Oracle Utilities Network Management System

Installation Guide

Release 1.11.0

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Oracle Utilities Network Management System Installation Guide, Release 1.11.0

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Contents

Preface

Please read through this guide thoroughly before beginning an installation or upgrade of Oracle Utilities Network Management System.

Audience

This document is intended for the administrator and the engineers responsible for installing and upgrading Oracle Utilities Network Management System.

Related Documents

For more information, see the following documents in the Oracle Utilities Network Management System v.1.11.0 documentation set:

- Oracle Utilities Network Management System Product Fix Documents
- Oracle Utilities Network Management System User's Guide
- Oracle Utilities Network Management System Configuration Guide
- Oracle Utilities Network Management System Adapters Guide

Conventions

The following text conventions are used in this document:

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

Chapter 1

Overview

This chapter provides an overview of the installation requirements for Oracle Utilities Network Management System, including:

- **Overview**
- **Product Releases**
- **Supported Platforms**
-

Overview

Please read through this document thoroughly before beginning your product installation or upgrade. The information provided in this guide is here to guide you through a successful product install. Be sure to read through all of the steps for installing the database and installing the application server before you begin this installation. Please complete these tasks in the required order before proceeding to any post-installation steps.

Product Releases

Oracle Utilities Network Management System product releases will occur as GA Releases, Service Packs, and Patch Bundles.

- **GA Releases** (i.e., 1.10.0, 1.11.0, …) - These are complete new binary releases with full documentation sets and QA processes.
- **Service Packs** (i.e., 1.11.0.1, 1.11.0.2, 1.11.0.3, …) - These are complete new binary releases containing all bug fixes since the last GA or Service Pack release. Service packs include targeted QA testing based on current customer platforms and module usage.
- **Patch Bundles** (i.e., 1.11.0.0.1, 1.11.0.0.2, …) - These contain only bug fixes and changed files since the last GA release, service pack, or patch bundle, whichever occurred last. This release will go through QA bug regression testing and QA smoke tests which verify the system will start and perform basic functionality. Patch bundles must be applied sequentially, and there are built-in checks in the installation scripts to verify that previous patch bundles have been installed correctly.

Supported Platforms

This section defines the platforms on which Oracle Utilities Network Management System is verified to operate. The application has been certified to run on a number of specific Operating System, database and 3rd party product combinations.

All the 3rd party vendors will periodically release different versions or patches of their own product. These 3rd party release versions may be different than the versions originally certified with Oracle Utilities Network Management System. Although every reasonable attempt to support customers who have applied these patches will be made, timing may prevent Oracle to completely certify these 3rd party versions. If a customer chooses to install these 3rd party patches (usually denoted by a change in the fourth digit of the software), Oracle asks the customer to fully test this configuration before they move it into production and to be prepared to de-install it if necessary. Should a customer encounter problems during testing, Oracle will provide support to the customer at the current Oracle Utilities Network Management System maintenance level. It must be understood that Oracle may not have this configuration in-house, and as a result there may be a delay in our ability to address any issues.

Please note this policy only applies to patches or service packs from the 3rd party vendors. It does not apply to a new release of the 3rd party software in which new functionality is introduced into the product - new releases are certified by Oracle and should not be used unless they are part of a certified platform configuration. In addition, these patches or service packs have been known to introduce bugs in Oracle Utilities Network Management Systems. We recommend that you do not install cumulative patches unless Oracle explicitly advises you to apply a patch to remedy a documented problem.

Refer to the System Overview chapter of the Oracle Utilities Network Management System v1.11.0 Configuration Guide for details on sample server implementations.

The following table summarizes the supported platforms for Oracle Utilities Network Management System.

Operating Systems	OS Server Architecture / Compiler Version	Database Server and Java Application Servers: Supported Combinations
IBM AIX6.1 TL6-SP3	POWER 64-bit / XL C/C++ 10.1 (10.01.0000.0005)	• Oracle 11gR2 11.2.0.2.0 (64-bit) SE or EE with WebLogic Server 10.3.4
IBM AIX7.1 TL0-SP2	POWER 64-bit	• Oracle 11gR2 11.2.0.2.0 (64-bit) SE or EE with WebLogic Server 10.3.4
Oracle Linux 6.0 (Unbreakable Enterprise Kernel)	x86 64-bit / g++ v4.4.4-13	• Oracle 11gR2 11.2.0.2.0 (64-bit) SE or EE with WebLogic Server 10.3.4
Oracle Linux 6.0 / Red Hat Enterprise Linux 6.0	x86 64-bit / g++ v4.4.4-13	• Oracle 11gR2 11.2.0.2.0 (64-bit) SE or EE with WebLogic Server 10.3.4

Operating Systems	OS Server Architecture / Compiler Version	Database Server and Java Application Servers: Supported Combinations
Oracle Solaris 10	SPARC 64-bit / SunStudio 12.1 (Sun C++ 5.10)	• Oracle 11gR2 11.2.0.2.0 (64-bit) SE or EE with WebLogic Server 10.3.4
SUSE Linux Enterprise Server 11.2	x86 64-bit / g++ v4.3.4	• Oracle 11gR2 11.2.0.2.0 (64-bit) SE or EE with WebLogic Server 10.3.4

Note: The Java Application Server used by Oracle Utilities Network Management System does not need to be co-located with the UNIX services and can run on any of the above platforms that are supported by that product vendor for that version. The Oracle RDBMS used by Oracle Utilities Network Management System does not need to be co-located with the UNIX Services and can run on any of the above platforms supported by Oracle for that RDBMS version.

Chapter 2

Pre-Installation

This chapter provides an overview of the installation requirements for Oracle Utilities Network Management System and provides additional information that you should read before you begin the installation process. This chapter includes the following topics:

- **Prerequisites for Installation of Oracle Utilities Network Management System**
- **Requirements for Oracle Utilities Network Management System Database**
- **Requirements for Spatial Landbase**
- **Requirements for Java Application Server**
- **Software Requirements for Unzipping Files**
- **Security Considerations**
- **Isis Directory and NTP Daemon**
- **STLport Libraries for Solaris**
- **Client Authentication**

Prerequisites for Installation of Oracle Utilities Network Management System

It is assumed that the person installing the Oracle Utilities Network Management System software has a thorough understanding and practical usage of UNIX system administration, Oracle RDBMS installation and configuration, Java application server installation, and EJB deployment as well as a cursory knowledge of the Oracle Utilities Network Management System architecture and applications functionality.

> **Note**: If you are upgrading from a previous version of Oracle Utilities Network Management System, please refer to **Troubleshooting Oracle Utilities Network Management System** on page 3-22.

UNIX User Environments

In order to install Oracle Utilities Network Management System software, you must have your UNIX administrator create a UNIX user environment. The naming conventions of the user names should be consistent and make sense. Oracle Utilities Network Management System assumes that Korn shell (ksh) is the default shell. Refer to the UNIX Configuration chapter of the Oracle Utilities Network Management System Configuration Guide for more details regarding the configuration of the UNIX usernames applications as well as other operating system specific configurations needed for use with the Oracle Utilities Network Management System applications.

Administrative User

The administrative user (nmsadmin) owns and launches the services. The administrative user also owns and maintains the binaries, and all the configuration standards.

The administrative user's database environment variables ($ORACLE_SID and $RDBMS_HOST) should point to the Oracle production tablespace owner, so that the services started under the nmsadmin user have the necessary read and write access to the production tablespace.

