Oracle9*i*AS Unified Messaging

Administrator's Guide

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Oracle9*i*AS Unified Messaging Administrator's Guide, Release 9.0.2

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Preface

The Oracle9*i*AS Unified Messaging Administrator's Guide is intended for anyone planning, configuring, managing, or monitoring Oracle9*i*AS Unified Messaging. It provides an introduction to the components and concepts of Oracle9*i*AS Unified Messaging and describes the planning, configuring, and management tasks you will perform.

This preface contains these topics:

- Audience
- Organization
- Related Documentation
- Conventions
- Documentation Accessibility

Audience

The Oracle9*i*AS Unified Messaging Administrator's Guide is intended for anyone planning, configuring, managing, or monitoring Oracle9*i*AS Unified Messaging. It provides an introduction to the components and concepts of Oracle9*i*AS Unified Messaging and describes the planning, configuring, and management tasks you will perform.

Organization

This book contains the following chapters:

Chapter 1, "Introduction"
This chapter contains an overview of the Oracle9*i*AS Unified Messaging system and describes its major features.

Chapter 2, "Getting Started"
This chapter contains information on the administration tools and explains how to configure, start up, shut down, and refresh the Oracle9*i*AS Unified Messaging system .

Chapter 3, "Administration and Provisioning"
This chapter contains information on administering Oracle9*i*AS Unified Messaging.

Chapter 4, "Servers and Processes"
This chapter contains information on the different servers and processes of the Oracle9*i*AS Unified Messaging system.

Chapter 5, "Telephony Processes"
This chapter contains information on the different telephony processes of the Oracle9*i*AS Unified Messaging system.

Chapter 6, "Administeri ng Web Calendar and Scheduler"
This chapter contains information on migrating and administering the Oracle9*i*AS Unified Messaging Calendar and Resource Scheduler.

Chapter 7, "Error Messages"
This chapter contains information on Oracle9*i*AS Unified Messaging error messages.

Chapter 8, "Command Line Interface"

This chapter contains information on the Oracle9*i*AS Unified Messaging command line interface.

Appendix A, "Server Statistics"

This chapter contains information on the Oracle9*i*AS Unified Messaging server statistics.

Appendix B, "Oracle9iAS Unified Messaging Access Control Lists"

This chapter contains information on the Oracle9*i*AS Unified Messaging access control lists.

Related Documentation

Oracle9*i*AS Unified Messaging documentation is available in HTML and PDF.

The following document is available on http://otn.oracle.com

- Oracle9*iAS Unified Messaging JAVA API Documentation*

For more information, see these Oracle resources:

- *Oracle Enterprise Manager Administrator's Guide*

- *Oracle9i Database Administrator's Guide*

- *Oracle9i Application Server Database Administrator's Guide*

- *Oracle9i SQL Reference*

- *Oracle Net Services Administrator's Guide*

In North America, printed documentation is available for sale in the Oracle Store at

`http://oraclestore.oracle.com/`

Customers in Europe, the Middle East, and Africa (EMEA) can purchase documentation from

`http://www.oraclebookshop.com/`
Other customers can contact their Oracle representative to purchase printed documentation.

To download free release notes, installation documentation, white papers, or other collateral, please visit the Oracle Technology Network (OTN). You must register online before using OTN; registration is free and can be done at

```
http://otn.oracle.com/admin/account/membership.html
```

If you already have a username and password for OTN, then you can go directly to the documentation section of the OTN Web site at

```
http://otn.oracle.com/docs/index.htm
```

To access the database documentation search engine directly, please visit

```
http://tahiti.oracle.com
```

For more information on Request for Comments (RFCs), please visit

```
http://www.ietf.org
```

Conventions

This section describes the conventions used in the text and code examples of this documentation set. It describes:

- Conventions in Text
- Conventions in Code Examples

Conventions in Text

We use various conventions in text to help you more quickly identify special terms. The following table describes those conventions and provides examples of their use.

Convention	Meaning	Example
Bold	Bold typeface indicates terms that are defined in the text or terms that appear in a glossary, or both.	When you specify this clause, you create an **index-organized table**.
Italics	Italic typeface indicates book titles or emphasis.	*Oracle9i Database Concepts* Ensure that the recovery catalog and target database do *not* reside on the same disk.

Convention	Meaning	Example
UPPERCASE monospace (fixed-width) font	Uppercase monospace typeface indicates elements supplied by the system. Such elements include parameters, privileges, datatypes, RMAN keywords, SQL keywords, SQL*Plus or utility commands, packages and methods, as well as system-supplied column names, database objects and structures, usernames, and roles.	You can specify this clause only for a NUMBER column. You can back up the database by using the BACKUP command. Query the TABLE_NAME column in the USER_TABLES data dictionary view. Use the DBMS_STATS.GENERATE_STATS procedure.
lowercase monospace (fixed-width) font	Lowercase monospace typeface indicates executables, filenames, directory names, and sample user-supplied elements. Such elements include computer and database names, net service names, and connect identifiers, as well as user-supplied database objects and structures, column names, packages and classes, usernames and roles, program units, and parameter values. **Note:** Some programmatic elements use a mixture of UPPERCASE and lowercase. Enter these elements as shown.	Enter sqlplus to open SQL*Plus. The password is specified in the orapwd file. Back up the datafiles and control files in the /disk1/oracle/dbs directory. The department_id, department_name, and location_id columns are in the hr.departments table. Set the QUERY_REWRITE_ENABLED initialization parameter to true. Connect as oe user. The JRepUtil class implements these methods.
lowercase italic monospace (fixed-width) font	Lowercase italic monospace font represents placeholders or variables.	You can specify the *parallel_clause*. Run U*old_release*.SQL where *old_release* refers to the release you installed prior to upgrading.

Conventions in Code Examples

Code examples illustrate SQL, PL/SQL, SQL*Plus, or other command-line statements. They are displayed in a monospace (fixed-width) font and separated from normal text as shown in this example:

```
SELECT username FROM dba_users WHERE username = 'MIGRATE';
```

The following table describes typographic conventions used in code examples and provides examples of their use.

Convention	Meaning	Example
[ ]	Brackets enclose one or more optional items. Do not enter the brackets.	`DECIMAL (digits [ , precision ])`
{ }	Braces enclose two or more items, one of which is required. Do not enter the braces.	`{ENABLE	DISABLE}`
|	A vertical bar represents a choice of two or more options within brackets or braces. Enter one of the options. Do not enter the vertical bar.	`{ENABLE	DISABLE}` `[COMPRESS	NOCOMPRESS]`

...	Horizontal ellipsis points indicate either:
	
	■ That we have omitted parts of the code that are not directly related to the example
	
	■ That you can repeat a portion of the code
		`CREATE TABLE ... AS subquery;`
		
		`SELECT col1, col2, ... , coln FROM employees;`

.
.
.
	Vertical ellipsis points indicate that we have omitted several lines of code not directly related to the example.	`SQL> SELECT NAME FROM V$DATAFILE;`
		`NAME`
		`------------------------------------`
		`/fsl/dbs/tbs_01.dbf`
		`/fsl/dbs/tbs_02.dbf`
		`.`
		`.`
		`.`
		`/fsl/dbs/tbs_09.dbf`
		`9 rows selected.`

Other notation	You must enter symbols other than brackets, braces, vertical bars, and ellipsis points as shown.	`   acctbal NUMBER(11,2);` `   acct    CONSTANT NUMBER(4) := 3;`
Italics	Italicized text indicates placeholders or variables for which you must supply particular values.	`CONNECT SYSTEM/system_password` `DB_NAME = database_name`

UPPERCASE	Uppercase typeface indicates elements supplied by the system. We show these terms in uppercase in order to distinguish them from terms you define. Unless terms appear in brackets, enter them in the order and with the spelling shown. However, because these terms are not case sensitive, you can enter them in lowercase.	`SELECT last_name, employee_id FROM employees;`
		`SELECT * FROM USER_TABLES;`
		`DROP TABLE hr.employees;`

Convention	Meaning	Example
lowercase	Lowercase typeface indicates programmatic elements that you supply. For example, lowercase indicates names of tables, columns, or files.	`SELECT last_name, employee_id FROM employees;` `sqlplus hr/hr` `CREATE USER mjones IDENTIFIED BY ty3MU9;`
	Note: Some programmatic elements use a mixture of UPPERCASE and lowercase. Enter these elements as shown.	

Documentation Accessibility

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

`http://www.oracle.com/accessibility/`

Accessibility of Code Examples in Documentation

JAWS, a Windows screen reader, may not always correctly read the code examples in this document. The conventions for writing code require that closing braces should appear on an otherwise empty line; however, JAWS may not always read a line of text that consists solely of a bracket or brace.

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Introduction

This chapter provides an overview of the Oracle9*i*AS Unified Messaging system and describes its major features.

This chapter contains the following topics:

- Oracle9iAS Unified Messaging Overview
- Oracle9iAS Unified Messaging Features

Oracle9*i*AS Unified Messaging Overview

Oracle9iAS Unified Messaging uses the Oracle9*i* database as a single message store for e-mail, voice mail, and fax messages, taking advantage of Oracle's core competencies in providing access to, storing, and managing all types of information. Using the highly scalable and reliable Oracle9*i* message store as a foundation, Oracle9iAS Unified Messaging provides message delivery, standards-based client access, telephone applications, wireless notification, browser-based clients (both Web and wireless), and administration utilities.

Oracle9*i*AS Unified Messaging Features

Oracle9*i*AS Unified Messaging is designed to grow to almost any size while maintaining its performance and ease of administration. The Oracle9*i*AS Unified Messaging system can be customized based on how many messages need to be stored, how many users access the system under peak loads, and how many messages are sent and received over a period of time. The Oracle9*i*AS Unified Messaging internet computing architecture enables customers to support thousands of users on a single system, if necessary. Customers have the option of creating a two-tier system with a single host supporting a few thousand users, or a three-tier system with the protocol access servers are separated from the message database supporting thousands of users. This architecture allows customers to add hardware at any tier, expanding the system to support a virtually unlimited number of users.

Message Store

Oracle9*i*AS Unified Messaging stores all messages, including e-mail, voice mail, and fax, in the same Oracle 9i database. This eliminates the need to synchronize message stores and the chore of administering multiple stores that each contain different message types. Oracle9*i*AS Unified Messaging users can access and manage all messages from the interface of their choice, including a Web browser, phone, PDA, and fax machine. The Oracle9*i* database enables Oracle9*i*AS Unified Messaging to offer data availability, data integrity, low recovery time, and fault-tolerance capability. Oracle9*i*AS Unified Messaging takes advantage of Oracle9*i*AS Unified Messaging multithreading, parallel processing, high availability support, and high performance.

Open Standards-Based Messaging

Oracle9*i*AS Unified Messaging enables users to access messages with the messaging client of their choice. Messages can be accessed using any client compliant with

Internet Message Access Protocol (IMAP4) or Post Office Protocol (POP3), such as Netscape Messenger, Microsoft Outlook Express, or Eudora Pro Lite. Oracle9iAS Unified Messaging provides directory services using the light-weight directory access protocol (LDAP) standard compliant Oracle Internet Directory.

Thin Client

The Oracle9iAS Unified Messaging Thin Client provides Internet access to Oracle9iAS Unified Messaging through a standard Web browser. Browser-based clients provide all of the advantages of internet computing: increased reliability because no dedicated client is needed; decreased support and administration costs due to the system being maintained in a professional data center; and increased message access because there are no local message storage requirements. Users can access and manage all aspects of their Oracle9iAS Unified Messaging account, including Calendar and to-do lists through the browser-based interface. Wireless functionality is also available through the wireless web using Wireless Markup Language (WML) and the Oracle9iAS Wireless Edition.

Standards Based Telephone Applications

Oracle9iAS Unified Messaging provides a basic voice mail interface with the ability to change user preferences through both the telephone and Web interface. Because Oracle9iAS Unified Messaging is a single store solution, actions taken on a message or account preferences set through the voice channel are visible through all channels. Voice mail and faxes are stored directly in the user's inbox as industry standard MIME-compliant messages with `.wav` (voice) or `.tif` (fax) attachments that are configurable to different en coder types, and are easily rendered messages through GUI clients.

Oracle9iAS Unified Messaging telephone applications are built on the Enterprise Computer Telephony Forum (ECTF) standards. These standards, collectively known as CT Server, define the infrastructure needed to build and support platform-independent computer telephony (CT) applications and allow Oracle9iAS Unified Messaging telephone applications to easily integrate with a variety of enterprise and carrier class switches.

Calendar

The Oracle9iAS Unified Messaging Calendar provides Web-based Calendaring and scheduling for enterprises and service providers. Oracle9iAS Unified Messaging Calendar leverages components of Oracle9iAS and the Oracle9i database to provide a scalable, reliable, and secure Calendar solution. This approach provides

users with full Calendar functionality from any Web browser and a single source of information for PDA synchronization.

Extended Server Side Filters

Oracle9*i*AS Unified Messaging extends the server side filters that were available in the previous release. Filters now provide additional predefined actions that can be applied to a wider range of mail events, including sending, forwarding, deleting, and expunging a message from the system. These filters include a PL/SQL API that enables customers to write their own customized actions for filters. Server side filters also provide integration with the Oracle9*i* Advanced Queueing to enable sophisticated e-business applications to work with mail. Server Side Filters can be used to identify and delete virus messages as they come. In addition, there is a standalone virus cleanup utility that can be used to scan the whole mail system for virus infections.

Integration With Other Applications

PL/SQL and Java programmers can create custom applications to integrate Oracle9*i*AS Unified Messaging with other applications. Oracle9*i*AS Unified Messaging Application Programming Interfaces (APIs) enable applications to directly manipulate stored messages as well as create outgoing messages that follow the MIME-standard. Combined with server side filters, applications integrated with Oracle9*i*AS Unified Messaging can process and manage large numbers of messages.

Enhanced Administration Features

Oracle9*i*AS Unified Messaging simplifies administration and management by integrating with Oracle Enterprise Manager, enabling consolidated, Web-based management of the total Oracle environment as well as integration into existing system monitoring infrastructures. Oracle9*i*AS Unified Messaging also supports multiple domains with delegated administration on the same system, enabling hosting.

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Getting Started

This chapter discusses the administration tools and explains how to configure, start up, shut down, and reinitialize the Oracle9*i*AS Unified Messaging system.

This chapter contains the following topics:

- Pre-Configuration Checklist
- Configuring Oracle9iAS Unified Messaging
- Using the Administration Tools
- Starting Up, Shutting Down, and Reinitializing Oracle9iAS Unified Messaging

Pre-Configuration Checklist

This section describes pre-configuration procedures that must be done prior to confuguring Oracle9*i*AS Unified Messaging.

This section contains the following topics:

- Applying the Oracle9iAS Interoperability Patch
- Applying the NetCA and DBCA Bug Fix Patches
- Verifying and Starting the Oracle9iAS Infrastructure and Application Servers
- Registering the Database with Oracle Internet Directory
- Installing the umbackend.tar File
- Installing the install_infra.sql File
- Creating Calendar and Mail Store Tablespaces and Schema

Applying the Oracle9*i*AS Interoperability Patch

Prior to configuring Oracle9*i*AS Unified Messaging, customers must apply the Oracle9*i*AS Interoperability Patch, Release 2, for 9.0.2 CD that is specific to the platform you are using.

> **Note:** It is important to read the Oracle9*i*AS Interoperability Patch README prior to applying the patch.

Applying the Patch on the Oracle9*i*AS Infrastructure Database

If you are using the database that comes with the Oracle9*i*AS infrastructure, perform the following steps:

1. Install the Oracle9*i*AS infrastructure.

2. Install the Oracle9*i*AS application server with the Oracle9*i*AS Unified Messaging installation type.

3. Apply the Oracle9*i*AS Interoperability patch on the Oracle9*i*AS infrastructure and application server.

Applying the Patch on a Custom Database

If you are using a custom database and not the database that comes with the Oracle9*i*AS infrastructure, perform the following steps:

1. Install the Oracle9*i*AS infrastructure.

2. Install the Oracle9*i*AS application server with the Oracle9*i*AS Unified Messaging installation type.

3. Install the Oracle9*i* database.

4. Apply the Oracle9*i*AS Interoperability patch on the Oracle9*i*AS infrastructure and application server.

Applying the NetCA and DBCA Bug Fix Patches

> **Note:** If you are using an Oracle 9.2 database, you need not apply the NetCA and DBCA bug fix patches.

If you installed an Oracle 9.0.1.3 database or higher, you must apply the NetCA and DBCA bug fix patches to create a database service name and register the database with Oracle Internet Directory.

Perform the following steps to apply the NetCA and DBCA bug fix patches:

1. Install the NetCA bug fix patch 2224723 on the database.

2. Install the DBCA bug fix patch 2227356 on the database.

Verifying and Starting the Oracle9*i*AS Infrastructure and Application Servers

Verify that the infrastructure and application servers are running:

```
% opmnctl startall
```

Registering the Database with Oracle Internet Directory

An Oracle9*i* database is required to install the mail store. Before a database can be configured as a mail store, it must be registered with the Oracle Internet Directory infrastructure. If the database is not already registered with the Oracle Internet Directory, it can be registered using the Oracle database configuration assistant . Once the database is registered with Oracle Internet Directory, at a later point any changes to the connect identifier can be made using Oracle Net Manager.

Installing the `umbackend.tar` File

> **Note:** If the mail store database is on a different platform than the
> application server, the `umbackend.tar` file must be downloaded
> from the Oracle Technology Network website.

Perform the following steps to install the `umbackend.tar` file:

1. Copy the `umbackend.tar` file from `$ORACLE_HOME/oes/bin` directory on
   the application server to the `$ORACLE_HOME` on the mail store database. If the
   mail store is located on another system, the `umbackend.tar` file must be
   transferred from the application server to the mail store database as the
   database owner.

2. Untar the `umbackend.tar` file:

   ```
   tar xvf umbackend.tar
   ```

3. Run the following commands to run the installer:

   ```
   cd backend/disk1
   ./runInstaller
   ```

4. Follow the screen prompts to complete the Oracle9*i*AS Unified Messaging
   backend installation.

Installing the `install_infra.sql` File

Administrators must run `<mailstore_database_oracle_home/`
`oes/install/sql/install_infra.sql` on the mailstore database machine
after installing the `umbackend.tar` file, if the Oracle9*i*AS Unified Messaging
server middle tier and backend database are on different platforms. For example,
the middle tier is on Solaris and the mail store database is on NT.

Creating Calendar and Mail Store Tablespaces and Schema

The Oracle9*i*AS Unified Messaging configuration wizard creates tablespaces and schema for Calendar and mail store. If you want to customize tablespace storage parameters or data files, you can create them before running configuration wizard.

For the name of mail store tablespaces and their default storage parameters go to `$ORACLE_HOME/oes/install/sql/tblspc.sql` directory.

> **Note:** If you pre-create tablespaces, the Oracle9*i*AS Unified Messaging configuration wizard log shows some errors indicating tablespace creation failed. These errors can be ignored.

Configuring Oracle9*i*AS Unified Messaging

> **See Also:** *Oracle9iAS Unified Messaging Telephony Services Installation Notes for Windows 2000* for more information on configuring telephony and wireless

This section describes how to configure the Oracle9*i*AS Unified Messaging mail store, middle tier, and Calendar servers.

This section contains the following topics:

- Configuring the Oracle9iAS Unified Messaging Mail Store
- Configuring the Oracle9iAS Unified Messaging Middle Tier
- Configuring the Oracle9iAS Unified Messaging Calendar Store

Configuring the Oracle9*i*AS Unified Messaging Mail Store

Configuring the mail store database does the following:

- Creates tablespaces for the mail schema
- Creates mail tables and indexes
- Loads mail related PL/SQL packages
- Loads mail related stored java procedures
- Configures the mail store with Oracle Internet Directory

To configure the Oracle9*i*AS Unified Messaging mail store, perform the following steps on the middle tier server:

1. Set the database `init.ora` parameters on the mail store database to the following values:

    ```
    processes=150 or higher
    open_cursors=300 or higher
    dml_locks=200 or higher
    shared_pool_size=32000000 or higher
    java_pool_size=40000000 or higher
    ```

2. Run the `umconfig.sh` script located on the application server:

    - For UNIX, enter the following command:

        ```
        $ORACLE_HOME/oes/bin/umconfig.sh
        ```

■ For Windows, enter the following command:

```
%ORACLE_HOME%\oes\bin\umconfig.bat
```

The Unified Messaging Configuration screen appears.

3. Select **Mail Store**.

4. Click **Next**. The Mail Store Database Configuration screen is displayed.

5. Enter the following information in the corresponding fields:

Field	Description
Database Hostname	The name of the machine on which the database is located
SID	The system identifier of the mail store
Port Number	The port number on which the listener is listening
System Password	The system password for the host database
CTXSYS Password	The password for the OracleText account

> **Note :** To use OracleText with the Oracle9*i* database, the `ctxsys` account must be unlocked. Installation of OracleText requires the `ctxsys` account to be present.

6. Click **Next**. The `ES_Mail` password screen is displayed.

7. Enter the `ES_MAIL` password and confirm it. If an `ES_MAIL` password is not entered, the default is `es`.

> **Note:** The mail store schema is owned by the `ES_MAIL` database user.

8. Click **Next**. The `UMADMIN` password screen is displayed.

> **Note:** UMADMIN is an administrator account created in the Oracle
> Internet Directory server during the application server installation
> of Oracle9iAS Unified Messaging. It account owns specific
> Oracle9iAS Unified Messaging entries in the directory. After
> installation, administrators should log in to the administration tool
> using the UMADMIN account and create an initial Oracle9iAS
> Unified Messaging domain and user. Thereafter, they can delegate
> system and domain administration responsibilities to other users.

9. Enter the UMADMIN password and confirm it. If a password is not entered, the
   default value welcome is stored in Oracle Internet Directory and the database
   as the UMADMIN password.

10. Click **Next**. The Configuration Tools screen is displayed and the mail store
    configuration begins.

Once the mail store configuration is complete, the End of Installation screen is
displayed.

Log files for umconfig.sh are located in the following directory:

$ORACLE_HOME/oes/log/

Manually Configuring the Oracle9*i*AS Unified Messaging Mail Store

> **Note:** The manual steps described below are an alternative to
> running the mailstore.sh script through the user interface.

Enter the following command to manually run the Oracle9iAS Unified Messaging
mail store configuration scripts with parameters:

- For UNIX:

```
$ORACLE_HOME/oes/bin/install_mailstore.sh <connect_str> <sys_passwd>
<system_passwd> <ctxsys_passwd> <SID> <host_name> <port_number>
<INSTALLATION_NAME> <ORACLE_HOME> <es_mail_passwd> <umadmin_passwd> <oid_flag>
```

- For Windows:

```
%ORACLE_HOME%\oes\bin\install_mailstore.bat <connect_str> <sys_passwd>
<system_passwd> <ctxsys_passwd> <SID> <host_name> <port_number>
<INSTALLATION_NAME> <ORACLE_HOME> <es_mail_passwd> <umadmin_passwd> <oid_flag>
```

> **Note:** The default INSTALLATION_NAME is UM_SYSTEM.

Configuring the Oracle9*i*AS Unified Messaging Middle Tier

- Configuring the middle tier does the following:
- Configures middletier with Oracle Internet Directory
- Configures middletier with mailstore
- Creates Oracle9*i*AS Unified Messaging server instances

To configure the Oracle9*i*AS Unified Messaging middle tier servers, perform the following steps:

1. Run the umconfig.sh script located on the application server:

   - For UNIX, enter the following command:

     $ORACLE_HOME/oes/bin/umconfig.sh

   - For Windows, enter the following command:

     %ORACLE_HOME%\oes\bin\umconfig.bat

   The Unified Messaging Configuration screen is displayed.

2. Select Middle Tier.

3. Click Next. The Middle Tier Configuration screen is displayed.

4. Enter the following information in the corresponding fields:

Field	Description
Database Hostname	The name of the machine on which the database is located
SID	The system identifier of the database
Port Number	The port number on which the listener is listening
System Password	The system password of the database specified above

5. Click Next. The Configuration Tools screen is displayed and the middle tier configuration begins.

Once the middle tier configuration is complete, the End of Installation screen is displayed.

Log files for `umconfig.sh` are located in the following directory:

UNIX:

```
$ORACLE_HOME/oes/log/
```

Windows:

```
% ORACLE_HOME\oes\log\
```

Manually Configuring the Oracle9*i*AS Unified Messaging Middle Tier

> **Note:** The manual steps described below are an alternative to running the `middletier.sh` script through the user interface.

Use the following command to run the Oracle9*i*AS Unified Messaging Middle Tier configuration scripts with parameters:

■ For UNIX:

```
$ORACLE_HOME/oes/bin/install_middletier.sh <connect_str> <system_passwd>
<INSTALLATION_NAME> <ORACLE_HOME> <umadmin_passwd> <oid_flag>
```

■ For Windows:

```
%ORACLE_HOME%\oes\bin\install_middletier.bat <connect_str> <system_passwd>
<INSTALLATION_NAME> <ORACLE_HOME> <umadmin_passwd> <oid_flag>
```

Configuring the Oracle9*i*AS Unified Messaging Calendar Store

> **Note:** An Oracle9*i* database is required to install the Calendar store.

Configuring the Calendar does the following:

■ Creates tablespaces for the Calendar schema

■ Creates Calendar tables and indexes

■ Loads Calendar related PL/SQL packages

- Loads Calendar related stored java procedures

- Configures Calendar store with Oracle Internet Directory

To configure the Oracle9*i*AS Unified Messaging Calendar store, perform the following steps:

1. Run the `umconfig.sh` script located on the application server:

- For UNIX, enter the following command:

  `$ORACLE_HOME/oes/bin/umconfig.sh`

- For Windows, enter the following command:

  `%ORACLE_HOME%\oes\bin\umconfig.bat`

  The Unified Messaging Configuration screen is displayed.

2. Select Calendar.

3. Click Next. The Calendar Configuration screen is displayed.

> **Note:** For a given deployment, there can be one or more mail stores, but only one Calendar store. Calendar and mail stores can be on the same or on different databases. Before a Calendar store is configured, you must configure that node as a mail store. However, you do not have to create users' mail accounts on that database.

4. Enter the following information in the corresponding fields:

Field	Description
Database Hostname	The name of the machine on which the database is located
SID	The system identifier of the Calendar store
Port Number	The port number on which the listener is listening
System Password	The system password of the database specified above
ES_MAIL Password	The ES_MAIL schema owner password. If an ES_MAIL password is not entered, it defaults to es

5. Click **Next**. The ES_CAL Password screen is displayed.

6. Enter the ES_CAL password and confirm it. If an ES_CAL password is not entered, the default is cal.

> **Note:** The Calendar store schema is owned by the ES_CAL database user.

7. Click **Next**. The Configuration Tools screen is displayed and the Calendar configuration begins.

Once the Calendar configuration is complete, the End of Installation screen is displayed.

The Log files for umconfig.sh are located in the following directory:

```
$ORACLE_HOME/oes/log/
```

Manually Configuring the Oracle9iAS Unified Messaging Calendar

> **Note:** The manual steps described below are an alternative to running the cal_flow_install.sh through the user interface.

Use the following command to run the Oracle9iAS Unified Messaging Calendar configuration scripts with parameters:

■ For UNIX:

```
$ORACLE_HOME/oes/calserver/cal_flow_install.sh <Net9_Connect_String>
<Sys_Passwd> <Flow_User> <Flow_User_Passwd> <App_User> <App_User_Passwd>
<Es_Mail_Passwd> <Img_Prefix> <Def_Tblspace> <Index_Tblspace>
<umadmin_passwd> <oid_flag>
```

■ For Windows:

```
%ORACLE_HOME%\oes\calserver\cal_flow_install.bat <Net9_Connect_String>
<Sys_Passwd> <Flow_User> <Flow_User_Passwd> <App_User> <App_User_Passwd>
<Es_Mail_Passwd> <Img_Prefix> <Def_Tblspace> <Index_Tblspace>
<umadmin_passwd> <oid_flag>
```

> **Note:** If oid_flag is set to 0, the createdefaults.sh script is invoked to create the domain in Oracle Internet Directory.

Using the Administration Tools

This section describes the different administration tools used to administer the Oracle9iAS Unified Messaging system.

This section contains the following topics:

- Oracle Enterprise Manager
- Thin Client

Oracle Enterprise Manager

> **See Also:** *Oracle9i Application Server Administrator's Guide* for more information about Oracle Enterprise Manager

Oracle Enterprise Manager is a Web-based tool that enables administrators to perform some of the management tasks for the Oracle9i database and Oracle9i Application Server. The Oracle Enterprise Manager can be used to administer Oracle9iAS Unified Messaging service processes. Through Oracle Enterprise Manager, administrators can perform the following tasks on Oracle9iAS Unified Messaging system:

- startup
- shutdown
- Reinitialize
- Modify default parameters

To perform administration tasks for Oracle9iAS Unified Messaging through Oracle Enterprise Manager, administrators must navigate to the following URL:

```
http://<machine name>:1810
```

Thin Client

> **See Also:** Chapter 3, "Administration and Provisioning" for more information on domain and user provisioning, and Calendar and resource administration

Using the Oracle9iAS Unified Messaging Thin Client, administrators can perform domain and user provisioning tasks, and administer the Calendar and resource

scheduler. Through the Oracle9*i*AS Unified Messaging Thin Client, administrators can do the following:

- Create and modify domain settings for users and distribution lists

- Create, delete, modify, and view e-mail, fax users, voice mail users, and distribution lists

- Add and delete members to and from distribution lists

- View all the distribution lists a specific user is on

- Create, delete, modify, and view server-side filters

- Create, delete, and modify lists

- Administer the Calendar and resource scheduler

To perform administration tasks for Oracle9*i*AS Unified Messaging through the Thin Client, administrators must navigate to the following URL:

```
http://<machine name>:<port>/um/traffic_cop
```

Starting Up, Shutting Down, and Reinitializing Oracle9*i*AS Unified Messaging

This section explains how to start, stop, and reinitialize the Oracle9*i*AS Unified Messaging system.

This section contains the following topics:

- Verifying and Starting the Listener for the Mail Store and Calendar Store
- Verifying and Starting the Listener for the Middle Tier
- Starting the Oracle9iAS Unified Messaging System
- Stopping the Oracle9iAS Unified Messaging System
- Reinitializing the Oracle9iAS Unified Messaging System
- Creating a Public User

> **See Also:**   Chapter 4, "Servers and Processes", for more information on how to start up, shut down, and reinitialize individual processes

Verifying and Starting the Listener for the Mail Store and Calendar Store

The Oracle Net Listener must be running on the mail store and Calendar store database so that the system can establish database connections from the Oracle9*i*AS Unified Messaging system and clients.

To verify that the listener is running, enter the following:

```
% lsnrctl status listener_es
```

If the computer returns a message that contains the line `no listener`, then the listener must be started.

To start the listener, enter the following:

```
% lsnrctl start listener_es
```

Verifying and Starting the Listener for the Middle Tier

Verify that the listener is running, by entering the following:

```
% lsnrctl status listener_es
```

If the computer returns a message that contains the line `no listener`, then the listener needs to be started.

To start the listener, perform the following steps:

1. Configure the listener with protocol addresses and other configuration parameters, using Oracle Net Configuration Assistant or Oracle Net Manager.

    See Also: Chapter 12, "Configuring and Administering the Listener," of the *Oracle9i Net Services Administrator's Guide*

2. Log in as superuser (root) and set file ownership and access permissions for the listener executable (`tnslsnr`) and its dependent shared libraries so that these files can be modified only by the superuser. The `tnslsnr` is located in the `$ORACLE_HOME/bin` directory.

3. Verify that the permissions of the individual directories found in the path names to these files, starting with the root directory, are modified in the same way.

4. Start the listener as root.

5. At the operating system prompt, enter `tnslsnr` with optional command line arguments.

    ```
    tnslsnr [listener_name] [-user user] [-group group]
    ```

    where:

listener_name	Specifies the name of the listener, as `listener_es`. If omitted, the default name LISTENER is used.
-user user	Specifies the user whose privileges the listener uses when superuser (root) privileges are not needed. After performing the privileged operations, the listener gives up root privileges irreversibly.
-group group	Specifies the group whose privileges the listener uses when superuser (root) group privileges are not needed. After performing the privileged operations, the listener gives up root group privileges irreversibly.

Starting the Oracle9*i*AS Unified Messaging System

Starting an Oracle9*i*AS Unified Messaging service starts all the processes comprising that service type, such as IMAP4 and SMTP.

Using Oracle Enterprise Manager, perform the following procedure to start an Oracle9*i*AS Unified Messaging system:

1. Navigate to the Oracle9*i* Application Server home page

2. Select Oracle9*i*AS Unified Messaging.

3. Click **Start**.

Stopping the Oracle9*i*AS Unified Messaging System

Stopping an Oracle9*i*AS Unified Messaging system sends a request to the operating system to shut down all of the Oracle9*i*AS Unified Messaging processes. One reason an administrator would want to stop the Oracle9*i*AS Unified Messaging system is to perform maintenance on the system, such as upgrading the server hardware or software. It is not possible for the processes to be running while certain kinds of upgrades are performed.

Using Oracle Enterprise Manager, perform the following procedure to stop an Oracle9*i*AS Unified Messaging system:

1. Navigate to the Oracle9*i* Application Server home page.

2. Select Oracle9*i*AS Unified Messaging.

3. Click **Stop**.

Reinitializing the Oracle9*i*AS Unified Messaging System

Reinitializing an Oracle9*i*AS Unified Messaging process informs the operating system to reload its operational settings from the Oracle Internet Directory server. The process does not stop running, which means that users continue to receive uninterrupted service. Whenever a Oracle9*i*AS Unified Messaging process parameter is modified, it must be reinitialized to make the changes take effect.

Using Oracle Enterprise Manager, perform the following procedure to reinitialize an Oracle9*i*AS Unified Messaging process:

1. Navigate to the Oracle9*i* Application Server home page

2. Select Oracle9*i*AS Unified Messaging.

3. Click **Reinitialize**.

Creating a Public User

After configuring Oracle9*i*AS Unified Messaging, administrators must create a public user account through delegated administration service (DAS). This public

user corresponds with the initial user that will be created through the Thin Client administration tool.

> **See Also:** Oracle Internet Directory Administrator's Guide for more information on using DAS

Once the public user has been created, administrators can navigate to `http://<machine name>:<port number>/um/admin/UMAdminLogin.uix`, to create the initial domain and user.

> **See Also:** Chapter 3, "Administration and Provisioning" for more information on creating the initial domain and user.

3

Administration and Provisioning

This chapter discuses how to administer Oracle9*i*AS Unified Messaging.

This chapter contains the following topics:

- Initial Administration Tasks
- Managing Domains
- Managing Users
- Managing Lists
- Managing Aliases
- Scanning and Removing Viruses

Initial Administration Tasks

To perform initial administration tasks for Oracle9*i*AS Unified Messaging, administrators must navigate to the following URL:

```
http://<machine name>:<port number>/um/admin/UMAdminLogin.uix
```

Once administrators have logged in, they can perform the following tasks:

- Create the initial domain
- Create the initial user
- Setup the Calendar server
- Change the administrator password

After performing initial administration tasks, Oracle Corporation disabling the initial administration pages to avoid inadvertent changes to the system.

Creating the Initial Domain

Perform the following steps to create the initial domain:

1. Navigate to the Administration page.
2. Enter the UMADMIN password. This is the password designated during configuration.
3. Select **Domain** > **Domain Management** > **Create Domain**.
4. Select the parent domain from the drop down list.
5. Enter the domain name.
6. Click **Create Domain**.

Creating the Initial User

> **Note:** Oracle Corporation that the initial user created be an Oracle9*i*AS Unified Messaging system administrator.

Perform the following steps to create the initial user:

1. Navigate to the Administration page.
2. Select **User** > **User Management** > **Create User**.

3. Enter the user's ID.

4. Select the domain to which the user belongs.

5. Select the public user domain.

6. Select the mail store from the drop down list.

7. Enter the quota for the user

8. Select the user's role from the drop down list.

9. Click **Create**.

Setting Up the Calendar Server

Perform the following steps to set up the Calendar server:

10. On the Middle Tier machine, navigate to `$ORACLE_HOME/j2ee/OC4J_ UM/config/oc4j.properties` file

11. Configure the following parameters:

    - `calendar.cookie.domain`: This is the domain name for the Calendar cookie. Cookie domains must have at least two periods, and the first character in the cookie domain must be a period. For example,`.acme.com`

    - `calendar.mailstoredn`: This is the mail store DN from the `es_mail` installation where `es_cal` is also installed. For example: a default installation is:

      ```
      calendar.mailstoredn=cn=IASDB.<fully qualified machine name of
      infrastructure
      install>,cn=MailStores,cn=UM_SYSTEM,cn=EmailServerContainer,
      cn=Products,cn=oraclecontext
      ```

12. Add the following line to the `$ORACLE_ HOME/Apache/modplsql/conf/plsql.conf` file on the middle tier machine:

    ```
    Alias  /i/   '<ORACLE_HOME>/Apache/Apache/htdocs/calendar/images/'
    ```

13. Verify if the following database access descriptor (DAD) is present on the middle tier machine, in the file `$ORACLE_ HOME/Apache/modplsql/conf/dads.conf`:

    ```
    /pls/calapps
    ```

If it is not present, a database access descriptor must be created to point to the database where Calendar server is installed. The database access descriptor name should be /pls/calapps. A database access descriptor can be created through Oracle Enterprise Manager, by navigating to the following URL:

```
http://middletiersvrname:1810/emd
```

> **See Also:** *Oracle9i Application Server Administrator's Guide* for more information on creating an authenticated DAD

14. Using Oracle Enterprise Manager, create a DAD /pls/calpalm. This is required for using Palm.

15. Navigate to the Oracle9*i*AS Unified Messaging administration tool, and log in as orcladmin and The URL for Oracle9*i*AS Unified Messaging administration tool is

```
http://middletiersvrname:port/um/admin/UMAdminLogin.uix)
```

For each user entry, verify that the value specified for the orclMailSQLDAD attribute is calapps.

16. Navigate to the Administration Page.

17. Select **Calendar** > **Calendar Server Setup**.

18. Enter the following information in the corresponding fields:

Parameter	Description
Calendar Server Username	The name of the Calendar schema. The default is es_cal
Calendar Server User Password	The password for the Calendar schema owner
Connect String to Database	The connect string to the database where the Calendar schema is installed
loginurl	The URL to log in to Calendar
logouturl	The URL to log out of Calendar
Calendar Server Locale	The default local time zone
Calendar Server Administrator	The e-mail address of the Calendar server administrator. If there is more than one administrator, the e-mail addresses must be separated by a comma

19. Click **Setup**.

Changing Administrator Password

Perform the following steps to change the administrator password:

1. Navigate to the Administration Page.

2. Select **Preferences**> **Change Password**.

3. Enter the following information in the corresponding fields:

- Old Password

- New Password

- Confirm Password

4. Click **Submit**.

Managing Domains

Using the Thin Client, administrators can perform domain management tasks, such as create domains, modify domain settings for users, and modify domain settings for lists.

To perform administration tasks for Oracle9*i*AS Unified Messaging, administrators must navigate to the following URL:

```
http://<machine name>:<port>/um/traffic_cop
```

Creating Domains

Perform the following steps to create domains:

1. Using the Thin Client, navigate to the Administration page.

2. Select **Domain** > **Create Domain**.

3. Select the installation name.

4. Select the parent domain from the drop down list.

5. Enter the new domain name in the corresponding field.

6. Click **Submit**.

Modifying Domain Settings for Users

> **Note:** When the preferences for a domain are modified using the Thin Client administration tool, only the new entries created after the modifications contain the new set of preferences. For example, if the administrator changes the default mail quota of mail users of the `oracle.com` domain to 60MB, the new users created in the `oracle.com` domain have the new 60MB quota. The existing users in `oracle.com` retain the old mail quota.

Perform the following steps to modify domain preferences for users:

1. Using the Thin Client, navigate to the Administration page.

2. Select **Domain** > **Domain Settings for Users**.

3. Select the installation name from the drop down list.

4. Select the domain you want to modify.

5. Click **Submit**.

6. Modify the preferences you want to change.

The following is a list of user domain parameters:

> **Note:** These parameter is present at the domain level preferences for users. The values set here are inherited by all new users in the domain during user creation time.

Mail Store
This parameter stores the DN of the mail store the user belongs to. The mail store for a user is the database that contains mail user information.

E-mail Quota
This parameter stores the e-mail quota of a mail user in megabytes. This parameter is present at the domain level preferences for users.

Voice Quota
This parameter stores the quota for the voice mail user in megabytes. This parameter is present at the domain level preferences for users.

Number of Email Display (Web Mail)
This parameter displays the number of message headers displayed on a single page of the Thin Client.

Mail User Index Type
This parameter is associated with individual users and is present at the user level in Oracle Internet Directory, enabling OracleText configuration on a per user basis.

Domain Control ACI
This parameter specifies the domains a user can access.

Document Binary
This parameter is associated with individual users and is present at the user level in Oracle Internet Directory, enabling OracleText configuration on a per user basis. This parameter enables binary attachment search for users

Allow External Access (Web Mail)
This is an end user parameter that enables account access from outside a firewall. This preference is only used when the client has been configured to check for this preference before enabling users to connect. Typically, the WebMail client is configured in this manner when it is facing outside the firewall. This configuration can be used in conjunction with another WebMail client that is inside the firewall and not configured to check for this preference so that a user can log in from within the firewall, enable, or disable the preference, and then subsequently log in or prevent log in from outside the firewall. For security purposes, this preference is set to disabled by default.

View in New Window (Web Mail)
This is an end user parameter that specifies whether the message view display should occur in a new browser window. When disabled, the application displays message views in the same window.

Display All Headers (Web Mail)
This is an end user parameter that specifies whether a message view displays all the headers that a message contains. If disabled, only the common headers are shown. The commom headers are:

- From

- To

- CC

- Subject

- Date

- Priority

7. Click **Submit**.

Modifying Domain Settings for Lists

Perform the following steps to modify domain preferences for lists:

1. Using the Thin Client, navigate to the Administration page.

2. Select **Domain** > **Domain Settings for Lists**.

3. Select the installation from the drop down list.

4. Select the domain you want to modify.

5. Click **Submit**.

6. Modify the preferences you want to change.

The following is a list of parameters for list domains:

Maximum Message Size
This parameter indicates the maximum size (in bytes) of a message delivered to the list. Any message larger than this size is rejected.

