Oracle® Voicemail & Fax

Administrator's Guide

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Oracle Voicemail & Fax Administrator's Guide 10*g* Release 1 (10.1.2)

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Preface

This Preface contains these topics:

Audience

Oracle Voicemail & Fax Administrator's Guide is intended for system administrators who plan, configure, manage, and monitor Oracle Collaboration Suite 10*g* Voicemail & Fax.

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Related Documents

For more information, see these Oracle resources:

- *Oracle Collaboration Suite Concepts Guide*
- *Oracle Voicemail & Fax and Oracle Web Conferencing Conversion Servers Installation and Upgrade Guide*
- *Oracle Collaboration Suite Deployment Guide*
- *Oracle Collaboration Suite Administrator's Guide*
- *Oracle Collaboration Suite Security Guide*
- *Oracle Process Manager and Notification Server Administrator's Guide*
- *Oracle Enterprise Manager Grid Control Basic Installation and Configuration*
- *Oracle Enterprise Manager Advanced Configuration*
- *Oracle Internet Directory Administrator's Guide*

Conventions

The following text conventions are used in this document:

Convention	Meaning
[ ]	Anything enclosed in brackets is optional.
{ }	Braces are used for grouping items.
|	A vertical bar represents a choice of one of several options.
+	A tag may be repeated multiple times.
...	Ellipsis points mean repetition in syntax descriptions. In addition, ellipsis points can mean an omission in code examples or text.
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
italic	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
`monospace`	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

1

Overview of Oracle Voicemail & Fax

This chapter discusses the following topics:

Oracle Voicemail & Fax Features

This section describes the major features of Oracle Voicemail & Fax.

Voice

Oracle Voicemail & Fax is a voicemail system that answers phone calls and saves voice messages in users' Inboxes. It provides greater flexibility than other phone answering systems and increased productivity by allowing users to access their voicemail messages through the interface of their choice: telephone, e-mail client, or Web browser. Voicemail messages can be accessed through e-mail clients as a WAVE file attachment. Oracle Voicemail & Fax provides a basic Dual-Tone Multifrequency (**DTMF**) interface, providing the capability to change users' preferences using the telephone interface. Because Oracle Voicemail & Fax is a single-repository solution, actions taken on a voicemail message or on a users' account preferences through the telephone interface are visible through other channels.

Fax

Oracle Voicemail & Fax provides inbound facsimile capabilities. Faxes sent to a user's phone number are delivered to the user's Inbox as a message attachment. Faxes are stored as TIFF attachments in MIME-compliant messages that can be printed or forwarded to any e-mail address using standards-based clients or Web clients.

Access to Voicemail and Fax Through GUI Clients

Oracle Voicemail & Fax provides access to voicemail messages through multiple channels, including the telephone, standards-based clients (IMAP4 or POP3), and through the Web. Because messages are stored in the industry-standard WAVE and TIFF formats, many readily available media players and graphics readers can be used. This allows great flexibility in accessing messages from the computer and for forwarding the messages. Because the user's e-mail, voicemail, and fax messages are

in a single Inbox, this increases users' productivity and provides great ease in using the product.

Notification Through Wireless Devices

Oracle Voicemail & Fax, along with other Oracle Collaboration Suite components, provides a comprehensive set of notification features. Making use of the server-side rules in the Oracle Collaboration Suite Database, users can define their own rules for when and how they are notified. Oracle Voicemail & Fax supports e-mail notification through SMTP-enabled pagers and cell phones. Oracle Voicemail & Fax enhances the Oracle Collaboration Suite 10*g* Mobile Collaboration component of Oracle Collaboration Suite. This component provides gateways for direct one-way and two-way communication with a number of devices, including many popular Systems Management Server (SMS) systems and pager networks.

Centralized System Administration

Oracle Voicemail & Fax administration is integrated into Oracle Enterprise Manager, allowing for centralized management and systemwide monitoring of the Oracle environment. Oracle Voicemail & Fax supports multiple domains within the same system and allows for central or distributed system administration in a hosted environment.

Self-Service User Preferences Management

Oracle Voicemail & Fax provides Web-based preferences management through the Oracle Collaboration Suite 10*g* WebMail client, Oracle Collaboration Suite 10*g* Web Access Client, and Oracle Connector for Outlook. Users can make distribution lists accessible to the telephone user interface (TUI) menu, set their voicemail password, set the language in which they hear their voicemail prompts, select the active greeting, and select the dial-out extension. Users also have the option of setting their preferences through the TUI.

Oracle Voicemail & Fax Architecture

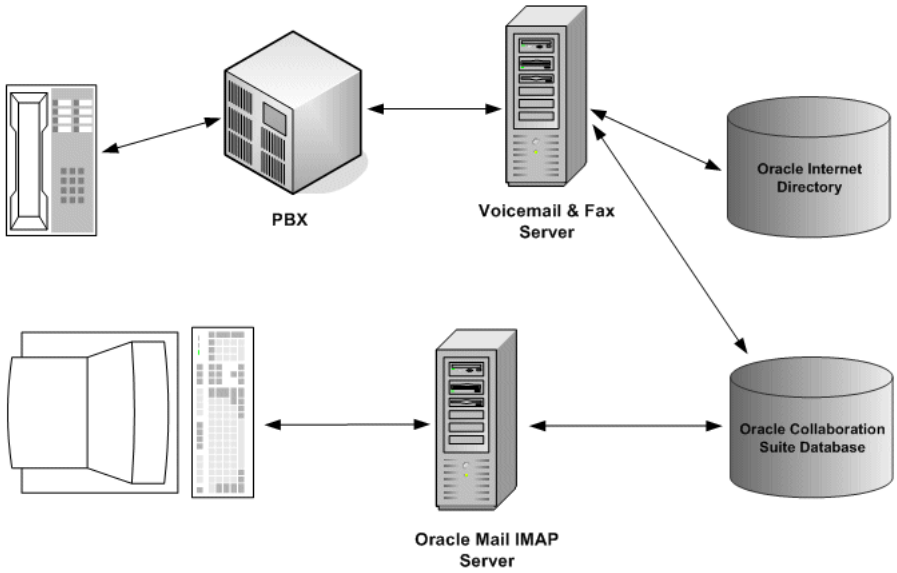
The following topics are covered in the subsequent sections:

- Application Flow in an Oracle Voicemail & Fax System
- Voicemail & Fax Server Architecture
- Oracle Voicemail & Fax Architecture Stack

Application Flow in an Oracle Voicemail & Fax System

A call comes in to the PBX (private branch exchange). If the call is not answered, the PBX transfers the call to the Voicemail & Fax Server. The Voicemail & Fax Application retrieves information about the user and the user's preferences and system information from Oracle directory server, for example, the language in which to play the voicemail prompts, and the voicemail user's recorded greetings. Voicemail messages are stored and retrieved from the Oracle Collaboration Suite Database. The Oracle Collaboration Suite 10*g* Mail IMAP server retrieves voicemail messages from the database and displays these messages in the user's Inbox. When the voicemail user calls in to the voicemail system for her messages, PL/SQL APIs are used to retrieve the voicemail messages from Oracle Collaboration Suite Database (Figure 1–1).

Figure 1–1 Oracle Voicemail & Fax Application Flow



Oracle Collaboration Suite Database

Oracle Voicemail & Fax uses the Oracle Collaboration Suite Database as the repository for all voicemail and fax messages, the same message repository used by Oracle Mail. The database provides common access methods for e-mail, voicemail, and fax messages in the format that is appropriate. For example, voicemail and fax messages are stored in VPiM format. All messages are available through standard IMAP4 or POP3 e-mail clients. A single repository makes the voicemail messages simultaneously accessible through e-mail or through the telephone interface.

Oracle Voicemail & Fax uses the Oracle Mail PL/SQL application programming interface (API) to access the database to store and retrieve voicemail messages in the user's Inbox.The database is accessed whenever a message is left for a voicemail user or if a voicemail user accesses the voicemail system to listen to his or her messages.

Although the Oracle Collaboration Suite Databases may be on the same physical server as the Voicemail & Fax Applications, in most situations, the databases are installed on a different server. A minimum of one Oracle Collaboration Suite Database is required for a Voicemail & Fax system.

Oracle Directory Server

Information about the user and the user's preferences, and system information is stored in the Oracle directory server. Oracle Voicemail & Fax enhances the user information and preferences of Oracle Mail and extends this to include attributes specific to voicemail. The voicemail attributes include site information, the user's recorded greetings, access to the voicemail and fax features, and the user's phone number. System configuration information stored in Oracle directory server include attributes such as system parameters, menus, and prompts.

Voicemail & Fax Server

The Voicemail & Fax Application is installed on top of the Telephony Server. Along with Oracle Container, they comprise the Voicemail & Fax Server. These components are described in more detail later in this chapter.

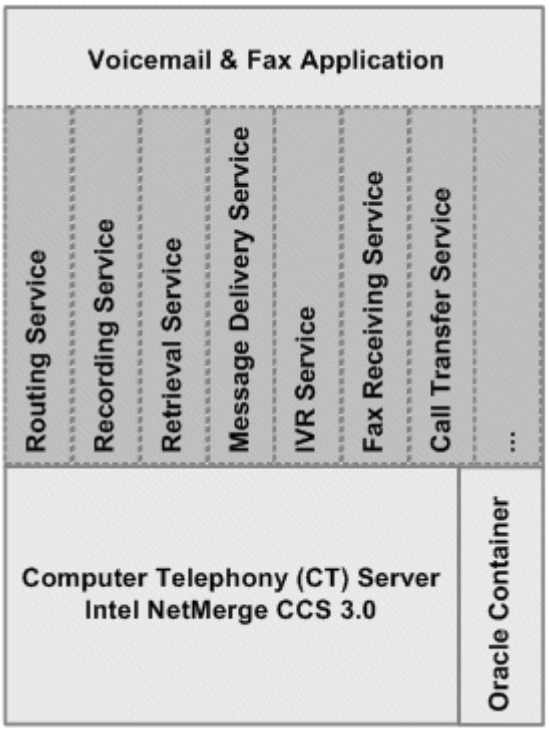
Oracle Mail IMAP Server

IMAP services are part of the Oracle Mail component of the Oracle Collaboration Suite. These services provide access to voicemail messages and faxes to a user using a standard IMAP client. The voicemail messages can be played using any media player that supports WAVE files. The fax messages can be viewed using a graphics viewer that supports TIFF format.

Voicemail & Fax Server Architecture

The components of the Voicemail & Fax Server (Figure 1–2) are the Voicemail & Fax Application, the Telephony Server, and the Oracle Container Subsystem. These components are described in the following sections.

Figure 1–2 Voicemail & Fax Server Architecture



Telephony Server

The Telephony Server is mainly composed of the Intel NetMerge Converged Communications Software (CCS). NetMerge CCS is the Intel implementation of the CT Server standard proposed by **Enterprise Computer Telephony Forum** (ECTF). This standard defines the infrastructure required to build platform-independent computer telephony applications. The NetMerge software manages the telephone calls and the resources. The Telephony Server runs on an Intel-based server (with the Windows 2000 or 2003 operating system) and consists of the Intel NetMerge software, and either the Intel **Host Media Processing** (HMP) software or the Intel telephony dialogic cards. The HMP software provides a Voice over Internet Protocol (VoIP) interface based on

the Session Initiation Protocol (SIP) using the server's existing Ethernet NIC (Network Interface Card). The telephony dialogic cards are used to connect the Telephony Server with a PBX using traditional telephony connections.

Although there are many APIs supported by NetMerge CCS, Oracle uses the s.410 (also known as JTAPI Media) specification, which defines the application-level programming interface, and the s.300 specification, which allows NetMerge CCS to use and manage resources including telephony boards, storage, and speech processing software.

Oracle Container Subsystem

NetMerge CCS provides encapsulated APIs to all processes. One of these encapsulations is the file system API that allows processes to retrieve and store recordings and to manipulate files. Oracle provides a plug-in to this encapsulated framework allowing Oracle Voicemail & Fax processes to store and retrieve data in the Oracle Collaboration Suite Database.

The Oracle Container provides direct access to the Oracle Collaboration Suite Database through Oracle Call Interface (OCI) and PL/SQL. Written in C, Oracle Container is the Oracle extension to the Intel NetMerge container subsystem. The Oracle Voicemail & Fax Application makes API calls into NetMerge to Oracle Container.

Oracle Voicemail & Fax Application

The Oracle Voicemail & Fax Application uses the APIs provided through NetMerge CCS to answer the calls and to provide voicemail features. The Oracle Voicemail & Fax Application consists of the following services:

- Routing Service receives and passes calls to other services.
- Retrieval Service authenticates callers and allows voicemail users to retrieve and respond to voicemail messages and manage their voicemail accounts.
- Recording Service plays the greeting, records messages, and delivers messages.
- Interactive Voice Response (IVR) Service runs simple call answering programs that system administrators can define and customize.
- **Call Transfer Service** transfers calls to the phone number configured as the operator or attendant number.
- Message Delivery Monitor Service tracks and reports the time it takes to deliver messages.
- Message Recovery Service recovers and redelivers messages that are not successfully delivered the first time.
- Telephony Monitor Service tracks and reports on the status of the Telephony Server.
- **Fax Receiving Service** receives and delivers fax messages.
- SMDI (Simplified Message Desk Interface) Monitor Service provides an interface between SMDI-enabled PBXes and Oracle Voicemail & Fax.
- MWI (Message Waiting Indicator) Service activates and deactivates users' message waiting indicators.

Some services are optional such as the IVR Service, Fax Receiving Service, Message Delivery Monitor Service, and SMDI Monitor Service. The services, collectively, are referred to as the Voicemail & Fax Application. There is one Voicemail & Fax

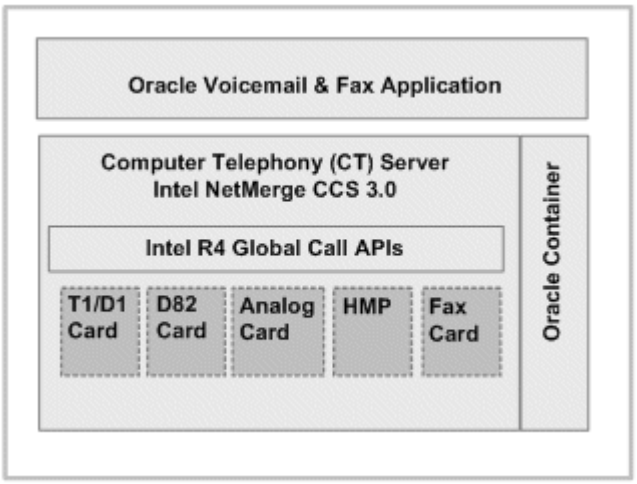
Application for each Telephony Server, and multiple Telephony Servers can be included in a single Oracle Voicemail & Fax system.

The PBX routes calls to the Telephony Server. The server, which includes NetMerge CCS, acts as a resource manager for the services that make up the Voicemail & Fax Application. Calls to the Oracle Collaboration Suite Database are made from the application through NetMerge CCS and Oracle extensions to the Intel NetMerge container subsystem.

Oracle Voicemail & Fax Architecture Stack

NetMerge CCS encapsulates access to cards through Intel Dialogic R4/Global Call APIs and provides implementations for different cards such as D82, T1, and Analog. NetMerge abstracts out access to file systems including reading, writing, and deleting files on local file systems.

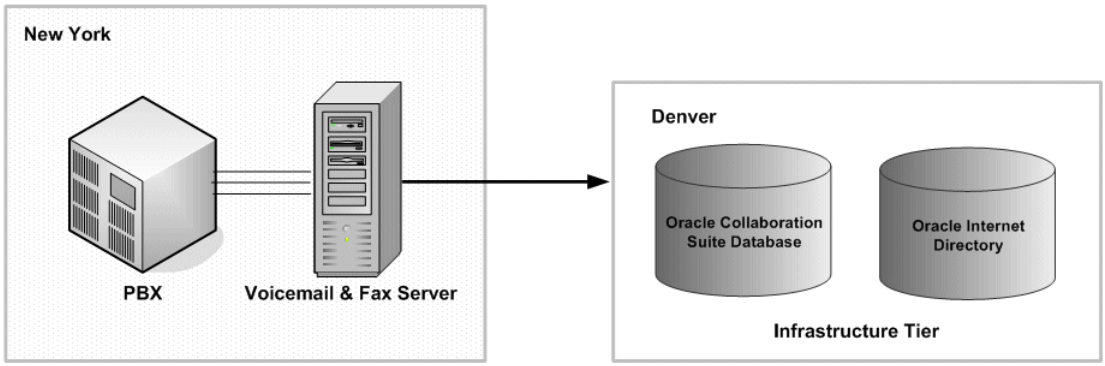
Figure 1–3 Oracle Voicemail & Fax Architecture Stack



Oracle Voicemail & Fax Deployments

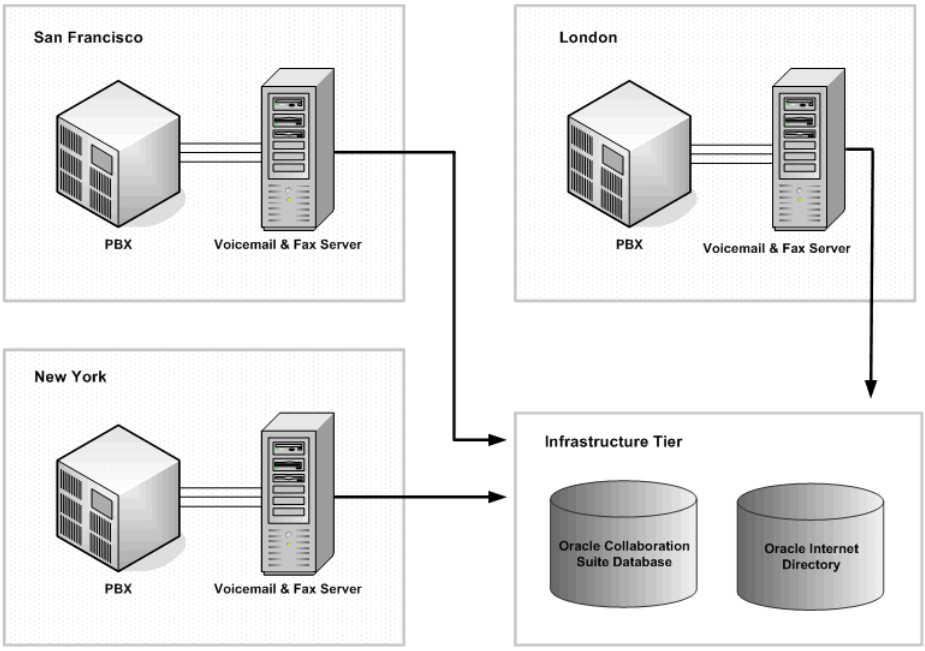
There are two basic types of boarded Voicemail & Fax deployments: single-site and multisite deployments. In a single-site boarded deployment (Figure 1–4), there is a direct connection between the PBX and the Voicemail & Fax Server. One or more Voicemail & Fax Servers at one site connect to an Oracle Collaboration Suite Database and to Oracle Internet Directory. The Infrastructure Tier may be in the same location as the PBX and server or, as in this example, may be in a different location.

Figure 1–4 Single-Site Boarded Deployment



In a multisite boarded deployment, there are one or more Voicemail & Fax Servers for each PBX, each serving a different location (Figure 1–5). For example, there may be one Voicemail & Fax Server for each of the following cities: San Francisco, New York, and London. All Voicemail & Fax Servers connect to a single, centralized Infrastructure Tier located in Denver.

Figure 1–5 Multisite Boarded Deployment



Note: See Chapter 12, "Deploying Oracle Voicemail & Fax," in *Oracle Collaboration Suite Deployment Guide* for more information about deployment options. See Chapter 14, "VoIP Gateway Deployments" for more information about Voice over IP deployments.

How the Oracle Voicemail & Fax Services Work

There are two basic types of calls received by a voicemail system: **forwarded calls** and **direct calls**. A forwarded call is a phone call that is not answered by the intended recipient (also known as the called party), and therefore, the call is transferred to the

voicemail system. A direct call is a call made by a voicemail user to the voicemail system, typically to retrieve messages or to manage his or her voicemail preferences.

The sections that follow describe how calls are handled by the Voicemail & Fax Application. NetMerge CCS performs as a resource manager and interacts with each of the application's services to route calls between the services.

Routing a Forwarded Call

A call comes in and the called party does not pick up the call. The PBX passes the call to the Telephony Server, and the call is picked up by the Routing Service. The Routing Service retrieves call-detail information from the PBX, including the caller's phone number, the destination phone number, and how the call arrived at the voicemail system (direct or forwarded). For a forwarded call, the Routing Service queries the PBX-Application Cluster which handles the phone number and checks the PBX-Application Cluster's call routing map. If the call's destination number is listed in the call routing map, the call is passed to the IVR (Interactive Voice Response) Service. All other forwarded calls are passed to the Recording Service, which retrieves the called party's information from the Oracle directory server and verifies that the called party is enabled for voicemail. Then, the Recording Service looks for a greeting, in the following order, until it finds one and it plays the greeting:

1. Called party's recorded greeting
2. Generic greeting with the called party's recorded name
3. Generic greeting with the called party's phone number

After the message is recorded, the Recording Service delivers the message to the voicemail user's Inbox on the Oracle Collaboration Suite Database.

If a fax tone is detected at any time during the interaction, the call is passed to the Fax Receiving Service, which receives the fax message and delivers the message to the voicemail user's Inbox. If the user chooses to transfer the call to an attendant, the call is passed to the Call Transfer Service, which performs this task.

Routing a Direct Call

A voicemail user calls into the voicemail system and the PBX passes the call to the Telephony Server where the Routing Service picks up the call. The Routing Service retrieves call-detail information from the PBX, including the caller's phone number, the destination phone number, and how the call arrived at the voicemail system (direct or forwarded). If it is a direct call, the Routing Service passes the call to the Retrieval Service, which formulates the mailbox number by using the caller ID or by prompting the voicemail user to enter a mailbox number. The Retrieval Service verifies that the user is a valid voicemail user against the data stored in Oracle directory server. Once the user has been verified, the user is prompted for a password, and the voicemail system authenticates the password against Oracle directory server. After the user has been successfully authenticated, the Retrieval Service interacts with the Oracle Collaboration Suite Database to retrieve voicemail messages and other account information.

After being authenticated by the voicemail system, the voicemail user is given the following options:

- Listen to new or saved messages
- Send a message to another voicemail user
- Reply to the sender of a voicemail message

- Forward the voicemail message to one or more recipients, with the option of including a message
- Perform administrative tasks such as changing passwords and recording or changing greetings

When the voicemail user listens to a message, the Retrieval Service plays the message. If the user chooses an option that involves creating a message, the Retrieval Service passes the call to the Recording Service. After the message is recorded and delivered to the user's Inbox by the Recording Service, the call is returned back to the Retrieval Service, and the user is given the choice to select another menu option.

Transferring Calls to an Attendant

During a call, if the caller chooses the menu option to transfer the call to an attendant, the call is passed to the Call Transfer Service, which looks up the attendant's number in Oracle directory server. It starts with the user profile, and if none is configured at the user level, it searches through the user's parent hierarchy. The call is transferred to the attendant through the PBX. (The Call Transfer Service returns the call to the PBX, which dials the attendant's phone number.)

Who the user is varies depending on which service passes the call to the Call Transfer Service. If the Retrieval Service passes the call, (that is, for a direct call), then the user is the authenticated voicemail user who is logged in to his mailbox. If the Recording Service hands off the call, (that is, for a forwarded call), then the user is the voicemail user for whom the caller recorded a message or for whom the caller intended to record a message.

Backup Message Delivery

There are times when the Recording Service and Fax Receiving Service attempt to deliver a recorded message to the Oracle Collaboration Suite Database and encounter errors. These messages end up in the file system queue of the Message Recovery Service, which makes periodic attempts to redeliver the message. Once the Message Recovery Service successfully delivers a message to the database, the message is deleted from its queue.

The Message Recovery Service maintains connections to all Oracle Collaboration Suite Databases configured for the host on which the Voicemail & Fax Application is installed. Each time the service picks up a message from the file system queue, it attempts to send the message in its queue through its connections to each Oracle Collaboration Suite Database until it is successful. If it encounters an error sending the message through every Oracle Collaboration Suite Database, it requeues the message on the file system and picks it up the next time it tries to deliver queued messages.

Delivering Fax Messages

When a forwarded call is passed to the Recording Service and the service detects a fax tone, it passes the call to the Fax Receiving Service, which looks up the called party's information in the Oracle Internet Directory. If the Fax Receiving Service determines that the called party is a valid user with the fax access feature enabled, it receives the fax and sends it to the called party's Inbox in the Oracle Collaboration Suite Database.

Forwarding Calls to an Interactive Voice Response System

Oracle Voicemail & Fax provides administrators with the ability to create and customize simple call answering programs. These call answering programs are

sometimes referred to as **auto attendants** or Interactive Voice Response (IVR) systems. Oracle Voicemail & Fax IVR systems play messages, transfer calls, search the user directory, offer simple DTMF (Dual-Tone Multifrequency) menus, and integrate with the Recording Service and Retrieval Service. The IVR Service supports multiple administrator-defined IVR deployments, each of which may specify an action for business hours, nonbusiness hours, holidays, and special times that fit none of these categories. When a forwarded call is passed to the Routing Service, it consults the PBX-Application Cluster's call routing map, which contains a mapping of telephone numbers to IVR deployments. If the call routing map contains a mapping for the originally dialed telephone number, the Routing Service sends the call to the IVR Service. The IVR Service then executes the applicable action for the appropriate IVR deployment.

Oracle Voicemail & Fax Monitoring Services

There are two monitoring services, the Telephony Monitor Service and the Message Delivery Monitor Service. The Telephony Monitor Service monitors the Telephony Server and reports the status and some key metrics of the Telephony Server to Oracle Enterprise Manager. It periodically checks the status of the server and the number of active calls being handled by the server.

The Message Delivery Monitor Service measures the time it takes for a message to be delivered to the Oracle Collaboration Suite Database. The service sends test messages to a test account on each Oracle Collaboration Suite Database, and reports the time it takes for the test message to arrive in the Inbox of the target Oracle Collaboration Suite Database.

Working with PBXes That Use SMDI

The SMDI (Simplified Message Desk Interface) Monitor Service provides an interface between SMDI-enabled PBXes and Oracle Voicemail & Fax. This service does not interact with NetMerge CCS and does not directly handle calls. The SMDI Monitor Service processes call-detail messages from the PBX, including whether it is a direct call or a forwarded call, and passes these messages to the Routing Service. It also receives MWI (Message Waiting Indicator) requests from the MWI Service and dispatches these to the PBX. Calls are passed from the PBX to the Telephony Server. When the Routing Service receives the call, it finds the correct PBX-Application Cluster and looks up the location of the SMDI Monitor Service. It then connects to the SMDI Monitor Service and asks for call-detail information for the call that the service is handling.

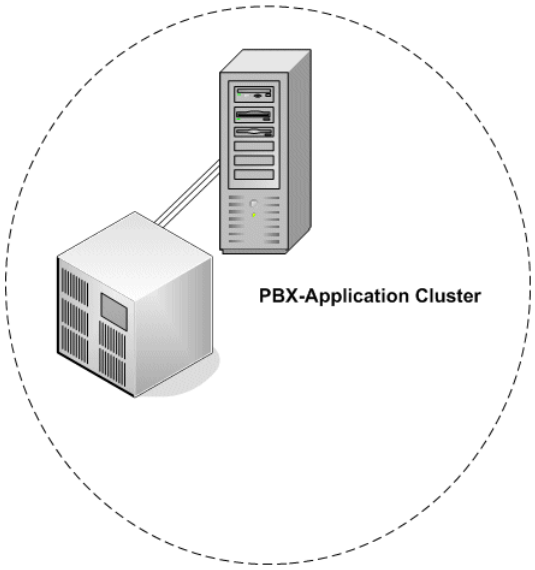
Any service within the Oracle Voicemail & Fax installation may use any SMDI Monitor Service within the installation, as long as it connects to the desired PBX. This means that in an installation where there are multiple Voicemail & Fax Applications installed on multiple computers all servicing the same PBX, system administrators can deploy one SMDI Monitor Service, which can be used by all Voicemail & Fax Applications installed on different machines.

PBX-Application Clusters

A PBX-Application Cluster defines the relationship between a Voicemail & Fax Application and a PBX. The Voicemail & Fax Application needs to have certain information about the PBX in order to work with the PBX. For example, Oracle Voicemail & Fax converts all phone numbers into international format. So it needs to know in what form the PBX passes phone numbers to the application, so it can convert the phone numbers to international format. When the application sends a phone

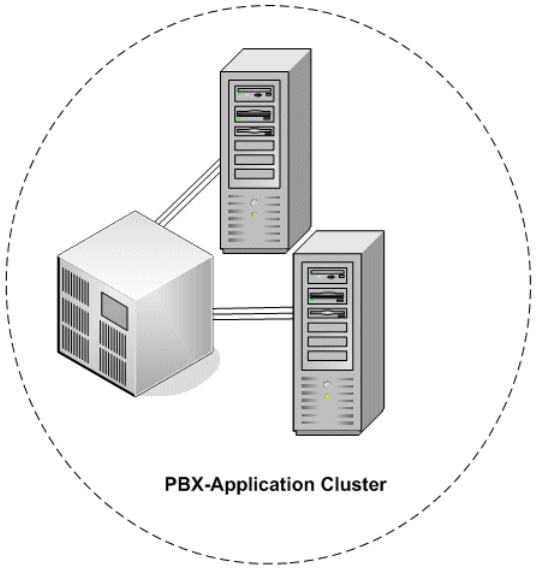
number to the PBX, it needs to convert this number from international format into a form that the PBX can dial, so it needs to know how to do this conversion. The way the PBX dials an internal phone number differs from dialing an external number, and the application needs to know which phone numbers belong to the PBX and which are external phone numbers, and what rules to apply. These and other specifications that are required for a PBX and Voicemail & Fax Application to work together are contained in the concept of a PBX-Application Cluster (Figure 1–6).

Figure 1–6 PBX-Application Cluster



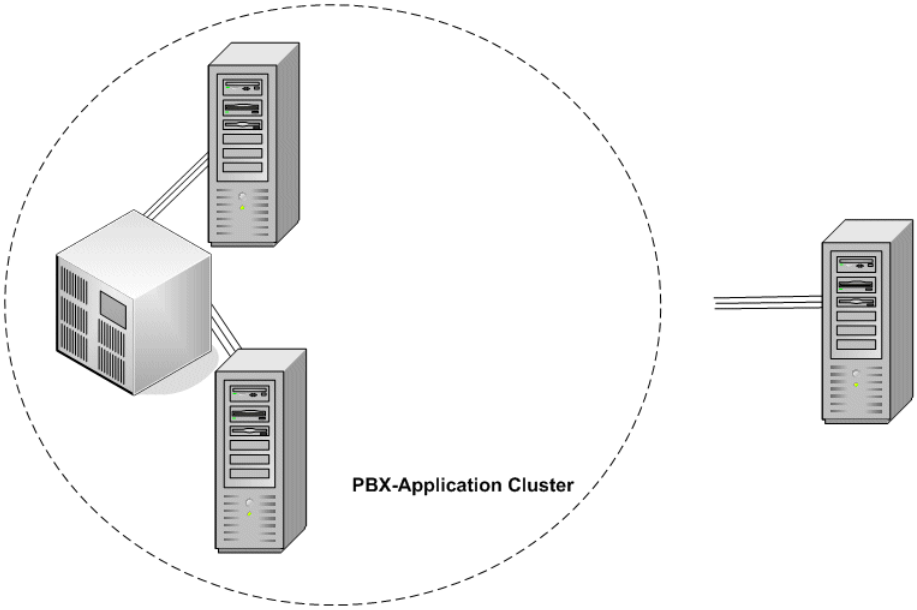
This configuration applies to any Voicemail & Fax Application that is associated with the PBX-Application Cluster. By creating this definition for a PBX, you can associate it with any Voicemail & Fax Application. System administrators can add another Voicemail & Fax Application without having to configure the PBX to work with it by using the existing PBX-Application Cluster configuration (Figure 1–7).

Figure 1–7 Adding Another Voicemail & Fax Application to a PBX-Application Cluster



System administrators can exchange one Voicemail & Fax Application for another, again, without any additional configuration (Figure 1–8).

Figure 1–8 Exchanging One Voicemail & Fax Application for Another



2

Getting Started with Oracle Voicemail & Fax

Before you can start using Oracle Voicemail & Fax, you must use Enterprise Manager Grid Control to set up your sites and **groups** and configure the PBX-Application Cluster.

This chapter discusses the following topics:

Getting Started with Oracle Enterprise Manager

You must verify that you have the privileges required to use Enterprise Manager in order to verify that the Oracle Voicemail & Fax targets are visible and to navigate through the hierarchy of targets.

Creating the Enterprise Manager Administrator

When you installed Enterprise Manager, a default super administrator, SYSMAN, was automatically created with the password you specified. You may use this user name and password, or any other user name with administrator privileges, to log in to Enterprise Manager Grid Control.

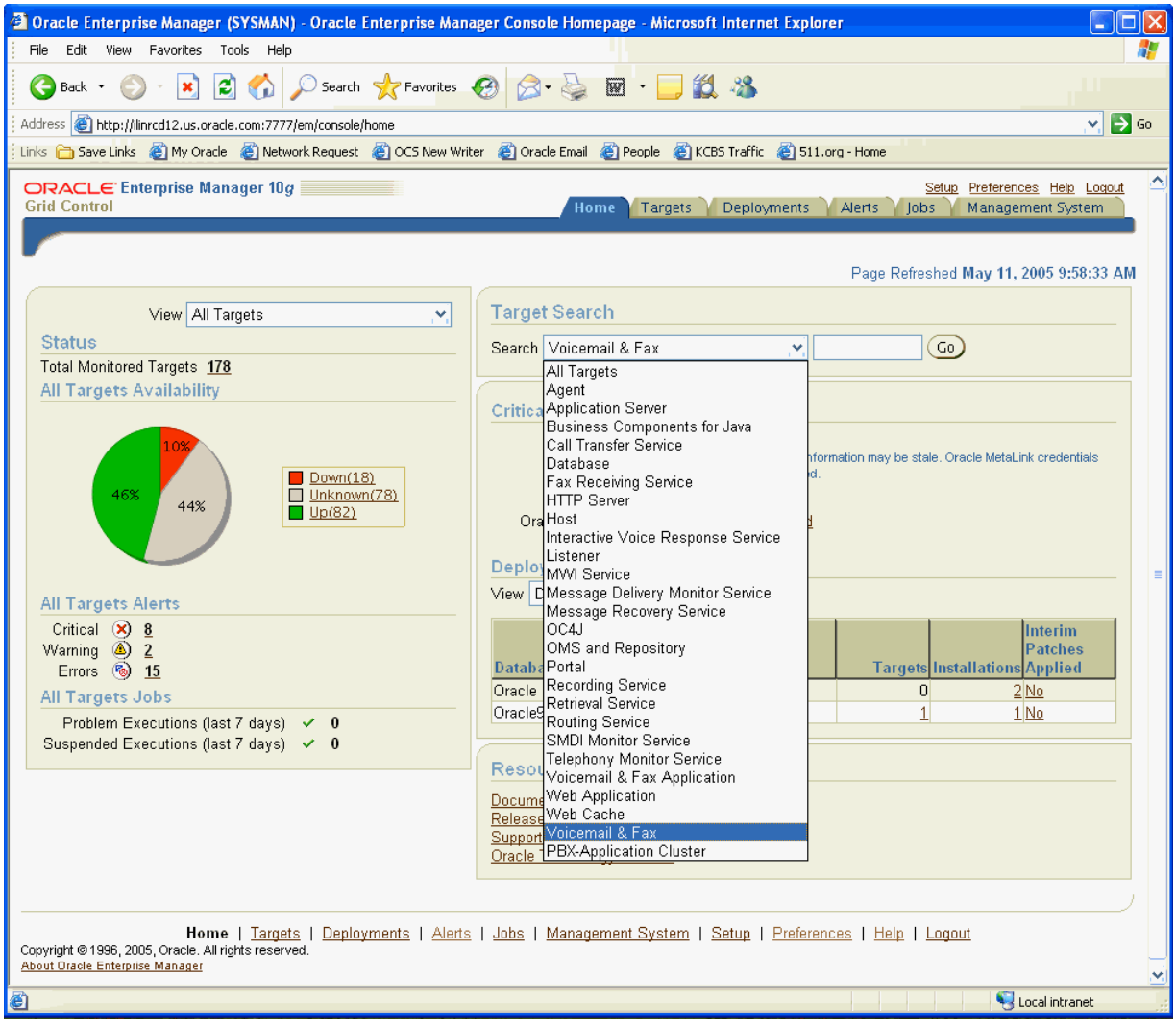
See *Oracle Enterprise Manager Grid Control Installation and Basic Configuration* for more information.

Verifying That the Oracle Voicemail & Fax Hierarchy Is Visible

To verify that you can see the Oracle Voicemail & Fax hierarchy:

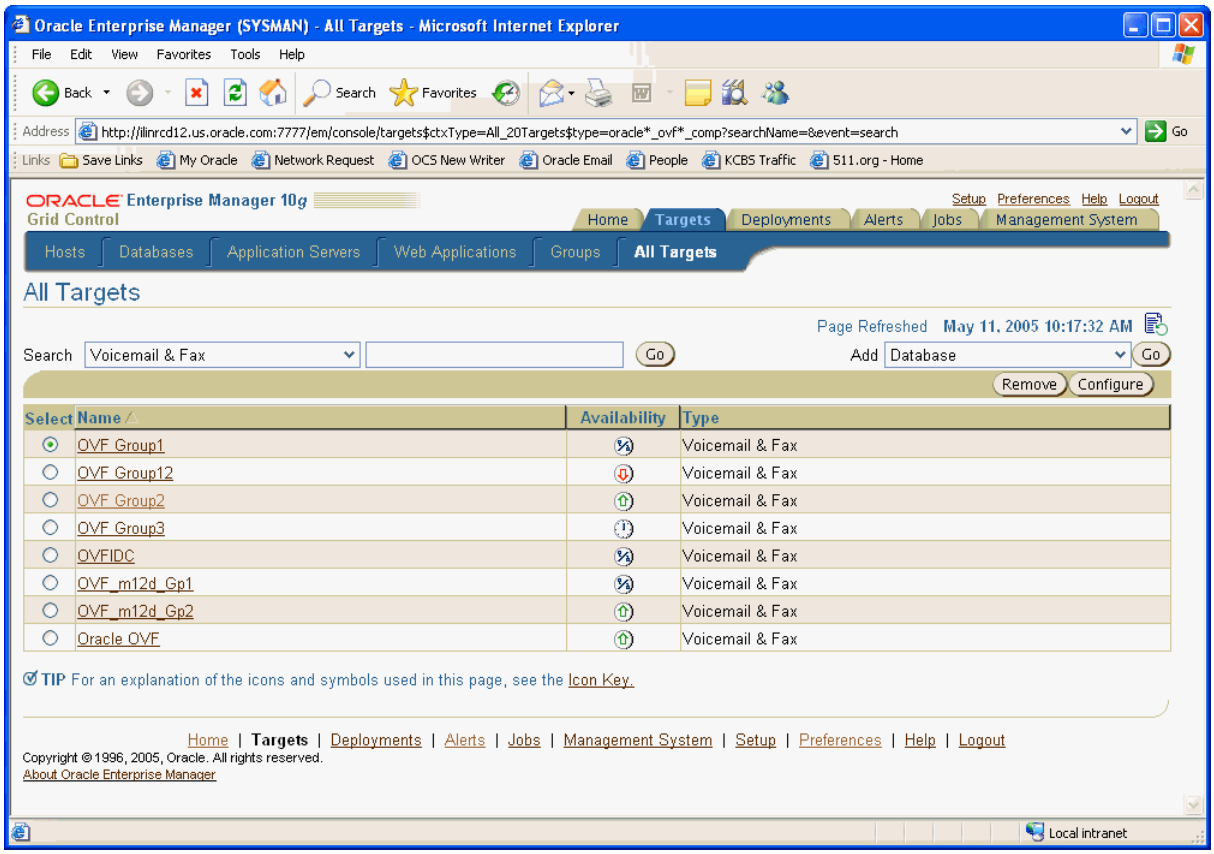
1. Open a Web browser and log in to Enterprise Manager Grid Control.
2. From the home page, select **Voicemail & Fax** in the Search field and click **Go.**

Note: There are two targets with very similar names: *Voicemail & Fax* and *Voicemail & Fax Application*. Select *Voicemail & Fax*, which refers to the Oracle Voicemail & Fax group. (*Voicemail & Fax Application* refers to the applications installed on your Applications Tier.)



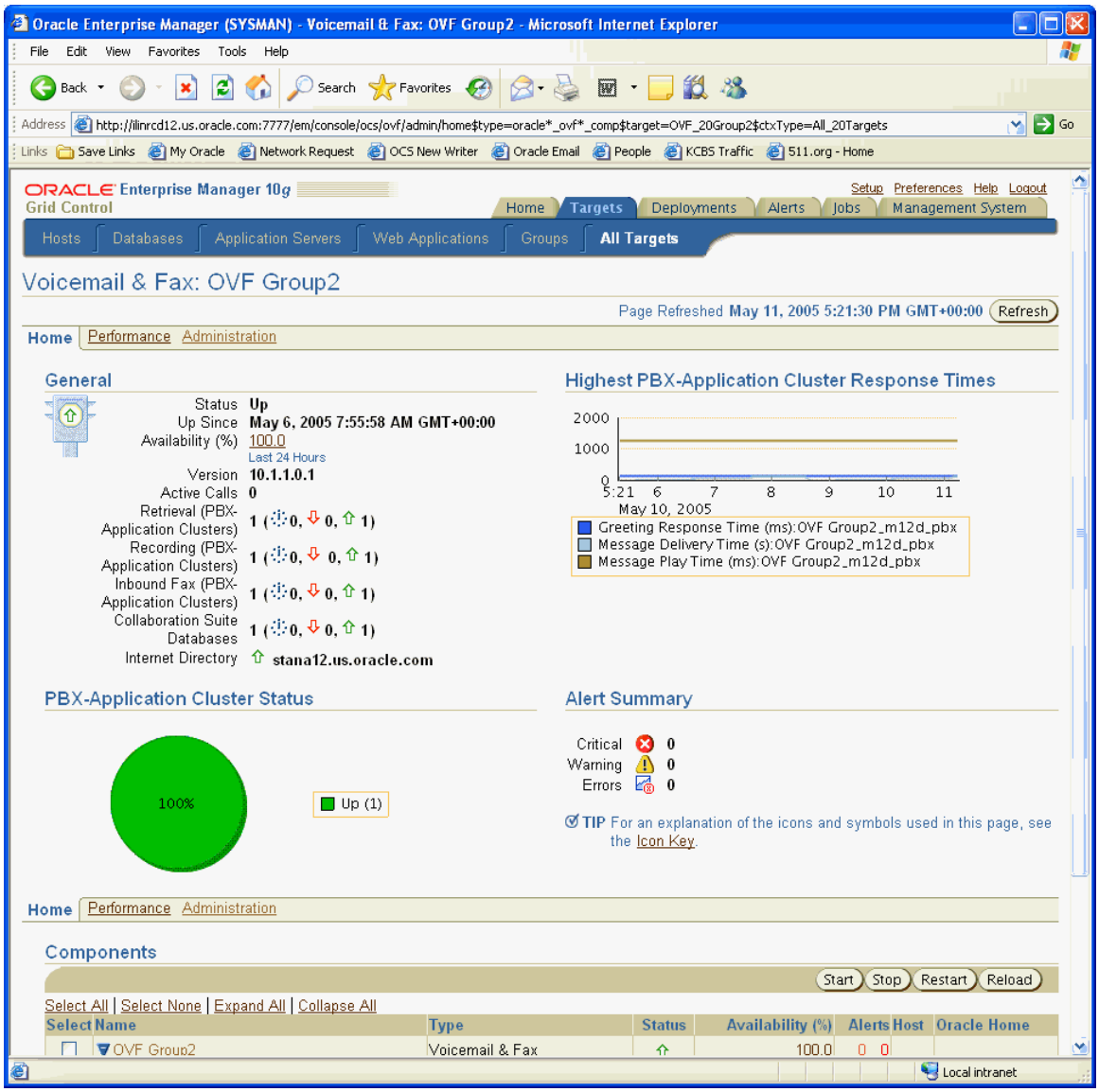
A list of all Voicemail & Fax group targets is displayed. In most environments, there will be only one Voicemail & Fax group target.

If the Oracle Voicemail & Fax group target does not appear in the list, you may have to manually create the group target. Refer to "Registering Oracle Voicemail & Fax Targets" on page A-3 for more information.



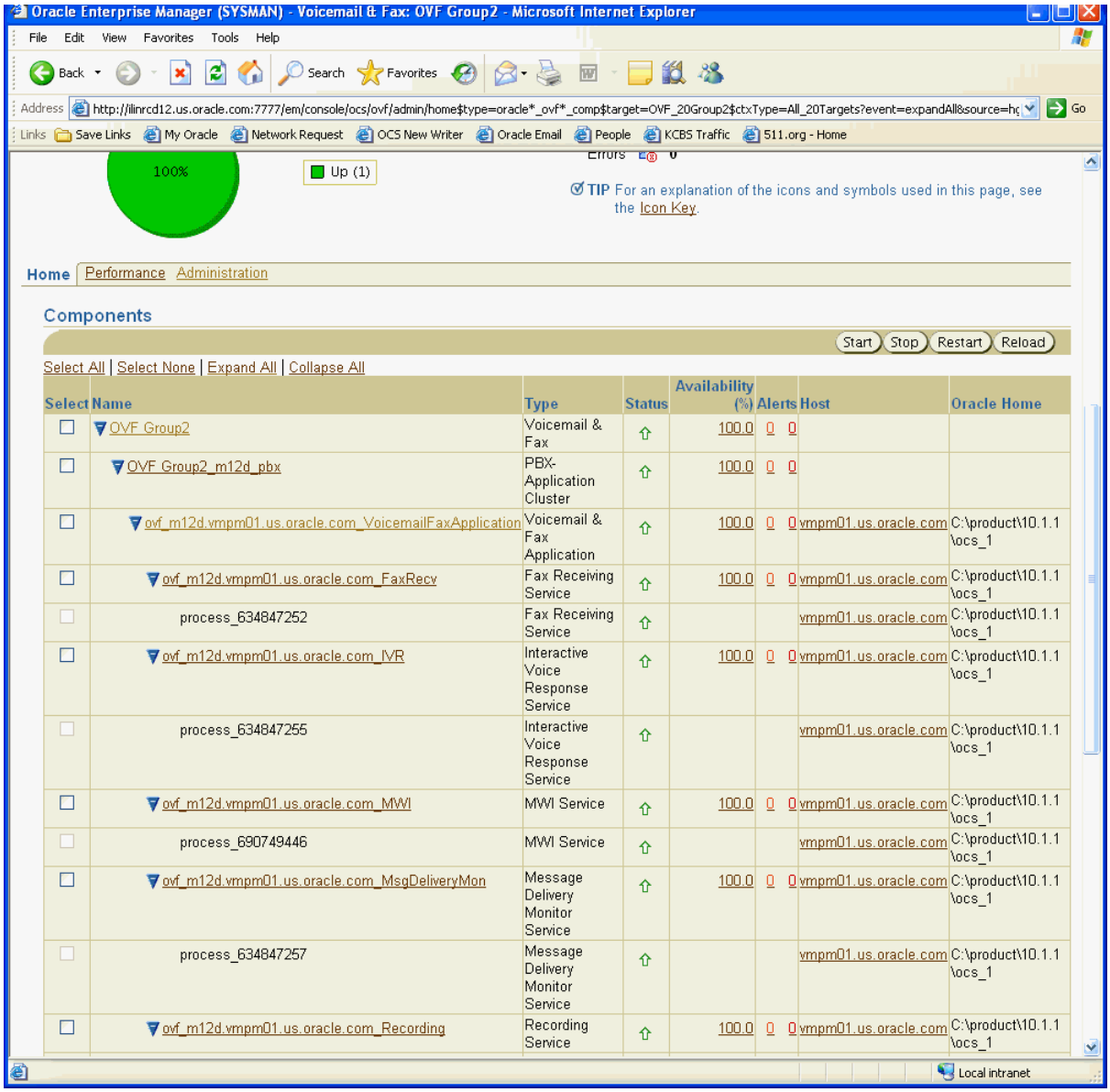
3. Click the desired target.
4. If you have not specified preferred credentials for the Voicemail & Fax group target, you are prompted to log in. Enter the user name and password for the Oracle directory server and click **Login.** You can use the superuser orcladmin user name and password.

