See "[Updating the Database by Running SQL Scripts](#)" for running the **pfisSQL_Master**.
- Update the stored procedures. See "[Updating Stored Procedures](#)" to update the stored procedures for your database.
- Verify the Database by running the Database (DB) Health Utility. See "[Verifying the Database](#)" to run the DB Health utility.

Updating Client Workstations

If you are manually installing and updating client workstations, a maintenance release or patch update to the workstation needs to be done manually the first time a user logs on to MSS after the maintenance release or patch has been installed on the application server.

You can also use the PowerClient to install and update the MSS client automatically for a maintenance release or a patch update.

9

Installing The Client Workstation

This chapter explains how to install the client application onto your workstation. You need the client installed to complete post installation tasks for the database and application server installations.

This chapter also provides information on distributing the client application to users across a network.

Prerequisites

You must install the latest Microsoft Visual C++ Redistributable (X86) on every client machine. The Microsoft Visual C++ Redistributable package contains essential runtime library files that enable MSS applications to run properly on Windows. This installation is required for the smooth operation of the MSS core application and any utility applications.

Installation Methods

You can distribute the client application to workstations in the following ways:

- By using a third-party software product such as Microsoft SMS.
- By copying the compressed client CAB files stored on the application server to a location where you can expand them for users to copy to client workstations or use directly.
- By using the PowerClient feature that provides automated deployment and update of the MSS application.

Installing the Client Application Manually

The following procedure explains how to install the core MSS application. It does not include any utility applications.

To install the client application manually:

1. Create a directory in the location where the client installation will be placed.
2. Copy the following files from the listed application server directories to the client installation location.
 - **/appserver/cab**
 - All CAB files
 - expand_mss.cmd
 - **/appserver/config**
 - jmaster.ini
 - lerg.ini
 - npasplit.ini
 - mss.ini

- mss_util.ini

Note

If you are copying the files using the FTP site, use the following modes for different file types:

- CAB files: Binary mode
- CMD, XML, and INI files: ASCII mode

3. Run **expand_mss.cmd** using the Run option on the Windows Start menu.

Installing the Client Application Using PowerClient

This section guides you through the process of installing and setting up the PowerClient version of MSS (MSSAUTO) on a Windows server using Internet Information Services (IIS) and NGINX servers. You can use PowerClient to automatically deploy, install and update MSS application. To use PowerClient, you must have IIS server or NGINX server installed in the machine that you installed MSS. See "[Installing IIS Server on Windows Server](#)" for information on how to setup IIS server. Also see "[Installing Nginx on Linux](#)" for information on how to set up NGINX server. IIS server or NGINX server is required for hosting the MSS executable (**mssauto**).

Prerequisites:

- A Windows server with administrative access
- Server Manager
- IIS or NGINX server installed
- The latest build deliverable of MetaSolv Solution

Installing Web Servers

The MSS application deployed with PowerClient is installed and updated through a Web server such as Internet Information Services (IIS) Server and NGINX. Therefore, you must install a Web server for deployment.

You can deploy the PowerClient application directly to the following servers:

- **Local web server:** You can directly deploy to a local server (such as IIS, Apache, Nginx etc.).
- **Remote web server:** To deploy to the remote IIS server, you must configure a server profile first and then deploy from IDE to the server. To deploy to the other remote servers such as Apache, and Nginx, you need to deploy from IDE to a local folder first and then deploy the folder (through FTP or manual copy) to the server.

You must install IIS server for Windows and NGINX server for Linux.

Installing IIS Server on Windows Server

Before you install MSS application using PowerClient, you must install the IIS server on your Windows server.

To install IIS server on Windows Server:

1. Open the Start menu, locate and open **Server Manager**.
2. In Server Manager, click **Manage** in the upper-right corner, then choose **Add Roles and Features**.
The **Add Roles and Features Wizard** opens.
3. On the **Before You Begin** page, review the information and click **Next**.
4. In the **Select installation type** page, select **Role-based or feature-based installation** and click **Next**.
5. In **Server Selection** page, select the server to which you want to add roles and features. You can choose the local server or a remote server that is added to Server Manager. Click **Next**.
6. On the **Server Roles** page, select the desired roles like Web Server (IIS) and click **Next**.
7. In the **Features** page, select the desired features. If only roles are needed, no feature selection is required. Click **Next** after you select the features.
8. Review the selections for roles and features on the **Confirmation** page, then click **Install**. Some installations may require a server restart, in which case, select the option **Restart the destination server automatically if required** to restart automatically.
9. After the installation is complete, click **Close**.
10. To verify, open a web browser, enter the server's IP address, and the default IIS web page is displayed.

Installing Nginx on Linux

The NGINX server is configured to host MSSAUTO on Linux.

1. Ensure that your machine has internet access and you have logged in using super user or root user.
2. Download and install Nginx from the CentOS software repositories.
3. Run the following command in your terminal to initiate the installation:

```
sudo dnf install nginx
```

4. You may be prompted to enter your user account password or confirm the installation with **y** during the process.
5. After the installation, enable the Nginx HTTP server to start automatically and then initiate the service:
 - a. Enable Nginx to start on system boot:

```
sudo systemctl enable nginx
```

- b. Start the Nginx service:

```
sudo systemctl start nginx
```

- c. To view the status of the Nginx service to ensure it is running, run the following command :

```
sudo systemctl status nginx
```

6. If a firewall is enabled on your server, perform the following steps to allow HTTP traffic:

- a. Open the HTTP Port:

```
sudo firewall-cmd --permanent --zone=public --add-service=http  
sudo firewall-cmd --permanent --zone=public --add-port=80/tcp
```

- b. Reload the firewall to apply the changes:

```
sudo firewall-cmd --reload
```

- c. Verify that the HTTP service and port 80 were added successfully by running the following command:

```
sudo firewall-cmd --permanent --list-all
```

7. Test the Nginx HTTP server by opening up a Web browser and entering the following address:

```
http://localhost
```

Alternatively, test from another device on the network by entering

```
http://your_server_ip
```

in the browser, where *your_server_ip* is the server's IP address.

The default Nginx welcome page is displayed.

Configuring the MSS Application on the Web Server

To configure MSS application (MSSAUTO) on the Web servers (IIS and NGINX):

1. Download the MSS file, **mssauto_Installer_bxx.zip**, for your platform from the Oracle software delivery website.
2. Extract the zip file into a directory of your choice.

Oracle recommends to extract the scripts to a directory on your local machine. The extracted file contains two directories **CloudAppPublisher** and **mssauto**.

3. Copy the **CloudAppPublisher** directory and **mssauto** directory to the appropriate directory for your web server:

For IIS server: C:\inetpub\wwwroot

For NGINX server: /usr/share/nginx/html

You can locate the Nginx server directory path in the /etc/nginx/nginx.config file, under the **Servers** section.

Updating the Configuration File for MSS

The PowerClient executable for MSS is **mssauto**. The **mssauto.zip** file includes external configuration files, such as **mss.ini**, which is initially empty. This file requires the application server details to enable login to the MSS application.

To update the **MSS.INI** file:

1. Ensure that you have the ASP.NET Core Runtime 3.1 or later installed.
2. Open the command prompt with administrator privileges by right-clicking on the Command Prompt icon and selecting **Run as administrator**.
3. Navigate to the server root folder, then to the specific application folder, and finally, to the deployment version folder. For example,

```
C:\inetpub\wwwroot\mssauto\8.0
```

Ensure you are in the correct deployment version folder, especially if multiple versions exist.

4. Run the following command to replace the **mss.ini** file:

```
dotnet CustomizeDeploy.dll -src=source_file -dest=destination_file
```

Here, *source_file* is the new or updated file that you want to use, and *destination_file* is the old file that you intend to replace.

Installing the Client Application

You can install the cloud app launcher first and then install the PowerClient MSS application.

Note

Cloud App Launcher is a one-time installation for each client workstation.

To install the MSS PowerClient application (mssauto) from the client workstation:

1. Open a web browser on the client machine and enter the following URL:

```
http://server_ip_address/mssauto
```

The Launch page opens.

2. On the launching page, click **Download** to download and install the launcher.
The **CloudAppLauncher_Installer.exe** file is downloaded.
3. Run the installer file (**CloudAppLauncher_Installer.exe**) to begin the installation process.
The MetaSolv Solution Launcher window opens.
4. The default installation directory is as follows:

Cloud App Launcher: C:\Oracle\MSS

MSS Application: C:\Oracle\MSS\Applications

You can change the default installation directory by selecting **Advanced Options** and specifying the path of the Cloud App Launcher directory and the application installation directory.

5. Click **Start Install** in the MetaSolv Solution Launcher window to install the Cloud App launcher.

6. After the Cloud App Launcher is installed, click **Start the Application** to initiate the installation of the MetaSolv Solution PowerClient application.

A progress bar appears indicating the progress of the MSS application installation. After the installation is complete, a new desktop shortcut **mssauto** is created, allowing you to launch the MSS application.

Starting the MSS Client

You can start the MSS client in the following ways:

- Double-click the executable file (**mss.exe**) located in the MSS installation directory on the workstation.

You can also create a desktop shortcut to start the application after installation.

- If you have installed MSS client using the PowerClient, double-click the executable file (**mssauto.exe**) located in the path that you specified while installing the MSS client.

Tools and Utilities

This section describes special considerations for MSS tool and utility applications. See *MetaSolv Solution System Administrator's Guide* for information on using these applications.

NPA NXX Split Utility

Before you can run this application, you must:

- Modify the INI file
- Create Oracle tables by applying the latest MSS maintenance release

The following sections explain how to complete these tasks.

Modifying the NPASplit.ini File

Before running the utility, you must customize the **npasplit.ini** file. The file is set up identically to the **mss_util.ini** file in the client installation directory folder, so the logon database name and Oracle SID can be copied from that file.

To modify the **npasplit.ini** file:

1. Locate the file in the client installation directory and open it in a text editor.
2. Change the *Example1* text in the Profiles section to the name the users will pick from the **Database** drop-down box in the initial logon window.

Any changes must match the title of the Profile listed in brackets that appears later in the file (for example: **[Profile Example1]**). Additional profiles can also be added in the same manner.

3. Change the value in the **ServerName** field to the Oracle SID shortcut in the **TNSNames.ora** file.

The easiest method of finding this information is in the **mss_util.ini** file (for example:

```
ServerName=@EXAMPLE1
```

4. Save the **npasplit.ini** file with these changes.

Creating NPA NXX Split Utility Oracle Tables

The utility uses Oracle tables that are not found in the MSS database. To ensure that you have the appropriate Oracle tables for the NPA Split Utility, apply the latest MSS maintenance release. These tables must be created prior to the running a split.

To create the tables, do the following:

1. Download the **npasplit.cab** and **expand_mss.cmd** files from the *MetaSolv_Home/server_name/appserver/cab* directory, on the WebLogic Administration server, to a directory on the client workstation.
2. On the client workstation, run the **expand_mss.cmd** file to expand the **npasplit.cab** file.
3. Connect to SQL*Plus and run the following script:
 - **Install.sql**

Note

There is also an **Uninstall.sql** file available to undo the changes, if necessary.

MetaSolv Solution Utilities

Copy the appropriate files to your workstation, run the **mss_util** executable and the logon window appears.

If you are installing manually, copy the appropriate files into the client installation directory for MSS. See [Table 9-1](#) for information on which files are needed for MSS Utilities.

If you want to run the Purge utility from a client workstation, you must install the Oracle database client on the workstation to establish a connection to the database. See *MSS Compatibility Matrix* for the software versions.

Note

Ensure that you have added the DB instance entry in the **TNSNames.ora** file on the workstation.

Background Processor

Oracle recommends installing this application on a separate machine. This application has two executables:

- Job Manager - is installed on a client workstation to view and manage jobs being processed
- Job Master - is installed on a separate machine to do processing

See *MetaSolv Solution System Administrator's Guide* for complete information on the Background Processor.

This application requires the Oracle client.

See [Table 9-1](#) for information on which files are needed for this application.

Location and Routing Gateway

Copy the appropriate files into the client installation directory for MSS. See [Table 9-1](#) for information on which files are needed for this application.

Installing a Utility to a Separate Installation Directory

Oracle recommends installing MSS applications in the same directory on the workstation. The exception to this rule is the Background Processor, which should be installed in its own directory on a separate machine.

You can install an application in a directory other than the MSS installation directory if you choose. If you use this method, you must make sure the INI file for the application you are copying is in the same installation directory as the application. If you install manually, make sure that you edit the INI file for the utility you install to point to the appropriate application server.

[Table 9-1](#) lists the CAB, INI, and XML files required for each application.

Table 9-1 MetaSolv Solution Application Files

Application	CAB file(s) required	INI files required	Install to
MSS core application	app.cab dll.cab pbvm.cab mapping.cab	mss.ini	Client installation directory
Job Manager (Background Processor)	jobmgr.cab pbvm.cab dll.cab	jmaster.ini	Machine dedicated to running this application
Job Master (Background Processor)	app.cab jobmstr.cab pbvm.cab dll.cab	jmaster.ini	Machine dedicated to running this application
Location and Routing Gateway	lerg.cab pbvm.cab dll.cab	lerg.ini	Client installation directory
MetaSolv Solution Utilities	utility.cab pbvm.cab dll.cab	mss_util.ini	Client installation directory
NPA NXX Utility	npasplit.cab pbvm.cab dll.cab	npasplit.ini	Client installation directory

Performing Post-Installation Tasks

This chapter explains tasks that you must perform once the database, the application servers, and the first client installation have been completed.

See *MetaSolv Solution System Administrator's Guide* for more information on ongoing administration and maintenance tasks.

Verifying the Database

To verify the database, you must have Oracle Communications MetaSolv Solution (MSS) Utilities installed.

Run the Database (DB) Health Utility to make sure that all database objects required by MetaSolv Solution are valid, make response times quicker, and eliminate problems in processing information. While DB Health is required only after an installation, maintenance release or patch, you may use it at any time.

You can use the DB Health Utility to repair database errors.

Note

The DB Health Utility cannot correct errors in invalid objects, the DBA must correct these errors. The DB Health Utility will attempt to grant privileges, create public synonyms and enable disabled objects.

The DB Health Utility can also generate a DB Status Report, which provides statistics vital to the health of the database.

See the discussion on using the DB Health Utility in the *MetaSolv Solution System Administrator's Guide* for detailed instructions.

Loading New and Updated Graphics to the Database

A utility named TBS Load Graphic Images loads new and updated graphics to the MSS database. You must run this utility one time, from any client workstation that has MSS Utilities installed, to update the database.

To load graphics to the database:

1. Open the MetaSolv Solution directory on a client workstation and double-click **TBSGraphicLoad.exe**.
2. The TBS Load Graphics Images utility appears minimized on the status bar. Click the icon on the status bar to display the utility. The TBS Load Graphics Images window appears.
3. Enter your user ID and password.
4. Enter the name of the database to which graphics are being loaded.
5. Click **Start**.

Once you run this file, subsequent attempts to run it have no effect on the database.

Loading Preferences to the Database

To ensure that all preferences have a value in the database after a first time installation, you must open the Preferences window. This causes any preferences that are not currently in the database to be added with the MSS default value.

To load preferences to the database:

1. On the MetaSolv Solution Navigation Bar, click **Application Setup**, then click **Preferences**.

The Preferences window appears.

2. Click **Close**.

Any preferences in this window not already defined in the database are included with default values.

If a preference is added through an upgrade or a patch, you must open the Preferences window, locate the preference, and configure it with the appropriate value for the feature to which it applies.

Compiling Invalid Objects for Oracle Database

Run the DBHealth utility, from a client machine, to ensure that there are no invalid objects in the Oracle Database.

1. Navigate to the *MSLV_Home* directory and double-click **mss_util.exe**.

This starts MetaSolv Solution Utilities.

2. When the logon window appears, log on as **ASAP**.

3. In MetaSolv Solution Utilities, click **DBHealth** on the toolbar, then click the **Compile Invalid Objects** tab and click **Execute**.

This recompiles any invalid procedures. If invalid procedures remain, click **Execute** again.

4. Select any of the tabs in the following list that have a value greater than zero and click the **Execute** button.

- Grant Privileges
- Create Public Synonyms
- Enable Disabled Objects

Note

It is not necessary to recompile the Analyze Statistics tab at this time.

5. Exit DBHealth.

User Authentication

User authentication is the process that allows a user to log on and use MSS. For user authentication, MSS uses an external security provider to validate the user ID and password.