Group Admin Mail ID
This parameter is the mail ID to which all commands to the list should be sent. The default is `<listname>-admin@domain`.

Group Type
This parameter specifies the type of the list. Possible values are announcement, discussion, edited, or moderated.

Group Subscription Type
This parameter denotes the type of subscription control on this list. Valid values are open, restricted, or closed.

Group Topic
This parameter is a single line phrase describing the topic of discussions on this list.

Group Information Text
This parameter is a multi-line field that owners can use to include descriptive text about the list.

Group Auto Reconfirm
This parameter is set to true if the owner wants all subscription requests to be reconfirmed with the user.

Group Invite Text
This parameter is a multi-line text sent in e-mail to users invited by a list owner to join their list.

Group Post Type
This parameter is defines the level of control a list owner wants on who can post messages to their list. Valid values are open or subscriber.

Group Editor's List
This parameter contains the list of users (mail IDs) who are the editors of the list.

Group Moderator's List
This parameter contains the list of users (mail IDs) who are the moderators of the list.

Group Merge Tag
This parameter enables a list owner to support mail merge or scheduled mail delivery, this attribute contains the tag that is used for specifying mail merge and scheduler tags.

7. Click **Submit**.

Managing Users

Using the Thin Client, administrators can perform user management tasks, such as create, delete, and modify e-mail, voice mail, and fax users.

To perform administration tasks for Oracle9*i*AS Unified Messaging, administrators must navigate to the following URL:

```
http://<machine name>:<port>/um/traffic_cop
```

Creating E-mail Users

Perform the following steps to create e-mail users:

1. Using the Thin Client, navigate to the Administration page.
2. Select **User** > **E-mail User Management** > **Create User**.
3. Select the domain from the drop down list.
4. Enter the user ID in the corresponding field.
5. Enter the base user domain.
6. Select the mail store from the drop down list.
7. Enter the quota value in the corresponding field.
8. Select the role from the drop down list.
9. Click **Create**.

Modifying E-mail User Parameters

Perform the following steps to modify e-mail user parameters:

1. Using the Thin Client, navigate to the Administration page.
2. Select **User** > **E-mail User Management** > **Modify User**.
3. Enter the user ID in the **Search Criteria** field.
4. Select the user's domain from the drop down list.
5. Click **Go**.
6. Modify the parameters you want to change.
7. Click **Modify**.

E-mail User Parameters

The following is a list of e-mail user parameters:

User ID
This parameter specifies the user ID.

Mail Store
This parameter stores the DN of the mail store the user belongs to. The mail store for a user is the database that contains mail user information.

E-mail Quota
This parameter stores the e-mail quota of a mail user in megabytes.

Auto Reply Text
This parameter stores auto reply text to be used by the user for the auto reply feature.

Auto Reply Expire
This parameter stores the auto reply expiration date in the following format:

```
MMDDYY:HH24:MI:SS:TZH:TZM
```

Forward Address
This parameter stores the e-mail addresses for the auto forward feature.

Telephone Number
This parameter is a local phone number for an Oracle9*i*AS Unified Messaging user. This parameter must be set because the voice mail application plays this number as part of the standard greeting when there are no greetings present. This value should be same as the telephone number in the base user entry

Mail User Index Type
This parameter is associated with individual users and is present at the user level in Oracle Internet Directory, enabling OracleText configuration on a per user basis. This parameter is present at the domain level preferences for users. The values set here are inherited by all new users in the domain during user creation time.

Document Binary
This parameter is associated with individual users and is present at the user level in Oracle Internet Directory, enabling OracleText configuration on a per user basis. This parameter is present at the domain level preferences for Users. The values set here are inherited by all new users in the domain during user creation time.

SQL DAD
This parameter stores the database access descriptor for the Calendar server.

Server Control ACI
This paramenter specifies the domains a user has access to.

Voice Quota
This parameter stores the quota for the voice mail user.

Deleting E-mail Users

> **Note:** When a mail user is deleted, any shared folders and public shared folders owned by that user are also deleted

Perform the following steps to delete e-mail users:

1. Using the Thin Client, navigate to the Administration page.

2. Select **User** > **E-mail User Management** > **Delete User**.

3. Enter the search criteria

4. Select the domain to which the user belongs to.

5. Click **Go**.

6. Select the user you want to delete.

7. Click **Delete**.

Creating Voice Mail and Fax Users

Perform the following steps to create voice mail or fax users:

1. Using the Thin Client, navigate to the Administration page.

2. Select **User** > **Voice/Fax User Management** > **Create User**.

3. Select the installation.

4. Select the domain and click **Get Mail Users**.

5. Select the user.

6. Click **Enable Voice/Fax**.

7. Enter the following information in the corresponding fields:

- Fax In Allowed

- Phone Access Allowed

- Web Access Allowed

- Telephone Number

- VPIM Mail

- VPIM Text Name

    See Also: "Voice Mail and Fax Parameters" for parameter definitions

8. Click **Enable**.

Modifying Voice Mail and Fax Users Parameters

Perform the following steps to modify voice mail or fax user parameters.

1. Using the Thin Client, navigate to the Administration page.

2. Select **User** > **Voice/Fax User Management** > **Modify User**.

3. Select the group profile of the user.

4. Click **Get Voice/Fax Users** to select from a list of users, or click **Select Voice/Fax Users** to search for a specific user.

5. Select the user and click **Edit**.

6. Modify the parameters you want to change.

7. Click **Modify**.

Voice Mail and Fax Parameters

The following is a list of voice mail and fax user parameters:

Group Profile
This parameter corresponds to the domain the selected mail user belongs to. Oracle9*i*AS Unified Messaging supports one level sub-grouping to define local PBX settings or different language preferences. Administrators are allowed to select from pre-existing groups or enter a sub-group name to be created.

Fax In Allowed

This parameter enables a user to receive faxes into their inbox. This is for an inbound fax only.

Phone Access Allowed

This parameter enables a user to use the voice mail application to listen to their messages.

Web Access Allowed

This parameter enables a user to use the Thin Client to view their messages.

Telephone Number

This parameter is a local phone number for an Oracle9*i*AS Unified Messaging user. This parameter must be set because the voice mail application plays this number as part of the standard greeting when there are no greetings present. This value should be same as the telephone number in the base user entry. Whenever this value is changed, the VPIM Mail parameter must be also be changed to the same value.

VPIM Mail

This parameter is the international number for a Oracle9*i*AS Unified Messaging user. The voice mail application uses this number to look up users. This number is associated with a domain. Whenever this value is changed, the Telephone Number parameter must be also be changed to the same value.

VPIM Text Name

This parameter is an optional value that represents the sender's address.

Deleting Voice Mail and Fax Users

Perform the following steps to delete voice mail or fax users.

1. Using the Thin Client, navigate to the Administration page.

2. Select **User** > **Voice/Fax User Management** > **Delete User**.

3. Select the domain to which the user belongs.

4. Click **Get Voice/Fax Users** to select from a list of users, or click **Select Voice/Fax Users** to search for a specific user.

5. Select the user you want to delete.

6. Click **Delete**.

Managing Lists

Using the Thin Client, administrators can perform list management, such as create lists, modify list properties, delete lists, show lists, add and delete list members, show list members, and show all the lists a member is on.

To perform list management tasks for Oracle9*i*AS Unified Messaging, administrators must navigate to the following URL:

```
http://<machine name>:<port>/um/traffic_cop
```

Creating Lists

Perform the following steps to create a list:

1. Using the Thin Client, navigate to the Administration page.

2. Select **List** > **Distribution List Management** > **Create a new list**.

3. Select the domain from the drop down list.

4. Select **SMTP** or **List Server** from the **Distribution List Typ**e drop down list. The distribution list type defines the mailing list type.

5. Click **Go**.

6. Enter the following information in the corresponding fields and click **Create**.

   - Distribution List Name

   - Owner

   - Maximum Message Size

   - Group Topic

   - Group Invite Text

   - Group Editor's List

   - Group Moderator's List

   - Group Merge Tag

   - Group Auto Reconfirm

   - Group Type

   - Group Subscription Type

   - Group Post Type

See Also: "List Server Parameters" for parameter definitions

Modifying Lists Properties

Perform the following steps to edit list properties:

1. Using the Thin Client, navigate to the Administration page.

2. Select **List** > **Distribution List Management** > **Edit list properties**.

3. Enter the list name, or enter * to display all available lists.

4. Select the domain of the list from the drop down list.

5. Select the list you want to make changes to.

6. Edit the properties you want to change.

7. Click **Modify**.

List Server Parameters

The following is a list of list server properties:

Distribution List Name
This parameter specifies the name of the distribution list.

Owner
This parameter specifies the person who owns or is responsible for the list.

Maximum Message Size
This parameter specifies indicates the maximum size, in bytes, of a message delivered to a list. Any message larger than this size is rejected.

Group Topic
This parameter is a single line phrase describing the topic of discussions on this list.

Group Invite Text
This parameter is a multi-line text that is sent in a mail to users invited by a list owner to join their list.

Group Editor's List
This parameter is contains the list of users (mail IDs) who are the editors of the list.

Group Moderator's List

This parameter is contains the list of users (mail IDs) who are the moderators of the list.

Group Merge Tag
This parameter enables a list owner to support mail merge or scheduled mail delivery, this attribute contains the tag used for specifying mail merge and scheduler tags.

Group Auto Reconfirm
This parameter is set to true if the owner wants all subscription requests to be reconfirmed with the user.

Group Type
This parameter specifies the type of the list. Possible values are:

- Announcement: Messages can only be sent to the list. Replies to the list are not accepted.

- Discussion: Messages can be sent and replied to on the list.

- Edited: Only certain people known as editors can post mails to the list. Messages from others are rejected.

- Moderated: Every mail posted to the list are sent to one or more persons known as moderators. The mail is delivered to the list only if at least one of the moderators approves the mail.

Group Subscription Type
This parameter denotes the type of subscription control on this list. Valid values are:

- Open: Anybody can subscribe to a list. No controls are imposed on who can subscribe

- Restricted: All subscriptions to the list need approval by the owner of the list.

- Closed: Users can subscribe to a list only if they are invited to join the list by the owner. All other subscription requests to the lists are automatically turned down.

Group Post Type
This parameter dines the level of control a list owner wants on who can post messages to their list. Valid values are open or subscriber.

- Open: Anybody can post a mail to the list.

■ Subscriber: Only a subscriber to a list can post a mail to the list. Non-subscribers that send mails to the list are rejected.

Deleting Lists

Perform the following steps to delete a list:

1. Using the Thin Client, navigate to the Administration page.

2. Select **List** > **Distribution List Management** > **Delete list(s)**.

3. Enter the list name, or enter * to display all available lists.

4. Select the domain of the list from the drop down list.

5. Click **Go**.

6. Select the list you want to delete.

7. Click **Delete**.

Adding and Deleting List Members

Perform the following to steps to add or delete list members:

1. Using the Thin Client, navigate to the Administration page.

2. Select **List** > **Membership Management** > **Add/Remove Members**.

3. Enter the list name, or enter * to display all available lists.

4. Select the domain of the list from the drop down list.

5. Click **Go**.

6. Select the list for which you want to add members.

7. Enter or remove information in the following fields:

   ■ Members (user) - Users on this system that are members of this list

   ■ Members (list) - Lists that are members of this sub-lists

   ■ Members (alias) - Aliases that are members of this list

   ■ Members (foreign) - Users foreign to this system who are members of this list

8. Click **Modify**.

Showing Lists

Perform the following steps to view all the lists belonging to a particular domain:

1. Using the Thin Client, navigate to the Administration page.

2. Select **List** > **Distribution List Management** > **Show list(s)**.

3. Enter the list name, or enter * to display all available lists.

4. Select the domain of the list from the drop down list.

5. Click **Go**.

6. Select the list you want to view.

Showing Members

Perform the following steps to show list members:

1. Using the Thin Client, navigate to the Administration page.

2. Select **List** > **Membership Management** > **Show Members**.

3. Enter the list name, or enter * to display all available lists.

4. Select the domain of the list from the drop down list.

5. Click **Go**.

6. Select the list for which you want to view members.

Showing All the List a User is On

Perform the following steps to show all the lists a user is on:

1. Using the Thin Client, navigate to the Administration page.

2. Select **List** > **Miscellaneous Functions** > **Show all memberships of a user**.

3. Enter the user's name.

4. Select the user's domain from the drop down list.

5. Click **Show Memberships**.

Managing Aliases

Using the Thin Client, administrators can perform alias management tasks, such as create, modify, and delete aliases.

To perform administration tasks for Oracle9*i*AS Unified Messaging, administrators must navigate to the following URL:

```
http://<machine name>:<port>/um/traffic_cop
```

Creating a New Alias

Perform the following steps to create a new alias.

1. Using the Thin Client, navigate to the Administration page.
2. Select **Alias** > **Alias Management** > **Create a new alias**.
3. Select the domain from the drop down list.
4. Click **Go**.
5. Enter the alias name.
6. Enter the alias target.
7. Enter the description.
8. Click **Create**.

Editing Alias Properties

Perform the following steps to edit alias properties:

1. Using the Thin Client, navigate to the Administration page.
2. Select **Alias** > **Alias Management** > **Edit alias properties**.
3. Enter the search criteria.
4. Select the domain from the drop down list.
5. Click **Go**.
6. Select the alias you want to modify.
7. Click **Modify**.
8. Modify the properties you want to change.
9. Click **Modify**.

Deleting Aliases

Perform the following steps to delete aliases:

1. Using the Thin Client, navigate to the Administration page.

2. Select **Alias** > **Alias Management** >**Delete alias(es)**.

3. Enter the search criteria.

4. Select the domain from the drop down list.

5. Click **Go**.

6. Select the alias you want to modify.

7. Click **Delete**.

Scanning and Removing Viruses

E-mail viruses typically have the form of an executable program as an e-mail attachment. The program gets executed on the client machine when the attachment is opened by an unsuspecting user, causing various forms of damage to the computer or the network. Oracle9*i*AS Unified Messaging server contains a PL/SQL utility package MAIL_AV that can scan and remove email viruses. To use this package, one simply writes a SQLPLUS script that uses this package or execute procedures in this package directly from SQLPLUS.

MAIL_AV package has three types of virus message identification methods. One identifies a message by either the subject, existence of an attachment with a certain name, or by the sender. Once messages with an attached virus are identified, the messages are moved to a designated folder away from their recipients. An administrator can manually examine the messages in the designated folder and remove them using any mail client. In cases where messages are wrongly identified as a virus, the MAIL_AV package provides functions to restore the message back to the original recipient's folder.

Because MAIL_AV has the ability to remove messages from regular users, it is considered a privileged package. Only sessions logged on as es_mail database user can execute this package.

Usage Examples

The following are summaries and usage examples for the procedures in the MAIL_AV package:

Quarantine

The quarantine procedure has the following syntax:

```
PROCEDURE quarantine (p_endday IN DATE,
                      p_dayrange IN NUMBER,
                      p_attribute IN NUMBER,
                      p_pattern IN VARCHAR2,
                      p_folder IN VARCHAR2);
```

The quarantine procedure identifies virus messages using a given pattern and moves them to a designated folder. The caller of the procedure must have write authorization to the folder. Authentication is done by using MAIL_SESSION package.

> **See Also:** *Oracle9iAS Unified Messaging Application Developer's Guide* for more information

Parameters p_endday and p_dayrange can used to narrow down the virus search to within certain time frame. Parameter p_attribute takes one of the following three values:

```
MAIL_AV.ATTR_SUBJECT
MAIL_AV.ATTR_ATTACHMENT
MAIL_AV.ATTR_SENDER
```

Parameter p_pattern is the identifying string for the virus. Parameter p_folder is the designated folder name to which virus-infected messages are moved.

Declare

The following example logs in as user SYSADMIN, and scans the whole mail server for messages with an attachment name containing .exe within the last seven days, and moves them to the /infected folder.

```
  sessionid number;
begin
  mail_session.login('sysadmin', <password>, <ldaphost>, sessionid);
    mail_av.quarantine(sysdate, 7, mail_av.attr_attachment, '.exe',
'/infected');
end;
/
```

Restore

There are two procedures to restore messages already quarantined back to their original folders:

```
PROCEDURE restore (p_messageid IN NUMBER);
PROCEDURE restoreall;
```

The restore procedure takes a given message ID and restore it back to its original folder. If the message ID does not exist, the procedure does nothing. The `restoreall` procedure restores all messages quarantined regardless which designated folders are used to store the messages. These procedures are useful when a message is wrongly identified as a virus message and must be restored back to its recipients.

4

Servers and Processes

This chapter discusses the different servers and processes of the Oracle9*i*AS Unified Messaging system.

This chapter contains the following topics:

- Mail Store
- IMAP4 and POP3 Processes
- SMTP Process
- Housekeeping Process
- List Server Process
- Managing Server Processes
- SSL Setup
- Thin Client

Mail Store

The Oracle9*i*AS Unified Messaging mail store is the location where messages and folder information are stored. If a message is destined for many accounts on that mail store, only one copy of the message is stored and links to the message are sent to all recipients. Folders can be private, shared, or public. A single mail store can store mail for one domain or several different domains. If you have an extremely large domain, it is possible to have multiple mail stores support a single domain.

Applications can make direct PL/SQL procedure calls to act upon messages similar to the voice mail client use standard protocol servers or JMA+ libraries. Calls made to the stored procedures are executed in the mail store.

The mail store loads stored procedures that enable the following features:

- High-Level Interface
- Process Close to the Data
- Extensible Store

High-Level Interface

The Oracle9*i*AS Unified Messaging mail store has a comprehensive and high-level PL/SQL interface. Clients make high-level calls to the mail store.

Because the logic of the PL/SQL procedures take place inside the Oracle9*i* database mail store, close to the actual data, mail transactions are greatly simplified and more reliable. Oracle9*i*AS Unified Messaging, by definition, enables multiple clients and client types to access the same mail store. By having all clients enter through the same interface and perform processing in the mail store, all clients achieve the same goals with the same behavior.

For example, a typical Oracle9*i*AS Unified Messaging installation enables a user to listen to voice mail messages from any one of three clients:

- Telephone handset client
- Standard IMAP4 mail client
- Web Client

In a typical telephone situation, if a voice mail message has not been heard, the Message Waiting Indicator (MWI) light on the user's telephone is on. If all voice mail messages have already been listened to, the light is off. Because the MWI logic is placed inside the mail store and not in the Web client, standard client, or

telephone handset, the solution consistently and appropriately turns the light off no matter which client was used to listen to the voice mail messages.

Process Close to the Data

All of the Oracle9*i*AS Unified Messaging scalable protocol servers and access servers perform tasks within the stored PL/SQL procedures running within the mail store. One can query an entire mail store with a simple request and the mail store efficiently carries it out. This comprehensive high-level interface enables effective support for system-wide rules, individual rules, server side filters, and spam control, for a very large and dynamic mail store without serious degradation. It also affords Oracle9*i*AS Unified Messaging the ability to query and update the mail store efficiently.

Extensible Store

The mail store can be extended by or integrated with other Oracle product capabilities. Filters can be applied that automatically act on all mail messages. The filters can either perform common mail tasks on a mail message, or they can pass the mail message to an external program.

For example, an Oracle9*i*AS Unified Messaging e-mail server can be set up to filter all mail messages sent to the abstract Helpdesk mail account of a company. Each message is broken down into its main body and any attachments. Each part is then passed, individually, through the Oracle Text engine. The results can then be routed to the appropriate support representative, who can choose from a list of possible responses to the specific request or create and log a new response.

> **See Also:** Chapter 2, "Getting Started" for more information on how to install a mail store

Modifying Mail Store Default Parameters

Using Oracle Enterprise Manager, perform the following steps to modify mail store default parameters:

1. Navigate to the Oracle9*i*AS Unified Messaging Service Targets page.

2. Select a server type. For example, IMAP, POP, SMTP, Housekeeping, or List server.

3. Select the mail store for which you want to make changes.

4. Modify the parameters you want to change.

5. Click **Apply**.

Modifying Mail Store Connection Parameters

Using Oracle Enterprise Manager, perform the following steps to modify mail store default parameters:

1. Navigate to the Oracle9*i*AS Unified Messaging Service Targets page.

2. Select a server type. For example, IMAP, POP, SMTP, Housekeeping, or List server.

3. Select the mail store for which you want to make changes.

4. Modify the parameters you want to change.

5. Click Apply.

Mail Store Parameters

The following is a list of mail store parameters.

Timeout
Connections idle for more than this time value are terminated, to maintain an optimum number of open connections

Increment
Oracle9*i*AS Unified Messaging can increase the number of connections to be opened to the database bye this number, if the current number of connections are less than maximum. Valid values are 0 and above.

Minimum
Specifies the minimum number of connections in the connection pool. Valid values are 0 and above.

Maximum
Specifies the maximum number of connections that can be opened to the database. Once this value is reached, no more connections are opened. Valid values are 1 and above.

Database Host
The machine on which the database is located.

Mail Store Port
Port number the database listener is listening on.

Default Value: 1521

Database SID
System identifier of the mail store database.

Default Value: none

User Name
The user name used to log into the mail store database as the mail user.

Default Value: es_mail

Password
The password for the mail store user name.

Default Value: es

Oracle Text Settings

The integration of Oracle Text and Oracle9*i*AS Unified Messaging extends the e-mail server functionalities. This enables text search in e-mails, e-mail theme generation, and e-mail formatting functions such as, highlight and markup.

Oracle Text is installed by default when Oracle9*i*AS Unified Messaging is installed. However, if database user `ctxsys` is not present at the time of installation, the Oracle Text installation will fail.

There are two user level Oracle Internet Directory parameters associated with the configuration of Oracle Text:

- orclMailUserIndexType: This parameter enables text search capability for users. When this parameter is set to 1 or 2 for a user, the user can use any supported client to perform server side search on message bodies.

- orclMailIsDocBinary: This parameter controls whether only the text or the complete contents of e-mail messages should be used for e-mail theme generation and e-mail formatting functions

The following table describes the parameter values for orclMailUserIndexType and orclMailIsDocBinary

Oracle Internet Directory Parameter Name & Associations	Type	Possible Values
orclMailUserIndexType/ text search	number	0:do not index incoming e-mail (default)
		1:for incoming e-mails, index text contents only
		2:for incoming e-mails, index both text and binary contents
orclMailIsDocBinary/ document service	Boolean	false: when requesting document service, process only text contents (default)
		true: when requesting document service, index both text and binary contents

The parameters are independent of each other, and can be configured at the user level. The parameters are present at the domain level preferences for viewers. The values set here are inherited by all new users in the domain during user creation time. To view or modify parameter values, use Oracle Enterprise Manager.

Oracle Text provides both a Java Software Developer's Kit (SDK) and a PL/SQL SDK for application integration. Applications can interface with the SDKs to use or extend Oracle Text functionalities.

Quota

There are two quota values that can be set for a user: user-quota and voice-quota. All e-mails and voice mails are delivered to the user as long as the user is under user-quota. When user-quota is reached, all e-mails are held in the system and are not delivered to the user. However, voice mail delivery continues as long as the user's total usage is under user-quota plus voice-quota value. For example, if the user-quota is 50MB and the voice-quota

is 20MB, e-mail delivery stops after the user's usage is 50MB but the voice mail delivery continue until the user reaches 70MB.

When the user cleans up the account and the usage is under the `user-quota` plus `voice-quota` value, voice mail delivery starts again. When the usage is under `user-quota`, e-mail delivery starts again. It is important to note that both e-mails and voice mails contribute to the user-quota calculations. When the usage reaches the `user-quota`, it means that the sum of e-mails and voice mails is equal to the `user-quota` value. Voice-quota is an additional buffer provided to users so that voice mail delivery is not affected when users reach their quota.

In addition to stopped mail delivery, users cannot save new messages in the server folders when `user-quota` is reached. For example, saving a copy of outgoing messages to the sent folder is not allowed. The IMAP server informs the client that the user is over quota and is trying to save new mail.

Server Side Filters

Server side filters enable users to create mailbox filters on the server. Users can use the Thin Client to create rule-based actions, such as message foldering, vacation reply, spam filter, and wireless notification. Because the filters are created on the server, the actions are carried out whether the user is online or not.

The filters engine enables customized auto-actions on e-mail messages being processed, based on a variety of customizable events and conditions.

The filters engine is an automated layer between server processes and message objects. It provides scripted operations done on behalf of the server processes to the message objects. The filters engine maintains its script database in the mail store.

IMAP4 and POP3 Processes

Internet Message Access Protocol (IMAP) and Post Office Protocol (POP), are protocols for retrieving e-mail messages.

The POP3 protocol provides mail manipulation services for certain types of smaller nodes on the Internet where it is often impractical to maintain a message transport system, or in situations where it is undesirable to keep an Internet connection open for long periods of time. Messages are temporarily stored on the server until they are downloaded to a client machine.

The IMAP4 protocol provides a set of functionality to manipulate mail messages as well as mail folders, which are stored on the server. It provides primitives to allow optimization of online performance, especially when dealing with large MIME

messages. The IMAP4 protocol also provides the capability for an off-line client to re-synchronize with the server.

Standards Supported

The IMAP4 and POP3 servers support the IMAP4 and POP3 protocols as described in the RFC-2060 and RFC-1939 respectively.

> **See Also:**   www.ietf.org for more information on RFCs

The IMAP4 Server also supports the following IMAP4 extensions:

- RFC-2087 IMAP4 QUOTA extension

- RFC-2088 IMAP4 non-synchronous literals

- RFC-2859 IMAP4 UIDPLUS extension

- RFC-2177 IMAP4 IDLE command

- Draft IMAP4 - SORT Extension

Process Architecture

By using the scalable protocol server programming framework, the IMAP4 and POP3 Servers obtain the benefits of multithreading, database connection sharing, and load balancing, which enables the servers to support thousands of concurrent user connections.

The IMAP4 and POP3 support a large number of client connections, using a very small amount of system resources for each client connection. It maintains a pool of worker threads, which handles the work for the clients and also a pool of database connections shared across client connections. When a client request comes in, a thread from the pool of worker threads is assigned to it. The worker threads read the command from the client, obtain a database connection from the database pool, and perform the operation. After the database connection is released back to the pool, the thread returns to the worker thread pool. There can be multiple mail stores in the system. The IMAP4 and POP3 servers can be set up to create database connection pools to more than one mail store. Administrators should check the IMAP4 and POP3 server parameters on how to control the size of the pools.

Many operating systems have limitations on the number of file descriptors and sockets a single process can open, requiring more than one instance of an IMAP4 or POP3 server to be running. If there is more than one instance running on the server, the listener distributes the load between them. Administrators should verify that

the operating system parameter controlling the file descriptors for a process is correctly set.

Figure 4–1   Process Architecture
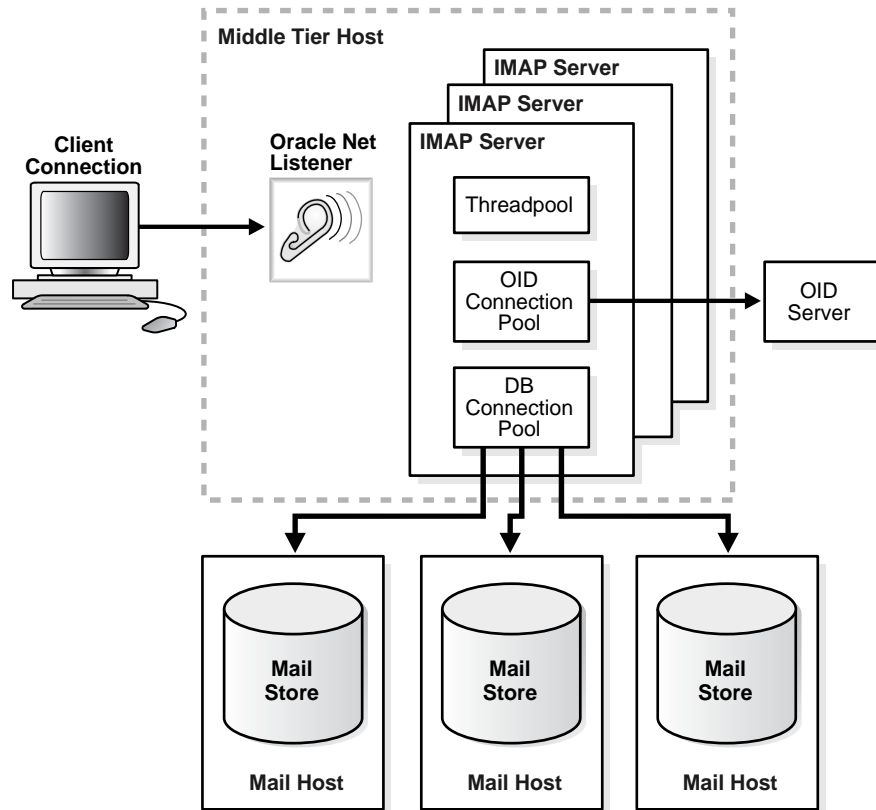
Process Log Writing

The IMAP4 logs are written in `$ORACLE_HOME/oes/log/<install_ name>/imap/<pid>/<pid>.log`. Different log levels determine the amount of information produced by from the servers. There are five different log levels. Their names and values from least to most are:

Error Level	Numeric Value
Internal Errors	1
Errors	6
Warnings	11
Notification	16
Trace	21
Dump	26

SMTP Process

Simple Mail Transfer Protocol (SMTP), is a protocol for sending e-mail messages between servers. Most e-mail systems that send mail over the Internet use SMTP to send messages from one server to another; the messages can be retrieved with an e-mail client using either POP or IMAP. Mail clients generally use SMTP to send messages to a mail server.

The SMTP server handles all inbound and outbound mail. It implements the SMTP protocol and interacts with DNS and Oracle Internet Directory servers to get information about hosts and users.

Standards Supported

The following is a list of the SMTP server -supported RFCs.

> **See Also:** www.ietf.org for more information on RFCs.

SMTP Base Protocol
RFC 821 - Simple Mail Transfer Protocol (SMTP)

RFC 1123 - Requirements for Internet hosts - application and support

SMTP Extensions
RFC 1869 - SMTP Service Extensions

RFC 1652 - SMTP Service Extension for 8bit-MIME transport

RFC 1870 - SMTP Service Extension for Message Size Declaration

RFC 1891 - SMTP Service Extension for Delivery Status Notifications

RFC 1894 - An Extensible Message Format for Delivery Status Notifications (DSNs)

RFC 2034 - SMTP Service Extension for Returning Enhanced Error Codes

Mail Format Standards

RFC 822 - Standard for the format of ARPA Internet text messages

RFC 2045 - MIME Part 1: Format of Internet Message Bodies

RFC 2046 - MIME Part 2: Media Types

RFC 2047 - MIME Part 3: Message Header Extensions for Non-ASCII Text

RFC 2048 - MIME Part 4: Registration Procedures

RFC 2049 - MIME Part 5: Conformance Criteria and Examples

Various Configurations

Oracle9*i*AS Unified Messaging has a flexible architecture that enables users to set up a single, double, or multiple tier configuration that is appropriate to a site's needs. The following are examples of various configurations.

Figure 4–2 **Simple Single Node Setup**
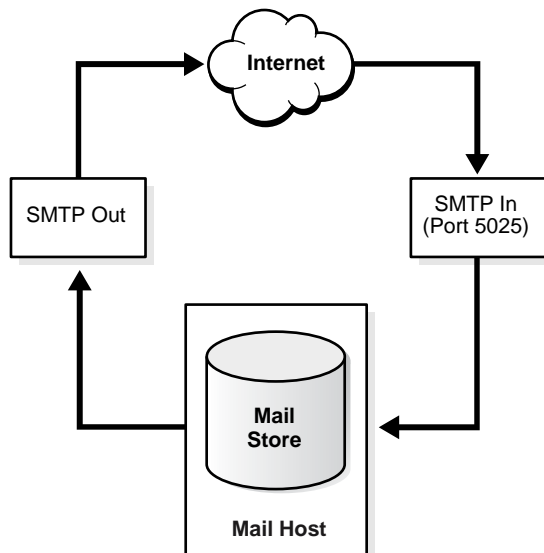
Figure 4-2 is the simplest setup where there is only one mail store and SMTP server running on the same host. This configuration can be used for supporting a small numbers of users.

Figure 4–3   Two Tier Setup
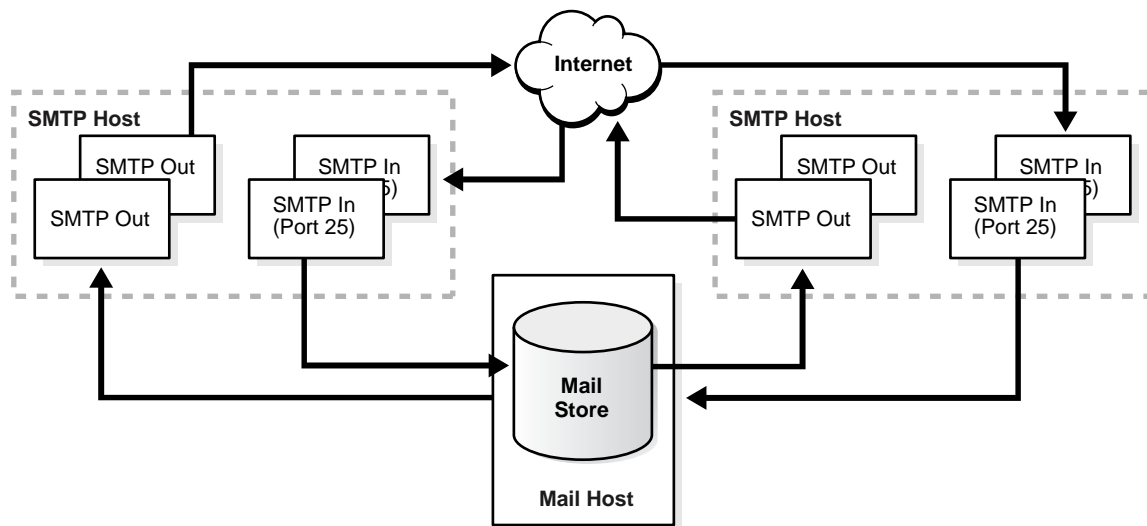
Figure 4-3 is a single mail store setup, with the processes divided into two tiers: the backend running the database and the middle tier running SMTP and other protocol servers. It provides fault tolerance and the flexibility to run multiple SMTP servers and distribute load across them. Load balancing and fault tolerance can be achieved by running the servers behind a network director or by having multiple MX records for the domain.

Figure 4–4   Multiple Mail Stores Setup
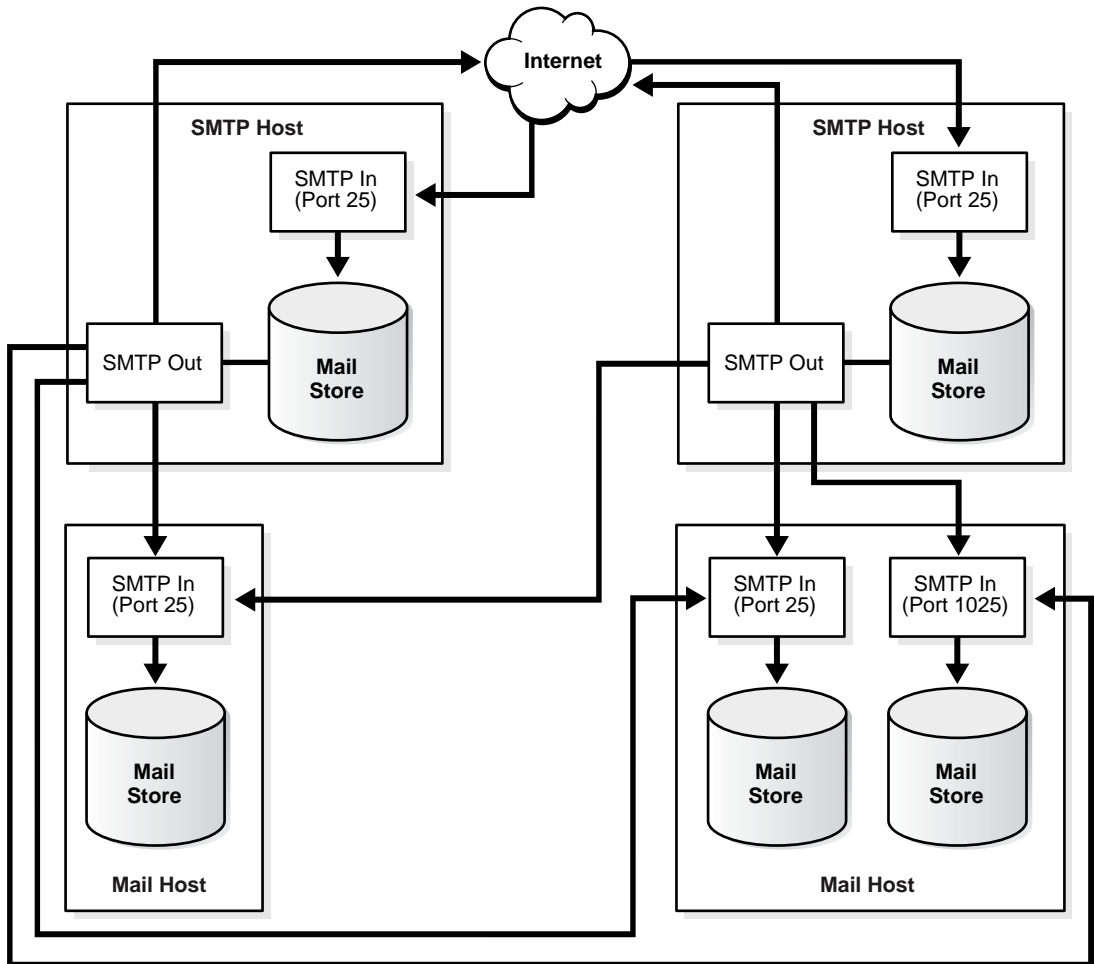
Figure 4-4 shows two kinds of configurations: multiple mail stores on different hosts and multiple mail stores on the same host. Each SMTP server serves only one mail host and each mail store must have a SMTP server. The mail stores on the SMTP hosts are used as SMTP queues and do not contain users.

Message Flow

The SMTP message transfer agent engine is responsible for the incoming SMTP connection. It receives incoming messages and performs address lookup and rewriting. The Oracle Internet Directory server is queried to find and authenticate the addresses. Addresses are rewritten based on the rewriting rules. Anti-spamming rules and external filtering are applied. If all of the above are successful, the SMTP message transfer agent accepts the message and inserts it into the corresponding queue based on the destination address.

If the recipient is an outside user, the message is stored in the relay or submission queue awaiting further processing. If the recipient is local, the message is stored in the local delivery queue. To determine if an address is local, the parameter SMTPlocaldomains is used. This parameter contains the list of domains that are considered local. The local delivery process picks up the message later, applies the rules, if any, and delivers it to the user's inbox.

If administrators do not want to process the messages immediately for performance reasons, messages can be stored in the relay/submission queue and marked as submitted or unprocessed. This is controlled by the server parameters. Messages created by the SDK applications are also marked as submitted in this situation.

The messages in the relay/submission queue are picked up by the outbound queue processor. For relay messages, the outbound processor queries the DNS server, applies the rules against them, and sends them out using SMTP. The submitted messages first go through the Address Rewriting and DNS resolution module. Next they are passed to the external filter, if there is any. Finally, the outbound queue processor sends them to the local delivery queue or to the Internet, depending on whether the messages' recipients are local or not.

During the address resolution phase, if the server determines that the message should be sent to a distribution list handled by the list server, it places the message in the list server queue. The list server then picks up this message, expands the distribution list and delivers the message.

If the message is for a user on a different mail store, then the message is placed in the relay queue. The outbound server picks up the message and transfers the mail to the other mail store using the SMTP protocol.

Inbound SMTP Server Architecture

The Oracle Net listener listens on the SMTP port, default 25, and transfers connections to the SMTP server. The SMTP server maintains a pool of worker threads and two other pools: a database connection pool to the mail store and a pool

of connections to the Oracle Internet Directory server. Upon receipt of a new client connection, a thread is picked up from the pool to handle the request. It performs name resolution using a connection from the Oracle Internet Directory pool and then inserts the mail into the database using a connection from the database pool. At this point the SMTP connection to the client is terminated, but if there are local recipients, the worker thread continues to process the mail and performs local delivery.

Figure 4–5   SMTP Inbound
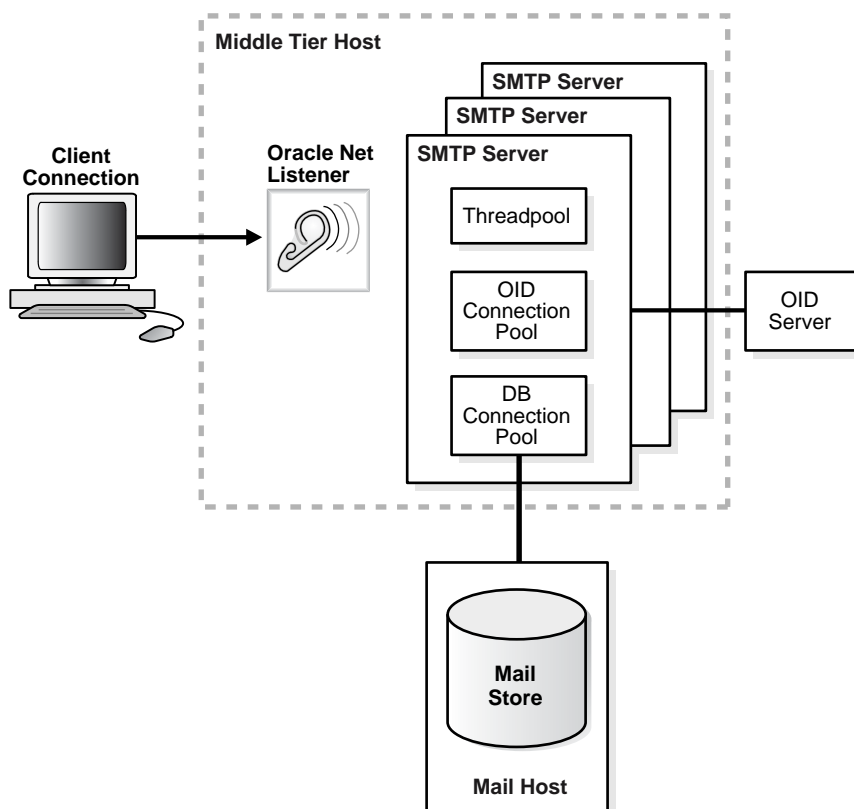
Outbound SMTP Server Architecture

The outbound STMP server has three main threads for each queue: submission, local, and relay. Each of the threads poll the database for messages in its queue. Whenever there are messages to process, a new thread is spawned to process the mail. If the delivery of an e-mail fails, the message is returned into the queue and delivery is retried after intervals defined by the minqueueage parameter. If the attempted re-deliveries are unsuccessful during the interval equal to the queuetimeout parameter, a delivery failure message is sent to the sender.