   The home page for the Voicemail & Fax group is displayed.



5. From the home page, scroll down to the Components table.
6. Click **Expand All.**

   The Components table expands to reveal all the targets in its hierarchy.



You should see the following targets for the Voicemail & Fax component:

- Voicemail & Fax group
- One or more PBX-Application Clusters
- For each PBX-Application Cluster, one or more Voicemail & Fax Applications
- For each Voicemail & Fax Application, you should see the following services:
  - Call Transfer Service
  - Fax Receiving Service
  - IVR Service
  - Message Delivery Monitor Service
  - Message Recovery Service
  - Message Waiting Indicator Service

- Recording Service
- Retrieval Service
- Routing Service
- SMDI Monitor Service
- Telephony Monitor Service

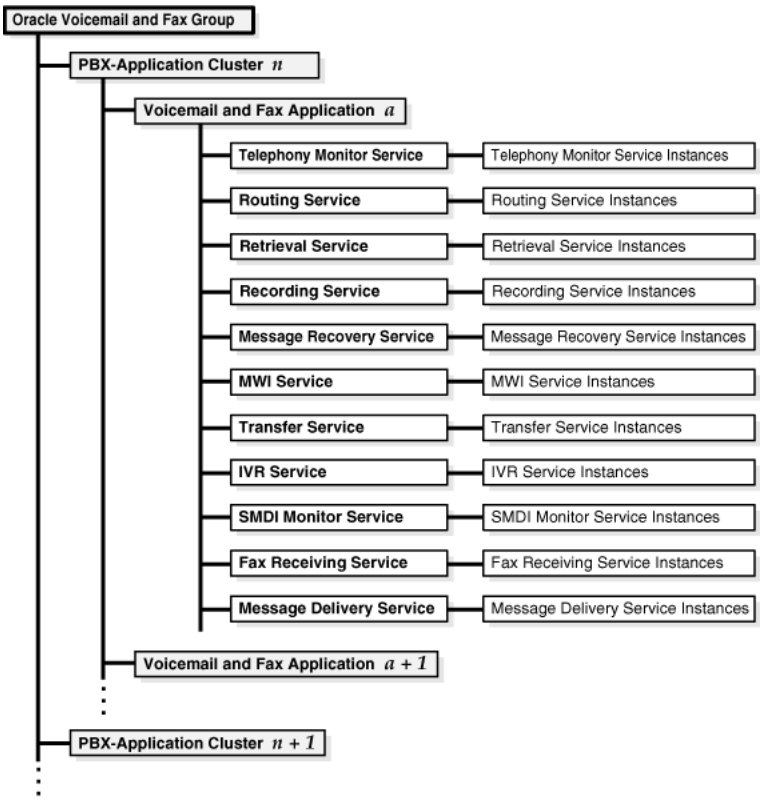
If you cannot see one or more of the services, use `opmnctl` to verify that the service is defined and is up. If the service is not defined, then there was a problem with the installation. Check the installation log files for any errors.

See *Oracle Voicemail & Fax and Oracle Web Conferencing Conversion Servers Installation and Upgrade Guide* for more information.

Oracle Voicemail & Fax Hierarchy

Enterprise Manager Grid Control is the system management tool you will use to administer your Oracle Voicemail & Fax system. The components of Oracle Voicemail & Fax are organized in a hierarchy (Figure 2–1). At each level of the hierarchy, you can get status and performance information for that level. In addition, you can set properties for each level in the hierarchy (with the exception of the service instances). Components inherit properties from their parent components and pass properties on to child components. At each level, a subset of the inherited properties is exposed. The values for these exposed properties can be overridden, and local values can be set. From any point in the hierarchy, you can drill down to all levels below it, or navigate back up the hierarchy.

Figure 2–1 Oracle Voicemail & Fax Hierarchy



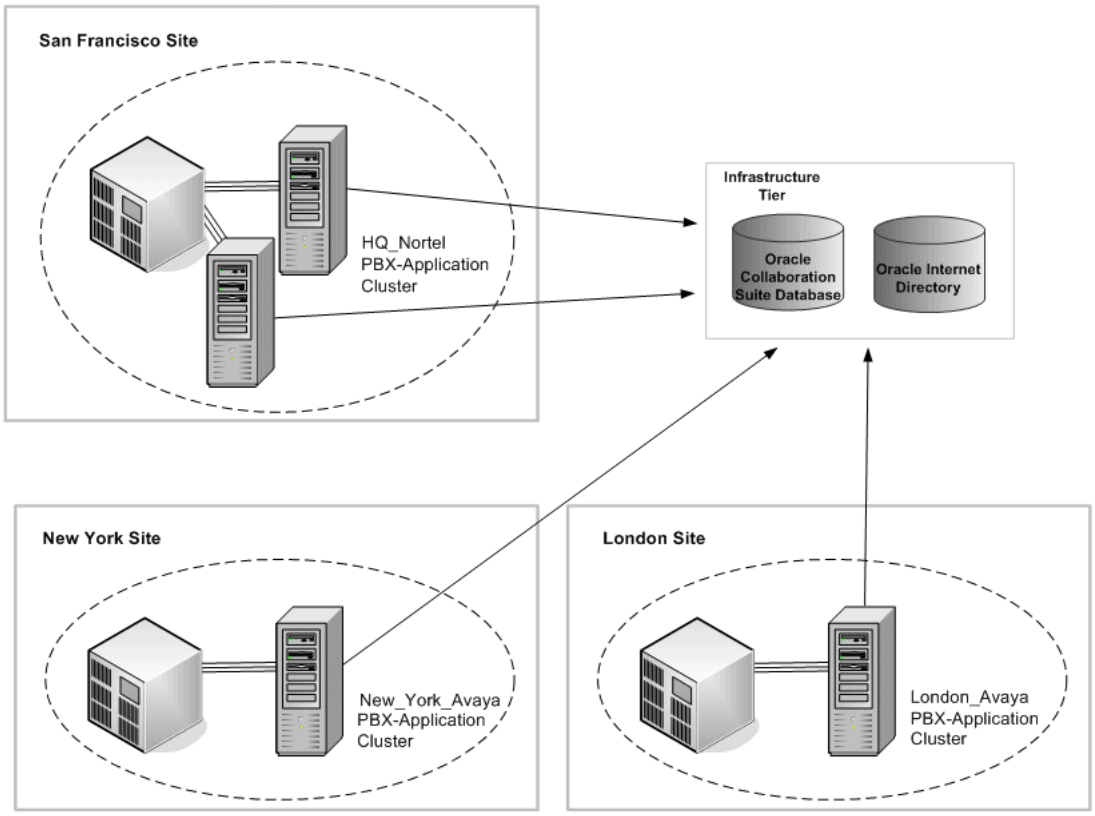
Voicemail & Fax Group — This is the highest level of the hierarchy. From this level, you have an overview of the Oracle Voicemail & Fax installation. You can get performance and status information on the component level below it, that is, the PBX-Application Cluster level. You can perform component-level tasks such as managing users, creating groups and sites, and set component-level and systemwide defaults. The properties set at this level are passed down to each level below it, that is, to the Voicemail & Fax Application level and to the services. From this level, you can drill down to a particular PBX-Application Cluster or to any components of a particular cluster.

PBX-Application Cluster — This is the second highest level of the hierarchy. From this level, you can define a relationship between one or more PBXes and one or more Voicemail & Fax Applications. The Voicemail & Fax Applications that support the PBX are called an application cluster. From the PBX-Application Cluster level, you can get a high-level overview of the Voicemail & Fax Applications associated with the PBX-Application Cluster. You set parameters in the PBX-Application Cluster for the specific Voicemail & Fax Applications that are servicing a specific PBX. From this level, you can drill down to a particular Voicemail & Fax Application or to one of the services associated with the application.

In many situations, you might deploy multiple Voicemail & Fax Applications to support a specific PBX. This ensures that if a specific Voicemail & Fax Server is unavailable, there is another that can take its place. There is also a physical limit to the number of simultaneous phone calls that a Voicemail & Fax Application on one server can manage. If a PBX routes more calls at one time than can be handled by one Voicemail & Fax Server, the PBX will need to be deployed with multiple Voicemail & Fax Servers.

There is one PBX-Application Cluster defined for each PBX. At a minimum, there is at least one Voicemail & Fax Application associated with the PBX-Application Cluster. In the multisite boarded deployment example in Figure 2–2, there are three PBX-Application Clusters, HQ_Nortel, New_York_Avaya, and London_Avaya. The HQ_Nortel PBX-Application Cluster has two Voicemail & Fax Applications associated with it, and the New_York_Avaya and London_Avaya PBX-Application Clusters each have one Voicemail & Fax Application associated with it. All four Voicemail & Fax Applications are installed against the same Oracle Internet Directory and are part of the same Oracle Voicemail & Fax installation.

Figure 2–2 PBX-Application Clusters — Multisite Boarded Deployment



Voicemail & Fax Applications — This is the third level in the hierarchy. A Voicemail & Fax Application is a set of services running on a voicemail host. At this level, you can get an overview of the Voicemail & Fax Application and the Telephony Sever, and set properties for the Voicemail & Fax Application. The parameter values are inherited from the values set at the Voicemail & Fax component level. For the parameters that are inherited and exposed at this level, the values can be overridden for this application. From this level, you can drill down to any of the services associated with this Voicemail & Fax Application.

Voicemail & Fax Services — Within the final level of the hierarchy, there are 11 services that comprise the Voicemail & Fax Application. These services are: Routing, Retrieval, Recording, Call Transfer, Message Delivery Monitor, Message Recovery, Telephony Monitor, SMDI (Simplified Message Desk Interface) Monitor, MWI (Message Waiting Indicator), IVR (Interactive Voice Response), and Fax Receiving. You can view the status of each service and set parameter values for the services. The parameter values are inherited from the Voicemail & Fax Application. For the parameters that are inherited and exposed at this level, the values can be overridden at the service level.

Oracle Voicemail & Fax is managed using Oracle Enterprise Manager. Oracle Enterprise Manager allows you to create and manage multiple Voicemail & Fax groups. Each instance of the Oracle Voicemail & Fax configuration is managed in a separate Oracle Internet Directory. In a typical production deployment, you would have only one Oracle Voicemail & Fax group being managed by your Enterprise Manager. One reason to have multiple Oracle Voicemail & Fax groups is to have a separate deployment for testing the Voicemail & Fax system.

Navigating the Oracle Voicemail & Fax Hierarchy

Follow this procedure to navigate through the different levels of the Oracle Voicemail & Fax hierarchy.

To navigate the Oracle Voicemail & Fax hierarchy:

1. Log in to Enterprise Manager Grid Control.
2. Navigate to the Oracle Voicemail & Fax group home page.
3. From the Oracle Voicemail & Fax group home page, scroll down to the Components table.

   The Components table displays the targets in the Oracle Voicemail & Fax hierarchy. The first target in the table is the Oracle Voicemail & Fax group. This target has the name that was assigned during the Oracle Voicemail & Fax configuration.

   The next level in the hierarchy is the PBX-Application Cluster. The name of the PBX-Application Cluster is the name that was assigned to it during the Oracle Voicemail & Fax configuration.
4. Click the **Show** icon next to the PBX-Application Cluster to reveal the next level in the hierarchy.

   You can continue to click the Show icon at each level to reveal the level below it. Alternatively, you can click the **Expand All** link to expose all the targets in the hierarchy.
5. Click the link for the PBX-Application Cluster in the Components table.

   This takes you to the home page for the PBX-Application Cluster target. You can click any target in the Components table to navigate to the home page for that target.
6. From the Components table, navigate between targets.
7. Navigate between the home page, performance page, and administration page by clicking the tabs at the top of the page.

Before You Configure Oracle Voicemail & Fax

Before you start configuring your Oracle Voicemail & Fax system, be sure you have completed the following tasks:

- Follow the instructions in *Oracle Voicemail & Fax and Oracle Web Conferencing Conversion Servers Installation and Upgrade Guide* and install Oracle Voicemail & Fax.
- Follow the instructions in "Verifying the Voicemail & Fax Installation" in *Oracle Collaboration Suite Administrator's Guide* and verify that the installation was successful.
- Connect the phone lines from the PBX to the Voicemail & Fax Server.
- Create a **hunt group** and set up the PBX to communicate with the Voicemail & Fax Server.
- Set up a test user's phone to roll over to the hunt group after the call is not answered.

Once you have verified that these steps have been successfully completed, you are ready to continue with the postinstallation steps.

Overview of the Configuration Steps

The following is an overview of the steps for configuring the Oracle Voicemail & Fax system and then testing the system.

1. Create and configure a site.
2. Configure the PBX-Application Cluster for your site.
3. Add a test user.
4. Test the Oracle Voicemail & Fax system.

This chapter makes the following assumptions about this Oracle Voicemail & Fax installation:

- This is a **boarded PBX**, that is, there is one PBX that is directly connected to one Voicemail & Fax Server.
- The Voicemail & Fax Server is using a Digital D82 card to communicate with the PBX. One port must be reserved for call-detail information and this port has been set.

In the procedures that follow, we use an example PBX that has the following characteristics:

- The PBX serves one physical site, the headquarters office for the ACME Company.
- The PBX supports phone numbers that match the patterns 1650203???? and 1650307????.
- The PBX uses 5-digit extensions to dial internal phone numbers and for its message waiting indicator.
- The PBX passes 10-digit extensions to Oracle Voicemail & Fax.
- Users can enter 5-digit extensions to identify their Oracle Voicemail & Fax accounts.
- The hunt group number is 1 650 203-0000.

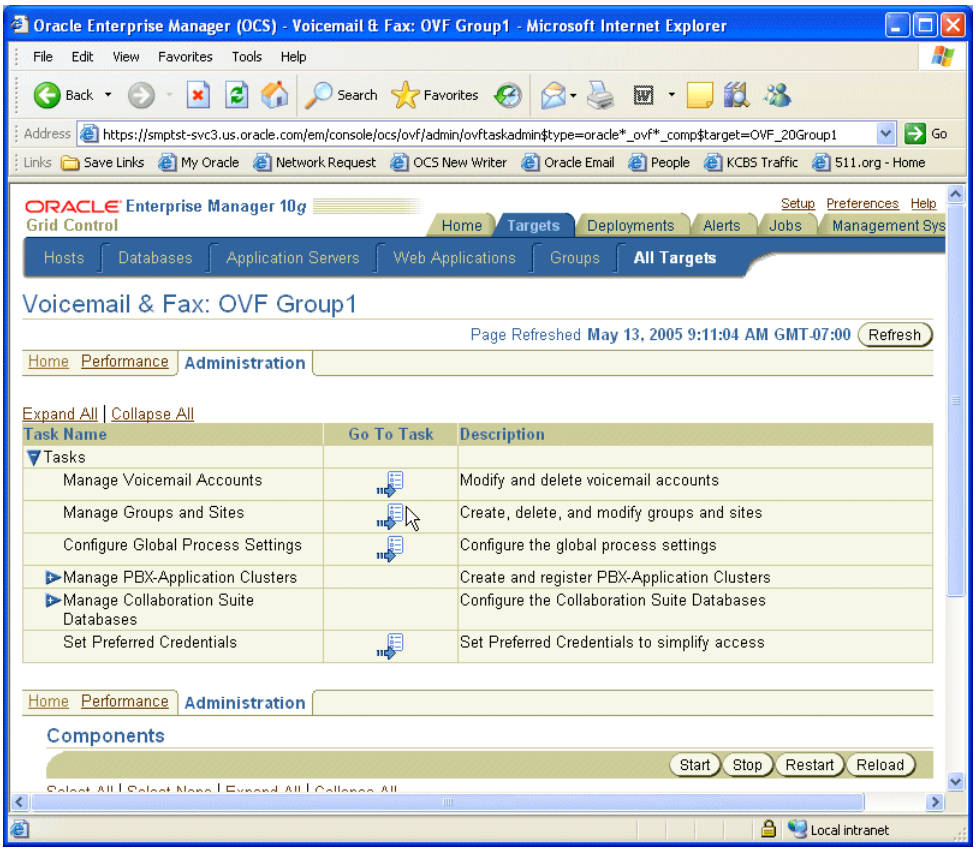
> **Note:** In the procedures that follow, we will refer to the values specified for this example PBX. You will have to replace these example values with the correct values for your PBX and for your site.

Creating and Configuring a Site

The first step is to create a group for your company's location. This group is called a site. We are assuming that the ACME Company is installing Oracle Voicemail & Fax at its headquarters.

To create and configure a site:

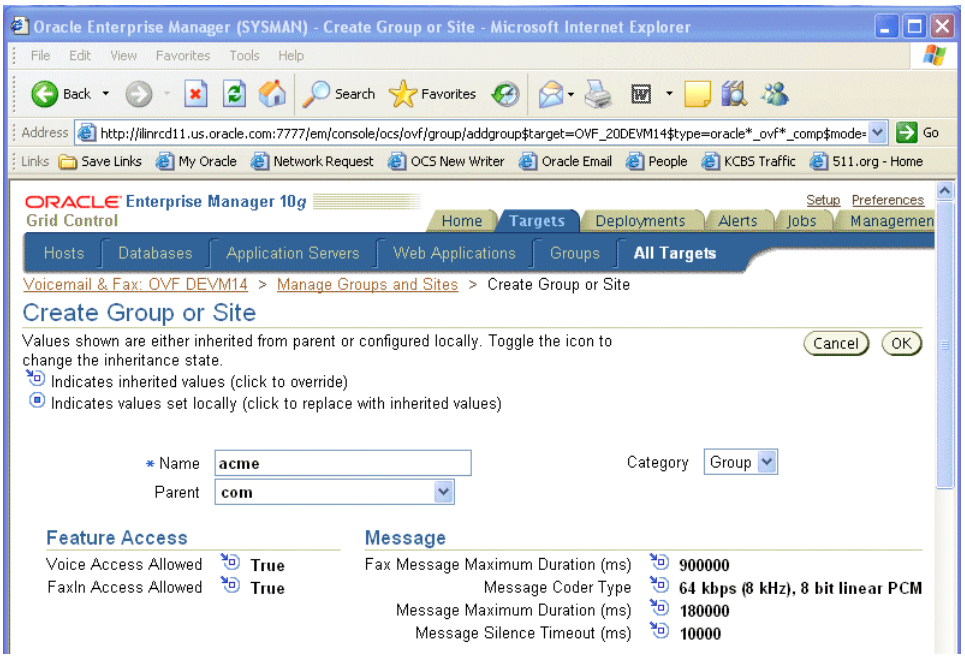
1. From the Enterprise Manager Grid Control console, navigate to the Voicemail & Fax home page and click the **Administration** tab.
2. Click the **Go To Task** icon of the Manage Groups and Sites task.



When you install Oracle Voicemail & Fax, the root, orclguest, and com groups are automatically created by default. The orclguest and com groups are children of the root group. First, you will change the default domain name of the root group.

3. In the Manage Groups and Sites page, click the **root** group.
4. On the Edit Group or Site page, change the Default Domain Name from oracle.com to the domain name for your company. In this example, we will use the domain name *acme.com*.
5. Click **OK**.

   In this example, you will be creating the hq.acme.com group. To create this group, you have to create each level in the hierarchy. The com group is already created. So you will create the acme.com group first, then you will create the hq.acme.com group.
6. Click **Create.**
7. In the Name field, enter `acme`.
8. Select **Group** from the Category list.
9. Select **com** from the Parent list.



The values you see for the parameters are inherited from the group specified in the Parent list, in this instance, the com group.

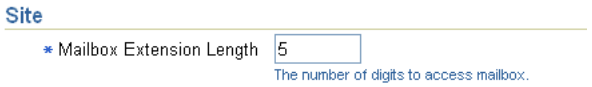
10. Click **OK**.
11. Click **Create** again.
12. In the Name field, enter `hq`.
13. This time, select **Site** from the Category list because we want hq.acme.com to be a *site*.
14. Select **acme.com** from the Parent list.

    The steps that follow focus on those parameters that are required to create a site. For all other parameters, the default values will be used.

15. Scroll down to the Site section, and enter the Mailbox Extension Length. In this example, enter `5` .

    When your users log in to the voicemail system, they are prompted to enter their mailbox number. The mailbox number is their phone number. Rather than entering 11-digits (the number of digits in a United States phone number in international format), you can allow them to enter their extension. Typically, this is 4 or 5 digits depending on what phone numbers your PBX supports. If your PBX supports phone numbers that match one pattern such as 650 203-????, you can use a 4-digit extension to get a unique number. If your PBX also supports phone numbers that match the pattern 650 307-????, then you have to use a 5-digit extension to ensure a unique extension. In this example, the PBX supports both 650 203-???? and 650 307-????.

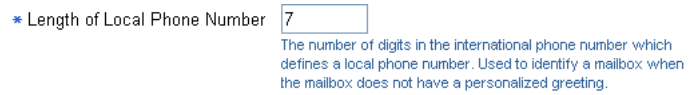
Figure 2–3 Mailbox Extension Length Parameter



16. Enter the Length of Local Phone Number. In this example, enter `7`.

When a caller is forwarded to a user's voicemail system and the user has not created a personalized greeting, the voicemail system uses the phone number to identify the mailbox (for example, "You have reached 3072492"). You can specify the length of the phone number to use to identify the mailbox. In this example, you want to use the 7-digit local phone number, so specify `7` .

Figure 2–4 Length of Local Phone Number Parameter

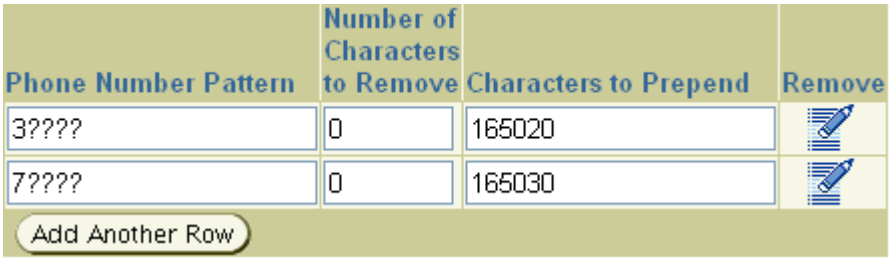


17. Enter the Telephone Number Translation Rules as shown in the information that follows.

    In Step 15, you specified an extension that users could enter for their mailbox number. So when a user logs in to his or her voicemail account and is prompted to enter the mailbox number, the user enters, for example, *37869* instead of *16502037869*. However, Oracle Voicemail & Fax needs the telephone number in international format in order to know what account the user is logging in to. Therefore, the Telephone Number Translation Rules specifies how to take a mailbox extension such as *37869* and convert it to an international phone number such as *16502037869*.

    You must create rules to cover all the phone numbers owned by this PBX. In this example, the two phone number patterns that users will be entering are *3????* and *7????*. Figure 2–5 shows how the Telephone Number Translation Rules table should be filled in.

Figure 2–5 Telephone Number Translation Rules



18. Select the time zone for your site from the Timezone list. In this example, select **US Pacific Time**.
19. Skip the Phone Numbers table. This will be covered when you configure the PBX-Application Cluster.
20. Accept the defaults for the Interactive Voice Response (IVR) parameters.
21. Click **OK.**
22. Set the Attendant Extension for the root group. Select the root group and click Edit or simply click **root** to go to the Edit Group or Site page. Enter the 5-digit extension for the attendant and click **OK.**

    During a call, a caller has the option to press 0 to reach an attendant. Typically, the attendant is the company operator. The Attendant Extension is the number to which calls are transferred when the caller presses 0. There is no default setting for the Attendant Extension, so you must provide this number. The format for this number is the format that users enter to specify their mailbox numbers. Oracle

recommends that you set this for the root group. Any group created under root inherits this setting. This setting can always be overridden at the group or user level.

See "Group Parameters" on page 4-4 for more information on setting the site parameters.

Configuring the PBX-Application Cluster

During the Oracle Voicemail & Fax installation, you created a PBX-Application Cluster to associate with the Voicemail & Fax Application. Now you will specify how the Voicemail & Fax Application will integrate with the PBX.

To configure the PBX-Application Cluster:

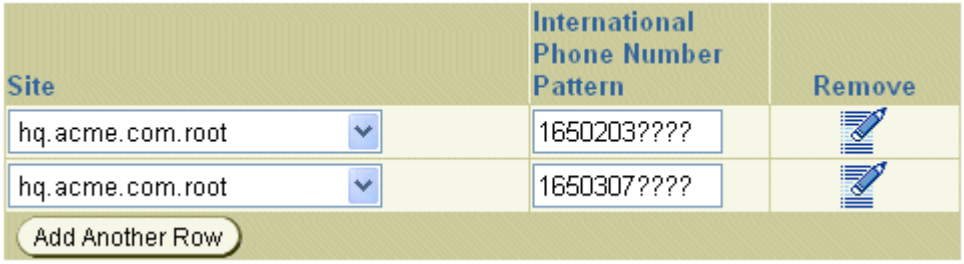
1. From the Enterprise Manager Grid Control console, scroll down to the Components table and select the PBX-Application Cluster that you created during installation.
2. On the home page for the PBX-Application Cluster, click the **Administration** tab.
3. In the PBX Integration section, select the Integration Type. For this example, select **Telephony Server.**
4. Leave the default setting for Message Truncation Time unchanged.
5. Complete the Phone Numbers table for your PBX and site.

   The Phone Numbers table is a mapping of a PBX and its phone numbers to a specific site. For this example, do the following:

   - Select **hq.acme.com** from the Site list. hq.acme.com is the site you created earlier in "Creating and Configuring a Site" on page 2-10.
   - Enter the phone number pattern in the International Phone Number Pattern column.
   - Enter as many entries as you need to cover all the phone numbers that are assigned to your site.

     Your entries should look like Figure 2–6.

Figure 2–6 Phone Numbers



> **Note:** This table is a different view of the Phone Numbers table on the Create Group or Site page. Alternatively, you could fill in this information on the Create Group or Site page, if you wish.

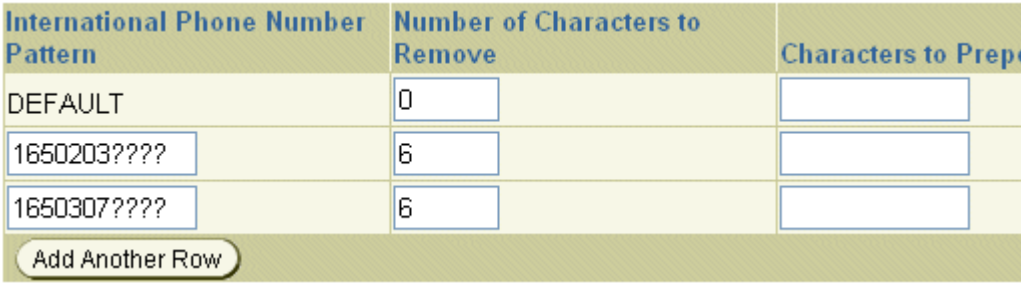
6. In the Internal Dialing Rules section, enter the dialing rules for the phone numbers owned by the PBX.

The internal dialing rules are used to convert phone numbers that are in Oracle Voicemail & Fax format (that is, in international format) into a form that the PBX recognizes. In this example, the PBX uses 5-digit extensions to dial internal phone numbers.

For this example, the Internal Dialing Rules table should look like Figure 2–7.

Note: When a phone number is passed to the application, the application checks the phone number against the phone number patterns. If the phone number does not match any of the specified patterns, the DEFAULT pattern is used. By default, the rule for the DEFAULT pattern is to pass the phone number, as is, with no changes. Another use of the DEFAULT pattern is if all phone numbers can be handled with one rule. If this is the case, you can use the DEFAULT pattern to define this rule.

Figure 2–7 Internal Dialing Rules



Therefore, if the phone number is 16503072492, the first 6 digits are removed, leaving *72492*. No numbers are prefixed to this number. The number that gets passed to the PBX is *72492*, which is the 5-digit format it uses to dial internal phone numbers.

7. In the External Dialing Rules table, enter the dialing rules for phone numbers that are not owned by this PBX.

   The external dialing rules are used to convert phone numbers that are in Oracle Voicemail & Fax format (that is, in international format) into a form that the PBX recognizes. For this example, the entries should look like Figure 2–8.

   The first rule is used to dial phone numbers with the local area code 650 that do not belong to this PBX. To dial phone numbers with area code 650, the PBX prefixes a *9* to the local number. For example, to call 16504518422, the PBX would dial *94518422*. To get from *16504518422* to *94518422*, the first 4 digits are removed and a *9* is prefixed to the result.

   The second rule covers all United States phone numbers that are outside of the local 650 area code. Note that you could also use *1,* followed by 10 question marks (*1??????????*) to specify this pattern. In this instance, you remove no digits and prefix a *9* to the number. Therefore, 14158439245 would be dialed as *914158439245*.

   The last rule covers international phone numbers. In this instance, no digits are removed, and *9011* is appended to the beginning of the number. Because international numbers can be of varying lengths, use the asterisk (*) rather than a series of question marks.

   If a phone number should match more than one pattern, the most restrictive pattern is used. For example, the phone number *16504518422* matches all three of

the specified patterns, *, *1**, and 1650???????. However, it matches more characters in the last pattern, so the *1650???????* rule is applied to the number.

Figure 2–8 External Dialing Rules

International Phone Number Pattern	Number of Characters to Remove	Characters to Prepe
DEFAULT	0	
1650???????	4	9
1*	0	9
*	0	9011

Add Another Row

8. In the Telephone Number Translation Rules table (Figure 2–9), enter the rules for converting phone numbers that the PBX passes to Oracle Voicemail & Fax into international phone number format.

   This PBX passes 10-digit phone numbers to Oracle Voicemail & Fax. These 10-digit numbers must be converted into a valid Oracle Voicemail & Fax account number. That is, they must be converted into international phone number format. You must specify rules to cover all phone numbers owned by this PBX.

Figure 2–9 Telephone Number Translation Rules

Phone Number Pattern	Number of Characters to Remove	Characters to Prepend	Remove
DEFAULT	0		
650203????	0	1	
650307????	0	1	

Add Another Row

9. In the MWI Phone Number Conversion table (Figure 2–10), enter the rules for converting Oracle Voicemail & Fax account numbers into a format that the PBX can dial.

   For this particular PBX, these rules are identical to the Internal Dialing Rules.

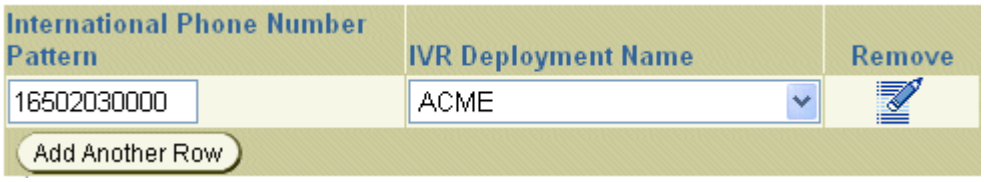
Figure 2–10 MWI Phone Number Conversion

International Phone Number Pattern	Number of Characters to Remove	Characters to Prepe
DEFAULT	0	
1650203????	6	
1650307????	6	

Add Another Row

10. In the Interactive Voice Response table (Figure 2–11), enter a phone number in the International Phone Number column. This phone number should always forward a call to the hunt group phone number.

Figure 2–11 Interactive Voice Response



11. Click **Apply.**

See "Configuring PBX-Application Clusters" on page 3-1 for more information on the PBX-Application Cluster parameters.

Creating an Oracle Voicemail & Fax User

Oracle Collaboration Suite users are provisioned for voice access through Oracle Internet Directory Self-Service Console.

To create a test user:

1. Log in to Oracle Internet Directory Self-Service Console.

   You need to be logged in as an administrator with privileges to provision users. For example, you can use the orcladmin user name, which has superuser privileges.

2. Create a user named John Doe.

3. Specify voice access for the user and assign the phone number *16502037882* to the user.

See Chapter 4, "Managing Oracle Collaboration Suite Users and Groups," in *Oracle Collaboration Suite Administrator's Guide* for more information on how to use the Self-Service Console.

Testing the Oracle Voicemail & Fax System

Make sure you complete each step successfully, resolving any errors, before you proceed to the next step.

To test the Oracle Voicemail & Fax system:

1. Dial the hunt group number (16502030000) and allow the phone call to roll over into the voicemail system.

   You should hear the following message: "Please enter the mailbox number or press start to record a message for another user."

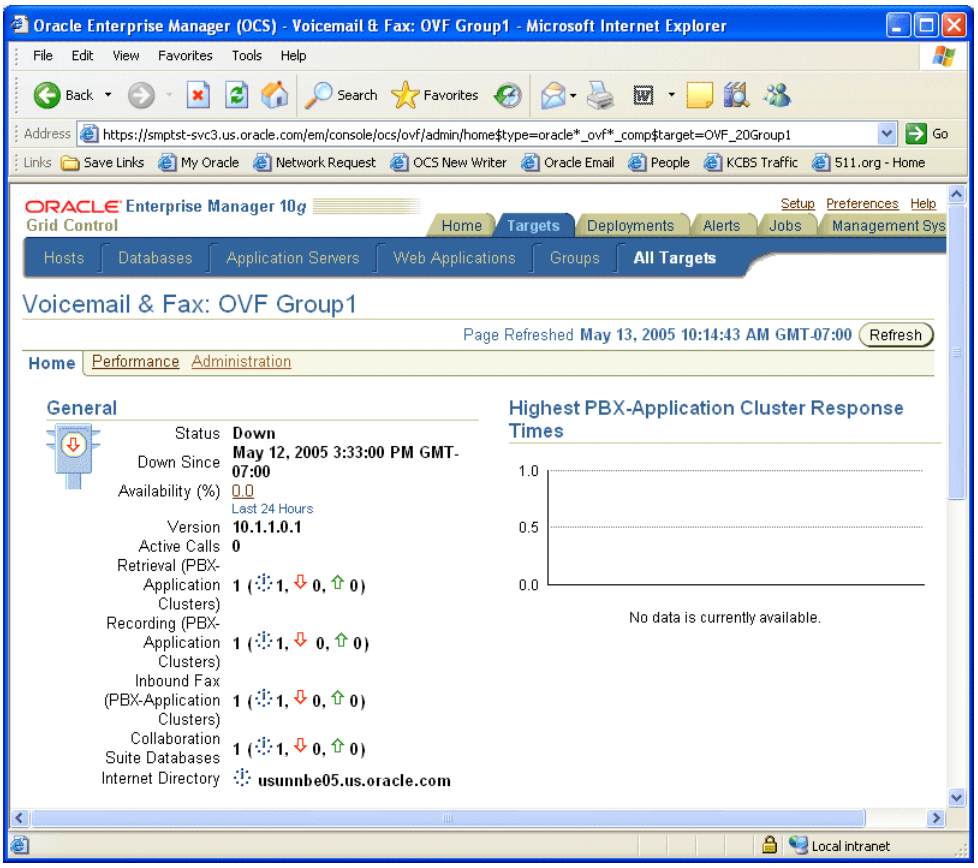
   You may hear the following message instead: "To record a message, press 1; to retrieve messages, press 2; to speak to an operator, press 0; to hang up, press the star key." If you hear this message prompting you to record a message or retrieve your messages, then this means that the Oracle Voicemail & Fax system cannot differentiate between a direct call and a forwarded call. Should this occur, check to see that the correct port has been specified on the Voicemail & Fax Server to receive call-detail information.

2. Log in using the account you created. In this example, the account number is 37882. (Remember, you are using the mailbox extension length you established on the Create Group or Site page.)
3. Enter the numeric password you established for this user.
4. Follow the voice prompts and change the user's password and record the user's name (John Doe).
5. From the main menu, select **5**, (Set Greetings or Change Personal Options), and do the following:
   - Record a greeting for the user (optional).
   - Activate one of the greetings you create.
   - Hang up the phone.
6. Dial the user's phone number (16502037882) and let the call roll over into the voicemail system.

   If you get the message: "An error occurred during the processing of your request. Please try your call again," check the Routing Service log to see what phone number the PBX is passing to Oracle Voicemail & Fax. Is it passing *6502037882* or is it passing some other number? In this example, you would look for the following entry: "Storing call details: from 650xxxxxxx; to 6502037882; type B." Look for a similar entry for your specific situation. Check the Telephone Number Translation Rules on the PBX-Application Cluster administration page and verify that it includes a rule that can convert this phone number into international phone number format.

   If you do not hear a greeting, then do the following:

   - Log in to the user's voicemail account and from the main menu, select **5** (Set Greetings or Change Personal Options), and follow the prompts to reactivate your greeting or record and activate the greeting again.
   - Verify that Oracle Internet Directory is running. Go to the Voicemail & Fax home page and check the status of Oracle Internet Directory in the General section of the page.



7. Dial the hunt group number (16502030000), log in to the user's account (37882) and from the main menu, select **4** to record a new message. After you record the message, press **4** to send the message to the user. (For the purpose of this test, you are logging in to John Doe's account, recording a message, and sending the message to John Doe's account.)

   If you hear the message: "Your message could not be sent and has been queued," then do the following:

   - Verify that the Oracle Collaboration Suite Database is up and running. Go to the Voicemail & Fax home page and check the status of the Oracle Collaboration Suite Database in the General section of the page.
   - Check to see that the Oracle Collaboration Suite Database is available for the Voicemail & Fax Application. See "Setting the Available Oracle Collaboration Suite Databases" on page 9-3 for more information.
   - Check to see that the Oracle Collaboration Suite Database is listed in the sc_vsto.cfg file. The sc_vsto.cfg file is a NetMerge configuration file that picks up information from the Oracle directory server. This file can be found in the following directory:

     ```
     C:\Documents and Settings\All Users\Dialogic\CT Media\Container
     ```

     Check to see that the database you are trying to connect to is listed.

8. Dial in to the hunt group number and log in to John Doe's account (37882). You should hear the following message: "You have one new voicemail message, no saved voicemail messages, no new e-mail messages, and no new fax messages."

If the voicemail prompt indicates that you have no new messages instead of indicating you have one new message, then verify that the Oracle Mail IMAP Server and the SMTP process are running. See *Oracle Mail Administrator's Guide* for information on checking the Oracle Mail IMAP Server and the SMTP process.

Congratulations! You have successfully done the following:

- Configured the Oracle Voicemail & Fax system
- Created a test user
- Verified that you can log in to the Oracle Voicemail & Fax system
- Set the user's personal settings (password and greeting)
- Verified that the system is correctly translating PBX phone numbers into Oracle Voicemail & Fax account numbers
- Verified that you can send and retrieve messages

Next Steps

You can now add the other users to your system. Follow the instructions in Chapter 5, "Managing Oracle Voicemail & Fax Accounts." In particular, you may want to refer to "Adding Users with Bulk Provisioning" on page 5-2 on bulk provisioning users.

3

Configuring Oracle Voicemail & Fax

This chapter discusses the following topics:

There are default values for most of the parameters and, generally, you can start with the defaults and make adjustments to the settings after your system has been running for awhile. There is one important exception to this. After you install Oracle Voicemail & Fax, you must configure the PBX-Application Cluster. There are no defaults for some of the required parameters, and these must be set in order for your Oracle Voicemail & Fax system to function properly.

Configuring PBX-Application Clusters

Oracle Voicemail & Fax supports multiple locations in one voicemail deployment. Because there may be different types of PBXes in the same deployment, Oracle provides a way to define integrations of PBXes and Voicemail & Fax Applications through the concept of a PBX-Application Cluster. A PBX-Application Cluster defines a relationship between one or more PBXes and one or more Voicemail & Fax Applications (called an application cluster) that support the PBX.

You set parameters in the PBX-Application Cluster for a specific PBX. The parameters define how a Voicemail & Fax Application integrates with the PBX. These parameters include the PBX integration type, PBX dialing rules, telephony number translation rules, Message Waiting Indicator (MWI) phone number conversion rules, Interactive Voice Response (IVR) mapping, and phone numbers belonging to the PBX. This configuration applies to any Voicemail & Fax Application that is associated with the PBX-Application Cluster.

During the installation and configuration of Oracle Voicemail & Fax, you are prompted to associate Oracle Voicemail & Fax with a PBX-Application Cluster. If this is a first-time installation or if you created a new PBX-Application Cluster during the installation, then you must configure it in order to have a functioning Oracle Voicemail & Fax system.

Some of the parameters have defaults or are optional, while others are required. At a minimum, you must configure the following parameters:

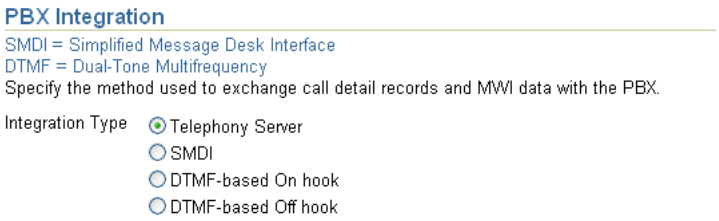
- Phone Numbers
- Telephone Number Translation Rules

- Internal Dialing Rules
- External Dialing Rules
- MWI Phone Number Conversion Rules

PBX Integration Parameters

PBX Integration (Figure 3–1) specifies the method for exchanging call-detail records and Message Waiting Indicator data with the PBX. The three methods of integration that Oracle Voicemail & Fax supports are Telephony Server, Simplified Message Desk Interface (SMDI), and Dual-Tone Multifrequency (DTMF).

Figure 3–1 PBX Integration



Telephony Server

The default integration type is Telephony Server. Select this option if you are using digital emulation, that is, the call-detail records are extracted from the digital display that the card is emulating, and message waiting indicator data is passed between the PBX and the Voicemail & Fax Server using digital emulation. In this scenario, one port on the card is reserved to handle the message waiting indicator function.

You must determine what integration type is supported by your PBX, and configure the PBX and telephony server hardware to work with Oracle Voicemail & Fax.

Simplified Message Desk Interface

If you choose SMDI, you must specify the following:

- Host – Specify the fully qualified name of the host computer on which the Oracle Voicemail & Fax SMDI Monitor Service is running.
- Port – Specify a valid Transmission Control Protocol (TCP) port on the host computer where SMDI Monitor Service is running.
- Timeout – Specify the number of milliseconds that Voicemail & Fax Applications will wait for the SMDI Monitor Service to respond to a query or connection request.
- Security Disabled – If the check box is selected, it indicates that access to the SMDI Monitor Service does not require authentication. It is recommended that SMDI Monitor Service security be enabled; however, it may be necessary to disable authentication in an environment where multiple versions of Oracle Voicemail & Fax interoperate.

  If security is disabled and you change this setting to enable security, manually refresh all Routing Service, MWI Service, and SMDI Monitor Service processes on all Applications tiers that use this PBX. This ensures that all processes that interact with the SMDI Monitor Service are now secure processes.

Dual-Tone Multifrequency

If you choose DTMF, you must specify the following

- On hook – Select on hook if the PBX sends call information while the voicemail system is on hook—that is, before the voicemail system answers the call.
- Off hook – Select off hook if the PBX sends call information while the voicemail system is off hook—that is, after the voicemail system answers the call.
- Direct Phone Number – Specify the hunt group pilot number used to access the voicemail system remotely.

Direct Phone Number The Voicemail & Fax Application needs to know the call type (direct or forwarded) in order to know how to handle the phone call and to which of its services the call should be passed. DTMF-based PBXes do not send call type information to the Voicemail & Fax Application. Therefore, the application uses the phone numbers specified in the Direct Phone Number table to determine the call type. The phone numbers specified in the Direct Phone Number table are used to access the voicemail system to retrieve messages or administer voicemail preferences. Calls to these phone numbers are direct calls. Therefore, if the PBX passes a number to the Voicemail & Fax Application that matches one of the phone numbers in the Direct Phone Number table, the application assumes it is a direct call. For all other numbers that the PBX passes to the Voicemail & Fax Application, the application assumes the call is a forwarded call.

Recording Process Parameters

On some PBXes, a dial tone triggers a call disconnection. The consequence of this is that when a user hangs up after leaving a voicemail message, a dial tone is appended to the end of the message. The system administrator can configure the application so that this dial tone is removed by specifying the length of time the dial tone plays before the call is disconnected. Message Truncation Time is the time, in milliseconds, that is deleted from the end of the message. The default is 0 milliseconds.

Phone Numbers Table

The Master Phone Numbers table includes PBX, site, and phone number data for the Oracle Voicemail & Fax system. Table 3–1 is an example of this table.

Table 3–1 Master Phone Numbers Table

PBX	Site	International Phone Number Pattern
SanFrancisco_Avaya	sf.us.acme.com	1415775????
SanFrancisco_Avaya	sf.us.acme.com	1415837????
London	London.uk.acme.com	44171816????
London	London.uk.acme.com	44171777????
HQNortel	hq.us.acme.com	1650506????
HQNortel	hq.us.acme.com	1650607????
HQNortel	hq.us.acme.com	1650633????

Oracle Voicemail & Fax uses the Master Phone Numbers table in two situations:

- If the caller is unknown to the Voicemail & Fax Application, Oracle Voicemail & Fax uses this table to identify the site of the phone number being called and uses

the site's settings to determine various settings, including the language in which the voicemail prompts are played.