MSS can support a variety of security providers. MSS system administrators must decide which security provider to use to validate users. The options available include authentication by:

- Oracle Database
- Oracle WebLogic Server
- A third-party software solution

Oracle Database Authentication

Oracle software provides the default user authentication. When Oracle database is used for user authentication, the user ID and password are validated using a standard SQL connect. The database performs the lookup to determine if the user ID is valid and returns the result to MSS. If the lookup is successful, the user is allowed to enter the system. If the lookup is not successful, the user receives an error message.

No changes are required to the default installation of MSS or Oracle WebLogic Server to use Oracle database authentication.

Oracle WebLogic Authentication

Oracle WebLogic Server provides an internal LDAP server and the ability to connect to other external providers such as Microsoft's Active Directory or another LDAP server. This authentication method has the advantage of being able to provide a common user ID and password for MSS as well as other applications.

The Oracle WebLogic Server authentication option requires an authentication provider. The default choice is the internal Oracle LDAP database. However, Oracle WebLogic Server also supports Oracle Internet Directory, Oracle Unified Directory, Active Directory shipped as part of the Microsoft Windows platform, and Open LDAP. Refer to the Oracle WebLogic Server security documentation for a description of capabilities for each of these providers. See the Oracle WebLogic Server documentation for more information.

To enable Oracle WebLogic Server authentication, configuration changes must be made to the base MSS installation. MSS uses the JEE JAAS authentication standard to connect to Oracle WebLogic. The changes that are outlined here enable the Java VM to load the correct classes. After you complete the changes, restart the server for the changes to take effect.

To enable Oracle WebLogic Server authentication:

1. Locate the JRE Security folder included in the *JAVA_Home* directory.

Default paths:

For UNIX/Linux: *JAVA_Home/conf/security*

For Windows: *JAVA_Home\conf\security*

Note

Ensure that the *JAVA_Home/conf/security* folder has write permissions.

2. Using any text editor, edit the text file called **mss_jaas.config** in the **Security** directory.

This file creates a pointer to the class that accesses Oracle WebLogic Server for security functions. The file needs to have the exact contents defined below and it must appear with the text between the braces on one line.

```
MSS {  
  weblogic.security.auth.login.UsernamePasswordLoginModule required  
  debug=false;  
};
```

3. Edit the **java.security** file to enable the external security call. Uncomment the following line:

```
login.config.url.1=file:${java.home}/conf/security/mss_jaas.config.
```

4. Configure the Oracle WebLogic Server security realm.

During this step, you must choose the Oracle WebLogic Server authentication mechanism. You have the choice of several providers distributed with the Oracle WebLogic Server software, or you can define a custom application and integrate it into the Oracle WebLogic Server installation. Refer to the Oracle WebLogic Server documentation for steps on how to accomplish this configuration.

5. Restart the server.

After the restart is completed, the MSS logon will use the Oracle WebLogic Server security configuration defined in step 4. There are several considerations for using this type of security:

- Creating a user is a two-step process.

First, users must be added to the external security system so that authentication can be performed during the logon procedure. Refer to the Oracle WebLogic Server documentation on how to add users to the system.

Next, users must be added to the MSS security tables. This step enables the permission functionality so that portions of the application, even individual screens, can be secured internally if necessary. See *MetaSolv Solution System Administrator's Guide* for more information.
- Oracle WebLogic Server security system users cannot be created from the MSS security window. This window only creates MSS users; it does not enable user logon.
- User IDs are limited to eight characters.
- Passwords are limited to 30 characters.
- The applications that connect to the database directly and do not use the application server cannot use this authentication method. These applications, which must continue to use the Oracle database authentication method, include the Location and Routing Gateway, MetaSolv Solution Utilities, and the NPA Split Utility.
- Group functionality is different in MSS and the external provider software and groups are not kept in sync by the software. This task must be completed manually.

Third-party Authentication

The final alternative for user authentication is to use a third-party authentication software package. This option lets you use an enterprise security package and bypass the Oracle WebLogic Server for authentication. One reason for bypassing the Oracle WebLogic Server is that it does not directly support a security provider and you may not prefer to extend Oracle WebLogic Server to add an additional security package.

MSS allows this option because it has enabled JAAS. This is the same architecture used to enable Oracle WebLogic Server authentication. The only requirement to enable a third-party authentication provider is that the provider must have a JAAS logon module (that conforms to the Java 8 specification), or you must develop one. If the provider has a JAAS logon module, skip to the configuration section.

Developing a JAAS Logon Module

This section provides an overview of the steps required to develop a JAAS logon module. It is not a comprehensive guide. The following is the link that provides information on how to enable JAAS authentication in WebLogic Server: https://docs.oracle.com/en/middleware/fusion-middleware/weblogic-server/14.1.2/scprg/fat_client.html. You must review Oracle's information about JAAS, and you must review your security provider's documentation on how to provide for authentication.

The only class that needs to be developed is a logon module class. This class gets called from MSS on logon. The class must implement the `LoginModule`. Inside the class you develop several methods. The key method is the logon method. This method gets called on each logon. Inside this method you get the userid and password from the callback object, verify the information, and return a success or failure message. The following is a code fragment from the logon method of a sample JAAS logon module. It simply gets the userid and password and compares it to a static string of `TESTUSER/TESTPASS`. If it matches, it returns true.

```
NameCallback name = new NameCallback("name");
PasswordCallback pwd = new PasswordCallback("Password", false);
Callback[] calls = new Callback[2];
calls[0] = name;
calls[1] = pwd;
try {
    callbackHandler.handle(calls);
} catch (Exception e) {
    System.out.print(e);
}
boolean isSuccess = false;
String userId, password;
userId = name.getName();
password = String.valueOf(pwd.getPassword());

// verify the username/password

if (userId.equals("TESTUSER"))
    isSuccess = true;
if (isSuccess &&
    password.equals("TESTPASS"))
{
    // authentication succeeded!!!
    isSuccess = true;
} else
    isSuccess = false;

return isSuccess;
```

Configuring a JAAS Logon Module

If you are using a third-party JAAS logon module or a logon module you developed, you must configure the application server to use that module.

To configure a JAAS logon module:

1. Navigate to the `JAVA_Home` directory and locate the **conf/security** directory.

Default paths:

For UNIX/Linux: `JAVA_Home/conf/security`

For Windows: `JAVA_Home\conf\security`

2. Using any text editor, edit the text file called **mss_jaas.config** in the security folder.

This file creates a pointer to the class that accesses the third-party security software. The file needs to have the package name of the third-party security class, and it must appear with the text between the braces on one line. Here is an example:

```
MSS {  
Sample.module.SampleJAASLoginModule required debug=false;  
};
```

3. Edit the **java.security** file, located in the **jre/lib/security** folder, using any text editor and uncomment the following line:

```
login.config.url.1=file:${java.home}/conf/security/mss_jaas.config.
```

This allows the Java runtime to find **mss_jaas.config**.

4. Configure the third-party security software.

Refer to the security software documentation for steps on how to accomplish this configuration.

5. Restart the server.

After the restart is completed, the MSS logon authentication uses third-party security software. See the following considerations for using a third-party solution:

- Creating the user is a two-step process.

First, users must be added to the external security system so that authentication can be performed during the logon procedure. Refer to your third-party security system documentation on how to add users to the system.

Next, users must be added to the MSS security tables. This step enables permission functionality so that portions of the application, even individual screens, can be secured internally if necessary. See *MetaSolv Solution System Administrator's Guide* for more information.
- Third-party security system users cannot be created from the MSS security window. This window creates only MSS users; it does not enable user logon.
- User IDs are limited to eight characters.
- Passwords are limited to 30 characters.
- The applications that connect to the database directly and do not use the application server cannot use this authentication method. These applications, which must continue to use the Oracle authentication method, include: the Location and Routing Gateway, MetaSolv Solution Utilities, and the NPA Split Utility.
- Group functionality is different in MSS and the external provider software, and groups are not kept in sync by the software. This task must be completed manually.

Encrypting Network Traffic

MSS uses HTTPS to encrypt network traffic between the client and the application server; however, by default, MSS uses HTTP for client-to-server communication. To enable HTTPS for network encryption, you must change the standard installation.

The following steps apply only to applications that use the application server for its services. The applications that connect directly to the database can not use HTTPS.

To encrypt network traffic:

1. Obtain an SSL certificate.

Typically you get this from a provider like Verisign. The provider requires a CSR to be generated from the application server. To generate the CSR, navigate to the URL:

```
https://host_name:ssl_port/certificate
```

where:

- *host_name* is the name of the Administration Server machine
- *ssl_port* is the Administration Server SSL port number

See the Oracle WebLogic Server documentation for more information about the certificate application.

2. Configure the application server to enable HTTPS.

Use the management console to complete the configuration. Refer to the Oracle WebLogic Server documentation and documentation from the certificate provider for details on how to complete this step. After the configuration is complete, restart the server.

3. Test the configuration by navigating to the MSS start page.

The URL for the page is:

```
https://host_name:ssl_port/main
```

where:

- *host_name* is the name of the Administration Server machine
- *ssl_port* is the Administration Server SSL port number

The page should render without any warning dialog boxes from the web browser. These warnings prevent the application from working with HTTPS.

4. To start or stop the administration server and managed servers (in a cluster environment) using the SSL port, you must add an **s** after **http** in the ADMIN_URL argument in the startup/stop server scripts for the administration server and for each managed server. For example:

```
https://host_name:admin_sslport
```

5. Change the **gateway.ini** file for the application and distribute the changes to each client using any distribution method.

Under the JNDI heading, edit the URL parameter by changing:

- HTTP to HTTPS
- The port number to the SSL port number you configured

6. Configure the browser on the client workstation to allow mixed content to be displayed.

- a. Click the **Start** menu, and then click **Settings** (gear icon).
- b. Enter **Internet Options** in the search bar.
- c. Click **Internet Options** from the search results to open the **Internet Properties** window.
- d. On the Security tab, click **Custom Level**.
- e. In the **Security Settings** window, for the **Display mixed content** option, click **Enable**.

If this option is disabled, the application does not work. If you set the option to **Prompt**, the user will be prompted with each page.

Gateway Events Setup

If you use the integration server for processing the gateway events, ensure that you configure the **gateway.ini** file as follows:

1. Navigate to the *MSLV_Home\appserver\gateway* directory and edit the **gateway.ini** file.
2. Uncomment the INTEGRATIONSERVER entry in the [ThreadProcs] section.
3. Continue with the steps given in the "Gateway Events through Integration Server" section in the *MSS System Administrator's Guide*.

Internationalization Web Service Character Set

If you use Web Services with extended character codes, you must specify the Web service character set in the startup properties using the following directives.

- Add a directive in the WebLogic Server domain environment configuration file to force proper encoding for Web services. For example:
 - setDomainEnv.cmd (Windows)


```
@REM Added to force webservices to use utf-8 encoding
set EXTRA_JAVA_PROPERTIES=%EXTRA_JAVA_PROPERTIES% -
Dweblogic.webservice.i18n.charset=utf-8
```
 - setDomainEnv.sh (UNIX/Linux)


```
# To force webservices to use UTF-8 encoding
EXTRA_JAVA_PROPERTIES=${EXTRA_JAVA_PROPERTIES} -
Dweblogic.webservice.i18n.charset=utf-8
export EXTRA_JAVA_PROPERTIES
```
- Add a directive in the WebLogic Server domain startup file to force proper encoding for Web services. For example:
 - startWebLogic.cmd (Windows)


```
@REM Added to force webservices to use utf-8 encoding
set SAVE_JAVA_OPTIONS=%SAVE_JAVA_OPTIONS% -
Dweblogic.webservice.i18n.charset=utf-8
```
 - startWebLogic.sh (UNIX/Linux)


```
# To force webservices to use UTF-8 encoding
SAVE_JAVA_OPTIONS="${SAVE_JAVA_OPTIONS} -Dweblogic.webservice.i18n.charset=utf-8"
export SAVE_JAVA_OPTIONS
```

Adding Your Company Logo to the MSS My Desktop and Forms

You can add your company logo to the MSS interface as shown in [Figure 10-1](#).

Figure 10-1 Location of Customized Company Logo in the MSS Interface



The logo has the following requirements:

- Size: Width = 100 pixels Height = 25 pixels
- File name: **imgCompanyLogo.jpg**

To add your logo to My Desktop:

1. Locate a directory named **images** in the *MSLV_Home/DOMAIN_NAME/logo* directory.
2. Copy the company logo file with the required name (**imgCompanyLogo.jpg**) into the directory.

The image stored in this directory under the file name given appears in the Company Logo field on the My Desktop page and on the Start page for MSS users.

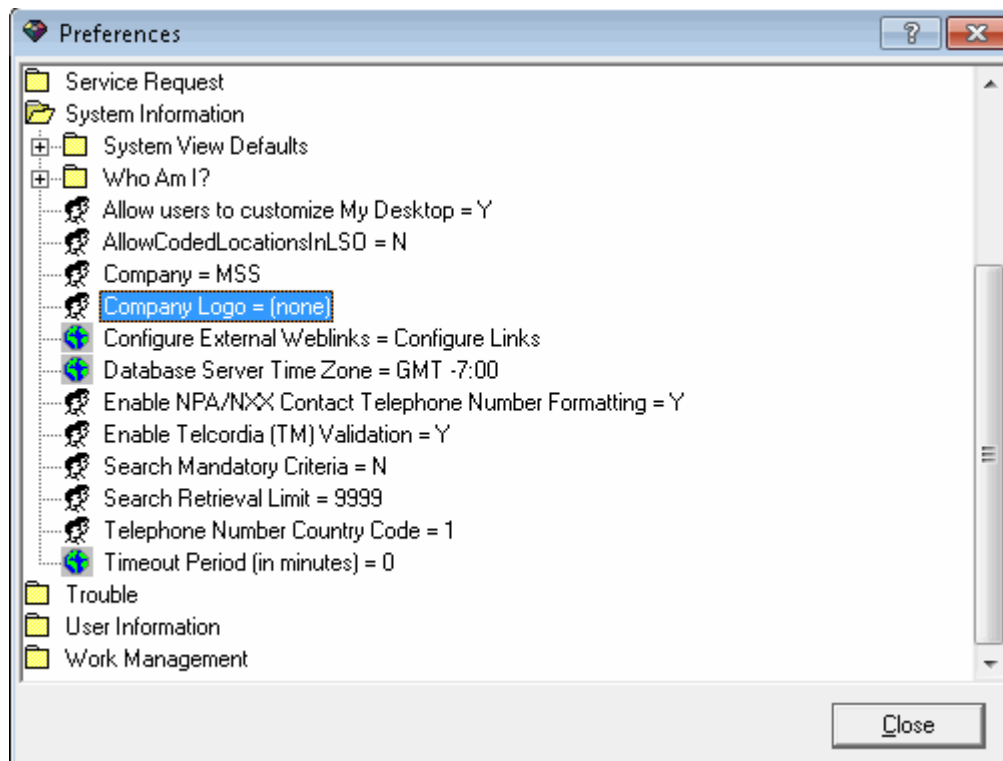
The following option is available if you installed MSS as a full installation. If you used the upgrade option, rather than a full installation, this option is not available.

To add your logo to MSS forms:

1. On the navigation bar, select **Application Setup**, and then **Preferences**.

The Preferences window appears.

Figure 10-2 Preferences Window



2. Expand the System Information folder.
3. Double-click Company Logo and type the path for the bitmap logo into the **Company Logo** field of the window that appears.

The default is **None**. If you leave the default, your company logo does not appear on forms such as orders or DLRs.

4. Click **OK**.

5. Click **Close** to close the Preferences window.

What to Do Next to Secure MSS

You must implement MSS security for individual users and groups of users. You can secure portions of the user interface to specific users to prevent unintended changes. This is especially useful if users only work in a portion of the application like ordering or connection design. See *MetaSolv Solution System Administrator's Guide* for complete information on setting up security for MSS.

Configuring JDBC Active GridLink Data Sources

This chapter describes how to configure the Oracle Communications MetaSolv Solution (MSS) JDBC Active GridLink (AGL) data sources to work in an Oracle Real Application Cluster (RAC) environment for MSS.

About Oracle RAC

Oracle RAC consists of two or more Oracle database instances that run on two or more clustered machines and access a shared storage device using cluster technology. The host machines for the database instances must be linked by a high-speed interconnection to form the cluster and enable communications among the nodes in the cluster.

Note

For more information on configuring Oracle RAC, your clustering software, your operating system, and storage solution, see the documentation from the respective vendors.