Figure 4–6   SMTP Outbound
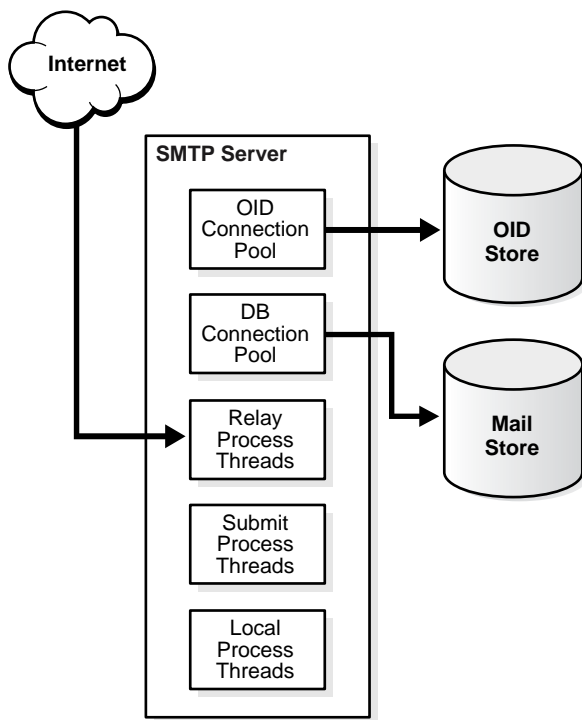
Antispamming

The SMTP server supports a variety of anti-spam methods to prevent users and domains from spamming and to prevent the server from being used as relay for other domains. The various spam prevention methods are:

Method	Description
Relay blocking:	The SMTP server can be set up to block all relaying. Alternatively it can setup to relay only a known set of domains. For example to allow relaying of all messages received from hosts within the `foo.com` domain, the `RelayDomains` parameter can be set up to `foo.com`.
Reject messages received from certain domains:	The `RejectSender` parameter can be used to set up a list of domains from which messages are not allowed.
Reject messages from certain senders:	The `RejectDomains` parameter contains the list of senders who are not allowed to send messages.
Reject messages for certain recipients:	The `Rejectrecipients` parameter contains the list of recipients who are not allowed to receive messages.
Prevent service attack denials:	The SMTP `Floodmax` and `TimeInterval` parameters can be set to control the number of messages coming from a host. If more than `Floodmax` connections and messages are received from a particular host in the `Timeinterval`, all further messages from that host are rejected until the rate of incoming messages from the host falls below the `Floodmax` level.

Virus Checking

Virus checking is performed by setting rules that can check various message headers and reject messages based on certain criteria.

External Process Interface

After a message is inserted into the database and before it is delivered, an external process can be used to filter the mail. An example of this is an virus scanner that can be invoked to scan the messages and reject messages that are infected. The external process returns a true or false indicating whether to accept or reject the mail. It is controlled by the following server parameters:

■ `orclmailsmtpexternalfilter`: A Boolean operator to indicate if external filter processing is turned on.

■ `orclmailsmtpexternalfilterprocess`: Path name of the executable for the external filter process

Address Rewriting Rules

Address Rewriting Rule Attributes

An address rewriting rule can have the following attributes:

Attribute	Type (Length)	Description
RuleNo	NUMBER	Specifies the number of the sequence
Pattern	VARCHAR(255)	Pattern of the addresses you want to rewrite.
Result	VARCHAR(255)	Result that shows how you want to change addresses that fit the pattern.
Description	VARCHAR(255)	Description of the rule

Rule Symbols

Address rewriting rules contain symbols that determine how an address is parsed and how it is changed.

Symbol	Description
$+	Represents a non-empty string in a pattern.
$*	Represents an empty or non-empty string in a pattern.
$1, $2	Identifies parts of an address in a result.
$:	If this symbol is at the beginning of a rule, it indicates that the rule should be applied only once.
$@	Stop immediately and ignore the remaining rules. This symbol must appear at the beginning of the result.

Rule Execution Guidelines

Address renaming rules are applied sequentially, starting with Rule 1. All rules are applied, unless a result starts with $@, that stops rule execution immediately and ignores any remaining rules. If a rule has a syntax error or cannot be executed, it is ignored.

A rule is applied to its own output in a loop until application of the rule yields no more changes in the result. The next rule in the sequence is then applied. After all the rules have been executed, an Oracle Internet Directory resolution is performed on the result. If the Oracle Internet Directory resolution returns a changed address such as an alias, the address rewriting rules are applied to the changed address, and

the Oracle Internet Directory resolution is performed again. When the Oracle Internet Directory resolution yields no more changes, the rule execution process is done.

Housekeeping Process

Housekeeping is a standalone component that directly interacts with the mail store database. It is a background process performing cleanup tasks that can be set to run according to a schedule. During Oracle9*i*AS Unified Messaging installation, a housekeeping job is created by default and has a default configuration associated with it. Administrators can manually alter its schedule or add more instances of the job.

Job scheduling and management are taken care of by Oracle Enterprise Manager. During the time a housekeeping process is running, it responds to administrative requests such as reporting job progress, reinitializing job parameters, or shutting down.

> **See Also:** *Oracle Enterprise Manager Administrator's Guide* for more information on job scheduling

Other servers interact with housekeeping by producing garbage. There are primarily three types of garbage - producing agents:

- SMTP
- IMAP and POP3
- Housekeeping

Housekeeping performs tasks in multiple stages, with some stage of operations producing garbage for another stage. For example, when performing message expiration stage, the housekeeping process produces messages that are later consumed by the pruning stage.

SMTP server creates and processes messages that are mostly in transit. The messages stay in queues until the SMTP server finishes processing them. The processed messages are marked as processed, sent to the housekeeping process, and removed from the system. When users delete messages through clients, the messages are marked for deletion and are picked up by housekeeping process for actual deletion.

The housekeeping log files are located in two areas: the mail store and the middle tier. The log file on the mail store contains information on the progress of

housekeeping tasks, the log file on the middle tier contains information on the status of the process.

Tertiary storage

Mailboxes are dynamic in nature. Mail constantly enters the store and is processed and deleted. Oracle9*i*AS Unified Messaging housekeeping cleans up deleted messages and can be set to move old and rarely read mail messages to a tertiary tablespace.

List Server Process

List servers provide a means of public list management as well as integration with other messaging services or applications.

The Oracle9*i*AS Unified Messaging list server enables users to own and administer public mailing lists. The lists can be set up as a means of distributing information to groups of people or as a discussion forum. In addition, lists can be set up with restricted membership, where users must be approved before becoming a member. Lists can also be set up so that any messages sent out are moderated, where only certain members can send out messages. For example, the administrator of a mailing list may screen out advertisements.

When a distribution list has a large number of members, the Oracle Internet Directory `Max Search Results Entries` parameter must be configured to return a large number of entries to enable the list resolution API to return all the members. The Oracle Internet Directory `Max Search Results Entries` parameter can be configured through `oidadmin`.

APIs provided with the Oracle9*i*AS Unified Messaging list server enable users to customize lists and messages sent out to a list. The Oracle9*i*AS Unified Messaging list server features can be used for applications such as marketing campaigns where special non-transferable offers are sent and readable only by the intended recipients. For example, a user can use the list server APIs to query a database of sales information to create a list of all customers who have made purchases in the past three months, then send coupons by e-mail to each of the customers with discounts based on the amount of their purchases.

List Server Mail Interface

The list server mail interface command is a list of commands that administrators and users can send to the list server to perform certain tasks. The `setattribute` command is used by administrators to set values for various list parameters.

> **See Also:** Oracle9*i*AS Unified Messaging User's Guide for more information on list server mail interface commands for users.

Setattribute

Use this command to set values for the various parameters of the lists by an administrator.

Syntax

```
setattribute type=<list type> subscription=<subscription type> topic="<list
topic>" autoreconfirm=<true/false> post=<post type> editor=<editor mailid>
moderator=<moderator mailid> invitetext="<multi-line text>"
```

Although none of the parameters are mandatory, every `setattribute` command should have at least one parameter. The following is a list parameters and their definitions:

Parameter	Definition
type	This sets the type of the list. Valid values are announcement, discussion, edited, and moderated.
subscription	This sets the type of subscription control you want on the list. Valid values are open, restricted, and closed.
topic	This sets the list topic. The topic value needs to be enclosed within quotes.
autoreconfirm	This sets whether subscription commands should reconfirmed by the list server or not. Valid values are true or false.
post	This sets the posting type allowed by the list. Valid values are open or subscriber.
editor	For an edited list, this parameter sets the editor for the list. More than one editor parameter can be set with a single `setattribute` command.
moderator	For a moderated list, this parameter sets the moderator for the list. More than one moderator parameter can be set with a single `setattribute` command.

Parameter	Definition
invitetext	This parameter specifies text that will be part of the mail sent to users an owner invites to join his/her list using the invite command. The parameter value should be enclosed within quotations. This text can be multi-lined and individual lines should be separated with a newline (\n) character.

Mail Merge and Schedule Mail Delivery

The list server supports mail merge and scheduled mail delivery. This feature can be enabled for a list by providing a value for the merge tag property of the list.

Mail Merge

Mail merge: Enables customized mail to be delivered to every list recipient. The list server supports two types of mail-merge:

- Standard mail-merge: In this type of mail-merge, the contents of a mail can be customized for each recipient with the following values:

```
Recipient's mail address(recipient_mail_address)
Recipient's first name(recipient_first_name)
Recipient's last name(recipient_last_name)
Recipient's full name(recipient_full_name)
Current date(current_date)
Current time(current_time)
```

To use this feature, use the mail merge tag in the appropriate sections of the mail. For example, If the list's mail merge property is orcl, and the mail is addressed with the recipient's full name, the mail looks like the following:

```
Dear <orcl>recipient_full_name</orcl>,
    ...
    ...
```

- PL/SQL mail-merge: Enables embedding of PL/SQL in messages. For every recipient, the PL/SQL function is executed and the output is embedded in the mail before delivery. The PL/SQL function must return a varchar2 string. As a parameter to the PL/SQL function, any of the parameters defined in the standard mail-merge can be included.

For example, if you have a PL/SQL getsalary function that returns the salary of an individual given his mail address, you can send a mail to a list of employees letting them know their salaries as follows.

```
Dear <orcl>recipient_full_name</orcl>,
    Your salary is <orcl>getSalary(recipient_mail_address)</orcl>.
    ...
```

By default, the list server looks for the PL/SQL function in the mail store that the server is connected to. If the function is on a different database, a database link must be created to that database in ES_MAIL schema and use that in the mail-merge tag. For example, the getSalary function is defined in a different database, create a database link called dblink. The mail will now look like this:

```
Dear <orcl>recipient_full_name</orcl>,
    Your salary is <orcl>getSalary(recipient_mail_address)@dblink</orcl>.
    ...
```

Scheduled Mail Delivery

This feature can be used to schedule mail delivery to a list at a particular time. This feature can be enabled by providing a value for the mail merge property of the list. In the mail, specify the delivery time of the mail by putting in the schedule mail delivery tag anywhere in the mail. The following is an example of how the tag appears if the mail merge property of the list is orcl.

```
<orcl>send_schedule=DD-MON-YYYY hh24:mi [TZH:TZM]</orcl>
```

Parameter	Description
DD	The date
MON	The 3 letter abbreviation for the month
YYYY	The year
hh24	The time in a twenty-four hour period
mi	The time in minutes
TZH	The optional time zone hour offset
TZM	The optional time zone minute offset

If TZH and TZM are not specified, the list server uses the sender's time zone to schedule delivery of the mail.

Managing Server Processes

This section discusses how to start, stop, reinitialize, and modify server processes.

Starting, Stopping, or Reinitializing All Server Processes

> **Note:** The following functions can only be executed if there is at least one instance has been created.

Using Oracle Enterprise Manager, perform the following steps to start, stop, or reinitialize all server processes:

1. Navigate to the Oracle9*i*AS Unified Messaging Service Targets page.

2. Select the server type. For example, IMAP, POP, SMTP, Housekeeping, or List server.

3. Click **Start, Stop,** or **Reinitialize**.

Creating a Server Instance

Using Oracle Enterprise Manager, perform the following steps to create a server instance:

To create a new IMAP4 server instance with default parameters:

1. Navigate to the Oracle9*i*AS Unified Messaging Service Targets page.

2. Select the server type. For example, IMAP, POP, SMTP, Housekeeping, or List server.

3. Click **Create**. This creates a new server instance with default parameters.

To create a new server instance with the same parameter values as an existing server instance:

1. Select the process with the parameters you want to replicate.

2. Click **Create Like**. This creates a new server instance with the same parameters as the selected server instance.

Deleting a Server Instance

> **Note:** A process must be shut down before it can be deleted.

Using Oracle Enterprise Manager, perform the following steps to delete a server instance:

1. Navigate to the Oracle9*i*AS Unified Messaging Service Targets page.

2. Select the server type. For example, IMAP, POP, SMTP, Housekeeping, or List server.

3. Select the server process you want to delete.

4. Click **Delete**.

Starting a Server Instance

Using Oracle Enterprise Manager, perform the following steps to start a server instance:

1. Navigate to the Oracle9*i*AS Unified Messaging Service Targets page.

2. Select the server type. For example, IMAP, POP, SMTP, Housekeeping, or List server.

3. Select the server instance you want to start.

4. Click **Start**.

Stopping a Server Instance

Using Oracle Enterprise Manager, perform the following steps to stop a server instance:

1. Navigate to the Oracle9*i*AS Unified Messaging Service Targets page.

2. Select the server type. For example, IMAP, POP, SMTP, Housekeeping, or List server.

3. Select the server instance you want to stop.

4. Click **Stop**.

Reinitializing a Server Instance

> **Note:** Servers must be reinitialized whenever parameters are modified.

Using Oracle Enterprise Manager, perform the following steps to reinitialize a server instance:

1. Navigate to the Oracle9*i*AS Unified Messaging Service Targets page.

2. Select the server type. For example, IMAP, POP, SMTP, Housekeeping, or List server.

3. Select the server process you want to reinitialize.

4. Click **Reinitialize**.

Modifying Parameters for a Specific Server Instance

Using Oracle Enterprise Manager, perform the following steps to modify parameters for a specific server instance:

1. Navigate to the Oracle9*i*AS Unified Messaging Service Targets page.

2. Select the server type. For example, IMAP, POP, SMTP, Housekeeping, or List server.

3. Select the server instance you want to modify.

4. Modify the parameters you want to change.

5. Click **Apply**.

To make the changes take effect, you must reinitialize the server instance.

Modifying Server Default Parameters

Using Oracle Enterprise Manager, perform the following steps to modify server default parameters:

1. Navigate to the Oracle9*i*AS Unified Messaging Service Targets page.

2. Select the server type. For example, IMAP, POP, SMTP, Housekeeping, or List server.

3. Select **Change Settings**.

4. Modify the parameters you want to change.

5. Click **Apply**.

To make the changes take effect, you must reinitialize the server.

Server Parameters

The following is a list of server parameters and descriptions:

IMAP4

Protocol Server Increment Thread
This parameter specifies the number of threads the client connection pool is increased by.

Range: 1-999

Default Value: 1

Protocol Server Thread Timeout
This parameter specifies the number of seconds after which an idle thread is cleaned up.

Range: 0-65535

Default Value: 1860 seconds

Protocol Server Minimum Threads
This parameter specifies the minimum number of threads available for client connection handling.

Range: 1-1000

Default Value: 1

Protocol Server Maximum Threads
This parameter specifies the maximum number of threads available for client connection handling.

Range: 0-1000

Default Value: 500

LDAP Connection Pool Increment
This parameter specifies the number of Oracle Internet Directory connections the pool is increased by.

Range: none

Default Value: 0

LDAP Current Connection Pool
This parameter specifies the current number of Oracle Internet Directory connections in the pool.

Range: none

Default Value: 10

LDAP Minimum Connection Pool
This parameter specifies the minimum number of Oracle Internet Directory connections in the pool.

Range: none

Default Value: 10

LDAP Maximum Connection Pool
This parameter specifies the maximum number of Oracle Internet Directory connections in the pool.

Range: none

Default Value: 10

Presentation Name
This parameter specifies the presentation name used by the server to register with the Oracle9i listener.

Range: string

Default Value: IMAP

Process Log Level
This parameter specifies the log messages level.

Range: 0-30

Default Value: 6

Process Debug Level
This parameter specifies the debug messages level. To enable statistics, set the value to 512.

Range: 4294967295 (32bits, multi-value)

Default Value: 0

Default Domain
This parameter specifies the default domain for user login. If the user does not provide a domain when logging in, the value of this parameter is used.

Default Value: none

Maximum Number of Clients
This parameter specifies the maximum number of clients allowed to connect to the server instance.

Range: 0-1000

Default Value: 1000

Maximum Rule Nesting Level
This parameter specifies the maximum number of times a nesting rule can be applied to a message. In general, setting this parameter to a smaller number increases overall performance, but not for systems that use rules heavily.

Range: >=1

Default Value: 20

Cache Size
This parameter specifies the caching level. For small caching levels, no mail information is cached in the middle tier IMAP server. For medium caching levels, certain parts of mail are cached. Increasing the cache size increases the memory requirements on the middle tier.

Range: small, medium

Default Value: small

Get New Mail Interval
This parameter specifies the interval to wait before checking for new mail. The IMAP server does not check for new mail until the time interval has elapsed. If clients send a large number of check new mail requests to the server it affects performance.

Range: 0-65535

Default Value: 120 seconds

Timeout Interval
Auto-logout timeout interval. If a client does not perform any operations within this interval, it is disconnected.

Range: 0-65535

Default Value: 1800 seconds

POP3

LDAP Connection Pool Increment
This parameter specifies the number of Oracle Internet Directory connections the pool is increased by.

Range: none

Default Value: 0

LDAP Current Connection Pool
This parameter specifies the current number of Oracle Internet Directory connections in the pool.

Range: none

Default Value: 10

LDAP Minimum Connection Pool
This parameter specifies the minimum number of Oracle Internet Directory connections in the pool.

Range: none

Default Value: 10

LDAP Maximum Connection Pool
This parameter specifies the maximum number of Oracle Internet Directory connections in the pool.

Range: none

Default Value: 10

Presentation Name
This parameter specifies the presentation name used by the server to register with the Oracle9i listener.

Range: string

Default Value: POP

Process Log Level
This parameter specifies the log messages level.

Range: 0-30

Default Value: 6

Process Debug Level
This parameter specifies the debug messages level. To enable statistics, set the value to 512.

Range: 4294967295 (32bits, multi-value)

Default Value: 0

Default Domain
This parameter specifies the default domain for user login. If the user does not provide a domain when logging in, the value of this parameter is used.

Default Value: none

Maximum Number of Clients
This parameter specifies the maximum number of clients allowed to connect to the server instance.

Range: 0-1000

Default Value: 1000

Maximum Rule Nesting Level
This parameter specifies the maximum number of times a nesting rule can be applied to a message. In general, setting this parameter to a smaller number increases overall performance, but not for systems that use rules heavily

Range: >=1

Default Value: 20

POP3 Delete Allowed
Enables read messages to be deleted from the server.

Range: [yes, no]

Default Value: no

POP3 Retrieval
Enables all or unread messages to be retrieved from the server.

Range: [unread, all]

Default Value: all

SMTP In

LDAP Connection Pool Increment
This parameter specifies the number of Oracle Internet Directory connections the pool is increased by.

Range: none

Default Value: 0

LDAP Current Connection Pool
This parameter specifies the current number of Oracle Internet Directory connections in the pool.

Range: none

Default Value: 10

LDAP Minimum Connection Pool
This parameter specifies the minimum number of Oracle Internet Directory connections in the pool.

Range: none

Default Value: 10

LDAP Maximum Connection Pool
This parameter specifies the maximum number of Oracle Internet Directory connections in the pool.

Range: none

Default Value: 10

Spam Flood Interval
This parameter specifies the time interval, in minutes, to detect spam flooding.

Range: none

Default Value: none

Spam Maximum Flood Count
SMTP server signals flooding if the number of messages and connections from a single host exceeds the Spam Max. Flood Count within the Spam Flood Interval.

Range: none

Default Value: none

Native Anti-Spamming
Turns on anti-spamming checks. If this parameter is not set, all anti-spamming checks are turned off.

Range: Boolean

Default Value: false

Relay Allowed
Enables domains determined by SMTP Relay Domains Allowed. Anti-spamming check.

Range: string

Default Value: false

Reject Domains
This parameter specifies the list of domains and sub-domains to be rejected. Anti-spamming check.

Range: multi-value

Default Value: none

Reject Senders
This parameter specifies the list of senders to be rejected. Anti-spamming check

Range: multi-value

Default Value: none

Reject Recipients
This parameter specifies the list of recipients to be rejected. Anti-spamming check.

Range: multi-value

Default Value: none

Relay Domains Allowed
This parameter specifies the list of domains to relay through. Anti-spamming check.

Range: multi-value

Default Value: none

Recipient Rewriting Rules
This parameter rewrites rules for recipients.

Range: multi-value

Default Value: none

Sender Rewriting Rules
This parameter rewrites rules for senders. Used only by the SMTP In server.

Range: multi-value

Default Value: none

Local Domains
This parameter specifies the list of local domains. Used only by the SMTP Out server.

Range: multi-value

Default Value: none

Protocol Server Increment Thread
This parameter specifies the number of threads the client connection pool is increased by.

Range: 1-999

Default Value: 1

Protocol Server Thread Timeout
This parameter specifies the number of seconds after which an idle thread is cleaned up.

Range: 0-65535

Default Value: 1860 seconds

Protocol Server Minimum Threads
This parameter specifies the minimum number of threads available for client connection handling.

Range: 1-1000

Default Value: 1

Protocol Server Maximum Threads
This parameter specifies the maximum number of threads available for client connection handling.

Range: 0-1000

Default Value: 500

Presentation Name
This parameter specifies the presentation name used by the server to register with the Oracle9i listener.

Range: string

Default Value: ESSMI

Process Log Level
This parameter specifies the log messages level.

Range: 0-30

Default Value: 6

Maximum Number of Clients
This parameter specifies the maximum number of clients allowed to connect to the server at one time.

Range: 0-1000

Default Value: 1000

Maximum Rule Nesting Level
This parameter specifies the maximum number of times a nesting rule can be applied to a message. In general, setting this parameter to a smaller number increases overall performance, but not for systems that use rules heavily

Range: >=1

Default Value: 20

Checkpoint Interval
This parameter specifies the number of recipients processed in a single relay delivery attempt.

Range: >=1

Default Value: 4

Fallback MX Host

This parameter, when set, specifies the host where relay messages are sent.

Range: string

Default Value: none

Maximum Hop Count

This parameter specifies the maximum number of hops a message can go through.

Range: >=1

Default Value: 25

Maximum Message Size

This parameter specifies the maximum allowed incoming message size in bytes.

Range: >=0

Default Value: 0

SMTP Minimum Queue Age

If the message has been in the queue less than the SMTP Min. Queue Age, the message is skipped for a delivery attempt.

Range: integer

Default Value: 30 minutes

Postmaster Copy

If the postmaster address is set, a copy of the delivery status notification is sent to it.

Range: string

Default Value: none

Message Timeout

When a SMTP server is shutdown it may be in the middle of processing certain messages. When the server is restarted, it looks for messages that are being processed. If the messages remain in the same state for this parameter value interval (in minutes), it assumes that the messages are left over from the previous run and processes them again.

Range: integer

Default Value: 30

SMTP Queue Timeout

This parameter specifies the maximum time a message can be in the queue.

Range: >=1

Default Value: 5 days

Use Errors To

This parameter determines if the Errors To header is to be used for delivery status notifications.

Range: Boolean

Default Value: False

Connection Number

This parameter specifies the number of SMTP connections the outbound SMTP server caches for future delivery to the same host.

Range: >1

Default Value: 0

Authentication

This parameter determines if SMTP authentication is enabled.

Range: Boolean

Default Value: false

Submit Only

This parameter submits inbound messages without resolving the recipient.

Range: Boolean

Default Value: false

External Filter

Enables external filter processing if set to true.

Range: Boolean

Default Value: false

External Filter Process

This parameter specifies the path for the executable of the external process.

Range: string

Default Value: none

SMTP Out

LDAP Connection Pool Increment
This parameter specifies the number of Oracle Internet Directory connections the pool is increased by.

Range: none

Default Value: 0

LDAP Current Connection Pool
This parameter specifies the current number of Oracle Internet Directory connections in the pool.

Range: none

Default Value: 10

LDAP Minimum Connection Pool
This parameter specifies the minimum number of Oracle Internet Directory connections in the pool.

Range: none

Default Value: 10

LDAP Maximum Connection Pool
This parameter specifies the maximum number of Oracle Internet Directory connections in the pool.

Range: none

Default Value: 10

Spam Flood Interval
This parameter specifies the time interval, in minutes, to detect spam flooding. Anti-spamming check.

Range: none

Default Value: none

Spam Maximum Flood Count

SMTP server signals flooding if the number of messages and connections from a single host exceeds the Spam Max. Flood Count within the Spam Flood Interval. Anti-spamming check.

Range: none

Default Value: none

Native Anti-Spamming

Turns on anti-spamming checks. If this parameter is not set, all anti-spamming checks are turned off.

Range: Boolean

Default Value: false

Relay Allowed

Enables domains determined by SMTP Relay Domains Allowed. Anti-spamming check.

Range: string

Default Value: false

Sender Rewriting Rules

This parameter rewrites rules for senders. Used only by the SMTP In server.

Range: multi-value

Default Value: none

Local Domains

This parameter specifies the list of local domains. Used only by the SMTP Out server.

Range: multi-value

Default Value: none

Process Log Level

This parameter specifies the log messages level.

Range: 0-30

Default Value: 6

Maximum Rule Nesting Level
This parameter specifies the maximum number of times a nesting rule can be applied to a message. In general, setting this parameter to a smaller number increases overall performance, but not for systems that use rules heavily

Range: >=1

Default Value: 20

Checkpoint Interval
This parameter specifies the number of recipients processed in a single relay delivery attempt.

Range: >=1

Default Value: 4

Fallback MX Host
This parameter, when set, specifies the host where relay messages are sent.

Range: string

Default Value: none

Maximum Hop Count
This parameter specifies the maximum number of hops a message can go through.

Range: >=1

Default Value: 25

Maximum Message Size
This parameter specifies the maximum allowed incoming message size in bytes.

Range: >=0

Default Value: 0

SMTP Minimum Queue Age
If the message has been in the queue less than the SMTP Min. Queue Age, the message is skipped for a delivery attempt.

Range: integer

Default Value: 30 minutes

Postmaster Copy
If the postmaster address is set, a copy of the delivery status notification is sent to it.

Range: string

Default Value: none

Message Timeout
When a SMTP server is shutdown it may be in the middle of processing certain messages. When the server is restarted, it looks for messages that are being processed. If the messages remain in the same state for this parameter value interval (in minutes), it assumes that the messages are left over from the previous run and processes them again.

Range: integer

Default Value: 30

SMTP Queue Timeout
This parameter specifies the maximum time a message can be in the queue.

Range: >=1

Default Value: 5 days

Use Errors To
This parameter determines if the Errors To header is to be used for delivery status notifications.

Range: Boolean

Default Value: False

Connection Number
This parameter specifies the number of SMTP connections the outbound SMTP server caches for future delivery to the same host.

Range: >1

Default Value: 0

Authentication
This parameter determines if SMTP authentication is enabled.

Range: Boolean

Default Value: false

External Filter
Enables external filter processing if set to true.

Range: Boolean

Default Value: false

External Filter Process
This parameter specifies the path for the executable of the external process.

Range: string

Default Value: none

Housekeeping

Collection
This parameter determines whether to run the collection task. The collection task collects or reclaims space taken up by messages that are no longer used by removing the message data. Oracle Corporation recommends scheduling this task to run continuously, to keep up with the rate of messages coming in from outside the server.

Range: True or False

Default Value: True

Expiration
This parameter determines whether to run the expiration task. The expiration task expires or deletes messages set to expire on or before the current time according to a timer, by moving such messages to the system trash folder. The expiration timer is a folder attribute and can be set by users. Oracle Corporation recommends running this task only once a day.

Range: True or False

Default Value: False

Calendar Cleanup
This parameter determines whether to perform Calendar-related cleanup tasks. The Calendar clean up option removes expired events and scheduled tasks. Oracle Corporation running the task on a quarterly basis, enabling users to keep track of pasts events and schedules for three months.

Range: True or False

Default Value: False

Text Synchronization

This parameter specifies whether to perform Oracle Text index synchronization task. Performing synchronization is essential to content-based searching. Doing it frequently should greatly increase search performance. However when expected rate of incoming message is low, doing it too frequently increases the server load unnecessarily. If content-based searching through Oracle Text is used heavily, it is recommended that a dedicated housekeeping instance should be created for this task with a sleep time of five to ten minutes.

Range: Disabled or Enabled

Default Value: Disabled

Text Optimization

This parameter specifies whether to perform Oracle Text optimization task. Oracle Text optimization improves performance of index synchronization. Without optimization, synchronization performance degrades over time. It is recommended that this task should be done about once per week. A dedicated housekeeping instance should be created with task enabled and a sleep time of 24*7 (168) hours.

Pruning

This parameter determines whether to run the pruning task. The pruning task clears up message queues and the system trash folder, and marks un-referenced messages for the collection task. Oracle Corporation recommends scheduling this task to run continuously, to keep up with user message deletion activity.

Range: True or False

Default Value: True

Tertiary Store

This parameter determines whether to run the tertiary store task. This task archives old messages by moving them to another tablespace, presumably a cheaper and larger storage designed for archiving. Oracle Corporation recommends running this task on a monthly basis.

Range: True or False

Default Value: False

Process Log Level

This parameter specifies the log message level.

Range: 0-30

Default Value: 6

Process Debug Level
This parameter specifies the debug messages level. To enable statistics, set the value to 512.

Range: 4294967295 (32bits, multi-value)

Default Value: 0

Tertiary Storage Age Threshold
This parameter specifies the minimum age of messages in number of days, for archiving. If the tertiary storage task is turned on, housekeeping tries to archive messages older than the number of days specified in this parameter. Oracle Corporation recommends setting this parameter to at least 30.

Range: Non negative number

Maximum Rule Nesting Level
This parameter specifies the maximum number of times a nesting can be applied to a message. In general, setting this parameter to a smaller number increases overall performance, but not for systems that use rules heavily.

Range: >=1

Default Value: 20

Process Sleep Duration
This parameter specifies the interval between two consecutive starts of the task processing in hours. If the task takes less than this amount of time to finish, the housekeeping process sleeps for the rest of the duration. If the task takes more time than the amount of sleep time specified, the process does not sleep but instead runs continuously.

Range: >=0

Default Value: 60 minutes

List Server

LDAP Connection Pool Increment
This parameter specifies the number of Oracle Internet Directory connections the pool is increased by.

Range: none

Default Value: 0

LDAP Current Connection Pool
This parameter specifies the current number of Oracle Internet Directory connections in the pool.

Range: none

Default Value: 10

LDAP Minimum Connection Pool
This parameter specifies the minimum number of Oracle Internet Directory connections in the pool.

Range: none

Default Value: 10

LDAP Maximum Connection Pool
This parameter specifies the maximum number of Oracle Internet Directory connections in the pool.

Default Value: 10

Range: none

Process Log Level
This parameter specifies the message log level.

Default Value: 6

Range: 1-30

Process Debug Level
This parameter specifies the debug messages level. To enable statistics, set the value to 512.

Default Value: 0

Number of Mails Processed Concurrently
This parameter specifies the number of messages to be processed simultaneously by the list server.

Default Value: 50

Range: Any positive number greater than zero.

Number of Threads per Mail
This parameter specifies the number of threads to be spawned to deliver list server messages to subscribers.

Default Value: 10

Range: Any positive number greater than zero.

Number of Recipients per Batch
This parameter specifies the number of users that each of the user threads deliver messages to.

Default Value: 1000

Range: Any positive number greater than zero.

Server Log Files

The server log files can be found in the following locations:

IMAP4
On UNIX:

```
$ORACLE_HOME/oes/log/<install_name>/imap/<process_id>/<process_id>.log.
```

On Windows:

```
%ORACLE_HOME\oes\log\<install_name>\imap\<process_id>\<process_id>.log.
```

POP3
On UNIX:

```
$ORACLE_HOME/oes/log/<install_name>/pop/<pid>/<pid>.log
```

On Windows:

```
%ORACLE_HOME\oes\log\<install_name>\pop\<pid>\<pid>.log
```

SMTP In and SMTP Out
On UNIX:

```
$ORACLE_HOME/oes/log/<install_name>/smtp_in/<pid>/<pid>.log
$ORACLE_HOME/oes/log/<install_name>/smtp_out/<pid>/<pid>.log
```

On Windows:

```
%ORACLE_HOME\oes\log\<install_name>\smtp_in\<pid>/<pid>.log
%ORACLE_HOME\oes\log\<install_name>\smtp_out\<pid>\<pid>.log
```

Housekeeping

Mail Store on UNIX:

```
$ORACLE_HOME/oes/log/collector/<SID>.*/text.log
```

Mail Store on Windows:

```
%ORACLE_HOME\oes\log\collector\<SID>.*\text.log
```

Middle Tier on UNIX:

```
$ORACLE_HOME/oes/log/<install_name>/gc./<pid>/<pid>.log
```

Middle Tier on Windows:

```
%ORACLE_HOME\oes\log\<install_name>\gc.\<pid>\<pid>.log
```

List Server

On UNIX:

```
$ORACLE_HOME/oes/log/<install_name>/ls/<pid>/<pid>.
```

On Windows

```
%ORACLE_HOME\oes\log\<install_name>\ls\<pid>/<pid>.
```

SSL Setup

Secure Sockets Layer (SSL), is a protocol used for transmitting private documents over the Internet. SSL works by using a public key to encrypt data that is transferred over the SSL connection. Many Web sites use the protocol to obtain confidential user information, such as credit card numbers. By convention, URLs requiring an SSL connection start with `https:` instead of `http:`.

Obtaining a SSL Server Certificate

In order for the server to communicate securely with clients, customers must obtain an SSL Server Certificate for their machine and configure their network listener to use that certificate.

> **See Also:** Chapter 16 of the *Oracle Advanced Security Administrator's Guide*, for how to use the Wallet Manager to create a wallet and store SSL certificates.

> **Note:** You must have a separate certificate for each machine on which the protocol server processes are running, but you can use the same certificate for all protocol server processes on the same machine.

In the Oracle environment, you can use the Oracle Wallet Manager to create and store certificates and the corresponding private keys securely.

To obtain a certificate, use the Wallet Manager to perform the following steps:

1. Create a new wallet, if one does not already exist. The same wallet can be used by all the servers running on that machine.

2. Generate a certificate request. This generates the corresponding private key and store it in the wallet.

3. Send the certificate request to a Certificate Authority like VeriSign and get it signed.

4. Store the signed certificate in the wallet with the Auto Login option enabled on. You should see the certificate status set to Ready.

5. Enter the host name along with the domain name as the Common Name while generating a certificate request.

Remember to store the wallet with the Auto Login option enabled. The option is under the Wallet menu option in the Wallet Manager.

This creates a `cwallet.sso` file in addition to the `ewallet.p12`, that is the actual wallet. The files can be found in the following location: `/etc/ORACLE/WALLETS/<userid>`.

Configuring the Network Listener for SSL

The `listener.ora` file is updated with the required SSL and non- SSL listening end points for both the IMAP4 and POP3 servers during installation. Users only need to set the wallet location and other optional SSL parameters in the `listener.ora` and the `sqlnet.ora` files for the listener to receive SSL connections. This can be done manually or by using the Oracle Network Manager.

Setting the Wallet Location Manually

Add the following `WALLET_LOCATION` and `SSL_CLIENT_AUTHENTICATION` entries in the beginning of the `$TNS_ADMIN/listener.ora` and `$TNS_ADMIN/sqlnet.ora` files:

```
WALLET_LOCATION =
  (SOURCE =
    (METHOD = FILE)
    (METHOD_DATA =
      (DIRECTORY = <Directory path containing the cwallet.sso file>)
    )
  )

SSL_CLIENT_AUTHENTICATION = FALSE
```

The following is what a typical directory parameter value looks like:

```
/etc/ORACLE/WALLETS/<userid>
```

The `SSL_CLIENT_AUTHENTICATION` parameter should be set to True, if the client needs to be authenticated by the server. This requires clients to present their certificates during the SSL handshake.

> **See Also:** Chapter 7 of the *Oracle Advanced Security Administrator's Guide* to set the wallet location using Oracle Network Manager.

If the `SSL_CLIENT_AUTHENTICATION` parameter is not set, the default setting is true and clients are required to present a certificate during the SSL handshake. If the intent is only to secure the communication, not to authenticate the client using the certificate, then this parameter should be set to false.

Configuring Protocol Servers for SSL

The IMAP4 and POP3 protocol servers can be configured to use SSL for securely communicating with and authenticating clients. To handle the SSL client connections, a new protocol server process should be created and configured. The default listening end points for both IMAP4 and POP3 protocol servers are created during the installation in `listener.ora`.

Setting Up a SSL Server Instance

Perform the following steps to set up a SSL server process:

1. Create a new IMAP4 or POP3 server process using `oesctl`.

2. Set the `Presentation Name` and `Mail Port` attributes of the newly created instance in the Oracle Internet Directory.

3. For an IMAP4 SSL instance, set the `Presentation Name` to `IMAPSSL`, and set the `Mail Port` to 993.

   For a POP3 SSL instance, set the `Presentation Name` to `POP3SSL`, and set the `Mail Port` to 953.

   > **Note:** The presentation names and port numbers should match the values given in the `listener.ora` file. If any of the parameters are changed in `listener.ora`, the corresponding server parameters should also be updated.

Thin Client

The Thin Client gives users a simple and fast means to access messages and other self service features through a web browser. A user points their browser to a predetermined URL to log in to their e-mail account. Their inbox is rendered dynamically. The logic to render a user's folders, messages, public directory and personal address book runs at the Oracle9*i* Application Server web server. The browser acts merely as a keyboard and screen. There is no processing or data storage on the desktop.

The Thin Client provides a standard, out of the box web mail solution, along with a tool kit that can extend and modify the standard solution.

The Thin Client log files are derived from values in the following `toolkit.properties` file:

■   `toolkit.logdirectory`

■   `toolkit.logfilename`

The files are placed in `toolkit.logdirectory`; the filename is `<toolkit.logfilename>_<toolkit.loghostclient>_<number>.log`.

The tool kit provides a framework for easy additions or modifications of simple functionality or presentation of the Thin Client. For example, a deployment can replace the Oracle logo with a different graphic. The tool kit can also enforce aspects of the application such as the availability of basic actions or functionality. This reduces the amount of development effort required to customize a solution for customer specific needs.

Thin Client Tool Kit Properties

The following line in `toolkit.properties` ensures that the Thin Client reads this file into the environment only at startup. This line must not be changed or removed.

```
ct_env=set
```

IMAP and SMTP Server Settings

Remove the comment and change this value to point to the IMAP server host name:

```
mail.imap.host=%machinehost%
```

Remove the comment and change this value to point to the IMAP server port address service listener. The IMAP server default ports are 143 and 993 for a secure server.

```
mail.imap.port=143
```

Remove the comment and change this value to point to the SMTP server host name

```
mail.smtp.host=%machinehost%
```

Remove the comment and change this value to point to the port address for the SMTP service listener. The SMTP server default port 25). This value is seldom changed, except to distribute the load for sending many messages.

```
mail.smtp.port=25
```

Set the fully qualified domain name to be appended to addresses that are not fully qualified. If someone sends an e-mail message to recipient, the Thin Client first attempts to resolve the name from the user's personal address book and other LDAP directories. If the recipient does not exist, the program assumes the message is for someone in the fully qualified domain. This value is appended to recipient and sent. If the mail domain was set to acme.com, recipient would be re-written as `recipient@acme.com`.

Thin Client Store Settings

The Oracle9*i*AS Unified Messaging Thin Client enables the end user to store certain messages in specific folders. To enable default names to be present and used, the folders may need to be automatically created by the client. End users can choose any folder in their account by changing their preference settings.

The following is a list of the default folder names:

```
mail.folder.drafts=Drafts
mail.folder.sent=Sent
mail.folder.templates=Templates
mail.folder.trash=Wastebasket
```

Tool Kit Default Settings

The state file is a XML file that defines the navigation behavior of the Thin Client. This file provides a way to easily define and manage state file transitions in the client. A state transition defines the logic that must be executed by the application when the user moves from one state file to another.

The state file for configuration can be found in the following directory:

```
$ORACLE_HOME/um/client/config/statefile.xml
```

- URL Directory for Pages:

  ```
  clientdir=/uixclient/ => http://<machine>:<port>/uixclient/<page>.uix
  clientdir=/templates/
  clientdir=/servlets/um/templates/
  ```

- Image Directory for Images

  ```
  imagedir=/um/images/
  ```

- Suffix for State -> Pages

  ```
  pagesuffix=.uix => state message_list -> message_list.uix
  pagesuffix=.uix
  pagesuffix=.uix
  ```

- Supported Languages (Based on Java locale conventions)

  ```
  Supported Languages=en,ar,cs,da,de,el,es,fi,fr,fr_
  CA,hu,it,iw,ja,ko,nl,no,pl,pt,pt_BR,ro,ru,sk,sv,th,tr,zh_CN,zh_TW
  ```

- Oracle Internet Directory Settings

  ```
  ldap.es.host=<host_name>
  ldap.es.port=389
  ldap.es.username=cn=orcladmin
  ldap.es.password=welcome
  ```

- URLs for the Administration and Preferences Tabs

Components of the Thin Client application are integrated by a set of tabs visible on every page, enabling easy navigation from one component to another. Backend components are integrated by accessing common

```
client.preferencestab.url=/um/templates/PFAccountBasicSettings.jsp
client.preferences.url=/um/templates/PFAccountBasicSettings.jsp
client.corporate.url=http://www.oracle.com
client.product.url=http://www.oracle.com
client.portal.url=http://www.oracle.com
```

- Images

```
client.image.corporate=/um/images/corporateBrand_oracle.gif
client.image.product=/um/images/unified_mediumbanner.gif
client.image.portal=/um/images/globalbutton_returntoportal.gif
client.image.login=/um/images/globalbutton_login.gif
client.image.logout=/um/images/globallogout.gif
client.image.preferences=/um/images/globalpreferences.gif
client.image.help=/um/images/globalhelp.gif

SSOCAL90_PROPERTIES=%ORACLE_HOME%/j2ee/ProductGroup3
/applications/UMClientApp/um_client
```

This file enables call applications to know the location of the `calendar.properties` file.