The Administrative UNIX user:

- Owns the Isis release directories.
- Starts and stops Isis processes.
- Performs installs.
- Owns the executable directories.
- Has read-write permissions to the production database.
- Owns the service processes (DBService, MTService, etc.) and performs ALL sms_start.ces commands.

Requirements for Oracle Utilities Network Management System Database

The Oracle RDBMS must be installed and configured before beginning the Oracle Utilities Network Management System. It must be installed on a server that is accessible from the Oracle Utilities Network Management System services applications. Typically, the Oracle RDBMS is installed on the same server as the Oracle Utilities Network Management System services applications, but that is not required.

Refer to the Database Configuration chapter of the Oracle Utilities Network Management System Configuration Guide for more details regarding the installation and configuration of the Oracle RDBMS for use with the Oracle Utilities Network Management System applications.

Requirements for Spatial Landbase

The Oracle Utilities Network Management System recommends the installation of the Oracle MapBuilder product tool to simplify the process of creating and managing map, theme, and symbology metadata in the spatial database for rendering spatial landbase maps behind the Web Workspace Viewer. MapBuilder is part of the Oracle MapViewer product and can be downloaded from the OTN website. To download MapBuilder, go to http://www.oracle.com/technology/products/mapviewer and click on the "Software" link.

Requirements for Java Application Server

The Oracle Utilities Network Management System requires the installation of a WebLogic Application Server. This installation should be done before installing the Oracle Utilities Network Management System software. Refer to the documentation that came with WebLogic for installation instructions.

Software Requirements for Unzipping Files

The Oracle Utilities Network Management System and 3rd Party Software files are compressed in the ZIP format. Most Linux / UNIX-based platforms already have the binaries needed to unzip the distribution archives. If not, you will need to download an unzip utility like Info-ZIP.

Security Considerations

Please refer to the Security Guidelines section in Chapter 1 of the Configuration Guide for security recommendations/guidelines when installing Oracle Utilities Network Management System software.

Isis Directory and NTP Daemon

Isis is the backbone of the Oracle Utilities Network Management System. It is the messaging bus through which all components communicate.

On any computer using Isis it is important to have an accurate clock, which moves monotonically forward. Many approaches, such as rdate, can cause the clock to jump unpredictably, possibly backwards. This jumping is especially deleterious to Isis timing and timer queues, but can easily be avoided by using NTP. NTP is the Network Time Protocol daemon and is designed to gracefully synchronize the system clock with any reliable time source.

NTP is available for free on all operating systems and is simple to configure. Even if all of your services and applications run on a single computer, it is important to run NTP there. If you have several computers on the same LAN, you may want to consider running an NTP server (pointing to an external time source) on one of them and pointing all of the other NTP clients on the LAN to it.

Refer to the Isis Configuration chapter of the Oracle Utilities Network Management System Configuration Guide for more details regarding the configuration of the Isis message bus for use with the Oracle Utilities Network Management System applications.

STLport Libraries for Solaris

The C++ Standard Template Library that ships with Solaris does not comply with the ISO C++ standard (in order to maintain backward compatibility for older applications) and thus is not adequate for running Oracle Utilities Network Management System software. For Solaris systems, before starting the Oracle Utilities Network Management System services (section 4.2.6), you will need to download and install a copy of STLport libraries from one of two locations.

- A working version of STLport is included in the free distribution of Sun Studio 12. You can find this package at:

```
http://developers.sun.com/sunstudio/products/downloads
```

  The libraries will be installed to: /opt/sunstudio12.1/lib/stlport4/v9

- A runtime-only version of STLport can be downloaded from Blastwave at:

```
http://download.blastwave.org/csw/stable/sparc/5.10/stlport-
4.5.3,REV=2006.09.06-SunOS5.8-sparc-CSW.pkg.gz
```

  This will be installed in /opt/csw/lib/sparcv9.

You will need the path to the stlport library directory during the installation.

On production servers, having a compiler or its components installed may not be permitted by security policy, and in those cases the second option is recommended.

Client Authentication

Client authentication for Oracle Utilities Network Management System 1.11.0 has changed in that passwords are no longer stored in the database. Authorization and roles are still stored in the database, but the authentication must come from an external source. No matter what the

authentication source, each login name must be granted access to the system by using the Configuration Assistant. For Java applications, Active Directory and LDAP are supported.

Chapter 3

Oracle Utilities Network Management System Installation

This chapter describes the Oracle Utilities Network Management System installation, including:

- **Installation Steps**
  - **Upgrading from a Previous Release**
  - **Installing Oracle Utilities Network Management System Software**
  - **Installing Oracle Utilities Network Management System Software**
- **Installing BI Publisher for Web Switching**
- **Installation, Project Configuration, and Runtime Directory Structure**
- **Troubleshooting Oracle Utilities Network Management System**

Installation Steps

Before you begin installing Oracle Utilities Network Management System, ensure that you have read and met all pre-installation requirements identified in the previous chapters. Those chapters contain important information with which you must be familiar before you begin the installation so you can avoid potential problems during the installation.

If this is a first-time installation of Oracle Utilities Network Management System software, follow all steps in this guide starting with **Installing Oracle Utilities Network Management System Software** on page 3-4.

If you are upgrading from a previous Oracle Utilities Network Management System software release, follow the steps outlined in **Upgrading from a Previous Release** on page 3-1.

Upgrading from a Previous Release

Upgrading the Oracle Utilities Network Management System should be done on a test system prior to attempting an upgrade on a production system. Make a complete copy of the production system on a test system, including the file system and the database. Once the test system is running, follow the steps below to upgrade your test system to Oracle Utilities Network Management System v1.11.0. Follow the instructions based on what release you currently have implemented. When satisfied with your test system, complete these same steps to upgrade your production system.

Upgrading From Oracle Utilities Network Management System v1.9.x or Earlier

1. Log in as the administrative user (e.g., nmsadmin).
2. Stop all services including Isis using the following command:

   ```
   $ sms_stop.ces -ai
   ```

   or, if your system does not support the sms_stop script, use:

   ```
   $ Action any.any stop
   $ cmd shutdown
   ```

3. Make sure the Naming Service is not running:

   ```
   $ ps -ef | grep Naming_Service
   ```

   If the Naming Service is running, output similar to the following is displayed:

   ```
   nmsadmin 348204  1  0  Aug 11   -  0:46 /opt/oms-9.1/bin/
   Naming_Service -p /users/oms1/logs/Naming_Service.pid iiop://
   server.example.com:17821 -ORBEndpoint
   ```

   If a process is running (i.e., user = nmsadmin), kill it:

   ```
   $ kill 348204
   ```

4. Stop the currently running JBoss Application Server.
5. If you have a deprecated isis run_isis directory in any location other than $NMS_HOME/etc/run_isis, you have two options:

   Option One (Most common):
   If you plan to run a single NMS server system (not including web servers), remove the deprecated run_isis directory using this command:

   ```
   $ rm -rf $NMS_HOME/oms/run_isis
   ```

   Option Two (Advanced):
   If you plan to run multiple NMS server systems, you will need to move your run_isis files from the deprecated directory to the new directory location using the following commands:

   ```
   $ mkdir -p $NMS_HOME/etc/run_isis
   $ mv $NMS_HOME/oms/run_isis/isis.* $NMS_HOME/etc/run_isis
   $ rm -rf $NMS_HOME/oms/run_isis
   ```

   Note: Verify that your isis.prm and isis.rc files do not require any changes based on the template files $CES_HOME/templates/isis.prm.template and $CES_HOME/templates/isis.rc.template.