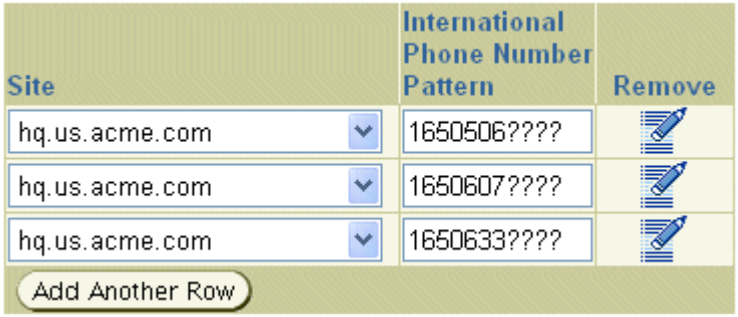
- The Message Waiting Indicator Service uses the Master Phone Numbers table to identify the PBX associated with a phone number and to deliver the MWI message to the correct PBX.

You will need to populate the Master Phone Numbers table at the following times:

- When you first install your Oracle Voicemail & Fax system
- When you add a new PBX to an existing system
- When you add a site

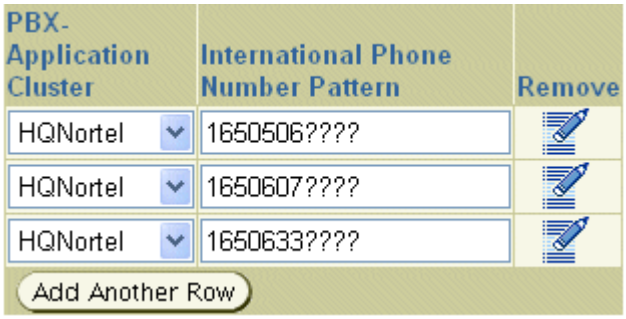
Two views of this Master Phone Numbers table are used in Oracle Enterprise Manager. On the PBX-Application Cluster administration page, the Phone Numbers table identifies all phone numbers for a particular PBX and the sites to which they belong. See Figure 3–2 for an example of the Phone Numbers table for the HQNortel PBX-Application Cluster.

Figure 3–2 PBX-Application Cluster View of the Master Phone Numbers Table



On the administration page for Groups or Sites, the Phone Numbers table identifies the phone numbers and PBXes for a site. Figure 3–3 shows the phone numbers for the one of the sites in Figure 3–2, the hq.us.acme.com site.

Figure 3–3 Group and Site View of the Master Phone Numbers Table



You can use either view of the Master Phone Numbers table to manage your Oracle Voicemail & Fax system. Generally, when you are configuring the Voicemail & Fax Application to work with the PBX, you will use the Phone Numbers table on the PBX-Application Cluster administration page. When you are adding a new site, you will generally use the Phone Numbers table on the Create Group or Site page.

Note: The Master Phone Numbers table does not appear in Enterprise Manager. You will only see one of two views of this table in the PBX-Application Cluster Administration page, the Create Group or Site page, and the Edit Group or Site page.

Phone Numbers Parameters

The Phone Numbers table contains entries for all phone numbers owned by the PBX and the site associated with these phone numbers. There are no default settings for this table. Therefore, you must configure the Phone Numbers table for each PBX.

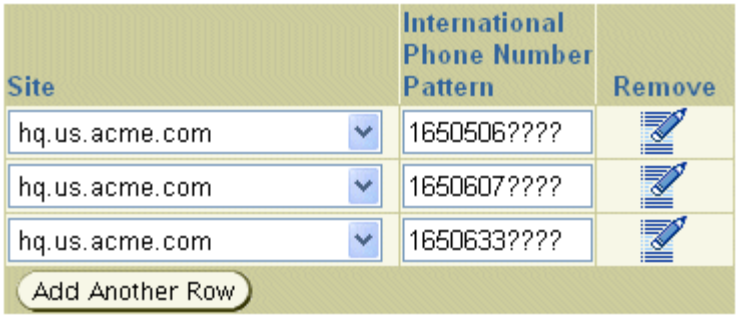
The Phone Numbers table is a view of the Master Phone Numbers table, which includes phone number entries for all PBXes in the Oracle Voicemail & Fax system. When the Voicemail & Fax Application tries to identify the site associated with a phone number, it searches the Master Phone Numbers table for a pattern in the International Phone Number Pattern field that matches the phone number.

Valid characters include digits; two types of wildcards, question marks (?) and asterisks (*); and hyphens (-). A question mark indicates a single digit and can be used anywhere in the phone number. An asterisk indicates zero or more digits and can be used only at the end of the phone number. Hyphens are used to prefix a phone number pattern to differentiate multiple PBXes connecting to the same server using a VoIP gateway.

Because the table includes phone number patterns for all the PBXes, the patterns must be unique. If a phone number matches more than one pattern, the resulting behavior will be unreliable. For example, if two PBXes own phone numbers that begin with *1650*, you would have to specify a unique pattern for each PBX-Application Cluster. For example, one PBX might have the phone numbers matching the pattern *1650506????*, and another might have phone number matching the pattern *1650632????*. Specifying the pattern *1650???????* for both PBXes would result in unreliable behavior.

Figure 3–4 is an example of Phone Numbers table entries for a boarded deployment with one PBX and one site. There are three phone number patterns that describe all the phone numbers belonging to the Redwood Shores PBX. All phone numbers for this site belong to the area code 650 and begin with a *506*, *607*, or *633* prefix. In a boarded deployment, there are separate PBXes for each physical site, and you would set up similar entries for each PBX in your Oracle Voicemail & Fax deployment.

Figure 3–4 Example of Phone Numbers Table for a Boarded Deployment



PBX Dialing Rules

Oracle Voicemail & Fax uses phone numbers in international format for all of its transactions, for example, 16505071234. Different PBXes handle phone numbers using different formats, for example, a PBX may use 5-digit extensions such as 71234. As phone numbers are passed between Oracle Voicemail & Fax and the PBX, the phone numbers must get translated into a format that each can understand. There are several parameters that describe the rules used in this translation. Each parameter handles a different situation in which phone numbers are being routed between the PBX and Oracle Voicemail & Fax:

- Telephone Number Translation Rules, which define the rules for translating PBX phone numbers into international format
- Internal Dialing Rules, which define the rules for converting Oracle Voicemail & Fax phone numbers into PBX phone numbers for phone numbers belonging to the PBX
- External Dialing Rules, which define the rules for converting Oracle Voicemail & Fax phone numbers into PBX phone numbers for phone numbers that do not belong to the PBX
- MWI Dialing Rules, which define the rules for converting Oracle Voicemail & Fax phone numbers into phone numbers that the PBX uses to turn the message waiting indicator on or off

Telephone Number Translation Rules Parameter

When a call is made, the PBX passes the phone number of the caller and the called party to the application. Different PBX systems convert phone numbers into different formats, and not necessarily into the international format that is required by the Voicemail & Fax Application. For example, some PBXes convert United States phone numbers to a 10-digit number (3-digit area code plus 7-digit phone number) that is not in international format. If the PBX does not pass the phone number to the application in international format, you must specify how to convert the PBX phone number into a valid account number.

The Telephone Number Translation Rules are rules for converting PBX phone numbers into valid Oracle Voicemail & Fax account numbers. These rules are specific to each PBX. You need to determine in what format your PBX transmits phone numbers, and then you need to specify as many rules as required to correctly convert the phone numbers that belong to this PBX.

A rule is constructed for a phone number pattern. Valid characters include digits; two types of wildcards, question marks (?) and asterisks (*); and hyphens (-). A question mark indicates a single digit and can be used anywhere in the phone number. An asterisk indicates zero or more digits and can be used only at the end of the phone number. Hyphens are used to prefix a phone number pattern to differentiate multiple PBXes connecting to the same server, using a VoIP gateway.

When the PBX passes a phone number to the Voicemail & Fax Application, the application checks to see which pattern it matches. The application removes the number of characters specified in Number of Characters to Remove from the beginning of the phone number and appends any characters specified in Characters to Prepend to the beginning of the string.

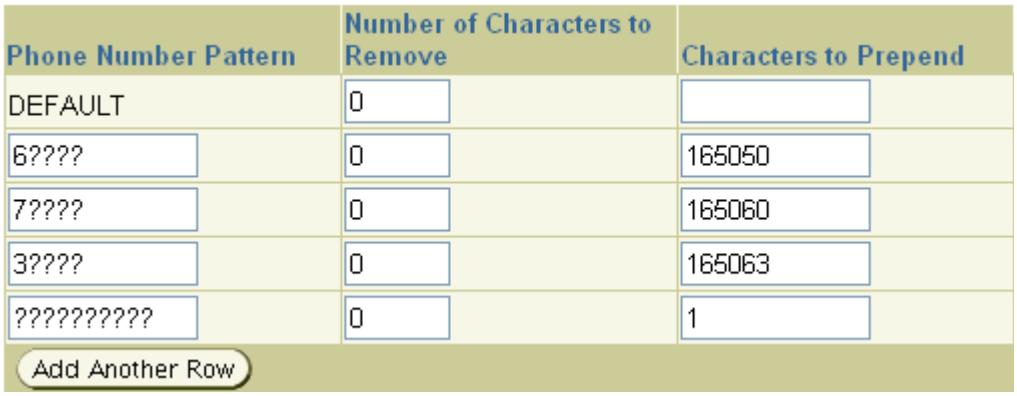
When you install Oracle Voicemail & Fax, a default rule is created. The Number of Characters to Remove is 0 and no characters are prefixed. Therefore, by default, the PBX passes the unmodified phone number to the Voicemail & Fax Application.

Figure 3–5 is an example of telephone number translation rules for a boarded PBX. There are three phone number patterns that belong to this PBX: *1650506????*, *1650607????*, and *1650633????*, and a rule must be created for each pattern. In this example, the PBX transmits 5-digit extensions to the Voicemail & Fax Application. Therefore *1650506????* phone numbers are transmitted by the PBX in a *6????* phone number pattern. To convert a *6????* extension to a phone number in international format, no digits are removed and *165050* is appended to the beginning of the number. This is the first rule in Figure 3–5. The second and third rules cover the *1650607????* and *1650633????* phone numbers. These are the minimum rules you need for this PBX.

Optionally, you can create a rule that covers United States phone numbers that do not belong to this PBX with the pattern consisting of 10 asterisks. These numbers are prefixed with a *1*. Some of these numbers may be recognized by the application.

The DEFAULT rule covers any other phone numbers that are transmitted by the PBX. These phone numbers are passed, with no changes, to the Voicemail & Fax Application.

Figure 3–5 Example of Telephone Translation Rules for a Boarded PBX



Internal and External Dialing Rules Parameters

Internal Dialing Rules and External Dialing Rules are used to specify the rules to convert phone numbers into a form that the PBX can dial. Internal Dialing Rules are used to dial numbers that belong to this PBX, and External Dialing Rules are used to dial all other numbers.

Two examples of when these dialing rules are used are the following:

- An unauthenticated user presses the option (usually *0*) to reach the attendant.
- A caller dials an auto attendant implemented using the Oracle Voicemail & Fax Interactive Voice Response feature. The caller selects a user from the user directory, and his or her call is transferred to this user's extension.

A rule is constructed for a phone number pattern. The phone number pattern must be in international format. Valid characters include digits; two types of wildcards, question marks (?) and asterisks (*); and hyphens (-). A question mark indicates a single digit and can be used anywhere in the phone number. An asterisk indicates zero or more digits and can be used only at the end of the phone number. Hyphens are used to prefix a phone number pattern to differentiate multiple PBXes connecting to the same server, using a VoIP gateway.

When the PBX passes a phone number to the application, the application first checks to see if the phone number is handled by the current PBX. If it is, the internal dialing rules table is used. Otherwise, the external dialing rules table is used. The application

checks the rules and finds the pattern that matches the phone number. It removes the number of characters specified in the Number of Characters to Remove column from the beginning of the phone number and appends any characters specified in the Characters to Prepend column to the beginning of the string.

When you install Oracle Voicemail & Fax, a default internal rule and a default external rule, called DEFAULT, are created. Both defaults are identical. A phone number is passed to the PBX, without making any changes to the phone number. This default rule is defined with the Number of Characters to Remove value as *0* and no digits being prefixed—that is, the Characters to Prepend cell is empty.

Creating Internal Dialing Rules

Create internal dialing rules that will cover all phone numbers owned by this PBX.

Figure 3–6 is an example of an internal dialing rule for a boarded PBX that uses 5-digit extensions. To convert the international phone number into a 5-digit extension, the first 6 digits are removed, and no digits are prefixed. For example, if the phone number is 1 650 506 1234, removing the first 6 digits (*165050*) results in the 5-digit extension *61234*.

Figure 3–6 Example of Internal Dialing Rules for a Boarded PBX

International Phone Number Pattern	Number of Characters to Remove	Characters to Prepend
DEFAULT	6	

Add Another Row

Creating External Dialing Rules

Figure 3–7 shows examples of three external dialing rules for a boarded PBX. The first pattern, *1650???????*, would be used for local phone numbers. The second pattern consisting of a *1*, followed by 10 asterisks would be used for any other United States phone number. The DEFAULT rule would cover phone numbers outside of the United States.

Figure 3–7 Example of External Dialing Rules for a Boarded PBX

International Phone Number Pattern	Number of Characters to Remove	Characters to Prepend
DEFAULT	0	9011
1650???????	4	9
1??????????	0	9

Add Another Row

The following illustrates how the external dialing rules are applied to three phone numbers:

- **1 650 123 4567** – This phone number matches the first pattern, *1650???????*. The first 4 digits, *1650*, are removed and *9* is appended to the beginning of the number. The result is *91234567*.

- **1 212 123 4567** – This phone number matches the second pattern, *1??????????*. No digits are removed and a *9* is appended to the beginning of the number. The result is *912121234567*.
- **91 11 1234567** – This phone number does not match either of the two patterns and, therefore, the default dialing rule is used. No digits are removed, and the digits *9011* are appended to the beginning resulting in *901191111234567*.

If a phone number matches more than one pattern, the application uses the pattern that is more specific. For example, the phone number 1 650 123 4567 matches the *1650???????* and the *1??????????* patterns in Figure 3–7. The application uses the more specific pattern, that is, the pattern where the asterisks begin farther to the right. In this example, *1650???????* is the more specific pattern and its rule is applied to the phone number.

MWI Phone Number Conversion Rules Parameters

The Message Waiting Indicator (MWI) Service tells the PBX that the MWI on the phone set for an account number needs to be turned on or off. The account number that is passed to the MWI service is the phone number in international format. This number must be converted to a phone number that the PBX can use. The conversion is done using the MWI Dialing Rules. Although many PBXes use the same phone number formats for MWI that they use for dialing internal numbers, this is not true for some PBXes. In order to support all possible formats for MWI phone numbers, the MWI Phone Number Conversion table is used to specify the MWI rules.

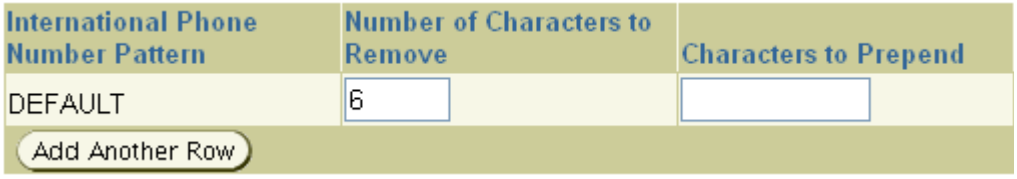
A rule is constructed for a phone number pattern. The phone number pattern must be in international format. Valid characters include digits; two types of wildcards, question marks (?) and asterisks (*); and hyphens (-). A question mark indicates a single digit and can be used anywhere in the phone number. An asterisk indicates zero or more digits and can be used only at the end of the phone number. Hyphens are used to prefix a phone number pattern to differentiate multiple PBXes connecting to the same server, using a VoIP gateway.

When the phone number is passed to the Voicemail & Fax Application, the application checks to see which pattern it matches. It removes the number of characters specified in the Number of Characters to Remove column from the beginning of the phone number and appends any characters specified in the Characters to Prepend column to the beginning of the string.

When you install Oracle Voicemail & Fax, a default rule is created. The Number of Characters to Remove value is *0* and no characters are prefixed. That is, by default, the phone number is passed to the PBX in international phone number format.

The Voicemail & Fax Application phone numbers are in international format. In this example, the PBX requires the phone number to be a 5-digit extension. For example, the phone number, *16505067777*, would need to be converted to the 5-digit extension *67777*. Six digits are removed from the international phone number and no digits are appended. Only one rule is required and, therefore, this is the DEFAULT rule as shown in Figure 3–8.

Figure 3–8 Example MWI Conversion Rule for a Boarded PBX



Interactive Voice Response (IVR) Parameters

The Interactive Voice Response (IVR) table specifies the phone numbers for which calls are diverted to an IVR deployment, and the name of the IVR deployment. There are no defaults for this table. You must specify all phone numbers on this PBX that are diverted to an IVR deployment.

Table 3–2 is an example of the IVR table.

Table 3–2 Example of Interactive Voice Response Table

International Phone Number Pattern	IVR Deployment Name
15108437000	LanguageChoiceAutoAttendant
	EnglishAutoAttendant
	FrenchAutoAttendant
14155067000	LanguageChoiceAutoAttendant

When a call is made to the phone number specified in the International Phone Number Pattern column, the call is diverted to the IVR deployment specified in the IVR Deployment Name column.

If an IVR deployment, for example, LanguageChoiceAutoAttendant, sends calls to other IVRs, these secondary IVRs must also be specified in the table. An example is an IVR that gives callers the option to hear the prompts in different languages. For example, the LanguageChoiceAutoAttendant deployment prompts users: "Press *1* to continue in English. Press *2* to continue in French." The secondary IVRs, in English and French, must also be included in the table. In this example, the secondary IVRs are EnglishAutoAttendant and FrenchAutoAttendant. The International Phone Number Pattern column for the secondary IVRs is left blank.

If more than one phone number uses the same deployment, each phone number is listed in the table with the deployment specified. In Table 3–2, both *15108437000* and *14155067000* are diverted to the LanguageChoiceAutoAttendant deployment. However, the secondary deployments, EnglishAutoAttendant and FrenchAutoAttendant, are listed once.

If the IVR is not specified in this table, calls to the phone number are directed to the recording application. Therefore, if the LanguageChoiceAutoAttendant deployment is not specified, phone calls to 15108437000 would be sent to the voicemail mailbox for 15108437000.

Valid characters for phone numbers include digits; two types of wildcards, question marks (?) and asterisks (*); and hyphens (-). A question mark indicates a single digit and can be used anywhere in the phone number. An asterisk indicates zero or more digits and can be used only at the end of the phone number. Hyphens are used to prefix a phone number pattern to differentiate multiple PBXes connecting to the same server, using a VoIP gateway.

Configuring the Voicemail & Fax Group

You can configure the default values of parameters for all Voicemail & Fax Applications using Oracle Enterprise Manager Grid Control console. These settings can be overridden at the application level. See "Configuring the Voicemail & Fax Application" on page 3-11 for more information on setting the application-level parameters.

To configure the global process settings:

1. Navigate to the administration page of the Voicemail & Fax group.
2. Click the **Go to Task** link for the Configure Global Process Settings task.
3. Edit the parameters and click **OK.**

   A confirmation page appears asking you to confirm that you want to apply these changes.

   You may choose to immediately reload the Voicemail & Fax Applications that are children of this Voicemail & Fax group with the new settings by selecting **Apply and Reload All Children.** If you do not select Apply and Reload All Children, then the Voicemail & Fax Applications are reloaded the next time each application is set to automatically reload itself.
4. Click **OK.**

   See Appendix B, "Process Parameters" for more information on each of the parameters and how to set them.

Configuring the Voicemail & Fax Application

You configure the Voicemail & Fax Application using Enterprise Manager Grid Control console. The settings are found on the administration page for the particular application. By default, the settings are inherited from global process settings for the Voicemail & Fax group.

See Appendix B, "Process Parameters" for information on each of the parameters.

To configure the Voicemail & Fax Application parameters:

1. Navigate to the administration page for the Voicemail & Fax Application.
2. Edit the parameters and click **Apply.**

   A confirmation page appears asking you to confirm that you want to apply the changes.

   You may choose to immediately apply the settings to the Voicemail & Fax Application by selecting **Apply and Reload All Children.** If you do not select Apply and Reload All Children, then the new settings do not take effect until the next time the services are automatically reloaded. You can also force a reload by going to the home page for the service and clicking **Reload.**

Clicking **Revert** changes the settings back to the most recently saved settings. Clicking **Refresh** loads the most recent values for these parameters from the Oracle Internet Directory. Refreshing the values can be useful if multiple system administrators are simultaneously editing the parameters.

Configuring the Voicemail & Fax Services

The Voicemail & Fax services are configured on the administration page of each service. By default, the services inherit their values from the Voicemail & Fax Application to which they belong. The Inherit icon indicates that the value is inherited and the Override icon indicates that the value has been set at the local level.

See Appendix B, "Process Parameters" for information on each of the parameters.

To configure the service parameters:

1. Navigate to the administration page for the service.
2. Edit the parameters and click **Apply.**

A confirmation page appears asking you to confirm that you want to apply the changes.

You may choose to immediately apply the settings to the service by selecting **Apply and Reload All Children.** If you do not select Apply and Reload All Children then the service is reloaded the next time it is set to automatically reload itself.

Clicking **Revert** changes the settings back to the most recently saved settings. Clicking **Refresh** loads the most recent values for these parameters from the Oracle Internet Directory. Refreshing the values can be useful if multiple system administrators are simultaneously editing the parameters.

4

Setting Up Groups and Sites

This chapter describes how to create and manage Oracle Voicemail & Fax groups and sites.

This chapter discusses the following topics:

Organizing Users into Groups and Sites

Groups are a way to organize users with the same characteristics. When you install Oracle Voicemail & Fax, by default, a root group is created. All groups are descendants of the root group and, by default, inherit its characteristics.

One way to organize your users is by their physical location. For example, you could create a group for each office—HQ, Burlington, London, and so on. Or you might organize by functional areas—for example, sales, finance, human resources, IT, and so on.

A group, by default, inherits the characteristics of its parent. You can override the inherited values of these characteristics at the group level. All users that belong to the group, by default, acquire the group characteristics.

A site is a group that is qualified by phone number sets and physical site-specific information within a company. A site is a particular type of group with site-specific parameters. All users must be assigned either to a site or to a group that is a descendant of a site. Because a phone number is tied to specific site, a user who is assigned a particular phone number can be assigned only to the site that the phone number belongs to, or to a group that is a descendent of that site.

For example, assume that hq.us.acme.com is a site, and sales.hq.us.acme.com, development.hq.us.acme.com, and legal.us.acme.com are child groups under the site (Figure 4–1). A user who is assigned a phone number, for example 16505061234, that

belongs to hq.us.acme.com can be assigned to the site or to any of the groups that are children of the site. A restriction on setting up groups and sites is that there must be only one *site* in any user's hierarchy. Therefore, if hq.us.acme.com is a site, then sales.hq.us.acme.com, development.hq.acme.com, and legal.acme.com cannot be sites.

Figure 4–1 Example of Group Hierarchy

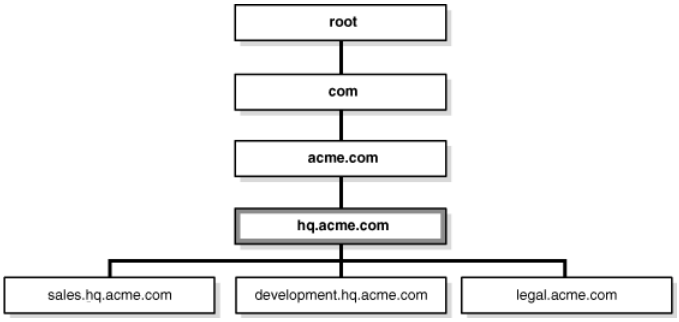
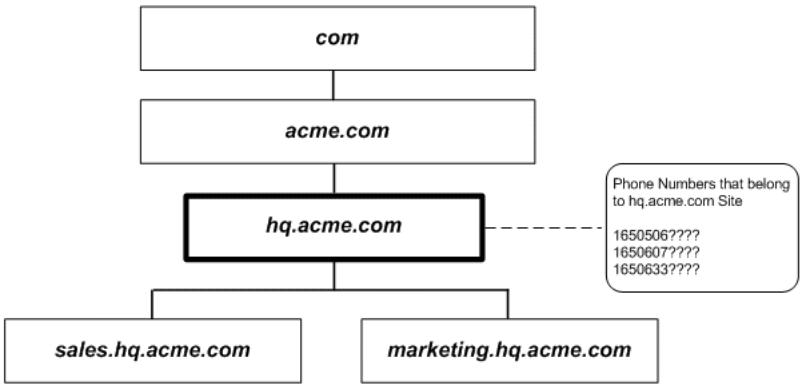


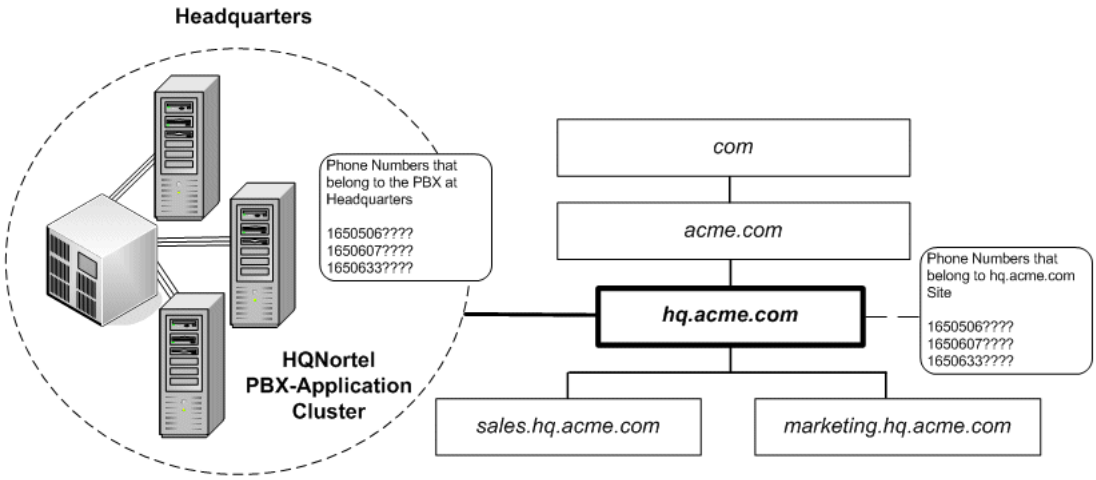
Figure 4–2 shows the group and site hierarchy for the Acme Corporation. The hq.acme.com group is a site. There are two child groups, sales.hq.acme.com and marketing.hq.acme.com. There are characteristics that are unique to sites, such as the phone numbers that belong to a site. For example, the phone numbers that belong to the hq.acme.com site match the patterns 1650506????, 1650607????, and 1650633????.

Figure 4–2 Phone Numbers for the hq.acme.com Site



Phone numbers belong to a particular PBX, in this instance, they belong to the HQ PBX and these phone numbers are specified for the PBX in the HQNortel PBX-Application Cluster. Therefore, phone numbers tie a group that is a site to a particular PBX and PBX-Application Cluster (Figure 4–3.)

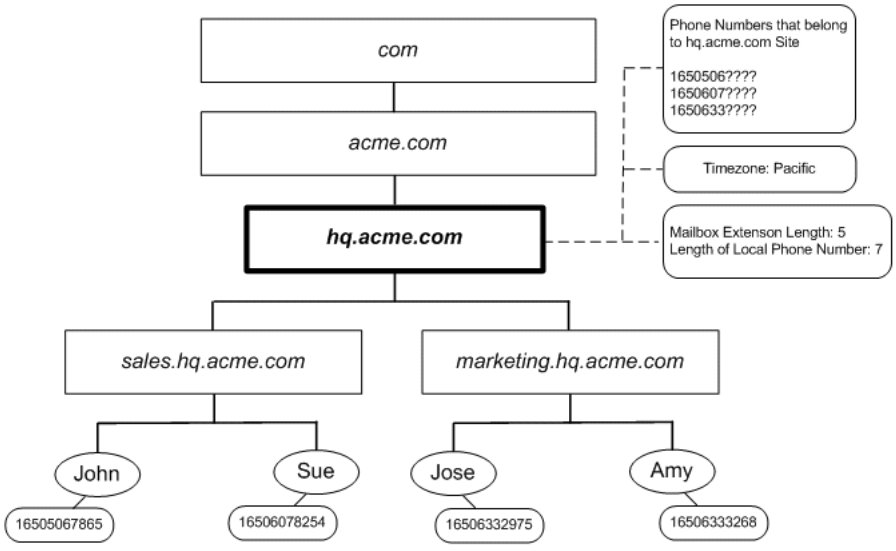
Figure 4–3 Relationship of a Site to a PBX-Application Cluster



The users that belong to the hq.us.acme.com site or to its children, sales.us.acme.com or marketing.us.acme.com, are located at the headquarters location and can only be assigned phone numbers that belong to the PBX at this location (Figure 4–4).

Groups that are designated as sites have other site-specific characteristics. For example, you set the time zone for the site (Figure 4–4). Mailbox Extension Length, the number of digits users use to access their voicemail mailbox, and Length of Local Phone Number, the number of digits used in the voicemail greeting, are both site characteristics.

Figure 4–4 hq.acme.com Site Characteristics



Creating a Group or Site

When creating groups, consider grouping users together who share the same characteristics or who will be managed in the same way. You can easily change a specific attribute at the group level, and the change is inherited by all group members.

Or you can temporarily disable Message Waiting Indicator processing for an entire group. Each group or site, by default, inherits characteristics from its parent group. You can either accept the inherited values or override them.

See "Group Parameters" on page 4-4 for more information on the parameters and how to set them.

To edit the parameters of a group or site:

1. Navigate to the Voicemail & Fax administration page.
2. Click the **Go To Task** icon of the Groups and Sites task.
3. Click **Create.**
4. Change the value of the parameters as desired.
   - To override the inherited value, click the **Override** icon. Select from the list or enter the desired value in the field.
   - To inherit the value of the parent group, click the **Inherit** icon.
5. When you are finished editing the parameters, click **OK.**
6. To revert back to the previously saved settings, click **Cancel.**

Group Parameters

You specify the group and site parameters when you create or edit a group or site. Similar parameters are grouped together and these categories correspond to the following sections. Unless otherwise specified, the default values appear in parentheses next to the parameter name.

Name, Parent, and Category

Note: The Name and Parent parameters cannot be modified for an existing group or site.

The new group or site inherits all characteristics of the selected parent group (root). The Parent name is appended to the group or site name. For example, if the name of the new group is *burlington* and the parent group is *acme.com*, then the fully qualified name of the group is *burlington.acme.com*. The exception to this are groups that are at the level just below the root group in the hierarchy. That is, *root* is not appended to the names of these groups. Use the Category (Group) field to specify whether or not this is a group or site.

Feature Access

You may specify whether or not the voicemail and fax features are enabled for this group with the Voice Access Allowed and Fax In Access Allowed parameters. The default is True. These parameters can be specified at the user level as well.

Message

The Fax Message Maximum Duration parameter (900000 milliseconds or 15 minutes) is the maximum size of a fax message. The Message Coder Type parameter is the compression algorithm used to compress voicemail messages. The default, 64 kilobytes per second (8 kilohertz), 8-bit linear PCM, can be specified for any player

that can play Microsoft Windows WAVE (.wav) files. The maximum message length is specified by Message Maximum Duration (180000 milliseconds or 3 minutes). If the caller does not speak for the length of time specified by Message Silence Timeout (10000 milliseconds or 10 seconds), the voicemail system continues with the next prompt.

Caution: Do not change the Message Coder Type setting. If another setting is selected, your users will not be able to listen to their voicemail messages using their e-mail client.

General

The following are General voicemail parameters:

- **Default Domain Name** (oracle.com). When a call is received, if Oracle Voicemail & Fax cannot determine the call's domain, it uses the Default Domain Name.

  Note: When you install Oracle Voicemail & Fax, the default domain name is set to oracle.com. After installation, you must change this setting to the domain for your site.

- **Preferred Language** (United States English). This is the language in which the voicemail prompts will be delivered.
- **Attendant Extension**. This is the phone number that must be dialed by the PBX to get to the Telephony Attendant. For example, if a user presses 0 to get to the Operator, the Attendant Extension is the number that the PBX must dial to connect to the operator. There is no default for this parameter.
- **Message Waiting Indicator Notification** (Enabled). This specifies whether or not the message waiting indicator feature is enabled.
- **New User Initial Voicemail Quota** (10 Megabytes). This specifies the voicemail quota that is allocated to a new user assigned to this group. The default is 10 megabytes. Changing this parameter affects the voicemail quota of new users. It does not change the quota for existing users belonging to the group. To change the quota of existing users, use the Voicemail & Fax Quota parameter on the Edit Users page.

Greeting

The Greeting Coder Type parameter (24 kilobytes per second, ADPCM) is the audio storage format for a user's greeting. The Greeting Maximum Duration parameter (60000 milliseconds or 1 minute) is the maximum length of the greeting. If, while recording a greeting, the user does not speak for the length of time specified by the Greeting Silence Timeout parameter (10000 milliseconds or 10 seconds), the voicemail system continues with the next prompt.

Directory Lookup

The Directory Lookup (Enabled) feature uses the telephone keypad to search for a user in the voicemail system. A combination of keypad keystrokes can match more than one name. The Maximum Hits to Return parameter (10) is the maximum number of matches to return for a combination of key strokes.

Password Length

The Set Password (No) parameter must be changed to *Yes* in order to set the Password Length parameters. The Maximum Voicemail Password Length (12) and Minimum Voicemail Password Length parameters (7) determine the number of digits that are used to set a password.

Note: Oracle recommends that you set this parameter for the company, for example, acme.com, and use the same settings throughout your company. This allows for a consistent policy and will simplify support for this feature.

Interactive Voice Response

The Interactive Voice Response (IVR) parameter establishes the times when the IVR system is on or off. A business would typically have one IVR deployment for the hours when a business is closed, another deployment for holidays, and a different deployment for unusual events such as an office closure due to weather conditions or an electrical outage, noted by the Special Mode Days parameter. The default for the Business Days parameter is 24 hours a day, 7 days a week. By default, no Holidays and Special Mode days are set. The date format is mm/dd/yy and the time format is hh:mm am/pm for the United States (English) locale.

These settings determine whether an IVR is in the open, closed, holiday, or special time category at any point in time. The ivrman command-line tool allows you to specify how a particular IVR deployment behaves for each time category.

Site Parameters

The following parameters apply only to sites:

- The **Mailbox Extension Length** parameter is the number of digits in the phone number extension. This specifies the number of digits that must be entered to access the voicemail mailbox. Users can always enter their phone numbers in full international format to access their mailboxes.
- The **Length of Local Phone Number** parameter specifies what portion of the international phone number is used in the greeting. If the voicemail user does not record a personalized greeting, then the voicemail system uses the phone number to identify the user (For example, "You have reached 61234.")

  You can specify any portion of the international phone number by specifying the number of digits. The voicemail system uses the number of digits specified, counting from the right. Therefore, if the international phone number is *16505061234*, and the Length of Local Phone Number parameter is set to 5, the voicemail system uses *61234*.
- The **Timezone** parameter specifies the time zone for this site.

There are no defaults for these site parameters.

Telephone Number Translation Rules

Telephone Number Translation Rules are rules for translating the local phone number to the international phone number. These rules are used to convert the phone numbers that the users enter to specify their account numbers. For example, if the Mailbox Extension Length parameter (specified in the Site Parameters section) is set to 5 digits, you must include a rule that converts the five digits into the international phone

number. This parameter applies only to groups that are sites. Specify the following for each translation rule:

- **Phone Number Pattern** is the pattern for recognizing the local phone number. For example, *6????* is the pattern for extensions that start with *6* followed by 4 digits.
- **Number of Characters to Remove** is the number of characters to truncate from the local phone number.
- **Characters to Prepend** is the string of characters to append to the beginning of the truncated result to get the international phone number.

See "Telephone Number Translation Rules Parameter" on page 3-6 for more information on setting this parameter.

Phone Numbers

The Phone Numbers parameter applies only to sites. This is a list of the valid phone numbers for the PBXes associated with this group. The phone numbers are in international format. Valid characters include digits, hyphens (-), and two types of wildcards, question marks (?) and asterisks (*). A question mark indicates a single digit or hyphen, and can be used anywhere in the phone number. An asterisk indicates zero or more digits or hyphens, and can be used only at the end of the phone number. Hyphens are used to prefix a phone number pattern to differentiate multiple PBXes connecting to the same server, using a Voice over IP gateway. There is no default for the Phone Numbers parameter.

Searching for a Group or Site

By default, the list displays all groups and sites in the Voicemail & Fax group in hierarchical order. You may narrow your search by selecting from the Search field. You can search only groups, only sites, or both groups and sites.

To search for a group or site:

1. Navigate to the Voicemail & Fax administration page.
2. Click the **Go To Task** icon of the Groups and Sites task.
3. Specify the scope of the search by selecting from the Search list.
4. Enter the search string in the box and click **Go.**

   The search will return any group that contains the search string in any part of its name. For example, the search string *com* returns *comoro.africa.org*, *virginia.commonwealth.edu*, and *chicago.us.acme.com.*

Editing Group or Site Parameters

The value of a parameter is either inherited from the parent of the group or site, as indicated by the Inherit icon, or it is set locally, as indicated by the Override icon.

Be aware that when you change a parameter for a group or site, you are also changing the parameter for any child groups that inherit from the parent group or site. Therefore, changing the parameter of a group or site may have repercussions for child groups.

See "Group Parameters" on page 4-4 for more information on the parameters and how to set them.

To edit the parameters of a group or site:

1. Navigate to the Voicemail & Fax home page and click the **Administration** tab.
2. From the administration page, click the **Go To Task** icon of the Groups and Sites task.
3. Select the group or site whose properties you want to edit and click **Edit.**
4. Change the value of the parameters as desired.
   - To override the inherited value, click the **Override** icon. Select from the list or enter the desired value in the field.
   - To inherit the value of the parent, click the **Inherit** icon.
5. When you are finished editing the parameters, click **OK**, or to revert back to the previously saved settings, click **Cancel.**

Modifying Parameters of Multiple Groups

You can modify selected properties for more than one group simultaneously. When you edit the parameters for multiple groups, there are no defaults, and you must enter the values for those parameters that you want to change. If you do not enter a value, the parameter remains unchanged. The following parameters can be edited for multiple groups:

- **Message Silence Timeout**. If the caller does not speak for the length of time specified by the Message Silence Timeout parameter, the voicemail system continues with the next prompt.
- **Message Maximum Duration.** This is the maximum message length.
- **Greeting Maximum Duration.** This is the maximum length of the greeting.
- **Greeting Silence Timeout**. If, while recording a greeting, the user does not speak for the length of time specified by the Greeting Silence Timeout parameter, the voicemail system continues with the next prompt.
- **Voice Access Allowed.** This specifies whether or not the voicemail feature is enabled.
- **FaxIn Access Allowed.** This specifies whether or not the fax feature is enabled.
- **Directory Lookup**. This feature allows users to use the telephone keypad to search for a user in the voicemail system.
- **Maximum Hits to Return**. When using the Directory Lookup feature, a user may enter a combination of key strokes that matches more than one name. The Maximum Hits to Return parameter specifies the maximum number of matches to return for a particular keystroke combination.

Be aware that when you change a parameter for a group or site, you are also changing the parameter for any child groups that inherit from the parent group or site. Therefore, changing the parameter of a group or site may have repercussions for child groups. If you want all child groups of the parent group to inherit the new value, use the propagate feature. See "Propagating Group or Site Properties" on page 4-9 for more information on how to propagate features to child groups.

To modify the properties of multiple groups:

1. Navigate to the Voicemail & Fax administration page.
2. Click the **Go To Task** icon of the Groups and Sites task.
3. Select the check boxes of the groups or sites whose properties you want to edit.

4. Click **Edit.**
5. Edit the properties and click **OK**. Clicking **Cancel** reverts to the last saved changes.

Propagating Group or Site Properties

The Propagate Parameters Page allows you to proliferate the values for selected parameters of a parent group to any of its children, including any accounts that belong to its children. For example, assume that us.acme.com has two children, hq.us.acme.com and chicago.us.acme.com. If the Preferred Language parameter of us.acme.com is set to Spanish and this value is propagated, then Spanish is passed to its children, hq.us.acme.com and chicago.us.acme.com, overriding any values set for those groups. Furthermore, if the Preferred Language parameter is set at the account level for any accounts belonging to the parent group or to hq.us.acme.com or chicago.us.acme.com, these values are overridden with the Preferred Language parameter for us.acme.com.

Only selected parameters can be propagated: Voice Access Allowed, Faxin Access Allowed, Preferred Language, Attendant Extension, and Message Waiting Indicator Notification. The value being propagated appears in the Value column. Select the parameters you want to propagate and click **OK.** The changes take effect immediately.

If you want to make a change to a parameter value and propagate the changes, you must first make the change to the parent group, then propagate them to the parent's children.

To edit a parameter and propagate these changes:

1. Navigate to the Voicemail & Fax administration page.
2. Click the **Go To Task** icon of the Groups and Sites task.
3. Select the group or site whose properties you want to edit and click **Edit.**
4. Change the value of the parameter for the parent group and click **OK.**
5. From the Manage Groups and Sites page, click the parent group.
6. Click **Propagate.**
7. From the Propagate Parameters page, select the parameter you want to propagate and click **OK.**

Deleting a Group or Site

Before you can delete a group or site, you must first delete all children, including any groups or users that belong to the group or site being deleted. If you are deleting a site, you must also delete any phone numbers associated with the site before the site can be removed.

To delete a group or site:

1. Navigate to the Voicemail & Fax administration page.
2. Click the **Go To Task** icon of the Groups and Sites task.
3. Select the groups and sites you want to delete, and click **Delete.**

   A message appears asking you to confirm that you want to delete the selected groups and sites.
4. Click **Yes.**

A message appears confirming that the groups and sites have been deleted.

5

Managing Oracle Voicemail & Fax Accounts

This chapter describes how to provision Oracle Collaboration Suite users for voice access, and how to manage voicemail accounts and user preferences.

This chapter discusses the following topics:

Provisioning Users for Voicemail & Fax Access

The Oracle Collaboration Suite Database that is used to store e-mail messages is shared by the voicemail and fax account to store voicemail and fax messages. The Voicemail & Fax Application accesses the same Inbox that the IMAP and SMTP servers access to retrieve and record voicemail and fax messages. Therefore, before you can provision a user for voicemail or fax message access, the user must first be created and must be assigned an e-mail account through Oracle Internet Directory Self-Service Console. When a user is provisioned for voicemail access, a voicemail account is created and a phone number is assigned to this account. This must be done through the Self-Service Console or the Oracle Voicemail & Fax Accounts Manager tool. You cannot provision a user for voicemail access through Oracle Enterprise Manager.

To provision a user for voicemail and fax message access:

1. Create a user using Oracle Internet Directory Self-Service Console.

   See Chapter 4, "Managing Oracle Collaboration Suite Users and Groups," in *Oracle Collaboration Suite Administrator's Guide*.

2. Provision a user for voicemail access using the Oracle Internet Directory Self-Service Console.

   See Chapter 4, "Managing Oracle Collaboration Suite Users and Groups," in *Oracle Collaboration Suite Administrator's Guide* for more information about using Oracle Internet Directory Self-Service Console.

3. Modify the account preferences.

See "Changing Voicemail Account Preferences" on page 5-4 for information on editing the preferred language, and enabling or disabling voice access, fax access, and the message waiting indicator for a user.

See "Adding Users with Bulk Provisioning" on page 5-2 for information on bulk provisioning users.

Multiple Voicemail Accounts

Voicemail accounts are tied to a site and Oracle Voicemail & Fax creates one account at every site where a user has a phone number. The majority of users will have one voicemail account at a single site, and one phone number assigned to that account. However, some users will have more than one phone number. For example, a user may have a phone number at the headquarters office in Redwood Shores, California and another in the Burlington, Massachusetts office. One account is created and assigned to each site. Using this example, an account is created and assigned to the hq.us.acme.com and burlington.us.acme.com sites. The preferences for each account can be set separately.

Note: Oracle Voicemail & Fax creates only one account at each site. Therefore, if a user has more than one phone number assigned to the same site, the account preferences apply to all phone numbers that belong to that site. You cannot set different preferences for each phone number.

Account preferences can be managed through all three interfaces, Enterprise Manager, Grid Control, Oracle Internet Directory Self-Service Console, and Oracle Voicemail & Fax Accounts Manager with the following qualifications. You can add a subsequent phone number for a user only through Enterprise Manager Grid Control or Accounts Manager. And you can only remove all voice access for a user through the Self-Service Console or Accounts Manager.

Adding Users with Bulk Provisioning

You can bulk provision Oracle Voicemail & Fax users in one of two ways. You can load an **LDIF** (LDAP Data Interchange Format) file into Oracle directory server and follow the procedure for bulk provisioning users in Oracle Internet Directory Self-Service Console. To successfully provision users for voice access, the attribute list must contain the information for creating a base user, an e-mail account, and a telephone number in international format

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See Also: *Oracle Collaboration Suite Administrator's Guide* for more information on bulk provisioning users and *Oracle Internet Directory Administrator's Guide* for information on creating and formatting the LDIF file.

The second method for bulk provisioning users is the Oracle Voicemail & Fax Accounts Manager tool. A description of the command can be found in "Oracle Voicemail & Fax Accounts Manager Tool" on page 5-6.

Adding Users with Automatic Provisioning

When a user is created and provisioned for voicemail access through Oracle Internet Directory Self-Service Console, an *add* event is sent to an Oracle Voicemail & Fax

plug-in. When the user is created, it triggers the add event that provisions the user for voicemail access and assigns the specified phone number to the account.

> **Note:** In order for the plug-in to create a voicemail account for the user, a valid phone number must be assigned to the user in the Self-Service Console.

Because Oracle Voicemail & Fax provides a plug-in that automatically provisions users for voicemail access, there is no on-demand provisioning by end users.

Setting Passwords for Bulk-Provisioned Users

When you bulk provision users for voicemail or fax access, you can set the users' initial password in one of the following ways.

You can specify the password for each user in the LDIF file. The LDIF file contains parameters and values to create base users for Oracle Collaboration Suite. In addition, you can also include the telephonenumber parameter, which specifies the phone number for a voicemail account. Once the file is loaded into Oracle Internet Directory, the Oracle Collaboration Suite base user is created, and an add event is sent to the Oracle Voicemail & Fax plug-in, which provisions the base user for voicemail access. The telephonenumber parameter in the LDIF file is the only parameter required to trigger the add event to provision the user for voicemail access. Optionally, you can include the orclpasswordverifier;email parameter in the LDIF file to specify the initial password for the voicemail account. Then, when the LDIF file is loaded, this password gets loaded into Oracle Internet Directory. Note, there is no automatic notification process with this method. You will have to notify the users of their initial voicemail password.