Thin Client Log Files

The Thin Client log files can be found in the following directory:

```
logdirectory=/tmp
```

5

Telephony Processes

This chapter discusses the different telephony processes of the Oracle9*i*AS Unified Messaging system.

This chapter contains the following topics:

- Overview
- Routing Process
- Voice Mail Recording Process
- Voice Mail Retrieval Process
- Attendant Process
- Fax Receiving Process
- Recovery Process
- Process Manager Process
- MWI Service Process
- AQMWI Process
- Wireless Process
- SMS Gateway Process
- WCTP Gateway Process
- Managing Telephony Processes

Overview

The Oracle9iAS Unified Messaging telephony component consists of several processes. Based on the computer telephony server (CT server) architecture from enterprise computer telephony forum (ECTF). Each process interacts with a call, performs the task(s) at hand and transfers the call to different processes. Its object oriented architecture provides the flexibility for scalability and performance.

These are the telephony processes:

- Routing Process: Acts as the routing agent when calls are first recieved by the Oracle9iAS Unified Messaging system.

- Recording Process: Records voice messages and stores them in the Oracle9iAS Unified Messaging mail store

- Fax Receiving Process: Records and stores fax messages in the Oracle9iAS Unified Messaging mail store

- Attendent Process: Manages and transfers calls when a user wishes to speak with an operator.

- Retrieval Process: Interacts with the user and retrieves/renders messages from the Oracle9iAS Unified Messaging mail store.

- Recovery Process: Manages queued voice mail / fax messages if the Oracle9iAS Unified Messaging mail store is unavailable.

- MWI Service Process: Manages the message waiting indicator (MWI) for individual switch implementations.

- AQMWI Process: Manages the message waiting indicator (MWI) requests from the Oracle9iAS Unified Messaging mail server.

The following are examples of how a call traverses through the various processes:

- Recording: The routing process will pick up the call from the PBX and parses call detail information. Once the Routing process determines that it's a recording call type, the call will be handed off to the Recording process or, if fax tone is detected, the call will be routed to the Fax Receiving process. Recording and Fax Receiving processes will interact with OID and the Oracle9iAS Unified Messaging mail store to store the recorded message. Calls to be transfered to an operator will be handed off to Attendant process.

- Retrieval: The routing process will pick up the call from the PBX and parses call detail information. Once the Routing process determines that it's a retrieval call type, the call will be handed off to the retrieval process. The retreival process

interacts with OID and the Oracle9*i*AS Unified Messaging mail store. For reply/forward, the call will be handed off to the recording process and for transfers, the call will be handed off to the attendant process.

- MWI: When a new voice mail message arrives into a Oracle9*i*AS Unified Messaging telephony subscriber's inbox, a message waiting indicator (MWI) activation request is generated for the AQMWI process. The AQMWI process interacts with OID, looks up the corresponding MWI Service process and relays the request to that MWI service process. Conversely, when there are no more unread voice mail Messages in the Oracle9*i*AS Unified Messaging telephony subscriber's inbox, an MWI deactivation request is generated to the AQMWI process and the same procedure is followed. MWI Service process performs activates and deactivates MWI for a specific PBX location.

Routing Process

The Oracle9*i*AS Unified Messaging routing process is implemented based on CT server (Computer Telephony Server) architecture from ECTF (Enterprise Computer Telephony Forum) organization.

When the voice mail server receives a call from the PBX, the routing process answers the call. This process retrieves call detail information from the PBX. This information indicates whether the current call was a direct call to the voice mail system or a forwarded call from a busy or unanswered extension. The routing process routes forwarded calls to the voice mail recording process and direct calls to voice mail retrieval process. If no call detail information is available, the routing process enables the caller to choose whether to access voice mail recording or voice mail retrieval.

The routing process maintains a pool of worker threads. Each thread can handle one call at any time.

The routing process can retrieve call details through SMDI or CTMEDIA.

Voice Mail Recording Process

Oracle9*i*AS Unified Messaging voice mail recording process is implemented based on CT server architecture from ECTF organization. Process Architecture

The Oracle9*i*AS Unified Messaging voice mail recording process records and sends voice mail messages. The voice mail recording process maintains a pool of worker threads. Each thread can handle one call at any time. There are four scenarios in which the caller interacts with the recording process:

- Normal Recording: When the routing process receives a forwarded call, the process routes the call to voice mail recording and provides the extension number of the call's intended recipient. Voice mail recording acquires the recipient's information from Oracle Internet Directory. The process verifies that the recipient has telephone access enabled and plays the recipient's greeting message: a personal greeting, a vacation greeting, a default greeting with a recorded name, or a default greeting with a telephone number. If a fax calling tone is detected while the greeting is played, the call is routed to the fax receiving process. The caller records a message, and can choose to edit it. Finally, the voice mail recording interacts with the CT server to store the voice mail in the mail store.

- Unknown Origin Recording: When the routing process receives a call without call detail information and the caller chooses to record a message, the Routing Process routes the call to the voice mail recording process, which prompts the caller for the recipient's telephone number. The latter process plays a generic system greeting. Next, the caller records a message and can choose to edit it. Finally, voice mail recording interacts with the CT server to store the voice mail in the mail store.

- Reply to a Message: When a user chooses to reply through the telephone user interface to a voice mail from another Oracle9*i*AS Unified Messaging user, the voice mail retrieval process routes the call to voice mail recording. This process plays a generic system greeting, and then the user records a message and can choose to edit it. The message's recipient is the sender of the original message. Finally, voice mail recording interacts with the CT server to store the voice mail in the mail store.

- Forward a Message: When a user chooses to forward a message through the telephone user interface, the voice mail retrieval process routes the call to voice mail recording. This process plays a generic system greeting, and then the user records a message, addresses it, and can choose to edit it. Finally, voice mail recording interacts with the CT server to store the voice mail in the mail store.

If there are any delivery problems while sending a message, the recording process places the message in a file system queue. The recovery process attempts to redeliver the message. This may occur if the mail store database is unavailable.

Voice Mail Retrieval Process

The Oracle9*i*AS Unified Messaging voice mail retrieval process is implemented based on computer telephony server (CT server) architecture from the Enterprise Computer Telephony Forum (ECTF) organization.

The voice mail retrieval process enables users to log in, retrieve messages, and administer their accounts. This process maintains a pool of worker threads each of which can process one call at any time. All calls to this process arrive through the routing process.

The retrieval process prompts the caller to enter an extension number and password, and authenticates him or her against a user object in the Oracle Internet Directory server. Upon a successful authentication, this process interacts with the CT server to retrieve voicemail messages and other account information. The voice mail retrieval process enables the user to listen to, save, and delete voice mail messages. Users can also set a PIN, and record or administer greetings. Account information for the user is stored in Oracle Internet Directory.

> **See Also:** *Oracle9i*AS Unified Messaging User's Guide for more information

Attendant Process

The Oracle9*i*AS Unified Messaging attendant process is implemented based on CT server architecture from ECTF organization.

The attendant process receives a call when the caller chooses to transfer to an operator during an interaction with the voice mail recording process or the retrieval process. The attendant process looks in the Oracle Internet Directory server for a system defined operator telephone extension and transfers the call to that extension.

Fax Receiving Process

The Oracle9*i*AS Unified Messaging fax receiving process is implemented based on the computer telephony server (CT server) architecture from the Enterprise Computer Telephony Forum (ECTF) organization.

The fax receiving process receives fax messages. This process maintains a pool of worker threads each of which can process one call at any time. All calls arrive through the voice mail recording process when a fax calling tone is detected. This process receives a fax message and then delivers it to the e-mail server mail store by communicating with the CT server.

Recovery Process

The Oracle9*i*AS Unified Messaging recovery process is implemented based on the computer telephony server (CT server) architecture from the Enterprise Computer Telephony Forum (ECTF) organization.

The recovery process attempts to redeliver messages if the voice mail recording or fax receiving process experience errors when communicating with the mail store. This process wakes periodically and attempts to send any messages found in the file system queue. Once the recovery process can successfully send a message, the process deliquesce any messages.

Process Manager Process

The Oracle9*i*AS Unified Messaging process manager process is implemented based on the Java RMI architecture.

The RMI service enables remote process startup for all Windows based processes for Oracle9*i*AS Unified Messaging. The RMI service registers itself with the RMI registry and RMID activation daemon. Client programs, like the Oracle Enterprise Manager JSP pages invoke a remote method in this RMI service to start up a specific process instance. When this service receives the request, it creates a service in the Windows Registry for the specified process instance and starts it up. If the service is already installed, it restarts the existing service.

Processes managed by this RMI service are:

- Routing Process
- Voice Mail Recording Process
- Voice Mail Retrieval Process
- Attendant Process
- Recovery Process
- Fax Receiving Process
- MWI Service Process

`rmiregistry` and the `rmid` must be running before the RMI service can be started.

MWI Service Process

The Oracle9*i*AS Unified Messaging message waiting indicator (MWI) service process is implemented based on the Java Remote Method Invocation (RMI) architecture.

The MWI service process activates and deactivates message waiting indicators for a specific PBX in response to requests received through Java RMI. This process maintains either an SMDI or a CTMEDIA connection with the PBX. At least one MWI service process should be running for each PBX with voice mail users. The AQMWI process initiates RMI requests for this process.

AQMWI Process

The Oracle9*i*AS Unified Messaging AQMWI process is implemented based on the Java RMI architecture.

The AQ MWI Process retrieves message waiting indicator (MWI) activation or deactivation requests from an advanced queue (AQ), and routes them to an MWI service process through Java Remote Method Invocation (RMI). When a user receives a new voice mail, the mail store inserts into an AQ a request to activate that user's MWI. When a user reads his or her last unread voice mail, the mail store inserts into an AQ a request to deactivate that user's MWI. The AQMWI Process retrieves the request from the AQ, looks up the user's telephone number and finds an MWI service process responsible for handling MWI for that telephone number. Finally, the AQ MWI Process sends the MWI request to that MWI service process through Java RMI.

Wireless Process

The Oracle9*i*AS Unified Messaging wireless process is implemented using the Oracle AQ architecture.

The wireless process is responsible for delivering wireless messages originating from a web client or a notification server, and sending a wireless notification to a given device address. The components insert messages into the wireless in-queue to be processed by the wireless server.

The wireless messages originating from notification servers and Web clients are processed differently from messages originating from a device directed to another device. Messages originating from notification server and Web clients contain the the following parameters:

- From address

- To address

- Text of the message

- Device name

With these parameters, the wireless process dequeues and prepares the message according to the device protocol specifications.

Messages originating from a device directed to another device contain the following parameters:

- From address: device number from which this message originated.

- To address: gateway address defined for each device type, using which, this message can be received by the gateway process listening on a given port.

- Text of the message: contains the actual address that this message be delivered to along with the message body to be sent and the device type to be used.

- Device name: gateway to indicate that this message originated from a device.

Using these parameters, the wireless process parses the message text to find out the destination and device type according to the device protocol specifications. The wireless process dequeues each message from the in-queue, resolves the destination address, and prepares it according to the device chosen. Depending upon the device protocol specifications, this process may send multiple messages for a single message body.

Once processed, the wireless process inserts this message into the out-queue, where the gateway processes dequeue the message. Depending on the type of device, messages are sent to the destination by connecting to the gateway servers.

SMS Gateway Process

The Oracle9*i*AS Unified Messaging SMS gateway process is implemented using the Oracle AQ architecture.

The SMS gateway process sends and receives wireless messages connecting to the gateway server. The process dequeues the prepared messages from the wireless server out-queue and routes them to the SMS - Center (SMSC) gateway servers. Once a message is received by the gateway server, a response is sent to the gateway process. The delivery of messages between server and the device is outside the scope of the Oracle9*i*AS Unified Messaging wireless system.

The SMS gateway process listens on the wireless server out-queue. This process dequeues wireless messages whose gateway type matches with its own gateway type and delivers them to the SMSC. The following SMS gateway processes are implemented in this release:

- SMSNokia

- SMSCMG

- SMSUnisys

These gateway processes are capable of two-way messaging and can receive wireless messages originating from a device into the Oracle9*i*AS Unified Messaging system, that are routed to another wireless address or an e-mail address.

WCTP Gateway Process

The wireless communication transfer protocol (WCTP) transfers information content between the wireline and wireless devices. The information is transferred in blocks using an XML format. Any protocol which is capable of transferring the data in blocks can be used to send the message. Over the internet, HTTP protocol is used to send these messages. The 1.1 version of this protocol supports one-way communication to the device.

Oracle9*i*AS Unified Messaging WCTP gateway process dequeues wireless messages with the gateway type `orclmailwctp`, prepares a XML document with the from, to, message text, and the time stamp of the message. Once the XML document is prepared, the process connects to the gateway server through HTTP on a given URL connection, to send the message. As a result, this gateway process receives a response from the server. Status 200 from the server indicates that the message has been received successfully by the HTTP server. Any other status code indicates an error. A proxy server host and port are defined in this process when implemented behind a firewall.

Managing Telephony Processes

This section describes how to start, stop, reinitialize, and modify telephony processes.

> **Note:** The process manager process is not managed by the Oracle9*i*AS Unified Messaging administration tool

Starting, Stopping, or Reinitializing All Telephony Processes

> **Note:** The following functions can only be executed if there is at least one instance has been created.

Using Oracle Enterprise Manager, perform the following steps to start, stop, or reinitialize all telephony processes:

1. Navigate to the Oracle9*i*AS Unified Messaging Service Targets page.

2. Select a telephony process.

3. Click **Start, Stop,** or **Reinitialize**.

Creating a Telephony Process Instance

Using Oracle Enterprise Manager, perform the following steps to create a telephony process instance:

To create a new telephony process instance with default parameters:

1. Navigate to the Oracle9*i*AS Unified Messaging Service Targets page.

2. Select a telephony process.

3. Click **Create**. This creates a new telephony process instance with default parameters.

To create a new telephony process instance with the same parameter values as an existing telephony process instance:

1. Select the instance with the parameters you want to replicate.

2. Click **Create Like**. This creates a new telephony process instance with the same parameters as the selected telephony process instance.

Deleting a Telephony Process Instance

> **Warning:** Deleting a telephony process may disable some or all telephony processes.

> **Note:** A process must be shut down before it can be deleted.

Using Oracle Enterprise Manager, perform the following steps to delete a telephony process instance:

1. Navigate to the Oracle9*i*AS Unified Messaging Service Targets page.

2. Select a telephony process.

3. Select the telephony process instance you want to delete.

4. Click **Delete**.

Starting a Telephony Process Instance

Using Oracle Enterprise Manager, perform the following steps to start a telephony process instance:

1. Navigate to the Oracle9*i*AS Unified Messaging Service Targets page.

2. Select a telephony process.

3. Select the telephony process instance you want to start.

4. Click **Start**.

Stopping a Telephony Process Instance

Using Oracle Enterprise Manager, perform the following steps to stop a telephony process instance:

1. Navigate to the Oracle9*i*AS Unified Messaging Service Targets page.

2. Select a telephony process.

3. Select the telephony process instance you want to stop.

4. Click **Stop**.

Reinitializing a Telephony Process Instance

> **Note:** Processes must be reinitialized whenever parameters are modified.

Using Oracle Enterprise Manager, perform the following steps to reinitialize a telephony process instance:

1. Navigate to the Oracle9*i*AS Unified Messaging Service Targets page.

2. Select a telephony process.

3. Select the telephony process instance you want to reinitialize.

4. Click **Reinitialize**.

Modifying Parameters for a Specific Telephony Instance

Using Oracle Enterprise Manager, perform the following steps to modify parameters for a specific telephony process instance:

1. Navigate to the Oracle9*i*AS Unified Messaging Service Targets page.

2. Select a telephony process.

3. Select the telephony instance you want to modify.

4. Modify the parameters you want to change.

5. Click **Apply**.

Modifying Telephony Process Parameters

Using Oracle Enterprise Manager, perform the following steps to modify telephony process default parameters:

1. Navigate to the Oracle9*i*AS Unified Messaging Service Targets page.

2. Select a telephony process.

3. Select **Change Settings**.

4. Modify the parameters you want to change.

5. Click **Apply**.

Telephony Process Parameters

The following is a list of telephony process parameters and definitions:

Routing Process

Log Level
This parameter specifies the log level parameter that controls amount of logging performed by the UM process.

Acceptable Values:

- INTERNALERROR

- ERROR

- WARNING

- NOTIFICATION

- TRACE

Default Value: WARNING

Process ID
This parameter specifies the process identification.

Acceptable Values: None

Default Value: None

Active Flag
This parameter specifies whether the instance is running.

Acceptable values = True or False

Default Value: None

Number of Threads per Process
This parameter specifies the number of threads for this routing process within one JVM.

Acceptable Values: None

Default Value: None

Root Context for UM
This parameter specifies the distinguished name of the Oracle9*i*AS Unified Messaging container in Oracle Internet Directory. This domain name's subtree contains Oracle9*i*AS Unified Messaging - specific information.

Acceptable Values: A valid Oracle Internet Directory distinguished name

Default Value: None

Root Context for ES
This parameter specifies the distinguished name of the e-mail server container in Oracle Internet Directory. This domain name's subtree contains e-mail server - specific information.

Acceptable Values: A valid Oracle Internet Directory distinguished name

Default Value: None

Install Context for UM
This parameter specifies UM Install Context. For example, um_system.

Acceptable Values: The name of a UM Install Context

Default Value: None

Voice Mail Recording Process

Maximum Message Recording Duration
This parameter specifies the maximum length of a recorded message in milliseconds.

Acceptable Values: A string of digits

Default Value: 120000

Maximum Silence Duration
This parameter specifies the amount of continuous silence which causes message recording to stop.

Acceptable Values: A string of digits

Default Value: 10000

Log Level
This parameter specifies the log level parameter that controls amount of logging performed by the Oracle9*i*AS Unified Messaging process.

Acceptable Values:

■   INTERNALERROR

■   ERROR

■   WARNING

- `NOTIFICATION`

- `TRACE`

Default Value: `WARNING`

Process ID
This parameter specifies the process identification.

Acceptable Values: None

Default Value: None

Active Flag
This parameter specifies whether the instance is running.

Acceptable Values: True or False

Default Value: None

Number of Threads per Process
This parameter specifies number of threads for this Oracle9*i*AS Unified Messaging process within one JVM.

Acceptable Values: A positive integer

Default Value: None

Root Context for UM
This parameter specifies the distinguished name of the Oracle9*i*AS Unified Messaging container in Oracle Internet Directory. This domain name's subtree contains Oracle9*i*AS Unified Messaging specific information.

Acceptable Values: A valid Oracle Internet Directory distinguished name

Default Value: None

Root Context for ES
This parameter specifies the distinguished name of the e-mail server container in Oracle Internet Directory. This domain name's subtree contains e-mail server specific information.

Acceptable Values: A valid Oracle Internet Directory distinguished name

Default Value: None

Install Context for UM
This parameter specifies `UM Install Context`

Acceptable Values: A valid `UM Install Context`

Default Value: None

CT Server Name
This parameter specifies the host name of the machine where the CT server is installed.

Acceptable Values: A valid host name

Default Value: None

CT Server Application Profile Name
This parameter specifies the name of the CT server profile that contains application configuration information.

Acceptable Values: A valid CT server profile name

Default Value: None

CT Server Group Configuration
This parameter specifies the name of the CT server group configuration that represents a collection of resources.

Acceptable Values: A valid CT server group configuration

Default Value: None

CT Application Service Name
This parameter specifies the name of CT application service name which is a unit of CTMEDIA functionality that corresponds to a Windows NT service offering OS functionality.

Acceptable Values: A valid CT server application service name

Default Value: None

CTMEDIA Call Timeout Value
This parameter specifies the time (in seconds) CTMEDIA waits to configure resources for this application.

Acceptable Values: A string of digits

Default Value: None

Message Coder Type
This parameter specifies audio coder type for voice mail messages.

Acceptable Values: A valid audio coder type

Default Value: v_Linear8Bit_64k

Greeting Coder Type
This parameter specifies the audio coder type for greetings and recorded names.

Acceptable Values: A valid audio coder type

Default Value: v_Linear8Bit_64k

Mail Box Minimum Length
This number specifies the minimum number of digits that can be entered by the user for the application to be able to resolve the user's mailbox number.

Acceptable Values: A positive integer

Default Value: None

Mail Box Maximum Length
This parameter specifies the maximum number of digits permitted for the mailbox number.

Acceptable Values: A positive integer

Default Value: None

International Number Prefix List
This parameter defines a mapping between PBX extension numbers and international telephone numbers. The mapping is list of submappings separated by semicolons. Each submapping follows the form `<international prefix>; <PBX prefix>`.

Where `<international prefix>` is a sequence of digits and `<PBX prefix>` is the digit sequence to prepend to a PBX extension number beginning with `<PBX prefix>`. For example, if the prefix list is 1650506 and 1650607, the extension 60000 is mapped to the international number 16505060000, and 70000 is mapped to the international number 165050670000.

Acceptable Values: A string of digits delimited by a semicolon

Default Value: None

Prefix to be Added to the PBX Number
This parameter specifies the prefix that needs to be added to the phone numbers that are sent to the application through the PBX in order to formulate a phone number in the international format

Acceptable Values: A string of digits

Default Value: None

Length of the Number Sent by the PBX
This parameter specifies the number of digits that the PBX sends.

Acceptable Values: A positive integer

Default Value: None

Directory Name for Stored Queued Messages
This parameter specifies the directory where the undelivered messages are stored for future delivery.

Acceptable Values: A full file system directory path

Default Value: None

Fax Receiving Application DN
This parameter specifies the distinguished name entry for the fax receiving application instance where fax calls are routed.

Acceptable Values: A valid Oracle Internet Directory distinguished name

Default Value: None

Attendant Application DN
This parameter specifies the distinguished nameentry for the attendant application instance where the calls are routed to when transferred to operator function.

Acceptable Values: A valid Oracle Internet Directory distinguished name

Default Value: None

Voice Mail Retrieval Process

Maximum Greeting Recording Duration
This parameter specifies the maximum length of a recorded greeting in milliseconds.

Acceptable Values: A string of digits

Default Value: `30000`

Maximum Silence Duration

This parameter specifies the amount of continuous silence that causes the greeting recording to stop in milliseconds.

Acceptable Values: A string of digits

Default Value: `10000`

Log Level

This parameter specifies the log level parameter that controls amount of logging performed by the Oracle9*i*AS Unified Messaging process.

Acceptable Values:

- `INTERNALERROR`

- `ERROR`

- `WARNING`

- `NOTIFICATION`

- `TRACE`

Default Value: `WARNING`

Process ID

This parameter specifies the process identification.

Acceptable Values: None

Default Value: None

Active Flag

This parameter specifies whether the instance is running.

Acceptable Values: True or False

Default Value: None

Number of Threads per Process

This parameter specifies the number of threads for this Oracle9*i*AS Unified Messaging process within one JVM.

Acceptable Values: A positive integer

Default Value: None

Root Context for UM
This parameter specifies the distinguished name of the Oracle9*i*AS Unified Messaging container in Oracle Internet Directory. This domain name's subtree contains Oracle9*i*AS Unified Messaging specific information.

Acceptable Values: A valid Oracle Internet Directory distinguished name

Default Value: None

Root Context for ES
This parameter specifies the distinguished name of the e-mail server container in Oracle Internet Directory. This domain name's subtree contains e-mail server specific information.

Acceptable Values: A valid Oracle Internet Directory distinguished name

Default Value: None

Install Context for UM
This parameter specifies `UM Install Context`

Acceptable Values: A valid `UM Install Context`

Default Value: None

CT Server Name
This parameter specifies the host name of the machine where the CT server is installed.

Acceptable Values: A valid host name

Default Value: None

CT Server Application Profile Name
This parameter specifies the name of the CT server profile that contains application configuration information.

Acceptable Values: A valid CT server profile name

Default Value: None

CT Server Group Configuration
This parameter specifies the name of the CT server group configuration that represents a collection of resources.

Acceptable Values: A valid CT server group configuration

Default Value: None

CT Application Service Name

This parameter specifies the name of CT application service name which is a unit of CTMEDIA functionality that corresponds to a Windows NT service offering OS functionality.

Acceptable Values: A valid CT server application service name

Default Value: None

CTMEDIA Call Timeout Value

This parameter specifies the time (in seconds) CTMEDIA waits to configure resources for this application.

Acceptable Values: A string of digits

Default Value: None

Message Coder Type

This parameter specifies audio coder type for voice mail messages.

Acceptable Values: A valid audio coder type

Default Value: v_Linear8Bit_64k

Greeting Coder Type

This parameter specifies the audio coder type for greetings and recorded names.

Acceptable Values: A valid audio coder type

Default Value: v_Linear8Bit_64k

Mail Box Minimum Length

This number specifies the minimum number of digits that can be entered by the user for the application to be able to resolve the user's mailbox number.

Acceptable Values: A positive integer

Default Value: None

Mail Box Maximum Length

This parameter specifies the maximum number of digits permitted for the mailbox number.

Acceptable Values: A positive integer

Default Value: None

Maximum Allowed Digits in Pin Number
This parameter specifies the maximum number of digits allowed for the PIN.

Acceptable Values: A positive integer

Default Value: None

Minimum Allowed Digits in Pin Number
This parameter specifies the minimum number of digits allowed for the PIN. If the PIN entered by the user does not fall within the minimum and maximum range, it is rejected.

Acceptable Values: A positive integer

Default Value: None

International Number Prefix List
This parameter defines a mapping between PBX extension numbers and international telephone numbers. The mapping is list of submappings separated by semicolons. Each submapping follows the form `<international prefix>; <PBX prefix>`.

Where `<international prefix>` is a sequence of digits and `<PBX prefix>` is the digit sequence to prepend to a PBX extension number beginning with `<PBX prefix>`. For example, if the prefix list is 1650506 and 1650607, the extension 60000 is mapped to the international number 16505060000, and 70000 is mapped to the international number 165050670000.

Acceptable Values: A positive integer

Default Value: None

Prefix to Be Added to the PBX Number
This parameter specifies the prefix that needs to be added to the phone numbers that are sent to the application through the PBX in order to formulate a phone number in the international format.

Acceptable Values: A positive integer

Default Value: None

Length of the Number Sent by the PBX
This parameter specifies the number of digits that the PBX sends.

Acceptable Values: A positive integer

Default Value: None

Voice Recording Application DN
This parameter specifies the distinguished name entry for the recording application instance to which recording calls are routed.

Acceptable Values: A valid Oracle Internet Directory distinguished name.

Default Value: None

Attendant Application DN
This parameter specifies the distinguished name entry for attendant application instance which the calls are routed to when transferred to the operator function.

Acceptable Values: A valid Oracle Internet Directory distinguished name.

Default Value: None

Attendant Process

Log Level
This parameter specifies the log level parameter that controls amount of logging performed by the Oracle9*i*AS Unified Messaging process.

Acceptable Values:

- INTERNALERROR

- ERROR

- WARNING

- NOTIFICATION

- TRACE

Default Value: WARNING

Process ID
This parameter specifies the process identification.

Acceptable Values: None

Default Value: None

Active Flag
This parameter specifies whether the instance is running.

Acceptable Values: True or False

Default Value: None

Number of Threads per Process
This parameter specifies the number of threads for this Oracle9*i*AS Unified Messaging process within one JVM.

Acceptable Values: A positive integer

Default Value: None

Root Context for UM
This parameter specifies the distinguished name of the Oracle9*i*AS Unified Messaging container in Oracle Internet Directory. This domain name's subtree contains Oracle9*i*AS Unified Messaging specific information.

Acceptable Values: A valid Oracle Internet Directory distinguished name

Default Value: None

Root Context for ES
This parameter specifies the distinguished name of the e-mail server container in Oracle Internet Directory. This domain name's subtree contains e-mail server specific information.

Acceptable Values: A valid Oracle Internet Directory distinguished name

Default Value: None

Install Context for UM
This parameter specifies `UM Install Context`

Acceptable Values: A valid `UM Install Context`

Default Value: None

CT Server Name
This parameter specifies the host name of the machine where the CT server is installed.

Acceptable Values: A valid host name

Default Value: None

CT Server Application Profile Name
This parameter specifies the name of the CT server profile that contains application configuration information.

Acceptable Values: A valid CT server profile name

Default Value: None

CT Server Group Configuration
This parameter specifies the name of the CT server group configuration that represents a collection of resources.

Acceptable Values: A valid CT server group configuration

Default Value: None

CT Application Service Name
This parameter specifies the name of CT application service name which is a unit of CTMEDIA functionality that corresponds to a Windows NT service offering OS functionality.

Acceptable Values: A valid CT server application service name

Default Value: None

CTMEDIA Call Timeout Value
This parameter specifies the time (in seconds) CTMEDIA waits to configure resources for this application.

Acceptable Values: A string of digits

Default Value: None

Dialing Number For Attendant
A working telephone number where the calls are routed to when they are transferred to the operator function.

Acceptable Values: A string of digits

Default Value: None

Fax Receiving Process

Log Level
This parameter specifies the log level parameter that controls amount of logging performed by the Oracle9*i*AS Unified Messaging process.

Acceptable Values:

- INTERNALERROR

- ERROR

- WARNING

- NOTIFICATION

- `TRACE`

Default Value: `WARNING`

Process ID
This parameter specifies the process identification.

Acceptable Values: None

Default Value: None

Active Flag
This parameter specifies whether the instance is running.

Acceptable Values: True or False

Default Value: None

Number of Threads per Process
This parameter specifies the number of threads for this Oracle9*i*AS Unified Messaging process within one JVM.

Acceptable Values: A positive integer

Default Value: None

Root Context for UM
This parameter specifies the distinguished name of the Oracle9*i*AS Unified Messaging container in Oracle Internet Directory. This domain name's subtree contains Oracle9*i*AS Unified Messaging specific information.

Acceptable Values: A valid Oracle Internet Directory distinguished name

Default Value: None

Root Context for ES
This parameter specifies the distinguished name of the e-mail server container in Oracle Internet Directory. This domain name's subtree contains e-mail server specific information.

Acceptable Values: A valid Oracle Internet Directory distinguished name

Default Value: None

Install Context for UM
This parameter specifies `UM Install Context`

Acceptable Values: A valid `UM Install Context`

Default Value: None

CT Server Name
This parameter specifies the host name of the machine where the CT server is installed.

Acceptable Values: A valid host name

Default Value: None

CT Server Application Profile Name
This parameter specifies the name of the CT server profile that contains application configuration information.

Acceptable Values: A valid CT server profile name

Default Value: None

CT Server Group Configuration
This parameter specifies the name of the CT server group configuration that represents a collection of resources.

Acceptable Values: A valid CT server group configuration

Default Value: None

CT Application Service Name
This parameter specifies the name of CT application service name which is a unit of CTMEDIA functionality that corresponds to a Windows NT service offering OS functionality.

Acceptable Values: A valid CT server application service name

Default Value: None

CTMEDIA Call Timeout Value
This parameter specifies the time (in seconds) CTMEDIA waits to configure resources for this application.

Acceptable Values: A string of digits

Default Value: None

Mail Box Minimum Length
This number specifies the minimum number of digits that can be entered by the user for the application to be able to resolve the user's mailbox number.

Acceptable Values: A positive integer

Default Value: None

Mail Box Maximum Length

This parameter specifies the maximum number of digits permitted for the mailbox number.

Acceptable Values: A positive integer

Default Value: None

International Number Prefix List

This parameter defines a mapping between PBX extension numbers and international telephone numbers. The mapping is list of submappings separated by semicolons. Each submapping follows the form `<international prefix>;` `<PBX prefix>`.

Where `<international prefix>` is a sequence of digits and `<PBX prefix>` is the digit sequence to prepend to a PBX extension number beginning with `<PBX prefix>`. For example, if the prefix list is 1650506 and 1650607, the extension 60000 is mapped to the international number 16505060000, and 70000 is mapped to the international number 165050670000.

Acceptable Values: A positive integer

Default Value: None

Prefix to Be Added to the PBX Number

This parameter specifies the prefix that needs to be added to the phone numbers that are sent to the application through the PBX in order to formulate a phone number in the international format.

Acceptable Values: A positive integer

Default Value: None

Length of the Number Sent by the PBX

This parameter specifies the number of digits that the PBX sends.

Acceptable Values: A positive integer

Default Value: None

Directory Name for Stored Queued Messages

This parameter specifies the directory where the undelivered messages are stored for future delivery.

Acceptable Values: A file system directory path

Default Value: None

Recovery Process

Log Level
This parameter specifies the log level parameter that controls amount of logging performed by the Oracle9*i*AS Unified Messaging process.

Acceptable Values:

- INTERNALERROR

- ERROR

- WARNING

- NOTIFICATION

- TRACE

Default Value: WARNING

Process ID
This parameter specifies the process identification.

Acceptable Values: None

Default Value: None

Active Flag
This parameter specifies whether the instance is running.

Acceptable Values: True or False

Default Value: None

Number of Threads per Process
This parameter specifies the number of threads for this Oracle9*i*AS Unified Messaging process within one JVM.

Acceptable Values: A positive integer

Default Value: None

Root Context for UM
This parameter specifies the distinguished name of the Oracle9*i*AS Unified Messaging container in Oracle Internet Directory. This domain name's subtree contains Oracle9*i*AS Unified Messaging specific information.

Acceptable Values: A valid Oracle Internet Directory distinguished name

Default Value: None

Root Context for ES
This parameter specifies the distinguished name of the e-mail server container in Oracle Internet Directory. This domain name's subtree contains e-mail server specific information.

Acceptable Values: A valid Oracle Internet Directory distinguished name

Default Value: None

Install Context for UM
This parameter specifies UM Install Context

Acceptable Values: A valid UM Install Context

Default Value: None

CT Server Name
This parameter specifies the host name of the machine where the CT server is installed.

Acceptable Values: A valid host name

Default Value: None

CT Server Application Profile Name
This parameter specifies the name of the CT server profile that contains application configuration information.

Acceptable Values: A valid CT server profile name

Default Value: None

CT Server Group Configuration
This parameter specifies the name of the CT server group configuration that represents a collection of resources.

Acceptable Values: A valid CT server group configuration

Default Value: None

CT Application Service Name
This parameter specifies the name of CT application service name which is a unit of CTMEDIA functionality that corresponds to a Windows NT service offering OS functionality.

Acceptable Values: A valid CT server application service name

Default Value: None

CTMEDIA Call Timeout Value
This parameter specifies the time (in seconds) CTMEDIA waits to configure resources for this application.

Acceptable Values: A string of digits

Default Value: None

Process Manager Process

Log Level
This parameter specifies the log level parameter that controls amount of logging performed by the Oracle9*i*AS Unified Messaging process.

Acceptable Values:

- INTERNALERROR

- ERROR

- WARNING

- NOTIFICATION

- TRACE

Default Value: WARNING

Process ID
This parameter specifies the process identification.

Acceptable Values: None

Default Value: None

Active Flag
This parameter specifies whether the instance is running.

Acceptable Values: True or False

Default Value: None

Root Context for UM

This parameter specifies the distinguished name of the Oracle9*i*AS Unified Messaging container in Oracle Internet Directory. This domain name's subtree contains Oracle9*i*AS Unified Messaging specific information.

Acceptable Values: A valid Oracle Internet Directory distinguished name

Default Value: None

Root Context for ES

This parameter specifies the distinguished name of the e-mail server container in Oracle Internet Directory. This domain name's subtree contains e-mail server specific information.

Acceptable Values: A valid Oracle Internet Directory distinguished name

Default Value: None

JavaHome

Full path name of the Java home directory that is used to locate the `java.exe` executable.

Acceptable Values: A file system directory path

Default Value: None

System Root

Full path name of the Windows system root directory that is used to located `cmd.exe` and any other windows system executables.

Acceptable Values: A file system directory path

Default Value: None

ResourceKit Home

This parameter specifies the full path name of the Windows resource kit directory. Is used to locate the `srvany.exe`, `instsrv.exe`, `sc.exe`, and other resource kit executables.

Acceptable Values: A file system directory path

Default Value: None

CTMEDIA Home

Full path name of the CTMEDIA directory that issued to locate the libraries and `dlls` under `CTMEDIA\Shared Files` folder.

Acceptable Values: A file system directory path

Default Value: None

MWI Service Process

Log Level
This parameter specifies the log level parameter that controls amount of logging performed by the Oracle9*i*AS Unified Messaging process.

Acceptable Values:

- INTERNALERROR

- ERROR

- WARNING

- NOTIFICATION

- TRACE

Default Value: WARNING

Set of International Phone Numbers
This parameter specifies the set of phone numbers for which this process controls MWI activation or deactivation. The set is the union of all phone number subsets listed under this attribute.

Acceptable Values: A semicolon-delimited list of international phone number subsets. A phone number subset is a string of digits and asterisk characters which are wildcards. For example, 1650506xxxx; 1650507xxxx.

Default Value: None

RMI URL
This parameter specifies the RMI URL of the MWI service. The MWI service registers as an RMI service with the name <service name>. If a port number is specified, the MWI service registers with the RMI registry on that port. Otherwise, it uses the default port. Other processes use the entire RMI URL to connect to this MWI service through RMI.

Acceptable Values: A well-formed URL for RMI.

Default Value: None

PBX integration type
This parameter specifies the PBX connection type. If the type is CTMEDIA, then this process attempts to set or unset MWI through CTMEDIA. If the type is SMDI, attempts to set or unset MWI through an SMDI monitor process.

Acceptable Values: SMDI or CTMEDIA

Default Value: None

SMDI Monitor Host Name
This parameter specifies the host name of a machine running the SMDI monitor.

Acceptable Values: A valid host name

Default Value: None

SMDI Monitor Port
This parameter specifies the port number on which the SMDI monitor accepts connections.

Acceptable Values: A valid TCP port number

Default Value: None

SMDI Monitor Timeout Value
This parameter specifies the timeout (in milliseconds) for socket communication with the SMDI monitor.

Acceptable Values: A positive integer

Default Value: None

MWI Phone Number Suffix Size for SMDI
Indicates the number of digits from the phone number to pass to the SMDI monitor. If the suffix size is five, then the rightmost five digits of phone number are used, and the rest are discarded. If the SMDI MWI prefix is defined, it is prepended to those five digits.

Acceptable Values: A positive integer

Default Value: None

MWI Phone Number Prefix for SMDI
A string of digits to be prepended to a phone number (after suffix truncation) before it is passed to the SMDI monitor.

Acceptable Values: A string of digits

Default Value: None

CTMEDIA MWI Provider Name
This parameter specifies the provider string for the CT server which hosts the MWI session service.

Acceptable Values: An IT Media provider string of the following form <profilename>@<server>:<port>

Default Value: None

CTMEDIA MWI Service Name
This parameter specifies the name of the MWI session service.

Acceptable Values: A valid name of a CTMEDIA session service.

Default Value: MWI service

MWI Phone Number Suffix Size for CTMEDIA
Indicates the number of digits from the phone number to pass to the CTMEDIA service. If the suffix size is 5, the rightmost 5 digits of phone number are used, and the rest are discarded. The CTMEDIA MWI prefix, if one is defined, is then prepended to those 5 digits.

Acceptable Values: A positive integer

Default Value: None

MWI Phone Number Prefix for SMDI
A string of digits to be prepended to a phone number (after suffix truncation) before it is passed to the CTMEDIA service.

Acceptable Values: a string of digits

Default Value: None

AQMWI Process

Log Level
This parameter specifies the log level parameter that controls amount of logging performed by the Oracle9*i*AS Unified Messaging process.

Acceptable Values:

- `INTERNALERROR`

- `ERROR`

- `WARNING`

- `NOTIFICATION`

- `TRACE`

Default Value: `WARNING`

Number of Threads
This parameter specifies the number of threads which should be listening to the AQ and processing MWI requests.

Acceptable Values: a positive integer

Default Value: `1`

Port number of AQ DB Listener
This parameter specifies the port number on which the database listens for connections.

Acceptable Values: A valid TCP port number

Default Value: `1521`

Connect string for AQ DB
This parameter specifies the connect string for the database which holds the AQ.

Acceptable Values: A valid Oracle connect string

Default Value: None

AQ name
This parameter specifies the name of the AQ on which MWI requests are made.

Acceptable Values: A valid name for an Oracle Advanced Queue

Default Value: None

User ID for connecting to the database
This parameter specifies the user ID for connecting to the database.

Acceptable Values: A valid oracle user ID

Default Value: None

Password for connecting to the database
This parameter specifies the password for connecting to the database.

Acceptable Values: A valid oracle user password

Install Root Context

This parameter specifies the distinguished name of the container for this installation in Oracle Internet Directory. This domain name's subtree contains information specific to a Oracle9*i*AS Unified Messaging installation.

Acceptable Values: A valid Oracle Internet Directory distinguished name

Default Value: None

Root Context for UM

This parameter specifies the distinguished name of the Oracle9*i*AS Unified Messaging container in Oracle Internet Directory. This domain name's subtree contains Oracle9*i*AS Unified Messaging specific information.

Acceptable Values: A valid Oracle Internet Directory distinguished name

Default Value: None

Root Context for ES

This parameter specifies the distinguished name of the e-mail server container in Oracle Internet Directory. This domain name's subtree contains e-mail server specific information.

Acceptable Values: A valid Oracle Internet Directory distinguished name

Default Value: None

Process Root Context

This parameter specifies the domain name of the e-mail server container in Oracle Internet Directory. The subtree of this domain name contains configuration information for all processes.