For information using Oracle RAC with Oracle WebLogic Servers, refer to the *Oracle Fusion Middleware Administering JDBC Data Sources for Oracle Weblogic Server* documentation.

Creating the JDBC Active GridLink Data Sources

A single Active GridLink (AGL) data source provides connectivity between WebLogic Server and an Oracle Database service, which may include one or more Oracle RAC clusters. An Oracle Database service represents a workload with common attributes that enables administrators to manage the workload as a single entity. You scale the number of AGL data sources as the number of services increases in the database, independent of the number of nodes in the Oracle RAC clusters.

Note

MSS supports only the failover algorithm (with remote listener enabled).

You can create JDBC Active GridLink data sources by doing one of the following:

- [Manually Creating the JDBC Active GridLink Data Sources](#)
- [Creating JDBC Active Data Sources by Updating the Configuration Files](#)

JDBC Data Source Properties

JDBC data source properties include options on the data source identify and the handling of data for the database connection. Before creating data sources, you need to be familiar with this topic. For detailed information on JDBC data sources and their properties, see *Fusion Middleware Administering JDBC Data Sources for Oracle WebLogic Server* on the Oracle Help Center website at:

<https://docs.oracle.com/en/middleware/fusion-middleware/index.html>

Manually Creating the JDBC Active GridLink Data Sources

You must create the JDBC Active GridLink data sources manually. By default, the MSS installer creates the multi data sources when the Oracle RAC database is selected. A multi data source provides an ordered list of data sources to use to satisfy connection requests.

To create the JDBC Active GridLink data sources, perform the following tasks in the WebLogic Remote Console:

- Deleting the existing multi data sources. See "[Deleting Multi Data Sources](#)" for more information.
- Creating the following JDBC Active GridLink data sources:
 - mslvDataSource
 - mslvDbTraceDataSource
 - mslvNoneTxDataSource
 - mslvProcDataSource
 - mslvPSDataSource
 - mslvWSDDataSource

See "[Creating Active GridLink Data Sources](#)" for more information.

- Creating the following persistent stores:
 - mssJMSStore (and point it to mslvPSDatasource)
 - pluginstore (and point it to mslvPSDatasource)

See "[Creating Persistent Stores](#)" for more information.

- Creating the following JMS servers:
 - mmsJMSServer (and point it to mssJMSStore)
 - pluginJMSServer (and point it to pluginstore)

See "[Creating JMS Servers](#)" for more information.

- Creating the following JMS modules:
 - mssJMSModule
 - pluginModule

After you create mssJMSModule and pluginModule, you must create JMS module resources (such as queues and connection factories) and create the subdeployments for those resources. A subdeployment is a process for grouping JMS module resources and targeting them to a server instance or cluster.

See "[Creating JMS Modules](#)" for more information.

Deleting Multi Data Sources

To remove a multi data source, perform the following:

1. Log in to the WebLogic Server Remote Console.
2. In the **Edit Tree**, expand **Services**, and then click **Data Sources**.
The Summary of JDBC Data Sources page appears.
3. Select the check box beside each data source that you want to delete and click **Delete**.

Creating Active GridLink Data Sources

To create an Active GridLink data source:

1. Log in to the WebLogic Server Remote Console.
2. In the **Edit Tree**, expand **Services**, and then click **Data Sources**.
The Summary of JDBC Data Sources page appears.
3. Click **New**.
4. In the **Name** field, enter **mslvDataSource**.
5. In the **JNDI Names** field, enter the JNDI path to where this data source is bound. By default, the JNDI name is the name of the data source. For example, MSLVPool.
6. In **Targets**, select the servers or clusters on which you want to deploy the data source.
7. Select **GridLink Data Source** from the **Data Source Type** drop-down list.
8. From the **Database Driver** list, select any one of the following database drivers, depending on the Active GridLink data source that you are creating:
 - When creating mslvDataSource and mslvWSDDataSource, select **Oracle's Driver (Thin XA) for GridLink Connections Versions:Any**.
 - When creating mslvDbTraceDataSource, mslvNoneTxDataSource, mslvProcDataSource, and mslvPSDataSource, select **Oracle's Driver (Thin) for GridLink Connections; Versions:Any**.
9. **Optional:** If you selected a non-XA driver, then select a **Global Transactions Protocol** from the following values:
 - Logging Last Resource
 - Emulate Two-Phase Commit
 - One-Phase Commit

For XA drivers, the system automatically selects the **Two-Phase Commit** protocol for global transaction processing.
10. Enter the connection details for the database that you want to connect to:
 - a. **Listeners:** Enter the host and port; separate the host and the port of each listener with a colon. Enter each listener on a new line.
 - b. **Service Name:** Specify the service name of the database to which you want to connect.
 - c. **Database User Name:** Enter the database user account name that you want to use for each connection in the data source.
 - d. **Password:** Enter the password for the database user account.

- e. **Protocol:** If required, change the value from TCP to SDP. To use Socket Direct Protocol (SDP), your database network must be configured to use Infiniband.
11. Select the **Fan Enabled** check box to subscribe to Oracle Fan Events.
12. In the **ONS host and port** field, enter the host and port for each ONS node separated by a comma.
13. If ONS is configured to use the SSL protocol, do the following:
 - a. In the **ONS Wallet File Directory** field, enter the directory of the Oracle wallet file in which the SSL certificates are stored.
 - b. In the **ONS Wallet Password** field, enter and confirm the ONS wallet password.
 - c. In the **Confirm ONS Wallet Password** field, enter the ONS wallet password again to confirm it.
14. Click Create.
15. Repeat this procedure to create the remaining Active GridLink data sources: `mslvDbTraceDataSource`, `mslvNoneTxDataSource`, `mslvProcDataSource`, `mslvPSDataSource`, and `mslvWSDDataSource`.
16. Proceed with "[Tuning the Active GridLink Data Source](#)".

Tuning the Active GridLink Data Source

After you create the Active GridLink data sources, you must tune each data source.

To tune each data source:

1. Log in to the WebLogic Remote Console.
2. In the **Edit Tree**, expand **Services**, and then click **Data Sources**.
The Summary of JDBC Data Sources page is displayed.
3. Select the target data source (for example, `mslvDataSource1`).
The Settings for `<DataSource>` page is displayed.
4. Click the **Connection Pool** tab.
The Connection Properties are displayed.
5. Click the **Advanced** tab to display additional configuration items.
6. In the **Test Table Name** field, clear the **SQL SELECT 1 FROM DUAL** entry and enter **SQL ISVALID**.
7. In the **Inactive Connection Timeout** field, enter **300**.
8. Click **Save**.
9. Click **Shopping Cart**, then select **Commit Changes**.
10. Repeat steps [3](#) through [9](#) to tune each data source.

Creating Persistent Stores

To create a persistent store:

1. Log in to the WebLogic Server Remote Console.
2. In the **Edit Tree**, expand **Services**, and then click **JDBC Stores**.
The Summary of JDBC Stores page appears.
3. Click **New**.

The Create a New JDBC Store page appears.

4. Do the following:
 - a. In the **Name** field, enter **mssJMSStore**.
 - b. From the **Target** list, select a server instance on which you want to deploy the JDBC store.
 - c. From the **Data Source** list, select **mslvPSDataSource**.
 - d. In the **Prefix Name** field, specify a prefix that is added to the table name in this JDBC store.
 - e. Click **Create**.
 - f. Repeat this procedure to create the **pluginstore** persistent store and point it to **mslvPSDataSource**.

Creating JMS Servers

To create a JMS server

1. Log in to the WebLogic Server Remote Console.
2. In the Domain Structure tree, expand **Services**, then expand **Messaging**, and then click **JMS Servers**.

The Summary of JMS Servers page appears.

3. Click **New**.

The Create a New JMS Server Properties page appears.

4. Do the following:
 - a. In the **Name** field, enter **mssJMSServer**.
 - b. From the **Persistent Store** list, select **mssJMSStore**.
 - c. Click **Finish**.
 - d. Repeat this procedure to create the **pluginJMSServer** JMS server and point it to **pluginstore**.

Creating JMS Modules

To create a JMS module:

1. Log in to the WebLogic Server Remote Console.
2. In the **Edit Tree**, go to **Services**, then **JMS Modules**.

The Summary of JMS Modules page appears.

3. Click **New**.

The Create JMS System Module page appears.

4. In the **Name** field, enter **mssJMSModule**.
5. Click **Create**.

The JMS Modules details page appears.

6. On the **Target** tab, from the Target drop-down list, select a server instance or cluster on which to deploy the JMS system module.
7. Click **Save**.

The **mssJMSModule** JMS module is created. You can create the resources for the newly created JMS module.

8. To add resources, select the JMS system module that you want to configure resources for.
9. In the Navigation Tree, as child nodes of JMS system module that you selected, click the resource(such as Connection Factory, Queue, Topic, and so on) that you want to configure.
10. Enter the required information for the selected resource.

Certain resources may encourage you to configure an appropriate subdeployment. A subdeployment is the mechanism by which targetable JMS module resources (such as queues, topics, and connection factories) are grouped and targeted to a server resource (such as JMS servers, server instances, or cluster).

Most JMS resources have additional parameters that can be modified after they are created. For example, you can modify the default message threshold values or enable message logging for queues, topics, and templates.

Note

When creating a JMS module resource, do not specify a sub deployment; instead, after creating the JMS resource, edit the resource and then specify a sub deployment for that resource. See "[Configuring Sub Deployments for JMS Module Resources](#)" for more information.

11. Click **Create**.

Click **Shopping Cart**, then select **Commit Changes**, which activates these changes.

12. Repeat this procedure to create the **pluginModule** JMS module.

Configuring Sub Deployments for JMS Module Resources

After you create the resources for the JMS module, edit the resource, and then specify a sub deployment for that resource.

To configure a sub deployment for a JMS module resource:

1. Log in to the WebLogic Remote Console.
2. In the **Edit Tree**, expand **Services**, and then click **JMS Modules**.
The Summary of JMS Modules page appears.
3. Click **mssJMS** module.
The Settings for mssJMSModule page appears.
4. In the navigation tree, select **Sub Deployments**.
5. Click **New**.
The **Create a new Sub Deployment** page opens.
6. Enter **Name** and click **Create**.
7. Click **Save**.
8. In **Shopping Cart**, select **Commit Changes**.
9. In the Navigation Tree, click the resource (Queues, Connection Factories and so on) for which you want to configure sub deployment.

10. In the **General** tab, enter the corresponding sub deployment in **Sub Deployment Name**.
11. Click **Save**.
12. Repeat this procedure to configure sub deployments for the resources of **pluginModule**.

Creating JDBC Active Data Sources by Updating the Configuration Files

Creating the JDBC Active GridLink data sources by updating configuration files involves doing the following tasks in the WebLogic Remote Console:

- [Encrypting Clear Text Passwords in WebLogic Server Domain Configuration Files](#)
- [Deleting Multi Data Source Instances from the config.xml File](#)
- [Modifying the Classpath for the WebLogic Server Domain](#)
- [Configuring the Connection Pool Parameters](#)

Note

Before converting Multi Data Sources to Active GridLink Data Sources, you must do the following:

1. Take a backup of all Multi Data Sources
2. Take a backup of the **config.xml** file that is located in the *mslvdomain\config* directory, where *mslvdomain* is the name of the domain directory you specified during domain configuration.

Encrypting Clear Text Passwords in WebLogic Server Domain Configuration Files

Each Active GridLink data source is represented by a configuration XML file for the RAC domain in the *mslvdomain\config\jdbc* directory. For example, **mslvWSDataSource-8065-jdbc.xml**, **mslvProcDataSource-9573-jdbc.xml**, and so on.

where:

mslvdomain is the name of the domain directory you specified during domain configuration.

You must encrypt the clear text passwords in each domain configuration XML file for all the data sources to protect them from unauthorized access. You encrypt passwords using the `java weblogic.security.Encrypt` utility, which you must run from within the *mslvdomain* folder.

Ensure that you encrypt passwords for the following database users: APP_MSLV, APP_API, and APP_INT.

To encrypt clear text passwords in WebLogic Server domain configuration files:

1. Change directory to your domain's bin folder.
For example:

```
cd MW_HOME\user_projects\domains\mslvdomain\bin
```
2. Run the `setDomainEnv` script. For example, `setDomainEnv.cmd` (Windows) or `setDomainEnv.sh` (UNIX/Linux).
3. Navigate to the *mslvdomain* directory and run the `java weblogic.security.Encrypt` utility. This utility prompts you for a password, and then displays the encrypted password.

The following is a sample output from running this utility:

```
C:\MW_HOME\user_projects\domains\mslvdomain>java weblogic.security.Encrypt
Password:
{3DES}9Hwsf87pJTW=
```

4. Navigate to the *mslvdomain\config\jdbc* directory.
5. Copy the encrypted passwords for all the data sources and paste these passwords in the <password> element within the XML file for each data source (mslvWSDDataSource, mslvProcDataSource, mslvPSDataSource, mslvNoneTxDataSource, mslvDbTraceDataSource, and mslvDataSource).

Note

You can generate a new password or you can copy the password from the Multi Data Source backup.

Deleting Multi Data Source Instances from the config.xml File

To delete the multi data sources instances from the **config.xml** file:

1. Edit the *mslvdomain\config\config.xml* file.
2. Remove all the instances of multi data sources.

For example, remove the entries for the following data sources: mslvDataSource1, mslvDbTraceDataSource1, mslvNoneTxDataSource1, mslvProcDataSource1, mslvWSDDataSource1, mslvPSDataSource1, mslvDataSource2, mslvDbTraceDataSource2, mslvNoneTxDataSource2, mslvProcDataSource2, mslvWSDDataSource2, mslvPSDataSource2, and so on:

```
<jdbc-system-resource>
  <name>mslvDataSource1</name>
  <target>RacConfigServer</target>
  <descriptor-file-name>jdbc/mslvDataSource1-0700-jdbc.xml
</descriptor-file-name>
</jdbc-system-resource>
<jdbc-system-resource>
  <name>mslvDbTraceDataSource1</name>
  <target>RacConfigServer</target>
  <de-scriptor-file-name>jdbc/mslvDbTraceDataSource1-8405-jdbc.xml
  </descriptor-file-name>
</jdbc-system-resource>
.
.
.
<jdbc-system-resource>
  <name>mslvWSDDataSource2</name>
  <target>RacConfigServer</target>
  <descriptor-file-name>jdbc/mslvWSDDataSource2-5599-jdbc.xml
  </descriptor-file-name>
</jdbc-system-resource>
<jdbc-system-resource>
  <name>mslvPSDataSource2</name>
  <target>RacConfigServer</target>
  <de-scriptor-file-name>jdbc/mslvPSDataSource2-5450-jdbc.xml
  </descriptor-file-name>
</jdbc-system-resource>
```

3. Save and close the **config.xml** file.
4. Restart the application server.

Modifying the Classpath for the WebLogic Server Domain

To update the classpath for the WebLogic domain:

1. Edit the *mslvdomain\bin\setDomainEnv.cmd* file.
2. Add the path for the **ons.jar** file to the CLASSPATH environment variable.

For example:

```
set CLASSPATH=%CLASSPATH%;C:\Oracle\Middleware\Oracle_Home\oracle_common\lib\ons.jar;
```

3. Save and close the file.

Configuring the Connection Pool Parameters

To configure the connection pool parameters:

1. Navigate to the *mslvdomain\config\jdbc* folder.
2. Edit each XML file for the *mslvWSDDataSource*, *mslvDbTraceDataSource*, *mslvNoneTxDataSource*, *mslvProcDataSource*, *mslvPSDataSource*, and *mslvWSDDataSource* data sources, and update the `<jdbc-connection-pool-params>` element as follows:

```
<jdbc-connection-pool-params>
  <initial-capacity>10</initial-capacity>
  <max-capacity>100</max-capacity>
  <min-capacity>2</min-capacity>
  <highest-num-waiters>1000</highest-num-waiters>
  <connection-reserve-timeout-seconds>60</connection-reserve-timeout-seconds>
  <test-connections-on-reserve>true</test-connections-on-reserve>
  <inactive-connection-timeout-seconds>14400
</inactive-connection-timeout-seconds>
  <test-table-name>SQL ISVALID</test-table-name>
  <statement-timeout>0</statement-timeout>
</jdbc-connection-pool-params>
```

3. Save and close the XML file for each data source.

[Example 11-1](#) shows sample XML for one data source.