In some instances, you may want to create the passwords and the voicemail accounts at two different times. Often, system administrators want to send an e-mail to their users some time before the new voicemail account is active. If this is the case, you can use the `ovfucr generatepassword` command to generate passwords for the users. Note, this command assumes that the base user and the e-mail account have already been created. This command automatically generates the initial password for users that are specified in an input file and sends an e-mail notification to the user with the new password. Then, when you are ready to activate the voicemail accounts, you can use the `ovfucr create` command to create the voicemail accounts.

> **Note:** Alternatively, you can specify the optional password parameter when you run the `ovfucr create` command to create a voicemail account and assign a password to the account. However, there is no notification feature if passwords are generated this way.

You can also use a third-party or other proprietary tool to generate passwords.

Searching for a Voicemail User

All users in the Oracle Voicemail & Fax installation, who have been provisioned for voicemail access, fax access, or both and have been assigned a phone number, appear in the Results table. The table is sorted in ascending order by the e-mail ID.

You may search for users using their e-mail IDs or phone numbers.

To search for a voicemail user:

1. Navigate to the Voicemail & Fax administration page.
2. Click the **Go To Task** icon for the Manage Voicemail Accounts task.
3. Find the Search section of the page. In the first list, select the field on which you want to search. You may search either for the user's e-mail ID or phone number.
4. Select a choice from the second list that specifies how the search is to be done:
   - **Containing** searches for the specified string anywhere in the field.
   - **Starting with** searches for the specified string at the beginning of the field.
   - **Ending with** searches for the specified string at the end of the field.
5. In the text box, type the string you want to search on and click **Go.**

   Any users that match the string you specified appear in the Results table.

Changing Voicemail Account Preferences

You may edit the preferences for a user's voicemail accounts in the Preferences table. There is, at most, one voicemail account at a site. When you edit the preferences for a particular site, these preferences apply to all phone numbers for this user at this site. By default, the preferences are set to inherit from the parent group.

You may change the following preferences:

- **Preferred Language** is the language in which the user hears the voicemail prompts. By default, this preference is inherited from the parent group or site.
- **Phone Access** is set to either True or False and enables voicemail access. By default, when a user is provisioned for voice access and assigned a phone number, this preference is set to True.
- **FaxIn Access** is set to either True or False and enables fax access. By default, when a user is provisioned for fax access, this preference is set to True.
- **MWI Enabled** enables the Message Waiting Indicator feature. If a user has a soft phone, set this to False. If a user has two phone numbers at this site, one for a soft phone and another for a phone set for which you want MWI to be enabled, set MWI Enabled to True.

To navigate to the Edit User page:

1. Navigate to the Voicemail & Fax administration page.
2. Click the **Go To Task** icon for the Manage Voicemail Accounts task.
3. Use the Search feature to find the user.
4. Click the E-mail ID of the user to go to the Edit User page.

To override the parent value:

1. Click the **Override** icon.
2. Select from the list and click **OK.**

To inherit the parent value:

- Click the **Inherit** icon and click **OK.**

Note: You can also use the `ovfucr modifyaccount` command to change the account preferences.

Changing the Voicemail & Fax Quota

A single quota is set for storage of a user's e-mail, voicemail, and fax messages and is determined by the e-mail quota. The Voicemail & Fax Quota adds additional quota to the e-mail quota to accommodate the extra space that the voicemail and fax messages may require. This single setting applies to all accounts for the user. The default for the Voicemail & Fax Quota is the quota that is assigned to the first account that is set up for the user.

To edit the Voicemail & Fax Quota:

- Enter the size of the quota, in megabytes, in the Voicemail & Fax Quota field and click **OK.**

Adding a Phone Number

You may add a phone number for a user for an existing voicemail account or for a new voicemail account.

To add a phone number:

1. In the Phone Numbers table, click **Add Phone Number.**
2. On the Add Phone Number page, enter the phone number in the International Number field and click **OK.**

   Note: The phone number must include the country code, area code or city code, and local phone number. The phone number must be a string of numbers with no spaces or other punctuation, for example, *14152927777*.

3. On the Select Group page, select a group to which you want to assign the phone number from the Group list, and click **OK.**

   The application returns you to the Edit User page. When a new phone number is added, the Edit User page for the user is updated as follows:

   - If the new phone number belongs to a site for which there is no voicemail account, a new row with the site and group name is added to the Preferences table, and a new row is added to the Phone Numbers table. When the phone number is assigned to a group, it inherits the properties of the group. After the phone number is created and you are returned to the Edit User page, you can edit the preferred language, phone access, fax access, and MWI-enabled properties for the phone number.
   - If the phone number is added to an existing voicemail account, a row with the new phone number is added to the Phone Numbers table. However, a new row is *not* added to the Preferences table.

   Note: You can also use the `ovfucr addphonenumber` command to add a phone number.

Deleting a Phone Number

You can delete a phone number for a user if the user has more than one phone number. You cannot delete a user's phone number if it is the user's only phone number because, by doing so, you will be removing all voicemail and fax services for the user. You can remove voicemail and fax services for a user only through Oracle Internet Directory Self-Service Console or by using the `ovfucr delete` command.

To delete a phone number:

1. Navigate to the Voicemail & Fax administration page.
2. Click the **Go To Task** icon for the Manage Voicemail Accounts task.
3. Use the Search feature to find the user.
4. Click the E-mail ID of the user.
5. In the Phone Numbers section of the Edit User page, click the **Remove** icon for the phone number you want to delete.

Note: You can also use the `ovfucr deletephonenumber` command to delete a phone number.

Removing Voicemail and Fax Services for a User

You can remove all voicemail and fax services for a user using Oracle Voicemail & Fax Accounts Manager. Once these services are removed for a user, you will not be able to reestablish voicemail and fax services for this user from Oracle Enterprise Manager. Voicemail and fax services can be reestablished only from Oracle Internet Directory Self-Service Console or using the Accounts Manager tool (`ovfucr delete` command), and a new phone number must be assigned to the user. You can temporarily remove voicemail or fax services for a user by following the procedure in "Changing Voicemail Account Preferences" on page 5-4 and editing a user's voicemail account preferences.

Removing the voicemail and fax services for a user does not delete the user. You can delete a user only from the Self-Service Console. Removing voicemail and fax access for a user makes the phone number available for reassignment to another user.

Oracle Voicemail & Fax Accounts Manager Tool

The Oracle Voicemail & Fax Accounts Manager tool is a command-line utility that you can use to create and manage your voicemail accounts. You can use the command to do the following:

- Create a voicemail account for a user.
- Bulk provision users for voicemail access.
- Add or delete a phone number.
- Modify the properties of a voicemail account.
- Replace a phone number with a different phone number.
- Delete a voicemail account.
- Move a voicemail account to a different group.
- Display a list of supported languages for voicemail prompts.

- Generate an initial password for a voicemail account and send an e-mail to the user with the password information.

The Oracle Voicemail & Fax Accounts Manager tool can be found in the following location:

```
%ORACLE_HOME%\um\scripts
```

Enter `ovfucr` at the command line to display the syntax for the Accounts Manager commands.

Phone Number Format

Phone numbers in Oracle Voicemail & Fax must be in international format—that is, they are expressed as a string of digits (0–9), with no spaces or punctuation. The phone number must include the country code, city code or area code, and local phone number. For example, the United States phone number *1 (415) 292-7777* expressed in international format is: *14152927777*.

ovfucr addphonenumber

Adds a phone number for an existing voicemail user.

Syntax

```
ovfucr addphonenumber emailaddress phonenumber [groupname]
```

Parameters

- *emailaddress* – E-mail account for which the phone number is being added. Include the domain of the e-mail address, for example, john.doe@acme.com.
- *phonenumber* – Phone number of the voicemail account, in international format.
- *groupname* – Name of the group to which the phone number is assigned. Use the fully qualified group name, for example, marketing.us.acme.com.

Comments

Use the *ovfucr addphonenumber* command to add another phone number for a voicemail user who already has a phone number. If you are creating a voicemail account for the first time for a user, use the *ovfucr create* command.

When you add a phone number for an existing voicemail user, the phone number can be added to a site where the user already has an account or to a site where the user does not have an account.

Each phone number belongs to a particular site. Use the *groupname* parameter to assign the phone number to this site or to a group that is a child of the site. These are the only valid groups to which the phone number can be assigned.

Examples

```
ovfucr addphonenumber johndoe@acme.com 14152927777
marketing.us.acme.com
```

ovfucr create

Creates the first voicemail account for an e-mail user.

Syntax

```
ovfucr create emailaddress phonenumber password [groupname]| inputfile
```

Parameters

- *emailaddress* – E-mail account of the user for whom the voicemail account is being created. Include the domain of the e-mail address, for example, john.doe@acme.com.
- *phonenumber* – Phone number assigned to the voicemail account, in international format.
- *password* – Password of the voicemail account.
- *groupname* – Name of the group to which the phone number is assigned.
- *inputfile* – Name of the file used to create multiple voicemail users at the same time.

Comments

The user and the user's e-mail account must already be created before you use `ovfucr create` command. You may create the user and e-mail account using the Oracle Internet Directory Self-Service Console. Alternatively, you may use the oesucr command-line tool to create an e-mail account for an existing user.

> **Note:** See Chapter 4, "Managing Oracle Collaboration Suite Users and Groups," in *Oracle Collaboration Suite Administrator's Guide* for information on using the Self-Service Console. See "oesucr" in Appendix D of *Oracle Mail Administrator's Guide* for more information on this command-line tool.

Use the `ovfucr create` command to enable voicemail access for a user who does not currently have voicemail access. If the user is already enabled for voicemail access, that is, the user has at least one voicemail account, and you are adding another phone number for this user, use `ovfucr addphonenumber` command instead.

If you do not specify a group, the Accounts Manager tool assigns the voicemail user to the site to which the phone number belongs. If there are invalid entries in the file, the tool returns an error for those entries.

You may enable access to an individual user by specifying the parameters at the command line, or you can bulk provision users by specifying a file containing the required parameters. Each entry appears on a separate line in the text file, and the entries must be in the following format:

```
emailaddress:phonenumber:password[:groupname]
emailaddress:phonenumber:password[:groupname]
emailaddress:phonenumber:password[:groupname] ...
```

Examples

```
ovfucr create johndoe@acme.com 14152927777 welcome
```

ovfucr delete

Deletes a voicemail account.

Syntax

```
ovfucr delete -emailaddress emailaddress [-group groupname] | -filename inputfile
```

Parameters

- –emailaddress *emailaddress* – E-mail account of the user for whom the voicemail account is being deleted. Include the domain of the e-mail address, for example, john.doe@acme.com.
- –group *groupname* – Name of the group to which the phone number is assigned.
- –filename *inputfile* – Name of the file used to delete voicemail users in bulk.

Comments

Use the `ovfucr delete` command to delete the voicemail account for a user. When a voicemail account is deleted, the user's account preferences are deleted, and any voicemail messages that are in the user's Inbox are saved. Once the account is deleted, the user will not be able to receive any new voicemail messages. If the user is later reprovisioned for voicemail access, he or she will be able to access the saved voicemail messages.

If you do not specify a group, the Accounts Manager tool deletes all voicemail accounts for the specified user. If the user has multiple voicemail accounts, and you want to delete a specific account, then you must specify the *groupname* parameter. If there are invalid entries in the file, the tool returns an error for those entries.

You may delete an individual user by specifying the parameters at the command line or you can delete all the users at one time by specifying a file containing the required parameters. Each entry appears on a separate line in the text file, and the entries must be in the following format:

```
emailaddress:phonenumber:password[:groupname]
emailaddress:phonenumber:password[:groupname]
emailaddress:phonenumber:password[:groupname] ...
```

ovfucr deletephonenumber

Deletes a phone number for a voicemail user.

Syntax

```
ovfucr deletephonenumber emailaddress phonenumber
```

Parameters

- *emailaddress* – E-mail account of the voicemail user. Include the domain of the e-mail address, for example, john.doe@acme.com.
- *phonenumber* – Phone number that is being deleted. Specify the phone number in international format.

Comments

This command can be used only if the user's voicemail account has more than one phone number. You cannot delete a phone number if there is the only one phone number in the voicemail account. You can delete an account with a single phone number using the `ovfucr delete` command.

Examples

```
ovfucr deletephonenumber johndoe@acme.com 14152927777
```

ovfucr displaylanguagelist

Displays a list of the languages and language codes for the supported Oracle Voicemail & Fax languages.

Syntax

```
ovfucr displaylanguagelist
```

Comments

Use the `ovfucr displaylanguagelist` command to display the language codes for the languages supported by Oracle Voicemail & Fax. These codes are used to specify the locale or language in the `ovfucr modifyaccount`, and `ivrman deployment` commands.

ovfucr generatepassword

Generates the initial password for a new voicemail user and sends an e-mail that contains the password to the user.

Syntax

```
ovfucr generatepassword {emailaddress telephonenumber | inputfile}
telephoneaccessnumber numdigitsofpassword smtphost
```

Parameters

- *emailaddress* – E-mail address of the user for whom the password is being generated.
- *telephonenumber* – Phone number of the user. Specify the phone number in international format.
- *inputfile* – Name of the file used to generate passwords and send e-mails to the users.
- *telephoneaccessnumber* – Phone number that the user will use to access the voicemail system.
- *numdigitsofpassword* – Number of digits in the generated password.
- *smtphost* – Name of the host where the SMTP process is run; generally, this is the host where the Oracle Mail Server is run. Use the fully qualified name of the host, for example, prod11.us.acme.com.

Comments

Before you can use the `ovfucr generatepassword` command, the user must already be created and provisioned for e-mail.

The `ovfucr generatepassword` command generates a random password for the voicemail account specified with the *telephonenumber* parameter. The *numdigitsofpassword* parameter sets the number of digits in this password. It sends an e-mail to the user, specified by the *emailaddress* parameter, with this initial password and the phone number that the user uses to access the voicemail system, as specified by the *telephoneaccessnumber* parameter.

You may generate a password for an individual user by specifying the parameters at the command line, or you can generate passwords, in bulk, by specifying a file containing the required parameters. Each entry appears on a separate line in the text file, and the entries must be in the following format:

```
emailaddress:telephonenumber
emailaddress:telephonenumber
emailaddress:telephonenumber ...
```

ovfucr modifyaccount

Modifies the voicemail account including specifying the language of the system prompts, enabling or disabling access to voicemail and fax, enabling or disabling the message waiting indicator feature, and changing the group to which the phone number is assigned.

Syntax

```
ovfucr modify account emailaddress -group groupname {-voicemailaccess {true | false} | -faxinaccess {true | false} | -mwienabled {true | false} |-preferredlanguage lang | -newgroup groupname}
```

Parameters

- *emailaddress* – E-mail account of the user whose voicemail account is being modified. Include the domain of the e-mail address, for example, john.doe@acme.com.
- `-group` *groupname* – Name of the group to which the phone number is assigned.
- `-voicemailaccess {true | false}` – Specifies whether or not the voicemail feature is enabled; `true` enables the feature; `false` disables the feature.
- `-faxinaccess {true | false}` – Specifies whether or not the fax receiving feature is enabled; `true` enables the feature; `false` disables the feature.
- `-mwienabled {true | false}` – Specifies whether or not the message waiting indicator feature is enabled; `true` enables the feature; `false` disables the feature.
- `-preferredlanguage` *lang* – Specifies the language in which the voicemail user hears the system prompts. Use the `ovfucr displaylanguagelist` command to display a list of the valid codes for the *lang* parameter.
- `-newgroup` *groupname* – Specifies the group to which to assign the phone number. The *groupname* parameter must be the site to which the phone number belongs or a group that is a child of the site.

Comments

You may modify one or more account properties at a time. Refer to the examples that follow.

In most instances, the voicemail user has one phone number and, therefore, has one voicemail account. In a smaller number of instances, a user may have more than one phone number. For each site where the voicemail user has a phone number, the user has a separate voicemail account. For example, if the user has a phone number at Site A and another phone number at Site B, then the voicemail user has two voicemail accounts. The properties for each account can be modified separately.

The account being modified is determined with the `-group` flag.

All phone numbers for a particular user that belong to the same group share the same account properties. Modifying the group's properties changes the properties for all phone numbers belonging to the user's account. In the situation where a user has two or more phone numbers that belong to the same site, there is only one account. The account properties apply to all phone numbers belonging to that site.

Examples

```
ovfucr modifyaccount johndoe@acme.com -group
marketing.us.acme.com -preferredlanguage en -newgroup
development.us.marketing.com
```

ovfucr modifyphonenumber

Replaces an existing phone number with a different phone number.

Syntax

ovfucr modifyphonenumber *emailaddress* -oldphonenumber *phonenumber* -newphonenumber *newphonenumber* [-newgroup *newgroup*]

Parameters

- *emailaddress* – E-mail account of the user whose phone number is being replaced with a new phone number. Include the domain of the e-mail address, for example, john.doe@acme.com.
- –oldphonenumber *phonenumber* – Phone number that is being replaced. Specify the phone number in international format.
- –newphonenumber *newphonenumber* – New phone number being assigned to the user. Specify the phone number in international format.
- –newgroup *newgroup* – Group to which the phone number is being assigned. If *newgroup* is not specified, the phone number is assigned to the site to which it belongs.

Comments

If you do not specify the group to which to assign the new phone number, the phone number is assigned to the site to which the phone number belongs.

ovfucr movegroup

Assigns a voicemail user to a different group. You can move a single voicemail user, multiple users specified in a text file, or all users belonging to a group.

Syntax

ovfucr movegroup {-emailaddress *emailadress* | -filename *filename* | -allusers *oldgroupname*} -newgroup *newgroup*

Parameters

- –emailaddress *emailaddress* – E-mail account of the voicemail user. Include the domain of the e-mail address, for example, john.doe@acme.com.
- –filename *filename* – Text file specifying the e-mail accounts of the voicemail users.
- –allusers *oldgroupname* – Moves all voicemail accounts assigned to the group.
- –newgroup *newgroup* – Name of the group to which the voicemail accounts are moved.

Comments

The `ovfucr movegroup` command is used to upgrade voicemail users from Oracle Voicemail & Fax releases 9.0.4 to 10.1.1. In Oracle Voicemail & Fax release 9.0.4, multiple accounts were not supported. Therefore, if you are moving a single voicemail user, specifying the user's e-mail address is sufficient to identify the user's phone number and the group to which the number is assigned.

Example

```
ovfucr john.doe@acme.com hq.marketing.us.acme.com
```

6

Managing Oracle Voicemail & Fax

This chapter describes how to manage Oracle Voicemail & Fax processes across the enterprise, from a single Applications Tier, and using command-line tools.

This chapter discusses the following topics:

Managing the Oracle Voicemail & Fax Components

You can start, stop, restart, and reload any component of the Oracle Voicemail & Fax system. The following describes the results of each of these actions:

- **Start** — Starts all enabled, stopped services that are direct or indirect members of the component.
- **Stop** — Stops all enabled, running services that are direct or indirect members of the component.
- **Restart** — Restarts all enabled, running services that are direct or indirect members of the component.
- **Reload** — Reinitializes all enabled services that are direct or indirect members of this component without restarting the services. Service reinitialization includes reloading all service-specific configurations stored in Oracle Internet Directory and, for certain services, includes reestablishing connections to the Telephony Server. The database connection information is not reloaded. It is refreshed only when a service is restarted.

You can use the following tools to manage your Oracle Voicemail & Fax components:

- Enterprise Manager Grid Control – a Web-based tool that consolidates management of all Oracle Voicemail & Fax installations in one location
- `opmnctl` – a command-line tool to manage processes on a particular Applications tier in the Oracle Voicemail & Fax installation
- Application Server Control for Collaboration Suite – a Web-based tool for managing a specific Applications tier

Enterprise Manager Grid Control gives you systemwide management capabilities, allowing you to manage not only all Oracle Voicemail & Fax components in your Oracle environment, but your application servers and databases as well. The `opmnctl` command-line tool allows you to manage the Voicemail & Fax Application and its processes on a specific Applications tier, and Application Server Control for

Collaboration Suite allows you to stop or start the Voicemail & Fax Application on a specific Applications tier.

Managing Processes Across the Enterprise

Using Enterprise Manager Grid Control, you can manage the processes for any Oracle Voicemail & Fax component in your enterprise. You can start, stop, restart, and reload any component in the hierarchy. When you do this, you also execute the same command on any of the subcomponents. The following illustrates how the Start command works when it is executed at different levels in the hierarchy:

- If you start the Voicemail & Fax component, this starts all PBX-Application Clusters, all Voicemail & Fax Applications, and all enabled services in the Oracle Voicemail & Fax system.
- If you start a PBX-Application Cluster, then only those Voicemail & Fax Applications that belong to the PBX-Application Cluster are started, and any enabled services associated with these applications are started.
- If you start a specific Voicemail & Fax Application, then only the enabled services associated with this particular application are started.
- If you start a particular service, then only that one service is started.

The Grid Control tool makes it easy to manage the Oracle Voicemail & Fax components from any of the pages. Navigate to any page for a Voicemail & Fax group, PBX-Application Cluster, or Voicemail & Fax Application where you find a Components table at the bottom of the page. From where you are in the hierarchy, you can execute a command on the topmost component. For example, if you navigate to the PBX-Application Cluster, you can select the cluster and click Stop. Or you can expand the hierarchy to reveal the subcomponents and execute a command on a subcomponent. For example, from the PBX-Application Cluster level, you can expand the hierarchy to reveal all Voicemail & Fax Applications that belong to the PBX-Application Cluster. You can then select a Voicemail & Fax Application and start only that application and its subcomponents.

To manage the Oracle Voicemail & Fax components:

1. Navigate to the home page for the Voicemail & Fax group.
2. Scroll down to the Components table.
3. To view all subcomponents of the Voicemail & Fax group, click **Expand All.**
4. Select the components that you want to start or stop.
5. Click **Start, Stop, Restart,** or **Reload.**

There are two ways to manage the individual services, such as the Recording Service or the Routing Service. You can either use the Components table at one of the levels above the service in the hierarchy (that is, Voicemail & Fax, PBX-Application Cluster, or Voicemail & Fax Application). Alternatively, you can navigate to the home page for the service. In the upper left-hand side of the home page, in the General section, you can click one of the buttons (**Start, Stop, Restart, Reload**) for the desired action.

Managing Processes on a Single Applications Tier

You can manage processes on a single Applications tier using the `opmnctl` command-line tool or using the Application Server Control for Collaboration Suite.

Managing Processes Using opmnctl

You can use the `opmnctl` command to manage Oracle Voicemail & Fax processes on the Applications tier from which you execute the command.

To list the status of all processes managed by `opmnctl`, use the following command:

```
%ORACLE_HOME%\opmn\bin\opmnctl status
```

Managing an Oracle Voicemail & Fax Component

To start, stop, reload, or restart any Oracle Voicemail & Fax component, execute the commands in Table 6–1.

Table 6–1 Commands Used to Manage the Voicemail & Fax Application

To	Execute this command
start	`%ORACLE_HOME%\opmn\bin\opmnctl startproc ias-component=VoicemailFaxApplication`
stop	`%ORACLE_HOME%\opmn\bin\opmnctl stopproc ias-component=VoicemailFaxApplication`
reload	`%ORACLE_HOME%\opmn\bin\opmnctl stopproc ias-component=VoicemailFaxApplication OVFRefresh=true`
restart	`%ORACLE_HOME%\opmn\bin\opmnctl restartproc ias-component=VoicemailFaxApplication`

Note: You use the `opmnctl restartproc` command when you want to reload or restart the services. If you want to refresh the processes and re-create the threads, as needed, without terminating any ongoing transactions, you must specify `OVRRefresh=true`.

Managing the Voicemail & Fax Application Services

To start, stop, reload, or restart a service of the Voicemail & Fax Application, execute the commands in Table 6–2.

Table 6–2 Commands Used to Manage Voicemail & Fax Application Services

To	Execute this command
start	`%ORACLE_HOME%\opmn\bin\opmnctl startproc process-type=`*`service_name`*
stop	`%ORACLE_HOME%\opmn\bin\opmnctl stopproc process-type=`*`service_name`*
reload	`%ORACLE_HOME%\opmn\bin\opmnctl restartproc process-type=`*`service_name`* `OVFRefresh=true`
restart	`%ORACLE_HOME%\opmn\bin\opmnctl restartproc process-type=`*`service_name`*

Oracle Voicemail & Fax Process Type IDs

The following are the valid values for the process-type IDs:

- `CallTransferService`
- `FaxReceivingService`
- `InteractiveVoiceResponseService`

- MessageRecoveryService
- MsgDeliveryMonitorService
- MWIService
- RecordingService
- RetrievalService
- RoutingService
- SMDIMonitorService
- TelephonyMonitorService

Note: The values for the process-type IDs are case-sensitive.

The Start and Restart commands can be executed on both enabled and disabled services.

The `opmnctl restartproc` command is used to reload and restart the services. If you want to refresh the processes and re-create the threads, as needed, without terminating any ongoing transactions, you must specify `OVRRefresh=true`.

Managing All Host Processes

To start, stop, or shut down `opmn` and all managed processes on the host, use the following commands:

```
%ORACLE_HOME%\opmn\bin\opmnctl startall
%ORACLE_HOME%\opmn\bin\opmnctl stopall
%ORACLE_HOME%\opmn\bin\opmnctl shutdown
```

The `stopall` and `shutdown` commands are identical. Both commands cause `opmn` and all processes to stop.

For more information on `opmnctl`, see *Oracle Process Manager and Notification Server Administrator's Guide*.

Managing Processes Using Application Server Control for Collaboration Suite

From the Application Server Control for Collaboration Suite you can only start the Voicemail & Fax Application. You cannot manage the individual services. You must use either Enterprise Manager Grid Control or the `opmnctl` command to start, stop, or reload the services.

To start or stop the Voicemail & Fax Application:

1. Log in to the Application Server Control for Collaboration Suite.
2. Navigate to the home page.
3. In the System Components section select the Voicemail & Fax Application and click **Start, Stop, Restart,** or **Reload.**

7

Administering Voicemail & Fax

This chapter discusses the following topics:

Administering PBX-Application Clusters

This section covers the following topics:

Associating a Voicemail & Fax Application with a PBX

When you installed Oracle Voicemail & Fax, you were prompted to specify the PBX-Application Cluster that is associated with the application. After installation, you can navigate to the administration page (Figure 7–1) for the Voicemail & Fax Application and change this specification by selecting another PBX-Application Cluster from the list. This parameter associates the actual Voicemail & Fax Server with a specific PBX. Therefore, when you change this parameter, you also need to change the physical connections that connect the PBX to the Voicemail & Fax Server.

To associate a Voicemail & Fax Application with a PBX:

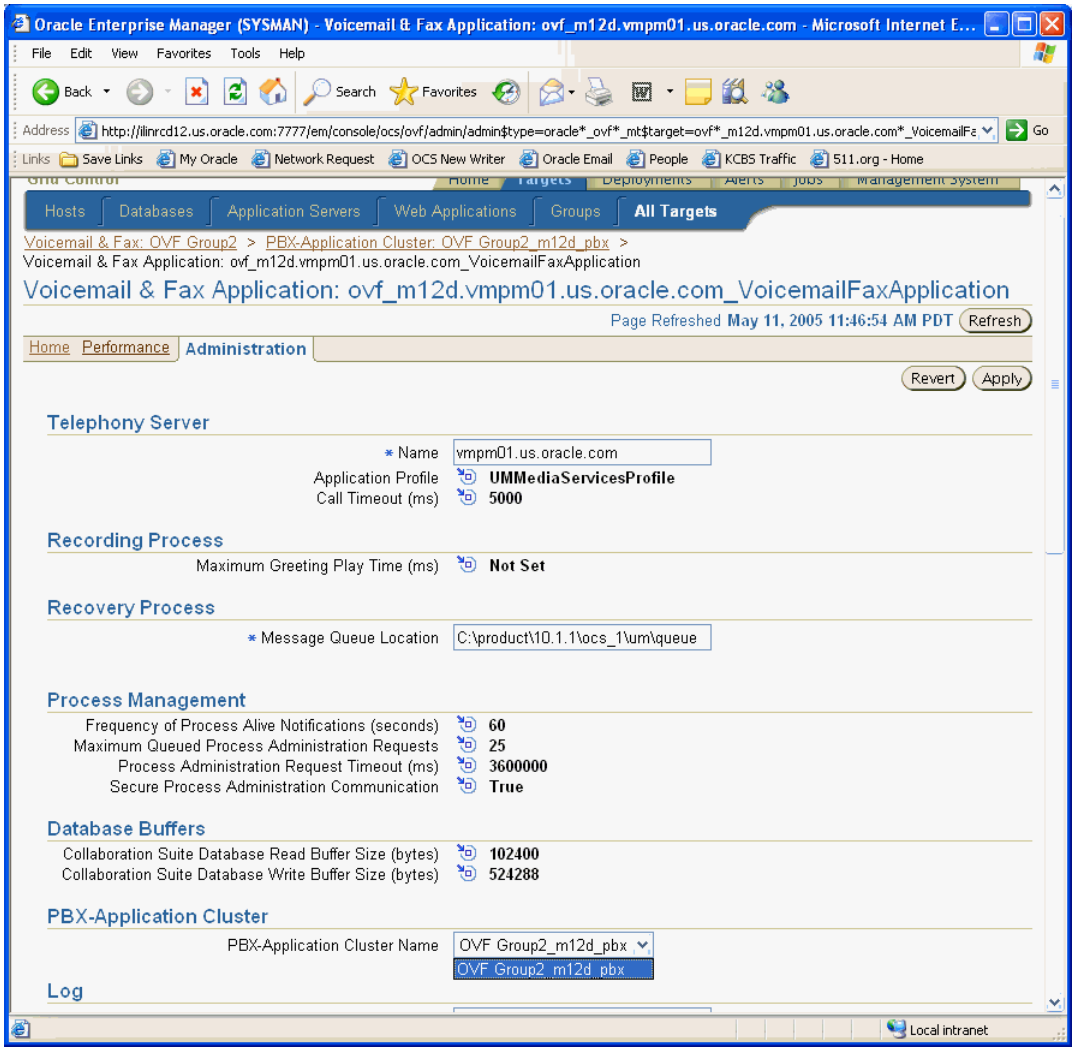
1. Navigate to the home page for the Voicemail & Fax group.
2. In the Components table, click **Expand All** to expand the hierarchy.
3. Click the link for the Voicemail & Fax Application.
4. Click the **Administration** tab.
5. Scroll down the page to the PBX-Application Cluster parameter.

   The PBX-Application Cluster that is currently associated with the application is displayed in the list.
6. Select the new PBX-Application Cluster that you want to associate with this application from the list, and click **Apply.**

A Confirmation page appears asking you to confirm the change.

7. Click **Yes.**

Figure 7–1 Voicemail & Fax Application Administration Page



Creating a PBX-Application Cluster

When you first install Oracle Voicemail & Fax, you create a new PBX-Application Cluster with which the Voicemail & Fax Application is associated. If you later decide to add a PBX-Application Cluster, you may create your PBX-Application Clusters in Oracle Enterprise Manager. Once you have created a new PBX-Application Cluster, you can reassociate an existing Voicemail & Fax Application with the new PBX-Application Cluster. This is done on the administration page for the Voicemail & Fax Application.

To create a PBX-Application Cluster:

1. Navigate to the administration page for the Voicemail & Fax group.
2. Click the link for the Create PBX-Application Cluster task.
3. Edit the parameters and click **OK.**

4. On the Confirmation page, click **OK.**

After you have created a PBX-Application Cluster, you may later decide that you want to change the parameter values. To edit the parameters, navigate to the administration page for the PBX-Application Cluster.

Deleting a PBX-Application Cluster

If you have a PBX-Application Cluster that is no longer associated with a Voicemail & Fax Application, for example, a PBX-Application Cluster that you created to test your system, you need to delete it. If you do not, the Voicemail & Fax group page will show the Recording, Retrieval, and Inbound Fax features with a status of down because the test PBX-Application Cluster does not have a Voicemail & Fax Application associated with it.

To delete a PBX-Application Cluster:

1. Navigate to the Enterprise Manager Grid Control home page.
2. In the Target Search section of the page, select PBX-Application Cluster from the Search list and click **Go.**
3. From the All Targets list, select the PBX-Application Cluster you want to delete and click **Remove.**

   A Warning message appears asking you to confirm the removal of the PBX-Application Cluster.
4. Click **Yes.**

Securing Oracle Voicemail & Fax

Oracle Voicemail & Fax can be secured in the following ways:

- Securing Oracle Voicemail & Fax Connections
- Setting Preferred Credentials
- Changing Passwords

Securing Oracle Voicemail & Fax Connections

You can secure Oracle Voicemail & Fax connections by encrypting all connections to the Oracle Collaboration Suite Database and by using Secure Sockets Layer (SSL) connections.

See *Oracle Collaboration Suite Security Guide* for information on configuring Oracle Voicemail & Fax to use SSL connections.

Setting Preferred Credentials

Preferred credentials simplify access to managed targets by storing target login credentials in the Management Repository. With preferred credentials, users can access Oracle Enterprise Manager targets, such as Oracle Voicemail & Fax targets, that recognize those credentials without being prompted to log in to the target. Preferred credentials can be set for all users, for selected users, or for an individual user as described in the following sections.

Setting Preferred Credentials for All Users

From Oracle Enterprise Manager, you can set the preferred credentials used by all users to access any Oracle Voicemail & Fax target. Once set, the individual users will have access to Oracle Internet Directory using these credentials.

1. From Oracle Enterprise Manager, navigate to the Voicemail & Fax group administration page.
2. In the task list, click the **Go To Task** icon for the Set Preferred Credentials task.
3. Specify the users for whom you want to provide preferred credentials by moving the users to the Selected Users list.
4. Enter the user name and password and click **OK.**

Setting Preferred Credentials for Selected Users

You can specify preferred credentials for a selected group of users for a specific Oracle Voicemail & Fax target.

1. From Oracle Enterprise Manager, navigate to the Voicemail & Fax group administration page.
2. In the task list, click the **Go To Task** icon for the Set Preferred Credentials task.
3. Specify the users for whom you want to provide preferred credentials by moving the users to the Selected Users list.
4. Enter the user name and password and click **OK.**

Setting Preferred Credentials for Yourself

From Oracle Enterprise Manager, you can set the preferred credentials to use any Voicemail & Fax target. These credentials will apply only to you.

1. Log in to Oracle Enterprise Manager.
2. Click the **Preferences** global link in the upper right-hand corner of the page.
3. In the Preferences menu, click **Preferred Credentials.**
4. Click **Set Credentials** for the Voicemail & Fax target.
5. In the Target Credentials list, enter the user name and password for each Voicemail & Fax target.
6. Click **Apply.**

Changing Passwords

User names and passwords provide some measure of security when applications connect to the Oracle Collaboration Suite Database. For example, the Voicemail & Fax Application requires a user name and password in order to connect to the Oracle Collaboration Suite Database. In addition, the Message Delivery Service requires a separate user name and password to connect to the database. When you install Oracle Voicemail & Fax, you are prompted to provide passwords for these user names. The Voicemail & Fax Application uses the `um` user ID and password and the Message Delivery Service uses the `ovfmetrics` user ID and password. If, for some reason, you need to change a password for these users in the database, you must also update the client applications that connect to the database with the new password.

To change the application password:

1. Navigate to the Voicemail & Fax group administration page.

2. Open the Manage Collaboration Suite Databases task and find the Set Application Password task. Click the **Go To Task** icon.
3. Select the database for which you want to set the password from the Collaboration Suite Database list, and click **Continue.**
4. On the Set Application Password: Set Password page, enter the old password, and enter the new password twice, and click **OK.**

   The application returns a message confirming that the password has been successfully changed and gives a list of the hosts that need to be restarted.

To change the metrics password:

1. Navigate to the Voicemail & Fax group administration page.
2. Open the Manage Collaboration Suite Databases task and find the Set Metrics Password task. Click the **Go To Task** icon.
3. Select the database for which you want to set the password from the Collaboration Suite Database list, and click **Continue.**
4. On the Set Metrics Password: Set Password page, enter the old password, and enter the new password twice, and click **OK.**

   The application returns a message confirming that the password has been successfully changed and gives a list of the hosts that need to be restarted.

After you change the password, you must restart the host of any Voicemail & Fax Application that accesses this Oracle Collaboration Suite Database. Until the applications have been updated with the new password, they will not be able to connect to the database.

Customizing Oracle Voicemail & Fax Menus

When users access their voicemail systems, they are guided through a series of audio prompts that allow them to listen to their voicemail messages, send and forward messages, create and activate their personal greetings, and so on. These choices are grouped into menus, for example, the Retrieval Menu (Figure 8–1 on page 8-2), which is also known as the Oracle Voicemail & Fax Main Menu. The choices in each menu are called menu items. For example, in the Oracle Voicemail & Fax Main Menu, there is a menu item called "Listen to New Voice Mail" that allows users to listen to new voicemail messages. There is another menu item called "Listen to Saved or Previously Read Messages" that allows users to listen to saved messages. When users press a key on the keypad, this results either in an action or they are directed to another menu with additional options.

Oracle Voicemail & Fax allows you to customize the menu items within a particular menu. You can do any of the following:

- Change the key used to initiate a menu item.

  For example, you can change the key to trigger the option to listen to new voicemail messages from 1 to 2.

- Change the order of the menu items within a menu.

  For example, the default is to play the prompt to listen to new voicemail messages before the prompt to listen to saved messages is played. You can reverse this order so that the prompt to hear saved messages is played first.

- Remove a menu item.

You can disable any menu item and make it unavailable to your users. For example, you could prevent users from returning to a previous menu.

The settings for the voicemail menus are maintained in an XML file. To customize the menu items, this file is edited, and the changes are loaded into the Oracle Internet Directory server. The changes take effect the next time the processes are refreshed, or you may manually refresh the processes.

Oracle recommends that you install the same menu for your entire Oracle Voicemail & Fax system. This simplifies troubleshooting and support. If there are different menus in the same installation, it is difficult to determine the causes of problems experienced by users.

Note: The 9.0.4.x menu is not compatible with the 10.1.1 menu. Therefore, if you customized the 9.0.4.x menu and you are upgrading to 10.1.1, you will need to edit the 10.1.1 menus.xml file with the changes that were made to the 9.0.4.x menus.xml file.

By default, the menus.xml settings apply at the root level. When a user accesses the voicemail system, Oracle Voicemail & Fax searches the menu definitions in the following order:

- The parent group of the user

  Oracle Voicemail & Fax first looks for the menu definitions for the parent group of the user, and, if no definitions are found, it searches the ancestors of the parent group until it finds the menu definitions.

- The site to which the called number belongs

  If the user is accessing their voicemail from a location outside the Oracle Voicemail & Fax hierarchy, for example they may be calling into the company headquarters from home, then the parent group of the user is unknown. In this instance, Oracle Voicemail & Fax uses the number the user is calling to determine which definitions to use. It looks for the definitions of the site that the called number belongs to, in this example, the headquarters site. If no definitions are found, it searches the site's ancestors until it finds the menu definitions.

- The default group of the PBX serving the site.

  There are times when it is not possible to determine the site for the called phone number. In this instance, Oracle Voicemail & Fax uses the menu definitions for the default PBX serving the site.

The menus.xml File

The voicemail menus are stored in an XML file (menus.xml). The following is an example of a portion of the menus.xml file.

```
....
<Menu name="DefaultMenu">
 <Menu-Item name="repeatOptions" trigger="9" silent="true" />
 <Menu-Item name="sendToOperator" trigger="0" silent="true" />
 <Menu-Item name="goToPreviousMenu" trigger="star" silent="true"
/>
</Menu>
```

```
<Menu name="ListenToMsgsMenu" super="DefaultMenu">
 <Menu-Item name="toDeleteVM" trigger="7" />
 <Menu-Item name="toListenToNextVM" trigger="1" />
<Menu-Item name="toRepeatThisVM" trigger="2" />
<Menu-Item name="toReplyToThisVM" trigger="3" />
<Menu-Item name="toForwardThisVM" trigger="4"/>
<Menu-Item name="moreOptions" trigger="8" />
</Menu>
....
```

The menus.xml file consists of `<Menu>` and `<Menu-Item>` tags. For a particular menu, `<Menu>`, there are two or more menu items `<Menu-item>`. Each `<Menu-item>` tag has an attribute, `trigger`, that specifies the key on the telephone keypad to use to execute a command or to go to another menu. The attribute `silent="true"` makes a menu item silent. The attribute `trigger="inactive"` is a way to inactivate a previously defined `<Menu-Item>` in order to reassign it to another action for this particular menu. For example, typically the asterisk symbol (*) is the trigger for "goToPreviousMenu." However, during the recording of the voicemail messages and subsequent validation of send options, you may want to make this option unavailable to the user because you want to assign the asterisk to trigger canceling this particular operation.

`DefaultMenu` is a global menu and the options in this menu are active in all menus. For example, one of the options is to return to the previous menu, and, by default, this option is triggered by pressing the asterisk key (*). You can press * from anywhere in the voicemail system to return to the previous menu. In the `<Menu-Item>` tags, there is an attribute, `super="DefaultMenu"`, which specifies it as a global menu.

Editing the menus.xml file

In order to edit the menus.xml file, you should have some basic familiarity with XML code. The file is located in the following directory:

`%ORACLE_HOME%\um\xml`

Create a backup copy of menus.xml before editing the file.

Keep the following in mind as you edit the menus.xml file:

- Do not edit the header information in the file. The header tags are the tags prior to the `<Item Bindings>` tag.
- The keys used within a menu must be unique. Do not assign the same key to more than one menu item.
- The menu items in `DefaultMenu` must be set to *silent*. Removing `silent="true"` from the menu items results in an error.
- You may change the trigger for the menu items of `DefaultMenu`. Be aware that if you assign a key that is assigned in `DefaultMenu`, for example *9*, to a menu item in another menu, the `DefaultMenu` option is overridden. For example, assume that *9* in `DefaultMenu` repeats the menu option. Assume that you the assign *9* to the option to listen to new voicemail messages in `RetrievalMainMenu`. When your users are at `RetrievalMainMenu`, pressing *9* allows them to listen to new voicemail messages, but they will not be able to repeat the menu options.
- Do not modify `CustomMenu`, which is required for the auto attendant feature.

- Although you can change the order of menu items within a menu, you cannot change the order in which the menus are presented to users.

Loading the menus.xml file

When you load the menus.xml file, all the sound files for the over 25 supported languages are loaded. Therefore, depending on the speed of Oracle Internet Directory, this process may take 30 minutes or longer.

To load the menus.xml file, execute the following command:

```
C:\%ORACLE_HOME%\um\scripts> promptsmenu.bat C:\%ORACLE_HOME%
```

Message Waiting Indicator Feature

The message waiting indicator (MWI) is a cue to the user that there is a new voicemail message. This could be a light on the phone set that is turned on, or a stuttering tone that the user hears when he or she picks up the receiver.

When a caller leaves a voicemail message for the user, the following occurs:

1. The voicemail message is stored in the Oracle Collaboration Suite Database.
2. The SMTP process in Oracle Mail delivers the voicemail message to the user's Inbox.
3. If this is the first new voicemail message for the user, the message waiting indicator receives a trigger from the database for this user to turn on message waiting.
4. The MWI Service tells the PBX phone number for which the PBX needs to turn message waiting on.

The message waiting indicator is triggered only with the first new voicemail message, and message waiting is turned on. If the user receives additional new messages, the message waiting indicator does not get triggered. Message waiting remains turned on until the last unread message is read. At that point, the mail process sends a trigger to the message waiting indicator to turn message off waiting.

MWI is configurable at the group level and at the individual user level. Disabling this feature means that no MWI message will be sent to the PBX for these users.

To modify the MWI feature for a specific user:

1. Navigate to the Voicemail & Fax administration page.
2. Find the Manage Voicemail Accounts task. Click the **Go To Task** icon for this task.
3. Select the user from the list and click **Edit.**
4. In the Preferences table, change the setting for MWI Enabled by selecting **True** or **False** from the list.

   If you do not see a list, you must first click the **Override** button above the list so that you can set this feature locally.
5. Click **OK.**

To modify the MWI feature for a group of users:

1. Navigate to the Voicemail & Fax administration page.
2. Find the Manage Groups and Sites tasks in the Task list. Click the **Go To List** icon for this task.

3. Select the group and click **Edit.**
4. In the General section, find Message Waiting Indicator Notification and select **Enabled** or **Disabled** from the list.

   If you do not see a list, you must first click the **Override** button next to the list so that you can set this feature locally.
5. Click **OK.**

Deleting Records from the Metrics Table

The Message Delivery Monitor Service monitors the length of time it takes to deliver test messages to test accounts on the Oracle Collaboration Suite Databases. This data is stored in the Metrics table and is used to calculate the Message Delivery Monitor Time metrics on the Performance and All Metrics pages. The Metrics table periodically needs to be cleared of all data so that the table does not fill up, at which point, it would not be able to collect more data. During installation of Oracle Voicemail & Fax, a job is created that periodically clears the data from the Metrics table. If an error occurs during the installation, this job may not get started. Or, if this job is stopped, for example, during database maintenance, you will need to manually restart the job. If you need to manually perform this job, execute the following command:

```
C:\msgDelivery_cleanup.sh Oracle_home_path ovfmetrics_user_
password log_file_path
```

Table 7–1 describes the parameters.

Table 7–1 Description of msgDelivery_cleanup.sh Parameters

Parameter	Description
Oracle_home_path	Location of the Oracle home directory
ovfmetrics_user_password	Password for the ovfmetrics user
log_file_path	Path to the Message Delivery Monitor log file

8

Voicemail & Fax End User Interface

This chapter discusses the Oracle Voicemail & Fax Telephone User Interface (TUI) and the e-mail client interfaces in the following topics:

Oracle Voicemail & Fax End-User Documentation

End-user information on using Oracle Voicemail & Fax can be found in the End-User Documentation Portal. The End-User Documentation Portal is a set of customizable HTML pages that provide an overview of Oracle Collaboration Suite clients, installation and configuration information, as well as information on using the clients. The End-User Documentation Portal also includes links to the FAQ & Troubleshooting site on the Oracle Technology Network (OTN) and to Oracle Collaboration Suite tutorials.

A number of components, such as Oracle Collaboration Suite 10*g* Mobile Data Sync, require frequent device certification updates. In such cases, the End-User Documentation Portal provides getting started information for these components and links to OTN for device certification and configuration information.

Administrators can easily host the End-User Documentation Portal. The default content can be customized for a particular site, adding, removing, and editing content as necessary.

The End-User Documentation Portal is included with the software installation CD as a ZIP file. For information on installing the End-User Documentation Portal, see *Oracle Voicemail & Fax and Oracle Web Conferencing Conversion Servers Installation and Upgrade Guide*. For information about deploying the End-User Documentation Portal, see ‘"Managing the Oracle Collaboration Suite End-User Documentation Portal" in Chapter 5 of *Oracle Collaboration Suite Administrator’s Guide*.