6. Complete all steps in **Installing Oracle Utilities Network Management System Software** on page 3-4.

   Note: This release uses new templates to help properly configure the software. Please pay careful attention to ensure you use the new templates and their settings.

7. Complete all steps in **Starting Isis** on page 3-6.
8. If your Oracle database version is currently supported for this version of Oracle Utilities Network Management System (see **Supported Platforms** on page 1-1 for more information), you can skip the **Create Database Environment** section. Otherwise, do the following:

   - Backup your current Oracle Utilities Network Management System database.
   - Install the new version of the Oracle RDBMS.

- Complete all steps in **Create Database Environment** on page 3-6, matching the configuration of your previous RDBMS instance.
- Import your current Oracle Utilities Network Management System database onto the new RDBMS installation.

9. Complete setting up the project configuration directory and upgrading your model following the steps below:
   - If you have not already done so, move your project configuration files into the $NMS_CONFIG directories as described in **Oracle Utilities Network Management System Project Configuration Directory** on page 3-21.
   - Execute the nms-install-config script, which will merge your project configuration with the product configuration and place the results in the runtime directory:

     ```
     $ nms-install-config --nojava
     ```

   - Run ces_setup.ces to load the schema and configuration:

     ```
     $ ces_setup.ces
     ```

     Note: Refer to the "Database Maintenance" Chapter of the Oracle Utilities Network Management System Configuration Guide, specifically the section on "Applying Migrations," for assistance when running the ces_setup script. Errors and required manual migrations will appear in the log file specified in the output of the command. Please resolve any required manual migrations.
   - Execute step 6 of **Model Setup** on page 3-7 to enable write permissions for the user that runs the Java Application Server.
10. Complete all steps in **Web Application Configuration** on page 3-8.
11. Complete all steps in **Starting Services** on page 3-10.
12. Complete all steps in the **WebLogic Server Runtime Configuration** on page 3-10.
13. Complete all steps in **Deploying Oracle Utilities Network Management System in WebLogic Server** on page 3-17.
14. If you will be using the web client application installers, complete all steps in **Installing Oracle Utilities Network Management System Web Clients** on page 3-18.

Applying Service Pack to Oracle Utilities Network Management System v1.11.x

1. Log in as the administrative user (e.g., nmsadmin).
2. Stop all services including Isis:

   ```
   $ sms_stop.ces –ai
   ```

3. Stop the domain server where Oracle Utilities Network Management System is deployed in WebLogic Application Server.
4. Install the Oracle Utilities Network Management System software by completing steps 1-6 in **Installing Oracle Utilities Network Management System Software** on page 3-4.
5. Modify the ~/etc/system.dat file and update your .nmsrc file by completing steps 7-10 in **Installing Oracle Utilities Network Management System Software** on page 3-5.

   Note: The environment variable $CES_HOME changes when applying a service pack release.
6. If you do not yet have your own custom configuration and network model but are migrating an OPAL test database, complete step 4 in **Model Setup** on page 3-6.

7. Start Isis by completing all steps in **Starting Isis** on page 3-6.
8. Execute the nms-install-config script, which will merge your project configuration with the product configuration and place the results in the runtime directory:

   ```
   $ nms-install-config --nojava
   ```

9. Run ces_setup.ces to load the schema and configuration, as follows:

   ```
   $ ces_setup.ces
   ```

10. If you are running a spatial server and have spatial data, configure the spatial server by completing the steps in **Web Application Configuration** on page 3-8.
11. Complete all steps in **Starting Services** on page 3-10.
12. To redeploy the web applications in WebLogic Application Server, complete all steps in **Deploying Oracle Utilities Network Management System in WebLogic Server** on page 3-17.

Installing Oracle Utilities Network Management System Software

Use the following procedures to install Oracle Utilities Network Management System software.

1. Log in as the administrative user (e.g., nmsadmin).
2. Set the NMS_ROOT, NMS_HOME, and CES_HOME environment variables. For example:

   ```
   $ export NMS_ROOT=/users/nmsadmin
   $ export NMS_HOME=/users/nmsadmin
   $ export CES_HOME=$NMS_ROOT/nms/product/1.11.0.0
   ```

3. Set the ORACLE_HOME environment variable. For example:

   ```
   $ export ORACLE_HOME=/users/oracle/product/11
   ```

4. Set the JAVA_HOME environment variable to the 64-bit JDK installation directory. For example:

   ```
   $ export JAVA_HOME=/opt/java6
   ```

5. Unzip the Oracle Utilities Network Management System "Base Software" zip file. For example:

   ```
   $ unzip /path/to/filename.zip
   ```

6. Run the install script:

   ```
   $ cd network
   $ ./nms-install
      Note: this could take several minutes to complete.
   ```

7. Remove the installation files before continuing:

   ```
   $ cd ..
   $ rm –rf network
   ```

8. If you already have an existing .profile, then add the following line to the bottom of .profile:

   ```
   . $NMS_HOME/.nmsrc
   ```

   This ensures that your environment is set correctly at login.
9. Execute the following commands to copy the templates from $CES_HOME/templates directory to $NMS_HOME/etc. If you have existing files in $NMS_HOME/etc, they will be backed up to <file>.bak.<timestamp>.

   ```
   $ export OMS_PREFIX=$CES_HOME/3rdparty
   ```

```
$ $OMS_PREFIX/jython/bin/jython $CES_HOME/bin/nms-install-templates
```

10. If you have an existing Oracle Utilities Network Management System resource file with a name other than `$NMS_HOME/.nmsrc` (*i.e.*, .ces.rc, .cesrc, …), rename it to `$NMS_HOME/.nmsrc`. Move all project-specific environment variables out of the `.nmsrc` file into your .profile file or another resource file.
    Change the environment variables set in the `$NMS_HOME/.nmsrc` file using the nmsrc configuration script by executing this command:
    `$CES_HOME/bin/config_nmsrc.pl`

    Set each variable as appropriate for your environment.

    Notes:

    New Installation

    The first time you run config_nmsrc.pl you will need to pay close attention to the values that are presented to you as defaults, and ensure that they are set correctly. During subsequent runs you will be presented with the current settings for each variable as the default, and can simply press return at each prompt, reducing the time it takes to run the script.

    When config_nmsrc.pl runs, it will flag variables that are not set to the defaults from the standard template. We encourage the use of defaults as much as possible to help facilitate customer support. However, it is up to the customer to decide if deviating from the defaults is appropriate for their environment.

    Upgrades and Patches

    All projects have to configure and maintain Oracle wallets for each unix user that starts services that connect to the database.

    The script prompts you to choose your wallet location, which sets the TNS_ADMIN environment variable (default: ~/etc/wallet). Then it asks you to create passwords and enter the database credentials. Your new Oracle wallet will then map the RDBMS_HOST environment variable to a user name and password stored in the wallet.

    IVR_RBDMS_HOST, CES_BI_INSTANCE, and CES_REP_INSTANCE all need wallet credentials if you are using IVR and BI. If any of these use the same database instance, you will also create additional tnsnames.ora entries so each has a unique alias for the same database instance, thus, providing separate wallet credentials for the different users.

    This script should be run for each unix user that runs NMS services.

    WARNING: After running `config_nmsrc.pl`, you must log out and log back in to set the environment variables.

11. After making the above changes, log out and log in to set the environment variables. For a list of environment variables set by config_nmsrc.pl and their descriptions, see Chapter 6 of the Oracle Utilities Network Management Systems Configuration Guide.