Example 11-1 Sample of One Data Source

```
<jdbc-data-source>
  <name>DataSourceName</name>
  <datasource-type>AGL</datasource-type>
  <jdbc-driver-params>
    <url>jdbc:oracle:thin:@server:port/DB</url>
    <driver-name>oracle.jdbc.xa.client.OracleXADataSource</driver-name>
    <properties>
      <property>
        <name>user</name>
        <value>user_name</value>
      </property>
    </properties>
    <password-encrypted></password-encrypted>
  </jdbc-driver-params>
  <jdbc-connection-pool-params>
    <test-table-name>SQL ISVALID</test-table-name>
  </jdbc-connection-pool-params>
  <jdbc-data-source-params>
    <jndi-name>JNDIName</jndi-name>
    <global-transactions-protocol>TwoPhaseCommit
```

```
</global-transactions-protocol>
</jdbc-data-source-params>
<jdbc-oracle-params>
  <fan-enabled>true</fan-enabled>
  <ons-node-list />
  <ons-wallet-file />
  <active-gridlink>true</active-gridlink>
</jdbc-oracle-params>
</jdbc-data-source>
```

Note

Some lines in the example are wrapped for the display.

Tuning JDBC Multi Data Source

For each data source perform the steps in this procedure to tune the data sources.

To tune each data source:

1. Ensure you are logged into the WebLogic Remote console.
2. In the Domain Structure tree, expand **Services**, and then click **Data Sources**.
The Summary of JDBC Data Sources page is displayed.
3. Select the target data source (for example, *mslvDataSource1*).
The Settings for <DataSource> page is displayed.
4. Click the **Connection Pool** tab.
The Connection Properties are displayed.
5. Click **Lock and Edit**.
6. Scroll down to Initial Capacity and Maximum Capacity.
7. In the **Initial Capacity** field, enter **1**.
8. In the **Maximum Capacity** field, enter **15**.

Note

The values of the Initial Capacity and Maximum Capacity fields depend on their particular MSS deployment.

9. Scroll down to the bottom of the page and click **Save**.
The Settings for <DataSource> page is displayed.
10. Click **Advanced** to display additional configuration items.
11. Select the **Test Connections On Reserve** check box.
12. Click **Save**.
The Settings for <DataSource> page is displayed.
13. Click the **Transaction** tab.
The Transaction Properties are displayed.

14. Select the **Set XA Transaction Timeout** check box.
15. In the **XA Transaction Timeout** field, enter **3600**.
16. In the **XA Retry Duration** field, enter **300**.
17. Click **Save**.
18. Click **Activate Changes**.
The Settings updated successfully message is displayed.
19. Repeat steps [1](#) through [18](#) to tune each data source.

Performing Maintenance and Troubleshooting

This chapter contains basic system maintenance and database troubleshooting information.

Basic Maintenance

This section contains information about the basic maintenance tasks for Oracle Communications MetaSolv Solution (MSS). See *MetaSolv Solution System Administrator's Guide* for full system maintenance information

Starting the MSS System

When starting MSS, you must start components in the following order:

- Database
- Application server
- MSS client (user workstation)

The startup scripts are located in the domain directory. The script name includes the server name. For example, if a server is named *mslv01*, it will have a startup script named **startmslv01.sh** in the domain directory.

To start MSS, run the following scripts located in the domain directory:

- For Unix Linux:
`startWebLogic.sh`
- For Windows:
`startWebLogic.cmd`

Starts the administration server if you are running in a domain that has a separate administration server. Start the administration server before starting the managed server(s).

- For Unix Linux:
`start<server>.sh`
- For Windows:
`start<server>.cmd`

Starts an application server (either managed or single) running MSS.

If you are running an administration server and a managed server on the same machine, after the managed server is started, the administration server can be shut down to release resources that the process would otherwise consume. However, the administration server must be running to allow access to the management console or to perform any administration function.

Uninstalling MSS

To uninstall MSS from an application server:

1. Start the administration server and log in to the WebLogic Server Remote Console.
2. To undeploy the application, do the following:
 - a. In the **Monitoring Tree**, click **Deployments** and then click **Application Management**.
 - b. From the Summary of Deployments pane, click the check box for **nur.ear** (or **cluster-nur.ear**).
 - c. Click **Stop** and select **Force Stop Now**.
 - d. Click **Delete**.
 - e. Click **Yes** to delete the deployment.
 - f. In **Shopping Cart**, select **Commit Changes**.
3. Repeat step 2 for each version of ASR that is installed.
4. To delete the data sources, do the following:
 - a. In **Monitoring Tree**, expand **Services**, and then click **Data Sources**.
 - b. Click **JDBC Data Source Runtime MBeans**.
 - c. From the Summary of JDBC Data Sources pane, click the check box for each data source that is to be deleted (refer to the list below).
 - **mslvDataSource**
 - **mslvDbTraceDataSource**
 - **mslvNoneTxDataSource**
 - **mslvProcDataSource**
 - **mslvPSDataSource**
 - **mslvWSDataSource**
 - d. Click **Delete**.
 - e. Click **Yes** to delete the data sources.
 - f. In **Shopping Cart**, select **Commit Changes**.
5. In the file system on the machine, delete the MSS installation directory.

Changing an IP Address

When an IP address for a server changes, adjustments must be made in the configuration. The following sections indicate how to handle this change.

Changing an IP Address for Clustered Servers

The IP address or DNS name can be used to identify a machine's listener address. Oracle recommends using the DNS name.

When the IP address changes on a server's machine, you must modify the machine's IP address in the Oracle WebLogic Server if it is used as the server listener address, the **gateway.ini**, **integration.xml**, **mss.ini**, **mss_util.ini**, and any other files that identify the server machine using the IP address.

Changing an IP Address for Single or Administration Servers

Before the IP address changes, start the server and change the listen address to the new IP address, then implement the IP address change and restart the server.

Change the **startserver.sh** file to show the new address:

```
ADMIN_URL=http://<Admin server IP address:port number>/
```

If you use the DNS name of the server's host machine rather than the IP address, there is no effect when the IP address changes.

Troubleshooting Database Issues

This section contains information about the causes and resolutions to common database problems so you can troubleshoot in MSS.

ORA-12519, TNS: No Appropriate Service Handler Found

Problem

Listener refused the connection with the following error:

```
ORA-12519, TNS: no appropriate service handler found
```

Cause

You receive this error message when activating the data sources (DS) or when starting the server.

Resolution

Check the DB parameter for the number of processes. The number of processes should be high enough to hold the number of connections that you want to create in addition to the WL internal processes.

ORA-01979: missing or invalid password for role WOTSTWTWWOO or ADMIN_ROLE

Problem

If you receive the following error:

```
ORA-01979: missing or invalid password for role "WOTSTWTWWOO" or "ADMIN_ROLE"
```

Cause

You receive this error message when activating the data sources (DS) or when starting the server.

Resolution

Change the role passwords.

Only the database administrator can change passwords for the roles ADMIN_ROLE and WOTSTWTWWOO by running the following stored procedure:

```

=====pl/sql should be run by dba for changing role's password=====
DECLARE
  C_NAME VARCHAR2(200);
  C_PASSWORD VARCHAR2(200);
BEGIN
  C_NAME := 'role_name'; /*specify the role name, ADMIN_ROLE OR WOTSTWTW00*/
  C_PASSWORD := ''; /*specify the password*/
  SP_CREDSTORE_CHG_ROLE_PWD(C_NAME, C_PASSWORD);
END;

```

ORA-39384: Warning: User <USERNAME> Has Been Locked And The Password Expired During Import

Problem

After DataPump import, the users with 10g style verifiers are locked, the passwords are expired, and the following error message is displayed:

```
ORA-39384: Warning: User <USERNAME> Has Been Locked And The Password Expired During Import
```

Cause

Because 10g style verifiers are no longer supported in 12.2, DataPump marks such users as locked and expires the password when they are imported.

Resolution

After you import, unlock the user and set a new value in the target database by running the following command:

```

ALTER USER <username> ACCOUNT UNLOCK;
ALTER USER <username> IDENTIFIED BY <password>;

```

SQL*Plus Quits During the Upgrade

SQL*Plus may unexpectedly quit while running the upgrade under the following scenarios:

- The ASAP, EBOND, EDI, JOB, and SYS user IDs do not exist on the instance.
- You entered an incorrect password.
- ASAP does not have DBA-level authority.
- The database is not at the appropriate version level when starting the upgrade.
- You do not have the standard tablespaces **data** and **indexes**.
- The full directory path for the SQL script files does not include the trailing slash, you entered an invalid path, or you do not have write access to the directory.
- The free space checks did not pass (minimum available tablespace free for the largest contiguous space and total free space). Check the output log (**upgenv.log**) for the exit reason, correct the tablespace limitation, and run the **_upgmss.sql** script again.

Restarting a Failed Upgrade Attempt With the Incorrect Mode

When failure occurs before the main upgrade sequence has begun (for example, during the interactive upgrade sequence), use your original selection of either upgrade mode 1 or 2 to restart the upgrade. Do not use upgrade mode 3 to restart the upgrade if a failure occurs during the interactive upgrade sequence.

Upgrade Failure and Losing Audits

If upgrade mode 1 was run more than once, all audits are lost and you must start the upgrade again from the beginning.

Database Graphics Not Displaying Correctly

Check to make sure you have run the **TBSGraphicLoad.exe** located in the same directory as the MSS executable on the client workstation. This executable contains new and updated graphics for the MSS database. It does not need to be run by every user. It only has to run one time on the database for the release.

No Database Log Files

When **_upgradetbs.sql** runs, you are prompted for the directory path for the script files that are used to do the upgrade. The path must end with a trailing slash. The slash is different for UNIX/Linux and Windows:

/ for UNIX and Linux

\ for Windows

If the slash is not included, no log files are written.

Received Insufficient Privileges (ORA-01031) When Running prodfix DB SQL Script

You may encounter the error ORA-01031: insufficient privileges while compiling procedure SAP.SP_DELETE_JOB_QUEUE when running the prodfix DB SQL script.

To resolve this insufficient privileges issue, apply the SQL patch 23743198.

Troubleshooting MSS Installation Issues

This section describes how to troubleshoot some of the issues that you may encounter during the MSS installation process.

Destination Unreachable Error in AppServer.log in IPv6 Environment

After you install MSS in an IPv6 environment, you may receive the following error in the **AppServer.log** file:

```
Error initializing the MetaSolv Solution Sender:
javax.naming.CommunicationException:
t3:// 2606:b400:2010:484b:f13b:4672:38b7:5af9:9065:
Destination 2606:b400:2010:484b:f13b:4672:38b7:5af9,
9065 unreachable; nested exception is:
java.net.ConnectException: Connection refused: no further information;
No available router to destination [Root exception is java.net.ConnectException:
t3:// 2606:b400:2010:484b:f13b:4672:38b7:5af9:9065:
Destination 2606:b400:2010:484b:f13b:4672:38b7:5af9,
9065 unreachable; nested exception is:
java.net.ConnectException: Connection refused: no further information;
No available router to destination]
```

```
at weblogic.jndi.internal.ExceptionTranslator.  
toNamingException(ExceptionTranslator.java:40)
```

This message is thrown if the Integration Server, Event Server and System Task Server are enabled. If this error repeatedly occurs (even after the server is up and running successfully), you must enable the HTTP Tunneling option through the WebLogic Remote Console. To enable HTTP Tunneling perform the following:

1. Login to the WebLogic Remote console.
2. In the **Edit Tree**, select **Environment**, then **Servers**, then **AdminServer**.
3. On the **Protocols** tab, select the **Http** subtab and update the settings for HTTP as necessary.
4. Turn on the **Enable Tunneling** option and then enter values in the **Tunneling Client Ping** and **Tunneling Client Timeout** fields.

Once the tunneling option is set, you can ignore the single issuance of the error message.

Generation Problem or Error for the Nameservice.ior File

During the installation of MSS, you may have an issue on the creation of the **NameService.ior** file and no error messages existing in the log files. To resolve this issue, you need to ensure that the following permissions are on the directories and files within the MSS home directory structure.

Another error can occur when starting the server with any one of the CORBA servers enabled, and the server can throw the following error in the **mss.log** file:

```
Tried and failed to open file: MSLV_HOME/mslvdomain/appserver/ior/NameService.ior  
SEVERE Exception while converting string to objectorg.omg.CORBA.BAD_PARAM:  
Invalid or unreadable URL/IOR: file:///MSLV_HOME/mslvdomain/appserver/ior/NameService.ior  
vmcid: 0x0 minor code: 0 completed: No
```

[Table 12-1](#) lists the directories and permissions that you need to address where *MSLV_Home* is the directory for the MSS home directory and *MSS_Server_Name* is the appropriate MSS server name.

Table 12-1 Required Directory and File Permissions

Directory/File	Owner Permissions	Group and Other Permissions
<i>MSLV_Home/MSS_Server_Name/appserver</i>	Read, Write, Execute	Read, Execute
<i>MSLV_Home/MSS_Server_Name/appserver/ior</i>	Read, Write, Execute	Read, Execute
<i>MSLV_Home/MSS_Server_Name/jacORB</i>	Read, Write, Execute	Read, Execute
<i>MSLV_Home/MSS_Server_Name/jacORB/startMSLVorb.sh</i>	Read, Write, Execute	Read, Execute
<i>MSLV_Home/MSS_Server_Name/jacORB/bin</i>	Read, Write, Execute (You also need to set these permissions for all the sub-directories and files.)	Read, Execute

These problems can occur because of the existing permissions on the files and directories in the environment. Once you set the permissions correctly, restart your server, the IOR file should exist in the *MSLV_Home/MSS_Server_Name/appserver/ior* directory, and no open file error should exist in the **mss.log** file.

Web Service Deployment Warning Message

You can ignore the following warning message that appears in the **mss.log** file during Web Service deployment:

```
<Warning> <com.sun.xml.ws.wsdl.PayloadQNameBasedOperationFinder> <BEA-000000> <Non  
unique body parts! In a port, as per BP 1.1 R2710 operations must have unique operation  
signature on the wire for successful dispatch. Methods [getServiceLocationRequest,  
getEntityByKeyRequest] have the same request body block {http://  
www.openuri.org/}getEntityByKeyRequest. Method dispatching may fail, runtime will try to  
dispatch using SOAPAction. Another option is to enable AddressingFeature to enabled  
runtime to uniquely identify WSDL operation using wsa:Action header.>
```

This warning message is related to `getServiceLocationRequest` and `getEntityByKeyRequest` APIs, because both the APIs use the same request structure. This warning message appears as you may be using these two APIs in your integrations in the earlier versions of MSS, such as 6.2.1 and these two APIs are also available in MSS, for customers migrating to the MSS 8.0 release.

Access Problem for the WebLogic Console and MSS Application Using IPv6 Address

After you create the domain and install the MSS application using IPv6 address, you may encounter the following issues:

- You are unable to access the WebLogic Server Remote Console and the following error message appears:

The proxy could not connect to the destination in time. Please verify the site you are attempting to access and retry.
- You are unable to log in to the MSS application and the following error message appears:

The user ID you entered is not valid. Please use a valid User ID or ask your manager for assistance.

To resolve both the issues, do the following:

1. Click the **Start** menu, and then click **Settings** (gear icon).
2. Enter **Internet Options** in the search bar.
3. Click **Internet Options** from the search results to open the **Internet Properties** window.
The Internet Options window appears
4. Click the **Connections** tab, and then click **LAN Settings**.
The Local Area Network (LAN) Settings window appears.
5. Under the Automatic configuration section and the Proxy server section, deselect all the check boxes.
6. Click **OK**, which returns you to the Internet Options window.
7. Click **OK**.

The Runtime Information Page is Not Displayed

The Runtime Information Page is not displayed and the following error message appears:

```
Error 500--Internal Server Error
From RFC 2068 HyperText Transfer Protocol -- HTTP/1.1:
10.5.1 500 Internal Server Error
The server encountered an unexpected condition which prevented it from fulfilling the
request.
```

And the MSS error log reflects the following:

```
javax.servlet.jsp.JspException: No collection found
at org.apache.struts.taglib.logic.IterateTag.doStartTag(IterateTag.java:281)
at jsp_servlet.__runtimeinfo._jspService(__runtimeinfo.java:594)
at
weblogic.servlet.internal.StubSecurityHelper$ServletServiceAction.run(StubSecurityHelper.
java:280)
at
weblogic.servlet.internal.StubSecurityHelper$ServletServiceAction.run(StubSecurityHelper.
java:254)
Truncated. see log file for complete stacktrace
```

To resolve this issue, you must enable HTTP tunneling in the WebLogic Remote Console.