Voicemail Message Formats

Voicemail messages are saved, by default, as WAVE files. Your voicemail users must use a media player that can play WAVE files to listen to the WAVE file attachments, for example, Windows Media Player or RealPlayer.

The message coder type is the compression algorithm used to compress voicemail messages. By default, this is set to 64 kilobits per second (8 kilohertz), 8 bit linear PCM for voicemail messages.

Caution: Do not change the setting for Message Coder Type. Other settings require a custom media player, which is not supported. If this setting is changed, users will not be able to hear their voicemail messages through any of the e-mail clients.

Voicemail greetings recorded by the user use the compression algorithm specified by the Greeting Coder Type parameter. By default, this is set to 24 kilobits ADPCM for the optimal compression and sound quality. You can change this setting to reduce storage requirements in Oracle directory server. See "Editing Group or Site Parameters" on page 4-7 for more information on changing this setting.

Telephone User Interface

Figure 8–1 shows the four menus and the main options of the telephone user interface (TUI).

Figure 8–1 Oracle Voicemail & Fax Main Menu

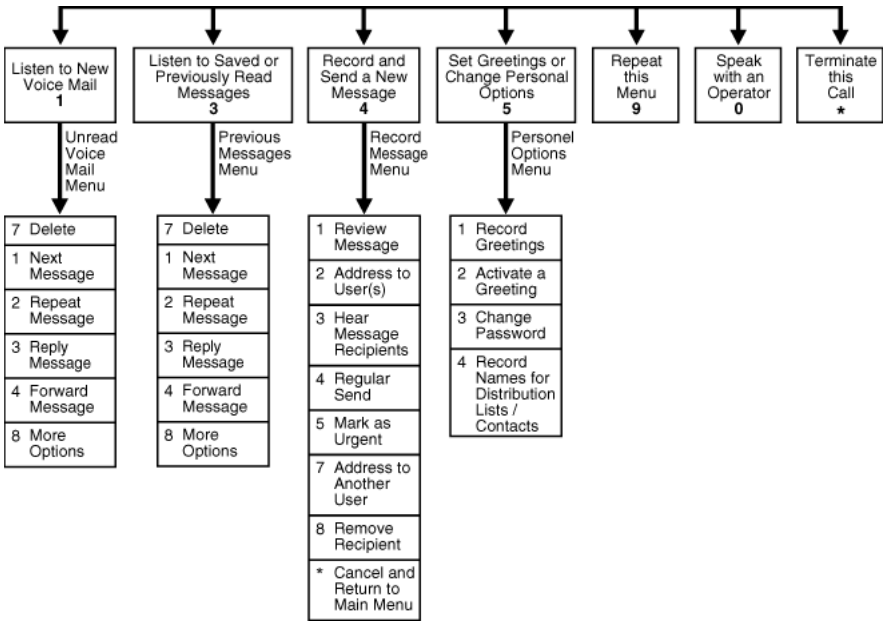
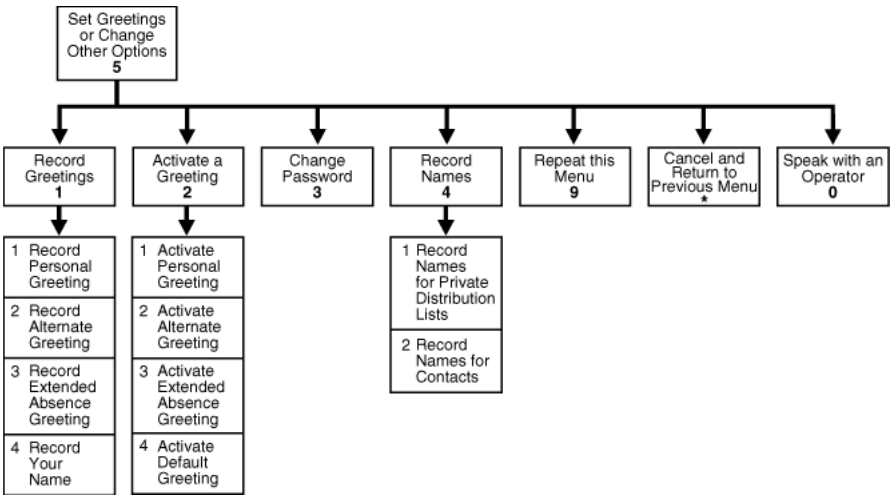


Figure 8–2 shows, in greater detail, the options of the Set Greetings or Change Personal Options Menu.

Figure 8–2 Set Greetings or Change Personal Options Menu



Language Support

Oracle Voicemail & Fax provides prompts in more than 25 different languages, including American English, Arabic, Brazilian Portuguese, British English, Czech, Danish, Dutch, Finnish, French, German, Greek, Hungarian, Italian, Japanese, Korean, Mandarin-Chinese, Mandarin-Taiwanese, Norwegian, Polish, Portuguese, Romanian, Russian, Setswana, Spanish, Swedish, and Turkish. When you install Oracle Voicemail & Fax, the sound files for all supported languages are automatically installed. The default language in which the system prompts are played is American English.

You can configure the system language prompts for all users belonging to a group or site using the Preferred Language parameter. (See"Editing Group or Site Parameters" on page 4-7 for information on setting the Preferred Language parameter.) You can configure the language prompts for a particular account. (See "Changing Voicemail Account Preferences" on page 5-4 for more information.) Each Oracle Voicemail & Fax user can set the language of his or her voicemail prompts from the Voice/Fax Preferences page of Oracle WebMail, the Voicemail Preferences page of Oracle Web Access Client, or from Oracle Connector for Outlook.

Oracle Voicemail & Fax Greetings

Oracle Voicemail & Fax allows users to record and store three greetings: a personal greeting, an alternate greeting, and an extended absence greeting. Once the greeting has been recorded using the telephone user interface (TUI), the user can activate the greeting through the TUI or one of the Web clients. Only one greeting can be active at any time. If the user does not activate one of the personalized greetings, then the system plays a system greeting.

When a caller is forwarded to the voicemail box of an Oracle Voicemail & Fax user, he or she will hear one of the following greetings:

- System Greeting – A prerecorded system greeting is played ("You have reached *name_or_phone_number*. Please leave a message at the tone. When you are finished, hang up or press the pound sign (#) for additional options.") If the Oracle Voicemail & Fax user has recorded her name, the system plays the recorded name in this greeting. If the user has not recorded her name, the user's phone number is used.

- Personal Greeting – The user records a personalized greeting. An example of a personal greeting is the following:

  "This is John Doe of Oracle. It is Monday, September 13. I am in the office, but I am currently away from my desk or on another call. Please leave a detailed message after the tone."

- Alternate Greeting – The user records an alternate personalized greeting. This greeting can be used, for example, when the user is away from the office or on vacation. An example of an alternate greeting is the following:

  "This is John Doe of Oracle. I am away from the office on business until Friday, September 17. I will be checking my messages periodically. Please leave a detailed message after the tone, and I will get back to you as soon as possible."

- Extended Absence Greeting – The user records a personalized greeting when he or she is away for a period of time and will not be checking voicemail messages. This greeting does not allow the caller to leave a message. An example of an extended greeting is the following:

  "This is John Doe of Oracle. I am on vacation until Friday, September 17. I will not be checking my voicemail messages. If you need assistance before I return, please contact Jane Doe at 650 546-8767."

How Voicemail Messages Are Handled in the Interfaces

Because voicemail and e-mail messages are stored in one database and voicemail messages can be accessed either through the IMAP client or through the telephone interface, actions taken on the voicemail message through one interface affects its status in the other interface. When a voicemail message is played over the telephone, it is moved to the saved message queue in the telephone interface and marked as "Read." In addition, the voicemail message is marked as "Read" in the user's Inbox. Likewise, if the message is played using the e-mail client, the message is moved to the saved queue in the telephone interface. Therefore, when a user opens a voicemail message using the e-mail client, the voicemail is considered to be a read message in both interfaces. This is true even if the user opens the e-mail message but does not actually listen to the voicemail.

Setting End-User Preferences

Voicemail users can set their preferences through the telephone user interface, from Oracle WebMail, Oracle Web Access Client, Oracle Connector for Outlook, and in some instances, using all the interfaces.

Table 8–1 How User Preferences Are Set

	Interface Used to Set Preference			
User Preference	**Telephone Interface**	**Oracle WebMail**	**Oracle Web Access Client**	**Oracle Connector for Outlook**
Activate a greeting	Yes	Yes	Yes	Yes
Specify preferred language	No	Yes	Yes	Yes
Change password	Yes	Yes	No	Yes
Specify attendant extension	No	Yes	No	Yes
Forward a message	Yes	Yes	No	No

Sending Voicemail to Distribution Lists

Oracle Voicemail & Fax makes it easy to send or forward voicemail messages to multiple users. Other systems require users to tediously enter the extension number of each person. With Oracle Voicemail & Fax, users create personal distribution lists in Oracle WebMail for groups of users with whom they commonly need to communicate, for example, team members, committee members, or friends and family. A list can include anyone who has an e-mail account—there is no restriction to Oracle Collaboration Suite users. Users record a message on the telephone, then enter the number assigned to the distribution list, and the voicemail is automatically sent to all the users on the list. Recipients who are on the same Oracle Collaboration Suite system can access the voicemail either through e-mail or through the telephone. Outside recipients can access the voice message as an e-mail attachment in their own Inbox.

9

Oracle Collaboration Suite Databases

This chapter discusses the following topics:

This chapter discusses how you can configure the Oracle Collaboration Suite Databases to work with the Voicemail & Fax Applications. You can configure the following:

- **Passwords** – There are two passwords to connect to the Oracle Collaboration Suite Databases: the application password and the metrics password. These passwords can be reset as necessary.
- **Database Connections** – For each Oracle Collaboration Suite Database, you can set the minimum and maximum number of connections between the database and any Voicemail & Fax Application. Each Voicemail & Fax Application inherits these defaults, but you can choose to override the defaults for a specific application.
- **Database Availability** – There is flexibility in how you specify the databases that are available to a Voicemail & Fax Application. By default, all Oracle Collaboration Suite Databases are set to Global and are available to all Voicemail & Fax Applications. If you want to restrict the access of a selected Voicemail & Fax Application to a particular database, you can override the default and specify which databases are available for the application.
- **Primary Outboxes** – There is one global primary outbox for the entire Voicemail & Fax installation. However, you can choose to set a different primary outbox for a particular Voicemail & Fax Application.

Setting the Parameters for an Oracle Collaboration Suite Database

You can set the following parameters for an Oracle Collaboration Suite Database:

- The Minimum Collaboration Suite Database Connections and Maximum Collaboration Suite Database Connections set the connections from the Oracle Container subsystem to the database.
- The Global setting sets the availability of an Oracle Collaboration Suite Database for the entire Oracle Voicemail & Fax installation.

To set the database parameters:

1. Navigate to the Voicemail & Fax group administration page.
2. In the Tasks list, expand the Manage Collaboration Suite Databases task.
3. Click the **Go To Task** icon for Set Database Parameters task.
4. Select the database from the Oracle Collaboration Suite Database list and click **Continue.**
5. Specify the minimum and maximum number of connections between the Voicemail & Fax Application and this database.
6. Select **Global** if you want to make this database available to all Voicemail & Fax Applications.

   You may decide that you want to make an Oracle Collaboration Suite Database available only to one Voicemail & Fax Application. In this instance, deselect the Global box for the Oracle Collaboration Suite Database. Then use the Set Voicemail & Fax Application Service List task to specify access for that particular application. See "Setting the Available Oracle Collaboration Suite Databases" on page 9-3 for more information.
7. Click **OK.**

Setting the Connections to an Oracle Collaboration Suite Database

The number of Voicemail & Fax Application connections to an Oracle Collaboration Suite Database can be specified for the database, and the default settings are 4 minimum connections and 10 maximum connections from the application to the database. By default, the Voicemail & Fax Applications inherit these connections settings. However, you can customize the number of connections from a particular Voicemail & Fax Application to any database that is available to the application.

The number specified by the Minimum Connections settings indicates the number of physical connections the application makes to the database. You may want to adjust the database connection settings if you need to manage your database resources. You do not have to individually manage the connections from each Voicemail & Fax Application to an Oracle Collaboration Suite Database. You can set the minimum number of connections to one, and the maximum number of connections to the largest number of connections required by any Voicemail & Fax Server. In this way, each server keeps one connection open at all times. Each server then opens up as many connections as it requires to handle calls, but no more than is necessary. See "Setting the Parameters for an Oracle Collaboration Suite Database" on page 9-1 for information on setting the default connections for a database.

To set the number of connections to the Collaboration Suite Database for a specific Voicemail & Fax Application:

1. Navigate to the Voicemail & Fax administration page.
2. In the Tasks list, expand the Manage Collaboration Suite Databases list.
3. Click the **Go To Task** icon for the Set Voicemail & Fax Application Collaboration Suite Database Parameters task.
4. Select the application from the Voicemail & Fax Application list.
5. Select the database from the Collaboration Suite Database list and click **Continue.**

   The Oracle Collaboration Suite Databases that are currently available to the selected Voicemail & Fax Application appear in the Collaboration Suite Database

list. If you want to configure connections to an Oracle Collaboration Suite Database that does not appear in the list, you must first make the database available to this application. See "Setting the Available Oracle Collaboration Suite Databases" on page 9-3 for more information on how to make a database available to an application.

6. Click **Continue.**

   The page displays the minimum and maximum number of connections from the Voicemail & Fax Application to the Oracle Collaboration Suite Database. If the number cannot be edited, then the application is set to use the default. If the number in the box can be edited, then the connections have been specifically set for the application.

   Click the icon above the box to either use the default or override the default. The icon toggles between the two options.

7. To override the default, click the **Override** icon, enter the number of connections.
8. To use the default, click the **Inherit** icon.
9. Click **OK.**

Caution: When these parameters are changed, you must restart the host computer of the Voicemail & Fax Application that accesses this Oracle Collaboration Suite Database. After you click **OK,** you will be given a confirmation message that identifies the host computer that must be restarted.

Setting the Available Oracle Collaboration Suite Databases

When an Oracle Collaboration Suite Database is installed, by default it is made globally available to all Voicemail & Fax Applications. And by default, a Voicemail & Fax Application has access to any globally available database. (See "Setting the Parameters for an Oracle Collaboration Suite Database" on page 9-1 for information on setting the Global parameter.) You can override this default and specify a different set of Oracle Collaboration Suite Databases for this Voicemail & Fax Application. You may restrict access to an Oracle Collaboration Suite Database that is set to be globally available or you may enable access to an Oracle Collaboration Suite Database that is not globally available.

Restricting access to a database is useful when you have multiple Oracle Collaboration Suite Databases that support users in different geographical regions. For example, you may have users in New York and Los Angeles. The Inbox of these users are in different databases, that is, the New York users' voice messages are stored in a database in New York, and the Los Angeles users' voice messages are stored in a database in Los Angeles. You might want to restrict the access of the Voicemail & Fax Server in New York to the database in New York. Likewise, you may want to restrict the access of the server in Los Angeles to the database in Los Angeles. Doing so restricts users' access to retrieve messages from a particular database. Note that users are still able to send voicemail messages to users whose Inboxes reside in other databases. **One of the disadvantages to restricting access to a database occurs when a user is away from their office. For example, if a New York user travels to the Los Angeles office, he or she must dial the New York phone number that is used to access the voicemail system instead of using the local Los Angeles phone number used to access the system. The advantage of restricting users to a particular database is that you do not have to maintain database connections and related database resources to other databases in the system.

Note: Setting the list of available Oracle Collaboration Suite Databases for a Voicemail & Fax Application only restricts where the user can access their voicemail messages. The user can still send voicemail messages to users residing on other Oracle Collaboration Suite Databases.

To set the Oracle Collaboration Suite Databases for a Voicemail & Fax Application:

1. Navigate to the Voicemail & Fax administration page.
2. In the Tasks list, expand the Manage Collaboration Suite Databases list.
3. Click the **Go To Task** icon for Set Voicemail & Fax Application Service List task.
4. Select the application from the Voicemail & Fax Application list and click **Continue.**

   The Set Voicemail & Fax Application Service List: Set Collaboration Suite Databases page displays the Oracle Collaboration Suite Databases that are available for the application you selected. If the list is grayed out, then the application is set to use the default. If the list is not grayed out, then the Oracle Collaboration Suite Databases have been specifically set for the application.

   Click the icon above the box either to use the default or to override the default. The icon toggles between the Inherit and Override options.
5. To specify a different set of databases, click the **Override** icon.
   - A list of all Oracle Collaboration Suite Databases appears, including those that are globally available and those that are not.
   - Select the Oracle Collaboration Suite Databases from the list that you want to make available to this Voicemail & Fax Application, and click **OK.**
6. To use the default, click the **Inherit** icon.

   The service list displays all Oracle Collaboration Suite Databases that are set to Global.

Note: If the Voicemail & Fax Application has a local primary outbox, you must first change the primary outbox and set it to the global primary outbox. You must do this before you can make any change to the service list. Once you have updated the service list, you can then change the primary outbox back to the local setting. See "Setting the Primary Outbox for a Voicemail & Fax Application" on page 9-5 for more information on how to change the primary outbox.

Primary Outboxes

The **primary outbox** is an Oracle Collaboration Suite Database that functions as an gateway to all other databases in the Oracle Voicemail & Fax installation. By default, the first Oracle Collaboration Suite Database that is installed is set as the global primary outbox for the entire system. You can later configure the global primary outbox and select another Oracle Collaboration Suite Database. By default, all voicemail messages are delivered to the global primary outbox. If the voicemail recipient does not belong to the database specified as the primary outbox, then the voicemail message is forwarded to the correct database. For the fastest message delivery time, it is preferable that the primary outbox be the same database where the

user's voicemail is stored. Therefore, Oracle recommends that you set the global primary outbox to be the database where the majority of your users' voicemail messages are stored. A global primary outbox is set for the system and, by default, this is inherited by all the Recording Services in the system.

You can set a different primary outbox for a Voicemail & Fax Application. You may want to do this if a specific Applications tier is configured to support the majority of users in a specific Oracle Collaboration Suite Database that is different from the one specified for the global primary outbox. You can override this global setting and configure the appropriate database as the primary outbox.

If the Recording Service is unable to successfully send the message using the specified primary outbox, the message is stored on the Telephony Server and sits in a queue waiting to be processed by the Message Recovery Service. The Message Recovery Service attempts to connect to all the configured databases for the Voicemail & Fax Application, instead of using the database specified by the Primary Outbox parameter.

Setting the Global Primary Outbox

When the Oracle Collaboration Suite Databases are created, the first Oracle Collaboration Suite Database that is created is set as the global primary outbox. The database you select as the global primary outbox is, by default, the primary outbox for all Voicemail & Fax Applications. After installation, you can change this global primary outbox setting and select any other Oracle Collaboration Suite Database in your system.

To set the global primary outbox:

1. Navigate to the Voicemail & Fax administration page.
2. In the Tasks list, expand the Manage Collaboration Suite Databases task.
3. Click the **Go To Task** icon for Set Global Primary Outbox to go to the Set Global Primary Outbox: Select Global Primary Outbox page.

   The database that is currently the global primary outbox appears in the Collaboration Suite Database list.
4. Select the database you want to set as the global primary outbox from the Collaboration Suite Database list and click **OK.**

One of the options in the Collaboration Suite Database list is No Global Primary Outbox. One way of using this option is if you want to change the availability of an Oracle Collaboration Suite Database that is currently the global primary outbox. In order to make it not globally available, you must first remove it as the global primary outbox and make another selection. If you do not want to select an alternative database as the global primary outbox, use No Global Primary Outbox.

You may specify a different primary outbox for an application. See "Setting the Primary Outbox for a Voicemail & Fax Application" for more information.

Setting the Primary Outbox for a Voicemail & Fax Application

By default, all Voicemail & Fax Applications use the global primary outbox. You may either use this inherited value or select another Oracle Collaboration Suite Database as the primary outbox.

To set the primary outbox:

1. Navigate to the Voicemail & Fax administration page.
2. In the Tasks list, expand the Manage Collaboration Suite Databases task.

3. Click the **Go To Task** icon for Set Voicemail & Fax Application Primary Outbox.
4. Select the application from the Voicemail & Fax Application list and click **OK.**

   In the Set Voicemail & Fax Application Primary Outbox: Select Primary Outbox page, the primary outbox is displayed for the application you selected. The icon to the left of the named primary outbox indicates whether this setting is inherited, that is, it is using the global primary outbox setting, or if the primary outbox is specifically set for this application.
5. If the primary outbox is inherited and you want to select a different primary outbox for this application, click the **Override** icon to the left of the box, and select another primary outbox from the list.

   The list displays the Oracle Collaboration Suite Databases that are available to this Voicemail & Fax Application. If you want to select an Oracle Collaboration Suite Database that does not appear in the list, you must first make it available. See "Setting the Available Oracle Collaboration Suite Databases" on page 9-3 for more information on making a database available to an application.
6. If the primary outbox is specified for this Voicemail & Fax Application, and you want to change this and use the global primary outbox, click the **Inherit** icon.
7. Click **OK.**

Setting the Application Password

The `um` user ID and password is required to connect from the Voicemail & Fax Application to the Collaboration Suite Database. This application password is used by the Oracle Container subsystem and the Message Waiting Indicator (MWI) Service. When you install Oracle Voicemail & Fax, you are prompted to provide a password for the `um` user ID. If, for some reason, you need to change the password or you add another Oracle Collaboration Suite Database to your installation, you must also update the Voicemail & Fax Applications that connect to the database with the password.

To set the application password:

1. Navigate to the Voicemail & Fax group administration page.
2. In the Tasks list, expand the Manage Collaboration Suite Databases task.
3. Click the **Go To Task** icon for the Set Application Password task.
4. Select the database from the Collaboration Suite Database list and click **Continue.**
5. On the Set Application Password: Set Password page, enter the old password, and enter the new password twice, and click **OK.**

   The application returns a message confirming that the password has been successfully changed, and gives a list of the host computers that must be restarted.

Caution: When the password is changed, you must restart the host computer of any Voicemail & Fax Application that accesses this Oracle Collaboration Suite Database. After you click **OK,** you will be given a confirmation message that identifies the host computers that must be restarted.

In addition, you must also update the `um` password in the Oracle Collaboration Suite Database. Therefore, the change must be made in two places—the Voicemail & Fax Applications and the Oracle Collaboration Suite Database—in order for the new password to take effect. Until the passwords are synchronized, the Voicemail & Fax Applications will not be able to connect to the database.

Setting the Metrics Password

The Message Delivery Service uses the `ovfmetrics` user ID and password to connect to the Oracle Collaboration Suite Database. When you install Oracle Voicemail & Fax, you are prompted to provide a password for the `ovfmetrics` user ID. If, for some reason, you need to change the password, or you want to add a new Oracle Collaboration Suite Database to your installation, you must also update the Voicemail & Fax Applications that connect to the database with this password.

To change the metrics password:

1. Navigate to the Voicemail & Fax group administration page.
2. In the Tasks list, expand the Manage Collaboration Suite Databases task.
3. Click the **Go To Task** icon for the Set Metrics Password task.
4. Select the database from the Collaboration Suite Database list and click **Continue.**
5. On the Set Metrics Password: Set Password page, enter the old password, enter the new password twice, and click **OK.**

   The application returns a message confirming that the password has been successfully changed, and provides a list of the host computers that must be restarted.

Caution: When the password is changed, you must restart the host computer of any Voicemail & Fax Application that accesses this Oracle Collaboration Suite Database. After you click **OK,** you will be given a confirmation message that identifies the host computers that must be restarted.

In addition, you must also update the `ovfmetrics` password in the Oracle Collaboration Suite Database. Therefore, the change must be made in two places—the Voicemail & Fax Applications and the Oracle Collaboration Suite Database—in order for the new password to take effect. Until the passwords are synchronized, the Voicemail & Fax Applications will not be able to connect to the database.

10

Performance and Monitoring

This chapter discusses the following topics:

This chapter discusses how to use Oracle Enterprise Manager Grid Control to monitor the performance of the Oracle Voicemail & Fax system, including the overall status of the system, the primary Voicemail & Fax features, and different measures of user satisfaction. It describes how to set up metrics notifications and how to troubleshoot when metrics reach undesirable levels.

Monitoring the Overall Status of the Oracle Voicemail & Fax System

You can get an overview of the overall status of the Oracle Voicemail & Fax system from the Voicemail & Fax home page. Refer to the metrics in the General section of the page.

Use the Status metric to see if any instances of any services are down. Status is *Up* when all PBX-Application Clusters are up. If one or more clusters are down, the Status is *Down*. For a PBX-Application Cluster to be up, all Voicemail & Fax Applications that are associated with that PBX-Application Cluster must be up. For a Voicemail & Fax Application to be up, at least one instance of each service must be up.

Note: The status of the Telephony Server is not included in the Status metric. Therefore, if the server is down, even though Status may display *Up*, there is no functioning Voicemail & Fax Application. To check the status of the Telephony Server, navigate to the Voicemail & Fax Application home page.

Monitoring the Major Oracle Voicemail & Fax Features

The Retrieval, Recording, and Inbound Fax metrics monitor the status of the most important Voicemail & Fax features. To get further metrics details, navigate to the All Metrics page for the relevant Voicemail & Fax Application.

Voicemail Message Retrieval

The Retrieval metric monitors the services required to retrieve voicemail messages from the Oracle Collaboration Suite Database. It has a status of *Up* when all of the following is true:

- There are one or more running instances of each of the following services for each Voicemail & Fax Application for each PBX-Application Cluster: Routing, Retrieval, and SMDI Monitor (if enabled).
- The Telephony Server is running.
- Oracle Internet Directory is running.
- All Oracle Collaboration Suite Databases are running.

Recording Voicemail Messages

The Recording metric monitors the services required to record voicemail messages. It has a status of *Up* when both of the following are true:

- There are one or more running instances of each of the following services for each Voicemail & Fax Application for each PBX-Application Cluster: Routing, Recording, and SMDI Monitor (if enabled).
- The Telephony Server is running.

Receiving Inbound Faxes

Inbound Fax monitors the services associated with receiving fax messages. It has a status of *Up* when both of the following are true:

- There are one or more running instances of each of the following services for each Voicemail & Fax Application for each PBX-Application Cluster: Routing, Fax Receiving, and SMDI Monitor, if it is enabled.
- The Telephony Server is running.

Interpreting the Metrics

While the Status metric in the General section monitors all Voicemail & Fax services, the Retrieval, Recording, and Inbound Fax metrics track only a subset of these services that are required for the feature to be running. In addition, the feature availability metrics track any required dependent services including the Telephony Server and, in the case of the Retrieval feature, Oracle Internet Directory and the Oracle Collaboration Suite Databases. Consequently, the Status metric may be *Up*, but Retrieval, Recording, and Inbound Fax feature availability may be *Down*. This would occur if the required Voicemail & Fax services are running, and one or more of the dependent services are down.

To get further metrics details for Oracle Internet Directory and Oracle Collaboration Suite Databases, navigate to the All Metrics page for the relevant Voicemail & Fax Application.

If the feature availability metrics are *Up*, but the Status metric is *Down*, then this means that the required services for at least one Voicemail & Fax Application are running, but the performance may be poor or unacceptable because one or more instances are down.

Use the Highest PBX-Application Cluster Response Times graph to monitor two important measures of user satisfaction: average response time to hear the voicemail system greeting once a user has successfully logged in, and average response time to

hear a voicemail message. For additional performance measures, go to the Voicemail & Fax Performance page.

Once you have determined that there is a problem with a service, use the Components table to navigate to the instance of the service that is down. Click the service instance to navigate to the home page for that service.

Getting Detailed Metrics Information

The metrics on the Voicemail & Fax home page give you a high-level overview of the status of your Voicemail & Fax system. To get further information about a problem, you need to access the metrics details on the All Metrics pages.

To navigate to the All Metrics page:

1. From the Voicemail & Fax home page, use the Components table to identify the PBX-Application Cluster with the problem.
2. Navigate to the PBX-Application Cluster by clicking the PBX-Application Cluster in the Components table.
3. Identify the problematic Voicemail & Fax Application, and click the Voicemail & Fax Application in the Components table.
4. In the Voicemail & Fax Application home page, click **All Metrics** at the bottom of the page.
5. On the All Metrics page, click the relevant link to get more details about the service.

Monitoring User Satisfaction Metrics

The following metrics are monitored at each level in the hierarchy. You can use the information to track the overall response times in your system and to identify which Voicemail & Fax Applications in your system require tuning. The following metrics are tracked on the performance pages at the Voicemail & Fax, PBX-Application Cluster, and Voicemail & Fax Application levels.

Login Time

After the user enters his or her password, the voicemail system responds with a count of the user's messages ("You have *n* new voicemail messages, *n* saved voicemail messages, *n* new e-mail messages, and *n* new fax messages"). The Login Time metric shows the average length of time, in milliseconds, between the time the password is accepted and the voicemail system responds with the message count.

Greeting Response Time

When a call is not answered, it is automatically forwarded to the voicemail system. Then the voicemail system responds with a prompt, for example, "You have reached *person's name*. Please leave a message at the tone." The Greeting Response Time metric shows the length of time, in milliseconds, between the voicemail system picking up the call and the start of the greeting.

Message Play Time

A voicemail user chooses the option to hear his or her messages, and the voicemail system retrieves and plays the message. The Message Play Time metric is the length of time, in milliseconds, between when the user chooses to hear the message and when the message starts playing.

Menu Play Time

After the voicemail system responds with a count of the user's messages, it then plays the Message Menu ("To record a message, press 1, to retrieve a message, press 2, ..."). The Menu Play Time metric is the length of time, in milliseconds, it takes to play the Message Menu after the message count is played.

Message Delivery Time

Once a caller confirms that he or she has completed recording a message, the message is sent to the called party's mailbox, at which point the message can be retrieved. The Message Delivery Time metric is the length of time, in seconds, between the caller's confirmation and the point at which the message is deposited into the user's account.

How the Metrics Are Calculated

The metrics at each level of the hierarchy are a summary of the components below it. The following describes how the metrics are calculated at each level.

Voicemail & Fax Performance Page

Each line on each graph shows the calculated average for a specific PBX-Application Cluster. The formula that follows describes how this average is calculated:

PBX-Application Cluster Average = [Average (Voicemail & Fax Application 1) + Average (Voicemail & Fax Application 2) + Average (Voicemail & Fax Application *n*)] / *number of instances*

PBX-Application Cluster Performance Page

Each line on each graph shows the calculated average for a specific Voicemail & Fax Application. The formula that follows describes how this average is calculated:

Voicemail & Fax Application Average = [Average (Instance 1) + Average (Instance 2) + Average (Instance *n*)] / *number of instances*

Voicemail & Fax Application Performance Page

The performance page provides summary metrics about the particular Voicemail & Fax Application. Averages for each service are calculated by averaging the service instance values. The formula that follows describes how this average is calculated:

[Average (Instance 1) + Average (Instance 2) + Average (Instance *n*)] /*number of instances*

Troubleshooting

If the Message Play Time metric is too long, the network connection to the Oracle Collaboration Suite Database may be slow. To improve the Oracle Voicemail & Fax connections to the database, check the bandwidth of the network. If the delay is due to the physical distance between the Voicemail & Fax Server and the database, then try adjusting the size of the data that is sent between the Voicemail & Fax Server and the database. To adjust the parameter that manages the data size, navigate to the Voicemail & Fax Application administration page. In the Database Buffers section, adjust the size of the Collaboration Suite Database Read Buffer Size parameter. If that does not reduce the delay sufficiently, you may need to consider adding another database that is physically closer to the server.

If the Greeting Response Time metric is too long, Oracle Internet Directory may not be working correctly or the network connection to the Oracle Internet Directory may be slow. To verify this, you need to perform some basic searches against the Oracle

Internet Directory using a command-line tool such as `ldapsearch`. See *Oracle Internet Directory Administrator's Guide* for more information on this tool. If the delay is due to the network distance, first consider increasing the network capacity, and then consider locating a replicated Oracle Internet Directory near the Voicemail & Fax Server.

If the Message Delivery Time metric is too long, check to see that there are enough SMTP processes to handle the traffic, and add additional processes as needed.

Monitoring the Telephony Server

You can monitor the status of the Telephony Server on the Telephony Server home page. You can get the number of calls currently being handled by the server (Active Calls) and the total number of calls that the server has handled since it was last started (Total Calls).

To navigate to the Telephony Server page:

1. Navigate to the Voicemail & Fax Application home page.
2. In the General section, click the **Telephony Server** link.

Note: Do not confuse the *Telephony Server* home page with the home page for the *Telephony Monitor Service*. The Telephony Monitor Service monitors the Telephony Server and reports on its status and performance.

Monitoring the Number of Active Calls

Active calls is the total number of concurrent phone calls handled by the Telephony Server at the time of the sampling. The Active Calls metric is an overall indicator of the usage of the Voicemail & Fax system.

Setting Up Notifications

You can be notified when a metric for any Oracle Enterprise Manager target reaches a particular threshold. You can set thresholds for Voicemail & Fax Application metrics or for any of the Oracle Voicemail & Fax services. In most instances, the most useful notifications will be set on metrics at the application level.

To set up notifications:

1. Scroll down any Voicemail & Fax Application page to the Related Links section and click **Manage Metrics.**
2. On the Manage Metrics page, specify the critical or warning threshold for the metric.
3. Click the **Preferences** global link.
4. If you want to be notified through an e-mail, click **General** on the Preferences menu and specify the e-mail address.
5. Click **Notification Rules** on the Preferences menu.
6. Set up the rules specifying the Oracle Enterprise Manager targets and the conditions under which you want to be notified.

See *Oracle Enterprise Manager Advanced Configuration* for more information on configuring notifications.

11

Interactive Voice Response

This chapter discusses the following topics:

About Interactive Voice Response Systems

An Interactive Voice Response (IVR) system automates interaction with telephone callers. The Oracle Voicemail & Fax IVR system allows system administrators to customize a user interface for callers and provides auto-attendant features such as simple DTMF-based menus (Dual-Tone Multifrequency), call routing, voicemail, and directory integration features.

The following is an example of what a caller might hear when she calls the central phone number for the Acme Corporation, a fictitious company.

"Thank you for calling the Acme Corporation. Please make a selection from the following menu. For our business hours, press 1. To speak to someone in Customer Support, press 2. If you know the extension of the person you wish to speak to, press 3. If you want to leave a message for a specific person, press 4. For general help, press 5 to leave a message, and someone will return your call."

Oracle Voicemail & Fax allows you to tailor the behavior of the IVR depending on the day and time that a call comes in. Therefore, if a caller calls during the hours that the Acme Corporation is closed for business, they hear a different message:

"Thank you for calling the Acme Corporation. Our office is now closed. Please call back during our regular business hours which are Monday through Friday, between 8:00 a.m. and 5:00 p.m."

Acme Corporation celebrates Martin Luther King's birthday as a holiday. On that day, callers hear the following message:

"Thank you for calling the Acme Corporation. Our office is closed today in celebration of Martin Luther King's birthday. Please call back tomorrow when we will resume standard business hours at 8:00 a.m."

One day during the winter, a snowstorm closed the offices of Acme Corporation. On that day, callers heard this recording:

"Thank you for calling the Acme Corporation. Our offices are closed today because of the snowstorm. We apologize for any inconvenience this closure has caused you. Please call our offices again tomorrow after 8:00 a.m."

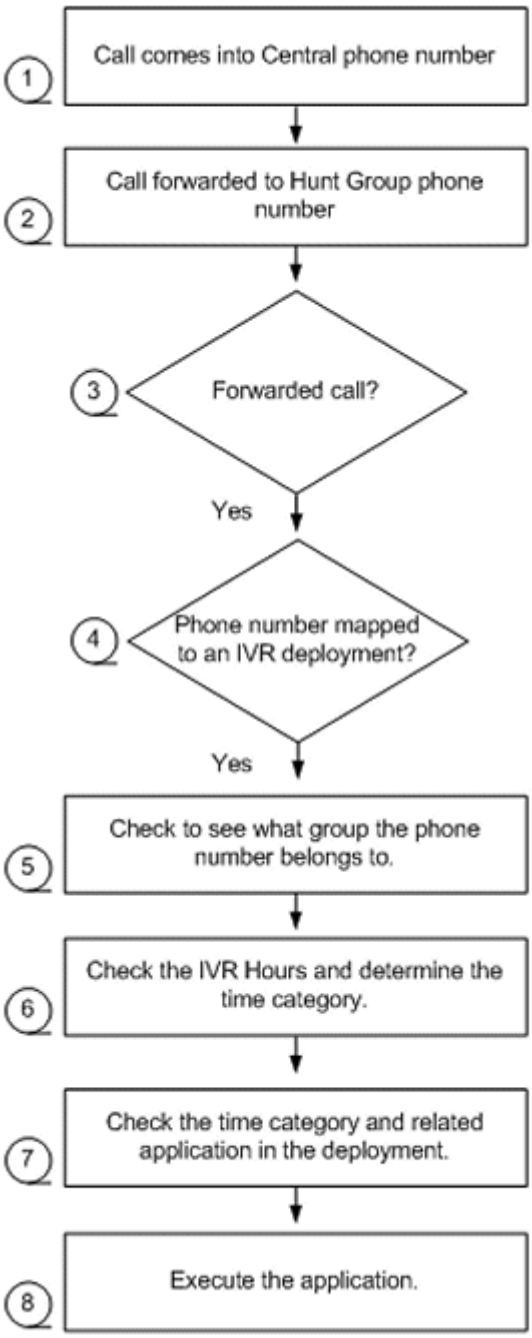
How Oracle Voicemail & Fax Initiates an Interactive Voice Response

When a call comes in, Oracle Voicemail & Fax goes through the following steps to initiate an IVR:

1. A call comes in to the central phone number, (415.292.6000), on Monday at 8:30 a.m.
2. The call is forwarded to the **hunt group** phone number.
3. Oracle Voicemail & Fax checks to see if it is a direct call or a forwarded call, and determines that it is a forwarded call.
4. For any forwarded call, Oracle Voicemail & Fax then checks to see if an IVR deployment is specified for the phone number. It determines that the Acme deployment *is* specified for this phone number.
5. Oracle Voicemail & Fax checks to see what group this phone number is assigned to and determines that the phone number belongs to the acme.hq.com group.
6. Oracle Voicemail & Fax checks the IVR Hours for the acme.hq.com group and determines that Monday, 8:30 a.m. corresponds to the Open time category.
7. Oracle Voicemail & Fax checks the Open time category in the acme deployment.
8. Oracle Voicemail & Fax executes the **call flow** specified for the Open time category.

Figure 11–1 is a flowchart of these steps. The numbers in the flowchart correspond to these steps.

Figure 11–1 Flow Chart of a Call Forwarded to an IVR Application



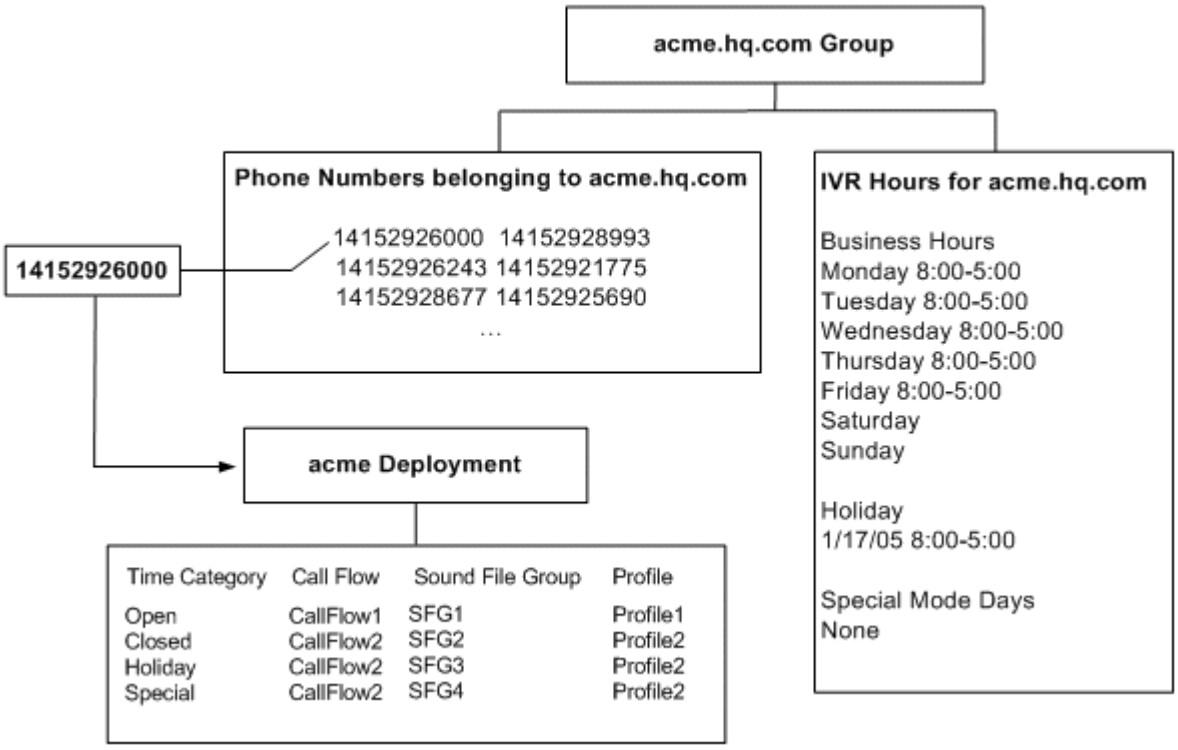
There is a relationship between a group, the phone numbers assigned to the group, the IVR hours specified for the group, and the IVR deployment assigned to a phone number. Figure 11–2 illustrates this relationship for the acme.hq.com group.

A group has two properties relevant to IVRs: Phone Numbers and IVR Hours. The Phone Numbers property is assigned to groups or sites. In this example, the central phone number (1.415.292.6000) is assigned to the acme.hq.com group. Second, the IVR Hours specify the open business hours, holidays, and any *special mode* days for a group. In this example, the hours are specified for acme.hq.com, the headquarters office of Acme Corporation. The Business Hours listed correspond to the Open time category. The hours of the Closed time category are the hours not included in the Open

time category. Acme Corporation celebrates one holiday on January 17. Special Mode days are used to designate unusual circumstances such as an office closure due to a snowstorm in the preceding example.

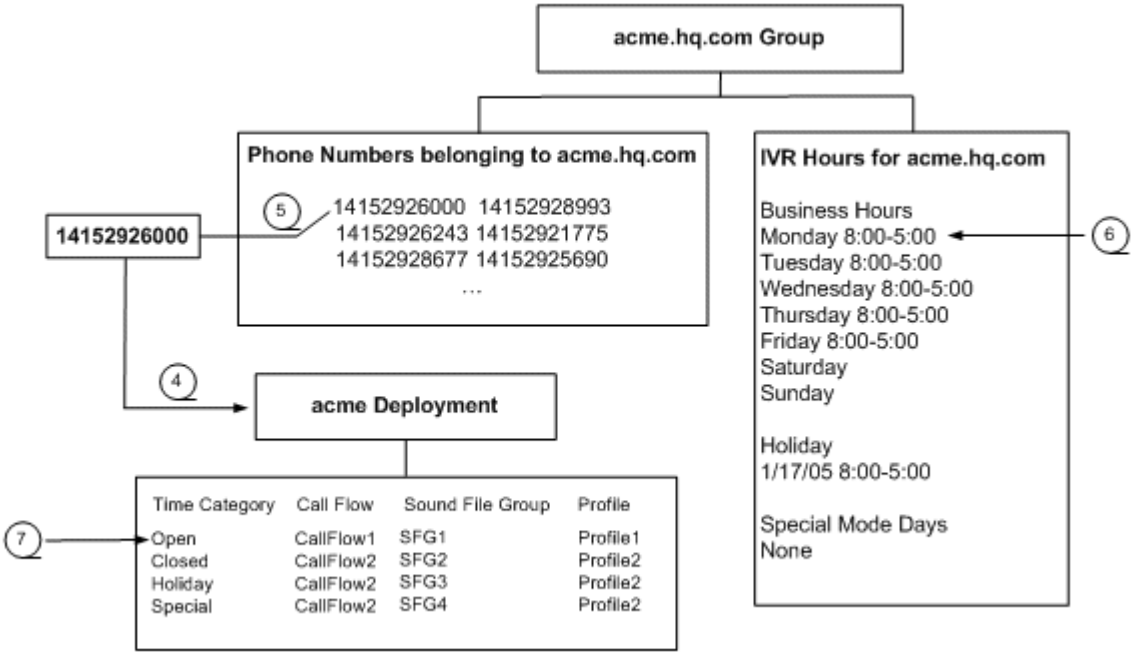
The phone number ties the information about the group to the IVR deployment. A deployment is specified for a particular phone number. In this example, the Acme deployment is specified for the phone number 14152926000. The deployment consists of call flows, **sound file groups,** and **profiles** for each of the time categories.

Figure 11–2 Relationship between Groups and Deployments



Refer to the flow chart in Figure 11–1. You can use Figure 11–3 to see how Oracle Voicemail & Fax uses the relationship between groups, phone numbers, IVR Hours, and IVR deployments to execute an IVR application. The IVR application consists of the call flow, sound file group, and profile for a time category. The IVR application that gets executed in the example in Figure 11–1 uses the CallFlow1 call flow, the SFG1 sound file group, and the Profile1 profile that correspond to the Open time category. The numbers in Figure 11–3 correspond to Step 4 through Step 7 in the flow chart (Figure 11–1).

Figure 11–3 Mapping Flowchart Steps



Creating an IVR System

An Oracle Voicemail & Fax IVR system includes the following elements:

- A mapping of phone numbers to IVR deployments.
- Definitions of time categories for the group to which the phone number belongs.
- An IVR deployment. A deployment consists of a call flow, sound file group, and profile for different time categories.

To create an IVR system, complete all of the following tasks:

- Specify the hours of the IVR.
- Create the IVR deployment.
- Map the phone number to a deployment.

Specifying the Hours of the IVR

The hours of the IVR are specified for a group or site. You can specify time categories, and by doing so, you can customize your deployment to behave differently depending on the time of day.

Business Hours are the hours that the business is open, and correspond to the Open time category. Any days and times that the business is not open are the hours that it is closed. These hours are deduced from the Business Hours and correspond to the Closed time category. Any days and times specified as Holidays or Special Mode Days override the Business Hours and correspond, respectively, to the Holiday and Special time categories. Special Mode Days can be used to cover unusual circumstances such as an office closure due to a power outage or weather conditions.