Starting Isis

Please refer to Chapter 4, "Isis Configuration," in the Oracle Utilities Network Management System Configuration Guide for details on configuring and optimizing Isis.

1. Start Isis, as follows:

   ```
   $ isisboot
   ```

2. When complete (which will take approximately one minute), type:

   ```
   $ cmd status
   ```

   This determines if Isis has successfully started and will provide information similar to the following:

   ```
   cmd:  my_site_no = 1
   my_host = <hostname>
   Isis version = Isis release V3.4.15 $Date: 2011/05/17 20:49:37 $
   verbose mode = off
   ```

Create Database Environment

Complete Steps 1 – 3 only if you do not have an existing Oracle Utilities Network Management System database. Use the following procedure to create a database environment:

1. Copy the nms.sql.template file, as follows:

   ```
   $ cp $CES_HOME/templates/nms.sql.template $NMS_HOME/nms.sql
   ```

2. Edit nms.sql and follow the instructions (included as comments in the file) to suit your environment.

3. Run the nms.sql as follows:

   ```
   $ sqlplus </users/nmsadmin/nms.sql
   ```

   If this is not the first time you have run this, you may see errors about objects that already exist (or may not exist), which can be safely ignored.

4. Log in as the administrative user and test the connection to Oracle. At the prompt, type:

   ```
   $ ISQL.ces
   ```

   This references the RDBMS_USER, RDBMS_PASSWD and RDBMS_HOST to establish the connection to the database.

5. If this connection is successful, a SQL> prompt will appear. Type "exit" to return to the shell prompt.

Model Setup

Use the following procedure to install an Oracle Utilities Network Management System installation verification network data model:

1. If you do not have an existing network data model to load at this point, you can use the OPAL validation model included in the Oracle Utilities Network Management System release.

2. Log in as the administrative user and run config_nmsrc.pl setting the following variables:

   ```
   CES_SITE="OPAL product ces"
   SYMBOLOGY_SET=${OPERATIONS_MODELS}/SYMBOLS/OPAL_SYMBOLS.sym
   NMS_CONFIG=$NMS_HOME/OPAL
   ```

3. Log out and log back in again, ensuring the variables are set correctly.
4. Copy the OPAL configuration in $CES_HOME to NMS_CONFIG:

```
$ cd $NMS_HOME
$ rm –rf $NMS_CONFIG
$ cp -r -L $CES_HOME/OPAL $NMS_CONFIG
```

5. Run nms-make-symbols, nms-install-config, and ces_setup.ces script to load the schema and configuration, as follows:

```
$ nms-make-symbols
$ nms-install-config --nojava
$ ces_setup.ces -clean -reset
```

6. Enable write permissions for the user that runs the Java Application Server (e.g., wls) such that the user can create files in the $OPERATIONS_MODELS/ser directory (typically $HOME/data/ser). This is done to enable the distribution of maps to web clients through the application server.

```
$ cd $OPERATIONS_MODELS
$ mkdir ser
$ su
  Password:
# chown wls:users ser
# exit
```

7. Load the sample data:

```
$ LoadOPALModel.ces
```

   The script will load sql files, start a subset of Oracle Utilities Network Management System services, and then build the data model.

Optional Spatial Landbase Map Installation

Use the following optional procedure to load the OPAL Spatial Landbase maps:

1. Unzip the OPAL spatial shapefiles and metadata file:

```
$ cd $NMS_CONFIG/data
$ unzip spatial_landbase.zip
```

2. Start Oracle MapBuilder:

   - $ cd <directory where mapbuilder.jar is installed>

```
$ java -Xms200m 0Xmx1000m -jar mapbuilder.jar
```

3. In MapBuilder, select **File/New Connection….** Specify the connection information to connect to the server where the spatial data will be served. Then connect to the server.
4. In MapBuilder, select **Tools/Import Shapefile….**and click **Next.**
   - Under Data Selection, select the **Multiple Files or Directories** and change the Selection drop down list to **Directory**.
   - Click **Select**, and navigate and Open the $NMS_CONFIG/spatial_landbase directory.
   - Click **Next**.
   - Set the SRID to 41100 (Ohio 3401, Northern Zone (1983, US Survey feet)), deselect **Append '_mb' to attribute names in new tables**, and deselect **Append records if table exists**.
   - Click **Next**, **Next**, and **Finish**.

5. Import the metadata for the spatial map data. In MapBuilder, select **Tools/Import Metadata**.
   - Click **File** and navigate and Open the NMS_CONFIG/spatial_landbase/SpatialMetadata.dat file.
   - Select **Styles**, **Themes**, and **Base Maps**, and then click **Ok**.
6. Verify that the OPAL spatial landbase maps and metadata loaded correctly.
   - In the MapBuilder left panel that lists the Metadata directory, expand the **Base Maps** directory, then double click the PRODUCT_PROJECTED_LANDBASE Base Map icon.
   - From the main panel, in the PRODUCT_PROJECTED_LANDBASE top tab, select the Preview lower tab, then click the green "Play" icon. You should see OPAL landbase data appear in the preview panel.

   Remember to set the Web Application Configuration parameters specified in the next installation section for the spatial landbase server: WEB_spatial.url, WEB_spatial.userName, and WEB_spatial.password.

Web Application Configuration

If you will be installing and running the optional web applications, follow these steps:

1. If you already have an existing $NMS_CONFIG/sql/*NMS_PROJECT*_parameters.sql file – where NMS_PROJECT is the name of your configuration project (e.g. OPAL) – then move it aside for reference later:

```
$ cp $NMS_CONFIG/sql/NMS_PROJECT_parameters.sql
     $NMS_CONFIG/sql/NMS_PROJECT_parameters.sql.bak
```

2. Copy the $CES_HOME/sql/product_parameters.sql file to your $NMS_CONFIG sql directory:

```
$ cp $CES_HOME/product/sql/product_parameters.sql
     $NMS_CONFIG/sql/NMS_PROJECT_parameters.sql
$ cd $NMS_CONFIG/sql
```

3. Modify the following parameters in *NMS_PROJECT*_parameters.sql (if applicable, refer to the backup file you made in step 1):

Element	Example	Description
WEB_intersysName	InterSys_nmsadmin	nmsadmin = your nmsadmin username (the value of $LOGNAME).
WEB_tempDirectory	/users/nmsadmin/dist/maps	Temporary map location
WEB_mapDirectory	/users/nmsadmin/data	Location of $OPERATIONS_MODELS
WEB_logDirectory	/users/nmsadmin/dist	Location of log files
WEB_corbaInitRef	NameService=corbaloc:iiop:1.2@server.example.com:17821/NameService	Change server.example.com and 17821 to match the value of $NMS_NS_HOST and $NMS_NS_PORT.

Element	Example	Description
WEB_spatial.url	jdbc:oracle:thin:@vmhost:1521:nms	URL of the spatial server. Only required to be set if you have spatial data.
WEB_spatial.userName	nms	User name. Only required to be set if you have spatial data.
WEB_spatial.password	nms	Password. Only required to be set if you have spatial data.
LDAP_DIRECTORY_SERVICES_LEVEL	LDAP_HYBRID	The authentication mode of the system. Defaults to LDAP_HYBRID.
LDAP_DISTINGUISHED_NAME	%u@yourdomain.com	Specifies the base distinguished name to use when submitting logins to LDAP or Active Directory.
LDAP_URL	ldap://server.example.com:389	The URL specifying the hostname and port of the LDAP or Active Directory server.
nmsadmin	nmsadmin	A valid LDAP or Active Directory login to be used with Configuration Assistant.
WebGw	WebGw	A valid LDAP or Active Directory proxy user to enable authenticated EJB traffic.