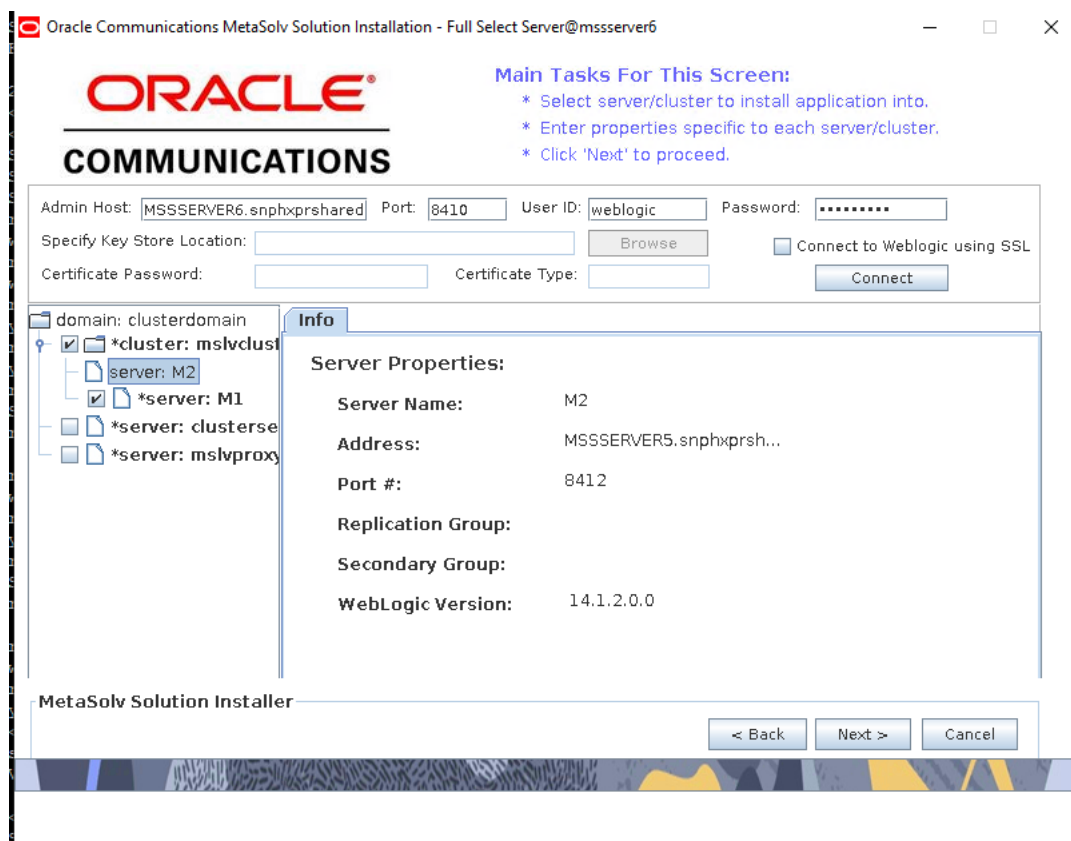
Enabling HTTP Tunneling

To enable HTTP tunneling:

1. Log in to the WebLogic Server Remote Console.
2. In the **Edit Tree**, select **Environment**, then **Servers**, then a server (for example, mslvserver).
3. On the **Protocols** tab, go to the **Http** subtab and update the settings for HTTP as necessary.
4. Turn on the **Enable Tunneling** option and then enter values in the **Tunneling Client Ping** and **Tunneling Client Timeout** fields.
5. Click **Save**.
6. In **Shopping Cart**, click **Commit Changes**, which activates these changes.

Check Box To Select the Server Name is Not Displayed in the MSS Installer

If you try to connect to the WebLogic Server by specifying an IPv6 address in the **Admin Host** field of the MSS installer, the check box to select the server name is not displayed under the domain tree.

Figure 12-1 Check Box to Select the Server Name

To resolve this issue, ensure that the IPv6 address of the Admin Host is added in the **hosts** file of the Operating System, as follows:

```
2606:b400:2010:484b:f13b:4672:38b7:5af9 slc04wro.example.com slc04wrolocalhost
```

On Windows, the **hosts** file is typically located at **C:\Windows\System32\drivers\etc**. On Unix and Solaris, the hosts file is located at **/etc/hosts**.

My Desktop Page is Not Displayed

If you install and deploy MSS on a single server using IPv6 address with SSL enabled, the My Desktop page is not displayed in the MSS application.

To resolve this issue, you must enable HTTP tunneling in the WebLogic Remote Console. See ["Enabling HTTP Tunneling"](#) for more information.

Number Format Exception When Starting the Proxy Server

When starting the proxy server, you may receive the following number format exception:

```
java.lang.NumberFormatException: For input string: "b400:2010:484b:f13b:4672:38b7:5af9"
at java.lang.NumberFormatException.forInputString(NumberFormatException.java:65)
at java.lang.Integer.parseInt(Integer.java:580)
at java.lang.Integer.parseInt(Integer.java:615)
at weblogic.servlet.proxy.HttpClusterServlet$Server.parsePorts
(HttpClusterServlet.java:2042)
```

```

at weblogic.servlet.proxy.HttpClusterServlet$Server.<init>
(HttpClusterServlet.java:1898)
at weblogic.servlet.proxy.HttpClusterServlet$ServerList.<init>
(HttpClusterServlet.java:2078)
at weblogic.servlet.proxy.HttpClusterServlet.init
(HttpClusterServlet.java:141)

```

To resolve this issue, ensure that you specify the IPv6 addresses within [] (brackets) in the WebLogicCluster init parameter of the HttpClusterServlet in the **web.xml** of the proxy server.

For example:

```

<init-param>
  <param-name>WebLogicCluster</param-name>
  <param-value> [IPv6_address1]:port1|[IPv6_address2]:port2</param-value>
</init-param>

```

Unable to Log In to the MSS Application

When logging in to the MSS application, you may receive the following error:

Unable to communicate with application server selected.

To resolve this issue, do the following:

- If you are connecting to an IPv6 proxy server for accessing MSS client application, ensure that you specify the proxy server's IPv6 address in the client machine's **etc/hosts** file, as follows:

```
IPv6address          ipv6machine@example.com      ipv6machine
```

- Install the self-signed certificate on the client machine. See "[Installing the Self-Signed Certificate on the Client Machine](#)" for more information.

Updates to the web.xml File of the Proxy Server are Not Reflected

Your updates are not reflected in the **web.xml** file of the proxy server.

To resolve this issue, do the following before starting the proxy server for the first time:

- Make your changes in the **web.xml** file
- Specify the IPv6 addresses within [] (brackets) in the WebLogicCluster init parameter of the HttpClusterServlet in the **web.xml** file
- Add the SecureProxy init parameter to the HttpClusterServlet in the **web.xml** file for a cluster that has SSL enabled

If you have already started the proxy server and still unable to see your changes in the **web.xml** file, redeploy the Oracle Cluster Proxy web application using the WebLogic Server Remote Console.

Managed Server Startup Warning When Servers on Different Machines

When the admin server and the managed server are on different machines, a warning can occur during a cluster installation. You can encounter the following warning when trying to start the managed server:

```

####<Warning> <DeploymentService> <BEA-290074> <Deployment service servlet
received file download request for file>

```

To resolve this issue, you add the following java option:

```
-Dweblogic.data.canTransferAnyFile=true
```

to the **startWeblogic.sh** file on the managed server.

DLL Error when Connecting to the Database

A DLL error can occur if an incorrect version of the Oracle Database Client was installed and you run any of the following applications:

- Location and Routing Gateway
- NPA Split Utility
- Data Selection
- Pre-Migration Analysis Tool
- MetaSolv Solution Utilities

The DLL error is the following:

```
Cannot make a connection to the database.  
Oracle library OCI.DLL or ORAC803.DLL could not be loaded.
```

This error can occur if the 64-bit version of the Oracle Database Client was installed instead of the 32-bit version.

Window Response Delay from MSS in SSL Environment After No Activity

When running MSS in an SSL environment, it is possible to experience a response delay when moving outside the application and then returning back to MSS. If you leave the MSS application for a few minutes (with no activity), and then later attempt to move to a new MSS window, then there can be a delay of few seconds before it responds. Also, the window header title can include "Not Responding" for few seconds.

This issue occurs due to the idle connection time-out set in the Oracle WebLogic console. To resolve this issue, log in to the WebLogic console, and under Server->Protocol->General, set the option for the idle connection time-out to a higher number. The default is 60 seconds, and after 60 seconds of no activity, it drops the connection to the client. Increase the idle connection time-out value to the appropriate value for your requirements.

CORBA Error During Integration Between MSS and Network Integrity

During the integration between MSS and Network Integrity, when a connection is made to the MSS application from Network Integrity through the CORBA server, Network Integrity returns the following error message:

```
Can't establish Corba connection with MSS  
IDL:org/CosNaming/NamingContext/NotFound1.0.
```

To resolve this issue, do the following:

1. Navigate to the *MSLV_Home/appserver/gateway* directory and edit the **gateway.ini** file.
2. Uncomment the INFRASTRUCTURESERVER entry in the [Servers] section.

Validation XML Not Found Message During Server Startup on mss.log

When you start the admin server with MSS deployed, the mss.log contains the following error message:

```
<Error> <Weblogic-Validation> <BEA-2156403> <Unable to process URL, file: MSLV_HOME/
mslvdomain/servers/<server_name>/tmp/_WL_user/nur/f4k4dv/war/WEB-INF/validation.xml,
because java.io.FileNotFoundException: MSLV_HOME/mslvdomain/validator_1_4_0.dtd (The
system cannot find the file specified).>
```

This issue is because the deployment is not able to find the validation XML available in the WAR file. To resolve this issue, you can copy the validation XML from nur.ear\main.war\WEB-INF directory to MSLV_HOME/mslvdomain directory.

Error Received in Custom Extensions

When upgrading from MSS 6.3.1 to MSS 8.0, you might encounter an issue with the custom extensions that were working in 6.3.1, resulting in the following error:

```
"com.metasolv.exception.PluginException:
ExtensionFactory.makeExtension("com.metasolv.custom.vendor.extension.SampleAdd
ressValidation.SampleAddressValidation", "VKR", "en", "TMZONEID=5", "null")
Sourced file: eval stream: Method Invocation ExtensionFactory.makeExtension"
```

To address this, you must recompile the custom extensions using JDK21.

BadPaddingException Received During Upgrade

When upgrading from version 6.3.1.587 or earlier to MSS version 8.0, the **appeserver.log** displays the error `javax.crypto.BadPaddingException`

To resolve this exception, update the passwords in the **Gateway.ini** file. For more information, see KM Doc ID 2979698.1 in My Oracle Support.

Configuring Oracle Spatial and Graph Map Visualization Component

This chapter describes how to configure Oracle Spatial and Graph Map Visualization Component for use with Oracle Communications MetaSolv Solution. The Map Visualization Component, which is included with your existing Oracle Database License for MetaSolv Solution, enables you to plot your network systems and inventoried equipment on a geographical map available within the application.

Configuring Map Visualization Component

To configure Oracle Spatial and Graph Map Visualization Component for MSS, perform the following tasks:

1. [Deploying Map Visualization Component](#)
2. [Updating the Database for Maps Visualization Component](#)
3. [Defining the Map Data Source](#)
4. [Defining Base Maps](#)
5. [Setting the Web Browser to Microsoft Edge](#)
6. [Setting Map View Preferences](#)

The Oracle Spatial and Graph Map Visualization Component Developer's Guide contains detailed Map Visualization Component documentation. The following is a link to the library page, where the document is located:

<https://docs.oracle.com/en/database/oracle/oracle-database/19/jimpv/index.html>

Deploying Map Visualization Component

To deploy Map Visualization Component:

1. Download Oracle Spatial and Graph Map Visualization Component from the database technologies downloads website:

<https://www.oracle.com/database/technologies/spatial-map-vis-downloads/>

Note

Oracle recommends that you install patch 38056686 or higher for Map Visualization Component. You can download the patch from My Oracle Support website: <https://support.oracle.com>.

2. Copy the **mapviewer.ear** file to the *MSLV_Home/deploy* directory.
For single server, copy the file to **/opt/m80Single/single/deploy**.
For Cluster server, copy the file to **/opt/m80Cluster/Cluster/deploy**.

3. Create a new directory in *MSLV_Home/MetaSolv/server_name/appserver/maps_directory* to copy the configuration files from map viewer, where
 - *MSLV_Home* is the directory location where MSS software is installed.
 - *server_name* is the MSS server home directory.
 - *maps_directory* is the directory that you create to copy the **WEB-INF/conf** files from the **mapviewer.ear** file.

Note

The default directory for mapviewer configuration files is *MSLV_Home/mslvdomain/Servers/server_name/tmp* directory.

For cluster server with managed servers installed in different machines, you must ensure that the contents of the configurations files are always the same between the managed servers. If you make any changes to the contents of the configuration files in one managed server, ensure that you make the same changes to the contents of the configuration files in all the managed servers.

4. Copy the contents of the **mapviewer.ear/web.war/WEB-INF/conf** directory to the newly created directory *maps_directory*.
5. Update the application server start up files **startMSLVmanaged.sh** or **startMSLVsingle.sh** (for UNIX/Linux) **startMSLVmanaged.cmd** or **startMSLVsingle.cmd** (for Windows) to include the following Java options:

For UNIX/Linux:

```
JAVA_OPTIONS="${JAVA_OPTIONS}
-Doracle.maps.config=${MSLV_Home}/MetaSolv/${server_name}/appserver/
maps_directory/mapViewerConfig.xml"
```

For Windows:

```
Set JAVA_OPTIONS=%JAVA_OPTIONS%
-Doracle.maps.config=%MSLV_Home%\MetaSolv\%server_name%
\appserver\maps_directory\mapViewerConfig.xml
```

6. Log in to the WebLogic Remote Console to deploy the mapviewer.
7. In the **Edit Tree**, then click **Deployments** and then click **App Deployments**.
8. Click **New**.

The **Create a new Application Deployment** page opens.

9. Enter a name for the application.
10. In **Targets**, select the servers and clusters to which you want to deploy the application. In the **Available** section, select the *cluster*. For example, select **mslvcluster**. Select **All servers in the cluster**.

11. Enable the **Upload** option.

Then, beside **Source**, click **Choose File** to browse to the **mapviewer.ear** location on your system. For example, *MSLV_Home/deploy*.

12. Select **Start Application** for **On Deployment**.
13. Click **Create**.

14. In **Shopping Cart**, select **Commit Changes**.
Ensure that the **mapviewer** application is in the **Active** state.
15. Restart the application server.

Updating the Database for Maps Visualization Component

You must update the database for maps visualization component by running the **MapsInstall.sql** located in **prodfixsql/maps** directory.

To update the database:

1. Change your **Start in:** directory to the location where you want the audit logs to appear and connect (from that location) to SQL*Plus using the ASAP user ID.

2. At the prompt, enter:

```
@driveletter:installation_directory/prodfixsql/maps/MapsInstall.sql
```

The SQL scripts run against the database and make the appropriate changes for the Maps Visualization Component. When the prompt reappears, the contents of the **maps** directory where the SQL files were stored have been applied.

3. Verify that the contents of the **maps** directory have been applied to your database correctly, review the log file for each **maps** file that was applied. The log files reside in the **Start in:** directory. Search the files in the directory for **ORA-**. Contact Oracle Global Customer Support if any of the files are not run or failed.

Defining the Map Data Source

You can predefine available map data sources in the Map Visualization Component Configuration page.

To define the map data source:

1. Log in to Map Visualization Component Remote Console by entering the following URL in a Web browser:

```
http://ServerName:PortNumber/mapviewer
```

where *ServerName* is the application server and *PortNumber* is the port used by MSS.

The **Log In** page is displayed.

2. Enter the user name and password that you used for installing the WebLogic Server and then click **Log In**.

The Map Visualization Component Home page is displayed.

3. Click the **Configuration** tab.

The **mapViewerConfig.xml** file is displayed.

4. Scroll down to the **Predefined Data Sources** section within the file.

5. Copy the contents starting from the **map_data_source** element to the end and paste the copied information after the existing predefined data source information within the **Predefined Data Sources** section.

6. (Optional) If you are using any user other than ASAP, do the following:

- a. Locate the **grants.sql** in the **prodfixsql** directory.