Acceptable Values: A valid Oracle Internet Directory distinguished name

Default Value: None

Wireless Process

Log Level

This parameter specifies the log level parameter that controls amount of logging performed by the Oracle9*i*AS Unified Messaging process.

Acceptable Values:

- `INTERNALERROR`

- `ERROR`

- WARNING

- NOTIFICATION

- TRACE

Default Value: WARNING

Process ID
This parameter specifies the process identification.

Acceptable Values: None

Default Value: None

Active Flag
This parameter specifies whether the instance is running.

Acceptable Values: True or False

Default Value: None

Number of Threads per Process
This parameter specifies the number of threads for this Oracle9*i*AS Unified Messaging process within one JVM.

Acceptable Values: A positive integer

Default Value: None

Root Context for UM
This parameter specifies the distinguished name of the Oracle9*i*AS Unified Messaging container in Oracle Internet Directory. This domain name's subtree contains Oracle9*i*AS Unified Messaging specific information.

Acceptable Values: A valid Oracle Internet Directory distinguished name

Default Value: None

Root Context for ES
This parameter specifies the distinguished name of the e-mail server container in Oracle Internet Directory. This domain name's subtree contains e-mail server specific information.

Acceptable Values: A valid Oracle Internet Directory distinguished name

Default Value: None

Install Context for UM
This parameter specifies UM Install Context

Acceptable Values: A valid UM Install Context

Default Value: None

Exception Queue
This parameter specifies the name of the exception queue which stores the exception messages.

Acceptable Values: A valid AQ name

Default Value: exqueue

In-Queue Table
This parameter specifies the name of the queue table in which the wireless process inqueue is created.

Acceptable Values: A valid queue table name

Default Value: exqueue

Out-Queue Table
This parameter specifies the name of the queue table in which the wireless process outqueue is created. In case of the same machine hosting both queues, the queuetable is same.

Acceptable Values: A valid queue table name

Default Value: Queue Table

In-Queue Driver
Type of the driver used to connect to the AQ.

Acceptable Values: A valid JDBC driver type

Default Value: thin

Mail Transport Protocol
This parameter specifies the name of the protocol used to send e-mail notifications.

Acceptable Values: A valid protocol name

Default Value: SMTP

SMTP Port
Port number used for the SMTP protocol.

Acceptable Values: A valid SMTP port number

Default Value: None

In-Queue Connect String
This parameter specifies the connect string used for the database hosting the inqueue for wireless process.

Acceptable Values: A valid connect string

Default Value: None

In-Queue Host
Host machine which contains the wireless inqueue.

Acceptable Values: A valid host name

Default Value: None

In-Queue Port
Port to connect to database.

Acceptable Values: A valid port number

Default Value: 1521

In-Queue ID
This parameter specifies the name of the user id used to connect to the queues.

Acceptable Values: A valid database user ID

Default Value: None

Out-Queue Connect String
connect string used to connect to the database hosting the out queue. This is same in case of a machine hosting both in and out queues.

Acceptable Values: A valid connect string

Default Value: None

Out-Queue Host
Host machine which contains the wireless outqueue.

Acceptable Values: A valid host name

Default Value: None

Out-Queue Port
Port to connect to the database. In case of the one machine hosting both queues, (which is quite often), the last 3 parameters above are same as the one for the in queue parameters.

Acceptable Values: None

Default Value: 1521

Process Sleep Duration
Sleep duration for the process.

Acceptable Values: A positive integer

Default Value: 30 seconds

SMTP Host
This parameter specifies the host name on which the SMTP process is running.

Acceptable Values: A valid host name

Default Value: None

Wireless Gateway Type
This is the parameter which defines the type of the gateway/wireless process to choose to send a wireless message. For all the messages which is inserted by other components, the type is "WS," which denotes wireless server, to be processed by wireless server process.

Acceptable Values: A valid wireless gateway type

Default Value: None

Wireless In-Queue
This parameter specifies the name of the queue created to be inqueue for wireless process.

Acceptable Values: A valid queue name

Default Value: None

Wireless Out-Queue
This parameter specifies the name of the queue created to be the outqueue for the wireless process.

Acceptable Values: A valid AQ name

Default Value: None

Password Attribute
Password used to connect to the database.

Acceptable Values: A valid database user password

Default Value: None

Wireless Process DN
This parameter specifies the distinguished name for the wireless process instance.

Acceptable Values: A valid Oracle Internet Directory DN

Default Value: None

Mail Store DN
This parameter specifies the mail store distinguished name for AQ messages.

Acceptable Values: A valid Oracle Internet Directory DN

Default Value: None

SMS Gateway Process

Log Level
This parameter specifies the log level parameter that controls amount of logging performed by the Oracle9*i*AS Unified Messaging process.

Acceptable Values:

- INTERNALERROR

- ERROR

- WARNING

- NOTIFICATION

- TRACE

Default Value: WARNING

Process ID
This parameter specifies the process identification.

Acceptable Values: None

Default Value: None

Active Flag
This parameter specifies whether the instance is running.

Acceptable Values: True or False

Default Value: None

Number of Threads per Process
This parameter specifies the number of threads for this Oracle9*i*AS Unified Messaging process within one JVM.

Acceptable Values: A positive integer

Default Value: None

Root Context for UM
This parameter specifies the distinguished name of the Oracle9*i*AS Unified Messaging container in Oracle Internet Directory. This domain name's subtree contains Oracle9*i*AS Unified Messaging specific information.

Acceptable Values: A valid Oracle Internet Directory distinguished name

Default Value: None

Root Context for ES
This parameter specifies the distinguished name of the e-mail server container in Oracle Internet Directory. This domain name's subtree contains e-mail server specific information.

Acceptable Values: A valid Oracle Internet Directory distinguished name

Default Value: None

Install Context for UM
This parameter specifies `UM Install Context`

Acceptable Values: A valid `UM Install Context`

Default Value: None

Wireless Gateway Host
Host name to access the gateway.

Acceptable Values: A valid host name

Default Value: None

Wireless Gateway Type
This parameter identifies each gateway process. For example: For SMSNokia, this parameter is defined as `orclmailsmsnokia`.

Acceptable Values: A valid wireless gateway type

Default Value: None

Wireless In-Queue Value
This parameter defines the in queue from which the gateway process dequeues its wireless messages to be sent out. The out-queue parameter for the wireless server is same as the in-queue parameter for the gateway process.

Acceptable Values: A valid AQ name

Default Value: `out-queue`

UM In-Queue Host Name
This parameter specifies the name of the machine hosting the gateway process's in queue. In case of a machine hosting both in and out queues, the host name is the same for the `In-Queue Host Name` and Out-Queue hostname parameter.

Acceptable Values: A valid AQ name

Default Value: None

UM In-Queue Port
This parameter specifies the port to connect to the in queue.

Acceptable Values: A valid port number

Default Value: None

UM In-Queue ID
This parameter specifies the user ID used to connect to the queue.

Acceptable Values: A valid database user name

Default Value: None

Password Attribute
This parameter is used to store the password to connect to the queues.

Acceptable Values: A valid database user password

Default Value: None

UM In-Queue Connect String

This parameter specifies the connect string used to connect to the queues. For this release, both queues are created on the same machine, thus, making many of the connection attributes common for both in and out queues.

Acceptable Values: A valid connect string

Default Value: None

Process Sleep Duration

This parameter specifies the time a process is allowed to sleep between requests in seconds.

Acceptable Values: A positive integer

Default Value: None

Gateway Host

This parameter specifies the name of the machine to which gateway process connects to in order to send out the wireless message machine name.

Acceptable Values: A positive integer

Default Value: None

Gateway Port

This parameter specifies the port through which the gateway process connect to the gateway server to both send and receive wireless messages post to connect to.

Acceptable Values: A valid host name

Default Value: None

Gateway ID

This parameter specifies the user ID to connect to the gateway server.

Acceptable Values: A valid database user ID

Default Value: None

Gateway Password

This parameter specifies the password used to connect to the gateway server.

Acceptable Values: A valid user password

Default Value: None

SMS Gateway Receive Process
This parameter listens on a port to receive wireless messages from SMS gateway server. The following parameters are required for a SMS gateway receive process. Example: `SMSNokiaReceiveProcess`

Acceptable Values: A valid port number

Default Value: None

Wireless Out-Queue Name
This parameter specifies the queue name to insert the messages into, after receiving from gateway server.

Acceptable Values: A valid AQ name

Default Value: None

UM Out-Queue Host
This parameter specifies the machine name hosting the queues.

Acceptable Values: A valid host name

Default Value: None

UM Out-Queue Port
This parameter specifies the port to connect to the queues in database.

Acceptable Values: A valid port number

Default Value: 1521

UM Out-Queue ID
This parameter specifies the user ID used to connect to the queues.

Acceptable Values: A valid user ID

Default Value: None

UM Out-Queue Connect String
This parameter specifies the connect string used to connect to the queues.

Acceptable Values: A valid connect string

Default Value: None

Password Attribute
This parameter is used to store the password to connect to the queues.

Acceptable Values: A valid database password

Default Value: None

Wireless Gateway Type
This parameter specifies the string which determines the gateway process. Example:
`orclmailsmsnokia`

Acceptable Values: A valid gateway type

Default Value: None

Process Sleep Duration
This parameter specifies the time a process is allowed to sleep between requests.

Acceptable Values: A positive integer

Default Value: None

Gateway Host
This parameter specifies the name of the machine to which gateway process
connects to in order to receive messages from the gateway server.

Acceptable Values: A valid host name

Default Value: None

Gateway Port
This parameter specifies the port through which the gateway process connect from
the gateway server to receive wireless messages.

Acceptable Values: A valid port number

Default Value: None

Gateway ID
This parameter specifies the user ID to connect to the gateway server.

Acceptable Values: A valid database user ID

Default Value: None

Gateway Password
This parameter specifies the password to connect to the gateway server.

Acceptable Values: A valid user password

Default Value: None

Mail Store DN
This parameter specifies the mail store distinguished name for AQ messages.

Acceptable Values: A valid Oracle Internet Directory DN

Default Value: None

WCTP Gateway Process

Log Level
This parameter specifies the log level parameter that controls amount of logging performed by the Oracle9*i*AS Unified Messaging process.

Acceptable Values:

- INTERNALERROR

- ERROR

- WARNING

- NOTIFICATION

- TRACE

Default Value: WARNING

Process ID
This parameter specifies the process identification.

Acceptable Values: None

Default Value: None

Active Flag
This parameter specifies whether the instance is running.

Acceptable Values: True or False

Default Value: None

Number of Threads per Process
This parameter specifies the number of threads for this Oracle9*i*AS Unified Messaging process within one JVM.

Acceptable Values: A positive integer

Default Value: None

Root Context for UM

This parameter specifies the distinguished name of the Oracle9*i*AS Unified Messaging container in Oracle Internet Directory. This domain name's subtree contains Oracle9*i*AS Unified Messaging specific information.

Acceptable Values: A valid Oracle Internet Directory distinguished name

Default Value: None

Root Context for ES

This parameter specifies the distinguished name of the e-mail server container in Oracle Internet Directory. This domain name's subtree contains e-mail server specific information.

Acceptable Values: A valid Oracle Internet Directory distinguished name

Default Value: None

Install Context for UM

This parameter specifies `UM Install Context`

Acceptable Values: A valid `UM Install Context`

Default Value: None

Wireless Gateway Type

This parameter identifies each gateway process. For example: For WCTP, this parameter is defined as `orclmailwctp`.

Acceptable Values: A valid wireless gateway type

Default Value: None

Wireless In-Queue Value

This parameter defines the in queue from which the gateway process dequeues its wireless messages to be sent out. Note that the outqueue parameter for the wireless server is same as the inqueue parameter for the gateway process.

Acceptable Values: A valide queue name

Default Value: outqueue

UM Out-Queue Host

This parameter specifies the machine name hosting the queues.

Acceptable Values: A valid host name

Default Value: None

UM Out-Queue Port
This parameter specifies the port to connect to the queues in database.

Acceptable Values: A valid port number

Default Value: 1521

UM Out-Queue ID
This parameter specifies the user ID used to connect to the queues.

Acceptable Values: A valid user ID

Default Value: None

UM Out-Queue Connect String
This parameter specifies the connect string used to connect to the queues.

Acceptable Values: A valid connect string

Default Value: None

Password Attribute
This parameter is used to store the password to connect to the queues.

Acceptable Values:

Default Value:

UM In-Queue Connect String
This parameter specifies the connect string used to connect to the queues. For this release, both queues are created on the same machine, making many of the connection attributes common for both in and out queues.

Acceptable Values:

Default Value:

Process Sleep Duration
This parameter specifies the time a process is allowed to sleep between requests.

Acceptable Values:

Default Value: 30 seconds

Proxy Host
This parameter specifies the machine name hosting the proxy server.

Acceptable Values:

Default Value:

Proxy Port
Port to connect to the proxy server.

Acceptable Values:

Default Value: 80

Telephony Log Files

The following is a list of telephony log file locations:

Routing Process
On UNIX:

```
$ORACLE_HOME/um/log/UMMediaApp
```

On Windows:

```
%ORACLE_HOME\um\log\UMMediaApp
```

Voice Mail Recording Process:
On UNIX:

```
$ORACLE_HOME/um/log/VMrecordingMediaApp
```

On Windows:

```
%ORACLE_HOME\um\log\VMrecordingMediaApp
```

Voice Mail Retrieval Process
On UNIX:

```
$ORACLE_HOME/um/log/VMretrievalMediaApp
```

On UNIX:

```
%ORACLE_HOME\um\log\VMretrievalMediaApp
```

Attendant Process
On UNIX:

```
$ORACLE_HOME/um/log/AttendantMediaAPP
```

On Windows:

```
%ORACLE_HOME\um\log\AttendantMediaAPP
```

Fax Receiving Process

On UNIX:

```
$ORACLE_HOME/um/log/FaxReceivingMediaApp
```

On Windows:

```
%ORACLE_HOME\um\log\FaxReceivingMediaApp
```

Recovery Process

On UNIX:

```
$ORACLE_HOME/um/log/DBRecovery
```

On Windows:

```
%ORACLE_HOME\um\log\DBRecovery
```

Process Manager Process

On UNIX:

```
$ORACLE_HOME/um/log/ProcessMgrService
```

On Windows:

```
%ORACLE_HOME\um\log\ProcessMgrService
```

MWI Service Process

On UNIX:

```
$ORACLE_HOME/um/log/MWIService
```

On Windows:

```
%ORACLE_HOME\um\log\MWIService
```

AQMWI Process

On UNIX:

```
$ORACLE_HOME/um/log/AQMWIStarter
```

On Windows:

```
%ORACLE_HOME\um\log\AQMWIStarter
```

Wireless Process

On UNIX:

```
$ORACLE_HOME/um/log/WirelessAppInstance
```

On Windows:

```
%ORACLE_HOME\um\log\WirelessAppInstance
```

SMS Gateway Process

On UNIX:

```
$ORACLE_HOME/um/log/SMSNokiaSendProcess
$ORACLE_HOME/um/log/SMSNokiaReceiveProcess
```

On Windows:

```
%ORACLE_HOME\um\log\SMSNokiaSendProcess
%ORACLE_HOME/um/log\SMSNokiaReceiveProcess
```

WCTP Gateway Process

On UNIX:

```
$ORACLE_HOME/um/log/WCTPSendProcess
```

On UNIX:

```
%ORACLE_HOME\um\log\WCTPSendProcess
```

6

Administeri ng Web Calendar and Scheduler

This chapter discusses how to administer Oracle9*i*AS Unified Messaging Web Calendar and Resource Scheduler.

This chapter contains the following topics:

- Administering Web Calendar
- Administering Scheduler

Administering Web Calendar

To administer Web Calendar, you must:

- Be a super user

> **Note:** One valid Oracle9*i*AS Unified Messaging user is set up as a super user after installation of Oracle9*i*AS Unified Messaging.

- Become familiar with the Web Calendar interface

> **Note:** For information about the interface, see the Product Overview in the online help. To access the Product Overview, click the Help button on the upper right of a Web Calendar page and select Product Overview from the side navigation bar.

> **See Also:** "Administering Scheduler" on page 6-7 for information about the administrative selections accessed by the Scheduler tab and the Admin subtab

- Understand the distinctions between the following different types of roles:

  - Web Calendar Super User: A Web Calendar super user has privileges to administer countries, facilities, resources, groups, and also to create new super users

    See Also:

    - Chapter 2 for Web Calendar installation information
    - "Administering Capabilities" on page 6-19 for information about creating super users and assigning administrative privileges to a user

  - Group Administrator: A person who has been granted privileges by the super user to manage groups
  - Web Calendar User: A person who is a valid Oracle9*i*AS Unified Messaging user

> **Note:** When Oracle9*i*AS Unified Messaging users are created, they are automatically created for Web Calendar.

- Learn the details about administering Web Calendar, Scheduler, resources, and about using the reports

    See Also:
    - "Monitoring Users" on page 6-5 for information about generating reports
    - "Administering Scheduler" on page 6-7 for information about administering Resource Scheduler and resources

This section contains the following topics:

- About Web Calendar
- Administering Group Web Calendar
- Monitoring Users
- Viewing Application Statistics
- Viewing Palm Sync Statistics

About Web Calendar

You can view technical information about Web Calendar including UserID, Effective UserID, Server Name, Server Software, HTTP User Agent, and Session ID.

To view information about Web Calendar, do the following:

1. Select the **Calendar** tab.
2. Select the **Admin** subtab.
3. Select **About** from the side navigation bar.

Administering Group Web Calendar

Two types of Web Calendar users exist:

- Individual Web Calendar users
- Web Calendar groups

Groups are maintained by one or more users. The group calendar entries belong to a group account, not the account of a standard user. Users can request a group account. The group account is created after a Web Calendar administrator approves the group account request.

To access the Group Administration page, do the following:

1. Select the **Calendar** tab.

2. Select the **Admin** subtab.

3. Select **Group Admin.** from the side navigation bar.

From this page an administrator can view:

■ **Open Requests**: Requests that are pending and require administrator action

■ **Approved Groups**: Requests for groups that have been approved

■ **All Requests**

Viewing, Approving, or Denying Group Requests

As an administrator, you can view, approve, and deny group requests.

This section contains the following topics:

■ Viewing Group Requests

■ Approving or Denying Group Requests

Viewing Group Requests To view a list of Web Calendar group requests, do the following:

1. Select the **Calendar** tab.

2. Select the **Admin** subtab.

3. Select **Group Admin.** from the side navigation bar. The Group Administration page displays.

4. Select to view one of the following from the **Display** drop-down list:

   ■ All open group requests

   ■ Approved group requests

   ■ All group requests

   Open group requests are requests that are pending administrator approval.

5. Select a sort order from the following choices in the **Order By** drop-down list:

- ■ Request Date
- ■ Group Name
- ■ Username

6.   Click **Rerun Report**.

Approving or Denying Group Requests To approve or deny a group request, do the following:

1.   On the Group Administration page, click the **Magnifying Glass** icon next to a group request. The View Group Request page is displayed.

2.   Type any information you want to convey to the person making the request in the **Administrator Response** field. Any text contained in this field is included in an e-mail generated and delivered to the person making the request, upon approval or denial of the request.

3.   Click **Approve Request** or **Deny Request** as appropriate.

If the group request is approved, a message reminds the administrator to create the corresponding e-mail account. The e-mail account must have the group user ID as the user ID for the account. When this e-mail account is created, the group account can be accessed by the users. The group ID must be a fully qualified e-mail address of the group. If at the time of the request, the domain is not provided by the requestor, the requestor's domain is appended to the requested group ID.

When approving a group request, the administrator can change the group name, group ID, and password. However, if the administrator tries to modify the requested group ID to have a different domain, an error is displayed. For example, if the requested group ID is `jane.doe@acme1.com` and the administrator tries to change it to `jane.doe@acme2.com`, an error is displayed.

Monitoring Users

The Monitor User page enables an administrator to generate reports about Web Calendar usage in various formats by user.

To access the Monitor User page, do the following:

1.   Select the **Calendar** tab.

2.   Select the **Admin** subtab.

3. Select **Monitor User** from the side navigation bar.

To monitor a user, click the list icon next to the **Monitor UserID** field and select the person's user ID and press Enter or Return. You can also enter a user ID in the **Monitor UserID** field.

The following reports are generated:

- **Page Views**: Graphically displays the number of times a user accesses various Web Calendar pages

- **User Privileges**: Displays privileges granted to and by a user

- **Groups**: Displays information about a user's subscribed groups

- **Statistics**: Displays various statistics regarding a user's page views

- **Recent Activity**: Displays a user's recent Web Calendar activity

- **User Entries**: Displays the number of entries a user makes into various categories such as Action Items, Appointments (active - non repeating), and Directory Entries

- **User Preferences**: Displays the values of a user's preferences

Viewing Application Statistics

The Application Statistics page shows a graph and tabular data that summarizes the page views accessed by all users over a period of time. It also shows the number of times each page was accessed and other statistics.

To access the Application Statistics page, do the following:

1. Select the **Calendar** tab.

2. Select the **Admin** subtab.

3. Select **Application Statistics** from the side navigation bar.

Viewing Palm Sync Statistics

The Palm Sync page enables the administrator to view various Palm Sync statistics.

To access this page, do the following:

1. Select the **Calendar** tab.

2. Select the **Admin** subtab.

3. Select **Palm Sync** from the side navigation bar.

Selections available from the menu on the side navigation bar are as follows:

- **General Statistics**: Displays general Palm statistics including Palm Sync Users, Address Book, Date Book, To Do Book, and Memo Book

- **Activity Statistics**: Displays Palm activity statistics including Book, SyncCode, Count, Users, AvgElap, MaxElap, and Days

- **Activity - All**: Displays recent Palm activity for all users

- **Recent Activity**: Displays recent Palm activity for the user who is signed in to Web Calendar

Administering Scheduler

Scheduler enables an administrator to create the necessary framework around which a company's resources are built. In addition to administering a company's resources, an administrator uses Scheduler to grant privileges to other Web Calendar users.

This section contains the following topics:

- Resource Administration

- Reservation Types

- Granting Reporting Access

- Administering Capabilities

Resource Administration

Scheduler gives Web Calendar users access to a company's various meeting and conference resources, such as conference rooms, company vehicles, and audio/visual equipment. An administrator can create and maintain these various resources, making them available for reservation by Web Calendar users.

Each resource can have an administrator; be restricted to specific users; be subject to another user's approval; and can have specific users notified when the resource is reserved.

Resources are assigned to each of a company's various facilities anywhere in the world. The facilities are organized by country.

This section contains the following topics:

- Administering Countries

- Administering Facilities
- Administering Resources
- Assigning Resource Administrators

Administering Countries

Create a list of countries in which all facilities are contained.

> **See Also:** Administering Facilities on page 6-9

To add a new country, do the following:

1. Select the **Scheduler** tab.
2. Select the **Admin** subtab.
3. Select **Countries** from the side navigation bar. The Countries page displays.
4. Click the **Plus** button on the right side of the page. The Create/Edit Countries page displays.
5. Type the name of the country.
6. Click **Create**.

Maintaining Countries Once you have created a list of countries, you can edit or view any country.

To edit the name of a country, do the following:

1. On the Countries page, select a country from the displayed list or type a string in the **Find Country** field and select either **begins with** or **contains**, to find a specific country.

    If you use the Find Country feature, click **Go!**. The Countries page displays a list of countries that match your search criteria.

2. Click the **Magnifying Glass** icon next to the country you want to edit. The Create/Edit Countries page displays.
3. Modify the country name.
4. Click **Apply Changes**.

To delete a country, do the following:

1. Click the **Magnifying Glass** icon next to the country name you want to delete. The Create/Edit Countries page is displayed.

2. Click **Delete**.

> **Note:** When you click **Delete**, the country name is deleted without confirmation.

To view and edit any of the facilities for the selected country, click the arrow next to the country to display the facilities for that country.

To view administrators associated with a particular country, click **Administrators** next to your country of choice.

Administering Facilities

Facilities are the brick and mortar offices in which resources are contained and where they are utilized.

Create a list of facilities for each country.

To add a new facility, do the following:

1. Select the **Scheduler** tab.

2. Select the **Admin** subtab.

3. Select **Facilities** from the side navigation bar. The Facilities page displays.

4. Select the desired country from the **Country** drop-down list.

5. Click the **Plus** button on the right side of the page. The Create/Edit Facilities page displays.

6. Type the name of the facility in the **Facility Name** field.

7. Choose a time zone for the facility from the **Time Zone** drop-down list.

   You can also enter other information about the facility, such as the address of the facility; directions to the facility; information about the facility (seating capacity, for example); catering information for the facility; and a URL for facility information.

8. Click **Create**.

Maintaining Facilities Once you have created a list of facilities, the facilities can be edited or viewed.

To edit or view an existing facility, do the following:

1. Select a country from the **Within Country** drop-down list on the Facilities page.

2. Select a facility from the displayed list or type a string in the **Find Facility** field and select either **begins with** or **contains**, to find a specific facility.

   If you use the Find Facility feature, click **Go!**. The Facilities page displays a list of facilities that match your search criteria.

3. Click the **Magnifying Glass** icon next to the facility you want to edit. The Create/Edit Facilities page displays.

4. Make any modifications.

5. Click **Apply Changes**.

To delete a facility, do the following:

1. Click the **Magnifying Glass** icon next to the facility you want to delete. The Create/Edit Facilities page displays.

2. Click **Delete**.

> **Note:** When you click **Delete**, the facility is deleted without confirmation.

To view and edit any of the resources for the selected facility, click the arrow next to the facility to display the resources for that facility.

To view administrators associated with a particular facility, click **Administrators** next to your facility of choice.

Administering Resources

Resources can be defined as anything employees might use for business operations. Resources can include conference rooms, auditoriums, overhead projectors, televisions, or company vehicles.

This section contains the following topics:

- Creating Resource Types
- Creating Resources
- Assigning Options to Resources

Creating Resource Types

An administrator creates different types of resources under which specific resources are created.

For example, an administrator can create a resource type called *equipment*. Different resources of type *equipment* might include televisions and laptops.

To create a new resource type, do the following:

1. Select the **Scheduler** tab.

2. Select the **Admin** subtab.

3. Select **Resource Types** from the side navigation bar. The Resource Types page displays.

4. Click the **Plus** button on the right side of the page. The Create/Edit Resource Types page displays.

5. Enter the new type in the **Resource Type** field.

6. Enter a description for this resource type in the **Description** field.

7. Click **Create**.

Maintaining Resource Types   Once you have created a list of resource types, the various resource types can be edited or viewed.

To edit or view an existing resource type, do the following:

1. On the Resource Types page, select a resource type from the displayed list or type a string in the **Find Resource Type** field and select either **begins with** or **contains**, to find a specific resource type.

   If you use the Find Resource Type feature, click **Go!**. The Resource Types page displays a list of resource types that match your search criteria.

2. Click the **Magnifying Glass** icon next to the resource type you want to edit. The Create/Edit Resource Types page displays.

3. Make any modifications.

4. Click **Apply Changes**.

To edit or delete a resource type, click the **Magnifying Glass** icon next to the resource type on the Resource Types page.

Creating Resources

Resources can have any number of various associated attributes. In addition to required attributes, such as resource name and type, resources can be restricted to certain users or require approval for use by another user.

Following is a description of the attributes you will find on the Create/Edit Resources page.

- **Resource Name** (required): The resource name displays in the reservation matrix (the display in the Scheduler daily view) beneath the heading of the selected resource type. A resource name should be short and meaningful. In the example *Conference Room 123*, the resource name is *123*. The resource type is *Conference Room*. Anywhere a resource is displayed, it is prefixed with the resource type.

- **Resource Type** (required): Each resource has an associated resource type. The resource type is always displayed to further describe the resource. Select a valid resource type from the **Resource Type** drop-down list. All resources of a given resource type within a facility are shown listed in the reservation matrix.

    See Also: "Creating Resource Types" on page 6-11

- **Facility** (required): Select the facility from the **Facility** drop-down list where this resource will be located.

    Note: If you selected a country and a facility from the Resources page before accessing the Create/Edit Resources page, that facility is selected on the Create/Edit Resources page.

- **Room Capacity Max**: Where appropriate, enter the maximum capacity of the room. This information is displayed in the reservation matrix.

- **Description**: Use the description field to describe the resource. If the resource is a room, enter the capabilities within the room in this field, such as number of network connections, availability of a speaker phone, or the number of white boards. This lets users know the exact details about the resource they reserve.

- **Email Text**: If e-mail text is present, it is sent to the user who requests an e-mail after the reservation is made.

    Following are examples of how Email Text can be used:

- To convey specific information about the resource, such as IP addresses and phone numbers

- To include messages to the user

- To include information about how to acquire catering for an event held in a room

- **Email HTML Text**: This is an HTML formatted version of the prior text. You can have a plain-text response message. However, if you want to include HTML formatting, such as colors or bold text, then you must maintain both the HTML version and the plain text version. This is because the messages are sent in multipart format if HTML text is present. Maintaining both HTML and plain text versions lets those who do not want to receive the message in HTML format read it in plain text format.

- **Restricted?**: When creating a new resource, this field defaults to **No**.

  See Also: "Restricting Resources" on page 6-15 for information about how to restrict resources

- **Restriction Text**: This text is displayed when a reservation request is attempted but not allowed and lets the user know why they cannot proceed with a reservation. The text can point the user to a facility coordinator who handles centralized reservations of the resource. This text is also displayed on the Resource Details page.

- **Approvers?**: When creating a new resource, this field defaults to **No**.

  See Also: "Making a Resource Require Approval" on page 6-16 for information about resource approval

- **Approval Text:** This text is mandatory for all resources requiring approval. If a resource has approvers, this text is displayed when a reservation request is made. This text should let the user know why the room requires approval and what information the approvers need in the justification submitted by the user.

- **Status** (required): The Status toggles between the selections of Available and Unavailable. The default is Available. Unavailable can indicate situations such as:

  - A room is not available for reservations yet. Use this when setting up new facilities on the Resource Scheduler.

- A piece of equipment is broken and the resource cannot be reserved until further notice. This prevents new reservations from being made and does not cancel existing reservations.

- **Status Text**: If a resource has a status of Unavailable, you must provide Status Text to explain to users why the resource is not available and when the resource will become available. You cannot fill in this field when the status is set to Available.

- **Time Restrictions**: The time restrictions set by the **Not Before** and **Not After** fields control the hours during the day that a resource can be reserved.

  For example, if you want your resource to be available between 8:00 in the morning and 5:30 in the evening, set **Not Before** to *8 am 00* and **Not After** to *5 pm 30*.

  The hours and minutes are selected separately. The four time restriction fields of **Not Before** and **Not After** selections must all be filled in or all left blank.

- **Reserve Within ___ Days**: This entry sets the number of days before the reservation date that a user can make a reservation.

  For example, if you do not want people to make reservations more than three months in advance, enter *90*.

- **URL for more info**: If there is information about the resource on another Web site, enter the URL. This information is displayed on the Resources page.

Adding a New Resource   To add a new resource, do the following:

1. Select the **Scheduler** tab.

2. Select the **Admin** subtab.

3. Select **Resources** from the side navigation bar. The Resources page displays.

4. Select the desired country from the **Within Country** drop-down list.

5. Select the desired facility from the **Facility** drop-down list.

6. Click the **Plus** button on the right side of the page. The Create/Edit Resources page displays.

7. Enter all pertinent information.

8. Click **Create**.

To edit or delete a resource, click the **Magnifying Glass** icon next to the resource on the Resource page.

Assigning Options to Resources

Once created, resources can have administrators, restrictions, approvers, and notifications sent to specific users when a resource is reserved.

This section contains the following topics:

- Viewing Administrators
- Restricting Resources
- Making a Resource Require Approval
- Reservation Notification

Viewing Administrators   You can view administrators assigned to a particular resource by clicking the **Administrators** link associated with the resource, from the list on the Resources page.

> **See Also:**   "Assigning Resource Administrators" on page 6-17

Restricting Resources   You can restrict particular resources to certain users or groups of users. Users can either be restricted from reserving a particular resource (in which case the resource appears in their list of resources) or from seeing and reserving a particular resource.

To restrict a particular resource, do the following:

1. Create the resource.
2. From the list of resources for a particular facility on the Resources page, click the **Restricted To** link associated with the resource you want to restrict. The Resource Restricted To page displays.
3. Click the **Plus** button on the right side of the page. The Select Resource Restricted To page displays.
4. Select either **All Who Work For** or **This Individual** from the **Restrict To** radio buttons.
5. Enter the user ID of a prospective user or click the icon to the right of the **User** field to search for and select a user ID from the list of users.
6. Select either **See Only** or **See and Reserve** from the **User Can** radio buttons.
7. Click **Create**.

To edit or delete a resource restriction, click the **Magnifying Glass** icon next to the user ID on the Resource Restricted To page.

Making a Resource Require Approval   If a resource requires approval, a user can only request a reservation. The reservation is finalized when an approver approves the reservation through the Resource Scheduler system.

If multiple approvers are listed for a particular resource, any approver on the list can approve a reservation request.

The time frame scheduled is displayed in a different color on the Daily View to indicate that the resource request requires approval.

To assign approvers to a particular resource, do the following:

1. Create the resource.

2. From the list of resources for a particular facility on the Resources page, click the **Approvers** link associated with the resource to which you want to assign an approver. The Resource Approvers page displays.

> **Note:**   Approvers are listed on this page once they are created.

3. Click the **Plus** button on the right side of the page. The Create/Edit Resource Approvers page displays.

4. Enter the user ID of a prospective approver or click the icon to the right of the **Approver** field to search for and select a user ID from the list of users.

5. Click **Create**.

To edit or delete an approver, click the **Magnifying Glass** next to the user ID on the Resource Approvers page.

Reservation Notification   Users can be notified when certain resources are reserved.

To add a user for notification, do the following:

1. Create the resource.

2. From the list of resources for a particular facility on the Resources page, click the **Notifications** link associated with the resource for which you want to notify a user. The Resource Notifications page displays.

> **Note:**   Users to be notified are listed on this page once they are created.

3. Click the **Plus** button on the right side of the page. The Create/Edit Resource Notifications page displays.

4. Enter the user ID of a prospective user or click the icon to the right of the **Notify User** field to search for and select a user ID from the list of users.

5. Click **Create**.

To edit or delete a user for notification, click the **Magnifying Glass** next to that user on the Resource Notifications page.

Assigning Resource Administrators

A super user can grant privileges to other users to administer countries, facilities, resource types, or resources for a particular country.

Super users can assign administrators to do any of the following:

- Administer a country; all facilities, all resource types, and all resources within that country

- Administer a facility; all resource types, and all resources within that facility

- Administer a particular resource, only

To assign administrators to resources, do the following:

1. Select the **Scheduler** tab.

2. Select the **Admin** subtab.

3. Select **Resource Admin** from the side navigation bar. The Display Administrators page displays.

4. Click the **Plus** button on the right side of the page. The Create/Edit Resource Administration page displays.

5. Enter the user ID of a prospective administrator or click the icon to the right of the **Select User** field to search for and select a user ID from the list of users.

6. Select the country, facility, resource type, or resource to which you want to assign an administrator, from the corresponding drop-down list.

7. Click **Create**.

To view a user's various administrator roles, on the Display Administrators page enter a user ID or click the icon to the right of the **Select User** field to search for and select a user ID from the list of users.

To edit or delete an administrator, click the **Magnifying Glass** next to the user ID on the Display Administrators page.

Reservation Types

Reservation types can be used to specify the business activity for which a resource is being used. For example, different reservation types can be *Conference Call*, *Internal Meeting*, or *Customer Visit*.

Only super users and administrators can create and maintain reservation types.

To create a reservation type, do the following:

1. Select the **Scheduler** tab.

2. Select the **Admin** subtab.

3. Select **Reservation Types** from the side navigation bar. The Reservation Types page displays.

4. Click the **Plus** button. The Create/Edit Reservation Types page displays.

5. Enter the new type in the **Reservation Type** field.

6. Enter a description for this resource type in the **Description** field.

7. Click **Create**.

Once created a reservation type can only be deleted.

To delete a reservation type, click the **Magnifying Glass** next to the reservation type on the Reservation Types page.

Granting Reporting Access

Reporting access gives a particular user privileges for running the various Web Calendar resource reports. Specifically, granting reporting access to a user gives the user the same privileges as those granted when a user is assigned the RUN-RREP capability.

> **See Also:** "Administering Capabilities" on page 6-19 for more information about capabilities

> **Note:** Reporting access is granted to all super users.

To grant reporting access to a user, do the following:

1. Select the **Scheduler** tab.

2. Select the **Admin** subtab.

3. Select **Reporting Access** from the side navigation bar. The Reporting Access page displays.

4. Click the **Plus** button. The Create/Edit Reporting Access page displays.

5. Enter the user ID of the person to whom you want to grant reporting access or click the icon to the right of the **User ID** field to search for and select a user ID from the list of users.

6. Click **Create**.

To determine if a user has been granted reporting access, on the Reporting Access page enter a user ID or click the icon to the right of the **Select User** field to search for and select a user ID from the list of users.

To revoke a user's reporting access, click the **Magnifying Glass** next to the user ID on the Reporting Access page. Click **Delete**.

Administering Capabilities

Once administrators have been assigned to the various resources, the administrators can be assigned capabilities.

Additionally, new super users can be created.

Web Calendar administrators can be assigned one or more of the following six capabilities:

- DEV: Developer

- GROUP: Calendar Group Administration

- MONITOR: Monitor

- PALM: Palm Sync

- RUN-RREP: Run Resource Reports

- SUPER: Super User

The DEV capability is assigned to all Web Calendar users by default.

The GROUP, MONITOR, and PALM capabilities grant administrative privileges for Calendar, only. The **Admin** tab in Scheduler will not be available.

The RUN-RREP capability grants privileges to run all reports. The Reports tab becomes available to these administrators.

The SUPER capability grants full administrative privileges in both Calendar and Scheduler.

Super users have the following capabilities:

- Administer Web Calendar
- Administer any resource on the system
- Create other super users and resource administrators
- Administer any country or facility
- View reports

Only a super user can create other super users.

This section contains the following topics:

- Viewing Capabilities
- Assigning Capabilities
- Viewing Administrators Assigned to Specific Capabilities

Viewing Capabilities

You can view a list of all the capabilities that can be assigned to administrators. Additionally, you can view a list of the administrators who have been assigned a particular capability.

To view the list of capabilities, do the following:

1. Select the **Scheduler** tab.

2. Select the **Admin** subtab.

3. Select **Administrator Admin** from the side navigation bar.

4. Select **View** from the side navigation bar. The Admin Capabilities List page displays, listing all available capabilities.

5. To view a list of administrators who have been assigned a particular capability, click the **Arrow** next to the capability for which you want to view a list.

Assigning Capabilities

You can assign capabilities to specific administrators or you can maintain an administrator's existing capabilities.

> **Note:** An administrator can be assigned only one capability.

To assign capabilities to specific administrators, do the following:

1. Select the **Scheduler** tab.

2. Select the **Admin** subtab.

3. Select **Administrator Admin** from the side navigation bar.

4. Select **Assign** from the side navigation bar. The Administrator's Capabilities page displays, listing administrators and their assigned capabilities.

5. Enter a user ID or click the icon to the right of the **Select User** field to search for and select a user ID from the list of users.

6. Click the **Plus** button on the right side of the page. The Create/Edit Administrator Capabilities page displays.

7. Select a capability from the **Capability** drop-down list.

8. Click **Create**.

To maintain an administrator's capabilities, do the following:

1. Select the **Scheduler** tab.

2. Select the **Admin** subtab.

3. Select **Administrator Admin** from the side navigation bar.

4. Select **Assign** from the side navigation bar. The Administrator's Capabilities page displays, listing administrators and their assigned capabilities.

5. Click the **Magnifying Glass** next to the user ID of the administrator whose capabilities you want to maintain.

6. Select a capability from the **Capability** drop-down list.

7. Click **Apply Changes**.

8. To delete an administrator, click **Delete**.

> **Note:** Clicking **Delete** will delete the administrator, entirely, without confirmation.

Viewing Administrators Assigned to Specific Capabilities

To view a list of administrators assigned to a specific capability, do the following:

1. Select the **Scheduler** tab.

2. Select the **Admin** subtab.

3. Select **Administrator Admin** from the side navigation bar.

4. Select **List of Admins** from the side navigation bar. The Make Selections for Administration Capability Report page displays.

5. Select a capability from the **Admin Capability** drop-down list.

   The list of administrators assigned the chosen capability displays below.

7

Error Messages

This chapter includes component-specific errors, listed in numerical order. The error codes are divided into the following groups:

- Overview
- IMAP4 and POP3
- SMTP
- Housekeeping
- List Server
- Thin Client
- Telephony Processes

Overview

Error messages may appear in any part of Oracle9*i*AS Unified Messaging. Users may see them in the end-user interface, and administrators may see them in the administrative tools and process logs.

Sometimes, more than one error is displayed. A list of error messages is called an error stack. The bottommost error in the stack is typically the cause of the error.

> **Note:** The error stack may contain error messages from other Oracle products that Oracle9*i*AS Unified Messaging uses. When these additional errors appear, refer to the documentation for the given product.

IMAP4 and POP3

The following is a list of IMAP4 and POP3 error messages:

101, 0, Login failed
Cause: Invalid user name or password used for LOGIN command.

Action: Check the user name, password and try again.

102, 0, No of auth/login tries exceeded. Exiting
Cause: Used all your allowed login attempts

Action: Check the user name and password, then retry in a new session.

103, 0, User logged out
Cause: IMAP/POP session ended either by LOGOUT/QUIT command or because of some other fatal server error like unable to read or write to client connection anymore.

Action: Session end by LOGOUT/QUIT command is normal. If you suspect an abnormal connection termination, check for other errors in this error chain in server log file.

104, 0, Authorization succeeded
Cause: Successful login via authenticate command

Action: None

105, 0, Authorization failed
Cause: Unsuccessful login attempt via authenticate command

Action: Check the user credentials and try again.

106, 0, Could not retrieve folder id for folder={sarg0}. Error#{narg0}
Cause: Possibly a non-existent folder name was used.

Action: Correct the folder name and try again. If folder name is correct, check and resolve any other database errors in this error chain.

107, 0, Failed to get header info for folder={sarg0} with fid={narg1}. Error#{narg0}
Cause: This could be due to an OCI error.

Action: Make sure all required packages are loaded in the database correctly. In particular, check if ES_FOLDER_API is loaded. Check and resolve any other database errors in this error chain.