4. When the above changes have been made, run these commands:

```
$ cp $NMS_CONFIG/sql/NMS_PROJECT_parameters.sql $NMS_HOME/sql
$ ISQL.ces NMS_PROJECT_parameters.sql
```

5. If you will be using SSL encryption with your java application server, copy the server and client keystores to the project directory:

```
$ cp /path/to/server/keystore $NMS_CONFIG/jconfig/
     server/nms-server.keystore
$ cp /path/to/client/keystore $NMS_CONFIG/jconfig/
      global/nms-client.keystore
```

   If you do not have certificates for your server that were generated by a trusted Certificate Authority, you can use the script nms-gen-keystore to generate self-signed certificates:

```
$ nms-gen-keystore
```

   Provide the new information for the server name (as you will enter it in the browser), as well as your organization.

6. If you are using LDAP or Active Directory for authentication, all Oracle Utilities Network Management System users must exist in a defined group, which defaults to "nmsuser". If you want to use a different group name, edit $NMS_CONFIG/jconfig/build.properties and change the following line (you may need to uncomment it):

```
weblogic-ldap-group = nmsuser
```

7. If you wish to change the default user "nms1" which the corba publisher will run as, then edit $NMS_CONFIG/jconfig/build.properties. Change the following line (you may need to uncomment it) to a valid user:

   ```
   publisher.ejb-user = nms2
   ```

8. If you wish to configure WebLogic to not use SSL/HTTPS, then edit $NMS_CONFIG/jconfig/build.properties. Add or change (uncomment) the following line:

   ```
   option.no_force_https = true
   ```

9. If you will be running multiple instances of Oracle Utilities Network Management System, you will need to create JDBC Data Sources for each managed server, each with a unique JNDI name (see WebLogic Runtime Configuration below). To change the JNDI name from the default of "jdbc/intersys", edit $NMS_CONFIG/jconfig/build.properties and modify the following line (you may need to uncomment the line):

   ```
   config.datasource = jdbc/intersys/nmsadmin
   ```

10. Once all files are in place, build the configuration by running:

    ```
    $ cd
    $ nms-install-config --java
    ```

Starting Services

Use the following procedure to start full Oracle Utilities Network Management System services:

1. Log in as the administrative user and stop any services that might be running, as follows:

   ```
   $ sms_stop.ces -a
   ```

2. Start the naming service, for example:

   ```
   $ nohup tao_cosnaming -p $CES_LOG_DIR/Naming_Service.pid
      -ORBEndpoint iiop://$NMS_NS_HOST:$NMS_NS_PORT &
   ```

3. Run the sms_start.ces script to start services, as follows:

   ```
   $ sms_start.ces
   ```

4. To verify services are running, run smsReport, as follows:

   ```
   $ smsReport
   ```

WebLogic Server Runtime Configuration

Configure database connectivity

In WebLogic Server, you configure database connectivity by adding data sources to your WebLogic domain. To create a JDBC data source in your domain, you can use the Administration Console:

1. Access the WebLogic Server Administration Console by entering the following URL:

   `http://`*`hostname:port`*`/console`

   Here *hostname* represents the DNS name or IP address of the Administration Server, and *port* represents the number of the port on which the Administration Server is listening for requests (port 7001 by default).

2. If you have not already done so, in the Change Center of the Administration Console, click **Lock & Edit**.

3. In the **Domain Structure** tree, expand **Services**, then select **Data Sources**.

4. On the Summary of Data Sources page, click **New**, Generic Data Source.

5. On the JDBC Data Source Properties page, enter or select the following information:
   - **Name** - Enter a name for this JDBC data source.
     For example: `JDBC Data Source-nms`.
   - **JNDI Name** - Enter the JNDI path to where this JDBC data source will be bound. Use `jdbc/intersys` for the JNDI path.

     Note: If you will have multiple instances of Oracle Utilities Network Management System running from this WebLogic installation, make the JNDI name unique (e.g., `jdbc/intersys/nmsadmin`) and change "config.datasource" in $NMS_CONFIG/jconfig/build.properties to match this string.
   - **Database Type** - Select Oracle for the DBMS of the database that you want to connect to.
   - Click **Next** to continue.
   - Select ***Oracle's Driver (Thin XA) for Instance connections,Versions: 9.0.1 and later** for the JDBC driver you want to use to connect to the database.
   - Click **Next** to continue.
6. On the Transactions Options page, click **Next** to continue.
7. On the Connection Properties page, enter values for the following properties:
   - **Database Name** - Enter the name of the database that you want to connect to. Exact database name requirements vary by JDBC driver and by DBMS.
   - **Host Name** - Enter the DNS name or IP address of the server that hosts the database.
   - **Port** - Enter the port on which the database server listens for connections requests.
   - **Database User Name** - Enter the database user account name that you want to use for each connection in the data source.
   - **Password/Confirm Password** - Enter the password for the database user account.
   - Click **Next** to continue.
8. On the Test Database Connection page, review the connection parameters and click **Test Configuration**.
   - WebLogic attempts to create a connection from the Administration Server to the database. Results from the connection test are displayed at the top of the page. If the test is unsuccessful, you should correct any configuration errors and retry the test.
   - If the JDBC driver you selected is not installed on the Administration Server, you should click **Next** to skip this step.
   - Click **Next** to continue.
9. On the Select Targets page, select the servers or clusters on which you want to deploy the data source.
10. Click **Finish** to save the JDBC data source configuration and deploy the data source to the targets that you selected.
11. To activate these changes, in the Change Center of the Administration Console, click **Activate Changes**.

Create a JMS server in your domain:

1. If you have not already done so, in the Change Center of the Administration Console, click **Lock & Edit**.
2. In the Administration Console, expand **Services > Messaging** and select **JMS Servers**.
3. On the Summary of JMS Servers page, click **New**.

   Note: Once you create a JMS server, you cannot rename it. Instead, you must delete it and create another one that uses the new name.
4. On the Create a New JMS Server page:
   - In **Name**, enter a name for the JMS server. For example: JMSServer-nms.
   - In **Persistent Store**, leave this field set to `none`, then the JMS server will use the default file store that is automatically configured on each targeted server instance.
   - Click **Next** to proceed to the targeting page.
5. On the Selects Targets page, select the server instance or migratable server target on which to deploy the JMS server.
6. Click **Finish**.
7. To activate these changes, in the Change Center of the Administration Console, click **Activate Changes**.

Create a JMS system module in your domain:

1. If you have not already done so, in the Change Center of the Administration Console, click **Lock & Edit.**
2. In the Administration Console, expand **Services > Messaging** and select **JMS Modules**.
3. On the Summary of JMS Modules page, click **New**.

   Note: Once you create a module, you cannot rename it. Instead, you must delete it and create another one that uses the new name.
4. On the Create JMS System Module page:
   - In **Name**, enter a name for the JMS system module. For example: SystemModule-nms.
   - Click **Next** to proceed to the targeting page.
5. On the Targets page, select the server instance or cluster target on which to deploy the JMS system module, and then click **Next**.
6. On the Add Resources page, select the checkbox indicating that you want to be able to immediately add resources to this JMS Module after it's created.
7. Click **Finish**.
8. On the Configuration page, click **New** above the Summary of Resources table.
9. On the Create a New JMS System Module Resource page, select **Connection Factory** from the list of JMS resources, and then click **Next**.
10. On the Connection Factory Properties page, define the connection factory's basic properties:
    - In **Name**, enter a name for the connection factory. For example: ConnectionFactory-nms.