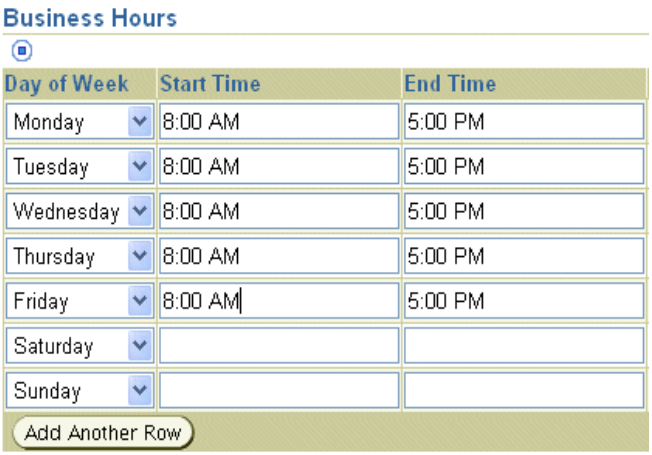
Table 11–1 is an example of how the hours specified for the hq.acme.com site map to the time categories. Therefore, if a call comes in on Monday, February 15, 2005 at 10:00 a.m., this time falls within the hours that have been specified as open business hours and the IVR application corresponding to the Open time category is used.

Table 11–1 Relationship Between IVR Hours Specified for Group and Time Categories

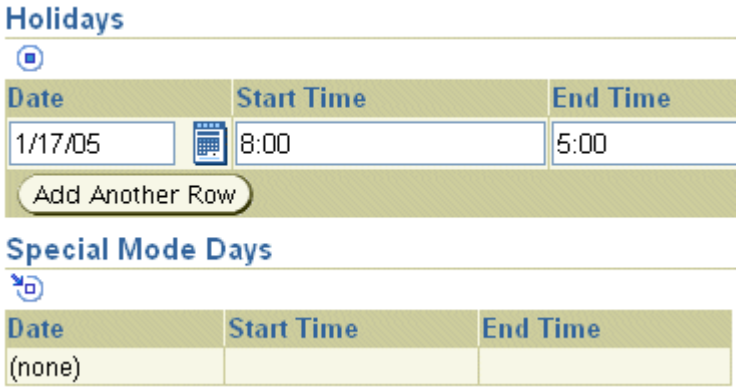
IVR Hours Specified for the hq.acme.com Group		Corresponding Time Category in IVR Deployment
Business Hours	Monday to Friday, 8:00 a.m. - 5:00 p.m.	Open
	Monday to Friday, 5:00 p.m. - 11:59 p.m. 12:00 a.m. - 7:59 a.m., Saturday and Sunday 12:00 a.m. - 11:59 p.m.	Closed
Holiday	Monday, January 17	Holiday
Special Mode Days	None specified	Special

To specify the hours of the IVR:

1. Navigate to the administration page for the Voicemail & Fax group.
2. Click the **Go To Task** icon for the Groups and Sites task.
3. In the Groups and Sites page, select the group to which the phone number belongs and click **Edit.**
4. In the Interactive Voice Response (IVR) section of the page, enter the hours that your business is open in the Business Hours table.



5. Enter any holidays in the Holidays table.



Note: You can leave the Special Mode Days and Holidays sections blank.

6. Click **OK.**

Creating an IVR Deployment

An IVR deployment consists of call flows, sound file groups, and profiles for each of the four time periods. For example, Table 11–2 shows the AcmeDemoDeployment IVR deployment:

Table 11–2 AcmeDemoDeployment

Time Category	Call Flow	Sound File Group	Profile
Open	CallFlow1	SFG1	Profile1
Closed	CallFlow2	SFG2	Profile2
Holiday	CallFlow2	SFG3	Profile2
Special	CallFlow2	SFG4	Profile2

The following is an overview of the steps to creating an IVR deployment. As you go through the steps, fill in the worksheet in Appendix C. The information in this worksheet will be required when you get to the last step where you create the deployment.

Use the Interactive Voice Response Manager, a command-line tool, to create the call flows, sound file groups, profiles, and deployments for your IVR deployment. See Appendix E, "Interactive Voice Response Manager Commands" for more information about the commands.

Overview of the Steps to Create an IVR Deployment

1. Create a new call flow or edit an existing call flow for a time category. See "About Call Flows" on page 11-8 for more information on call flows. Enter the name of the call flow for the appropriate time category in the worksheet.
2. Identify the roles in your call flow and create a sound file for each role in your call flow. See"Creating Sound Files" on page 11-17 for more information on creating sound files. Enter the name of each role, the sound file associated with the role, and coder type of each sound file in the worksheet.

3. Create a new sound file group. See "About Sound File Groups" on page 11-16 for more information about sound file groups. Enter the name of the sound file group in the worksheet.
4. Identify the profile keys in your call flow. See "About Profiles" on page 11-18 for more information about profiles. Enter the profile keys and their values in the worksheet.
5. Create a new profile. Enter the name of the profile in the worksheet.
6. Repeat Step 1 through Step 5 for each time category.
7. Create your deployment. See "Creating the IVR Deployment" on page 11-19 for more information on creating the deployment.

In the sections that follow, the AcmeDemoDeployment deployment will describe the call flow and related sound file group and profile for the Open time category.

Note: Do not confuse the *AcmeDemoDeployment* deployment with the sample deployment, *ACME*. AcmeDemoDeployment is used as an example in this chapter, but the files required for the deployment are not provided as one of the sample deployments.

About Call Flows

A **call flow** is an XML file that is executed by the IVR Service. A call flow is a state machine, that is, a call enters the call flow at the state defined as the start state, and it leaves the call flow through the state defined as the end state. Between these two states, there are a series of transition states. For each state there is one **call flow action** that defines a specific action. For example, the <menuAction> action provides a menu of options. Each action has associated with it, certain behavior, for example, the <menuAction> action lets callers select menu options that are initiated with a keypress.

Certain conditions within the state must be met in order for the call to move from its current state to another state. When a call flow completes the state's action and it reaches the end state, the call flow completes its processing of the call and the IVR Service exits the application.

Besides the main body of the call flow, there are two other sections that set up the call flow. The configuration section of the call flow, <globalConfig>, defines the default behavior of the state machine. This default behavior applies to all states, but can be overridden locally within a specific state. The <declarations> section declares sound file roles and profiles that are referenced within the call flow.

An Example Call Flow

When a caller calls the main phone number of Acme Corporation during standard business hours, they hear the following recording:

"Thank you for calling the Acme Corporation. Please make a selection from the following menu. For our business hours, press 1. To speak to someone in Customer Support, press 2. If you know the extension of the person you wish to speak to, press 3. If you want to leave a message for a specific person, press 4. For general help, press 5 to leave a message, and someone will return your call."

If the caller presses 1, they hear a recording that gives them Acme's business hours. If the caller presses 2, they are transferred to the phone extension for Customer Support. If the caller presses 3, they are prompted to enter the phone extension of the person they are reaching, and after they enter the extension, they are transferred to that phone

number. With option 4, the caller bypasses getting transferred to a user's extension and is transferred directly to the voicemail system, where they can leave a message for a recipient that they specify. Option 5 transfers them to a general voicemail mailbox where they can leave a message.

This behavior is represented in the call flow document that follows (Example 11–1).

Note: The line numbers in the example call flow are for reference only.

Example 11–1 CallFlow1.xml File

```
<?xml version="1.0" encoding="UTF-8"?>
<ivr:stateMachine xmlns:ivr="http://www.oracle.com/ovf/ivr/2003"
                  xmlns="http://www.oracle.com/ovf/ivr/2003"
                  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
<declarations>
  <profKeys>
      <profKey>Customer Support extension</profKey>
      <profKey>General Help mailbox</profKey>
       <profKey>Operator extension</profKey>
  </profKeys>

  <sfRoles>
    <sfRole>Main menu prompt</sfRole>
    <sfRole>Business hours prompt</sfRole>
    <sfRole>Extension entry prompt</sfRole>
    <sfRole>Goodbye</sfRole>
  </sfRoles>
</declarations>

<startState>MainMenu</startState>
<endState>Finish</endState>
<globalConfig>
<allConfig>
  <onMiscError>
    <ivr:destinationState>Goodbye</ivr:destinationState>
    </onMiscError>
  </allConfig>
  <menuConfig>
    <keyPresses>
      <menuItem key="0">
        <destinationState>ToReachOperator</destinationState>
      </menuItem>
      <repeatOptions key="9"/>
    </keyPresses>
    <timeoutBehavior><retreat/></timeoutBehavior>
  </menuConfig>

</globalConfig>
<state name="MainMenu">
  <menuAction>
    <leadSoundFile><sfRoleRef>Main menu prompt</sfRoleRef></leadSoundFile>
    <keyPresses>
      <menuItem key="1">
        <destinationState>ForBusinessHours</destinationState>
      </menuItem>
      <menuItem key="2">
       <destinationState>ForCustomerSupport</destinationState>
```

```
48          </menuItem>
49            <menuItem key="3">
50              <destinationState>ToReachUser</destinationState>
51            </menuItem>
52            <menuItem key="4">
53              <destinationState>ToReachVoicemail</destinationState>
54            </menuItem>
55            <menuItem key="5">
56              <destinationState>GeneralHelpMailbox</destinationState>
57            </menuItem>
58          </keyPresses>
59
60          <timeoutBehavior noResponseOk="false">
61            <onTimeout>
62              <destinationState>ToReachOperator</destinationState>
63            </onTimeout>
64          </timeoutBehavior>
65        </menuAction>
66      </state>
67
68      <state name="ForBusinessHours">
69        <playInfoAction>
70          <soundFile><sfRoleRef>Business hours prompt</sfRoleRef></soundFile>
71          <onSuccess><destinationState>Finish</destinationState></onSuccess>
72          <keyInterrupt>false</keyInterrupt>
73          <keyFlush>true</keyFlush>
74        </playInfoAction>
75      </state>
76
77      <state name="ForCustomerSupport">
78        <extensionTransferAction>
79          <extension><profKeyRef>Customer Support
80          extension</profKeyRef></extension>
81          <onSuccess><destinationState>Finish</destinationState></onSuccess>
82        </extensionTransferAction>
83      </state>
84
85     <state name="ToReachUser">
86        <getExtAndTransferAction>
87          <leadSoundFile>
88            <sfRoleRef>Extension entry prompt</sfRoleRef>
89          </leadSoundFile>
90          <onSuccess><destinationState>Finish</destinationState></onSuccess>
91          <onCancel><destinationState>MainMenu</destinationState></onCancel>
92          <onTimeout><destinationState>MainMenu</destinationState></onTimeout>
93          <directoryAccess>true</directoryAccess>
94          <dialRestriction>SITE</dialRestriction>
95        </getExtAndTransferAction>
96      </state>
97
98      <state name="ToReachVoicemail">
99        <passToServiceAction>
100         <id>Recording</id>
101         <waitForReturn>false</waitForReturn>
102         <destroyCallDetails>true</destroyCallDetails>
103        <onSuccess><destinationState>Finish</destinationState></onSuccess>
104       </passToServiceAction>
105     </state>
106
107     <state name="GeneralHelpMailbox">
```

```
108      <mailboxTransferAction>
109        <mailbox>
110          <profKeyRef>General Help mailbox</profKeyRef>
111        </mailbox>
112        <onSuccess><destinationState>Finish</destinationState></onSuccess>
113      </mailboxTransferAction>
114    </state>
115
116    <state name="ToReachOperator">
117      <extensionTransferAction>
118        <extension><profKeyRef>Operator
119        extension</profKeyRef></extension>
120        <onSuccess><destinationState>Finish</destinationState></onSuccess>
121      </extensionTransferAction>
121    </state>
123
124    <state name="Goodbye">
125      <playInfoAction>
126        <soundFile><sfRoleRef>Goodbye</sfRoleRef></soundFile>
127      <onSuccess><destinationState>Finish</destinationState></onSuccess>
128        <keyInterrupt>false</keyInterrupt>
129        <keyFlush>true</keyFlush>
130      </playInfoAction>
131    </state>
132
133    <state name="Finish"/>
134
135  </ivr:stateMachine>
```

The following sections describe CallFlow1 and how call flows work.

States and Actions

The state through which all calls enter the application is defined by the <startState> tag.

```
20     <startState>MainMenu</startState>
```

All calls enter the call flow through the MainMenu state.

```
39     <state name="MainMenu">
```

Each state has associated with it a call flow action. The call flow action for the MainMenu state is <menuAction>.

```
40       <menuAction>
```

A state can have only one call flow action. These call flow actions define behaviors that you typically find in an IVR—for example, providing a menu from which the caller can select a menu option, transferring a call to a telephone extension, transferring a call to a voicemail mailbox, and so on.

The <menuAction> action requires that a recorded message or sound file be played. The <leadSoundFile> tag indicates that a sound file is required. The sound file role, Main menu prompt, acts as a placeholder for this sound file.

```
41         <leadSoundFile><sfRoleRef>Main menu prompt</sfRoleRef></leadSoundFile>
```

All sound file roles must be declared in the <declarations> section of the call flow.

```
12       <sfRoles>
13       <sfRole>Main menu prompt</sfRole>
```

In this example, when the call enters the MainMenu state, the sound file associated with the Main menu prompt sound file role is played, and the caller hears the following:

"Thank you for calling the Acme Corporation. For our business hours, press 1. To speak to someone in Customer Support, press 2. If you know the extension of the person you wish to speak to, press 3. If you want to leave a message for a specific person, press 4. For general help, press 5 to leave a message, and someone will return your call."

The <menuAction> action requires that the caller select from a number of options by pressing a key.

```
42         <keyPresses>
43           <menuItem key="1">
44             <destinationState>ForBusinessHours</destinationState>
45           </menuItem>
46           <menuItem key="2">
47            <destinationState>ForCustomerSupport</destinationState>
48         </menuItem>
49           <menuItem key="3">
50             <destinationState>ToReachUser</destinationState>
51           </menuItem>
52           <menuItem key="4">
53             <destinationState>ToReachVoicemail</destinationState>
54           </menuItem>
55           <menuItem key="5">
56             <destinationState>GeneralHelpMailbox</destinationState>
57           </menuItem>
58         </keyPresses>
```

Note that each keypress is associated with a new state, specified by the <destinationState> tag. Each of these states, ForBusinessHours, ForCustomerSupport, ToReachUser, ToReachVoicemail, and GeneralHelpMailbox, are transition states. When the caller presses keys 1, 2, 3, 4, or 5, the call is transferred to the specified destination state. If you look through the call flow, you will see each of these states:

```
68     <state name="ForBusinessHours">
...
77     <state name="ForCustomerSupport">
...
85    <state name="ToReachUser">
...
98     <state name="ToReachVoicemail">
...
107    <state name="GeneralHelpMailbox">
```

Play a Recorded Message

The following describes each of the destination states. When the caller presses 1, the call is transferred to the ForBusinessHours state. The caller hears a recording with the business hours of the Acme Corporation. The action associated with the ForBusinessHours state is <playInfoAction>, which requires a sound file.

```
68     <state name="ForBusinessHours">
69       <playInfoAction>
70         <soundFile><sfRoleRef>Business hours prompt</sfRoleRef></soundFile>
```

The <sfRoleRef> tag specifies the sound file roles that act as placeholders for these sound files. The sound file roles are declared in the <declarations> section of the call flow.

```
12       <sfRoles>
...
14         <sfRole>Business hours prompt</sfRole>
...
17       </sfRoles>
```

Transfer Call to a Predetermined Extension

When the caller presses 2, the call is passed to the ForCustomerSupport state. The action associated with this state is <extensionTransferAction>.

```
77     <state name="ForCustomerSupport">
78       <extensionTransferAction>
```

This action transfers the call to the telephone number specified by a profile key. The profile key, Customer Support Extension, is identified with the <profKeyRef> tag.

```
79         <extension><profKeyRef>Customer Support
80         extension</profKeyRef></extension>
```

Profile keys must be declared in the <declarations> section of the call flow in the <profKeys> subsection.

```
5    <declarations>
6      <profKeys>
7          <profKey>Customer Support extension</profKey>
```

Transfer Call to Caller-Specified Extension

When the caller presses 3, the call is transferred to the ToReachUser state. The <getExtAndTransferAction> action requires a sound file as indicated by the <leadSoundFile> and <sfRoleRef> tags. The caller hears the following recording: "Enter the extension of the person you wish to speak to and press the pound key." The <getExtAndTransferAction> action takes the user's input and transfers the call to the extension provided by the caller. The <Extension entry prompt> sound file role is declared in the <declarations> section of the call flow under the <sfRoles> section.

```
85    <state name="ToReachUser">
86       <getExtAndTransferAction>
87         <leadSoundFile>
88           <sfRoleRef>Extension entry prompt</sfRoleRef>
89         </leadSoundFile>
```

Send Call to Voicemail

When the caller presses 4, the call is transferred to the ToReachVoicemail state. The <passToServiceAction> passes the call to another IVR or to one of the Oracle Voicemail & Fax services. In this example, the call is passed to the Recording Service as indicated by the <id> tag. Once the call is passed, the caller hears the Oracle Voicemail & Fax prompts to record a message and to enter the extension of the user to whom they want to send the message.

```
98     <state name="ToReachVoicemail">
99       <passToServiceAction>
100        <id>Recording</id>
```

When the caller presses 5, the call is transferred to the GeneralHelpMailbox state. The <mailboxTransferAction> action transfers the call to a voicemail mailbox specified by the General Help mailbox profile key.

```
107    <state name="GeneralHelpMailbox">
108      <mailboxTransferAction>
109        <mailbox>
110          <profKeyRef>General Help mailbox</profKeyRef>
111        </mailbox>
```

Both the <passToServiceAction> and <mailboxTransferAction> actions allow callers to leave a message. The difference is that the <passToServiceAction> action prompts the caller for the extension of the person for whom they want to leave a message. And the <mailboxTransferAction> action automatically sends them to a voicemail mailbox specified by the <mailbox><profKeyRef> tags.

Exiting the Application

For each state, once the action is successfully completed, the call is transferred to the Finish state. (See lines 71, 81, 90, 103, and 112, beginning on page 11-10.)

```
71         <onSuccess><destinationState>Finish</destinationState></onSuccess>
```

The Finish state is declared as the <endState> in the <declarations> section of the call flow.

```
21     <endState>Finish</endState>
```

Once the call reaches the Finish state, it exits the application.

```
133    <state name="Finish"/>
```

Global Call Flow Behavior

You can define general behavior that applies to all states in the call flow in the <globalConfig> section of the call flow using the <allconfig> tag.

```
22     <globalConfig>
23     <allConfig>
```

In this call flow, one action is defined. When an unexpected error occurs, the call is sent to the Goodbye state. The Goodbye state has a <playInfoAction> action associated with it. It plays a sound file associated with the profile called Goodbye. In this instance, the caller hears a recording that says, "Goodbye." The call flow then transfers the call to the Finish state, and the call exits the application.

```
24       <onMiscError>
25         <ivr:destinationState>Goodbye</ivr:destinationState>
26         </onMiscError>
...
124    <state name="Goodbye">
125      <playInfoAction>
126        <soundFile><sfRoleRef>Goodbye</sfRoleRef></soundFile>
127      <onSuccess><destinationState>Finish</destinationState></onSuccess>
```

There is another global configuration that sets a global keypress for the <menuAction> action. At any time when a call is in a state whose action is <menuAction>, the caller can press 0 and he or she is transferred to an operator through the ToReachOperator state.

```
28       <menuConfig>
29         <keyPresses>
30           <menuItem key="0">
31             <destinationState>ToReachOperator</destinationState>
32           </menuItem>
...
116    <state name="ToReachOperator">
117      <extensionTransferAction>
118        <extension><profKeyRef>Operator
119        extension</profKeyRef></extension>
```

If the caller presses 9, then the menu options are repeated.

```
28       <menuConfig>
29         <keyPresses>
...
33           <repeatOptions key="9"/>
```

Other Actions

Besides the call flow actions that determine the behavior of a state, there are actions that apply to one or more states. These actions define behavior that can be used with the call flow actions. For example, the <onSuccess> tag, discussed earlier, defines the behavior when the state's action is successful. The <onTimeout> tag defines the behavior when the call times out (that is, it exceeds the time allowed) in a particular state.

Header and Footer Information

Every call flow must begin with the following XML code. This identifies the file as an IVR to Oracle Voicemail & Fax. Do not change the code in these lines. Doing so will invalidate the file.

```
1    <?xml version="1.0" encoding="UTF-8"?>
2    <ivr:stateMachine xmlns:ivr="http://www.oracle.com/ovf/ivr/2003"
3                      xmlns="http://www.oracle.com/ovf/ivr/2003"
4                      xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
```

The following XML code must be the last line in the call flow:

```
135  </ivr:stateMachine>
```

Profile Keys

In this call flow, there are three profile keys. All profile keys must be declared in the <declarations> section of the call flow in the <profKeys> section.

```
6      <profKeys>
7          <profKey>Customer Support extension</profKey>
8          <profKey>General Help mailbox</profKey>
9           <profKey>Operator extension</profKey>
10       </profKeys>
```

The Customer Support extension is the telephone extension for the Customer Service department. The General Help mailbox is the telephone extension that transfers callers to the voicemail mailbox for general help. The Operator extension is the telephone extension that transfers callers to the operator. When you put together your IVR, you will provide the values for these profile keys. By using profile keys instead of actually coding the telephone numbers in the call flow, you can reuse the call flow in other time categories for the same deployment, or in other deployments.

Sound File Roles

In this call flow there are four sound file roles. All sound file roles must be declared in the <declarations> section of the call flow in the <sfRoles> section.

```
5    <declarations>
...
12       <sfRoles>
13         <sfRole>Main menu prompt</sfRole>
14         <sfRole>Business hours prompt</sfRole>
15         <sfRole>Extension entry prompt</sfRole>
16         <sfRole>Goodbye</sfRole>
17       </sfRoles>
```

Each sound file role is a placeholder for a recorded message known as a sound file. When you create your IVR, you will associate a sound file with each role. Certain call flow actions require a sound file; these are: <menuAction>, <playInfoAction>, and <getExtAndTransferAction>. When the call flow is executed, it uses the sound file role to locate the correct sound file to play. Recording the prompts and information in discrete files makes it possible to reuse the files in different call flows and in different deployments.

Creating a Call Flow

Oracle Voicemail & Fax comes with sample IVR deployments including sample call flows. The sample call flows give examples of the behaviors that are possible in an IVR. Determine what you want your application to do and determine if one of the sample call flows includes an example of this behavior. Use an XML editor to edit the sample call flow and adapt it to your particular application. See "Sample Deployments" on page 11-20 for more information on the sample call flows. See Appendix D, "IVR Call Flow XML" for more information on the XML tags used in the call flows.

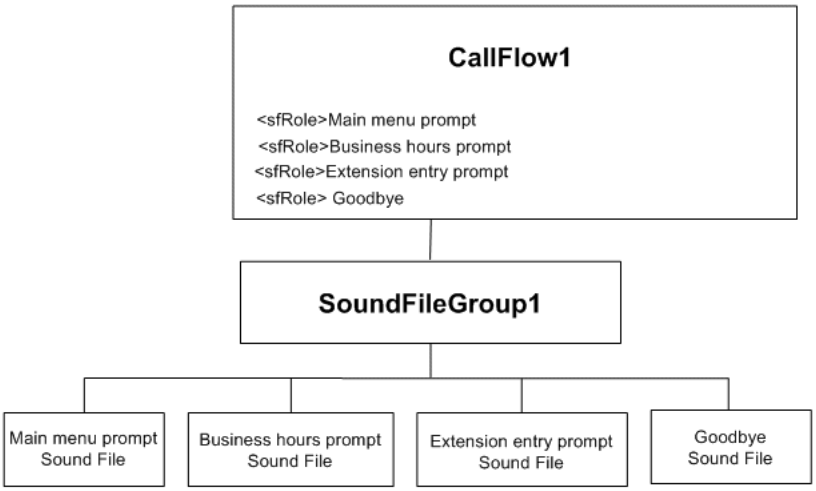
After you have created the call flow, use the `ivrman callflow add` command to load the call flow into the Oracle directory server. You must provide the name of the call flow and the call flow file with the command. In other words, the name of the file can differ from the name of the call flow. See Appendix E, "Interactive Voice Response Manager Commands" for more information about this command.

Note: You can use the same call flow for multiple time categories in a deployment. See "Reusing IVR Components" on page 11-21 for more information on reusing call flows.

About Sound File Groups

A **sound file** is the recorded message for a role in a call flow. A **sound file group** associates sound files with roles for a specific call flow. Figure 11–4 illustrates this relationship for CallFlow1. In CallFlow1, there are four sound file roles: Main menu prompt, Business hours prompt, Extension entry prompt, and Goodbye. There is one sound file for each role. The SoundFileGroup1 group associates a sound file with each sound file role in CallFlow1.

Figure 11–4 Relationship of Call Flows, Sound File Roles, Sound File Groups, and Sound Files



Creating Sound Files

Identify the roles in your call flow and create a sound file for each role. You can use the voicemail system to create your sound files. Log in to the voicemail system, and select option 4, record and send a new message, from the Main Menu. Record the message for a sound file role. For example, for the Main menu prompt sound file role, you would record the message shown in Table 11–3. Then follow the voicemail prompts to send the voicemail message to yourself. Retrieve the voicemail message using an e-mail client. From your e-mail client, save the voicemail attachment in your e-mail message to your desktop. These files are in 64k8bitlinear WAVE format, which is a supported coder type. Then repeat this process for each of the sound file roles. You should have one file for each sound file role in a call flow.

For CallFlow1, Table 11–3 shows the transcript of the sound files for each declared sound file role.

Table 11–3 Transcript of Sound Files for the CallFlow1 Call Flow

Sound File Role	Transcript of Sound File
Main menu prompt	"Thank you for calling the Acme Corporation. Please make a selection from the following menu. For our business hours, press 1. To speak to someone in Customer Support, press 2. If you know the extension of the person you wish to speak to, press 3. If you want to leave a message for a specific person, press 4. For general help, press 5 to leave a message, and someone will return your call."
Business hours prompt	"Acme Corporation is open for business Monday through Friday, 8:00 a.m. to 5:00 p.m."
Extension entry prompt	"Please enter the extension of the person you wish to speak to or use the directory."
Goodbye	"Thank you for calling Acme Corporation. Goodbye."

You will need to specify a sound file group for each time category. However, you will probably not be able to create a sound file for the Special time category, which is used

for special circumstances that may arise. Therefore, create an empty sound file to use as a placeholder in the deployment.

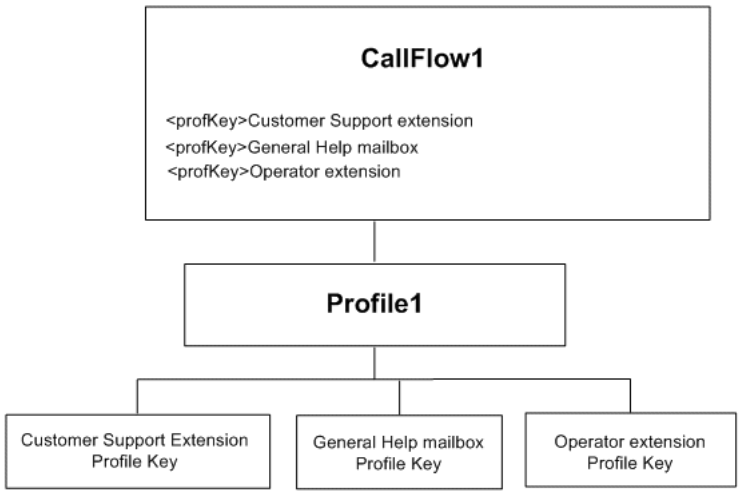
Creating a Sound File Group

After you have created all the sound files for a call flow, use the `ivrman sfgroup add` command to create a sound file group. When you execute the command, you specify the call flow for which the sound file group is being created. The Interactive Voice Response Manager tool checks the call flow to see what sound file roles are declared. If you execute the command in interactive mode, it prompts you with the name of the sound file role. You must specify the name of the file for that role and the coder type. If you execute the command in batch mode, you must provide a file specifying the role name, file name, and coder type. See Appendix E, "Interactive Voice Response Manager Commands" for more information about this command.

About Profiles

A **profile** contains the settings for the profile keys required for a particular call flow. The settings for each profile key in the call flow must be specified in the profile. Figure 11–5 illustrates this relationship for CallFlow1. There are three profile keys declared in CallFlow1: Customer Support extension, General Help mailbox, and Operator extension.

Figure 11–5 Relationship of Call Flows, Profile Keys, and Profiles



Creating a Profile

Identify the profile keys in your call flow and identify the values for each key. Enter this information in the worksheet (see Appendix C, "IVR Worksheet"). Use the `ivrman profile add` command to create the profile. When you execute the command, the Interactive Voice Response Manager tool checks the call flow to see what profile keys are declared. If you execute the command in interactive mode, it prompts you with the name of the profile key. You provide the correct value for this key. For example, for the profile key for the Customer Support extension, you would provide the telephone number for Customer Support. For General Help mailbox, you would provide the telephone number to the General Help voicemail mailbox. And for Operator extension, you would provide the telephone number that connects the caller to the Operator. If you use the command in batch mode, you provide a file with the format

profile_key=value for each profile key. See Appendix E, "Interactive Voice Response Manager Commands" for more information about this command.

You will need to specify a profile for each time category. However, there may be call flows for which there are no profile keys. In these situations, create an empty profile to use as a placeholder in the deployment.

Creating the IVR Deployment

This chapter has discussed CallFlow1 and its related sound file group and profile for the Open time category. When you create your IVR deployment, you will need to go through a similar procedure and create a call flow, sound file group, and profile for *each* time category: Open, Closed, Holiday, and Special. In this example, the same call flow (named CallFlow2 in Table 11–2 on page 11-7) can be used for the remaining time categories because the behavior in each case is identical, that is, a recorded message is played. There are no profile keys for these call flows, so you create an empty profile to act as a placeholder. A different message is recorded for each of the three time periods and a sound file group is created for each (SFGroup2, SFGroup3, and SFGroup4). Because the Special time category is often used for unexpected office closures, you will probably create an empty sound file group to act as a placeholder in your deployment.

After you have created the call flows, sound file groups, and profiles for each of the time periods, you are now ready to create the IVR deployment. Use the `ivrman deployment add` command to create the deployment. The command prompts you for the call flow, sound file group, and deployment for each time category. You must provide a value for each of these elements. See Appendix E, "Interactive Voice Response Manager Commands" for more information about this command.

The deployment and related call flows, sound file groups and profiles are stored in the Oracle directory server.

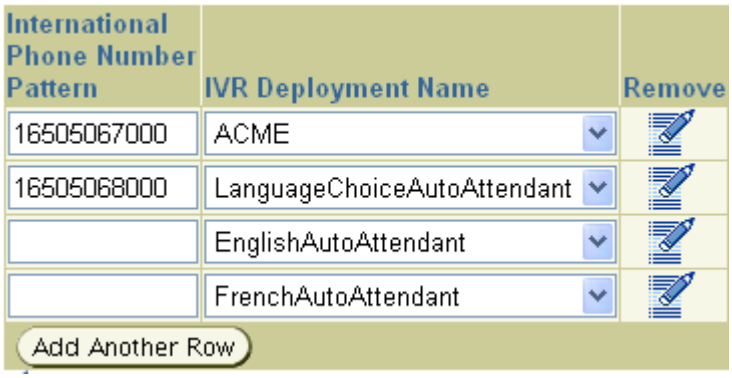
Mapping the Phone Number to a Deployment

An IVR deployment is mapped to a phone number. For example, most companies will want to set up an IVR for the company's main phone number. In addition, if customers have direct access to different departments, you could assign an IVR to each department phone number.

An IVR deployment is associated with a particular phone number. This mapping is specified on the administration page of the PBX-Application Cluster for the PBX to which the phone number belongs.

To map a phone number to a deployment:

1. Identify the PBX to which the phone number belongs and identify the PBX-Application Cluster for this PBX.
2. Navigate to the administration page for the PBX-Application Cluster.
3. In the Interactive Voice Response section of the page, enter the phone number in the International Phone Number Pattern column.



4. Enter the name of the deployment in the IVR Deployment Name column.

See "Interactive Voice Response (IVR) Parameters" on page 3-10 for more information on mapping a phone number to a deployment.

Sample Deployments

The following example IVR deployments are automatically provided when you install Oracle Voicemail & Fax:

- ToFax – Routes a call directly to the Fax Receiving Service. You can use this IVR with a phone number that is used exclusively to deliver and send faxes.
- ToRetrieval – Sends a user to the Oracle Voicemail & Fax retrieval system where the user can retrieve his voicemail messages.
- DormExtensions – Gives the caller the option of leaving a voicemail for one of three roommates.
- ACME – Exhibits different behavior depending on the time category. During the Open hours, it plays a multilevel menu, giving callers the option to transfer to an extension, to enter an extension and get transferred to the extension, to search for a person using the directory search, to leave a voicemail message, and to get transferred to the company operator. During the Closed hours, it allows a caller to leave a message in a general mailbox. During the Holiday hours, it plays a message informing the caller that it is a company holiday. During the Special hours, it plays a message informing callers that the company is closed due to a snowstorm.
- LanguageChoiceAutoAttendant – Gives the caller the choice of hearing the IVR in French or English. It transfers the call to the FrenchAutoAttendant IVR or the EnglighAutoAttendant IVR.
- EnglishAutoAttendant – Called by the LanguageChoiceAutoAttendant that plays a basic Oracle auto attendant in English. This is a secondary IVR deployment.
- FrenchAutoAttendant – Called by the LanguageChoiceAutoAttendant that plays a basic auto attendant in French. This is a secondary IVR deployment.
- TransferToExtension – Prompts the caller to enter the phone extension of the person they want to speak to or to search for that person using a directory, then it transfers the caller to the extension.
- MailboxPicker – Prompts the caller to enter the phone extension of the persons for whom she wants to leave a voicemail message, or to search for a person using a directory.

Table 11–4 shows the sample deployments and the call flows associated with each one. For all deployments, except ACME, the same call flow is used for all time periods. You can use the sample call flows as the basis for the call flows in your IVR application. The call flow XML files can be found in the directory:

```
%UM_HOME/sample/ivr
```

Use an XML editor or any text editor to view and edit these files.

Table 11–4 Sample Deployments and Related Call Flows

Deployment Name	Associated Call Flows
ToFax	ToFax
ToRetrieval	ToRetrieval
DormExtensions	DormExtensions
ACME	ACME (Open time period)
ACME	SendToMailbox (Closed time period)
ACME	Play Message (Holiday and Special time periods)
LanguageChoiceAutoAttendant	Chooser
EnglishAutoAttendant	BasicAutoAttendant
FrenchAutoAttendant	BasicAutoAttendant
TransferToExtension	TransferToExtension
MailboxPicker	MailboxPicker

Using the Sample IVR Deployments

You can deploy the sample IVR deployments to see how they work. You must set up a test phone number to use. Select the deployment you want to test and specify this deployment for the phone number. See "Mapping the Phone Number to a Deployment" on page 11-19 for more information on how to associate a phone number with a deployment.

The sample deployments use the same call flow for all time periods. Therefore, you do not need to specify the Business Hours, Holidays, or Special Mode Days for the PBX-Application Cluster. The only exception to this is the ACME deployment.

You will need to edit any profile settings. Use the `ivrman profile update` command. See Appendix E, "Interactive Voice Response Manager Commands" for more information about this command.

Reusing IVR Components

The Oracle Voicemail & Fax implementation of IVR separates call flows, sound file groups, and profiles so that the same call flow can be reused for different time categories in the same deployment, or in different deployments. By separating the sound file group from the call flow, you can use the same call flow and assign a sound file group with recordings in English in one deployment and assign a sound file group with recordings in French in another deployment. The EnglishAutoAttendant and the FrenchAutoAttendant IVR deployments use the same call flow, BasicAutoAttendant. However, the sound files for the EnglishAutoAttendant deployment are in English, while the sound files for the FrenchAutoAttendant deployment are in French.

The same call flow can also be used in the same deployment. In the AcmeDemoDeployment deployment, the same call flow, CallFlow1, is used for three time periods, Closed, Holiday, and Special. The CallFlow2 call flow has only one call flow action, <playInfoAction>, which plays a message. You can use the same call flow and change the message that is played by assigning a different sound file group to the deployment items. The SFGroup2, SFGroup3, and SFGroup4 sound file groups have a different sound file associated with it, and each plays a different recorded message.

Likewise, by separating out the profile settings, the same call flow and sound group can be used, for example, in multiple office locations in the United States. For example, with the ACME deployment, you could use the same call flow and sound file group, and provide a different profile for each regional office that contains the phone numbers for that office.

12

Scaling the Oracle Voicemail & Fax System

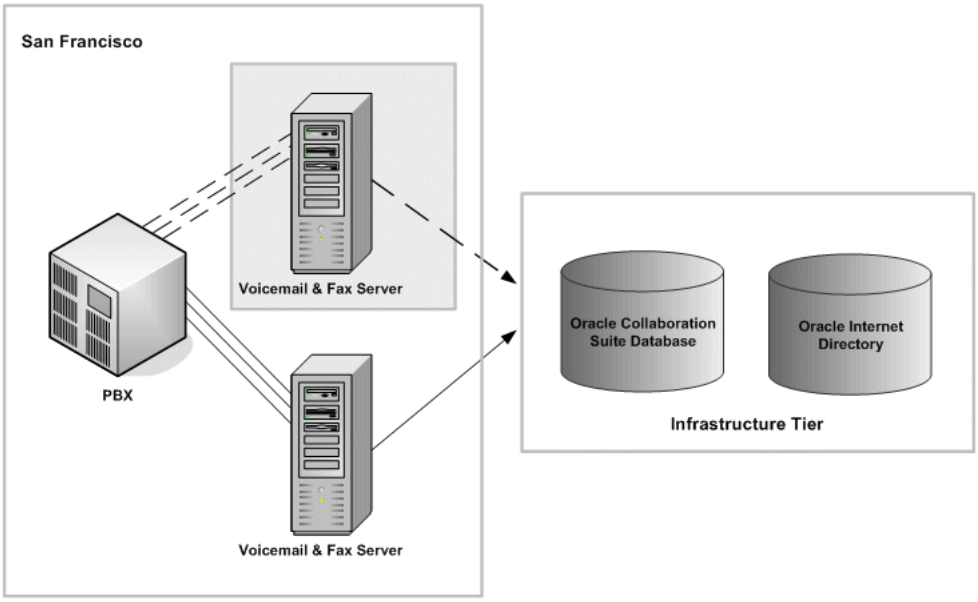
This chapter discusses the following topics:

This chapter discusses how to scale your Oracle Voicemail & Fax system. It specifically discusses how to add Voicemail & Fax Servers and additional sites to a boarded site. (Refer to Chapter 14, "VoIP Gateway Deployments" for information on scaling a VoIP Gateway system.) In addition, this chapter discusses adding additional Oracle Collaboration Suite Databases to your system.

Adding a Voicemail & Fax Server to a Boarded Site

You may need to add another Voicemail & Fax Server to an existing site if the volume of calls increases and cannot be handled with the existing servers. In this situation, you have an existing PBX and an existing Voicemail & Fax Server. You are adding a second or subsequent Voicemail & Fax Server (Figure 12–1).

Figure 12–1 Adding a Voicemail & Fax Server to a Boarded Site



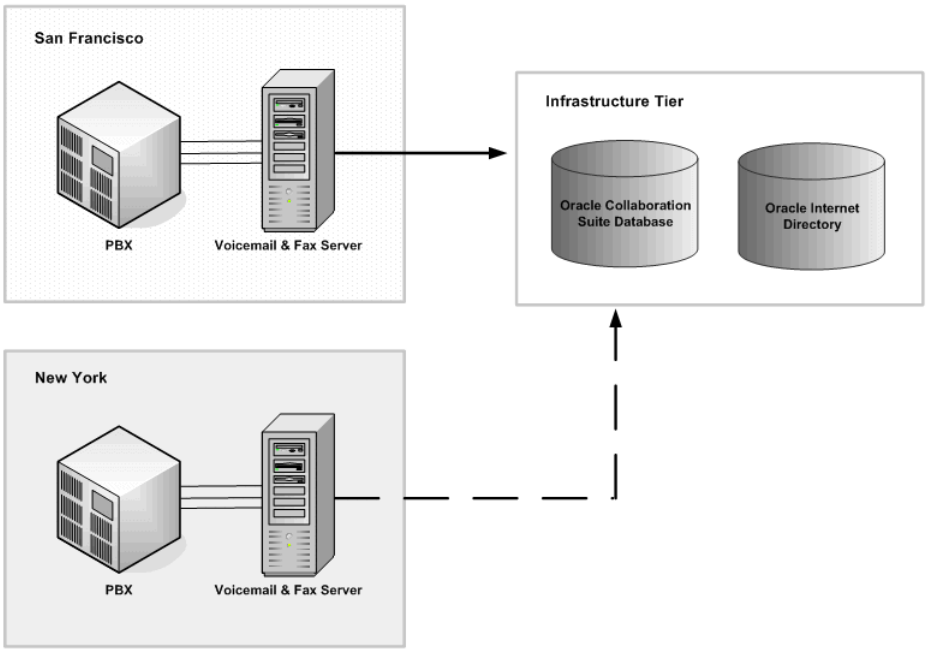
To add a Voicemail & Fax Server to a boarded site:

1. Follow the instructions in *Oracle Voicemail & Fax and Oracle Web Conferencing Conversion Servers Installation and Upgrade Guide* for installing Oracle Voicemail & Fax.
2. During the configuration, the instructions prompt you to either create a new PBX-Application Cluster or select an existing PBX-Application Cluster. Select the existing PBX-Application Cluster for your site.
3. Complete the installation and configuration of the software.
4. Physically connect the PBX to the newly installed Voicemail & Fax Server.
5. Allocate the phone numbers for the new Voicemail & Fax Server.
6. Program the PBX to distribute phone calls to the phone numbers belonging to the new server.

Adding a Site to a Boarded Site

The necessity to add a site to a boarded site typically occurs when you are adding a new office to your Oracle Voicemail & Fax system. In a boarded site, you are adding a new PBX and a new Voicemail & Fax Server. The steps are the same as if you were setting up a new Oracle Voicemail & Fax system (Figure 12–2).

Figure 12–2 Adding a Site to a Boarded Site



To add a site to a boarded site:

1. Follow the instructions in *Oracle Voicemail & Fax and Oracle Web Conferencing Conversion Servers Installation and Upgrade Guide* for installing Oracle Voicemail & Fax.
2. During the configuration, create a new PBX-Application Cluster.

3. Verify that the installation was successful. Follow the instructions in "Verifying the Voicemail & Fax Installation" in *Oracle Collaboration Suite Administrator's Guide*.
4. Connect the PBX to the Voicemail & Fax Server.
5. Create a hunt group and set up the PBX to communicate with the Voicemail & Fax Server.
6. Set up a test user's phone to roll over to the hunt group after the call is not answered.
7. Create your site.

   See "Creating and Configuring a Site" on page 2-10 and Chapter 4, "Setting Up Groups and Sites" for more information on creating your site.
8. Configure the PBX-Application Cluster.

   See "Configuring the PBX-Application Cluster" on page 2-14 and "Configuring PBX-Application Clusters" on page 3-1 for more information.
9. Create a test user.

   See "Creating an Oracle Voicemail & Fax User" on page 2-17 for more information.
10. Test the Oracle Voicemail & Fax system.

    See"Testing the Oracle Voicemail & Fax System" on page 2-17 for more information.

Adding Oracle Collaboration Suite Databases

There are many scenarios that may indicate that a new Oracle Collaboration Suite Database needs to be added to the environment to support your users. You may want to add a new database to distribute your users among several different databases. You may want to locate databases in different geographic regions to support geographically separated users. When you add a new Oracle Collaboration Suite Database to the Oracle Collaboration Suite system to manage your e-mail and voicemail users, you need to add the database to the Voicemail & Fax system.

To add a new Oracle Collaboration Suite Database:

1. Install the new Oracle Collaboration Suite Database and configure it for Oracle Mail and Oracle Voicemail & Fax.

   See the Oracle Collaboration Suite installation guide for your platform for more information.
2. Set the database parameters for the database.

   See "Setting the Parameters for an Oracle Collaboration Suite Database" on page 9-1 for more information.
3. You can accept the remaining Oracle Collaboration Suite Database defaults or specify the following as necessary:

   - Number of connections to the Oracle Collaboration Suite Database

     For more information on setting this parameter, see "Setting the Connections to an Oracle Collaboration Suite Database" on page 9-2.
   - Voicemail & Fax Applications that can access the database

     If you accept the default values, the Oracle Collaboration Suite Database is made available to all Voicemail & Fax Applications. You can limit the access to

this database using the Set Voicemail & Fax Application Service List on the Voicemail & Fax administration page. For more information on setting this parameter, see "Setting the Available Oracle Collaboration Suite Databases" on page 9-3.

- Whether the database is a global primary outbox for all Voicemail & Fax Applications or a primary outbox for specific applications

  For more information on setting this parameter, see "Primary Outboxes" on page 9-4.

13

Performance Tuning

This chapter discusses tuning the Oracle Voicemail & Fax system in the following topics:

Improving Message Delivery Time

In a boarded installation, users in remote sites may experience a delay in hearing their voicemail messages. This can occur if the data packet size is too small and it takes multiple retrievals in order to have sufficient data to play a message. You can configure the buffer size so that larger packets of data are retrieved and delivered at one time.

The database buffer size can be set globally at the Voicemail & Fax group level, or it can be set locally at the Voicemail & Fax Application level. Navigate to the administration page and set the Collaboration Suite Database Read Buffer Size parameter. The global default is 102400 bytes, and the Voicemail & Fax Application is set to inherit this value by default.

Adding Threads and Processes

Generally, when you are tuning your Voicemail & Fax Application, you want to start by adding threads to existing processes because there is less overhead with adding threads compared to adding a new instance. A general guideline is to keep the number of threads to no more than 10 to 15 threads per process. Increasing the number of threads increases the amount of context switching between threads, thus increasing CPU usage. Depending on your situation and CPU resources, you will need to adapt this number. The sum of all the threads for all processes for a particular service should equal the number of concurrent users you are servicing on that particular Applications tier.

For instance, the Routing Service answers all phone calls for the Applications tier. On a boarded deployment, if the Applications tier has 48 telephone ports available, then the total number of available threads for the Routing Service should be 48. The number does not need to be greater than 48 because the system will never have more than 48 concurrent calls. In most instances, the number can be fewer than 48 because it is rare that there will be 48 calls coming in simultaneously. Because the Routing Service is used only at the beginning of a call to identify the caller and route the call to another service, it takes only seconds for it to handle a call, pass it off, and be ready to accept

another call. Once you determine the total number of threads required for a particular service, then divide the threads among the processes for that service.

If you find that performance does not sufficiently improve after tuning the number of threads per process, then you might want to consider adding another instance. However, when you add another instance, you incur the overhead of adding another process that has to be managed by Oracle Process Manager and Notification Server (OPMN), adding another connection to Oracle Internet Directory, and generating an active message.

Adding Threads to a Process

The number of threads is configurable at the service level. Because the thread requirements vary depending on the service, this is not inherited from the global process parameters that are set at the Voicemail & Fax group level.