108, 0, Failed to update folder={sarg0} with fid={narg1}. Error#{narg0}
Cause: This could be due to an OCI error.

Action: Make sure all required packages are loaded in the database correctly. In particular, check if ES_FOLDER_API is loaded. Check and resolve any other database errors in this error chain.

109, 0, Failed to connect to database {sarg1}. Error#{narg0}
Cause: Server unable to create OCI connection pool.

Action: Make sure database is up and configured correctly in Oracle Internet Directory.

110, 0, Conntected to database {sarg1}
Cause: Successful connections to the database

Action: None

111, 0, Failed to get statement handle {narg1} with Error#{narg0}.
Cause: Database related error

Action: Check for OCI error in this error chain

112, 0, Autologout: idle {narg0} minutes.
Cause: Your session was idle for too long

Action: Send noop or any other command before timeout.

113, 0, Out of free Memory. Requested {narg0} bytes.
Cause: No more free memory is available to server.

Action: Reduce the load on server by reducing any of following: threads, max. clients, OCI sessions or Oracle Internet Directory connections. Make sure enough free memory is available for server on your system.

114,0, Module {sarg0}: nesting level too deep, no stats
Cause: Internal error

Action: Contact customer support

117, 0, Failed to get body parts for messageID={narg0}
Cause: This could be due to an OCI error.

Action: Make sure all required packages are loaded in the database correctly. In particular, check if ES_FOLDER_API is loaded. Check and resolve any other database errors in this error chain.

118, 0, Failed to get database session for db={sarg0}. Error#{narg0}
Cause: There are no more free sessions available in OCI connection pool.

Action: This may be a temporary error due to a spike in load. You may need to reevaluate your system to reduce the number of clients connecting to this database, increase the number of sessions in pool or tune the system in general to get faster response.

119, 0, Failed to insert subscribed folder={sarg0}. Error #{narg0}
Cause: Database error.

Action: Check the OCI errors in this error chain

120, 0, Failed to rename folder={sarg0})to {sarg1}. Error#{narg0}
Cause: Trying to rename a non-existent folder, or the new name is already in use or not allowed.

Action: Make sure folder with old name exists and new name is not already in use or contains restricted characters. Check for any other database errors in this error chain.

121, 0, Failed to set SEEN flag for msgid={narg0} in fid={narg1}. Error#{narg2}
Cause: This could be due to an OCI error.

Action: Make sure all required packages are loaded in the database correctly. In particular, check if ES_FOLDER_API is loaded. Check and resolve any other database errors in this error chain.

122, 0, Failed to get shell for msgid={narg0}. Error#{narg1}
Cause: This could be due to an OCI error.

Action: Make sure all required packages are loaded in the database correctly. In particular, check if ES_FOLDER_API is loaded. Check and resolve any other database errors in this error chain.

123, 0, Failed to create hierarchical folders {sarg0}. Error#{narg0}
Cause:

- You cannot create INBOX in any case insensitive form.

- You may be trying to create a folder which already exists.

Action: Check the folder name you are trying to create. Also check for any OCI errors in this error chain.

124, 0, Failed to expunge {narg0} msgs from folder with fid={narg1}. Error#{narg2}
Cause: This could be due to an OCI error.

Action: Make sure all required packages are loaded in the database correctly. In particular, check if ES_FOLDER_API is loaded. Check and resolve any other database errors in this error chain.

125, 0, Bad flags list
Cause: Syntax error in flag list for Store command.

Action: Correct the syntax for flag list.

126, 0, Failed to get folder Id for folder={sarg0}. Error#{narg0}
Cause: Possible causes are:

- You may be looking for a non-existent folder

- For a shared folder you may not have read permissions on folder.

Action: Make sure you are looking for the right folder and is spelled correctly. If it is a shared folder, check its configuration and permissions in Oracle Internet Directory. Check and resolve any other database errors in this error chain.

117, 0, Failed to create shared folder={sarg0}. Error#{narg0},{sarg1}
Cause: Database error.

Action: Check and resolve database errors in this chain.

128, 0, Failed to delete shared folder={sarg0}. Error#{narg0},{sarg1}
Cause: Possible causes are:

SMTP

- You may be trying to delete a non-existent folder.

- Only the shared folder owner can delete the shared folder.

Action: Check the name of the folder and make sure you are the owner of the shared folder you are trying to delete. Check for database errors in this error chain.

129, 0, Failed to rename shared folder={sarg0} to {sarg1}. Error#{narg0},{sarg2}
Cause: Possible causes are:

- You may be trying to rename a non-existent folder.

- Only shared folder owner can rename it.

- New name is already in use or not allowed.

Action: Make sure you are the owner of shared folder or retry with a different name.

130, 0, Failed to change ACI on shared folder={sarg0}. Error#{narg0},{sarg1}
Cause: Database error.

Action: Check the database and Oracle Internet Directory error logs.

131, 0, Failed to determine if this folder or any child is shared.{sarg0}. Error#{narg0}
Cause: This could be due to an OCI error.

Action: Make sure all required packages are loaded in the database correctly. In particular, check if ES_FOLDER_API is loaded. Check and resolve any other database errors in this error chain.

132, 0, Failed to determine Folder space usage for user={sarg0}. Error#{narg0}
Cause: This could be due to an OCI error.

Action: Make sure all required packages are loaded in the database correctly. In particular, check if ES_FOLDER_API is loaded. Check and resolve any other database errors in this error chain.

133, 0, Bad message in Folder={narg0},mid={narg1},muid={narg2}. Null value for {sarg0}
Cause: One of the required message attributes is missing in database.

Action: Make sure all required packages are loaded in the database correctly.

SMTP

The following is a list of SMTP server error messages:

100, 0, Memory allocation failed
Cause: The process is consuming too much memory.

Action: Reduce the number of threads running and restart the process.

101, 0, Memory realloc failed
Cause: The process is consuming too much memory.

Action: Reduce the number of threads running and restart the process.

103, 0, failed to create thread
Cause: There are too many threads in the process.

Action: Reduce the number of threads and restart the server. If the problem persists, contact technical support.

175, 0, ESDSGetEntry failed {sarg0}
Cause: The Oracle Internet Directory server may be down.

Action: Restart the Oracle Internet Directory server. If the problem still exists contact technical support.

176, 0, ESDSGetEntry for entrytype failed {sarg0}
Cause: The Oracle Internet Directory server may be down.

Action: Restart the Oracle Internet Directory server. If the problem still exists contact technical support.

177, 0, ESDSGetAttribute failed for {sarg0}
Cause: The Oracle Internet Directory server may be down.

Action: Restart the Oracle Internet Directory server. If the problem still exists contact technical support.

200, 0, loop detected for the recipient: {sarg0}
Cause: The address resolution for the recipient resulted in a loop.

Action: Make sure the data present in the Oracle Internet Directory server does not introduce any loops for the recipient. Check if auto forward attribute for the recipient introduces a chain ending with original recipient.

201, 0, orclobjectid not populated in Oracle Internet Directory for usr: {sarg0}
Cause: Mandatory attribute `orclobjectid` is missing in Oracle Internet Directory.

Action: Populate correct value for the user in Oracle Internet Directory.

205, 0, failed to deliver to user inbox: {sarg0}
Action: Make sure all required packages are loaded in the database correctly. Check if ES_MESSAGE_API is loaded.

208, 0, failed to index msg for user: {sarg0} index type: {sarg1}
Action: Make sure all required packages are loaded in the database correctly. Check if ES_OT_API is loaded.

209, 0, message rejected by rules for usr: {sarg0}
Cause: The user rule resulted in rejection of the message.

Action: None.

210, 0, message rejected by the recipient {sarg0} using replymode: reject
Cause: Auto reject is set in Oracle Internet Directory entry for the recipient.

212, 0, failed to delete local recipients
Cause: There may be OCI errors.

Action: Make sure all required packages are loaded in the database correctly. Check if ES_MESSAGE_API is loaded.

213, 0, local delivery failed for user: {sarg0}
Action: Check the log for exact reason for failure prior to this message, and see any correction for the user's setup is needed.

225, 0, failed to pickup unprocessed messages
Cause: Error in recovery processing.

Action: Make sure all required packages are loaded in the database correctly. In particular, check if ES_QUEUE_API is loaded.

226, 0, failed to requeue messages
Cause: Error in recovery processing.

Action: Make sure all required packages are loaded in the database correctly. In particular, check if ES_QUEUE_API is loaded.

243, 0, path for external filter process is NULL in Oracle Internet Directory
Action: Populate orclmailsmtpexternalfilterprocess with path for virus scanner executable if virus scanning is enabled.

302, 0, User {sarg0} logon failed. Oracle Internet Directory returns {narg0}
Cause: Unable to authenticate user in Oracle Internet Directory.

Action: Check user name and password to see if they are correct.

401, 0, Error {narg0}: Unable to get msgid
Cause: Unable to get next message ID from database.

Action: Check if the schema is installed and if the package is valid.

402, 0, Error {narg0}: Unable to store envelope
Cause: Unable to insert envelope information into database.

Action: Check if the schema is installed and if the package is valid.

403, 0, Error {narg0}: Unable to store recipient
Cause: Unable to insert recipient information into database.

Action: Check if the schema is installed and if the package is valid.

404, 0, Error {narg0}: Unable to store {sarg0} queue
Cause: Unable to insert the message into a queue.

Action: Check if the schema is installed and if the package is valid.

405, 0, Error {narg0}: Unable to insert the message
Cause: Unable to insert message into database.

Action: Check the OCI error and ORACLE error.

406, 0, Error: Routing loop detected
Cause: Message may be in a loop by checking the Received: headers.

Possible causes: Loop in address rewriting rules; Auto-forward between addresses;.forward set up by UNIX mail senders.

Action: Check the rewriting rules and auto-forward setup and notify the sender.

407, 0, Error: Unable to read from client
Cause: Unable to read from client.

Action: Check network connections.

500, 0, spam check failed for IP address: {sarg0}
Cause: DNS server failed to verify that the IP address of the SMTP client is correct.

501, 0, spam check failed for host: {sarg0}
Cause: DNS server failed to verify that the host is a valid internet host.

502, 0, spam check failed for sender: {sarg0}
Cause: The sender is either in the list of rejected senders or rejected domains.

503, 0, spam check failed for recipient: {sarg0}
Cause: This could be due to either relay is not allowed for the non-local recipient's domain OR the non-local recipient is in the list of rejected recipients.

650, 0, failed to get submit recipients
Cause: This could be due to OCI errors.

651, 0, failed to delete submit recipients
Cause: This could be due to OCI errors.

Action: Make sure all required packages are loaded in the database correctly. In particular, check if ES_MESSAGE_API is loaded.

652, 0, failed to insert resolved recipients
Cause: This could be due to OCI errors.

Action: Make sure all required packages are loaded in the database correctly. In particular, check if ES_MESSAGE_API is loaded.

Housekeeping

The following is a list of housekeeping error messages:

Oracle error {sarg0} occurred during expiration
Cause: An RDBMS error prevented house keeper from successfully performing expiration.

Action: Correct the generic RDBMS error and try running house keeper again.

Oracle error {sarg0} occurred during queue pruning
Cause: An RDBMS error prevented house keeper from successfully performing pruning.

Action: Correct the generic RDBMS error and try running house keeper again.

Oracle error {sarg0} occurred during pruning
Cause: An RDBMS error prevented house keeper from successfully performing pruning.

Action: Correct the generic RDBMS error and try running house keeper again.

Oracle error {sarg0} occurred during collection
Cause: An RDBMS error prevented house keeper from successfully performing collection.

Action: Correct the generic RDBMS error and try running house keeper again.

Calendar component not installed, ignoring calendar cleanup
Cause: Calendar component is not installed, attempt to perform Calendar garbage collection failed.

Action: If Calendar component is not used, ignore this error. Otherwise re-install Calendar component.

Oracle error {sarg0} occurred during calendar cleanup
Cause: An RDBMS error prevented house keeper from successfully performing Calendar cleanup.

Action: Correct the generic RDBMS error and try running house keeper again.

Oracle error {sarg0} occurred during tertiary storing
Cause: An RDBMS error prevented house keeper from successfully performing tertiary storage.

Action: Correct the generic RDBMS error and try running house keeper again.

List Server

The following is a list of list server error messages:

Msg-id: 5002(An error occurred while performing a database operation. Error= {sarg0})
Cause: The cause for this error is available in the error message itself.

Action: Look at the oerr error for the error specified in the error message.

Msg-id: 5003(Error occurred while connecting to the Oracle Internet Directory server on {sarg0}port {narg0} bind dn {sarg0})
Cause: The Oracle Internet Directory server is down or has stopped responding or is listening on a different port.

Action: Restart the Oracle Internet Directory server if it is not running. Otherwise, restart the list server and specify the correct host name and port number of the Oracle Internet Directory server.

Msg -id: 5004(Error initializing process control)
Cause: Either the database or the Oracle Internet Directory server is not running or has stopped responding.

Action: Restart the database and Oracle Internet Directory server. If they are running, then restart the list server.

Msg-id: 5021(Error modifying user {sarg0} entry. Error = {narg0})
Cause: An Oracle Internet Directory error occurred while trying to process a command for the user.

Action: Check if the user entry on the Oracle Internet Directory server is still valid.

Thin Client

The following is a list of Thin Client error messages:

An error occurred while adding attachments
Cause: WebMail was unable to add the attachments.

Action: Try again.

No folder name was specified
Cause: The user did not specific a folder name.

Action: Enter a folder name.

An error occurred; unable to create the new folder
Cause: WebMail was unable to create the folder.

Action: Try again.

A folder by that name `<foldername here>` already exists
Cause: The user specified a folder name that is being used by another folder.

Action: Name the folder with a new name or put the folder in a different location.

An error occurred while creating the message
Cause: WebMail could not create a new message object.

Action: Try creating a message again.

No valid To: recipients found
Cause: User did not specify a valid e-mail address in the **To** field.

Action: Try again and specify a valid e-mail address.

Error occurred during message creation
Cause: WebMail could not create a new message object.

Action: Try creating a message again.

Invalid parameter specified for attachment removal
Cause: WebMail experienced a problem when removing the attachment.

Action: Contact your system administrator.

Invalid attachment index was received
Cause: WebMail attachment indices are misaligned.

Action: Recreate the message.

No message IDs were specified for deletion
Cause: The user did not select messages for deletion.

Action: Select the message for deletion.

An error occurred during message deletion
Cause: The message does not exist.

Action: Contact your system administrator.

An error occurred while compacting the folder
Cause: This is a problem with the voice mail messages in the folder.

Action: Contact your system administrator.

No message IDs were specified for forwarding
Cause: The user did not select a message before selecting **Forward**.

Action: Select a message before selecting **Forward**.

More than one message specified for forwarding
Cause: Multiple messages were selected for forwarding.

Action: Select one message at a time for forwarding.

Invalid message specified
Cause: The message selected could not be forwarded.

Action: Try selecting another message, if that does not work, contact your system administrator.

An error occurred while preparing the message for forwarding
Cause: The selected message could not be processed for forwarding.

Action: Try again or contact your system administrator.

The destination folder does not exist
Cause: The destination folder selected does not exist.

Action: Select another destination folder.

No message IDs were specified for move
Cause: The user did not select a message before selecting **Move**.

Action: Select a message before selecting **Move**.

An error occurred while performing message move
Cause: WebMail could not process the move request.

Action: Try again or contact your system administrator.

There are no more messages in this folder
Cause: No messages exist before of after the current message.

Action: Try another folder.

An error occurred opening the next message
Cause: WebMail could not open the next message.

Action: Try again or contact your system administrator.

There are no messages before this one in this folder
Cause: No messages exist before of after the current message.

Action: Try another folder.

An error occurred opening the previous message
Cause: WebMail could not open the previous message.

Action: Try again or contact your system administrator.

Unable to find folder
Cause: The folder is not accessible.

Action: Check the shared permission or contact your system administrator.

Folder does not exist
Cause: There is no such folder in the account.

Action: Contact your system administrator.

An error occurred while opening the folder
Cause: WebMail experienced problems opening the folder.

Action: Contact your system administrator.

Error occurred during communication with the message store
Cause: Possibly a network problem.

Action: Contact your system administrator.

No message ID specified
Cause: Internal error.

Action: Contact your system administrator.

Error retrieving message
Cause: The message may have been deleted, but the browser is looking a cached or old pages.

Action: Refresh the message list and try again.

No message IDs were specified for reply
Cause: The user did not check any messages before selecting **Reply.**

Action: Select a message before selecting **Reply.**

More than one message specified for reply
Cause: The user selected multiple messages for reply.

Action: Select only one message at a time.

Invalid message specified
Cause: WebMail could not process the message for reply.

Action: Try again or contact your system administrator.

Error occurred while preparing the message for reply
Cause: Internal error

Action: Contact your system administrator

Error while sending message
Cause: Internal error

Action: Contact your system administrator.

No folder was specified for editing
Cause: The user did not select a folder in the folder list before selecting **Edit**.

Action: Select a folder from the folder list.

The specified folder does not exist in the mail store
Cause: The folder selected is not available.

Action: Verify that the folder exists, or contact you system administrator.

An error occurred while preparing the folder for editing
Cause: Internal Error

Action: Contact your system administrator.

You cannot rename special system folders
Cause: The user tried to rename the inbox.

Action: None, the inbox cannot be renamed.

No new name was specified
Cause: The user did not specify a name for the folder.

Action: Specify a name for the folder.

A folder with that name already exists
Cause: Internal error

Action: Contact your stem administrator.

Unable to rename folder
Cause: Internal error

Action: Contact your stem administrator.

An error occurred while trying to update the folder
Cause: Internal error

Action: Contact your stem administrator.

Error while setting previous state
Cause: Internal error

Action: Contact your stem administrator.

You are no longer connected to the mail store
Cause: The session has timed out.

Action: Contact your stem administrator.

Telephony Processes

The following is a list of telephony error messages:

Routing Process

Error: Unable to establish Oracle Internet Directory connection
Cause: The Oracle Internet Directory server is not accessible.

Action: Make sure the Oracle Internet Directory server is accessible.

Error: Can't communicate with Oracle Internet Directory
Cause: The Oracle Internet Directory server is not accessible.

Action: Make sure the Oracle Internet Directory server is accessible.

Internal Error: Unknown exception caught in + thisClassName +.run()
Cause: Unknown error.

Action: If the problem persists, reboot the system and report the problem.

Internal Error: Reinitialization failed
Cause: Attempting to reinitialize the application after an unknown error failed.

Action: Reboot the system and report the problem.

Internal Error: thisClassName
Cause: The application thread is shutting down due to failed reinitialization after an unknown error.

Action: Reboot the system and report the problem.

Internal Error: thisClassName +: closed
Cause: The application has attempted thread-specific cleanup and will shutdown due to failed initialization after an unknown error.

Action: Reboot the system and report the problem.

Error: Lost connection with Oracle Internet Directory while trying to lookup user - Retrying
Cause: Oracle Internet Directory is down or inaccessible.

Action: None. Application will automatically retry connection

Error: naming exception encountered while trying to lookup user
Cause: Oracle9*i*AS Unified Messaging is answering calls for users who do not have Oracle Internet Directory entries or who have incorrect Oracle Internet Directory entries.

Action: If the user should be on the system, make sure that the user's VPIM user object has a correct VPIM mail address. If the user should not be on the system, then configure the PBX not to forward that user's calls to Oracle9*i*AS Unified Messaging.

Error: No queueing location defined in Oracle Internet Directory
Cause: The application is attempting to queue a message and the message queue location is undefined in Oracle Internet Directory.

Action: Set the message queue location in the appropriate process or instance objects in Oracle Internet Directory.

Error: Unexpected I/O error
Cause: Error outputting a message to the recovery queue.

Action: Check disk space and permissions on the queue directory.

Internal Error: Message file + messageFile + does not exist
Cause: Application error condition.

Action: Restart the machine, check disk space, and report the problem if it persists.

Error: Cannot send message: queueing
Cause: The mail store database is down or inaccessible or there is another problem with message sending.

Action: Make sure the recovery application is running. It will send the message when the database is accessible again. Check database.

Internal Error: Needed parameter settings are missing
Cause: Oracle Internet Directory process or instance settings which are required for process startup are missing.

Action: Make sure that all Oracle Internet Directory properties required for the application are set in the appropriate process or instance objects.

Error: Error retrieving coder type from Oracle Internet Directory
Cause: The code type stored in a user or greeting Oracle Internet Directory object is incorrectly formatted. It may have been altered.

Action: Correct the formatting of the coder type, and make sure that the default coder types are valid ones.

Error: Fatal error: Can't create prompt table
Cause: The installation default message localization description string (XML) is poorly formed.

Action: Correct the message localization description string.

Error: Fatal error: Can't create menu table
Cause: The installation default menu item bindings description string (XML) is poorly formed.

Action: Correct the menu item bindings description string.

Error: Fatal error: Unexpected Naming Exception
Cause: Oracle Internet Directory error while looking up the installation default message localization description string or the installation default menu item bindings description string.

Action: Make sure that a default menu object and a default prompts object exist in Oracle Internet Directory as immediate children of the installation container in Oracle Internet Directory. The default attributes of both objects should be set to true.

Internal Error: Unexpected exception
Cause: An unexpected error condition with IT Media and CT Media.

Action: Make sure that IT Media is correctly installed.

Error: Unexpected exception
Cause: The CT Server may be down.

Action: Make sure that the CT Server is starting up. Once the server starts up, the application will recover.

Error: Error refreshing
Cause: The current configuration of the process instance being refreshed is invalid. A setting made since the process instance's last startup is wrong.

Action: Correct the process instances in the Oracle Internet Directory settings.

Error: Error in retrieving the signal. `Current` value = + signals + Event = + sdev
Cause: IT Media or CT Media API error. This message should never occur.

Action: Check disk space, reboot the system, and report the problem if it persists.

Internal Error: Item handler does not exist for + itemTriggered.getName() + in + menuName
Cause: Internal application coding error. This message should never occur.

Action: Edit the menu item bindings configuration string to disable the menu item whose handler is missing.

Error: No AttendantAsi defined! Cannot release to AttendantMediaApp
Cause: The ASI for the attendant application is not defined in the attendant Oracle Internet Directory object to which this process instance's Oracle Internet Directory configuration points.

Action: Define the attendant ASI in the appropriate Oracle Internet Directory object.

Internal Error: Unexpected MediaBindException when releasing to service +

requestor.getAttendantAsi()
Cause: There was a problem releasing the call to the attendant application. The attendant application is not running or not enough threads are running.

Action: Make sure the attendant application is running.

Internal Error: Unexpected MediaConfigException when releasing to service + requestor.getAttendantAsi()
Cause: There was a problem reconfiguring the group for forwarding to the attendant application. The UMMediaServicesProfile could be configured incorrectly.

Action: Check UMMediaServicesProfile.

Error: Fax tone detected - this is a fax call. Cannot continue processing this call
Cause: A fax tone was detected for a call for which call details were unavailable.

Action: Make sure call details are available. Also make sure that fax tone settings in CT Media are reasonable.

Internal Error: MediaResourceException encountered
Cause: There was an unexpected problem performing a resource operation such as playing a message or detecting signals.

Action: Consult CT Media documentation for the meaning of the error code, if one is logged. Make sure that all sound files are installed. Make sure that disk space is available. Restart machine if all else fails.

Internal Error: Unexpected MediaBindException when releasing to service + mbex
Cause: There was a problem releasing the call to the recording or retrieval application. The recording or retrieval application is not running or not enough threads are running.

Action: Make sure the recording or retrieval application is running.

Internal Error: Unexpected MediaConfigException when releasing to service
Cause: There was a problem reconfiguring the group for forwarding to the recording or retrieval application. The UMMediaServicesProfile may be configured incorrectly.

Action: Check the UMMediaServicesProfile.

Error: PBXConnection is null
Cause: The PBX connection type is missing or unrecognized, or, for SMDI connections, the SMDI monitor host, port, or timeout properties are missing.

Action: Correct all required PBX connection related properties in the appropriate Oracle Internet Directory process or instance object.

Internal Error: Unexpected exception trying to initialize MediaProvider
Cause: An unexpected error condition with IT Media and CT Media.

Action: Make sure that IT Media is correctly installed.

Error: Unexpected exception trying to initialize MediaProvider
Cause: The CT Server may be down.

Action: Make sure that the CT Server is starting up. Once the server starts up, the application will recover.

Error: Poorly formatted integer parameter
Cause: A well-formed XML string has an integer parameter value which cannot be parsed as an integer.

Action: From the log files, determine which XML string is causing the problem and correct it.

Error: Parse exception
Cause: A localized message description string is not correctly formed.

Action: From the log files determine which string is not correctly formed and correct it.

Error: Unexpected SAX Exception
Cause: Unexpected error.

Action: Determine from the logs which XML string is being parsed, and make sure the XML string is formed correctly.

Internal Error: I/O Exception shouldn't ever happen here
Cause: Message should never occur.

Action: Report the problem.

Voice Mail Recording Process

Error: Unable to establish Oracle Internet Directory connection
Cause: The Oracle Internet Directory server is inaccessible.

Action: Make sure the Oracle Internet Directory server is accessible.

Error: Can't communicate with Oracle Internet Directory
Cause: The Oracle Internet Directory server is inaccessible.

Action: Make sure the Oracle Internet Directory server is accessible.

Internal Error: Unknown exception caught in + thisClassName +.run()
Cause: Unknown error.

Action: If the problem persists, reboot the system and report the problem.

Internal Error: Reinitialization failed
Cause: Attempting to reinitialize the application after an unknown error failed.

Action: Reboot the system and report the problem.

Internal Error: thisClassName +: closing
Cause: The application thread is shutting down due to failed reinitialization after an unknown error.

Action: Reboot the system and report the problem.

Internal Error: thisClassName +: closed
Cause: The application has attempted thread-specific cleanup and will shutdown due to failed initialization after an unknown error.

Action: Reboot the system and report the problem.

Error: Lost connection with Oracle Internet Directory while trying to lookup user - Retrying
Cause: Oracle Internet Directory is down or inaccessible.

Action: None. Application will automatically retry connection.

Error: Naming exception encountered while trying to lookup user
Cause: Oracle9*i*AS Unified Messaging is answering calls for users who do not have Oracle Internet Directory entries or who have incorrect Oracle Internet Directory entries.

Action: If the user should be on the system, make sure that the user's VPIM user object has a correct VPIM mail address. If the user should not be on the system, then configure the PBX not to forward that user's calls to Oracle9*i*AS Unified Messaging.

Error: No queueing location defined in Oracle Internet Directory
Cause: The application is attempting to queue a message and the message queue location is undefined in Oracle Internet Directory.

Action: Set the message queue location in the appropriate process or instance objects in Oracle Internet Directory.

Error: Unexpected I/O error
Cause: Error outputting a message to the recovery queue.

Action: Check disk space and permissions on the queue directory.

Internal Error: Message file + messageFile + does not exist
Cause: Application error condition.

Action: Restart the machine, check disk space, and report the problem if it persists.

Error: Cannot send message: queueing
Cause: The mail store database is down or inaccessible or there is another problem with message sending.

Action: Make sure the recovery application is running. It will send the message when the database is accessible again. Check database.

Internal Error: Needed parameter settings are missing
Cause: Oracle Internet Directory process or instance settings which are required for process startup are missing.

Action: Make sure that all Oracle Internet Directory properties required for the application are set in the appropriate process or instance objects.

Error: Error retrieving coder type from Oracle Internet Directory
Cause: The code type stored in a user or greeting object in Oracle Internet Directory is incorrectly formatted. It may have been altered.

Action: Correct the formatting of the coder type, and make sure that the default coder types are valid ones.

Error: Fatal error: Cannot create prompt table
Cause: The installation default message localization description string (XML) is poorly formed.

Action: Correct the message localization description string.

Error: Fatal error: Cannot create menu table
Cause: The installation default menu item bindings description string (XML) is poorly formed.

Action: Correct the menu item bindings description string.

Error: Fatal error: Unexpected NamingException
Cause: There was an Oracle Internet Directory error while looking up the installation default message localization description string or the installation default menu item bindings description string.

Action: Make sure that a default menu object and a default prompts object exist in Oracle Internet Directory. The immediate children of the installation container in Oracle Internet Directory. The default attributes of both objects should be set to true.

Internal Error: Unexpected exception
Cause: An unexpected error condition with IT Media and CT Media.

Action: Make sure that IT Media is correctly installed.

Error: Unexpected exception
Cause: The CT Server may be down.

Action: Make sure that the CT Server is starting up. Once the server starts up, the application will recover.

Error: Error refreshing
Cause: The current configuration of the process instance being refreshed is invalid. A setting made since the process instance's last startup is wrong.

Action: Correct the Oracle Internet Directory process instance settings.

Error: Error in retrieving the signal. Current value = + signals + Event = + sdev
Cause: IT Media or CT Media API error. This message should never occur.

Action: Check disk space, reboot the system, and report the problem if it persists.

Internal Error: Item handler does not exist for + itemTriggered.getName() + in + menuName
Cause: Internal application coding error. This message should never occur.

Action: Edit the menu item bindings configuration string to disable the menu item whose handler is missing.

Error: No AttendantAsi defined! Cannot release to AttendantMediaApp.
Cause: The ASI for the attendant application is not defined in the attendant Oracle Internet Directory object to which this process instance's Oracle Internet Directory configuration points.

Action: Define the attendant ASI in the appropriate Oracle Internet Directory object.

Internal Error: Unexpected MediaBindException when releasing to service +

requestor.getAttendantAsi()
Cause: There was a problem releasing the call to the attendant application. The attendant application is not running or not enough threads are running.

Action: Make sure the attendant application is running.

Internal Error: Unexpected MediaConfigException when releasing to service + requestor.getAttendantAsi()
Cause: There was a problem reconfiguring the group for hand off to the attendant application. The UMMediaServicesProfile profile is not configured correctly.

Action: Check UMMediaServicesProfile.

Internal Error: Unexpected exception trying to initialize MediaProvider
Cause: An unexpected error condition with IT Media and CT Media.

Action: Make sure that IT Media is correctly installed.

Error: Unexpected exception trying to initialize MediaProvider
Cause: The CT Server may be down.

Action: Make sure that the CT Server is starting up. Once the server starts up, the application will recover.

Error: Poorly formatted integer parameter: + value
Cause: A well-formed XML string has an integer parameter value which cannot be parsed as an integer.

Action: Determine from the logs which XML string is causing the problem, and correct it.

Error: Parse exception: + errorStream.toString()
Cause: A localized message description string is not formed correctly.

Action: Determine from the logs which string is not formed correctly, and correct it.

Error: Unexpected SAXException: + errorStream.toString()
Cause: Unexpected error.

Action: Determine from the logs which XML string is being parsed, and make sure the XML string is well formed.

Internal Error: I/O Exception should not ever happen here
Cause: Message should never occur.

Action: Report the problem.

Error: Oracle Internet Directory is down and installation may be + multi-instance. Aborting call
Cause: Oracle Internet Directory is down and no default domain is set in the environment.

Action: If the installation encompasses multiple domains, do nothing. If it is a single domain installation, set the default domain parameter in Oracle Internet Directory to be the name of the single domain.

Error: User does not have VM access.
Cause: The user who called in does not have voice mail access.

Action: If the user should have voice mail access, enable the user's voice mail access in Oracle Internet Directory.

Error: Fax tone detected - this is a fax call.
Cause: A fax call was received.

Action: None.

Internal Error: Unexpected MediaConfigException when releasing to service + faxReceivingAsi
Cause: There was a problem reconfiguring the group for hand off to the fax application. There may not be enough fax resources installed.

Action: If this problem is persistent, install more fax cards.

Internal Error: Unexpected MediaBindException when releasing to service + faxReceivingAsi
Cause: There was a problem delegating the call to the fax application. The fax application is not running or not enough threads are running.

Action: Make sure the fax application is running.

Internal Error: RuntimeException received
Cause: An unknown error condition.

Action: Report the problem if it persists.

Internal Error: Unexpected MediaBindException
Cause: CT Server corruption. This message should never occur.

Action: Check disk space and reboot the CT Server.

Internal Error: No destination address has been specified. Message in + recordingFile + will not be sent.
Cause: The user did not specify any message recipients.

Action: None.

Internal Error: Recorded message file does not exist
Cause: Unexpected error condition or CT Server corruption.

Action: Check disk space and reboot the CT Server.

Error: Error obtaining user's phone number
Cause: The message which is being replied to or forwarded has a sender whose text name is numeric, but not a phone number of a user in the system. The sender could have been removed from the system or could have an entirely numeric text name defined in Oracle Internet Directory.

Action: None

Internal Error: Container Exception while retrieving the header parameter on the message. Exception Details: This is the exception + cex.toString() + This is the event + ev.toString()
Cause: An error communicating with the database, or simultaneous deletion of the message being forwarded or replied to.

Action: Check database connection.

Error: FaxReceivingAsi is null - cannot release to FaxRecevingMediaApp!
Cause: The ASI is not set in the fax process instance's Oracle Internet Directory object referenced in this process instance's object.

Action: Make sure the ASI is set in the appropriate fax process or instance object.

Error: Recorder stopped for unknown reason: qual is null
Cause: CT Media or IT Media API error.

Action: Check disk space and report the problem if it persists.

Error: RTC trigger is null in msg recording
Cause: CT Media or IT Media API error.

Action: Check disk space and report the problem if it persists.

Error: Unknown RTC trigger: + trigger
Cause: CT Media or IT Media API error, or an additional RTC has been defined in the CT Media application profile.

Action: Check disk space, correct the application if necessary, and report the problem if it persists.

Error: Error looking up user's Attendant Extension! Cannot release to AttendantMediaApp
Cause: The user's attendant extension cannot be found in Oracle Internet Directory.

Action: Make sure that the attendant extension is set in Oracle Internet Directory under one of the user's parent group profiles.

Error: User's phone number is null
Cause: The telephone number field for a VPIM user is not set.

Action: Set the telephone number to the local telephone number of the VPIM user.

Error: User's phone number is too long: + phoneNumber
Cause: The user's telephone number is too long to be played.

Action: Shorten the user's telephone number. The length should be large enough to accommodate any phone number.

Voice Mail Retrieval Process

Error: Unable to establish Oracle Internet Directory connection
Cause: The Oracle Internet Directory server is inaccessible.

Action: Make sure the Oracle Internet Directory server is accessible.

Error: Cannot communicate with Oracle Internet Directory
Cause: The Oracle Internet Directory server is inaccessible.

Action: Make sure the Oracle Internet Directory server is accessible.

Internal Error: Unknown exception caught in + thisClassName +.run()
Cause: Unknown error.

Action: If the problem persists, reboot the system and report the problem.

Internal Error: Reinitialization failed: + e2
Cause: Attempting to reinitialize the application after an unknown error failed.

Action: Reboot the system and report the problem.

Internal Error: thisClassName +: closing
Cause: The application thread is shutting down due to failed reinitialization after an unknown error.

Action: Reboot the system and report the problem.

Internal Error: thisClassName +: closed
Cause: The application has attempted thread-specific cleanup and will shut down due to failed initialization after an unknown error.

Action: Reboot the system and report the problem.

Error: Lost connection with Oracle Internet Directory while trying to lookup the user - Retrying
Cause: Oracle Internet Directory is down or inaccessible.

Action: None. Application will automatically retry connection.

Error: Naming Exception encountered while trying to lookup the user
Cause: Oracle9*i*AS Unified Messaging is answering calls for users who do not have Oracle Internet Directory entries or who have incorrect Oracle Internet Directory entries.

Action: If the user should be on the system, make sure that the user's VPIM user object has a correct VPIM mail address. If the user should not be on the system, then configure the PBX not to forward that user's calls to Oracle9*i*AS Unified Messaging.

Error: No queueing location defined in Oracle Internet Directory
Cause: The application is attempting to queue a message and the message queue location is undefined in Oracle Internet Directory.

Action: Set the message queue location in the appropriate process or instance objects in Oracle Internet Directory.

Error: Unexpected I/O error
Cause: Error outputting a message to the recovery queue.

Action: Check disk space and permissions on the queue directory.

Internal Error: Message file + messageFile + does not exist
Cause: Application error condition.

Action: Restart the machine, check disk space, and report the problem if it persists.

Error: Cannot send message: queueing
Cause: The mail store database is down or inaccessible or there is another problem with message sending.

Action: Make sure the recovery application is running. It will send the message when the database is accessible again. Check database.

Internal Error: Needed parameter settings are missing
Cause: Oracle Internet Directory process or instance settings which are required for process startup are missing.

Action: Make sure that all Oracle Internet Directory properties required for the application are set in the appropriate process or instance objects.

Error: Error retrieving coder type from Oracle Internet Directory
Cause: The code type stored in a Oracle Internet Directory user or greeting object is incorrectly formatted. It may have been altered.

Action: Correct the formatting of the coder type, and make sure that the default coder types are valid ones.

Error: Fatal error: Can't create prompt table
Cause: The installation default message localization description string (XML) is poorly formed.

Action: Correct the message localization description string.

Error: Fatal error: Can't create menu table
Cause: The installation default menu item bindings description string (XML) is poorly formed.

Action: Correct the menu item bindings description string.

Error: Fatal error: Unexpected naming exception
Cause: Oracle Internet Directory error while looking up the installation default message localization description string or the installation default menu item bindings description string exist in Oracle Internet Directory as immediate children of the installation container in Oracle Internet Directory. The default attributes of both objects should be set to true.

Internal Error: Unexpected exception
Cause: An unexpected error condition with IT Media and CT Media.

Action: Make sure that IT Media is correctly installed.

Error: Unexpected exception
Cause: The CT Server may be down.

Action: Make sure that the CT Server is starting up. Once the server starts up, the application will recover.

Error: Error refreshing
Cause: The current configuration of the process instance being refreshed is invalid. A setting made since the process instance's last startup is wrong.

Action: Correct the process instance's Oracle Internet Directory settings.

Error: Error in retrieving the signal. Current value = + signals + Event = + sdev
Cause: IT Media or CT Media API error. This message should never occur.

Action: Check disk space, reboot the system, and report the problem if it persists.

Internal Error: Item handler does not exist for + itemTriggered.getName() + in + menuName
Cause: Internal application coding error. This message should never occur.

Action: Edit the menu item bindings configuration string to disable the menu item whose handler is missing.

Error: No AttendantAsi defined! Cannot release to AttendantMediaApp
Cause: The ASI for the attendant application is not defined in the Oracle Internet Directory attendant object to which this process instance's Oracle Internet Directory configuration points.

Action: Define the attendant ASI in the appropriate Oracle Internet Directory object.

Internal Error: Unexpected MediaBindException when releasing to service + requestor.getAttendantAsi()
Cause: There was a problem releasing the call to the attendant application. The attendant application is not running or not enough threads are running.

Action: Make sure the attendant application is running.

Internal Error: Unexpected MediaConfigException when releasing to service + requestor.getAttendantAsi()
Cause: There was a problem reconfiguring the group for hand off to the attendant application. The `UMMediaServicesProfile` profile could be configured incorrectly.

Action: Check the `UMMediaServicesProfile`.

Internal Error: Unexpected exception trying to initialize MediaProvider
Cause: An unexpected error condition with IT Media and CT Media.

Action: Make sure that IT Media is correctly installed.

Error: Unexpected exception trying to initialize MediaProvider
Cause: The CT Server may be down.

Action: Make sure that the CT Server is starting up. Once the server starts up, the application will recover.

Error: Poorly formatted integer parameter: + value
Cause: A well-formed XML string has an integer parameter value which cannot be parsed as an integer.

Action: Determine from the logs which XML string is causing the problem, and correct it.

Error: Parse exception: + errorStream.toString()
Cause: A localized message description string is not formed correctly.

Action: Determine from the logs which string is not formed correctly, and correct it.

Error: Unexpected SAX Exception: + errorStream.toString()
Cause: Unexpected error.

Action: Determine from the logs which XML string is being parsed, and make sure the XML string is well formed.

Internal Error: I/O Exception shouldn't ever happen here
Cause: Message should never occur.

Action: Report the problem.

Internal Error: RuntimeException received
Cause: An unexpected application condition.

Action: Check disk space, network connectivity, and access privileges.

Error: Setting the startSearchMessageUid value in Oracle Internet Directory to = +messageUid.toString() + failed!
Cause: An error communicating with Oracle Internet Directory. This error is non-fatal, but may reveal more serious Oracle Internet Directory communication problems.

Action: Try the operation again and see whether the condition recurs. Check if the Oracle Internet Directory server is down.

Error: Setting the oldestVoiceMessageUid value in Oracle Internet Directory to = +oldestVMUid.toString() + failed!
Cause: An error communicating with Oracle Internet Directory. This error is non-fatal, but may reveal more serious Oracle Internet Directory communication problems.

Action: Try the operation again and see whether the condition recurs. Check if the Oracle Internet Directory server is down.

Internal Error: Container Exception encountered in the finally clause: + Exception Details: This is the exception + cex.toString() + This is the event + ev.toString()
Cause: Database down, disk space, or other error after a call has disconnected.

Action: Check disk space and see if database is reachable.

Internal Error: Container Exception encountered while destroying the container: + mailbox + Exception Details: This is the exception + cex1.toString() + This is the event + ev1.toString();
Cause: Database down or other error.

Action: Check if database is reachable.

Error: Lost connection with Oracle Internet Directory when trying to lookup user-Retrying
Cause: Connection lost with Oracle Internet Directory.

Action: None. The application will automatically retry Oracle Internet Directory connection at the beginning of every call.

Error: Invalid MailBox Number - Null
Cause: The user pressed only the pound key when asked to enter a mailbox number.

Action: None.

Error: Exception caught - Details: + ex.toString() + Event details - + sdev.toString()
Cause: Third party bug was triggered and workaround is being attempted.

Action: None

Error: Exception caught - Details: + stex
Cause: Third party bug was triggered and workaround is being attempted.

Action: None

Error: Lost connection with Oracle Internet Directory when trying to lookup the user - Retrying
Cause: Loss of Oracle Internet Directory connection.

Action: None. The application will automatically retry Oracle Internet Directory connection at the beginning of every call.

Error: Lost connection with Oracle Internet Directory when trying to lookup the user- Retrying
Cause: Loss of Oracle Internet Directory connection.

Action: None. The application will automatically retry Oracle Internet Directory connection at the beginning of every call.