      Note: Once you create a connection factory, you cannot rename it. Instead, you must delete it and create another one that uses the new name.
    - In **JNDI Name**, enter `ConnectionFactory`.
11. Click **Next** to proceed to the targeting page.

12. For basic default targeting, accept the default targets presented in the Targets box and then click **Finish**.
13. Upon clicking **Finish**, the configured connection factory is added to the module's Summary of Resources table, which displays its default targets.
14. On the Configuration page, click New above the Summary of Resources table.
15. On the Create a New JMS System Module Resource page, select Distributed Topic from the list of JMS resources, and then click Next.
16. On the JMS Distributed Destination Properties page, define the distributed topic's basic properties:
    - In **Name**, enter a name for the distributed topic. For example: `MsgBean-nms`.

      Note: Once you create a distributed topic, you cannot rename it. Instead, you must delete it and create another one that uses the new name.
    - In **JNDI Name**, enter topic/MsgBean.
17. Click **Next** to proceed to the targeting page.
18. For basic default targeting, accept the default targets presented in the Targets box and then click Finish.
19. Upon clicking **Finish**, the JMS system module resource is added to the module's Summary of Resources table, which displays its default targets.
20. To activate these changes, in the Change Center of the Administration Console, click **Activate Changes**.

Configure T3 protocol:

1. If you have not already done so, in the Change Center of the Administration Console, click **Lock & Edit** (see Use the Change Center).
2. In the left pane of the Console, expand Environment and select **Servers**.
3. On the Servers page, click on the server name.
4. Select Protocols > General.
5. Modify the value for Maximum Message Size.
    - In the Maximum Message Size field, enter 25000000.

      Note: These settings apply to all protocols in the server's default network configuration. See Configuring Network Resources.
6. Click **Save**.
7. To activate these changes, in the Change Center of the Administration Console, click Activate Changes.

Configure the arguments to use when starting a server in your domain:

1. If you have not already done so, in the Change Center of the Administration Console, click **Lock & Edit**.
2. In the Administration Console, expand **Environment** and select **Servers**.
3. On the Servers page, click the name of the server.
4. Select the **Configuration** > **Server Start** tab.
5. On the **Server Start** page:
    - Add a `-DRMI_URL=t3`**`s:`**`//`*`hostname:port`* line to the beginning of the **Arguments** field, if using SSL.

or

- Add a `-DRMI_URL=t3://hostname:port` line to the beginning of the Arguments field, if not using SSL.

Here *hostname* represents the DNS name or IP address of the domain server, and *port* represents the SSL listen port or non-SSL listen port of the domain server.

In addition, it is recommended to add the following JVM parameters:

-Xms4096m

-Xmx4096m

-XX:PermSize=512m

-XX:MaxPermSize=512m

-XX:+UseConcMarkSweepGC

-XX:+ExplicitGCInvokesConcurrent

6. Click **Save**.To activate these changes, in the Change Center of the Administration Console, click **Activate Changes**.

Configure Keystores

Before you begin:

- Obtain private keys and digital certificates from a reputable certificate authority such as Verisign, Inc. or Entrust.net.
- Create identity and trust keystores.
- Load the private keys and trusted CAs into the keystores.

To configure the identity and trust keystores:

1. If you have not already done so, in the Change Center of the Administration Console, click **Lock & Edit.**
2. In the left pane of the Console, expand **Environment** and select **Servers.**
3. Click the name of the server for which you want to configure the identity and trust keystores.
4. Select **Configuration > Keystores.**
5. In the **Keystores** field, select the method **Custom Identity and Java Standard Trust** for storing and managing private keys/digital certificate pairs and trusted CA certificates.
6. In the **Identity** section, define attributes for the identity keystore.
   - **Custom Identity Keystore:** The fully qualified path to the identity keystore `nms-server.keystore`. This will be in the $NMS_HOME/java directory.
   - **Custom Identity Keystore Type:** The type of the keystore. Generally, this attribute is Java KeyStore (JKS); if left blank, it defaults to JKS.
   - **Custom Identity Keystore Passphrase:** The password you will enter when reading or writing to the keystore. This attribute is optional or required depending on the type of keystore. All keystores require the passphrase in order to write to the keystore. However, some keystores do not require the passphrase to read from the keystore. WebLogic Server only reads from the keystore so whether or not you define this property depends on the requirements of the keystore.

7. Click **Save.**
8. To activate these changes, in the Change Center of the Administration Console, click **Activate Changes.**

To Configure SSL:

1. If you have not already done so, in the Change Center of the Administration Console, click **Lock & Edit.**
2. In the left pane of the Console, expand **Environment** and select **Servers.**
3. Click the name of the server for which you want to configure SSL.
4. Select **Configuration > SSL,** and set the SSL attributes for the Private Key Alias (defaults to nms-key) and Private Key Passphrase.
5. Click **Save.**
6. To activate these changes, in the Change Center of the Administration Console, click **Activate Changes.**

To configure the SSL listen ports for a server:

1. If you have not already done so, in the Change Center of the Administration Console, **click Lock & Edit.**
2. In the Administration Console, expand **Environment** and select **Servers.**
3. On the Servers page, click the name of the server.
4. Select **Configuration > General.**
   - Select SSL Listen Port Enabled so that the server listens on the SSL listen port.
   - If you want to disable the non-SSL listen port so that the server listens only on the SSL listen port, deselect **Listen Port Enabled.**
5. Click **Save.**
6. To activate these changes, in the Change Center of the Administration Console, click **Activate Changes.**

To set the Default Authenticator control flag:

1. If you have not already done so, in the Change Center of the Administration Console, click **Lock & Edit.**
2. In the left pane, select **Security Realms,** then click the name of the realm you are configuring. Select myrealm.
3. Select **Providers > Authentication.**

   The Authentication Providers table displays the name of the Authentication and Identity Assertion providers.
4. Click the name of the provider you want to configure. Select DefaultAuthenticator.
5. Select **Configuration > Common** and set the **Control Flag** to OPTIONAL.
6. Click **Save.**
7. To activate these changes, in the Change Center click **Activate Changes.**

To create and configure an Active Directory Authentication provider:

Note that any of the **WebLogic Authentication Provider** types can be used. Here, ActiveDirectoryAuthenticator is used as an example.

1. If you have not already done so, in the Change Center of the Administration Console, **click Lock & Edit.**
2. In the left pane, select **Security Realms** and click the name of the realm you are configuring (defaults to myrealm).
3. Select **Providers > Authentication** and click **New.**

   The Create a New Authentication Provider page appears.
4. In the **Name** field, enter a name for the Authentication provider. For example, enter ldap-provider.
5. From the **Type** drop-down list, select the type of the Authentication provider and click **OK**. Select ActiveDirectoryAuthenticator.
6. Select **Providers > Authentication** and click the name of the new Authentication provider to complete its configuration.
7. Select **Configuration > Common** and set the **Control Flag** to OPTIONAL.
8. Click **Save.**
9. Select **Configuration > Provider Specific** and set the desired values for your Active Directory server. The following configuration is given for example purposes only.

   For Connection:

   Host: server.example.com

   Port: 389

   Principal: cn=Administrator,cn=Users,dc=example,dc=com

   Credential: The credentail (usually a password) used to connect to the LDAP server.