- b. Modify the **grants.sql** and replace *user_id* with the user ID other than ASAP user to connect to the data source.
 - c. Run the updated **grants.sql** using sysdba privileges.
 - d. Run the **load_user_sdo_tables.sql** in the **prodfixsql** directory using the user ID that you replaced in **grants.sql**.
7. Enter the details according to your settings to map the Map Visualization Component data source to the data source that MSS appserver is pointing to. For example:

```
<!-- ***** -->
<!-- *****Predefined Data Sources***** -->
<!-- ***** -->
<map_data_source name="MSSDATA"
    jdbc_host="db.example.com"
    jdbc_sid="orcl"
    jdbc_port="1521"
    jdbc_user="user"
    jdbc_password=""
    jdbc_mode="thin"
    number_of_mappers="3"
    allow_jdbc_theme_based_foi="false"
    editable="false"/>
```

8. Find **<mds_config>** element under **Map Data Server Configs** section and add the following datasource within the **<mds_config>** element:

```
<!-- ***** -->
<!-- ***** Map Data Server configs ***** -->
<!-- ***** -->
<data_source name="MSSDATA">
    <allow_predefined_themes>true</allow_predefined_themes>
    <allow_dynamic_themes>true</allow_dynamic_themes>
</data_source>
```

9. Click **Save & Restart**.

The **File mapViewConfig.xml has been saved** and **MapView has been restarted** messages are displayed above the Config area. The encrypted jdbc_password is displayed.

10. Select the **Admin** tab.

The **MSSDATA** data source that is configured in step 6 should appear in the existing **Data Sources** table.

11. Select **Datasources** and verify if the corresponding value (for example, MSSDATA) is displayed in the *Existing data sources* table.

Note

If you encounter issues logging in to the Map Viewer console or notice that the configuration tab is missing, you must manually configure the data source by locating the **mapViewerConfig.xml** file. After making the necessary changes, you must restart the servers.

Defining Base Maps

You can use an existing world map as the base map.

To define base maps:

1. In the Map Visualization Component Administration Console, click the **Admin** tab.
2. Click **Create tile layer** link.
3. From **Tile layer type**, select **Oracle Maps** and click **Next**.
The Tile Layer Properties page appears.
4. Under the **External tile layer** section, enter the **Name** as **ELOCATION_MAP**.
5. From **Data source**, select **MSSDATA** and click **Next**.
The Tile Layer XML page appears.
6. Click **Submit**.
The system saves the configuration changes.
7. Verify that the map is set up with the changes from the **Existing map tile layers** section in the **Manage tile layers** page.

The map tile layer is the link between MSS and Map Visualization Component.

There is no limit to the number of map tile layers that you can set up.

Setting the Web Browser to Microsoft Edge

MSS uses Oracle Maps APIs to display and use map operations such as the initial center, zoom levels, and map controls. Oracle Maps applications require HTML5 support. To emulate the web browser to Microsoft Edge which supports HTML5, edit the Windows Registry settings for MSS.

To set up the web browser to Microsoft Edge:

1. Open the Windows **Registry Editor**.
2. Navigate to
HKEY_CURRENT_USER\SOFTWARE\Microsoft\Internet Explorer\Main\FeatureControl\FEATURE_BROWSER_EMULATION
3. Create a new **DWORD(32-bit)** value entry. Enter the value as **mss.exe** and **Value Data** as **2ee0** with **base** Hexadecimal.
The entered value is saved for **mss.exe**
4. Navigate to
HKEY_CURRENT_USER\SOFTWARE\Microsoft\Internet Explorer\BrowserEmulation
5. Edit the **IntranetCompatibilityMode** DWORD and modify the **Value Data** to 1.

Note

Modify **IntranetCompatibilityMode** DWORD to 1 only if it is already displayed and the value data is 0. Do not add a new DWORD value entry.

6. Close the Windows **Registry Editor**.

Setting Map View Preferences

To set up map view preferences in MSS:

1. Log in to MSS Application.

2. Navigate to **Preferences** and expand **System Information** folder.
3. Double-click the system preference named **Engineering Maps View**.
4. In the **System Preference - Engineering Maps View** window, enter the environment details specified in [Table 13-1](#).

Table 13-1 Engineering Maps View Preferences

Preference	Description	Example value
Base Map	Name of the Base Map that you set up in Map Viewer	ELOCATION_MAP
Application Datasource	The datasource name that you created in Map Visualization Component Map tile layer	MSSDATA
Base Map URL	The URL of the map visualization component	<code>http://ServerName:PortNumber/mapviewer</code> where <i>ServerName</i> is the application server and <i>PortNumber</i> is the port used by MSS.
Zoom Level	The zoom level for the map view	1
Map Center Latitude	Latitude value. The map view is centered with the latitude and longitude value entered based on the zoom level.	37.6402
Map Center Longitude	Longitude value. The map view is centered with the latitude and longitude value entered based on the zoom level	-97.2104

Uninstalling Map Visualization Component

To uninstall Map Visualization Component:

1. Log in to the WebLogic Server Remote Console.
2. From the **Monitoring Tree**, click **Deployments**, and then click **Application Management**.
3. From the Summary of Deployments pane, click the check box for **mapviewer**.
4. Click **Stop** and select **Force Stop Now**.
5. Click **Delete**.
6. Click **Yes**.
7. In **Shopping Cart**, click **Commit Changes**.

Note

When you upgrade MSS, you need not uninstall or upgrade Map Visualization Component.

Upgrading Map Visualization Component

To upgrade Map Visualization Component:

1. Uninstall Map Visualization Component using the WebLogic Remote Console. See "[Uninstalling Map Visualization Component](#)" for information about uninstalling the Map Visualization Component application.
2. Deploy Map Visualization Component by performing the following procedures:
 - a. [Deploying Map Visualization Component](#)
 - b. [Defining the Map Data Source](#)
 - c. [Defining Base Maps](#)

A

Proxy Server Setup

In a clustered environment, you typically have multiple servers running on different machines. To transparently connect to one of the servers, a central routing server is required to direct the client to one of the clustered servers. The routing server can be a hardware-based (load balancer) or software-based (proxy server) solution. This appendix describes how to configure and set up the optional Oracle-provided proxy server.

Proxy Server Files

The following files (**web.xml** and **weblogic.xml**) are necessary for the proxy server setup. Refer to "[Setting up the Proxy Server](#)" for the steps required to create the files.

- **web.xml**

```
<!DOCTYPE web-app PUBLIC "-//Sun Microsystems, Inc.//DTD Web Application 2.3//EN"
"http://java.sun.com/dtd/web-app_2_3.dtd">
<web-app>
<servlet>
  <servlet-name>HttpClusterServlet</servlet-name>
  <servlet-class>
    weblogic.servlet.proxy.HttpClusterServlet
  </servlet-class>
<init-param>
  <param-name>WebLogicCluster</param-name>
  <param-value>
    srvrchosa1:6001|srvrchosa2:6001
  </param-value>
</init-param>
<!--The following two init-parameter tags are required if the proxy server is set up
using SSL in a clustered environment.-->
<init-param>
  <param-name>SecureProxy</param-name>
  <param-value>ON</param-value>
</init-param>
<init-param>
  <param-name>DebugConfigInfo</param-name>
  <param-value>ON</param-value>
</init-param>
</servlet>
<servlet-mapping>
  <servlet-name>HttpClusterServlet</servlet-name>
  <url-pattern>/</url-pattern>
</servlet-mapping>
<servlet-mapping>
  <servlet-name>HttpClusterServlet</servlet-name>
  <url-pattern>*.jsp</url-pattern>
</servlet-mapping>
<servlet-mapping>
  <servlet-name>HttpClusterServlet</servlet-name>
  <url-pattern>*.htm</url-pattern>
</servlet-mapping>
<servlet-mapping>
  <servlet-name>HttpClusterServlet</servlet-name>
```

```
<url-pattern>*.html</url-pattern>
</servlet-mapping>
</web-app>
```

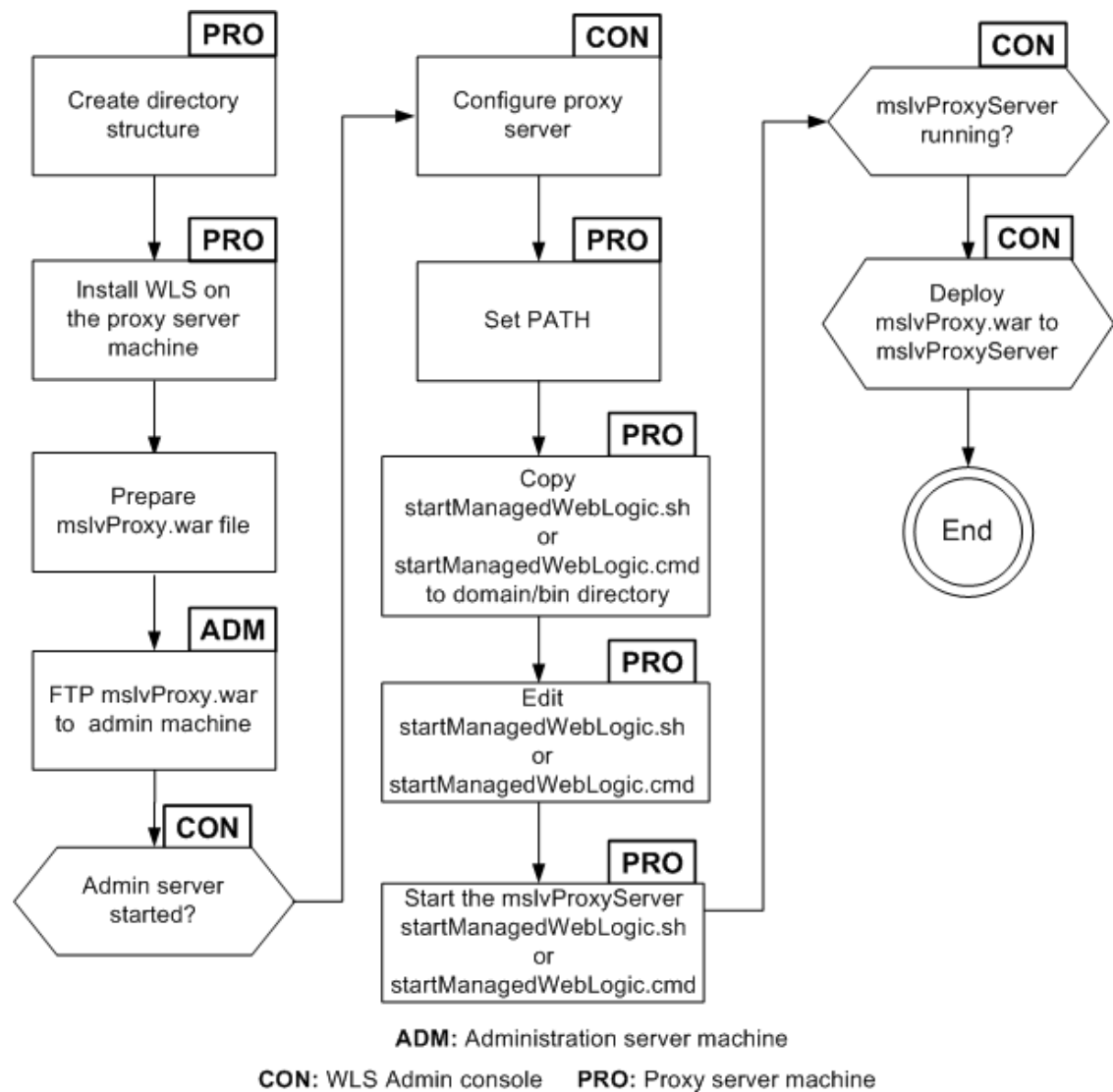
- **weblogic.xml**

```
<!DOCTYPE weblogic-web-app PUBLIC "-//BEA Systems, Inc.//DTD Web Application 8.1//EN"
"http://www.bea.com/servers/wls810/dtd/weblogic810-web-jar.dtd">
<weblogic-web-app>
  <context-root>/</context-root>
</weblogic-web-app>
```

Setting up the Proxy Server

[Figure A-1](#) shows the procedure for setting up the proxy server.

Figure A-1 Setting Up a Proxy Server



To set up a proxy server:

1. Create the directory structure.
For example: **/opt/g80/mslvcluster/mslvdomain**.
2. Install Oracle WebLogic Server on the proxy server machine.
3. Prepare the **mslvProxy.war** file
 - a. Create a **WEB-INF** directory under the proxy directory.
 - b. On the proxy server machine, create a file named **web.xml** and copy the contents as shown previously, in "[Proxy Server Files](#)".
 - c. Copy the file into the **WEB-INF** directory.
 - For Windows, enter the following command:

```
notepad web.xml
```
 - For UNIX/Linux, enter the following command:

```
touch web.xml
```
 - d. On the proxy server machine, create a file named **weblogic.xml** and copy the contents as shown previously, in "[Proxy Server Files](#)".
 - e. Copy the file into the **WEB-INF** directory.
 - For Windows, enter the following command:

```
notepad weblogic.xml
```
 - For Linux, enter the following command:

```
touch weblogic.xml
```
 - f. In the **web.xml** file, add all managed server host machine names and ports in the manner shown in the bold text in [Figure A-2](#).

Figure A-2 web.xml File



- g. Go to the parent of the **WEB-INF** directory and type the following command and press ENTER:

```
jar cvf mslvProxy.war WEB-INF
```

4. FTP the **proxy.war** file to the administration server.
5. Start the administration server if it is not running.
6. Create a WebLogic machine for the proxy server by completing the following tasks:
 - a. Log in to the WebLogic Server Remote Console.
 - b. In the **Edit Tree**, expand **Environment** and then select **Machines**.
 - c. In the Summary of Machines pane, click **New**.
 - d. In the **Create a New Machine** pane, enter the name of the machine that will host the proxy server in the **Name** field, select the **Machine OS** type, and click **Ok**.
 - e. In **Shopping Cart**, click **Commit Changes**.
7. To configure the proxy server, in the Remote Console, select **Environment**, select **Servers**, and then select **New** in the right pane.
The **Create a New Server** pane appears.
8. In the **Create a New Server** pane, enter the following information into the appropriate fields for the proxy server: **Name**, **Machine**, **Listen Address**, and **Listen Port** and click **Create**.

Worksheet references and example values:

Field Name	Worksheet Reference Number	Example Value
Name	Proxy-0610	mslvProxyServer
Machine	Proxy-0620	srvplscal1
Listen Address	Proxy-0620	srvplscal1
Listen Port	Proxy-0630	6001

9. Copy the **startManagedWeblogic** file to the **domain/bin** directory. (This script will be used to start the proxy server.)
10. Edit the **startManagedWebLogic** file, including new values for the parameters in the following list.

Example values from the proxy worksheet are included in the list.

```
ADMIN_URL=http://host_admin:7001
SERVER_NAME=mslvProxyServer
WLS_USER=weblogic
WLS_PW=
JAVA_VM=-server
MEM_ARGS=-Xms512m -Xmx512m -XX:NewRatio=4
```

11. Start the proxy server by running the following command:

```
startManagedWeblogic.sh
```

12. From the WebLogic Remote Console, in the **Edit Tree**, expand **Environment** and then select **Servers** to see the updated list of servers and to view the state of the proxy server.
13. Configure the server and deploy the **proxy.war** file by completing the following tasks
 - a. In the **Edit Tree**, then click **Deployments** and then click **App Deployments**.
 - b. Click **New**.
The **Create a new Application Deployment** page opens.
 - c. Enter a name for the application.
 - d. In **Targets**, select the servers and clusters to which you want to deploy the application.
In the **Available** section, select the *cluster*. For example, select **mslvcluster**. Select **All servers in the cluster**.
 - e. Enable the **Upload** option.
Then, beside **Source**, click **Choose File** to browse to the **deploy** directory and select **mslvProxy.war**. For example, *MSLV_Home/deploy*.
 - f. Select **Start Application** for **On Deployment**.
 - g. Click **Create**.
 - h. In **Shopping Cart**, select **Commit Changes**.
 - i. Ensure that the state of the **mslvProxy** application is **Active**.

B

Oracle Communications MetaSolv Solution Components

[Table B-1](#) shows which software components are included in the Oracle Communications MetaSolv Solution (MSS) core product, which are separate software options, and which are separate applications included with MSS.