Error: Invalid MailBox Password - Null
Cause: The user pressed only the pound key when prompted for a password.

Action: None.

Error: NamingException - Unable to retrieve e-mail ID for VPIM user. + Exception Details: Exception = + ex.toString();
Cause: Oracle Internet Directory error occurred while looking up a user.

Action: Check the user's Oracle Internet Directory settings.

Error: Null value returned when querying Oracle Internet Directory for the owner of orclUMUser. Cannot proceed further
Cause: The owner field of the Oracle9*i*AS Unified Messaging user object is not set.

Action: Set the owner field of the Oracle9*i*AS Unified Messaging user object to point to a mail user.

Error: Null value returned when querying Oracle Internet Directory for the mailUser object whose dn = + mailUserDn +. Cannot proceed further.
Cause: The owner field of the Oracle9*i*AS Unified Messaging user object is a DN which does not exist in the Oracle Internet Directory server.

Action: Correct the owner field of the Oracle9*i*AS Unified Messaging user object.

Error: Null value returned when querying Oracle Internet Directory for the mail user's (dn = + mailUserDn +) orclmailStore attribute. Cannot proceed further.
Cause: The mail user's `orclMailStore` attribute is not set.

Action: Set the mail user's `orclMailStore` attribute.

Error: Null value returned when querying Oracle Internet Directory for the mail user's (dn = + mailUserDn +) targetdn attribute. Cannot proceed further.
Cause: The mail user's `targetdn` attribute is not set or set incorrectly.

Action: Correct the `targetdn` to point to the mail user's corresponding public user.

Error: Null value returned when querying Oracle Internet Directory for the mailStores object (dn = + mailStoreDn +). Cannot proceed further.
Cause: The mail user's `orclMailStore` attribute is a DN which does not exist on the Oracle Internet Directory server.

Action: Correct the mail user's `orclMailStore` attribute.

Error: Null value returned when querying Oracle Internet Directory for the mailStores object's (dn = + mailStoreDn +) orcldbdistinguishedname attribute. Cannot proceed further.
Cause: The mail store `orcldbdistinguishedname` attribute is not set.

Action: Set the mail store `orcldbdistinguishedname` attribute.

Error: Null value returned when querying Oracle Internet Directory for the DBService object (dn = + dbStoreDn +). Cannot proceed further.
Cause: The mail store `orcldbdistinguishedname` attribute is set to a DN which does not exist in the Oracle Internet Directory server.

Action: Correct the mail store object's `orcldbdistinguishedname` attribute.

Error: Null value returned when querying Oracle Internet Directory for the DBService object's (dn = + dbStoreDn +) orcldbglobalname attribute. Cannot proceed further.
Cause: The `DBService` `orcldbglobalname` attribute is not set in Oracle Internet Directory.

Action: Set the `DBService` `orcldbglobalname` attribute.

Error: Lost connection with Oracle Internet Directory while retrieving the mail ID of the VPIMUser - Retrying
Cause: Loss of Oracle Internet Directory connection.

Action: None. The application will automatically retry Oracle Internet Directory connection at the beginning of every call.

Error: Lost connection with Oracle Internet Directory while retrieving the mail ID of the VPIMUser - Retrying
Cause: Loss of Oracle Internet Directory connection.

Action: None. The application will automatically retry Oracle Internet Directory connection at the beginning of every call.

Error: Null value for VPIMMail ID specified in Oracle Internet Directory. Cannot proceed further
Cause: The VPIM mail user's object does not have the vpimmail ID set. As this attribute is required by the schema, a severe Oracle Internet Directory corruption has occurred.

Action: Contact Oracle Internet Directory server support.

Error: Invalid vpimmail id - + mailbox + - specified in Oracle Internet Directory. Cannot proceed further
Cause: The VPIM mail user's vpimmail ID was altered during the course of the telephone call. Most likely an Oracle Internet Directory corruption.

Action: Contact Oracle Internet Directory server support.

Error: Container Exception. Exception Details: This is the exception + cex.toString() + This is the event + ev.toString()
Cause: Unknown error authenticating user. Database could be down.

Action: Check database status.

Error: E-mail account specified in Oracle Internet Directory: + hotelman +: does not exist on the e-mail server. Cannot proceed further. + Exception Details: This is the exception + cex.toString() + This is the event + ev.toString();
Cause: E-mail server is missing the user's account.

Action: Make sure that user's account is properly set up in the e-mail server and Oracle Internet Directory.

Error: MsgId is null. Cannot proceed further with the delegation to Recording.
Cause: The message for which a reply or forward is being composed has no message ID.

Action: None.

Error: Mailbox is null. Cannot proceed further with the delegation to Recording.
Cause: A failure to find items in the message header of a message to be forwarded or replied.

Action: None.

Internal Error: Media Bind Exception while doing a delegateToService() to VMRecordingMediaApp. Exception Details: This is the exception + mbe.toString();
Cause: An error delegating to recording for a reply, forward, or new message composed within retrieval.

Action: Make sure that the recording application is running.

Error: Container Exception while setting the OCIPassword parameter on the mailbox: + mailbox + Exception Details: This is the exception + cex.toString() + This is the event + ev.toString();
Cause: Unknown error while changing password.

Action: None.

Error: Error looking up user's Attendant Extension! Cannot release to AttendantMediaApp
Cause: The user's attendant extension cannot be found in Oracle Internet Directory.

Action: Make sure that the attendant extension is set in Oracle Internet Directory under one of the Oracle9*i*AS Unified Messaging user's parent Group Profiles.

Error: Error retrieving the user's telephone number., ne
Cause: The user's VPIM user object could not be found. There may have been an Oracle Internet Directory communication error or the owner attribute of the user object may have been incorrectly set.

Action: Make sure that the user's owner object is set to the dn of the mail user / VPIM user. Check that Oracle Internet Directory is available.

Internal Error: Container Exception while setting the unread parameter on the message. + Exception Details: This is the exception + cex.toString() + This is the event + ev.toString();
Cause: Database communication problem or disk space problem while setting the unread flag on a message.

Action: Make sure that the database is accessible and that there is sufficient disk space.

Internal Error: Container Exception while deleting message. + Exception Details: This is the exception + cex.toString() + This is the event + ev.toString()
Cause: Database communication problem or disk space problem while deleting a message.

Action: Make sure that the database is accessible and that there is sufficient disk space.

Internal Error: Container Exception while retrieving the header parameter on the message. Exception Details: This is the exception + cex.toString() + This is the event + ev.toString()
Cause: Database communication problem or disk space problem while obtaining message header information.

Action: Make sure that the database is accessible and that there is sufficient disk space.

Internal Error: Container Exception while destroying the container: + tmpGreetingPath + Exception Details: This is the exception + ce.toString() +This is the event + ev1.toString()
Cause: A data object in CT Media's container subsystem was externally deleted or there is an internal CT Media error.

Action: Check disk space. Reinstall CT Media if the problem persists.

Error: Cannot look up VPIM user
Cause: The user's VPIM user object could not be found. There may have been an Oracle Internet Directory communication error or the owner attribute of the user object may have been incorrectly set.

Action: Make sure that the user's owner object is set to the dn of the mail user or VPIM user. Check that Oracle Internet Directory is available.

Internal Error: Container Exception while creating the SpokenName data object. + Exception Details: This is the exception + cex.toString() + This is the event + ev.toString()
Cause: Disk space or internal CT Media error.

Action: Check disk space. Reinstall CT Media if the problem persists.

Internal Error: Container exception while retrieving the header parameter on the message. + Exception Details: This is the exception + cex.toString() + This is the event + ev.toString()
Cause: There was a database communication problem or disk space problem while obtaining message header information.

Action: Make sure that the database is accessible and that there is sufficient disk space.

Internal Error: Container exception in greeting recording
Cause: There was an error accessing a just-recorded greeting or name. The greeting or name was removed, there is a disk space problem, or there was another CT Media error.

Action: Check disk space. Reboot the server if the problem persists.

Internal Error: Naming exception in greeting recording:
Cause: There was an error storing a just recorded greeting or name in Oracle Internet Directory.

Action: Make sure that the Oracle Internet Directory server is accessible.

Error: Cannot Set User's Password in Oracle Internet Directory + Exception Details: This is the exception + ex.toString();
Cause: There was an error accessing Oracle Internet Directory to store a new password. Oracle Internet Directory maybe down or access control may be may not be configured correctly.

Action: Make sure that the Oracle Internet Directory server is accessible and that permissions are set correctly.

Error: Unexpected MediaResourceException + during message playback or + associated processing
Cause: There was an error with the message playback due to a database connection problem.

Action: Check the database connection.

Attendant Process

Error: Unable to establish Oracle Internet Directory connection
Cause: The Oracle Internet Directory server is inaccessible.

Action: Make sure the Oracle Internet Directory server is accessible.

Error: Can't communicate with Oracle Internet Directory
Cause: The Oracle Internet Directory server is inaccessible.

Action: Make sure the Oracle Internet Directory server is accessible.

Internal Error: Unknown exception caught in + thisClassName +.run()
Cause: Unknown error.

Action: If the problem persists, reboot the system and report the problem.

Internal Error: Reinitialization failed
Cause: Attempting to reinitialize the application after an unknown error failed.

Action: Reboot the system and report the problem.

Internal Error: thisClassName +: closing
Cause: The application thread is shutting down due to failed reinitialization after an unknown error.

Action: Reboot the system and report the problem.

Internal Error: thisClassName +: closed
Cause: The application has attempted thread-specific cleanup and will shutdown due to failed initialization after an unknown error.

Action: Reboot the system and report the problem.

Error: Lost connection with Oracle Internet Directory while trying to lookup user - Retrying
Cause: Oracle Internet Directory is down or inaccessible.

Action: None. Application will automatically retry connection.

Error: Naming exception encountered while trying to lookup user
Cause: Oracle9*i*AS Unified Messaging is answering calls for users who do not have Oracle Internet Directory entries or who have incorrect Oracle Internet Directory entries.

Action: If the user should be on the system, make sure that the user's VPIM user object has a correct VPIM mail address. If the user should not be on the system, then configure the PBX not to forward that user's calls to Oracle9*i*AS Unified Messaging.

Error: No queueing location defined in Oracle Internet Directory
Cause: The application is attempting to queue a message and the message queue location is undefined in Oracle Internet Directory.

Action: Set the message queue location in the appropriate process or instance objects in Oracle Internet Directory.

Error: Unexpected I/O error
Cause: Error outputting a message to the recovery queue.

Action: Check disk space and permissions on the queue directory.

Internal Error: Message file + messageFile + does not exist
Cause: Application error condition.

Action: Restart the machine, check disk space, and report the problem if it persists.

Error: Cannot send message: queueing
Cause: The mail store database is down or inaccessible or there is another problem with message sending.

Action: Make sure the recovery application is running. It will send the message when the database is accessible again. Check the database.

Internal Error: Needed parameter settings are missing
Cause: Oracle Internet Directory process or instance settings which are required for process startup are missing.

Action: Make sure that all Oracle Internet Directory properties required for the application are set in the appropriate process or instance objects.

Error: Error retrieving coder type from Oracle Internet Directory
Cause: The code type stored in a user or greeting Oracle Internet Directory object is incorrectly formatted. It may have been altered.

Action: Correct the formatting of the coder type, and make sure that the default coder types are valid ones.

Error: Fatal error: Cannot create prompt table
Cause: The installation default message localization description string (XML) is poorly formed.

Action: Correct the message localization description string.

Error: Fatal error: Cannot create menu table
Cause: The installation default menu item bindings description string (XML) is poorly formed.

Action: Correct the menu item bindings description string

Error: Fatal error: Unexpected naming exception
Cause: Oracle Internet Directory error while looking up the installation default message localization description string or the installation default menu item bindings description string.

Action: Make sure that a default menu object and a default prompts object exist in Oracle Internet Directory. The immediate children of the installation container in Oracle Internet Directory. The default attributes of both objects should be set to true.

Internal Error: Unexpected exception
Cause: An unexpected error condition with IT Media and CT Media.

Action: Make sure that IT Media is correctly installed.

Error: Unexpected exception
Cause: The CT Server may be down.

Action: Make sure that the CT Server is starting up. Once the server starts up, the application will recover.

Error: Error refreshing
Cause: The current configuration of the process instance being refreshed is invalid. A setting made since the process instance's last startup is wrong.

Action: Correct the process instance's Oracle Internet Directory settings.

Internal Error: Unexpected exception trying to initialize MediaProvider
Cause: An unexpected error condition with IT Media and CT Media.

Action: Make sure that IT Media is correctly installed.

Error: Unexpected exception trying to initialize MediaProvider
Cause: The CT Server may be down.

Action: Make sure that the CT Server is starting up. Once the server starts up, the application will recover.

Error: Poorly formatted integer parameter
Cause: A well-formed XML string has an integer parameter value which cannot be parsed as an integer.

Action: Determine from the logs which XML string is causing the problem, and correct it.

Error: Parse exception
Cause: A localized message description string is not formed correctly.

Action: Determine from the logs which string is not formed correctly, and correct it.

Error: Unexpected SAX Exception
Cause: Unexpected error.

Action: Determine from the logs which XML string is being parsed, and make sure the XML string is well formed.

Internal Error: I/O Exception should not ever happen here
Cause: Message should never occur.

Action: Report the problem.

Fax Receiving Process

Error: Unable to establish Oracle Internet Directory connection
Cause: The Oracle Internet Directory server is inaccessible.

Action: Make sure the Oracle Internet Directory server is accessible.

Error: Can't communicate with Oracle Internet Directory
Cause: The Oracle Internet Directory server is inaccessible.

Action: Make sure the Oracle Internet Directory server is accessible.

Internal Error: Unknown exception caught in + thisClassName +.run()
Cause: Unknown error.

Action: If the problem persists, reboot the system and report the problem.

Internal Error: Reinitialization failed: + e2
Cause: Attempting to reinitialize the application after an unknown error failed.

Action: Reboot the system and report the problem.

Internal Error: thisClassName +: closing
Cause: The application thread is shutting down due to failed reinitialization after an
unknown error.

Action: Reboot the system and report the problem.

Internal Error: thisClassName +: closed
Cause: The application has attempted thread-specific cleanup and will shut down
due to failed initialization after an unknown error.

Action: Reboot the system and report the problem.

**Error: Lost connection with Oracle Internet Directory while trying to lookup user -
Retrying**
Cause: Oracle Internet Directory is down or inaccessible.

Action: None. Application will automatically retry connection.

Error: a naming exception was encountered while trying to lookup user
Cause: Unified Messaging is answering calls for users who do not have Oracle Internet Directory entries or who have incorrect Oracle Internet Directory entries.

Action: If the user should be on the system, make sure that the user's VPIM user object has a correct VPIM mail address. If the user should not be on the system, then configure the PBX not to forward that user calls to Oracle9*i*AS Unified Messaging.

Error: No queueing location defined in Oracle Internet Directory
Cause: The application is attempting to queue a message and the message queue location is undefined in Oracle Internet Directory.

Action: Set the message queue location in the appropriate process.

Error: Unexpected I/O error
Cause: Error outputting a message to the recovery queue.

Action: Check disk space and permissions on the queue directory.

Internal Error: Message file + messageFile + does not exist
Cause: Application error condition.

Action: Restart the machine, check disk space, and report the problem if it persists.

Error: Cannot send message: queueing
Cause: The mail store database is down or inaccessible or there is another problem with message sending.

Action: Make sure the recovery application is running. It will send the message when the database is accessible again. Check the database.

Internal Error: Needed parameter settings are missing.
Cause: Oracle Internet Directory process or instance settings which are required for process startup are missing.

Action: Make sure that all Oracle Internet Directory properties required for the application are set in the appropriate process or instance objects.

Error: Error retrieving coder type from Oracle Internet Directory
Cause: The code type stored in a user or greeting Oracle Internet Directory. The object is incorrectly formatted. It may have been altered.

Action: Correct the formatting of the coder type, and make sure that the default coder types are valid ones.

Error: Fatal error: Can't create prompt table
Cause: The installation default message localization description string (XML) is poorly formed.

Action: Correct the message localization description string.

Error: Fatal error: Cannot create menu table
Cause: The installation default menu item bindings description string (XML) is not formed correctly.

Action: Correct the menu item bindings description string.

Fatal Error: Unexpected NamingException
Cause: Oracle Internet Directory error while looking up the installation default message localization description string or the installation default menu item bindings description string.

Action: Make sure that a default menu object and a default prompts object exist in Oracle Internet Directory as immediate children of the installation container in Oracle Internet Directory. The default attributes of both objects should be set to true.

Internal Error: Unexpected exception
Cause: An unexpected error condition with IT Media and CT Media.

Action: Make sure that IT Media is correctly installed.

Error: Unexpected exception
Cause: The CT Server may be down.

Action: Make sure that the CT Server is starting up. Once the server starts up, the application will recover.

Error: Error refreshing
Cause: The current configuration of the process instance being refreshed is invalid. A setting made since the process instance's last startup is wrong.

Action: Correct the Oracle Internet Directory process instance settings.

Error: Error in retrieving the signal. Current value = + signals + Event = + sdev
Cause: IT Media or CT Media API error. This message should never occur.

Action: Check disk space, reboot the system, and report the problem if it persists.

Internal Error: Item handler does not exist for + itemTriggered.getName() + in +

menuName
Cause: Internal application coding error. This message should never occur.

Action: Edit the menu item bindings configuration string to disable the menu item whose handler is missing.

Error: No AttendantAsi defined! Cannot release to AttendantMediaApp
Cause: The ASI for the attendant application is not defined in the attendant Oracle Internet Directory objects.

Action: Define the attendant ASI in the appropriate Oracle Internet Directory object.

Internal Error: Unexpected MediaBindException when releasing to service + requestor.getAttendantAsi()
Cause: There was a problem releasing the call to the attendant application. The attendant application is not running or not enough threads are running.

Action: Make sure the attendant application is running.

Internal Error: Unexpected MediaConfigException when releasing to service + requestor.getAttendantAsi()
Cause: There was a problem reconfiguring the group for hand off to the attendant application. The UMMediaServicesProfile could be configured incorrectly.

Action: Check UMMediaServicesProfile.

Internal Error: Unexpected exception trying to initialize MediaProvider
Cause: An unexpected error condition with IT Media and CT Media.

Action: Make sure that IT Media is correctly installed.

Error: Unexpected exception trying to initialize MediaProvider
Cause: The CT Server may be down.

Action: Make sure that the CT Server is starting up. Once the server starts up, the application will recover.

Error: Poorly formatted integer parameter: + value
Cause: A well-formed XML string has an integer parameter value which cannot be parsed as an integer.

Action: Determine from the logs which XML string is causing the problem, and correct it.

Error: Parse exception: + errorStream.toString()
Cause: A localized message description string is formed incorrectly.

Action: Determine from the logs which string is formed incorrectly, and correct it.

Error: Unexpected SAXException: + errorStream.toString()
Cause: Unexpected error.

Action: Determine from the logs which XML string is being parsed, and make sure the XML string is well formed.

Internal Error: I/O Exception should not ever happen here
Cause: Message should never occur.

Action: Report the problem.

Error: Cannot process this call further - No call detail information or the cd.to field is null!
Cause: Call detail information is unavailable.

Action: Make sure that the SMDI Monitor, if one exists, is running, and that the PBX integration settings in Oracle Internet Directory are correct.

Error: Oracle Internet Directory is down and installation may be + multi-domain aborting call
Cause: Oracle Internet Directory is down and no default domain is set in the environment.

Action: If the installation encompasses multiple domains, do nothing. If it is a single domain installation, set the default domain parameter in Oracle Internet Directory to be the name of the single domain.

Error: User does not have FaxIn access
Cause: The user to whom a fax is being sent has fax-in access disabled.

Action: If the user should have fax-in access enabled, then enable it.

Internal Error: Fax receive was interrupted. Message in + receivingFile + will not be sent
Cause: An error during fax reception.

Action: Check disk space, and reinstall CT Media if problems persist.

Internal Error: No destination address has been specified. Message in + receivingFile + will not be sent.
Cause: The user did not specify any message recipients.

Action: None.

Error: Fax receiver stopped for unknown reason: qual is null
Cause: CT Media or IT Media API error.

Action: Check disk space and report the problem if it persists.

MWI Service Process

Internal Error: Unexpected exception trying to initialize MediaProvider
Cause: An unexpected error condition with IT Media and CT Media.

Action: Make sure that IT Media is correctly installed.

Error: Unexpected exception trying to initialize MediaProvider
Cause: The CT Server may be down.

Action: Make sure that the CT Server is starting up. Once the server starts up, the application will recover.

Error: Class location URL is not defined. + Cannot export MWIService for activation.
Cause: The class location URL is not set in Oracle Internet Directory.

Action: Set the class location in Oracle Internet Directory.

Error: An I/O error occurred while constructing MarshalledObject
Cause: Insufficient disk space or file system privileges.

Action: Check disk space and privileges.

Error: Error connecting to PBX
Cause: The SMDI Monitor or CT Media MWI session service is unavailable.

Action: Verify that Oracle Internet Directory settings of PBX properties are correct. Verify that the SMDI Monitor, if any, is running. The `MWIService` will automatically reestablish connection.

Error: PBXConnection cannot be created
Cause: The PBX connection type is missing or unrecognized, or the SMDI Monitor host, port, or timeout properties are missing.

Action: Correct all required PBX connection related properties in the appropriate process or instance Oracle Internet Directory object.

AQMWI Process

Error: Unable to register driver manager -- exiting
Cause: The Oracle JDBC classes are not correctly installed.

Action: Reinstall the Oracle JDBC classes.

Error: Error communicating with AQ
Cause: The advanced queue for MWI does not exist, or is unavailable.

Action: Make sure the queue is installed and available.

Error: Error communicating with the database
Cause: The database is unavailable or inaccessible.

Action: Make sure the database is running and is accessible.

Error: Error communicating with Oracle Internet Directory
Cause: An Oracle Internet Directory server connection or authentication error occurred

Action: Make sure that the Oracle Internet Directory server is running. Reset authentication credentials if necessary.

Error: Unexpected Exception
Cause: An unknown error.

Action: None. Reconnection will be attempted.

Error: Unable to reconnect
Cause: An error establishing a connection after an unknown error.

Action: None. Reconnection will be attempted every 60 seconds.

Error: Unexpected ClassNotFoundException
Cause: The class `oracle.AQ.AQOracleDriver` cannot be found.

Action: Make sure that Oracle AQ classes are installed.

Error: Remote exception occurred while looking up the MWIService
Cause: A RMI registry could not be located at the host and port number of the RMI URL set in Oracle Internet Directory.

Action: Make sure that an `rmiregistry` is running at the host and port number of the RMI URL set in Oracle Internet Directory.

Error: A URL exception was not formed correctly while looking up the MWI service
Cause: The URL of the `MWIService` set in Oracle Internet Directory under the MWI service process or instance object is not formed correctly.

Action: Correct the `MWIService` URL.

Error: A NotBoundException occurred while looking up MWI service
Cause: The `MWIService` is not registered at the expected URL.

Action: Make sure that an `MWIService` is running at the location set in Oracle Internet Directory under the `MWIService` process or instance object.

Wireless Process

Error: Cannot create QueueTable for this user. Check the permissions
Cause: Cannot create `QueueTable`. During installation, queue table creation did not go through

correctly. Or these queue connection parameters were changed in Oracle Internet Directory.

Action: Check for the `Queuetable` name listed in Oracle Internet Directory against the database.

Error: Cannot create queue for a given session
Cause: The queue connection did not happen during installation.

Action: Check if the user entry and queues were created in the wireless process entry.

Error: Cannot rollback the QueueSession
Cause: Session created was closed without saving the changes.

Action: Check if the wireless process died suddenly. If the connection to database was lost for some reason. Look at the `v$session` table to check if the wireless process has any session open.

Error: Cannot close the QueueSession
Cause: Session was already closed. The wireless process went down and closed the session before running the final `closeConnections` code.

Action: Re-start the Wireless process if it was stopped suddenly.

Error: Cannot close the queue connection
Cause: Queue connection was closed. The wireless process is cleaning up connections. In that process, it may encounter a already closed queue connection.

Action: If this happens when a process is shutdown through the administration screens, please verify v$session table to remove any dangling session for wireless process. In most cases, the queue connection is already closed.

Internal Error: Cannot get JMS queue object for a given name
Cause: Wrong queue name in wireless process entry.

Action: Check user_queues table to verify the queue names.

Internal Error: Cannot create QueueSender for a given session and queue objects
Cause: User does not have permissions to create queues or queue senders.

Action: Check the user entry in Oracle Internet Directory against the user in database.

Internal Error: Cannot create QueueBrowser for a given session and queue
Cause: User does not have permissions to create queues or queue browsers.

Action: Check the user entry in Oracle Internet Directory against the user in database.

Internal Error: Cannot create a queue receiver for a given session and a queue object
Cause: User does not have permissions to create queues or queuereceiver.

Action: Check the user entry in Oracle Internet Directory against the user in database.

Internal Error: Cannot commit the given session.
Cause: Cannot queue or dequeue a message from queue.

Action: Check if the database is up and running. If the user has permissions to queue or dequeue messages

Warning: Sending a message to null address
Cause: Trying to send this message to a null address. Cannot resolve to a null address.

Action: Sender will get a notification from wireless system saying the same.

Warning: No such device for user: messageToAddress
Cause: The device specified for the destination user does not exist.

Action: Will try to send to a default device. If no such device, notification sent back to the sender of the wireless message.

Warning: The device name cannot be null when sending a broadcast message
Cause: Cannot send broadcast messages to null device.

Action: Notification sent back to the administrator.

Error:This message is not intended to be sent as a broadcast message
Cause: Sender is not administrator.

Action: Check the credentials.

Error: Communication error when accessing data from Oracle Internet Directory
Cause: Oracle Internet Directory went down. Cannot connect to Oracle Internet Directory for resolving addresses.

Action: Check Oracle Internet Directory connections. Re-send the message.

Notification: Account could not be resolved to admin
Cause: Sender is not a administrator.

Action: Check the credentials and re-send the message.

Error: Naming exception caught in method getUserDevice in programName AddressResolution
Cause: Cannot find devices for a given destination user.

Action: If default device is found, wireless system will send the message to that device. Else, will send a notification to the sender about the same. Check the user entry to find if he has any devices associated.

Notification: No such device for the user specified device
Cause: Cannot find devices for a given destination user.

Action: If default device is found, wireless system will send the message to that device. Else, will send a notification to the sender about the same. Check the user entry to find if he has any devices associated.

Error: Cannot get the device address for this user
Cause: Cannot find devices for a given destination user.

Action: If default device is found, wireless system will send the message to that device. Else, will send a notification to the sender about the same. Check the user entry to find if he has any devices associated.

Internal Error: Communication exception caught in method resolveUMUser method in AddressResolution class
Cause: Oracle Internet Directory went down during the address resolution for a message.

Action: Bring up Oracle Internet Directory. The message will be resolved again by wireless system.

Error: Cannot resolve the Oracle9iAS Unified Messaging user address
Cause: Not a Oracle9iAS Unified Messaging user.

Action: Ignore. Will try to resolve it to user device or send a notification back to the user.

Error: Cannot search available devices in the system
Cause: No system devices in Oracle Internet Directory.

Action: Check for system devices under installation under `UMContainer` in Oracle Internet Directory.

Error: Service Unavailable Exception. Have to re-initialize context
Cause: Oracle Internet Directory is down.

Action: Will re-establish connection three times. If cannot establish a connection, it will enqueue the message into `exqueue`, which will be later processed by `WirelessExceptionProcess`. Bring up the Oracle Internet Directory.

Error: Naming exception caught while searching system devices
Cause: No system devices found under installation container.

Action: Need to have devices supported by the wireless system in order to send out messages.

Warning: This phone number does not belong to any Oracle9iAS Unified Messaging user in the system
Cause: Message sent from an outside caller.

Action: Will send the message if destination is Oracle9iAS Unified Messaging user. If not, will send back notification to the sender.

Error: Exception caught while looking up to resolve the user device
Cause: Cannot resolve a given destination to the user device.

Action: Will send out a notification to the sender in case of error.

Notification: This is not an address belonging to the address book
Cause: Address does not belong to sender's address book.

Action: Wireless server will resolve from user devices instead.

Warning: No such device for user
Cause: Given device name not available for the destination.

Action: Will send to the default device. Else send notification to the sender about the same.

Error: Cannot send a message to the address with null device name
Cause: Cannot send wireless message to null device. Null device specified in Message

Action: Will send a notification back to the sender about the same. Re-send a wireless message with non-null wireless message.

Error: Exception caught in resolving user's address book
Cause: Exception in resolution.

Action: Check if Oracle Internet Directory is down. Or user entry is removed from the time the wireless message was sent.

Internal Error: Cannot get system property for WirelessAppInstance to initialize connection to Oracle Internet Directory
Cause: Cannot find the DN for the wireless process to get queue connection parameters.

Action: Check for the command line parameters for using the class.

Internal Error: One of the parameters to open a queue connection is null
Cause: Oracle Internet Directory parameters for queue connection are null.

Action: Input the correct parameters in the wireless process entry in Oracle Internet Directory and re-run the command.

Error: Cannot create a given queue for inserting wireless message
Cause: During installation, the queue creation failed. Trying to re-create and that fails too.

Action: Check for permission set for this user in the database for queue creations.

Error: Cannot create a Queue Sender for an empty Queue Object
Cause: Empty queue object. Either the queue connection lost due to the database down or the queue object was removed.

Action: Check if the database is down.

Error: An error occurred while retrieving the queue handle
Cause: Cannot get the queue object. Either connection lost or queue name is wrong.

Action: Check for the name match. Check if the database is down.

Error: Unable to establish Oracle Internet Directory connection
Cause: Oracle Internet Directory is down.

Action: Check if the Oracle Internet Directory server is up and running. Re-start the application.

Internal Error: Unexpected Exception
Cause: The classpath was not set right. The wireless application stopped.

Action: If the application is down, restart the application. Look if the database or Oracle Internet Directory server went down suddenly.

Notification: Error in creating InQueueSession
Cause: The wrong parameters were set in Oracle Internet DirectoryOracle Internet Directory for queue connections or the database is down.

Action: Check if the database is up and running. Check the following parameters:

- `orclumwirelessinqueue`

- `orclpasswordattribute`

- `orcluminquid` in Oracle Internet Directory against user or password in the database and check `user_queues` in the database for the `inqueue` name.

Warning: Cannot get handle to WirelessInQueue
Cause: Cannot create a session or the queue name specified in Oracle Internet Directory does not match with the queue name in the database.

Action: Check for the name match and the database connections.

Notification: Creating the queue for the first time

Cause: During installation, the queue objects specified in Oracle Internet Directory were not created correctly.

Action: Check if the name matches are not right for the queue names.

Notification: Error during creation of OutQueueSession and connections
Cause: Either the database is down or the queue connection parameters are specified wrong in Oracle Internet Directory.

Action: Same as for error in creating `InQueueSession`.

Internal Error: JMS exception caught while receiving a message from queue
Cause: An error occurred when receiving a message from the queue.

Action: See message inside the `JMSException` and linked `SQLException` for more information.

Internal Error: Null pointer exception caught in WirelessServerProcessThread.run Method()
Cause: One of the expected non-null variables for queue processing is null.

Action: Check the required parameters for queue connections.

Error: cannot process a given message
Cause: Message inserted into the queue has parameters missing or wrong.

Action: Look for the `prepareMessage` exceptions for more information.

Internal Error: Exception caught in WirelessServerProcessThread run method
Cause: Exception caused in the `RunProcess`

Action: Check for any `SQLExceptions` and `WirelessServerProcessExceptions` for more information.

Internal Error: Error constructing WirelessServerApplication
Cause: Queue connections or Oracle Internet Directory connection are not established correctly.

Action: Check to see if the database is up and running. Oracle Internet Directory is up and running. Check the queue parameters in the Oracle Internet Directory against the database.

Error: Cannot initialize the queue and WMT table connections
Cause: The database is down or the connection parameters wrong.

Action: DB should be up and running. Check the connection parameters for wireless exception process.

Error: Cannot set UM and ES root contexts
Cause: Received null values from Oracle Internet Directory.

Action: Check for the values of `UMInstallContext`, `UMRootContext`, and `ESRootContext` for the wireless exception process.

Internal Error: Null pointer exception caught in WirelessServerProcessThread.run

Method
Cause: Not null value expected for processing a message. Null value encountered.

Action: check the messages enqueued into exception queue. In most of the cases, this error should not occur.

Error: cannot process a given message

Cause: Unable to process the message from exception queue.

Action: Look for `prepareMessageExceptions` and other SQL exceptions for more information.

Internal Error: Exception caught in WirelessServerProcessThread run method
Cause: Exception during run. An unexpected process shutdown occurred or the database connection was lost.

Action: Look out for the other exceptions thrown for more information.

Internal Error: Cannot prepare statement for inserting rows into WirelessMessageTable
Cause: The prepare statement for `WirelessMessageTable` is failing.

Action: Check for permissions for this user on `WirelessMessageTable` in the database.

Internal Error: Internal Error in prepare statement for updating rows in WirelessMessageTable
Cause: Cannot prepare statement for update operations.

Action: Check permission for this user.

Error: Cannot prepare statement for getting sendingCode for given message ID
Cause: Cannot prepare statement for sequence number.

Action: Check permissions for this user.

Error: Cannot get the sequence number from database
Cause: The database is down or the sequence created in the database is not accessible.

Action: check for `um_sequence` for this user.

Error: Cannot get the sequence number for sendingCode field. Cannot insert row into WMT table
Cause: Cannot perform the database operation. Database is down or permission problems for the user.

Action: Check the database and permissions in the database for this user.

Error: Cannot even rollback the database connection
Cause: Corrupted connections in the database. Unable to undo the operation.

Action: Check the database uptime.

Error: Cannot update the lastByteAccessed for messageId
Cause: Unable to access `WirelessMessageTable`.

Action: The database should be up. Check for rows in `WirelessMessageTable` through SQL.

Error: Cannot get the sending code for the messageID
Cause: Same as above.

Internal Error: Cannot get a row from WMT table for MessageId
Cause: The database is down or the user's permission does not permit them to perform database operations.

Action: Check the database and permissions.

Internal Error: Cannot close statements in WirelessMessageTable close method
Cause: The database connection already closed. The database went down suddenly.

Action: restart the database and restart the application.

Error: Cannot initialize the ESDSContext for this server process
Cause: Cannot establish ESDS Oracle Internet Directory connection to process user address book. Oracle Internet Directory

Action: Bring up Oracle Internet Directory.

Error: Cannot create a mail session for sending e-mails
Cause: SMTP process not running.

Action: SMTP in process should be running to send notifications out.

Error: Cannot initiate prepareMessage object
Cause: Error during initialization.

Action: Check for other errors for more information.

Error: Cannot send a wireless message
Cause: Error during resolution of address.

Action: Check for other errors.

Error: Cannot enqueue wireless message into deviceGatewayQueue
Cause: Queue connection was lost or the database is down or queue name is wrong.

Action: Check for the database state. Check the queue names against the database.

Error: Exception caught in queueNewMessage method
Cause: Exception error in inserting prepared message into queue.

Action: Same as above.

Notification: No more bytes to send
Cause: Entire message is sent. User asking for more message parts.

Action: Ignore. The message has already been sent.

Error: Exception caught in resolveDeviceFromSystemDevices method
Cause: The device in message does not match with any system devices.

Action: Send Messages to devices already supported by system.

Error: Error in Parsing Message Text
Cause: Cannot parse the message sent from device.

Action: Look for additional error messages for more information. Format may be wrong.

Error: Error in resolving addresses for the message
Cause: Cannot resolve addresses for a message sent from a device.

Action: Check the format, to and from addresses.

Error: Exception caught while doing the DML operations in WirelessMessageTable in prepare method
Cause: Cannot get rows or data from `WirelessMessageTable`. The database may be down.

Action: Check for Database uptime.

Error: Exception caught in run method
Cause: Exception in preparing the message.

Action: Look for other errors for more information.

Error: Cannot find the device from which this message could have originated
Cause: The system does not support such a device to send back the message or notification.

Error: Exception in notifySender method
Cause: Error while notifying the sender with error information.

WCTP Process

Error: Cannot create QueueTable for this user. Check the permissions
Cause: Cannot create `QueueTable`. During installation, the `QueueTable` creation did not go through correctly. Or these queue connection parameters were changed in Oracle Internet Directory.

Action: Check for the `QueueTable` name listed in Oracle Internet Directory against the database.

Error: Cannot create queue for a given session
Cause: A queue creation did not occur during installation.

Action: Check if the queues were created and the user entry in the wireless process entry.

Error: Cannot rollback the QueueSession
Cause: Session created was closed without saving the changes.

Action: Check if the wireless process died suddenly. If the connection to database was lost for some reason. Look at the `v$session` table to check if the Wireless process has any session open.

Error: Cannot close the QueueSession
Cause: Session was already closed. The wireless process died for some reason and closed the session before running the final `closeConnections` code.

Action: Re-start the wireless process if it was stopped suddenly.

Error: Cannot close the queue connection
Cause: The queue connection was closed. The wireless process is cleaning up connections. In that process, it may encounter a already closed queue connection.

Action: If this happens when a process is shutdown through the administration screens, please verify `v$session` table to remove any dangling session for wireless process. In most cases, the queue connection is already closed.

Internal Error: Cannot get JMS Queue Object for a given name
Cause: Wrong queue name in wireless process entry.

Action: Check `user_queues` table to verify the queue names.

Internal Error: Cannot create QueueSender for a given Session and Queue Objects
Cause: User does not have permissions to create queues or queue senders.

Action: Check the user entry in Oracle Internet Directory against the user in database.

Internal Error: Cannot create QueueBrowser for a given Session and Queue
Cause: User does not have permissions to create queues or queue browsers.

Action: Check the user entry in Oracle Internet Directory against the user in database.

Internal Error: Cannot create a Queue Receiver for a given Session and a Queue Object
Cause: User does not have permissions to create queues or queue receiver.

Action: Check the user entry in Oracle Internet Directory against the user in database.

Internal Error: Cannot commit the given Session
Cause: Cannot queue or dequeue a message from queue.

Action: Check if the database is up and running. If the user has permissions to queue or dequeue messages

Warning: Sending a message to null Address
Cause: Trying to send this message to a null address. Cannot resolve to a null address.

Action: Sender will get a notification from wireless system saying the same.

Warning: No such device for user : messageToAddress
Cause: The device specified for the destination user does not exist.

Action: Try to send to a default device. If no such device, notification sent back to the sender of the wireless message.

Warning: The device name cannot be null when sending a broadcast message
Cause: Cannot send broadcast messages to null device.

Action: Notification sent back to the administrator.

Error: This message is not intended to be sent as a broadcast message
Cause: The sender is not an administrator.

Action: Check the credentials.

Error: Communication error when accessing data from Oracle Internet Directory
Cause: Oracle Internet Directory went down. Cannot connect to Oracle Internet Directory for resolving addresses.

Action: Check Oracle Internet Directory connections. Re-send the message.

Notification: Account could not be resolved to Admin
Cause: Sender is not an administrator.

Action: Check the credentials and re-send the message.

Error: Naming Exception caught in method getUserDevice in programName AddressResolution
Cause: Cannot find devices for a given destination user.

Action: If default device is found, wireless system will send the message to that device. A notification will be sent to the sender. Check the user entry to find if he has any devices associated.

Notification: No such device for the user specified device
Cause: Cannot find devices for a given destination user.

Action: If default device is found, wireless system will send the message to that device. A notification will be sent to the sender. Check the user entry to find if he has any devices associated.

Error: Cannot get the device address for this user
Cause: Cannot find devices for a given destination user.

Action: If default device is found, wireless system will send the message to that device. A notification will be sent to the sender. Check the user entry to find if he has any devices associated.

Internal Error: Communication exception caught in method resolveUMUser method in AddressResolution class
Cause: Oracle Internet Directory went down during the address resolution for a message.

Action: Bring up Oracle Internet Directory. The message will be resolved again by the wireless system.

Error: Cannot resolve UM user address
Cause: Not a Oracle9*i*AS Unified Messaging user.

Action: Ignore. Try to resolve it to user device or send a notification back to the user.

Error: Cannot search available devices in the system
Cause: No system devices in Oracle Internet Directory.

Action: Check for System devices under installation under `UMContainer` in Oracle Internet Directory.

Error: Service Unavailable Exception. Have to re-initialize context
Cause: Oracle Internet Directory is down.

Action: Will re-establish connection three times. If cannot establish a connection, it will enqueue the message into exqueue, which will be later processed by `WirelessExceptionProcess`. Bring up the Oracle Internet Directory.

Error: Naming exception caught while searching system devices
Cause: No system devices found under installation container.

Action: Need to have devices supported by the wireless system in order to send out messages.

Warning: This phone number does not belong to any Oracle9*i*AS Unified Messaging user in the system
Cause: Message sent from an outside caller.

Action: Will send the message if destination is Oracle9*i*AS Unified Messaging user. If not, will send back notification to the sender.

Error: Exception caught while looking up to resolve user device
Cause: Cannot resolve a given destination to user device.

Action: Will send out a notification to the sender in case of error.

Notification: This is not an address belonging to the address book
Cause: Address does not belong to sender's address book.

Action: Wireless server will resolve from user devices instead.

Warning: No such device for user
Cause: Given device name not available for the destination.

Action: Will send to the default device. Else send notification to the sender about the same.

Error: Cannot send a message to address with null device name
Cause: Cannot send wireless message to null device. Null device specified in Message

Action: Will send a notification back to the sender about the same. Re-send a wireless message with non-null wireless message.

Error: Exception caught in resolving users address book
Cause: Exception in resolution.

Action: Check if Oracle Internet Directory is down. The user entry was removed from the time the wireless message was sent.

Internal Error: Cannot get system property for WirelessAppInstance to initialize connection to Oracle Internet Directory
Cause: Cannot find the DN for the wireless process to get queue connection parameters.

Action: Check for the command line parameters for using the class.

Internal Error: One of the parameters to open a queue connection is null
Cause: Oracle Internet Directory parameters for queue connection are null.

Action: Input the correct parameters in the wireless process entry in Oracle Internet Directory and re-run the command.

Error: Cannot create a given queue for inserting wireless message
Cause: During installation, the queue creation failed. Trying to re-create and that fails too.

Action: Check for permission set for this user in the database for queue creations.