   For Users:

   User Base DN: cn=Users,dc=example,dc=com

   User Name Attribute: Ensure this matches the attribute specified in the User Base DN (e.g. "cn").
10. Click **Save.**
11. To activate these changes, in the Change Center, click **Activate Changes.**
12. After you finish configuring Authentication providers, restart WebLogic Server.
    IMPORTANT: verify that users and groups from your authenticator are configured by looking at the **Users and Groups** tab for your security realm.

To configure Log4j logging services:

1. Edit the setDomainEnv.sh script which is located in the *WLS_HOME*/Oracle/Middleware/user_projects/domains/*domain_name*/bin directory:

   Add the following lines:

   ```
   LOG4J_CONFIG_FILE=${DOMAIN_HOME}/nms-log4j.xml
   export LOG4J_CONFIG_FILE
   ```
2. Create file user_projects/domains/*domain_name*/nms-log4j.xml.

   ```
   <?xml version="1.0" encoding="UTF-8"?>
   <!DOCTYPE log4j:configuration SYSTEM "log4j.dtd" >
   <log4j:configuration>
   ```

```
    <appender name="stdout"
class="org.apache.log4j.ConsoleAppender">
        <layout class="org.apache.log4j.PatternLayout">
           <param name="ConversionPattern" value="%d{ABSOLUTE} %5p
%c{1}:%L - %m%n"/>
        </layout>
    </appender>

    <!-- NMS logging configuration -->
    <category name="com.splwg.oms">
        <priority value="INFO"/>
    </category>

    <root>
        <priority value="WARN"></priority>
        <appender-ref ref="stdout"/>
    </root>
</log4j:configuration>
```

Deploying Oracle Utilities Network Management System in WebLogic Server

To deploy the Oracle Utilities Network Management System application in your domain, follow these steps:

1. Login in as the user account that will run the WebLogic Application Server.
2. Access the WebLogic Server Administration Console by entering the following URL:

   `http://`*`hostname`*`:`*`port`*`/console`

   Here *hostname* represents the DNS name or IP address of the Administration Server, and *port* represents the number of the port on which the Administration Server is listening for requests (port 7001 by default).
3. If you have not already done so, in the Change Center of the Administration Console, click **Lock & Edit**.
4. In the left pane of the Administration Console, select **Deployments**.
5. If a previous release of Oracle Utilities Network Management System (cesejb) is in the table, select the checkbox to the far left of the deployed cesejb application. Click the **Delete** button at the top or bottom of the Deployments table to delete the cesejb application, then click **Yes** to confirm your decision.
6. In the right pane, click **Install**.
7. In the Install Application Assistant, locate the `cesejb.ear` to install. This will be in the `$NMS_HOME/java/deploy` directory.
8. Click **Next**.
9. Specify that you want to target the installation as an application.
10. Click **Next**.
11. Select the servers and/or cluster to which you want to deploy the application.

    Note: If you have not created additional Managed Servers or clusters, you will not see this assistant page.
12. Click **Next**.
13. Update the following additional deployment setting:
    - Change the deployed name of the application from `cesejb` to something unique.
14. Click **Next**.

15. Review the configuration settings you have specified, and click **Finish** to complete the installation.
16. If you chose to immediately go to the deployment's configuration screen, click the tabs to set additional configuration settings for the application or module.

    If you chose to change this information later, you are returned to the **Deployments** table, which now includes your newly-installed application or module.
17. To activate these changes, in the Change Center of the Administration Console, click **Activate Changes**.
18. A restart of the WebLogic-managed server(s) that will be running Oracle Utilities Network Management System is not required for these changes to take effect unless you are instructed to do so at this time.
19. Open a browser and navigate to: http://hostname:port/nms

Here *hostname* represents the DNS name or IP address, and *port* represents the port for the WebLogic Server.

Complete the following Steps **if Step 19 was not successful** and you wish to test the connection to the corba gateway:

20. Open a browser and navigate to: http//hostname:port/nms/console.jnlp
21. Ignore the Security Warning and enter the WebLogic username and password.
22. Select NMS/CorbaPublisher/Operations/testGatewayConfiguration.
23. Press the testGatewayConfiguration button.
24. A pop-up message stating the configuration test ran successfully or else an error message stating what is wrong with the configuration should be seen.

Installing Oracle Utilities Network Management System Web Clients

The Oracle Utilities Network Management System Java-based products (Web Workspace, Web Trouble, Service Alert, Storm Management, Web Call Entry, Web Callbacks, Web Switching Request) all make use of the Oracle Utilities Network Management System Web Gateway.

There are two supported ways of running Oracle Utilities Network Management System Web Clients. One way is to run from a browser as a Java Web Start application, and the other is to run as a standalone Java application. If the Java Web Start version is chosen, there is no client installer needed. The user selects the appropriate web site: http://<your_web_gateway>/nms.

To run the Web Client application installer, complete these steps:

1. **Uninstall** the previous version of the web clients before continuing.
2. Unzip the NMS_V1_11_0_Optional_Windows_Apps.zip, which is included in the Oracle Utilities Network Management System "Base Software" zip file.

If anonymous access is disabled on the web gateway, or it is desired to install this application without having access to the web gateway at installation time, perform the following optional steps:

3. <Optional> From a web browser, enter the url: `http://<your_web_gateway>:<your port>/nms/ejb-client.jar`, then save the file to the same directory as the unzipped installers.
4. <Optional> Do the above step for the nms_config.jar, saving the file to the same directory as the unzipped installers.
5. On the PC where the client application will be used, double-click on the desired setup executable file. The Oracle Utilities Network Management System installer window appears.

If installing on Windows 7, right-click the installer and choose Properties. Then in the Compatibility tab, check Run this program in compatibility mode for: and choose Windows XP (Service Pack 3).

6. Click **Next** in the installer window. The Web Gateway Information window appears.
7. In the Web Gateway Machine Name field, enter the name and port of the server where the Web Gateway was installed. This should be the same value used for the RMI_URL environment variable. Click the **Next** button to bring up the Choose Install Folder window.
8. Install the software in the default C:\OracleNMS directory unless your site requires a different drive or location be used. Click the **Next** button to bring up the Choose Shortcut Folder window.
9. Configure these settings to suit your organization's needs. The recommended settings are:
   - Leave the default location (Oracle Utilities NMS). This is what will show in your Start menu.
   - If "In a new Program Group" is selected, then select the **Create Icons for All Users** checkbox at the bottom of the window.
   - If "In an existing Program Group", then leave as is.
10. Click **Next**. The Pre-Installation Summary panel appears.
11. Review the Pre-Installation Summary settings to make sure they are correct. If they are not correct, click the **Previous** button until you reach the information you need to change. Make the changes, and then click **Next** until you return to this page.
12. When the settings are correct, click **Install**. Installation should take less than a minute. When it is complete, the Install Complete window appears confirming that the Oracle Utilities Network Management System application has been installed.
13. Click **Done**. The installer window closes.

Installing html2ps

The perl script html2ps is used to convert HTML formatted documents or output to a PostScript style format so that the document can be sent directly to a PostScript printer.

The installation of this script is required if you are implementing the **Oracle Utilities Network Management System Service Alert** application with printing. Service Alert is able to send out notifications to pagers and emails without this script. The script is only required for printed notifications.

Currently, the html2ps script can be found at http://user.it.uu.se/~jan/html2ps.html. This script requires version 5 of Perl.

Follow these steps to install the script:

1. Download the compressed tarfile to your UNIX server.
2. Move the file to an appropriate location for untarring.

```
gunzip < html2ps-1.0b5.tar.gz | tar xv
su root
cd html2ps-1.0b5
./install
```

   Note: Make sure you put "./" in front of "install".