Table B-1 MSS Components Included In This Release

Component	Core component, software option, or separate application	Where installed
Engineering	-	-
AutoDesign	Software option	Client
Diversity	Software option	Client
Equipment	Core	Client
Groom Tool	Core	Client
Network Design Canvas	Core	Client
Ownership of Inventory	Core	Client
Path Analysis	Core	Client
Plant Administration Module	Software option	Client
Provisioning Assistant	Core	Client
OSS Gateways and APIs	-	-
ASR API	Software option	Application server
End User Billing API	Software option	Application server
Internet Services API	Software option	Application server
Inventory and Capacity Management API	Software option	Application server
Plant API	Software option	Application server
PSR End User Order Entry API	Software option	Application server
Switch Provisioning Activation API	Software option	Application server
Transportation Provisioning Activation API	Software option	Application server
Trouble Management API	Software option	Application server
Work Management API	Software option	Application server
Service Requests	-	-
ASR	Software option	Application server
ASR and ISR using templates	Core	Client
Customer Management Module	Software option	Client
Engineering Work Order (EWO)	Software option	Client
Generate ASR (PSR to ASR mapping)	Software option	Client
Internal Service Request (ISR)	Software option	Client

Table B-1 (Cont.) MSS Components Included In This Release

Component	Core component, software option, or separate application	Where installed
Product Catalog Module	Software option	Client
Product Service Request (PSR)	Software option	Client
Service Request Worksheet Module	Software option	Client
USO	Software option	Client
Technology Modules	-	-
ATM/Frame Relay Technology Module	Software option	Client
Digital Loop Carrier Technology Module	Software option	Client
DSL Technology Module	Software option	Client
Ethernet Technology Module	Software option	Client
IP Technology Module	Software option	Client
MPLS Technology Module	Software option	Client
Optical/TDM Technology Module	Software option	Client
SONET Technology Module	Software option	Client
Wireless Technology Module	Software option	Client
Trouble Management	-	-
Notifications	Core	Client
Trouble Management Subsystem	Software option	Client
Utilities	-	-
Background Processor	Core Separate application	Separate machine
Location and Routing Gateway	Software option Separate application	Client
MetaSolv Solution Utilities	Core Separate applications	Client
NPA Split Utility	Software option	Client
Web Service	-	-
MSS WebService	Core	Application server
Work Management	-	-
Provisioning Plans	Core	Client
Rules and Behaviors for all areas	Core	Client
Work Queues	Core	Client

C

Planning Worksheets

This appendix contains worksheets to help you determine the values you need to complete an installation of Oracle Communications MetaSolv Solution (MSS).

Each worksheet contains columns for the following information:

- **R/O:** This field indicates whether a value for the item is required or optional.
- **Reference number:** This is a number used in the installation procedures in "[Installing and Deploying MetaSolv Solution on a Single Server](#)" or "[Installing and Deploying MetaSolv Solution on a Clustered Server](#)" to identify a value and show where the value is used. When the number is referred to in a procedure, you can look it up on a worksheet to see an example and a definition.
- **Item name:** This field indicates the item you must identify for your system, for example, a name for the administration server or an HTTP port for a managed server.
- **Example value in Windows/UNIX/Linux:** Examples are provided for all items on the worksheet.
- **Your value:** This is the installation value you must provide on the worksheet for an item.
- **Item description:** A description of the item you are being asked to provide an installation value for.

MSS Installation

This section lists the worksheets that help you determine the values you need to complete the installation of MSS.

Application Server Common Installation Worksheet

[Table C-1](#) shows the worksheet that applies to MSS installation. Complete the values and use the worksheet as you install required software and MSS 8.0.

Table C-1 Application Server Common Installation Worksheet

R/O	Reference number	Item name	Example value	Your value	Item description
R	COMM-0010	Application server domain name	mslvdomain		WebLogic domain name
R	COMM-0020	Application server user name	weblogic		WebLogic Server logon user name
R	COMM-0030	Application server password	WebLogic Server logon password		WebLogic Server logon password
R	COMM-0040	APP_MSLV passwd	APP_MSLV database password		APP_MSLV database password

Table C-1 (Cont.) Application Server Common Installation Worksheet

R/O	Reference number	Item name	Example value	Your value	Item description
R	COMM-0050	APP_API passwd	APP_API database password		APP_API database password
R	COMM-0055	APP_INT passwd	APP_INT database password		APP_INT database password
R	COMM-0090	MetaSolv Home	/opt/m80Single/single or /opt/m80Cluster/cluster		MetaSolv home directory
R	COMM-0100	MW_HOME	/opt/Oracle/Middleware/ Oracle_Home		WebLogic home directory
R	COMM-0110	WebLogic domain directory	/opt/m80Single/single/ or /opt/m80Cluster/cluster/		Directory that holds the files for the WebLogic domain.
R	COMM-0115	Application directory	/opt/m80Single/single/application or /opt/m6Cluster/cluster/application		Directory that holds the files for the Application server.
R	COMM-0120	PATH	WIN: %MW_HOME%\jdkVersion\bin;%PATH% UNIX/Linux: %PATH%:\$MW_HOME/ jdkVersion/bin:\$PATH		Directory where jre\bin is located. Must be part of the PATH environment variable.
R	COMM-0130	Oracle Database Server Name	DB_Server		The name of the server where the Oracle database resides.
R	COMM-0140	Oracle Database Port	1521		Port used to communicate with the Oracle database.
R	COMM-0150	Oracle Database Service Name	DB Service Name		Database SID
R	COMM-0160	Oracle Database Server Name1	DB RAC server		The name of the server where the Oracle RAC database resides.
R	COMM-0165	Oracle Database Port#1	1521		Port used to communicate with the Oracle RAC database.
R	COMM-0170	Oracle Instance Name1	drac1		The name of the Oracle RAC database instance.

Table C-1 (Cont.) Application Server Common Installation Worksheet

R/O	Reference number	Item name	Example value	Your value	Item description
R	COMM-0175	Oracle Database Server Name2	DB Server 2		The name of the server where the Oracle RAC database resides.
R	COMM-0180	Oracle Database Port#2	1521		Port used to communicate with the Oracle RAC database.
R	COMM-0185	Oracle Instance Name2	drac2		The name of the Oracle RAC database instance.

Single Server Installation Worksheet

[Table C-2](#) shows the worksheet for single server installation.

Table C-2 Single Server Installation Worksheet

R/O	Reference number	Item Name	Example value	Your value	Item description
R	Single-0150	Application server name	mslv01		Logical name for the WebLogic application server instance.
R	Single-0160	Application server DNS hostname	svrchosa1		Name of the host machine on which the WebLogic application server resides.
R	Single-0170	Application server HTTP port	7070		Application server HTTP port.
R	Single-0180	Application server HTTPS port	7071		Application server SSL port.
R	Single-0190	Application server log port	4501		Used for MSS application server logging purposes. This value must be unique across all MSS application servers running on the same host machine.
R	Single-0200	Application server CORBA port	2507		CORBA initialPort. This value must be unique across all MSS application servers running on the same host machine.

Table C-2 (Cont.) Single Server Installation Worksheet

R/O	Reference number	Item Name	Example value	Your value	Item description
R	Single-0205	Single server DEBUG_PORT	8453		Single server debug port. This value must be unique for each machine.
O	Single-0210	Proxy URL	http://srvrchosa1:7070 (default to http://Single-0160:Single-0170)		Proxy/Load balancer URL
R (Only if SSL is enabled)	Single-2015	JacORB security keystore	/opt1/stores/identity.jks		The full path of the JacORB security keystore.
R (Only if SSL is enabled)	Single-2020	JacORB security keystore password	Keystore password		The password for the JacORB security keystore.
R (Only if SSL is enabled)	Single-2025	JacORB security default username	mycert		The default user name for JacORB security.
R (Only if SSL is enabled)	Single-2030	JacORB security default password	default password		The default password for JacORB security.

Admin Server Installation Worksheet

[Table C-3](#) shows the worksheet for administration server installation.

Table C-3 Admin Server Installation Worksheet

R/O	Reference number	Item Name	Example value	Your value	Item description
R	Admin-0240	Admin server name	mslvadmin		Logical name for a WebLogic admin server instance.
R	Admin-0250	Admin server DNS hostname	srvrchscal		The name of the host machine on which the admin server resides.
R	Admin-0260	Admin server HTTP port	7001		Admin server HTTP port. It is unique for each machine.
R	Admin-0270	Admin server HTTPS port	7002		Admin server SSL port. It is unique for each machine.

Clustered Server General Installation Worksheet

[Table C-4](#) shows the worksheet for clustered server general installation.

Table C-4 Clustered Server General Installation Worksheet

R/O	Reference number	Item Name	Example value	Your value	Item description
R	Cluster-0410	Cluster Name	MSLVCluster		Logical name for the WebLogic cluster.
R	Cluster-0420	Cluster Address	Test/development environment: svrchosa1:6001 (HTTP port), svrchosa1:6002 (HTTPS port) svrchosa2:6001 (HTTP port), svrchosa2:6002 (HTTPS port) (2-node cluster) Production environment requires a DNS entry: m80cluster: 192.0.2.23 (svrchosa1), 192.0.2.24 (svrchosa2)		Comma separated list of single address host machine names or IP addresses and ports for each server in this cluster.
R	Cluster-0430	Multicast Address	2xx.3.3.5		Valid Range: 224.0.0.0 - 239.255.255.255 (Class D address)
R	Cluster-0440	Multicast Port	6060		Valid range: 1 - 65535
R	Cluster-0450	Front End Host	http://192.0.2.57:6001		For a cluster, you must provide this value for a proxy server or a load balancer URL. See LB-0100 and LB-0200.

Clustered Server Installation Worksheet

[Table C-5](#) shows the worksheet for clustered server installation.

Table C-5 Clustered Server Installation Worksheet

R/O	Reference number	Item Name	Example value	Your value	Item description
R	Cluster-0520	Managed server name	(1) mslv01 (2) mslv02		Logical name for the WebLogic managed server instance.
R	Cluster-0550	Cluster managed server listen address	(1) svrchosa1:10.1.236.23 (2) svrchosa2:10.1.236.24		The name of the host machine on which the WebLogic managed server resides.
R	Cluster-0570	Cluster managed server listen port	(1) 6001 (2) 6001 This must be the same port in a production environment.		Managed server HTTP port. It is unique for each machine.

Table C-5 (Cont.) Clustered Server Installation Worksheet

R/O	Reference number	Item Name	Example value	Your value	Item description
R	Cluster-0580	Cluster-managed server SSL listen port	(1) 6002 (2) 6002		Managed server SSL port. This value is unique for each machine.
R	Cluster-0590	Cluster-managed server log port	(1) 4551 (2) 4551		Used for MSS clustered server logging purposes. This value must be unique for each machine.
R	Cluster-0600	Cluster server CORBA port	(1) 4552 (2) 4552		CORBA initialPort. This value must be unique for each machine.
R	Cluster-0610	Cluster server DEBUG_PORT	(1) 8444 (2) 8444		Managed server debug port. This value must be unique for each machine.

WebLogic Proxy Server Installation Worksheet

[Table C-6](#) shows the worksheet for WebLogic proxy server installation.

Table C-6 WebLogic Proxy Server Installation Worksheet

R/O	Reference number	Item Name	Example value	Your value	Item description
O	Proxy-0610	Proxy managed server name	m80Proxy		Logical name for the WebLogic proxy server instance.
O	Proxy-0615	Machine name	srvProxyServer		The name of the host machine on which the WebLogic proxy managed server resides.
O	Proxy-0620	Proxy managed server listen address	srvProxyServer		The name of the host machine on which the WebLogic proxy managed server resides.
O	Proxy-0630	Proxy managed server listen port	7001		Proxy managed server HTTP port. This value is unique for each machine.
O	Proxy-0640	Proxy managed server SSL listen port	7002		Proxy managed server SSL port. This value is unique for each machine.

Hardware Load Balancer Installation Worksheet

[Table C-7](#) shows the worksheet for hardware load balancer installation.

Table C-7 Hardware Load Balancer Installation Worksheet

R/O	Reference number	Item Name	Example value	Your value	Item description
O	LB-0100	Front end host virtual IP address	192.0.2.57		The virtual IP address for a load balancer machine.
O	LB-0200	Front end HTTP port	6001		The HTTP port used by the load balancer machine.

D

Configuration Values

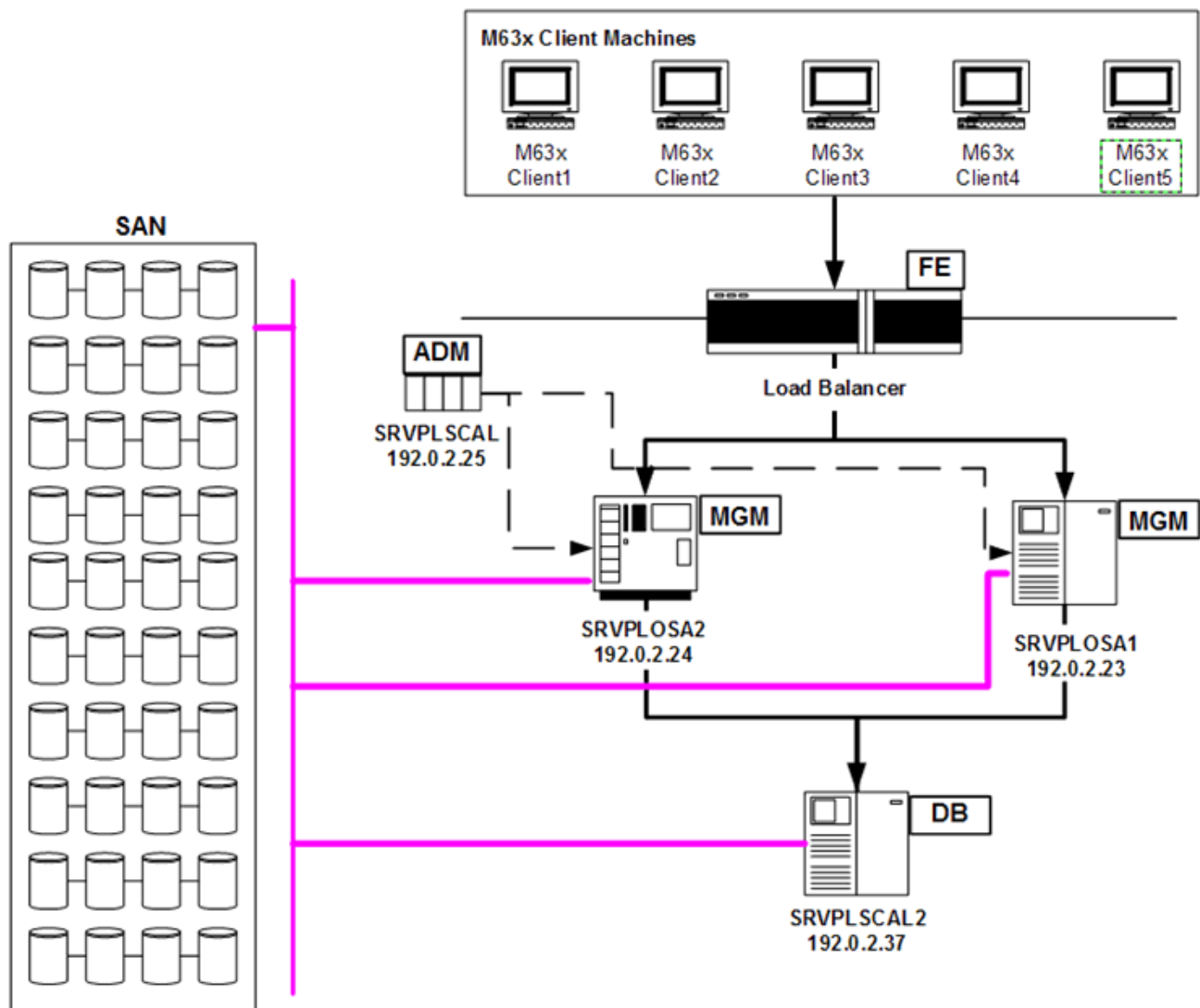
The installer sets certain configuration values for the domain automatically during the installation process. You can change these values through the WebLogic Server Remote Console, but the values are recommended by Oracle. The location in the console are enclosed in parentheses.

- Domain Logging (*Domain* > **Logging** tab)
 - Files to retain: 100
 - Rotation file Size: 65535
 - Rotation Type: By Size
 - Limit number of retained files: Selected
- Server Logging (**Environment** > **Servers** > *servername* > **Logging** tab > **General** tab)
 - Files to retain: 100
 - Rotation file Size: 65535
 - Rotation Type: By Size
 - Limit number of retained files: Selected

Load Balancer Configuration Example

[Figure E-1](#) shows a configuration that includes a load balancer for the M80 cluster used in the scenario in this document.