The threads for a process are set on the administration page for each of the services. The Threads Per Process parameter is found in the General section of the page. As a general recommendation, keep the number of threads to be no more than 10 to15 per process. However, this may need to be adapted to your particular situation. Edit the number of threads and click **Apply.** The change takes effect during the next refresh cycle. Or, if you want the change to take effect immediately, navigate to the home page for the service and click **Refresh** or **Reload.**

Adding and Deleting Instances

You can add and delete service instances, as necessary, to improve the performance of the following services: Retrieval, Routing, Recording, Interactive Voice Response (IVR), Call Transfer, Fax Receiving, and Message Waiting Indicator (MWI).

To add an instance:

1. Navigate to the home page of the service.
2. In the Components table, click **Add One Instance.**
3. When the message appears asking you to confirm that you want to add an instance, click **Yes.**

To delete an instance:

1. Navigate to the home page of the service.
2. In the Components table, select the instance you want to delete and click **Delete One Instance.**
3. When the message appears asking you to confirm that you want to delete an instance, click **Yes.**

Note: You can also add and delete instances from the Components table on the performance and administration pages.

Tuning the Message Waiting Indicator Service

Generally, the average time between the point at which a caller records a message and the time it takes for the message waiting indicator to be turned on should be less than 60 seconds. If you find that it consistently takes longer than a minute, you may want to modify the number of threads and processes.

Each Oracle Collaboration Suite Database has an MWI_Q queue that allows you to monitor the message waiting messages on that database. Refer to *Oracle Streams Advanced Queuing User Guide and Reference* for more information on how to use the MWI_Q queue. In particular, you may find the GV$AQ view, which provides information about the number of messages in different states, to be useful.

14

VoIP Gateway Deployments

This chapter discusses the following topics:

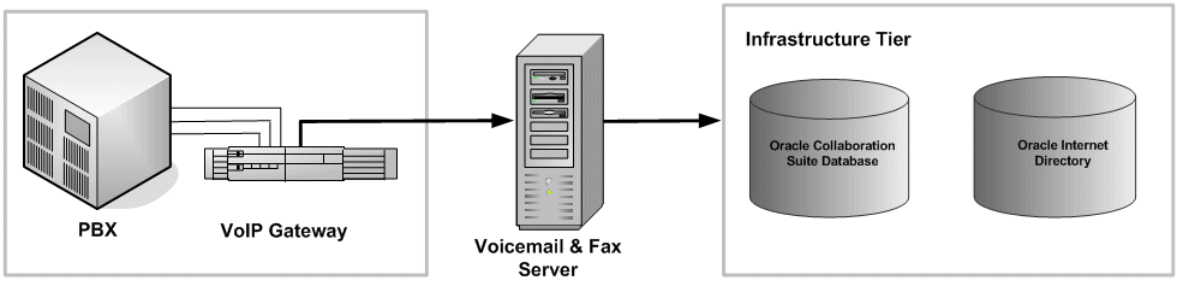
This chapter contains information on Voice over Internet Protocol (VoIP) deployments, including how to configure a PBX-Application Cluster for multiple PBXes, and how to scale a VoIP deployment.

VoIP Gateway Deployment Scenarios

This section discusses different scenarios using Voice over IP gateways in Oracle Voicemail & Fax deployments.

Single site, VoIP Gateway deployment – One PBX connects to one Voicemail & Fax Server through the Voice over Internet Protocol (VoIP). VoIP is a category of hardware and software that allows users to transmit telephone calls over the IP network, rather than using the traditional circuit transmissions. The VoIP gateway converts a phone call from traditional circuit transmissions to VoIP, and connects it to the Voicemail & Fax Server. The PBX is in a remote location and the Voicemail & Fax Server, the Infrastructure, and Oracle Collaboration Suite Database reside in a central location (Figure 14–1).

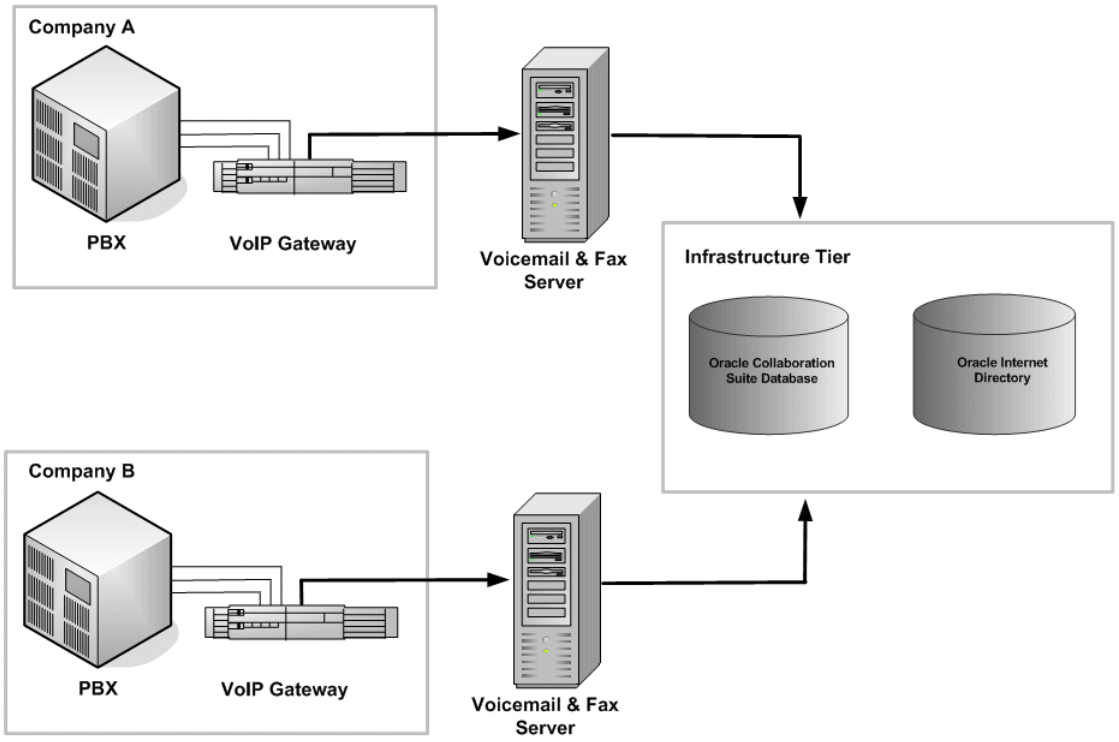
Figure 14–1 Single-site, VoIP Gateway Deployment



Hosted VoIP Gateway deployment – Each company has its own PBX, connecting through a VoIP gateway, to a separate Voicemail & Fax Server. The servers access the same Infrastructure and Oracle Collaboration Suite Database (Figure 14–2). This deployment is typical where a company or organization acts as a service provider,

providing some type of communications service, storage service, or processing service, such as an Application Service Provider (ASP).

Figure 14–2 Hosted VoIP Deployment



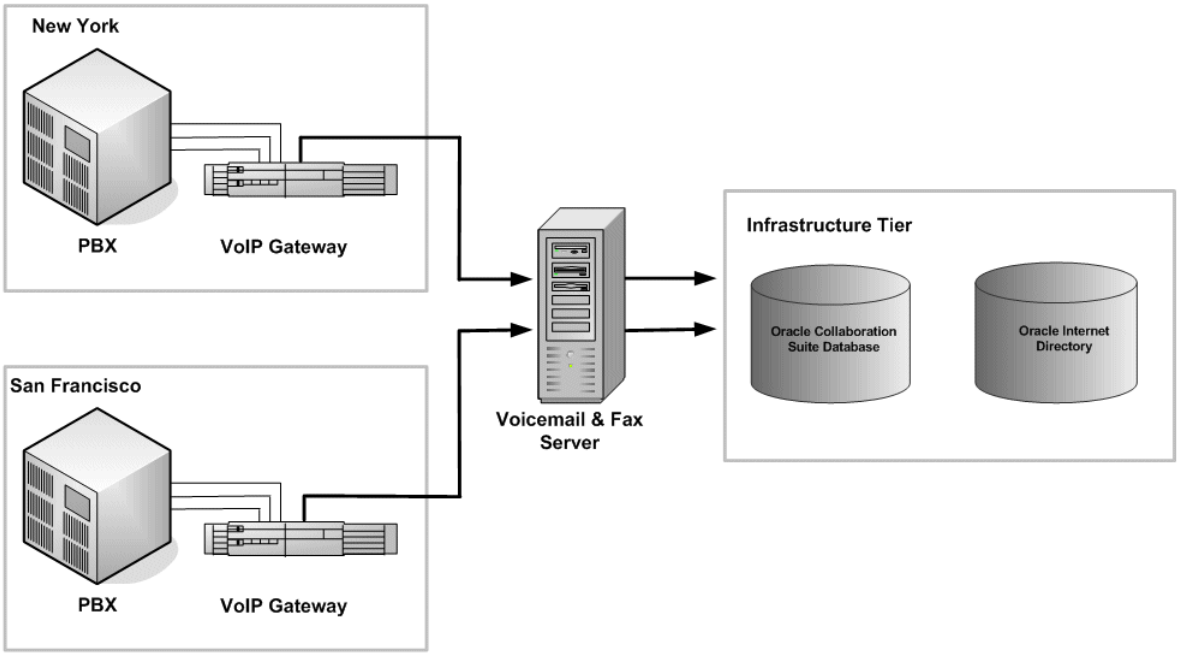
Note: You can have any number of Voicemail & Fax Servers deployed with a PBX. One instance of Oracle Voicemail & Fax is installed on each Voicemail & Fax Server.

An Oracle Voicemail & Fax installation consists of any instance of Oracle Voicemail & Fax installed against a single Oracle Internet Directory. Each of the deployments described could be in a separate installation. You can also have any combination of deployment types in the same installation.

Deploying with Multiple PBXes

Multisite VoIP Gateway deployment – Several PBXes connect through a VoIP gateway to a single remote Voicemail & Fax Server (Figure 14–3). The server, Infrastructure, and Oracle Collaboration Suite Database are centralized. This allows multiple sites to share the Voicemail & Fax Server and conserves resources.

Figure 14–3 Multisite VoIP Gateway Deployment



Configuring Multiple PBXes Using VoIP Gateway

You can have multiple PBXes serving different sites that are connected to a single Voicemail & Fax Server through a gateway and VoIP. Assume that there are two PBXes, one in San Francisco and one in New York. Although there are two physical PBXes, from the perspective of NetMerge CCS, there is only one virtual PBX. Therefore, the PBXes must be identified so that NetMerge CCS knows from which PBX it is receiving the call and to which PBX to send calls. The PBX identification is also required by the Voicemail & Fax Application so that it knows which dialing rules to apply.

In the following procedure, we are assuming that the VoIP gateway is Intel Corporation's PBX IP Media Gateway (PIMG). Use the Intel NetMerge CCS 3.0 Administration Interface to specify a prefix for each PBX.

To specify the PBX prefix:

1. Log in to the Intel Web Console.
2. In the menu on the left-hand side of the page, click **Configure.**
3. Click **Platform,** then click **Intel NetMerge CCS Logs.**
4. On the right-hand side of the page, click the **PBX** tab.
5. Click **Add PIMG.**

   On the PBX IP MG Settings page, specify the settings for the PBX.
6. Enter a name for the PBX in the PBX Name field.
7. Use a whole number (1, 2, and so on) to specify the prefix for this PBX in the PBX Prefix field.
8. Enter the IP addresses of each PIMG in the PBX IP MG Address field. Enter only one address on each line.

9. If you are using the message waiting indicator feature, enter the IP address of the PIMG that accepts the MWI calls and click **Add.**

   If you daisy chain several PIMGs together to serve a specific PBX and you are using the message waiting indicator feature, you need only one port on one of the PIMGs to listen for message waiting calls for that PBX. Specify one of the PIMGs in the MWI Gateway Address field to serve as the PIMG that accepts MWI calls and the port on that PIMG.

   When you click **Add,** the MWI Gateways field displays the port information.

10. Click the port information link, and on the MWI Gateway Settings page, edit the Port field.

11. Click **OK.**

12. Click **OK** again.

13. Repeat this procedure for each PBX that is part of the PBX-Application Cluster.

For more information on configuring your PBXes, refer to Intel Corporation's online help for its Web Console.

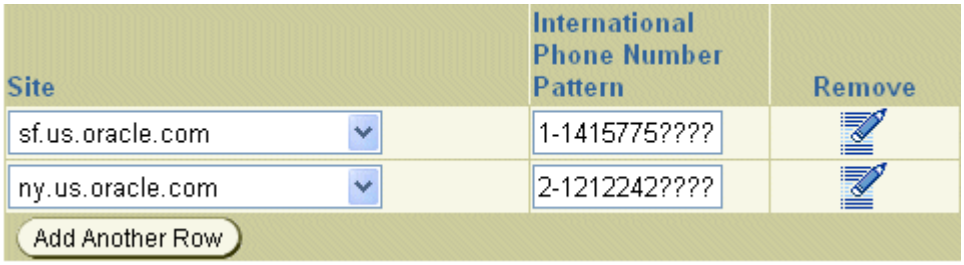
The prefix you specified in the PBX IP MG Address field is appended to the beginning of phone numbers as they are passed between the PIMG and NetMerge CCS. Assume that you have created PBX IP MG settings for two PBXes, one in San Francisco and one in New York, and you have specified a prefix of *1* for San Francisco calls and *2* for New York calls. When the VoIP gateway connected to the San Francisco PBX passes a phone number to NetMerge, NetMerge adds the prefix, followed by a hyphen. Let us assume that the gateway in San Francisco passes 5-digit phone numbers, for example, *53445*. NetMerge CCS appends a *1-* to the beginning of the phone number before passing the number (1-53445) to the Voicemail & Fax Application.

Similarly, when the gateway connected to the New York PBX passes a phone number to NetMerge, NetMerge CCS appends a *2-* to the beginning of the phone number, for example, *2-63784*. Oracle Voicemail & Fax uses the *1-* and *2-* prefixes to distinguish between the PBXes and to know which dialing rules to apply. Therefore, when you specify phone numbers in configuring the PBXes, you must include the prefix in the phone number patterns.

Phone Numbers

Figure 14–4 is an example of the Phone Numbers table for multiple PBXes using the VoIP gateway. The phone number pattern is identical to the pattern in Figure 14–4, with the addition of the *1-* prefix for the San Francisco site and the addition of the *2-* prefix for the New York site.

Figure 14–4 Example of Phone Numbers Table for VoIP Gateway Deployment with Multiple PBXes



Internal and External Dialing Rules

When specifying the internal and external dialing rules, you would specify the rules for each PBX in the Internal Dialing Rules and External Dialing Rules tables, including the prefix in the international phone number pattern. In this example, the PBX in San Francisco uses 5-digit extensions for dialing internal numbers. In Table 14–1, the first four rules apply to the PBX in San Francisco, and rule 5 through rule 8 apply to the PBX in New York. (The numbers in the Rule column are for reference only and do not appear on the Administration Web page.) Therefore, rule 1 specifies that the first 8 characters are removed, which includes the *1* and the hyphen. The PBX in New York uses 4-digit extensions for dialing internal numbers. Therefore, rule 5 specifies removing the first 9 characters. Rule 2 specifies the rule for dialing phone numbers in the local area code that do not belong to the San Francisco PBX. Rule 3 is the rule for dialing all other phone numbers in the United States. Rule 4 is the rule for dialing international phone numbers. Rules 6, 7, and 8 are the equivalent versions of rules 2, 3, and 4 for the New York PBX.

Remember that an asterisk is a wildcard that can be used only at the end of a pattern and signifies an unspecified number of digits. Therefore, in rule 1, the *1-415775????* pattern can also be specified as *1-415775**. The asterisk is particularly useful for specifying international phone numbers where the exact number of digits may vary and may not be known.

Table 14–1 Example of Dialing Rules for VoIP Gateway Deployment with Multiple PBXes

Rule	International Phone Number Format	Number of Characters to Remove	Characters to Prepend
1	1-1415775????	8	
2	1-1415*	6	9
3	1-1*	2	9
4	1-*	2	9011
5	2-1212242????	9	
6	2-1212*	6	9
7	2-1*	2	9
8	2-*	2	9011

Note: For multiple-PBX configurations, both internal and external dialing rules must be entered in the External Dialing Rules table. The Internal Dialing Rules table is ignored.

Telephone Number Translation Rules

The San Francisco PBX passes 5-digit extensions to NetMerge CCS and the New York PBX passes 4-digit extensions. NetMerge CCS appends a *1-* and *2-* , respectively, to the San Francisco and New York phone numbers. Figure 14–5 is an example of the telephone number translation rules for each PBX. The telephone number translation rules remove the prefix (*1-* or *2-*) and prefixes the necessary numbers to convert the extensions into international format.

Figure 14–5 Example of Phone Number Translation Rules for VoIP Gateway Deployment with Multiple PBXes

Phone Number Pattern	Number of Characters to Remove	Characters to Prepend
DEFAULT	0	
1-5????	2	141577
2-????	2	1212242

Add Another Row

MWI Phone Number Conversion

Figure 14–6 is an example of the MWI phone number conversion rules. In this example, assume that both PBXes use local number formats to turn MWI on or off, that is, the San Francisco PBX uses 5-digit extensions and the New York PBX uses 4-digit extensions. The only difference between the rules for a multiple-PBX installation and a single-PBX installation is that you need to specify the prefix in the phone number pattern.

Figure 14–6 Example of MWI Phone Number Conversion Rules for VoIP Gateway Deployment with Multiple PBXes

International Phone Number Pattern	Number of Characters to Remove	Characters to Prepend
DEFAULT	0	
1-415775????	8	
2-212242????	9	

Add Another Row

Interactive Voice Response

Figure 14–7 is an example of the Interactive Voice Response table for multiple PBXes using the VoIP gateway. The only difference between a multiple-PBX and single-PBX installation is that you need to specify the prefix for the PBX in the international phone number pattern.

Figure 14–7 Example of Interactive Voice Response for VoIp Gateway Deployment with Multiple PBXes

International Phone Number Pattern	IVR Deployment Name
1-4157756000	ACME
2-2122426000	ACME

Add Another Row

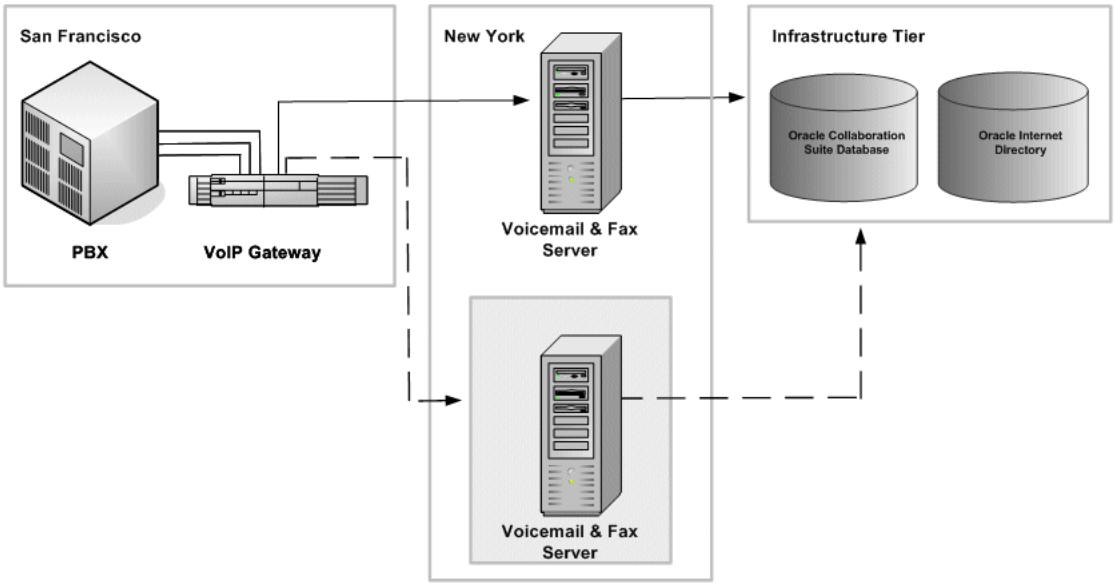
Scaling a VoIP Gateway Deployment

This section covers the following topics:

Adding a Voicemail & Fax Server to a VoIP Gateway Site

You may need to add another Voicemail & Fax Server to an existing VoIP gateway site if the volume of calls increases and cannot be handled with the existing servers. In this situation, you have an existing PBX and VoIP gateway and an existing Voicemail & Fax Server. You are adding a second or subsequent Voicemail & Fax Server (Figure 14–8).

Figure 14–8 Adding a Voicemail & Fax Server to a VoIp Gateway Site



To add a Voicemail & Fax Server to a VoIP gateway site:

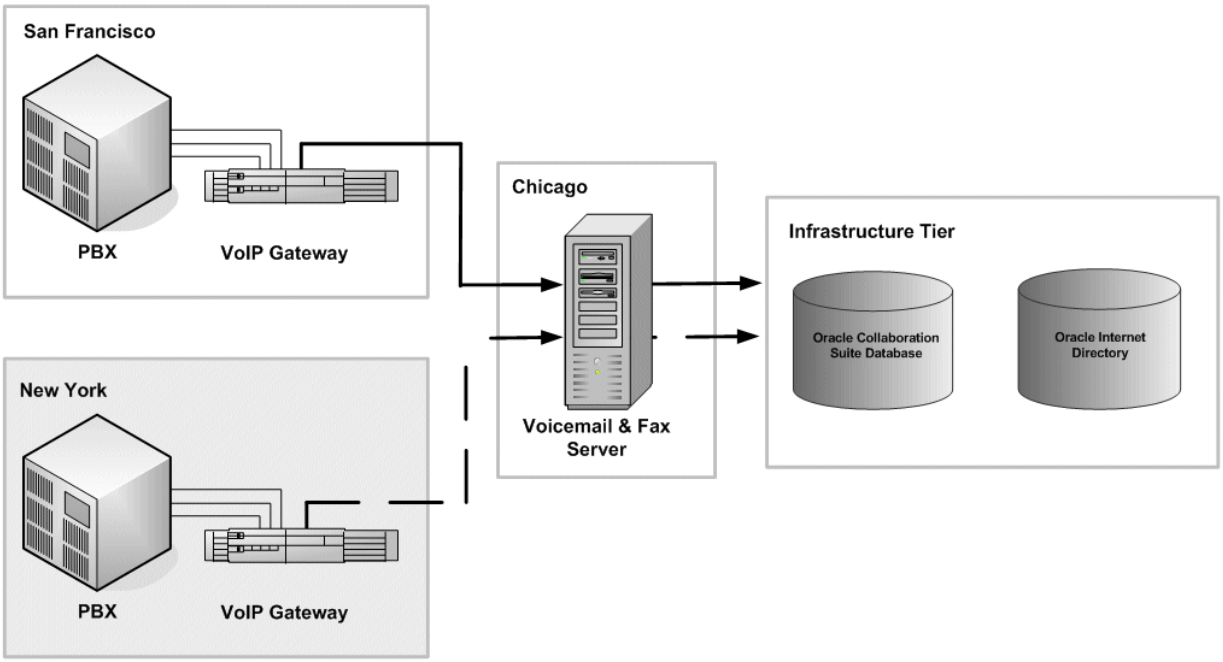
1. Follow the instructions in *Oracle Voicemail & Fax and Oracle Web Conferencing Conversion Servers Installation and Upgrade Guide* for installing Oracle Voicemail & Fax.
2. During the configuration, the instructions prompt you to either create a new PBX-Application Cluster or select an existing PBX-Application Cluster. Select the existing PBX-Application Cluster for your VoIP gateway site.
3. Complete the installation and configuration of the software.
4. Add additional Intel Corporation PIMG gateways if additional capacity is needed at the site.

   In order to configure PIMG to communicate with multiple Voicemail & Fax Servers, you need to use a VoIP Address Resolution service, typically a SIP Registration Server or a SIP Proxy Server. This service allows you to specify one endpoint address for the Voicemail & Fax Server, which then gets translated to one of many addresses for the various Voicemail & Fax Servers in your farm. See the Intel documentation for PIMG for details on this concept.
5. Use the Intel NetMerge CCS 3.0 Administration Interface to add the new PIMG to the list of PIMGs that the Telephony Server is aware of for this site.

Adding a Site to a VoIP Gateway Site

In a VoIP Gateway site, when you add a new site, you do not need to add a new Voicemail & Fax Server. There is an existing PBX serving a site using VoIP to connect to a Voicemail & Fax Server. You are adding a second PBX that serves a different site, but which connects to the same Voicemail & Fax Server (Figure 14–9). The end result is two PBXes serving different sites connecting to the same Voicemail & Fax Server.

Figure 14–9 Adding a Site to a VoIP Gateway Site



To add a site to a VoIP gateway site:

1. Create your site and groups.
2. Set up the PIMG gateway to work with the PBX.
3. Configure the PBX-Application Cluster to handle the new site.

   See "Configuring Multiple PBXes Using VoIP Gateway" on page 14-3 for more information on specifying the PBX prefix and configuring multiple PBXes for the same Voicemail & Fax Server.

A

Troubleshooting

This appendix discusses problems you may encounter as you administer your Oracle Voicemail & Fax system, and provides solutions to those problems. The appendix discusses the following topics:

Log Files

Table A–1 lists the log files for each Oracle Voicemail & Fax service and their location.

Table A–1 Oracle Voicemail & Fax Log Files

Oracle Voicemail & Fax Service	Log File Location and Name
Call Transfer	%ORACLE_HOME%\um\log\CallTransferService
Fax Receiving	%ORACLE_HOME%\um\log\FaxReceiving Service
IVR (Interactive Voice Response)	%ORACLE_HOME%\um\log\InteractiveVoiceResponseService
Message Delivery Monitor	%ORACLE_HOME%\um\log\MessageDeliveryMonitorService
Message Recovery	%ORACLE_HOME%\um\log\MessageRecoveryService
Message Waiting Indicator	%ORACLE_HOME%\um\log\MWIService
Recording	%ORACLE_HOME%\um\log\RecordingService
Retrieval	%ORACLE_HOME%\um\log\RetrievalService
Routing	%ORACLE_HOME%\um\log\RoutingService
SMDI (Simplified Message Desk Interface) Monitor	%ORACLE_HOME%\um\log\SMDIMonitorService
Telephony Monitor	%ORACLE_HOME%\um\log\TelephonyMonitorService

There is a log file for each Oracle Voicemail & Fax service that writes status or trace information as it processes transactions for that particular service. The log level can be set globally (Voicemail & Fax), at the application level (Voicemail & Fax Application), and at the service level. To set the log level, navigate to the administration page for the appropriate level in the hierarchy. For example, to change the log settings for the Recording Service, navigate to the Recording Service and click the Administration tab. The log level is set for each service, and any service-level settings override any other log settings.

By default, the log level is set to NOTIFICATION, which reports all errors and warnings. When you are trying to track a problem, set the log level to NOTIFICATION. The TRACE log level is rarely used because it generally produces too much information. It should not be used during standard business operations because it can affect process performance. See "Log Parameters" on page B-5 for more information on the log levels.

The default maximum size of a log file is 500,000 bytes. The log file, log.xml, is the file to which the logs are being written. When this log file approaches the maximum log file size, it is renamed log1.xml and log entries continue to be written to log.xml. As the log file gets filled up, the historical log files keep incrementing so that log1.xml is the oldest log file, followed by log2.xml, and so on. The default for the maximum number of log files is 10 log files. When the maximum number of files is reached, the oldest log file is deleted.

Viewing the Log Files

You can view the Oracle Voicemail & Fax log files from the Collaboration Suite Control.

1. Log in to the host where Oracle Voicemail & Fax is installed.
2. Click the name of the Oracle Voicemail & Fax standalone instance that takes you to the home page for the Oracle Collaboration Suite instance of Oracle Voicemail & Fax.
3. Click the **Logs** link at the top right-hand corner of the page.
4. In the View Logs page, select Voice Mail and Fax from the Available Components List and click the **Move** link.
5. Click **Search.**

   The page refreshes with a list of all Oracle Voicemail & Fax logs.
6. Click the log file you want to view.

   The contents of the log file are displayed in reverse chronological order, with the most recent entries displayed first. The first 100 entries in the log file are displayed. If there are more than 100 entries, use a text editor to view the additional entries in the log file.

Alternatively, you can click the name of the log file and view it in a text editor such as Microsoft Notepad. The log entries appear within XML tags and the message text of the log entry appears within the <MSG_TXT> tag.

Search through the log file for any error messages and the related cause and solution. If you are unable to resolve the error, report the problem to Oracle Support Services.

Registering Oracle Voicemail & Fax Targets

When you install Oracle Voicemail & Fax, the Oracle Voicemail & Fax targets are registered in Oracle Management Service. If Oracle Management Service is not running when you install Oracle Voicemail & Fax, the targets are not registered and will not appear in Enterprise Manager Grid Control. Therefore, you will need to manually create the Oracle Voicemail & Fax group.

To create the Oracle Voicemail & Fax group:

1. Log in to Enterprise Manager Grid Control.
2. Click the **All Targets** subtab.
3. In the Add list, select **Collaboration Suite Component**, and click **Go.**
4. Select **Voicemail & Fax (10g)** from the list, and click **Continue.**
5. On the Create Collaboration Suite Component: Properties page, enter the values for the required fields. Click **Help** for information on the fields.

   Note: The *Name* field must be the same name that you provided on the configuration screens for the Oracle Voicemail & Fax group during the installation of Oracle Voicemail & Fax.

6. You can verify that the connection to Oracle Internet Directory by clicking **Test.**
7. Click **Finish.**

   A confirmation message appears confirming that the target has been created.

After creating the Oracle Voicemail & Fax group, you must register the PBX-Application Cluster with Oracle Management Service in order to view the target and its subcomponents. Refer to"Registering the PBX-Application Cluster" on page A-4 for the procedure to register the PBX-Application Cluster.

Errors Starting Intel NetMerge

If you see errors about missing NetMerge DLLs or not finding the NetMerge service, verify that the path to the NetMerge executable is in your Microsoft Windows CLASSPATH environment variable. There is a limit to the length of Microsoft Windows environment variables. Therefore, depending on what you have installed on your computer, it is possible that the path definition exceeds this limit, and the path to the NetMerge executable got truncated.

Calls Not Passed to Routing Service

If calls are not being passed to the Routing Service and you have verified that the Routing Service is up, check the log file for the Routing Service. If you see "NTLM Authentication Error" in the log file, it means that the NetMerge services are not being started with the correct user ID.

For security reasons, the Intel NetMerge services and the Voicemail & Fax Application are both started using the same user ID. By default, they are started under the user ID that was used to install NetMerge. The assumption is that the same user ID was used to install both NetMerge and Oracle Voicemail & Fax. If this is not the case, then the NetMerge user name must be changed to match the user name used to install Oracle Voicemail & Fax.

To change the Intel NetMerge user name:

1. Navigate to the Microsoft Windows Services Panel and double-click **Intel Netmerge Converged Communications Server**.
2. In the Properties window, click the **Logon** tab.
3. In the Logon pane, select **This account.**
4. You can either change the existing user name and password to match the Oracle Voicemail & Fax user name and password, or you can add a user name and password that matches those used to install Oracle Voicemail & Fax.

Message Delivery Time Metrics

If the Message Delivery Time metrics do not appear on the performance page graphs, follow these steps to determine the cause:

- Verify that the Message Delivery Monitor Service is running:
  1. Navigate to the home page for the Message Delivery Monitor Service.
  2. In the General section of the home page, check to see that the status of the service is *Up*.
- Verify that the Message Delivery Monitor Service is sending data:
  1. From the Message Delivery Monitor Service home page, click the **All Metrics** link.
  2. On the All Metrics page, click **Message Delivery Monitor Service Performance Metrics.**
  3. Verify that the Average Message Delivery Time is not zero.

  If the Average Message Delivery Time is zero, then check the Message Delivery Monitor Service log files, and verify that the msgDelivery_user was created during installation.
- Verify that the msgDelivery_user has been created using one of the following methods:
  - Log in to Oracle Internet Directory Self-Service Console and verify that the msgDelivery_user has been created.
  - Check the Message Delivery Monitor log files and verify that the msgDelivery_user was created.

  If the user does not exist, create the msgDelivery_user public user. After you create the user, you must restart the Message Delivery Monitor Service so that the required steps are completed for the message delivery time metrics to be generated and collected. See"Managing Processes Using opmnctl" on page 6-3 for more information on restarting the service.

Registering the PBX-Application Cluster

Occasionally, during the Oracle Voicemail & Fax installation process, Oracle Universal Installer is unable to connect to the Enterprise Manager Grid Control and it may fail to create the PBX-Application Cluster target in the Oracle Management Service. When this occurs, the PBX-Application Cluster does not appear as a target in the Components table, and you must register the PBX-Application Cluster in Oracle Enterprise Manager.

To register the PBX-Application Cluster in Oracle Enterprise Manager:

1. Navigate to the Voicemail & Fax administration page.
2. In the Tasks list, click the **Go To Task** icon for the Register PBX-Application Cluster task.

   A list of the unregistered PBX-Application Clusters appears.
3. Select the PBX-Application Cluster from the list and click **OK.**
4. Check to see that the PBX-Application Cluster appears in the Components table.

Listening to Voicemail Attachments

End users must have a media player that can play WAVE (.wav) files. Many popular media players such as Windows Media Player support WAVE files. If an end user is unable to open the WAVE attachment, check to see if they have a media player installed that supports WAVE files.

B

Process Parameters

This appendix describes the Oracle Voicemail & Fax parameters. The parameters are set on the administration pages for the Voicemail & Fax group, Voicemail & Fax Application, and each of the services.

Note: Not all parameters apply at each level of the hierarchy, or for each of the services.

Database Buffers Parameters

The Database Buffers parameters specify the size of the read and write buffers (Table B–1).

Table B–1 Database Buffers Parameters

Parameter Name	Description	Valid Values/Default Value
Collaboration Suite Database Read Buffer Size	The amount of data that is read from the database in one read operation during retrieval of voicemail messages.	Valid Values: Positive integer Default Value: 102400 bytes
Collaboration Suite Database Write Buffer Size	The amount of data that is written to the database in one write operation during the sending of voicemail messages.	Valid Values: Positive integer Default Value: 524288 bytes

General Parameters

General parameters do not fit any other category of parameters. The general parameters for each of the services are described in the sections that follow.

Miscellaneous Services

There is only one parameter for the Call Transfer Service, Fax Receiving Service, Interactive Voice Response Service, and SMDI Monitor Service (Table B–2).

Table B–2 General Parameters for Miscellaneous Services

Parameter Name	Description	Valid Values/Default Value
Threads Per Process	Number of worker threads for this service within one Java Virtual Machine (JVM).	Valid Values: A positive value. Default Value: 4

Message Delivery Monitor Service

Table B–3 shows the general parameter for the Message Delivery Monitor Service.

Table B–3 General Parameter for the Message Delivery Monitor Service

Parameter Name	Description	Valid Values/Default Value
Process Sleep Duration	Test messages are sent from the Oracle Voicemail & Fax system to a test account on the Oracle Collaboration Suite Database. This parameter specifies the time interval between test messages.	Valid Values: 0 – 2147483647 seconds Default Value: 600 seconds

Message Waiting Indicator Service

Table B–4 shows the general parameters for the Message Waiting Indicator Service.

Table B–4 General Parameters for Message Waiting Indicator Service

Parameter Name	Description	Valid Values/Default Value
Process Sleep Duration	Number of milliseconds an MWI service instance thread sleeps between back-to-back MWI requests.	Valid Values: Positive integer Default Value: 250
Collaboration Suite Database Physical Connection Time	Number of seconds a physical database connection between an MWI service instance and an Oracle Collaboration Suite Database is idle before the connection is broken.	Valid Values: Positive integer Default Value: 3600
MWI Mode	In Dispatch mode, the MWI Service processes Oracle Collaboration Suite Database requests. In Notify mode, the MWI Service sets the message waiting indicator on the PBX.	Valid Values: Dispatch and Notify, Dispatch, Notify Default Value: Dispatch and Notify

Recording Service

Table B–5 shows the general parameters for the Recording Service.

Table B–5 General Parameters for the Recording Service

Parameter Name	Description	Valid Values/Default Value
Threads Per Process	Number of threads for this service within one JVM.	Valid Values: A positive value. Default Value: 4
Transfer Application DN	Distinguished name entry for the transfer service. This is the service to which calls are routed when a user chooses to transfer to an attendant.	Valid Values: A valid Oracle Internet Directory distinguished name Default Value: cn=%LDAPComputerName% : %installhome% : transfer, cn=ovf, cn=%ct_orahome%, cn=%LDAPComputerName%, cn=Computers, cn=oraclecontext
Fax Receiving Application DN	Distinguished name entry for the fax receiving service. This is the service to which fax calls are routed.	Valid Values: A valid Oracle Internet Directory distinguished name Default Value: cn=%LDAPComputerName% : %installhome% : faxrecv, cn=ovf, cn=%ct_orahome%, cn=%LDAPComputerName%, cn=Computers, cn=oraclecontext

Retrieval Service

Table B–6 shows the general parameters for the Retrieval Service.

Table B–6 General Parameters for the Retrieval Service

Parameter Name	Description	Valid Values/Default Value
Threads Per Process	Number of worker threads for this service within one Java Virtual Machine (JVM).	Valid Values: A positive value. Default Value: 4
Recording Application DN	Distinguished name entry for the recording service. This is the service to which forwarded calls are routed. Forwarded calls are calls to the voicemail system to record a voicemail message or to send a fax.	Valid Values: A valid Oracle Internet Directory distinguished name Default Value: cn=%LDAPComputerName% : %installhome% : recording, cn=ovf, cn=%ct_orahome%, cn=%LDAPComputerName%, cn=Computers, cn=oraclecontext
Transfer Application DN	Distinguished name entry for the transfer service. This is the service to which calls are routed when a user chooses to transfer to an attendant.	Valid Values: A valid Oracle Internet Directory distinguished name Default Value: cn=%LDAPComputerName% : %installhome% : transfer, cn=ovf, cn=%ct_orahome%, cn=%LDAPComputerName%, cn=Computers, cn=oraclecontext

Routing Service

Table B–7 shows the general parameters for the Routing Service.

Table B–7 General Parameters for the Routing Service

Parameter Name	Description	Valid Values/Default Value
Threads Per Process	Number of worker threads for this service within one JVM.	Valid Values: A positive value. Default Value: 4
Retrieval Application DN	Distinguished name entry for the retrieval service. When a call is made to the voicemail system to retrieve voicemail messages, the call is routed to this service.	Valid Values: A valid Oracle Internet Directory distinguished name Default Value: cn=%LDAPComputerName% : %installhome% : retrieval, cn=ovf, cn=%ct_orahome%, cn=%LDAPComputerName%, cn=Computers, cn=oraclecontext

Table B–7 (Cont.) General Parameters for the Routing Service

Parameter Name	Description	Valid Values/Default Value
Recording Application DN	Distinguished name entry for the recording service. This is the service to which forwarded calls are routed. Forwarded calls are calls to the voicemail system to record a voicemail or to send a fax.	Valid Values: A valid Oracle Internet Directory distinguished name Default Value: cn=%LDAPComputerName% : %installhome% : recording, cn=ovf, cn=%ct_orahome%, cn=%LDAPComputerName%, cn=Computers, cn=oraclecontext
Transfer Application DN	Distinguished name entry for the transfer service. This is the service to which calls are routed when a user chooses to transfer to an attendant.	Valid Values: A valid Oracle Internet Directory distinguished name Default Value: cn=%LDAPComputerName% : %installhome% : transfer, cn=ovf, cn=%ct_orahome%, cn=%LDAPComputerName%, cn=Computers, cn=oraclecontext
Telephony Port Map	Mapping of the Telephony Server's card port and device numbers to agent line numbers. If the machine belongs to a PBX that uses the SMDI integration type, the default values must be changed after the Voicemail & Fax Application is installed.	Valid Values: Space delimited pairs of device name and agent line number values Default Values: blt1LSI1 507654321 blt1LSI2 501234567

Internet Directory Parameters

The Internet Directory parameters in Table B–8 specifies parameters for the Oracle Internet Directory (OID) from which the Recording Service retrieves recipient information and connection pool characteristics.

Note: Some parameters apply to some components and not to others. Therefore, you may not see every parameter shown here on your page.

Table B–8 Internet Directory Parameters

Parameter Name	Description	Valid Values/Default Value
Process Refresh Interval	Length of time, in seconds, between attempts by the service to refresh itself.	Valid Values: Positive integer Default Value: 3600
Query Timeout	Length of time, in milliseconds, that an Oracle Internet Directory query may run before the system abandons the query.	Valid Values: Positive integer Default Value: 4000
Initial Connection Pool Size	Number of Oracle Internet Directory connections that are created at application startup.	Valid Values: Positive integer Default Value: 1
Minimum Connection Pool Size	Minimum number of simultaneous Oracle Internet Directory connections that an application may use.	Valid Values: Positive integer Default Value: 1
Maximum Connection Pool Size	Maximum number of simultaneous Oracle Internet Directory connections that an application may use.	Valid Values: Positive integer Default Value: 1, plus the number of worker threads that the application uses
Connection Pool Increment Size	Number of new Oracle Internet Directory connections to create when all OID connections are in use.	Valid Values: Positive integer Default Value: 1

Table B–8 (Cont.) Internet Directory Parameters

Parameter Name	Description	Valid Values/Default Value
Connection Timeout	Length of time, in seconds, that an Oracle Internet Directory connection may be idle before it is released from the connection pool.	Valid Values: Positive integer Default Value: 3600
Search Base for E-mail Users	Distinguished name of the Oracle Internet Directory subtree that will be searched for e-mail users. Oracle Voicemail & Fax services will be able to find only e-mail users in this subtree.	Valid Values: A valid Oracle Internet Directory distinguished name. Default Value: cn=EmailServerContainer,cn=products,cn=oraclecontext
Search Base for Voicemail Users	Distinguished name of the Oracle Internet Directory subtree that will be searched for voicemail users. Oracle Voicemail & Fax services will only be able to find voicemail users in this subtree.	Valid Values: A valid Oracle Internet Directory distinguished name. Default Value: cn=UMContainer,cn=products,cn=oraclecontext
Search Base for Voicemail Processes	A container in Oracle Internet Directory that holds all the Oracle home and process-level configuration for all Oracle Voicemail & Fax Applications.	Valid Values: An Oracle Internet Directory distinguished name Default Value: cn=Computers,cn=OracleContext

Log Parameters

The log parameters in Table B–9 configure logging for the service.

Note: Some parameters apply to some components and not to others. Therefore, you may not see every parameter shown here on your page.

Table B–9 Log Parameters

Parameter Name	Description	Valid Values/Default Value
Full Path for Log Directory	Directory where log files are written.	Valid Values: Path name of a file system directory Default Values: On Windows: %ORACLE_HOME%\um\log
Log Level	Specifies the type of logging performed by the UM process	Valid Values: INTERNALERROR. Reports only critical errors. ERROR. Reports all errors. WARNING. Reports all errors and warnings. NOTIFICATION. Reports high-level flow of operations within the process. TRACE. Reports all debugging information. Default Value: WARNING
Maximum Log File Size	Maximum size of each log file, in bytes. Once this size is exceeded, another log file is created.	Valid Values: A positive integer Default Value: 500000
Maximum Number of Log Files	Maximum number of log files to write for a process. Once the maximum number of log files has been written and all log files are full, the oldest log file is overwritten.	Valid Values: A positive integer Default Value: 10

Note: The TRACE option should never be used during standard business operations because it can have a detrimental impact on process performance.

PBX-Application Cluster Parameters

The PBX-Application Cluster parameter in Table B–10 specifies the name of the PBX-Application Cluster associated with this Voicemail & Fax Application.

Table B–10 PBX-Application Cluster Parameter

Parameter Name	Description	Valid Values/Default Value
PBX-Application Cluster Name	Name of the PBX-Application Cluster with which this Voicemail & Fax Application is associated.	Valid Values: Valid characters include alphanumeric characters, spaces, dashes, underscores, and colons. Must not exceed 256 characters. Default Value: None

Process Management Parameters

Note: Some parameters apply to some components and not to others. Therefore, you may not see every parameter shown here on your page.

Table B–11 Process Management Parameters

Parameter Name	Description	Valid Values/Default Value
Frequency of Process Alive Notifications	Frequency with which the Oracle Voicemail & Fax Services return a notification to OPMN that the process is alive.	Valid Values: Numeric String Default Value: 60 seconds
Maximum Queued Process Administration Requests	Maximum number of requests that may be queued at the process administration port.	Valid Values: Positive integer Default Value: 25
Secure Process Administration Communication	Specifies whether process administration requests made to the Voicemail & Fax Services need to be secured.	Valid Values: Boolean Default Value: True
Process Administration Request Timeout	Time out (in milliseconds) for a request made to the process administration port.	Valid Values: Positive integer Default Value: 3600000 msec

Recording Process Parameters

Table B–12 Recording Process Parameters

Parameter Name	Description	Valid Values/Default Value
Maximum Greeting Play Time	The maximum length of silence, in milliseconds, permitted before the system plays a user's greeting. If the system is unable to obtain the user's greeting from Oracle Internet Directory in the specified time, the system uses a more generic greeting based on the user's phone number or recorded name, depending on what information was obtained. If this parameter is not set, there is no time limit besides that which is imposed by Oracle Internet Directory on each query.	Valid Values: A positive integer to indicate that a time out is in use or *Not Set* to indicate that a time out is not in use. Default Value: Not Set

Recovery Process Parameters

Note: Some parameters apply to some components and not to others. Therefore, you may not see every parameter shown here on your page.

Table B–13 Recovery Process Parameters

Parameter Name	Description	Valid Values/Default Value
Process Sleep Duration	Frequency with which Message Recovery Service checks to see if there are queued messages on the file system	Valid Values: Numeric string Default Value: 900 seconds
Message Queue Location	Location where messages are queued.	Valid Values: Valid path name of a file system directory Default Value: %ORACLE_HOME%\um\queue

SMDI Parameters

These parameters are used to configure PBXes that are enabled for Simplified Message Desk Interface (SMDI) to work with the Voicemail & Fax Application.