3. You will be asked if you want to proceed with the installation. Confirm the default value by selecting **Enter**.
4. You will be asked to specify a command for retrieving remote documents. Confirm the default value by selecting **Enter**.

5. You will be asked to install in the subdirectories *bin*, *lib*, and *man*. Confirm the default value by selecting **Enter**.
6. When asked to enter a directory, enter: `/usr/local/bin`
7. You will be asked to enter the default paper type. A4 is the default size. U.S. users will probably want to change this to letter or legal. If A4 is acceptable, select **Enter**.
8. The html2ps script and manpages will be installed.

Installing BI Publisher for Web Switching

For instructions on installing and configuring Web Switching BI Publisher reports, refer to Chapter 15, Java Application Configuration, in the Oracle Utilities Network Management System Configuration Guide.

Installation, Project Configuration, and Runtime Directory Structure

The Oracle Utilities Network Management System has three directory areas involved with product installation, project configuration, and runtime. This section describes how these directories are created and interact.

Oracle Utilities Network Management System Directory Overview

The Oracle Utilities Network Management System Directory structure is comprised of three major areas:

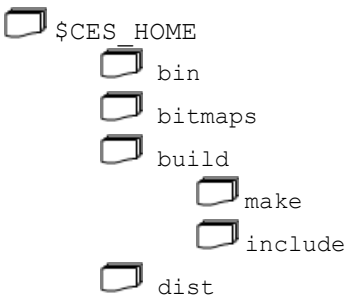
- The Oracle Utilities Network Management System Installation directory
- The Oracle Utilities Network Management System Project Configuration directory
- The Oracle Utilities Network Management System Runtime directory

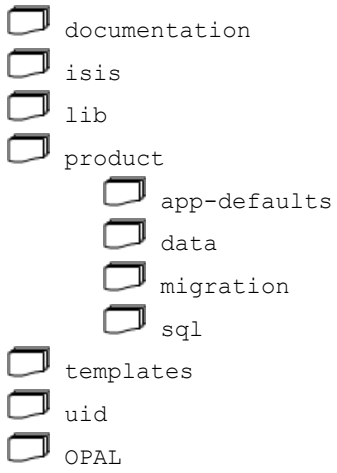
Oracle Utilities Network Management System Installation Directory

The Oracle Utilities Network Management System Installation directory is created as part of the installation process. There are two environment variables involved with this directory:

- **$NMS_ROOT** – Points to the top-level of the Oracle Utilities Network Management System installation directory and is typically set to "NMS". The installation process will create a directory under the $NMS_ROOT called "product". Under "product" will be the directories for each version of the Oracle Utilities Network Management System installed named by the fully qualified release number (i.e., `$NMS_ROOT/nms/product/1.11.0.0`).
- **$CES_HOME** – Points to the current product version being utilized by the running system. For example: `$CES_HOME=$NMS_ROOT/nms/product/1.11.0.0`

The installation directory will contain all content from the Oracle E-Delivery and should not be changed by the runtime system or user.

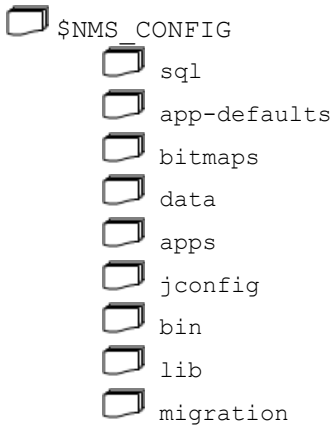




Oracle Utilities Network Management System Project Configuration Directory

The Oracle Utilities Network Management System Project directory will contain all project-specific configurations, scripts, and programs required to run the Oracle Utilities Network Management System. This directory is identified by the environment variable: $NMS_CONFIG and is typically set to "$NMS_HOME/config". Configuration files in the configuration directory will need to be prefixed by the project name. For example, the project classes file will have the path: `$NMS_CONFIG/sql/config_classes.dat`.

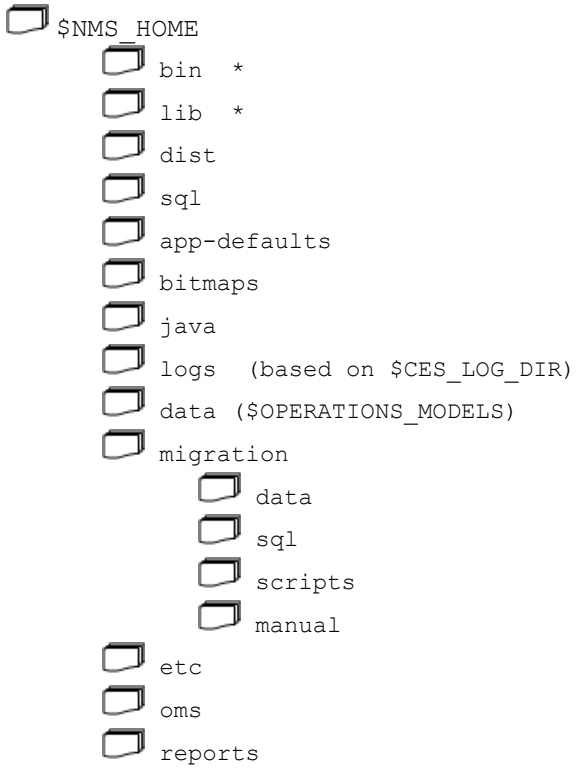
Here is the top level directory structure for the project configuration directory



Other files and directories can exist in the $NMS_CONFIG directory, but only those documented above will be utilized by the install script: nms-install-config.

Oracle Utilities Network Management System Runtime Directory

The Oracle Utilities Network Management System runtime directory will contain all runtime specific configurations, scripts, and programs required to run the Oracle Utilities Network Management System. This directory is identified by the environment variable: $NMS_HOME and for Oracle Utilities Network Management System Release 1.11.0.0 this must be set to $HOME (i.e., `/users/nmsadmin`).



* The bin and lib directories here have historically contained the Oracle Utilities Network Management System executables and shared libraries. This is no longer true as of Oracle Utilities Network Management System v1.9.0.1. These executables and shared libraries now exist in `$CES_HOME/bin` and `$CES_HOME/lib`.

Oracle Utilities Network Management System Directory Administration

The install process establishes the Oracle Utilities Network Management System Installation Directory. The project implementation team creates the contents of the Oracle Utilities Network Management System Project Directory. The nms-install-config script installs the product and project configurations into the runtime directories. Project files will either be appended to or override the product configurations based on type.

Troubleshooting Oracle Utilities Network Management System

Please refer to the Troubleshooting chapter of the Oracle Utilities Network Management System Configuration Guide for information on typical debugging strategies for various aspects of the system as well as locations of log files that contain pertinent information about the runtime applications.

Chapter 4

3rd Party Software

This chapter identifies the open source 3rd party products installed with Oracle Utilities Network Management System, and provides licensing and copyrighting information associated with each product.

> **Note**: The 3rd party software described in this chapter is "bundled" with the Oracle Utilities Network Management System product and installed automatically. Download information is provided for informational purposes only.

Package: boost-1.45.1

Available from: http://www.boost.org/users/download

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Package: Xerces-2.7.0

Available from: http://www.apache.org/dist/xml/xerces-c/xerces-c-current.zip

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Package: Xalan-1.10.0

Available from: ftp://ftp.oregonstate.edu/pub/apache/xml/xalan-c/Xalan-C_1_10_0-src.zip

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Package: csmap-1922

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