Figure E-1 Example of a Load Balancer Used With the MSS Cluster



Contact your network engineering team or other IT support to set up the load balancer. One requirement for the load balancer service is server affinity, also known as Sticky session.

See the Oracle WebLogic Server documentation for more information.

F

Tuning Servers For Performance

This appendix provides recommended configurations to tune your servers for performance.

Information on Tuning the Application Server

The configuration information given in this document is for a baseline setup. To achieve optimum performance for individual business needs, load and performance testing in a test environment that represents your true production environment is required. The test environment should mimic how you use your production system, including the transaction mix, number of users, hardware and software infrastructures, database, network usage, and all other relevant factors. Setting up a test environment will allow you to determine the settings that you should have for your production environment for:

- Connection pool sizing
- Java memory management

See the Oracle WebLogic Server documentation for more information about setting parameters for items such as execute queues, connection pools, and timeouts.

Connection Pool Settings

For the **MSLVPool**, set the Maximum Capacity = **Threads Maximum**

1. Log in to the WebLogic Server Remote Console.
2. In the **Edit Tree**, expand **Services**, and then click **Data Sources**.
The Summary of JDBC Data Sources page appears.
3. Select **mslvDataSource**.
The Settings for mslvDataSource page appears.
4. Select the **Connection Pool** tab.
5. Set the **Maximum Capacity** field to **100**.
6. Click **Save**.
7. In **Shopping Cart**, click **Commit Changes**.

JVM Memory Argument Settings

This section describes how to setup the JVM memory argument settings. The MSS startup scripts are located under the *MSLV_Home/domain* directory where *MSLV_Home* is the path of your MSS domain. The following lists the startup script files with the first script in the list used for single servers and the remaining scripts used for clustered servers:

For Windows Operating Systems

- **startMSLVSingle.cmd**
- **startMSLVManaged.cmd**

- **startAdminServer.cmd**
- **startProxyServer.cmd**

For UNIX/Linux Operating Systems

- **startMSLVSingle.sh**
- **startMSLVManaged.sh**
- **startAdminServer.sh**
- **startProxyServer.sh**

The following is an example of the settings which can be configured. (The parameters are separated onto separate lines for readability.)

```
set MEM_ARGS=  
-Xms8g  
-Xmx8g  
-XX:NewRatio=4  
-XX:SurvivorRatio=4  
-XX:TargetSurvivorRatio=80  
-XX:MaxMetaspaceSize=772m
```

You can configure the following parameters:

- **Xms:** This option sets the initial and minimum Java heap size. The Java heap is the memory portion where blocks of memory are allocated to objects and freed during garbage collection. The MSS default value for 64-bit operating systems is "1g" for Windows and "8g" for all other platforms.
- **Xmx:** This option sets the maximum Java heap size. The optimum value varies based on your operating system. The MSS default value for 64-bit operating systems is "4g" for Windows and "8g" for all other platforms.
- **NewRatio:** This option sets the ratio between young and tenure or old generation. This sets the young generation size in relation to the size of the old generation. The young generation contains the pool of objects that have survived garbage collection of the Eden space. The tenure generation contains the pool of objects that exist in the survivor space. The MSS default value is "4." With this setting, the old generation will be four times as large as the young generation.
- **SurvivorRatio:** This option specifies how large of a size the Eden space is relative to one of the two survivor spaces. This value sets the ratio of Eden size to one survivor space size. The MSS default value is "4".
- **TargetSurvivorRatio:** This option specifies the target percentage and the allowable fullness of the survivor space. The MSS default value is "80" or 80%. This setting allows more memory to be utilized and aids high throughput applications.
- **MaxMetaspaceSize:** This option allows you to limit the amount of native memory used for class metadata. Without a setting, the Metaspace will dynamically re-size depending of the application demand at runtime. With this Java version, class metadata is stored in the native heap and this space is called Metaspace. By default class metadata allocation is only limited by the amount of available native memory. The MSS default value is "772m".

There are no standard memory argument settings for the JVM. The MSS default values are suggestions and can be changed to optimally tune your JVM, given your current configuration (operation system and the number of CPUs for example). At a minimum, set the initial heap size (Xms) and maximum heap size (Xmx) to equal values. The startup time can be slightly longer, but for long-running applications it provides an overall better performance. Please review your operating system and set the best possible memory argument values for your configuration. See the Oracle WebLogic Server documentation for more information.

G

Configuration Files

This appendix provides additional information about the configuration files involved in the Oracle Communication MetaSolv Solution (MSS) installation process.

Note

After you make changes to any of the configuration files, ensure that you restart each server or clustered server. The changes that you make in the configuration files do not take effect until the server(s) are restarted.

mslvloggingconfig.xml File

Not all windows in the application allow you to limit the number of rows that are retrieved when performing a query. If you are not able to specify a limit and your query retrieves a large number of rows, the application server may display a `java.lang.OutOfMemory` error or a 500 server error. If this occurs, you must restart the application server. To eliminate this problem, you can edit the **jdbc-trace** query parameters of the **mslvloggingconfig.xml** file.

See *MetaSolv Solution System Administrator's Guide* for more information.

gateway.ini File

Compare the new **gateway.ini** file against your original **gateway.ini** file for the following sections:

- [Servers]: For API servers
- [ThreadProcs]: For event servers
- [System]: For URLNamingServicePort
- [CA]: For Custom attribute refresh interval

See *MetaSolv Solution System Administrator's Guide* for more information on the **gateway.ini** file.

H

Deployment Configuration Examples

This appendix contains examples of three deployment configurations:

- Small (100 users)
- Medium (300 to 400 users)
- Large (1000 users)

The hardware proposed for each deployment size is based on the equation for calculating capacity presented in "[Hardware Sizing Guidelines](#)".

The examples presented here are based on the number of concurrent users, which is only one criteria used to determine hardware sizing. The examples are general and are intended as a learning tool. Estimates on equipment and configuration settings cannot be exact because needs vary between MetaSolv Solution installations based on criteria such as the number of users, the volume of transactions, whether the application is being used on a WAN, and so on. To ensure that you have planned for the appropriate equipment and software, Oracle recommends that you contact its Professional Services Organization before you proceed with an installation.

When assessing your business situation to estimate hardware needs, you should consider a combination of factors such as API transactions and the type and number of transactions being processed, then adjust accordingly.

Small Deployment Example (100 users)

The following sections describe a small deployment example and include details on deployment size assumptions and hardware configuration.

Deployment Description

[Table H-1](#) shows the size assumptions made for this deployment example.

Table H-1 Size Assumptions for a Small Deployment

Size and Usage Requirement	Nonclustered Nonredundant Environment	Clustered Redundant Environment
Number of concurrent users	100	100
Number of orders per day	8,000	8,000
Circuit assignment	700	700
Number of trouble tickets	4,000	4,000
Reliability/availability	98%	99.5%

Hardware Configuration

[Table H-2](#) shows the hardware configurations for this deployment example.

Table H-2 Example Small Deployment Hardware Configuration

Computer	Nonclustered Nonredundant Environment	Clustered Redundant Environment
Client computer (one per user)	Windows-based computer (2.6+ GHz; 8 GB+ RAM)	Windows-based computer (2.6+ GHz; 8 GB+ RAM)
Administration server computer	N/A	You can use the WebLogic application server computer (below) to handle the administration server as well. No additional hardware is needed.
WebLogic application server computer	1 SPARC T8-1 - Dual cores of 1 x 5.0 GHz SPARC M8 processor 16 GB RAM, 2 X 600 GB Disk	2 SPARC T8-1 - Dual cores of 2 x 5.0 GHz SPARC M8 processor 16 GB RAM, 2 X 600 GB Disk
External load balancers	N/A	***2 load balancers Customer's choice Example: F5 BIG-IP LTM
Database server (Oracle) computer	1 SPARC T8-1 - Quad cores of 1 x 5.0 GHz SPARC M8 processor 16 GB RAM, 2 X 600 GB Disk	2 SPARC T8-1 (Active/Passive) - Quad cores of 2 x 5.0 GHz SPARC M8 processor 16 GB RAM, 2 X 600 GB Disk
Background Processor computer	1 Windows-based computer 2 CPUs @ 3.4+ GHz 8 GB RAM	2 Windows-based computers 2 CPUs @ 3.4+ GHz 8 GB RAM

*Clustering with non-redundancy does not apply here. Oracle recommends one Oracle application server per 2 CPUs.

**Only one Oracle Application Server will reside on each computer.

***Access Oracle requirements for hardware load balancer. See the following website:

https://docs.oracle.com/en/middleware/fusion-middleware/weblogic-server/14.1.2/clust/load_balancing.html

For a configuration example using BIG-IP LTM as hardware load balancer, see the following website:

<https://docs.oracle.com/en/middleware/fusion-middleware/weblogic-server/14.1.2/clust/bigip.html>

Medium Deployment Example (300 to 400 users)

The following sections describe a medium deployment example, and include details on size assumptions and hardware configuration.

Deployment Description

[Table H-3](#) shows the size assumptions for this deployment example.

Table H-3 Size Assumptions for a Medium Deployment

Size and Usage Requirement	Clustered Nonredundant Environment	Clustered Redundant Environment
Number of concurrent users	300-400	300-400
Number of orders per day	30,000	30,000
Circuit assignment	3,000	3,000
Number of trouble tickets	16,000	16,000
Reliability/availability	99.5%	99.9%

Hardware Configuration

[Hardware Configuration](#) shows the hardware configurations for this deployment example.

Table H-4 Example Medium Deployment Hardware Configuration

Computer	Clustered Nonredundant Environment	Clustered Redundant Environment
Client computer (one per user)	Windows-based computer (3.4+ GHz; 8 GB+ RAM)	Windows-based computer (3.4+ GHz; 8 GB+ RAM)
Administration server computer	N/A	You can use the WebLogic application server computer (below) to handle the administration server as well. No additional hardware is needed.
WebLogic application server computer	1 SPARC T8-1 - Quad cores of 1 x 5.0 GHz SPARC M8 processor 32 GB RAM, 2 X 250 GB Disk	2 SPARC T8-1 - Quad cores each of 2 x 5.0 GHz SPARC M8 processor 32 GB RAM, 2 X 250 GB Disk
External load balancers	*** 1 load balancer Customer's choice Example: F5 BIG-IP LTM	***2 load balancers Customer's choice Example: F5 BIG-IP LTM
Database server (Oracle) computer	1 SPARC T8-1 - Eight cores of 1 x 5.0 GHz SPARC M8 processor 32 GB RAM, 2 x 600 GB HDD/SSD	2 SPARC T8-1 - Eight cores each of 2 x 5.0 GHz SPARC M8 processor 32 GB RAM, 2 x 600 GB HDD/SSD
Background Processor computer	1 Windows-based computer 2 CPUs @ 3.4+ GHz 8 GB RAM	2 Windows-based computers 2 CPUs @ 3.4+ GHz 8 GB RAM

*For better performance and reliability, a clustered environment is recommended for medium-sized customers.

**The recommendation is for four Oracle application server processes to run on each computer.

***Access Oracle requirements for hardware load balancer. See the following website:

https://docs.oracle.com/en/middleware/fusion-middleware/weblogic-server/14.1.2/clust/load_balancing.html

For a configuration example using BIG-IP LTM as hardware load balancer, see the following website:

<https://docs.oracle.com/en/middleware/fusion-middleware/weblogic-server/14.1.2/clust/bigip.html>

Large Deployment Example (1,000 users)

The following sections describe a large deployment example, and include details on size assumptions and hardware configuration.

Deployment Description

[Table H-5](#) shows the size assumptions for this deployment example.

Table H-5 Size Assumptions for a Large Deployment

Size and Usage Requirement	Clustered Nonredundant Environment	Clustered Redundant Environment
Number of concurrent users	1,000	1,000
Number of orders per day	100,000	100,000
Circuit assignment	7,200	7,200
Number of trouble tickets	42,000	42,000
Reliability/availability	99.5%	99.9%

Hardware Recommendations

[Table H-6](#) shows the hardware configurations for this deployment example.

Table H-6 Example Large Deployment Hardware Configuration

Computer	Clustered Nonredundant Environment	Clustered Redundant Environment
Client computer (one per user)	Windows-based computer (3.4+ GHz; 512 MB+ RAM)	Windows-based computer (3.4+ GHz; 512 MB+ RAM)
Administration server computer	N/A	You can use the WebLogic application server computer (below) to handle the administration server as well. No additional hardware is needed.
WebLogic application server computer	1 SPARC T8-2 - Sixteen cores each of 2 x 5.0 GHz SPARC M8 processor 64 GB RAM, 2 x 350 GB HDD/SSD	2 SPARC T8-2 - Sixteen cores each of 4 x 5.0 GHz SPARC M8 processor 64 GB RAM, 2 x 350 GB HDD/SSD
External load balancers	***1 load balancer Customer's choice Example: F5 BIG-IP LTM	***2 load balancers Customer's choice Example: F5 BIG-IP LTM

Table H-6 (Cont.) Example Large Deployment Hardware Configuration

Computer	Clustered Nonredundant Environment	Clustered Redundant Environment
Database server (Oracle) computer	1 SPARC T8-2 • Sixteen cores each of 2 x 5.0 GHz SPARC M8 processor • 64 GB RAM, 2 x 600 GB HDD/SSD	2 SPARC T8-2 • Sixteen cores each of 4 x 5.0 GHz SPARC M8 processor • 64 GB RAM, 2 x 600 GB HDD/SSD
Background Processor computer	1 Windows-based computer • 2 CPUs @ 3.4+ GHz • 8 GB RAM	2 Windows-based computers • 2 CPUs @ 3.4+ GHz • 8 GB RAM

*For better performance and reliability, a clustered environment is recommended for large-sized customers.

**The recommendation is for eight Oracle application server processes to run on each computer.

***Access Oracle requirements for hardware load balancer. See the following website:

https://docs.oracle.com/en/middleware/fusion-middleware/weblogic-server/14.1.2/clust/load_balancing.html

For a configuration example using BIG-IP LTM as hardware load balancer, see the following website:

<https://docs.oracle.com/en/middleware/fusion-middleware/weblogic-server/14.1.2/clust/bigip.html>

Environment Planning Worksheet

This appendix contains worksheets to use in your environment planning.

Environment Profiles

Use [Table I-1](#) and [Table I-2](#) to write down your hardware and software specifications, for example disk size, type, processor speed, and operating system type/version.

Table I-1 Hardware/Software Specifications for the Current Environment

Environment and Purpose	AppServers	DB Servers	Background Processor	Citrix Server	Max Concurrent Users
Test					
Development					
Production					

Table I-2 Hardware/Software Specifications for the Anticipated MSS 8.0 Environment

Environment and Purpose	AppServers	DB Servers	Background Processor	Citrix Server	Max Concurrent Users
Test					
Development					
Production					

Functional Areas

Rank the following areas of the application in [Table I-3](#), with 10 being most heavily used and 0 being not used at all. If there is a specific function not listed that is particularly high use or important to your process, add it to the list.

Table I-3 Functional Areas and Level of Use

Functional Area	Level of Use (0-10)
PSR	
ASR	
ISR	
USO	
ASR to PSR Mapping	
Product Catalog	
Customer Management	

Table I-3 (Cont.) Functional Areas and Level of Use

Functional Area	Level of Use (0-10)
Trouble Management	
Work Management	
PERT Chart	
Rules and Behaviors	
Equipment Specifications	
Equipment Installation	
Auto Design	
Path Analysis	
IP Address Management	
TN Administration	
Group Assign	
Reconciliation	
Engineering Work Order (EWO)	
LERG	
NPA/NXX Split Utility	
Background Processor	
Custom Attributes	
APIs (list which ones)	
Diversity Module	
SONET Module	
SONET AutoBuild	
Broadband Design Module (non-template ATM/FR and DSL)	
DSL Module (non-template)	
VPN Module (non-template)	
Network Design Canvas (general templates and graphical design)	
ATM/FR Technology Module (template based)	
DLC Technology Module (template based)	
DSL Technology Module (template based)	
Ethernet Technology Module (template based)	
Fiber Based Broadband Delivery Module (template based)	
IP Technology Module (template based)	

Table I-3 (Cont.) Functional Areas and Level of Use

Functional Area	Level of Use (0-10)
MPLS Technology Module (template based)	
Optical/TDM Technology Module (template based)	