Error: Cannot create a queue sender for an empty queue object
Cause: Empty queue object. Either the queue connection was lost due to the database being down or the queue object was removed.

Action: Check if the database is down.

Error: An error while retrieving the queue handles
Cause: Cannot get the Queue Object. Either connection lost or queue name is wrong.

Action: Check for the name match. Check if the database is down.

Error: Unable to establish Oracle Internet Directory connection
Cause: Oracle Internet Directory is down.

Action: Check if the Oracle Internet Directory server is up and running. Re-start the application.

Internal Error: Unexpected Exception
Cause: The `classpath` is not set right. The wireless application suddenly died for some reason.

Action: If the application is down, restart the application. Look if the database or Oracle Internet Directory server went down suddenly.

Notification: Error in creating InQueueSession
Cause: Wrong parameters set in Oracle Internet Directory for queue connections or the database is down.

Action: Check if the database is up and running. Check the following parameters:

- `orclumwirelessinqueue`

- `orclpasswordattribute`

- `orcluminquid` in Oracle Internet Directory against user or password in the database and check `user_queues` in the database for the inqueue name.

Warning: Cannot access WirelessInQueue
Cause: Cannot create a session from above or queue name specified in Oracle Internet Directory does not match with queue name in the database.

Action: Check for the name match and the database connections.

Notification: Creating the queue for the first time
Cause: During installation, queue objects specified in Oracle Internet Directory were not created correctly. Trying creating them before establishing connections.

Action: Check if the name matches are not right for the queue names.

Notification: Error during creation of OutQueueSession and connections
Cause: Either the database is down or the queue connection parameters are specified wrong in Oracle Internet Directory.

Action: Check the database status and verify that the queue connection parameters are correct.

Internal Error: JMS Exception caught while receiving a message from queue
Cause: An error occurred when receiving a message from queue.

Action: See message inside the `JMSException` and linked `SQLException` for more information.

Internal Error: Null pointer exception caught in WirelessServerProcessThread.run Method()
Cause: One of the expected non-null variables for queue processing is null.

Action: Check the required parameters for queue connections.

Error: cannot process a given message
Cause: Message inserted into the queue has parameters missing or wrong.

Action: Look for the prepareMessage exceptions for more information.

Internal Error: Exception caught in WirelessServerProcessThread run method
Cause: Exception caused in run process

Action: Check for any SQLExceptions, WirelessServerProcessExceptions for more information.

Internal Error: Error constructing WirelessServerApplication
Cause: The queue connections or Oracle Internet Directory connection are not established correctly.

Action: Check if the database is up and running. Oracle Internet Directory is up and running. Check the queue parameters in the Oracle Internet Directory against the database.

Error: Cannot initialize queue and WMT table connections
Cause: The database is down or the connection parameters are wrong.

Action: Verify that the database is running. Check the connection parameters for the wireless exception process.

Error: Cannot set UM and ES root contexts
Cause: Received null values from Oracle Internet Directory.

Action: Check for the values of UMInstallContext, UMRootContext, and ESRootContext for the wireless exception process.

Internal Error: Null pointer exception caught in WirelessServerProcessThread.run Method
Cause: There can be no null values for processing a message. Null value encountered.

Action: Check the messages enqueued into exception queue. In most of the cases, this error should not occur.

Error: Cannot process a given message
Cause: The system is unable to process the message from the exception queue.

Action: Check for `prepareMessage` exceptions and other SQL exceptions for more information.

Internal Error: Exception caught in WirelessServerProcessThread run method
Cause: Exception during run. Unexpected shutdown of process or database connection lost.

Action: Look out for the other exceptions thrown for more information.

Internal Error: Cannot prepare statement for inserting rows into WirelessMessageTable
Cause: prepare Statement for `WirelessMessageTable` failing.

Action: Check for permissions for this user on the `WirelessMessageTable` in the database.

Internal Error: Internal error in prepare statement for updating rows in WirelessMessageTable
Cause: cannot prepare statement for update operations.

Action: Check permission for this user.

Error: Cannot prepare statement for getting sendingCode for given message ID
Cause: Cannot prepare statement for sequence number.

Action: Check permissions for this user.

Error: Cannot get the sequence number from database
Cause: The database is down or the sequence created in the database is not accessible.

Action: check for `um_sequence` for this user.

Error: Cannot get the sequence number for sendingCode field. Cannot insert row into WMT
Warning: Cannot insert a row into WMT table

Cause: Cannot perform the database operation. The database is down or permission problems for the user.

Action: Check the database and permissions in the database for this user.

Error: Cannot even rollback the database connection
Cause: Corrupted connections in the database. Unable to undo the operation.

Action: Check the database uptime.

Error: Cannot update the lastByteAccessed for messageId
Cause: Unable to access the `WirelessMessageTable`.

Action: the database should be up. Check for rows in `WirelessMessageTable` through SQL.

Error: Cannot get the sending Code for the message ID
Cause: Unable to access the `WirelessMessageTable`.

Internal Error: Cannot get a row from WMT table for MessageId
Cause: The database is down or user's permission does not permit them to perform database operations.

Action: Check the database and permissions.

Internal Error: Cannot close statements in WirelessMessageTable close method
Cause: The database connection already closed. The database went down suddenly.

Action: restart the database and restart the application.

Error: Cannot initialize the ESDSContext for this server process
Cause: Cannot establish ESDS Oracle Internet Directory connection to process user address book.

Action: Oracle Internet Directory must be down. Bring up Oracle Internet Directory.

Error: Cannot create a mail session for sending e-mails
Cause: SMTP process not running.

Action: SMTP in process should be running to send notifications out.

Error: Cannot initiate prepareMessage object
Cause: There was an error during initialization.

Action: Check for other errors for more information.

Error: Cannot send a wireless message
Cause: There was an error during resolution of address.

Action: Check for other errors.

Error: Cannot enqueue wireless message into deviceGatewayQueue
Cause: The queue connection was lost, or the database is down, or queue name is wrong.

Action: Check the database. Check the queue names against database.

Error: Exception caught in queueNewMessage method
Cause: There was an exception error in inserting prepared message into queue.

Action: Check the database. Check the queue names against database.

Notification: No more bytes to send
Cause: The entire message was sent and the user asking for more message parts.

Action: Ignore. The message has already been sent.

Error: Exception caught in resolveDeviceFromSystemDevices method
Cause: The device in message does not match with any system devices.

Action: Send messages to devices that are already supported by system.

Error: Error in Parsing Message Text
Cause: The message sent from the device cannot be parsed.

Action: Look for additional error messages for more information. Format may be wrong.

Error: Error in resolving addresses for the message
Cause: Cannot resolve addresses for a message sent from a device.

Action: Check the format of the to and from addresses.

Error: Exception caught while executing the DML operations in WirelessMessageTable in prepare method
Cause: Cannot get the rows or data from the `WirelessMessageTable`. The database may be down.

Action: Check the database uptime.

Error: Exception caught in run method
Cause: There was an exception in preparing the message.

Action: Look for other errors for more information.

Error: Cannot find the device from which this message could have originated
Cause: The system does not seem to support such a device to send back the message or notification.

Error: Exception in notifySender method
Cause: An error occurred while notifying the sender with error information.

8

Command Line Interface

This chapter contains general instructions on how to use the command-line interface. It also contains an entry for each command available in the command-line interface. Each command is followed by a brief description of its purpose. In addition, the proper syntax, keywords, and command parameters are provided.

This chapter contains the following topics:

- OESCTL

- OESMON

- OESUCR

- OESDL

OESCTL

The `oesctl` command enables an Oracle9*i*AS Unified Messaging administrator to perform some configuration and control operations on Oracle9*i*AS Unified Messaging services.

This command is used from within a command shell, such as `/bin/csh` on Unix systems, and provides a subset of the functionality available on Oracle Enterprise Manager pages for Oracle9*i*AS Unified Messaging. For example, `oesctl` can be used by an administrator to start an Oracle9*i*AS Unified Messaging IMAP server, but it cannot be used to modify IMAP service parameters.

Getting Usage Information

Without arguments, `oesctl` prints out the following usage information:

```
% oesctl
oesctl  [ [<command>] [<target>|<instance>] ]
```

Where commands can be any of the following:

Command	Description
startup	Starts all the processes associated with the target or instance.
shutdown	Shuts down all the processes associated with the target or instance.
create instance	Creates an instance on a target.
delete instance	Creates an instance on a target.
refresh	Causes the target or instance to reload parameters from Oracle Internet Directory.
show targets	Displays a list of possible targets.
show status	Displays the status of the target.
show processes	Displays the status of the processes associated with the target.

OESCTL Syntax

The syntax of `<target>` is `<host>:<installation>:<service>`

`<host>` is the host name of the computer on which server processes run

`<installation>` is always `um_system` for the this release

<service> is one of the following: gc, list, smtp_in, smtp_out, imap, pop

The syntax of <instance> is <target>:<instance_id>

The meaning of the different service names are:

- gc: housekeeper service

- list: secure list service

- smtp_in: inbound SMTP service

- smtp_out: outbound SMTP service

- imap: IMAP service

- pop: POP service

<instance_id> is a number assigned to an instance when it is created. These numbers are selected automatically at instance creation time. Instance numbers cannot be configured by administrators.

All the examples that follow are executed from within a command shell running on a host named mail server.

Examples

OESCTL Configuration Operations

The configuration operations either query or update the current configuration.

The query operations are:

```
% oesctl show targets
% oesctl show processes <target>
% oesctl create instance <target>
% oesctl delete instance <target>
```

Getting the List of Available Targets

```
% oesctl show targets
TARGET: mailserver:um_system:gc
TARGET: mailserver:um_system:imap
TARGET: mailserver:um_system:list
TARGET: mailserver:um_system:pop
TARGET: mailserver:um_system:smtp_in
TARGET: mailserver:um_system:smtp_out
```

Getting the List of Process Instances for a Target

```
% oesctl show processes mailserver:um_system:imap
mailserver:um_system:imap:101771055406040653

% oesctl show processes mailserver:um_system:pop
No processes for mailserver:um_system:pop
```

In this pair of examples, there is one process instance configured for the IMAP service running on the host mail server, and there are no process instances for the POP service. A service must have at least one process instance before it can be started. From the above example we know that the POP service cannot be started on the host mail server.

Creating a Process Instance

```
% oesctl show processes mailserver:um_system:gc
No processes for mailserver:um_system:gc

% oesctl create instance mailserver:um_system:gc
Succesfully created a new instance for a total of: 1

% oesctl show processes mailserver:um_system:gc
mailserver:um_system:gc:101778964029981136
```

The list of process instances for the target `mailserver:um_system:gc` was checked just prior to instance creation, and it was empty. The create command was then used to create a new process instance for the target, after which the process instance list was checked again and found to contain the new instance.

Deleting a Process Instance

```
% oesctl show processes mailserver:um_system:gc
mailserver:um_system:gc:101778964029981136

% oesctl delete instance mailserver:um_system:gc
Succesfully deleted an instance for a total of: 0

% oesctl show processes mailserver:um_system:gc
No processes for mailserver:um_system:gc
```

The list of process instances for the target mail server: `um_sytem:` `gc` was checked just prior to instance deletion. The delete command was used to delete the process instance found, after which the process instance list was checked again and found to contain no more processes.

OESCTL Control Operations

The control operations display or alter the operational state of targets and instances.

The control operations are:

```
% oesctl show status <target>
% oesctl startup <target>
% oesctl startup <instance>
% oesctl shutdown <target>
% oesctl shutdown <instance>
% oesctl refresh <target>
% oesctl refresh <instance>
```

Starting and Stopping a Target

```
% oesctl show processes mailserver:um_system:gc
mailserver:um_system:gc:101779027179112257
mailserver:um_system:gc:101779029537864556

% oesctl show status mailserver:um_system:gc
mailserver:um_system:gc:101779027179112257 <stopped>
mailserver:um_system:gc:101779029537864556 <stopped>

% oesctl startup mailserver:um_system:gc
ok
ok

% oesctl show status mailserver:um_system:gc
mailserver:um_system:gc:101779027179112257 is alive. Message from console: null
mailserver:um_system:gc:101779029537864556 is alive. Message from console: null

% oesctl shutdown mailserver:um_system:gc
mailserver:um_system:gc:101779027179112257 Housekeeper is terminated.  Message
from console: null
mailserver:um_system:gc:101779029537864556 Housekeeper is terminated.  Message
from console: null
% oesctl shutdown mailserver:um_system:gc
No processes configured to be running for mailserver:um_system:gc
```

If `oesctl` is used to start a target, each configured process instance is started.

Starting and Stopping an Instance

```
% oesctl startup mailserver:um_system:gc:101779027179112257
ok
```

```
% oesctl show status mailserver:um_system:gc
mailserver:um_system:gc:101779027179112257 is alive. Message from console: null
mailserver:um_system:gc:101779029537864556 <stopped>

% oesctl shutdown mailserver:um_system:gc:101779027179112257
ok:Housekeeper is terminated.  Message from console: null
```

In some situations administrators may want to start or stop only a particular process instances. In this case, `oesctl startup <instance>` and `oesctl shutdown <instance>` are used.

Refreshing Targets and Instances

```
% oesctl refresh mailserver:um_system:gc:101779027179112257
ok:is refreshed. Message from console: null

% oesctl refresh mailserver:um_system:gc
mailserver:um_system:gc:101779027179112257 is refreshed.  Message from console:
null
mailserver:um_system:gc:101779029537864556 is refreshed.  Message from console:
null
```

Refreshing a process instance sends the instance a message to reload its process parameters from Oracle Internet Directory.

To refresh a service target means to refresh each started process instance.

The refresh functionality can be used to change a process parameter and have the change take effect without having to stop and restart running processes. For example, the log level of the IMAP service can be changed in Oracle Internet Directory and then the service refreshed without disconnecting any users that are currently connected to the IMAP service. Executing a shutdown followed by a startup would change the logging behavior, and temporarily disconnect users.

OESMON

The `oesmon` command enables customers to obtain raw metric data from the Oracle9*i*AS Unified Messaging e-mail server processes. The output of the `oesmon` command uses ASCII characters.

Overview

A metric is either a string or a number. Every metric is associated with an object called a managed object. Managed objects are associated with other managed objects in a parent-child relationship, forming a hierarchical tree structure of managed objects and metrics. The metrics are always leaves of the tree.

A numeric metric is either a gauge or a counter. A gauge measures the current amount of something and is characterized by a value going up and down. A counter measures an accumulated value and is characterized by the value remaining the same or becoming larger. If the value of a counter goes past the maximum supported number, the value wraps around to 0.

Handling of Units

The integer values tracked by numeric metrics measure quantities in some unit of measure. The unit of measure for a given metric is not maintained internally and is not printed out by the `oesmon` command. Instead, the units are defined by the server-specific product documentation.

> **See Also:**   Appendix A, "Server Statistics" for more information on server-specific statistics

Metric Names

All metrics and all managed objects have names. Names contain only alphanumeric characters, including the underscore character. A name cannot contain spaces or dot characters. Names are case-sensitive. The full name of object O is formed by connecting all the names along the path from the tree root to O. In this case, O may be either a metric or a managed object.

For example:

`.MTA` is the full name of a managed object named MTA. It is at located immediately under the root of the tree.

`.MTA.connections` is the full name of a managed object named connections that is a child of the MTA object.

.MTA.connections.out.current is the full name of a numeric metric that tracks the number of currently active outbound SMTP connections.

.MTA.connections.out.total is the full name of a metric that tracks the number of outbound SMTP connections created since startup.

Examples

Getting the Usage Message
If you run oesmon without any arguments, it shows the command type:

Output
```
% oesmon
Usage: oesmon targets | names <target> | get <target> <name>
```

Getting the List of Available Service Targets

Command
```
oesmon targets
```

Purpose
Shows all possible service targets that can be polled with oesmon:

Output:
```
% oesmon targets
TARGET: mailserver:um_system:gc
TARGET: mailserver:um_system:imap
TARGET: mailserver:um_system:list
TARGET: mailserver:um_system:pop
TARGET: mailserver:um_system:smtp_in
TARGET: mailserver:um_system:smtp_out
```

Showing Metric Names for a Given Service Target

Command
```
oesmon names mailserver:um_system:smtp_in
```

Purpose
This command queries each process instance for the metric names it currently has defined.

Output
```
% oesmon names mailserver:um_system:smtp_in
.DUMP.OIDStatus.Connection
.DUMP.Threads.dump
.ES_SPS.socket.currload
.ES_SPS.socket.sockmax
.ES_SPS.thread.currthreads
.ES_SPS.thread.thrmax
.MTA.uptime
.MTA.connections.in.current
.MTA.connections.in.total
.MTA.msgs.deferred.current
.MTA.msgs.deferred.total
.MTA.receive.kbytes
.MTA.receive.messages
.MTA.receive.recipients
.MTA.receive.time
.MTA.transmit.bytes
.MTA.transmit.bytes_local
.MTA.transmit.messages
.MTA.transmit.messages_local
.MTA.transmit.recipients
.MTA.transmit.recipients_local
.um.admin.os_pid
.um.admin.uptime
```

Using the command `oesmon names mailserver:um_system:imap` contacts each process instance that belongs to the service `mailserver:um_system:imap` and find out which metrics are currently defined for the process.

Many metrics are defined as soon as the process starts up, but some metrics are created dynamically during operation, and are therefore not available at all times. Therefore, the output from using the `oesmon names` command does not always give the same list of metric names. For example, an IMAP server process will not have any metrics available about particular user until that user logs in at least one time.

Querying a Metric Value from a Running Server

Command
```
oesmon get mailserver:um_system:smtp_
in.MTA.connections.in.total
```

Purpose

This command queries each in-bound SMTP process to find out how many connections it has accepted.

Output

```
% oesmon get mailserver:um_system:smtp_in .MTA.connections.in.total
.MTA.connections.in.total = 352
.MTA.connections.in.total = 0
```

From the output it can be determined that the `smpt_in service` for `mailserver: um_system` has two process instances configured and running. The first process has received 352 connection and the second has not received any.

In the previous example, the metric given to the command was the complete name of a single metric. It is possible to retrieve values for all metrics associated with a managed object, as is shown in the following example.

Query Multiple Related Metrics for a Managed Object

Command

```
oesmon get mailserver:um_system:smtp_in .MTA.transmit
```

Purpose

This command queries in-bound SMTP processes to find out transmission metrics.

Output

```
% oesmon get mailserver:um_system:smtp_in .MTA.transmit
.MTA.transmit.bytes = 3282806
.MTA.transmit.bytes_local = 3282806
.MTA.transmit.messages = 330
.MTA.transmit.messages_local = 330
.MTA.transmit.recipients = 698
.MTA.transmit.recipients_local = 698
.MTA.transmit: metric not found
```

The name `.MTA.transmit` is the name of a managed object, not a metric. In this case, oesmon returns all metrics and children managed objects associated with `.MTA.transmit`.

From the output it can be determined that the `smpt_in service` for mail server: `um_system` has two process instances configured and running. The first process has transmitted a number of e-mail messages, and the second process has not transmitted any.

Error Output

The oesmon command returns error results if a metric cannot be found or if a process instance cannot be contacted.

Example of output for undefined metric:

```
% oesmon get mailserver:um_system:smtp_in .nosuchmetric
.nosuchmetric: metric not found
```

Example of output for process that does not respond:

```
% oesmon get mailserver:um_system:smtp_in .MTA.connections.in.total
<no response>
```

OESUCR

The oesucr command creates and deletes Oracle9*i*AS Unified Messaging e-mail users.

Overview

OESUCR takes a file as an input. For user creation, the file should contain a list of records, separated by an empty line. Each record contains information above a user to be created. Each line in a record is a name-value pair for an attribute for the e-mail user in the directory. Each record must have at least five mandatory attributes

- mail
- mailhost
- orclmailquota
- userpassword
- baseuserdn

For user deletion, the file should contain one line that lists all the users to be deleted, separated by a comma.

This tool is only for creating and deleting e-mail users, the corresponding public users are not created or deleted by the tool. For user creation, the public users must exist before running the tool to create the corresponding e-mail users. For user deletion, after running the tool, the users are no longer valid e-mail users, but they are still users in the directory.

Usage

```
% oesucr <file> [-v] [-d]
```

<file> is the path to the file containing the user records of the users to be created or the list of users to be deleted.

The -v flag prints out debug messages.

The -d flag deletes users.

-v and -d can be used together.

Examples

Creating Users

The example file user_file contains the following records:

```
mail=testuser1@us.oracle.com
mailhost=us.oracle.com
orclmailquota=400000000
userpassword=welcome
baseuserdn=cn=testuser1,cn=users,o=oracle,dc=com

mail=testuser2@us.oracle.com
mailhost=us.oracle.com
orclmailquota=400000000
userpassword=welcome
baseuserdn=cn=testuser2,cn=users,o=oracle,dc=com
```

Running the % oesucr user_file creates two e-mail users called testuser1 and testuser2. Each record in the file contains only the five mandatory attributes.

> **Note:** The corresponding public users must exist before running the OESUCR.

Creating Users with Optional Attributes

For a file user_file containing the following records:

```
mail=testuser1@us.oracle.com
mailhost=us.oracle.com
orclmailquota=400000000
userpassword=welcome
```

```
baseuserdn=cn=testuser1,cn=users,o=oracle,dc=com
orclMailDomainControlAci=domain

mail=testuser2@us.oracle.com
mailhost=us.oracle.com
orclmailquota=400000000
userpassword=welcome
baseuserdn=cn=testuser2,cn=users,o=oracle,dc=com
```

Running `% oesucr user_file` creates two-e-mail users called `testuser1` and `testuser2`. The role of the first user is set to domain administrator.

Deleting Users

The example file `user_file` contains the following line:

```
mail=testuser1@us.oracle.com,testuser2@oracle.com,testuser3@oracle.com
```

Running `% oesucr user_file -d` deletes the e-mail users: `testuser1@us.oracle.com`, `testuser2@oracle.com`, and `testuser3@oracle.com`.

> **Note:** Corresponding public users are not deleted by `OESUCR`

OESDL

`OESDL` is the command line tool for adding users to and removing users from distribution lists.

Overview

The `oesdl` tool takes a file as an input. The file should contain a list of records, separated by an empty line. Each record contains information to manipulate one distribution list. Each record must have the name of the list, and a list of users.

For adding users to a list, you have to indicate the type of users. You can add a regular user, a distribution list, an alias, or a foreign user to a distribution list. For description of the type of users, please refer to the distribution list documentation.

When adding users to a list, you can create the list at the same time if it does not exist. To create a new list, the owner must be specified.

Usage

```
% oesdl <file> [-v]
```
<file> is the path to [-v] the file containing the list records.

The -v flag prints out debug messages.

Examples

Adding Users to a Lists

The example file list_file contain the following records:

```
listname=list1@oracle.com
action=add
newlist=n
usertype=U
users=user1@oracle.com,user2@oracle.com,user3@oracle.com

listname=list2@oracle.com
action=add
newlist=n
usertype=L
users=list1@oracle.com
```

Running % oesdl list_file adds user1, user2, and user3 to list1@oracle.com, list1 must already exist. It then adds list1@oracle.com to another list called list2@oracle.com.

The usertype can be U for regular user, F for foreign user, L for a distribution list, and A for an alias. For description of the type of users, please refer to the distribution list documentation.

Adding Users to a New List

The example file list_file contains the following records:

```
listname=list1@oracle.com
action=add
newlist=y
owner=user1@oracle.com
usertype=U
users=user1@oracle.com,user3@oracle.com
```

Running `% oesdl list_file`, creates a new list called `list1@oracle.com`, set its owner to `user1@oracle.com`, and then adds users: `user1@oracle.com`, and `user3@oracle.com` to the new list.

Removing Users from a Distribution List

The example file `user_file` contains the following lines:

```
listname=list1@oracle.com
action=delete
usertype=U
users=user1@oracle.com,user2@oracle.com

listname=list2@oracle.com
action=add
newlist=y
owner=user1@oracle.com
usertype=U
users=user1@oracle.com,user2@oracle.com
```

Running `% oesdl list_file` removes `user1` and `user2` from `list1@oracle.com`. It then creates a new list called `list2`, sets the owner `user1@oracle.com`, and then add `user1`, and `user2` to the new list `list2@oracle.com`.

A

Server Statistics

The DBMS_STATS package generates statistics for the entire Oracle9*i*AS Unified Messaging table or index. Statistics are transferred between statistics table and data dictionary, and can be used only when they are stored in the data dictionary. The statistics table enables users to export or import statistics from one database to another. Oracle9*i*AS Unified Messaging includes statistics that are collected from a mature system, because there is not enough statistical data when the system is first installed. Users can choose to import these statistics into their systems prior to using their own statistics.

This chapter contains the following topics:

- POP3 Statistics
- IMAP4 Statistics
- SMTP In Statistics
- SMTP Out Statistics
- Housekeeping Statistics
- List Server Statistics

POP3 Statistics

The following is a list of POP3 server statistics and their descriptions:

Statistic	Description
.um.admin.os_pid	The operating system process id
.um.admin.uptime	The amount of time the server has been up
.ES_SPS.socket.currload	The current number of client connections
.ES_SPS.socket.sockmax	The maximum number of client connections allowed
.ES_SPS.thread.currthreads	The number of threads the server is currently using
.ES_SPS.thread.thrmax	The maximum number of threads the server creates.
.DUMP.DBconnections.dump	Internal Information
.DUMP.OIDStatus.Connection	Internal Information
.DUMP.Threads.dump	Internal Information
.ESPROTO.uptime	The amount of time the server has been up
.ESPROTO.COMMAND.total	total number of commands executed
.ESPROTO.COMMAND.<PO3_COMMAND>.success	where PO3_COMMAND is one of the commands defined by the POP3 protocol
.ESPROTO.COMMAND.<PO3_COMMAND>.totalcalls	The total number of calls for that command
.ESPROTO.COMMAND.<PO3_COMMAND>.fail	The total number of failed calls for that command
.ESPROTO.USERS.LOGIN.<userid>	Where userid is the user who has used the server since the server was started. A value of 1 indicates that user is still logged in.Otherwise, it is 0.
.ESPROTO.connections.lost	The total number of client connections that have disconnected
.ESPROTO.connections.timeout	The total number of client connections that have timed out.
.ESPROTO.connections.total	The total number of client connections
.ESPROTO.receive.bytes	The total number of bytes received by the server
.ESPROTO.transmit.bytes	The total number of bytes sent by the server

IMAP4 Statistics

The following is a list of IMAP4 server statistics and their descriptions:

Statistic	Description
.um.admin.os_pid	The operating system process id
.um.admin.uptime	The amount of time the server has been up
.ES_SPS.socket.currload	The current number of client connections
.ES_SPS.socket.sockmax	The maximum number of client connections allowed
.ES_SPS.thread.currthreads	The number of threads the server is currently using
.ES_SPS.thread.thrmax	The maximum number of threads the server can create.
.DUMP.DBconnections.dump	Internal Information
.DUMP.OIDStatus.Connection	Internal Information
.DUMP.Threads.dump	Internal Information
.ESPROTO.uptime	The amount of time the server has been up
.ESPROTO.COMMAND.total	The total number of commands executed
.ESPROTO.COMMAND.<IMAP_COMMAND>.success	Where IMAP_COMMAND is one of the commands defined by the IMAP protocol (RFC2060). A value of 1 means that command has succeeded. A value of 0 means the command has failed
.ESPROTO.COMMAND.<IMAP_COMMAND>.totalcalls	The total number of failed calls for that command
.ESPROTO.COMMAND.<IMAP_COMMAND>.fail	The total number of failed calls for that IMAP command
.ESPROTO.USERS.LOGIN.<userid>	where userid is the user who has used the server since the server was started. A value of 1 indicates that user is still logged in, 0 otherwise.
.ESPROTO.connections.lost	The total number of client connections that have disconnected

Statistic	Description
`.ESPROTO.connections.timeout`	The total number of client connections that have timed out.
`.ESPROTO.connections.lost`	The total number of client connections that have disconnected
`.ESPROTO.connections.timeout`	The total number of client connections that have timed out.
`.ESPROTO.connections.total`	The total number of client connections
`.ESPROTO.receive.bytes`	The total number of bytes received by the server
`.ESPROTO.transmit.bytes`	The total number of bytes sent by the server

SMTP In Statistics

The following is a list of SMTP In server statistics and their descriptions:

Statistic	Description
`.um.admin.os_pid`	The operating system process id
`.um.admin.uptime`	The amount of time the server has been up
`.ES_SPS.socket.currload`	The current number of client connections
`.ES_SPS.socket.sockmax`	The maximum number of client connections allowed
`.ES_SPS.thread.currthreads`	The number of threads the server is currently using
`.ES_SPS.thread.thrmax`	The maximum number of threads the server creates
`.DUMP.DBconnections.dump`	Internal Information
`.DUMP.OIDStatus.Connection`	Internal Information
`.DUMP.Threads.dump`	Internal Information
`.MTA.uptime`	Time string describing when this MTA came up
`.MTA.connections.in.current`	The current number of inbound SMTP Connections
`.MTA.connections.in.total`	The total number of inbound SMTP connections
`.MTA.msgs.deferred.current`	The current number of messages deferred
`.MTA.msgs.deferred.total`	The total number of messages deferred
`.MTA.receive.kbytes`	The total number of kilobytes received

Statistic	Description
`.MTA.receive.messages`	The total number of messages received
`.MTA.receive.recipients`	The total number of recipients received
`.MTA.receive.time`	The total time receiving data (ms)
`.MTA.transmit.bytes`	The total number of bytes transmitted
`.MTA.transmit.bytes_local`	The total number of bytes transmitted to local entities
`.MTA.transmit.messages`	The total number of messages transmitted
`.MTA.transmit.messages_loca`	The total number of messages transmitted to local entities
`.MTA.transmit.recipients`	The total number of recipients transmitted
`.MTA.transmit.recipients_ local`	The total number of recipients transmitted to local entities

SMTP Out Statistics

The following is a list of SMTP Out server statistics and their descriptions:

Statistic	Description
`.um.admin.os_pid`	The operating system process id
`.um.admin.uptime`	The amount of time the server has been up
`.DUMP.OIDStatus.Connection`	Internal Information
`.MTA.uptime`	Time string describing when this MTA came up
`.MTA.connections.broken`	The number of broken connections encountered by the MTA
`.MTA.connections.failed`	The number of failed connections from the MTA to another MTA
`.MTA.connections.rejected`	The number of rejected connections
`.MTA.connections.rejection_ reason`	Description of reason for most recent rejection
`.MTA.connections.out.current`	The current number of outbound SMTP connections
`.MTA.connections.out.current _foreign`	The current number of outbound SMTP connections to MTAs in foreign domains

Statistic	Description
`.MTA.connections.out.current_native`	The current number of outbound SMTP connections to MTAs in native domains
`.MTA.connections.out.total`	The total number of outbound SMTP connections
`.MTA.connections.out.total_foreign`	The total number of outbound SMTP connections to foreign domains
`.MTA.connections.out.total_native`	The total number of outbound SMTP connections to MTAs in native domains
`.MTA.dl.receive.count`	The number of messages sent to distribution lists
`.MTA.msgs.deferred.current`	The current number of messages deferred
`.MTA.msgs.deferred.total`	The total number of messages deferred
`.MTA.msgs.delivered.totaltime`	The total time inserting data into db (ms)
`.MTA.ndr.inbound`	The total number of non delivery reports generated by inbound mail
`.MTA.ndr.loop`	The total number of messages not delivered due to mail loops
`.MTA.ndr.outbound`	The total number of non delivery reports generated by outbound mail
`.MTA.queued.out.kbytes`	The kilo bytes queued awaiting to be sent out to the Internet
`.MTA.queued.out.messages`	The messages queued awaiting to be sent out to the Internet
`.MTA.transmit.bytes`	The total number of bytes transmitted
`.MTA.transmit.bytes_foreign`	The total number of bytes transmitted to foreign domain MTA's
`.MTA.transmit.bytes_local`	The total number of bytes transmitted to local entities
`.MTA.transmit.messages`	The total number of messages transmitted
`.MTA.transmit.messages_foreign`	The total number of messages transmitted to foreign domain MTA's
`.MTA.transmit.messages_local`	The total number of messages transmitted to local entities

Statistic	Description
`.MTA.transmit.messages_native`	The total number of messages transmitted to native domain MTA′s
`.MTA.transmit.messages_relay`	The total number of messages transmitted during relay operations
`.MTA.transmit.recipients`	The total number of recipients transmitted
`.MTA.transmit.recipients_foreign`	The total number of recipients transmitted to foreign domain MTA′s
`.MTA.transmit.recipients_local`	The total number of recipients transmitted to local entities
`.MTA.transmit.recipients_native`	The total number of recipients transmitted to native domain MTA′s
`.MTA.transmit.time`	The total time transmitting data (ms)
`.MTA.transmit.time_foreign`	The total time transmitting data to foreign domain MTA′s (ms)
`.MTA.transmit.time_native`	The total time transmitting data to native domain MTA′s (ms)
`.MTA.transmit.time.local`	The total time spent transmitting data to local entities (ms)
`.MTA.transmit.time.relay`	The total time transmitting data during relay operations (ms)

Housekeeping Statistics

The following is a list of housekeeping server statistics and their descriptions:

Statistic	Description
`.GC.processed.expirables`	The number of message instances expired by a particular housekeeping process
`.GC.processed.prunables`	The number of message instances removed from the system trash folder by a particular housekeeping process
`.GC.processed.queued_prunables`	The number of message references removed from the system trash queue by a particular housekeeping process
`.GC.processed.collectables`	The number of unreferenced messages removed from the system by a particular housekeeping process

Statistic	Description
`.GC.processed.tert iary_storables`	The number of messages moved to tertiary storage by a particular housekeeping process
`.GC.pending.expira bles`	The number of message instances awaiting expiration remaining in the system
`.GC.pending.prunab les`	The number of message instances remaining in the system trash folder
`.GC.pending.queued _prunables`	The number of message references remaining in the system trash queue.
`.GC.pending.collec tables`	The number of identified unreferenced messages remaining in the system
`.GC.pending.tertia ry_storables`	The number of messages eligible for tertiary storage remaining in the system

List Server Statistics

The following is a list of list server statistics and their descriptions:

Statistic	Description
`.DUMP.OIDStatus.Connection`	Internal information.
`.SLIST.connections.busy`	The number of busy database connections
`.SLIST.connections.total`	The total number of database connections
`.SLIST.process.current_mail_ threads`	The number threads running in the server processing mails
`.SLIST.process.current_mails`	The number of mails being processed in the server
`.SLIST.process.current_user_ threads`	The number of threads running in the server that are delivering mails to users
`.SLIST.process.total_mails`	The total number of mails that have been processed by the server since startup
`.SLIST.queue.pending`	The number of mails waiting to be processed by the list server
`.um.admin.os_pid`	The operating system process ID
`.um.admin.uptime`	The amount time the server has been up

B

Oracle9*i*AS Unified Messaging Access Control Lists

This section provides an overview of access control list policies set for the mail, telephony, and wireless server components of Oracle9*i*AS Unified Messaging in Oracle Internet Directory. These directory access control lists are set in Oracle Internet Directory during the infrastructure installation phase.

This appendix contains the following topics:

- Mail Server Access Control Lists
- Telephony Process Access Control Lists

Mail Server Access Control Lists

> **See Also:** *Oracle Internet Directory Administrator's Guide* for more
> information on access control lists

The Oracle9*i*AS Unified Messaging LDAP schema and entries are installed during
the installation of Oracle Internet Directory. In Oracle Internet Directory, the
`cn=Products` container under OracleContext, contains all product specific
information. The mail server container underneath this product container contains
all the Oracle Internet Directory entries related to the e-mail server component of
Oracle9*i*AS Unified Messaging.

The `%s_OracleContextDN%` parameter described in the following access control
lists can be the root or subscriber OracleContext.

During installation, the following privilege group is created:

```
cn=EmailAdminsGroup,cn=EMailServerContainer,cn=Products,%s_OracleContextDN%
```

The members of this group are the e-mail server component administrators. Various
access control lists on `cn=EMailServerContainer,cn=Products,`
`%s_OracleContextDN%` entry are as follows:

- Access control list for the group `cn=iASAdmins, cn=Groups,%s_`
  `OracleContextDN%` giving browse, add, delete and proxy permissions. This is
  required for the `iasadmins` to be able to do a proxy to the
  `EmailServerContainer`.

- Access control list with DN equals `owner` or `targetdn` attribute giving read,
  search, write, selfwrite, and compare permissions to all entries. Since the mail
  users in the e-mail directory information tree have references to the
  organization level users, this ACL enables users to modify only entries they
  own. This prevents end users from modifying other users' entries, or entries
  they are not supposed to modify.

- Access control list enabling any user binding in "Simple" mode to have read and
  search permissions. This is required as the public users are stored outside the
  e-mail directory information tree. This bind mode "Simple" is added to restrict
  anonymous lookups using some client tools, such as Netscape Navigator.

- Access to the e-mail subtree is denied to everybody else.

This example specifies the access control list that must be set in order for the public
distribution lists to be searchable through standard clients. In an e-mail domain, the
distribution lists are stored under the list container. For example, if the domain is

oracle.com, the list container `cn=List,dc=oracle,dc=com,cn=um_`
`system,cn=EMailServerContainer,cn=Products,cn=OracleContext`
needs to have access control list "`access to entry by * (browse)`".

OID Group Membership for `EmailAdminsGroup`

The `cn=EmailAdminsGroup,cn=EMailServerContainer,cn=Products,`
`%s_OracleContextDN%` also is added to the following groups in order to have
permissions for e-mail related directory operations.

Group	Permissions
cn=ComputerAdmins, cn=Groups,%s_OracleContextDN%	The addition of `EmailAdminsGroup` to this group enables the e-mail administrators to create process entries under `cn=Computers`.
cn=UserProxyPrivilege, cn=Groups,%s_OracleContextDN%	The addition of `EmailAdminsGroup` to this group enables the e-mail administrators to proxy as the end users.
cn=AuthenticationServices,cn=Groups,%s_OracleContextDN%	The addition of `EmailAdminsGroup` to this group enables the e-mail servers to compare the user's password at the time of authentication.
cn=verifierServices,cn=Groups,%s_OracleContextDN%	The addition of `EmailAdminsGroup` to this group enables the e-mail servers to compare the `orclpasswordverifier;email` attribute. This is required for the voice mail authentication.

Oracle9*i*AS Unified Messaging Privilege Groups

The following privilege groups are created for Oracle9*i*AS Unified Messaging
e-mail server component administration:

Group
`cn=MailstoreAdminsGroup,cn=MailStores,cn=um_system,cn=EMailServerContainer,`
`cn=Products,cn=OracleContext`

Permissions
This group has read, search, compare, selfwrite, write access to the attribute
`orclPasswordAttribute` of the mail store entry, everybody else is denied access
to this attribute.

Members
```
cn=EmailAdminsGroup,cn=EMailServerContainer,cn=Products,cn=OracleContext
cn=DomainAdminsGroup,<Domain RDNs>,cn=um_system,cn=EMailServerContainer,
cn=Products,cn=OracleContext - if exists
```

Group
```
cn=DomainAdminsGroup,<Domain RDNs>,cn=um_system,cn=EMailServerContainer,
cn=Products,cn=OracleContext
```
where, `<Domain RDNs>` for the domain oracle.com is the string
`dc=oracle,dc=com`

> **Note:** This group is present in a system where domain
> administrators have been created from the Thin Client
> administration pages.

Permissions
This group has add, delete, browse, read, search, compare, and write permissions
on the particular domain.

Members
```
Domain administrator user's DN
cn=EmailAdminsGroup,cn=EMailServerContainer,cn=Products,cn=OracleContext
```

Telephony Process Access Control Lists

> The The
>
> **See Also:** *Oracle Internet Directory Administrator's Guide* for more
> information access control lists

The Oracle9*i*AS Unified Messaging LDAP schema and entries are installed during
the installation of Oracle Internet Directory.

The `UMContainer` created under the products container stores Oracle9*i*AS Unified
Messaging user and installation specific information.

The `UMContainer` and `EmailserverContainer` directory information trees
because Oracle9*i*AS Unified Messaging user information is spread over both
directory information trees. To achieve grant access for both directory information
trees, a privilege group (`AdminsGroup`) is created both under the
`EmailServerContainer` and `UMContainer`, with appropriate access control lists
applied.

The `UMAdminsGroup` is a privilege group created to access the `UMContainer` directory information tree. Members of this group include the creator, `UMContainer`, and `EMailAdminsGroup`.

The `EmailAdminsGroup` must be created before the `UMAdminsGroup`. After the `UMAdminsGroup` is created, it becomes a member of the `EmailAdminsGroup`, enabling the Oracle9*i*AS Unified Messaging applications to access both containers.

The following access control lists are applied to the `UMContainer` to give applications access to the `UMContainer` and `EMailContainer`.

- The access control list for the group `cn=iASAdmins, cn=Groups,%s_OracleContextDN%` has browse, add, delete and proxy permissions. This is required for the `iasadmins` to be able to do a proxy to the `UMContainer`.

- The access control list for the group `cn=UMAdminsGroup, cn=UMContainer, cn=Products,%s_OracleContextDN%` has browse, add, and delete permissions.

- The access control list for `dn=*,cn=EMailServerContainer,cn=Products, %s_OracleContextDN%` has browse, add, delete, and proxy permissions.

> **Note:** The %s_OracleContextDN% can be the root or the subscriber OracleContext.

Oracle Internet Directory Group Membership for `UMAdminsGroup`

The following table documents the group and permissions for the `UMAdminsGroup`:

Group	Permissions
`cn=ComputerAdmins` `cn=Groups,%s_OracleContextDN%`	The addition of `UMAdminsGroup` to this group enables the Oracle9*i*AS Unified Messaging applications to create and access process entries under `cn=Computers`.
`cn=UserProxyPrivilege` `cn=Groups,%s_OracleContextDN%`	The addition of `UMAdminsGroup` to this group enables the Oracle9*i*AS Unified Messaging applications to proxy as the end user.

The addition of the `UMAdminsGroup` to the following group enables the Oracle9*i*AS Unified Messaging applications to create and access process entries under `cn=Computers`:

`cn=ComputerAdmins, cn=Groups,%s_OracleContextDN%`

The addition of `UMAdminsGroup` to the following group enables the Oracle9*i*AS Unified Messaging applications to do a proxy as the end users:

`cn=UserProxyPrivilege, cn=Groups,%s_OracleContextDN%`

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