Table B–14 SMDI Parameters

Parameter Name	Description	Valid Values/Default Value
Terminal Map	Mapping of SMDI message desks to identifiers. The Terminal Map is entered as a list of entries delimited by a new line. The format for the mapping is: *message_desk_number terminal_number description* Example: 1 1 44001 1 2 44002 1 3 44052 1 4 44006 2 1 45001 2 1 45003 2 3 42643 2 4 42662	Valid Values: A list of entries in the prescribed format. Default Values: 5 4 44030 6 1 44121 6 2 44122 6 3 44123 10 1 44000 10 2 44001 10 3 44003 10 4 44003 5 3 44029 3 2 44017
Emulation Type	Protocols used by the SMDI Monitor Service to retrieve call details and make MWI requests.	Valid Values: SMDI, MD110 (Ericsson MD110 protocol), NEC (NEC MCI protocol), OnHook, and OffHook Default Value: SMDI
Baud Rate	Rate, in bits per second, that data is transferred. This setting must be identical to the data transfer rate configured on the PBX.	Valid Values: Positive integer Default Value: 4800
Number of Data Bits	Number of data bits sent as one byte.	Valid Values: Positive integer Default Value: 7
Number of Stop Bits	Number of stop bits sent at the end of one byte.	Valid Values: Positive integer Default Value: 1
Parity Type	Type of parity bit.	Valid Values: E = Even N = None O = Odd M = Mark S = Space Default Value: E
Serial Port	On Microsoft Windows machines, this port is often *COM1* or *COM2*.	Valid Values: A valid serial port Default Value: COM1
Port Number for TCP Connections	Port number on which the SMDI monitor accepts connections.	Valid Values: A valid TCP port number Default Value: 7000
Ping Time	Length of time, in milliseconds, between ping messages. This parameter is required by some PBXes to keep the data link alive. If set to -1, no ping messages are sent.	Valid Values: Positive integer Default Value: 60000

Telephony Server Parameters

The Telephony Server parameters in Table B–15 are used to register the application with the Telephony Server.

Note: Some parameters apply to some components and not to others. Therefore, you may not see every parameter shown here on your page.

Table B–15 Telephony Server Parameters

Parameter Name	Description	Valid Values/Default Value
Name	Host name of the Telephony Server.	Valid Values: A valid host Default Value: localhost
Group Configuration	Name of the Telephony Server group configuration that represents a collection of resources, such as the Player, Signal Detector, Signal Generator, and Fax Receiver.	Valid Values: A valid Telephony Server group configuration Default Value: UMMediaServicesProfile (for all services except the Fax Receiving Service. UMFaxMediaServices (for the Fax Receiving Service)
Application Service Name	Telephony Server application service identifier (ASI). This is the name the Voicemail & Fax Service uses to register itself with the Telephony Server. Each service is identified by its ASIs, which are defined in the application profile.	Valid Values: A valid Telephony Server application service name Default Value depends on the service: CallTransferService, FaxReceivingService, InteractiveVoiceResponseService, MessageRecoveryService, MWIService, RecordingService, RetrievalService, RoutingService, SMDIMonitorService, TelephonyMonitorService
Application Profile	The name of the Telephony Server profile that contains application configuration information. The application profile contains information on the signal processing resources the application requires, declares the application service identifiers (ASIs) the application uses to identify itself to the Telephony Server, and documents the ASIs that the application uses to identify other applications to pass calls to.	Valid Values: A valid Telephony Server profile name Default Value: UMediaServicesProfile
Call Timeout	The time (in milliseconds) that Telephony Server waits to configure resources for this application.	Valid Values: A string of digits Default Value: 5000

C

IVR Worksheet

Use this worksheet to plan your Interactive Voice Response (IVR) deployment. For each time category, do the following

1. Give your deployment a name.
2. Specify a locale for the deployment. By default, this is United States English.
3. Specify a call flow.
4. Specify a sound file group. The sound file group consists of roles and sound files of a specific coder type.
5. Identify each role in the call flow and enter the name of the role in the Role column.
6. You must create a sound file for each role. Enter the location and name of the sound file in the Sound File column.
7. Specify the coder type for each sound file in the Coder Type column.
8. Identify the profiles in the call flow and enter the name of the profiles in the Profile Key column.
9. Enter the value of the profile key in the Value column.

Repeat Step 1 through Step 7 for each time category.

Use this worksheet when you create the sound file groups, profiles, and the IVR deployment. See Chapter 11, "Interactive Voice Response" for more information on creating IVR deployments.

IVR Worksheet

DEPLOYMENT NAME:

DEPLOYMENT LOCALE:			
Time Category: open			
1	Name of Call Flow:		
2	Name of Sound File Group:		
	Role	Sound File (Path and file name)	Coder Type
3	Name of Profile:		
	Profile Key	Value	

Time Category: closed			
1	Name of Call Flow:		
2	Name of Sound File Group:		
	Role	Sound File (Path and file name)	Coder Type
3	Name of Profile:		
	Profile Key	Value	

DEPLOYMENT NAME:

Time Category: holiday			
1	Name of Call Flow:		
2	Name of Sound File Group:		
	Role	Sound File (Path and file name)	Coder Type
3	Name of Profile:		
	Profile Key	Value	

Time Category: special			
1	Name of Call Flow:		
2	Name of Sound File Group:		
	Role	Sound File (Path and file name)	Coder Type
3	Name of Profile:		
	Profile Key	Value	

D

IVR Call Flow XML

This appendix contains the XML tags used in the IVR call flows.

Call Flow XML Tags

These XML tags are used to create call flow documents used in IVR deployments. The tags fall into the following categories:

- State tags – Mark the progress of a call through the call flow.
- Declaration tags – Used to declare profiles and roles.
- Configuration tags – Specify the default behavior of the application.
- Action Type tags – Specify the actions associated with a call flow state.
- Common Action tags – Specify the actions that can be used with any of the action types.

For each tag, there is a description of the purpose of the XML tag:

- **Contents** describes what is contained within the tag, for example, other XML tags that may be required or optional. Unless otherwise specified, the tags contained within a tag must be specified in the order shown. A tag may also contain other information, for example, the <startState> tag contains name of a state.
- Some XML tags have **Attributes** that are specified within that tag. For example, the <menuItem> tag has a *key* attribute. An example of this attribute specified for the <menuItem> tag is <menuItem key="0">.
- **Parent Tags** lists those tags within which the XML tag may be contained. For example, the <extensionTransferConfig> tag is always found within the <globalConfig> tag.

Refer to "About Call Flows" on page 11-8 for information on how these XML tags are used in a sample call flow, CallFlow1. You can find other examples of call flows in the following location:

```
%UM_HOME/sample/ivr
```

Use an XML editor or any text editor to view and edit these files. Refer to "Sample Deployments" on page 11-20 for more information about the deployments that use these call flows

State Tags

The state tags are used to mark the progress of a call through the call flow.

destinationState

Indicates the state to which control transitions if a specified transition point is reached.

Contents

Name of the state to which control transitions.

Attributes

None

Parent Tags

onSuccess, onCancel, onMiscError, onTimeout, menuItem

endState

Specifies the end state of a call flow.

Contents

Name of the call flow's end state.

Attributes

None

Parent Tags

stateMachine

previousState

Defines a keypress that causes control to return to the previous state in the current path.

Contents

None

Attributes

Attribute Name	Value
key	numbers 0 through 9, #, or *

Parent Tags

keyPresses

retreat

Indicates that control should return to the previous state when a menu has timed out. A menu times out when the caller does not give a timely response (that is, within 8 seconds) and either of the following conditions is true:

- The noResponseOk attribute of the containing timeoutBehavior is set to true.
- The menu has replayed twice after the caller fails to respond to the current state's menu within 8 seconds.

The time within which the caller must respond cannot be configured.

Contents
None

Attributes
None

Parent Tags
timeoutBehavior

startState

Specifies the start state for a call flow.

Contents
Name of the call flow's start state.

Attributes
None

Parent Tags
stateMachine

state

Defines a state and its action.

Contents
getExtAndTransferAction | extensionTransferAction | mailboxTransferAction | menuAction | playInfoAction | passToServiceAction

Attributes
A unique name of a state

Parent Tags
stateMachine

stateMachine

Root element of a call flow document.

Contents
declarations, startState, endState +, [globalConfig], state +

Attributes
None

Parent Tags
None

Declaration Tags

The declarations tags are used to declare profiles and roles in the call flow.

declarations

Contains the declarations for all profile keys and sound file roles used in the call flow.

Contents
profKeys, sfRoles

Attributes
None

Parent Tags
stateMachine

profKey

Contains the declaration for a profile key.

Contents
Name of a profile setting key.

Attributes
None

Parent Tags
profKeys

profKeyRef

Refers to information that is specified in a profile.

Contents
Name of the profile key.

Attributes
None

Parent Tags
mailbox, extension, ivr

profKeys

Contains the declarations for all profile keys.

Contents
profKey +

Attributes
None

Parent Tags
declarations

sfRole

Contains the declaration for a single sound file role.

Contents
Name of a sound file role.

Attributes
None

Parent Tags
sfRoles

sfRoleRef

Refers to the role of a sound file that is played.

Contents
Name of a sound file role.

Attributes
None

Parent Tags
soundFile, leadSoundFile

sfRoles

Contains the declarations for all sound file roles.

Contents
sfRole +

Attributes
None

Parent Tags
declarations

Configuration Tags

The configuration tags are used to specify the default behavior of the application.

allConfig

Specifies global configuration information that applies to all states.

Contents
onMiscError

Attributes
None

Parent Tags
globalConfig

extensionTransferConfig

Contains global configuration information for states with the action type extensionTransferAction.

Contents
[onMiscError]

Attributes
None

Parent Tags
globalConfig

getExtAndTransferConfig

Contains global configuration information for states with the action type getExtAndTransferAction.

Contents
[onMiscError], directoryAccess, dialRestriction

Attributes
None

Parent Tags
globalConfig

globalConfig

Container for default configuration information.

Contents
allConfig, [getExtAndTransferConfig], [extensionTransferConfig] , [mailboxTransferConfig] , [menuConfig] , [playInfoConfig], [passToServiceConfig]

Attributes
None

Parent Tags
stateMachine

mailboxTransferConfig

Contains global configuration information for states with action type mailboxTransferAction.

Contents
[onMiscError]

Attributes
None

Parent Tags
globalConfig

menuConfig

Contains global configuration information for states with action type menuAction.

Contents
[onMiscError] , keyPresses, timeoutBehavior

Attributes
None

Parent Tags
globalConfig

passToServiceConfig

Contains global information for states with action type passToServiceAction.

Contents
[onMiscError]

Attributes
None

Parent Tags
globalConfig

playInfoConfig

Contains global configuration information for states with action type playInfoAction.

Contents
[onMiscError] , keyInterrupt, keyFlush

Attributes
None

Parent Tags
globalConfig

Action Type Tags

The action type tags are the possible actions associated with a call flow state.

destroyCallDetails

Indicates whether or not call-detail information is destroyed before the call is passed to another service.

Contents

true indicates that call-detail information is destroyed; false indicates that call-detail information is not destroyed before the call is passed to another service. If waitForReturn is true, call-detail information will be restored when control returns to this action.

Attributes

None

Parent Tags

passToServiceAction

dialRestriction

Specifies the restrictions on telephone numbers to which callers may transfer. If a global default is not specified using the <getExtAndTransferConfig> tag, dialRestriction defaults to SITE.

Contents

The dialRestriction tag may contain the following values:

- SITE – Restricts calls to telephone numbers at the primary site.
- SYSTEM – Restricts calls to telephone numbers that belong to some site on the system.
- NONE – No restriction is applied. Calls may be transferred to any phone number that is supported by the PBX.

Specify the contents using the uppercase values.

This tag is nillable.

Attributes

None

Parent Tags

getExtAndTransferConfig, getExtAndTransferAction

directoryAccess

Indicates whether or not dial-by-name directory access is enabled through getExtAndTransferAction actions.

Contents

true if directory access is enabled; false if directory access is not enabled. Default is true.

Attributes

None

Parent Tags
getExtAndTransferConfig, getExtAndTransferAction

extension

Specifies the number to which a call is transferred when control enters a specific extensionTransferAction action.

Contents
profKeyRef

Attributes
None

Parent Tags
extensionTransferAction

extensionTransferAction

Indicates configuration information for an extensionTransferAction action.

Contents
[onMiscError] , extension, onSuccess

Attributes
None

Parent Tags
state

getExtAndTransferAction

Indicates configuration information for the getExtAndTransferAction action.

Contents
[onMiscError] , leadSoundFile +, onSuccess, onCancel, onTimeout, directoryAccess (nillable), dialRestriction (nillable)

Attributes
None

Parent Tags
state

id

Indicates the identifier (ID) of a service to which to pass the current call when control enters a specific passToServiceAction. You can send a caller to the following Oracle Voicemail & Fax Services: Retrieval Service, Recording Service, and Fax Receiving Service. When calls are sent to the Retrieval or Recording Service, they enter the services as if they had directly called the Oracle Voicemail & Fax system and were

routed to these services. When the IVR is passed to the Fax Receiving Service, it behaves in the same way as a fax call coming into Oracle Voicemail & Fax.

Contents

ID of a service to which to send the current phone call. The valid values are:

- retrieval
- recording
- fax

The values are not case-sensitive.

Attributes

None

Parent Tags

passToServiceAction

ivr

Specifies the IVR to which the passToServiceAction action passes the call.

Contents

profKeyRef

Attributes

None

Parent Tags

passToServiceAction

keyFlush

Specifies whether keys pressed during a playInfoAction action are flushed from memory or saved for future playInfoAction actions. Use keyFlush when you want to flush the buffer of any of the user's key presses before going on to the next state. For example, a user may press the asterisk key twice (**) instead of once. If the buffer is not flushed out, any extra keypresses (in this instance, the second asterisk) become the input for the next action requiring a keypress. This may not result in the desired behavior.

Contents

true flushes the keypresses from memory; false keeps the keypress information for future actions. Default is true.

This tag is nillable.

Attributes

None

Parent Tags

playInfoConfig, playInfoAction

keyInterrupt

Specifies whether or not keys pressed during playInfoAction action interrupts the playing of messages.

Contents

true interrupts the playing of messages, false does not interrupt the playing of messages. Default is false.

This tag is nillable.

Attributes

None

Parent Tags

playInfoConfig, playInfoAction

keyPresses

Defines the behavior of keypresses for global defaults or for menu-specific settings.

Contents

menuItem *, [repeatOptions], [previousState]

Attributes

None

Parent Tags

menuConfig, menuAction

leadSoundFile

Indicates a sound file that should be played at the beginning of a state's action.

Contents

sfRoleRef

Attributes

None

Parent Tags

getExtAndTransferAction, menuAction

mailbox

Specifies the telephone number of a mailbox to which the current caller leaves a message when control enters a specific mailboxTransferAction action.

Contents

profKeyRef

Attributes

None

Parent Tags
mailboxTransferAction

mailboxTransferAction

Indicates configuration information for a mailboxTransferAction action. The action, mailboxTransferAction, transfers the caller to the Recording Service where the caller can leave a voicemail message.

Contents
[onMiscError] , mailbox, onSuccess

Attributes
None

Parent Tags
state

menuAction

Indicates configuration information for a menuAction action.

Contents
[onMiscError] , leadSoundFile, keyPresses, timeoutBehavior

Attributes
None

Parent Tags
state

menuItem

Indicates a valid keypress for a menu.

Contents
destinationState

Attributes

Attribute Name	Value
key	numbers 0 through 9, #, or *

Parent Tags
keyPresses

passToServiceAction

Indicates configuration information for a passToServiceAction action.

Contents
[onMiscError] , id | ivr

Attributes
None

Parent Tags
state

playInfoAction

Indicates configuration information for a playInfoAction action.

Contents
[onMiscError] , soundFile +, onSuccess, keyInterrupt (nillable), keyFlush (nillable)

Attributes
None

Parent Tags
state

repeatOptions

Defines a keypress that repeats the prompts for this menu.

Contents
None

Attributes

Attribute Name	Value
key	numbers 0 through 9, #, or *

Parent Tags
keyPresses

soundFile

Used to specify the sound file to be played by identifying the associated role, or identifies the role that is associated with the sound file to be played.

Contents
sfRoleRef

Attributes
None

Parent Tags
playInfoAction

Common Action Tags

The common actions are action tags that may be used with any of the action types.

onCancel

Describes a transition that occurs when the caller cancels an action.

Contents

destinationState

This tag is nillable.

Attributes

None

Parent Tags

getExtAndTransferAction

onMiscError

Indicates a transition when an action encounters an unexpected, miscellaneous error.

Contents

destinationState

This tag is nillable.

Attributes

None

Parent Tags

allConfig, getExtAndTransferConfig, extensionTransferConfig, mailboxTransferConfig, menuConfig, playInfoConfig, passToServiceConfig, getExtAndTransferAction, extensionTransferAction, mailboxTransferAction, menuAction, playInfoAction, passToServiceAction

onSuccess

Describes a transition that occurs when a state's action is successful. The definition of success depends on the action type. Not all action types use the onSuccess tag.

Contents

destinationState

This tag is nillable.

Attributes

None

Parent Tags

getExtAndTransferAction, extensionTransferAction, playInfoAction, passToServiceAction, mailboxTransferAction

onTimeout

Indicates a transition when the call times out in a particular state. The definition of a time out depends on the action type of the current state and how the state is configured.

Contents

destinationState

This tag is nillable.

Attributes

None

Parent Tags

timeoutBehavior, getExtAndTransferAction

timeoutBehavior

Contains information on the behavior of a menu when a user does not respond within eight seconds. This response time cannot be configured.

Contents

retreat | onTimeout

This tag is nillable.

Attributes

Attribute Name	Value
noResponseOk	true, if the absence of a response from a caller is acceptable false, if the absence of a response from a caller is an error that causes the menu to repeat

Parent Tags

menuConfig, menuAction

waitForReturn

Indicates whether or not a passToServiceAction action waits for the target service to return the call to the call flow. For example, if the call flow passes the call to the Recording Service, it can wait for the caller to finish recording their message and return to the call flow to perform another action. If waitForReturn is set to false, once the call is passed to the Recording Service, the call is not returned to the IVR.

Contents

true, if the current passToServiceAction action waits for the target service to release the current call to the call flow. false, if the current passToServiceAction action does not wait for the target service to release the current call.

Attributes

None

Parent Tags

passToServiceAction

E

Interactive Voice Response Manager Commands

This appendix contains the commands for the Interactive Voice Response Manager (ivrman).

IVR Manager

IVR Manager is a command-line tool to create and manage the different components of IVR deployments. Using IVR Manager, you can do the following:

- Create, modify, and delete a call flow
- Create, modify, and delete a sound file group
- Create, modify, and delete a profile
- Create, modify, and delete a deployment

The tool can be found on the machine where Oracle Voicemail & Fax is installed at the following location:

`%ORACLE_HOME%/um/scripts`

Type `ivrman` at the command line to get help on the command syntax. You can type `ivrman` followed by one of the modes (callflow, sfgroup, profile, deployment) and get the syntax for all the commands for that mode.

For example, if you type `ivrman callflow`, the IVR Manager tool displays the syntax for the `ivrman callflow add`, `ivrman callflow delete`, `ivrman callflow dump`, `ivrman callflow list`, and `ivrman callflow replace` commands.

ivrman callflow Commands

Use the `ivrman callflow` commands to create and modify IVR call flows.

ivrman callflow add

Takes the contents of the *`file_name`* file and loads the call flow in the Oracle directory server with the name *`flow_name`*

Syntax

`ivrman callflow add` *`flow_name file_name`*

Parameters

- *flow_name* – name of the call flow
- *file_name* – name of the XML document that describes the call flow

Comments

If a call flow with the specified name already exists or the contents of the file are in the wrong format, the tool displays an error message and makes no changes.

To update an existing call flow, use *ivrman callflow replace*.

ivrman callflow delete

Deletes a call flow and all profiles associated with the call flow.

Syntax

```
ivrman callflow delete flow_name [-f]
```

Parameters

- *flow_name* – name of the call flow
- *-f* – If the *-f* flag is not specified, the command deletes a call flow only if it is not referred to in a deployment. The *-f* flag deletes the call flow even if a deployment references the call flow.

Comments

If the *-f* flag is not specified and the call flow is referred to in a deployment, the tool displays a message telling the user to use the -f flag and it does not delete the call flow.

ivrman callflow dump

Saves the specified call flow description in the *file_name* file.

Syntax

```
ivrman callflow dump flow_name file_name
```

Parameters

- *flow_name* – name of the call flow
- *file_name* – name of the XML document

Comments

If the specified call flow does not exist, the tool displays an error. If the *file_name* specified already exists, the tool overwrites the contents of the file.

ivrman callflow list

Displays a list of all call flows in the Oracle Voicemail & Fax system.

Syntax

```
ivrman callflow list
```

Comments

None.

ivrman callflow replace

Replaces the specified call flow with the contents of the *file_name* file.

Syntax

```
ivrman callflow replace flow_name file_name
```

Parameters

- *flow_name* – name of the call flow
- *file_name* – name of the text file

Comments

If the specified call flow does not exist or if the contents of the file are in the wrong format, the tool displays an error message and makes no changes.

Use the *ivrman callflow replace* command to make changes to an existing call flow. To create a new call flow, use the *ivrman callflow add* command.

ivrman sfgroup Commands

Use the `ivrman sfgroup` commands to create and modify sound file groups.

ivrman sfgroup add

Adds a new sound file group to Oracle Voicemail & Fax.

Syntax

```
ivrman sfgroup add group_name  flow_name [-batch file_name]
```

Parameters

- *group_name* – name of the sound file group
- *flow_name* – name of the call flow
- *file_name* – name of the file that contains the entries for the sound file group

Comments

The *ivrman sfgroup add* command can be used in interactive mode or batch mode using the *-batch* flag.

In interactive mode, IVR Manager prompts you for the path location and coder type of the sound file for each role in the specified call flow.

In batch mode, the *file_name* file includes an entry for each role that is declared in the specified call flow. You must include an entry for each role. One role is specified per line, and entries are in the following format:

role_name, *path_location*, *coder_type*

role_name is the value of the sfRole tag, *path_location* is the location of the sound file for this role, and *coder_type* is the compression algorithm used to compress the sound file. The following coder types are supported.

Table E–1 Supported Coder Types

Coder Type Name	Description
48k8BitLinear	48 kbps (6 kHz), 8-bit linear PCM

Table E–1 (Cont.) Supported Coder Types

Coder Type Name	Description
64k8BitLinear	64 kbps (8 kHz), 8-bit linear PCM
88k8BitLinear	88 kbps (11 kHz), 8-bit linear PCM
24kADPCM	24 kbps ADPCM
32kADPCM	32 kbps ADPCM
44kADPCM	44 kbps ADPCM
48kMuLaw	48 kbps MuLaw PCM
64kMuLaw	64 kbps MuLaw PCM
88kMuLaw	88 kbps MuLaw PCM
48kALaw	48 kbps ALaw PCM
64kALaw	64 kbps ALaw PCM
88kALaw	88 kbps ALaw PCM

If the sound file group with the specified name already exists, IVR Manager displays an error message and exits without adding the sound file group.

ivrman sfgroup delete

Deletes the specified sound file group.

Syntax

```
ivrman sfgroup delete group_name [-f]
```

Parameters

- *group_name* – name of the sound file group
- *-f* – If the *-f* flag is not specified, the command deletes a sound file group only if it is not referred to in a deployment. The *-f* flag deletes the sound file group even if a deployment references the call flow.

Comments

If the *-f* flag is not specified and the sound file group is referenced by a deployment, IVR Manager displays an error message and does not delete the sound file group.

ivrman sfgroup describe

Displays a list of the sound file roles, coder types, and sound file sizes for the specified sound file group.

Syntax

```
ivrman sfgroup describe group_name
```

Parameters

- *group_name* – name of the sound file group

Comments

None

ivrman sfgroup dump

Writes the sound file for the specified role and sound file group to the *file_name* file.

Syntax

```
ivrman sfgroup dump group_name role file_name
```

Parameters

- *group_name* – name of the sound file group
- *role* – name of the role in the sound file group
- *file_name* – name of the file that contains the entries for the sound file group

Comments

None

ivrman sfgroup list

Displays a list of all sound file groups installed in the Oracle Voicemail & Fax system.

Syntax

```
ivrman sfgroup list
```

Comments

None

ivrman sfgroup update

Replaces sound files in a sound file group.

Syntax

```
ivrman sfgroup update group_name [-batch file_name]
```

Parameters

- *group_name* – name of the sound file group
- *file_name* – name of the file that contains the entries for the sound file group

Comments

The `ivrman sfgroup update` command only allows you to update the existing sound files. If you change the call flow and add another role, you need to delete the old sound file group, then re-create the sound file group using the new call flow.

The `ivrman sfgroup update` command can be used in interactive mode or batch mode using the `-batch` flag.

In interactive mode, IVR Manager prompts you to enter a sound file and the coder type for each role in the sound file group. The current setting appears in brackets beside the prompt. You may change the value or keep the current setting by pressing Enter.

In batch mode, IVR Manager uses a batch file. Refer to the `ivrman sfgroup add` command for the format of this file. You need to specify only those roles whose settings have changed. The tool does not modify the settings for roles that are not included.

If the batch file includes a role that is not included in the sound file group, a message is displayed and the tool ignores the role.

ivrman profile Commands

A profile is associated with a specific call flow. Therefore, you can have two profiles with the same name if they are tied to different call flows. A profile and a call flow together are required to identify a particular profile. Therefore, all of the `ivrman profile` commands (except `ivrman profile list`) require that you specify both the name of the profile and the name of the call flow.

ivrman profile add

Adds a new profile to the Oracle Voicemail & Fax system.

Syntax

`ivrman profile add` *`profile_name flow_name`* `[-batch` *`file_name`*`]`

Parameters

- *`profile_name`* – name of the profile
- *`flow_name`* – name of the call flow for which the profile is being added
- *`file_name`* – name of the file that contains the profile keys and profile settings for the named profile. Used in batch mode.

Comments

The *`ivrman profile add`* command can be used in interactive mode or in batch mode using the *`-batch`* flag.

In interactive mode, IVR Manager prompts you to enter a value for each profile key that is declared in the specified call flow. You must provide a value for each profile key.

In batch mode, the *`file_name`* file includes an entry for each profile key in the specified call flow. One profile key is specified per line, and entries are in the following format:

profile_key = value

The *profile_key* is the value of the profKey tag in the call flow and *value* is the setting for that key. If the batch file is missing settings for any declared profile key, IVR Manager prints an error and exits without adding the profile.

If the value is a phone number, the phone number must be entered in international format as a string of numbers with no spaces or punctuation, for example, *14152926000*.

ivrman profile list

Displays a list of all profiles for the specified call flow.

Syntax

`ivrman profile list` *`flow_name`*

Parameters

- *`flow_name`* – name of the call flow

Comments

None

ivrman profile delete

Deletes the specified profile.

Syntax

```
ivrman profile delete profile_name flow_name [-f]
```

Parameters

- *profile_name* – name of the profile
- *flow_name* – name of the call flow for which the profile is being updated
- `-f` – If `-f` is not specified, the command deletes a profile only if it is not referred to in a deployment. The `-f` flag deletes the profile even if it is referenced in a deployment.

Comments

If the `-f` flag is not specified and the profile is referenced by a deployment, IVR Manager displays an error message and does not delete the profile.

ivrman profile dump

Displays the settings for the specified profile.

Syntax

```
ivrman profile dump profile_name flow_name
```

Parameters

- *profile_name* – name of the profile
- *flow_name* – name of the call flow for which the profile is being updated

Comments

IVR Manager displays the settings for a profile using the following format:

profile_key = value

profile_key is the value of the profKey tag in the call flow and *value* is the setting for that key.

ivrman profile update

Changes the settings for the profile keys in an installed profile.

Syntax

```
ivrman profile update profile_name flow_name [-batch file_name]
```

Parameters

- *profile_name* – name of the profile
- *flow_name* – name of the call flow for which the profile is being updated

- *file_name* – name of the file that contains the profile keys and profile settings for the named profile. Used in batch mode.

Comments

The *ivrman profile update* command can be used in interactive mode or in batch mode using the `-batch` flag.

In interactive mode, IVR Manager prompts you to enter a value for each profile key that is declared in the specified call flow. The current setting appears in brackets next to the prompt. You may change the value or keep the current setting by pressing Enter.

In batch mode, a file with the profile keys and settings is specified with the `-batch` flag. Refer to the `ivrman profile add` command for the format of this file. You need to specify only those profile keys whose settings have changed.

ivrman deployment Commands

Use the deployment commands to create and modify your IVR deployments.

ivrman deployment add

Adds a new deployment to the Oracle Voicemail & Fax system.

Syntax

`ivrman deployment add` *deployment_name*

Parameters

- *deployment_name* – name of the deployment

Comments

The command prompts you to provide a locale for the deployment. This locale setting is the language in which callers to your system will hear the Oracle Voicemail & Fax voicemail prompts. This setting is optional; the default is United States English. Use the `ovfucr displaylanguagelist` command to display a list of the supported languages and their codes. See "ovfucr displaylanguagelist" on page 5-10 for more information on using this command.

The locale setting should not be confused with the language in which you record your sound files. There is no locale setting for the IVR. To create an IVR in different languages, you need to provide a different set of sound files, recorded in the languages you want to support. See the LanguageChoiceAutoAttendant sample IVR deployment for an example.

The *ivrman deployment add* command prompts you to provide the name of the call flow, sound file group, and profile for each time category (Open, Closed, Holiday, and Special). The call flow, sound file group, and profile for each time category in your deployment must be created and added before you create a new deployment.

You must provide a call flow, profile, and sound file group for each time category. For some deployments, the same call flow, sound file group, and profile may be used for more than one time category. Some call flows may not have sound files associated with them, for example, a call flow that sends a call directly to a voicemail mailbox. Or in the case of the Special time category, you cannot create a sound file in advance. In this situation, create a placeholder sound file group or profile.

ivrman deployment delete

Deletes the named deployment.

Syntax

```
ivrman deployment delete deployment_name
```

Parameters

- *deployment_name* – name of the deployment

Comments

The `ivrman deployment delete` command does not give you a warning before deleting the deployment.

ivrman deployment dump

Displays the deployment locale and the call profile, call flow, and sound file group for each category.

Syntax

```
ivrman deployment dump deployment _name
```

Parameters

- *deployment _name* – name of the deployment

Comments

None

ivrman deployment list

Displays a list of all IVR deployments on the Oracle Voicemail & Fax system.

Syntax

```
ivrman deployment list
```

Comments

None

ivrman deployment update

Updates an existing deployment and assigns a different call flow, profile, or sound file group to the deployment.

Syntax

```
ivrman deployment update deployment_name
```

Parameters

- *deployment_name* – name of the deployment

Comments

Use the `ivrman deployment update` command to assign a call flow, profile, or sound file group with a different name to one or more of the time categories. If you

want to make a change to a call flow, profile, or sound file group that is currently assigned to a deployment, you do not need to update the deployment.

The command prompts you to provide a locale for the deployment. This locale setting is the language in which callers to your system will hear the Oracle Voicemail & Fax voicemail prompts. This setting is optional; the default is United States English. Use the `ovfucr displaylanguagelist` command to display a list of the supported languages and their codes. See "ovfucr displaylanguagelist" on page 5-10 for more information on using this command.

The `ivrman deployment update` command prompts you to provide the name of the call flow, sound file group, and profile for each time category (Open, Closed, Holiday, and Special). You must first use IVR Manager to create and add any new call flows, sound file groups, or profiles to Oracle Voicemail & Fax before you update the deployment.

F

Oracle Voicemail & Fax Administration Configuration

This appendix discusses enabling and disabling Oracle Voicemail & Fax services.

Enabling and Disabling Services

By default, when Oracle Voicemail & Fax is installed, all services are enabled, with the exception of the SMDI Monitor Service which is disabled. To enable or disable a service, edit the following file in a text editor:

```
%ORACLE_HOME%\opmn\conf\opmn.xml
```

Enabling or disabling a service is controlled with the `status` parameter for each service. Search for the process type ID of the service you want to modify, and change *status* to *enabled* or *disabled*:

```
<process-type ID="process_type_ID" module-id=module_ID
status="enabled_or_disabled">
```

See "Oracle Voicemail & Fax Process Type IDs" on page 6-3 for a list of the process type IDs.

If your PBX uses Simplified Message Desk Interface, change the status of the SMDI Service from *disabled* to *enabled*:

```
<process-type ID="SMDIMOnitorService" module-id=oracle_ovf_
smdimon status="enabled">
```

The Message Delivery Service collects data on the length of time it takes to deliver messages to the Oracle Collaboration Suite Database and reports this information. You can use this to monitor the performance of your system. This service is optional and you may disable it. If you do not have any IVR deployments in your system or you are not enabling the fax receiving feature, you may disable, first, the IVR Service, and then, the Fax Receiving Service.

Caution: All other Oracle Voicemail & Fax Services are required for the basic functioning of the voicemail system. If you disable a required service, your voicemail system may no longer function properly.

Glossary

analog card

A card that supports analog transmission, that is, telephone transmission and switching that is not digital.

Applications tier

The tier of Oracle Collaboration Suite that runs the server applications that provide specific functions to end users. The term "Applications tier" replaces the term "middle tier" that was used in previous releases. Each Applications tier corresponds to an instance of Oracle Application Server. *See also* **Oracle Collaboration Suite**. For Oracle Voicemail & Fax, this is the tier where the Oracle Voicemail & Fax Server is installed, which includes the Voicemail & Fax Application and the Telephony Server.

auto attendant

An automated answering service that routes calls to the appropriate places, based on user-defined steps and responses to prompts.

boarded PBX

A PBX that connects directly to the Voicemail & Fax Server through a telephony card. This is different from a PBX that uses a PIMG gateway to connect to the server.

call flow

A definition of the behavior of an interactive voice response application. The call flow describes how the caller enters the application, the options and input (keypresses) that are provided to the caller, and the application's response to this input.

call flow action

The particular actions in a call flow that are defined by the call flow action. Behaviors that are supported by the call flow actions include playing a menu, transferring a call to an extension, transferring a call to a voicemail mailbox, prompting the user for a telephone extension and transferring the call to the extension, passing the call to another IVR, and playing a message.

call routing map

A mapping of phone numbers to a particular IVR call flow within a PBX-Application Cluster.

Call Transfer Service

The service used to transfer calls to the phone number configured as the operator or attendant number.

call receiver

The person to whom a call is directed. Also referred to as the *called party*.

Client tier

The tier of Oracle Collaboration Suite that consists of the end-user applications that reside on client devices, such as desktops, laptops, wireless phones, and PDAs. *See also* **Oracle Collaboration Suite Applications**.

CT Server

A standard developed by the Enterprise Computer Telephony Forum (ECTF) that defines the infrastructure required to build platform-independent computer telephony (CT) applications.

direct call

A call to the voicemail system by the voicemail user to listen to his or her messages, administer greetings and preferences, and so on.

DTMF

Dual-Tone Multifrequency, also known as *Touchtone*. This is the type of signaling used in all modern telephony equipment. DTMF is the name given to the system of audible tones generated by a user when dialing numbers on a telephone, and DTMF phones usually have 12 keys, (that is, the 10 decimal digits plus the symbols for the pound sign (#) and the asterisk (*)). Each phone key generates a different pair of audible frequencies, one high and one low frequency, thus the term *dual tone.* At the exchange or receiving equipment, these tones are decoded to determine which keys have been pressed.

In addition to their use for dialing, these tones are also used to enter data after a connection has been made, for example when activating voicemail, selecting a service from automatic answering systems, or banking by phone.

Enterprise Computer Telephony Forum (ECTF)

A vendor-membership organization for developing interoperability standards among computer telephony devices. The goal of the ECTF is to facilitate the interoperability of computer telephony (CT) components and technologies to promote an open and cohesive CT environment.

Fax Receiving Service

The service used to determine if the receiver of the call is a valid user with the fax access feature enabled. For users with fax access, it receives the fax and sends it to the call receiver's Inbox in the Oracle Collaboration Suite Database.

forwarded call

A call that is not answered by the intended receiver of the call and is forwarded to the voicemail system.

group

A collection of users with similar characteristics. Groups are created in a hierarchical relationship. Each telephone number is assigned to a group and inherits the properties of the group to which it is assigned or inherits default values from its parent group.

Host Media Processing (HMP)

Technology used to perform media processing tasks on general-purpose, standard high-volume servers with Intel Architecture processors, but without specialized digital signal processing (DSP) hardware.

hunt group

The arrangement of a group of telephone lines such that one telephone number is listed in the directory. A caller dials the listed phone number and is connected by means of the telephone switching equipment to any line that is available in the hunt group. The hunt group number is the publicly listed telephone number.

IMAP4

Internet Message Access Protocol. This is an Internet protocol for accessing e-mail messages on a remote server from a local client. It enables efficient operation such as downloading only essential data by first getting the e-mail header before the actual e-mail message download. This makes the protocol well-suited to remote environments.

IMAP client

A client that uses the IMAP standard to access e-mail messages.

Infrastructure tier

The tier of Oracle Collaboration Suite that consists of the components that provide services, such as identity management and metadata storage, for the **Applications tier**. Components of the Infrastructure tier include **Oracle Collaboration Suite Database** and **Oracle Identity Management**. See also **Oracle Collaboration Suite Infrastructure**.

International Phone Number Format

Format that includes the country code, city code or area code, and local phone number expressed as a string of digits with no spaces or punctuation. For example, the United States phone number 1 (650) 368-7777 expressed in international format is: *16503687777*. All phone numbers in the Oracle Voicemail & Fax system are in international phone number format.

Interactive Voice Response (IVR)

A system that plays messages, transfers calls, searches the user directory, offers simple DTMF (Dual-Tone Multifrequency) menus, and integrates with the Recording Service and Retrieval Service. Sometimes referred to as an auto attendant.

IVR (Interactive Voice Response) Service

A service that runs simple call answering programs that administrators can define and customize. The IVR Service supports multiple administrator-defined IVR deployment items, each of which may specify a behavior for business hours, nonbusiness hours, holidays, and special times that fit none of these categories.

LDAP

Lightweight Directory Access Protocol. A standard, extensible directory access protocol. It is a common language that LDAP clients and servers use to communicate. This framework of design conventions supports industry-standard directory products, such as Oracle Internet Directory.

LDIF (LDAP Data Interchange Format)

The set of standards for formatting an input file for any of the LDAP command-line utilities.

message coder type

A compression algorithm used to compress voicemail messages. Players that can play Microsoft Windows WAVE files use a 64 kbps (8kHz) 8 bit linear PCM message coder type.

Message Delivery Monitor Service

This service is used to measure the time it takes to send a message to the Oracle Collaboration Suite Database by sending test messages to test accounts on each database, and reporting the time it takes for the message to arrive in the Inbox of the target database.

Message Recovery Service

This service is used to recover messages that are not successfully delivered, and to attempt to redeliver the message.

message waiting indicator (MWI)

An indicator, usually a light on the telephone set or an intermittent dial tone, that users hear when they pick up the receiver, that notifies them that they have a voicemail message.

MWI Service

This service activates and deactivates users' message waiting indicators. This is done in response to requests that are stored on each Oracle Collaboration Suite Database associated with the service's Voicemail & Fax Application.

NetMerge Converged Communications Software (CCS)

The Intel implementation of the CT Server standard.

off hook

The condition where a terminal or device capable of active connection with the facilities of a communications network or computer is in the active or connected state; a unit functioning under the continual control of a computer.

on hook

The standard state of the phone in which the handset rests in the cradle and the circuit to the central office conducts no electrical signal.

Oracle Collaboration Suite

An integrated suite of software applications to enable communication, messaging, and content sharing in an enterprise environment. At an architectural level, it includes three tiers: an **Applications tier** which consists of server applications that provide the basic functions, a **Client tier** which consists of applications on desktops, laptops, and wireless devices, and an **Infrastructure tier** which provides centralized services, such as identity management and metadata storage, for the applications.

Oracle Collaboration Suite Applications

The applications that make up Oracle Collaboration Suite, are the following:

- Oracle Calendar

- Oracle Collaboration Suite Search
- Oracle Content Services
- Oracle Discussions
- Oracle Mail
- Oracle Mobile Collaboration
- Oracle Real-Time Collaboration
- Oracle Voicemail & Fax
- Oracle Workspaces

Each of the preceding applications is a component of Oracle Collaboration Suite Applications. These applications rely on the services provided by the Infrastructure tier. *See also* **Applications tier**.

Oracle Collaboration Suite Database

The default database included with Oracle Collaboration Suite to hold application data and metadata. The Oracle Collaboration Suite Database is part of the Oracle Collaboration Suite Infrastructure.

Oracle Collaboration Suite Infrastructure

The underlying components that support Oracle Collaboration Suite and provide centralized product metadata and security services, configuration information, and data repositories for Oracle Collaboration Suite Applications. Oracle Collaboration Suite Infrastructure uses and builds on Oracle Application Server Infrastructure. It includes the Oracle Collaboration Suite Database and Oracle Identity Management. *See also* **Infrastructure tier**.

Oracle Container

The Oracle extension to the Intel NetMerge container subsystem. It provides direct access to the Oracle Collaboration Suite Database through Oracle Call Interface (OCI) and PL/SQL.

Oracle directory server

One of the components of Oracle Internet Directory; it responds to client requests for information about people and resources, and to updates of that information.

Oracle Enterprise Manager

The Oracle integrated management solution for managing the Oracle environment.

Oracle Identity Management

An integrated set of components that provides distributed security to Oracle products and makes it possible to centrally and securely manage enterprise identities and their access to applications in the enterprise. It includes the following components: Oracle Internet Directory, Oracle Directory Integration and Provisioning, Oracle Delegated Administration Services, Oracle Application Server Single Sign-On, and Oracle Application Server Certificate Authority.

Oracle Internet Directory

A general purpose directory that enables retrieval of information about dispersed users and network resources.

Oracle Internet Directory Self-Service Console

A tool to delegate administrative privileges to system administrators and end users, that provides a single graphical interface for system administrators and end users to manage data in the directory. End users can manage their personal profiles, including password, photograph, time zone, and resource access information. Administrators, with the required privileges, can manage identity realms, users and groups, services, accounts, and resource information.

Oracle Mail IMAP Server

The Oracle implementation of the IMAP protocol.

Oracle Process Manager and Notification Server

A management system for Oracle HTTP Server and Oracle Application Server Containers for J2EE (OC4J) processes within an application server instance, as well as other processes such as the Oracle Voicemail & Fax services. It acts as a manager daemon to restart managed services, when necessary.

Oracle Voicemail & Fax Accounts Manager tool

A command-line tool used to create and manage voicemail accounts.

PBX

Private branch exchange, a private telephone network within an enterprise. Users of the PBX share a number of lines for making telephone calls external to the PBX. The PBX enables switching of multiple incoming and outgoing lines between multiple internal phones.

PBX-Application Cluster

The definition of the relationship between one or more PBXes and one or more Voicemail & Fax Applications that support the PBX. You set the parameters in the PBX-Application Cluster for a specific PBX. These parameters define how the Voicemail & Fax Application integrates with the PBX.

PBX IP Media Gateway (PIMG)

An Intel product that converts proprietary digital PBX messages into a format suitable for transmission over standard IP networks.

POP3

Post Office Protocol 3. A standard protocol that is used by a client to receive e-mail messages that have been sent to the client over the Internet. The protocol is used to retrieve the client's e-mail messages from the server.

POP3 is the most recent version of this protocol and is typically included in software e-mail applications such as Outlook Express; it is also built into popular browsers, for example, Microsoft Explorer and Netscape. POP3 is usually employed with Simple Mail Transfer Protocol (SMTP). IMAP is the alternative protocol to POP3, with more features for handling the e-mail messages on the server.

primary outbox

The Oracle Collaboration Suite Database to which the Recording Service connects when it delivers a voicemail message. The primary outbox can be globally specified for all Voicemail & Fax Applications or it can be set at the application level.

profile

The profile keys and their values for a call flow. Profiles are always associated with a particular call flow.

profile key

The specification of where a setting must be provided in a call flow. Typically, this is a telephone number or extension.

Recording Service

A service that verifies that the called party has voice access, then searches for and plays a greeting, and records a message. When a call is not picked up by the called party, the call is forwarded to the voicemail system where the Routing Service answers the call and passes it to the Recording Service. When a voicemail user accesses the voicemail system, he or she is given the option to record a message. The call is passed to the Recording Service, which records the message.

Retrieval Service

A service that verifies that the user is a valid voicemail user and authenticates the user. The Retrieval Service allows users to listen to, save, delete, reply to, or forward voicemail messages; set passwords; leave a voicemail for another user; and record and activate greetings. Once the user is successfully authenticated, the Retrieval Service retrieves the voicemail messages and other account information from the Oracle Collaboration Suite Database.

role

A placeholder that indicates where a sound file is required in a call flow.

Routing Service

A service that passes calls between the Oracle Voicemail & Fax services. For direct calls, the Routing Service retrieves call-detail information from the PBX including the caller's phone number, the destination phone number, and how the call arrived at the voicemail system. For forwarded calls, the Routing Service checks the PBX-Application Cluster's call routing map. If the call's destination number is listed in the call routing map, the call is passed to the IVR Service. All other forwarded calls are passed to the Recording Service.

SIP

Session Initiation Protocol, an application-layer control protocol. This is a signaling protocol for Internet conferencing, telephony, presence, events notification, and instant messaging.

Simplified Message Desk Interface (SMDI)

A data link protocol used to communicate between the switch and the computer telephony system to carry call progress and call control information. SMDI allows central office-based switching services to integrate with customer equipment. The SMDI protocol specifies the extension number that is being called and the condition of the called extension.

site

A particular type of group with physical site-specific information such as telephone number translation rules and phone number sets. A phone number must be assigned to a site or to a group that is a descendant of a site, and it can have only one site in its hierarchy.

SMTP

Simple Mail Transfer Protocol. The main protocol used to control the transfer of electronic mail (e-mail) messages on the Internet. SMTP is the TCP/IP protocol, and this specifies the format of the messages, and how servers and terminals are to interact.

SMTP is usually employed for sending messages. Other protocols, for example POP3 or IMAP, are used to receive and save messages in a mailbox for download from the server to a particular terminal, as required by the user. ESMTP, Extended Simple Mail Transfer Protocol, allows multimedia files to be sent as e-mail attachments.

sound file

The file with the recorded audio message for a role.

sound file group

Mapping of sound files to roles for a call flow.

state

A state marks the progress of a call through a call flow. There are one or more states in a call flow and each state is associated with a call flow action.

target

A single component that you can monitor or configure with Oracle Enterprise Manager. Examples of a target include a Oracle 10*g* Database, Oracle Application Server or an instance of an HTTP Server, Web application, Sun Solaris host computer, including its memory, disks, and CPU, and an Oracle Collaboration Suite component such as Voicemail & Fax. In Oracle Voicemail & Fax, targets include the Voicemail & Fax group, PBX-Application Clusters, Voicemail & Fax Applications, and any of the services that comprise the application.

Telephony Server

Intel NetMerge Converged Communications Software (CCS) and the Oracle Container comprise the Telephony Server. The Telephony Server is a resource manager for the Voicemail & Fax services. Calls from the PBX are passed to the Telephony Server which then passes the call to the appropriate Oracle Voicemail & Fax service.

TIFF

Tagged Image File Format. A graphics file format, developed by Aldus and Microsoft, for exchanging raster graphics (bitmap) images between application programs.

TUI

Telephone user interface, including the telephone keypad and the voicemail interface that is typically a series of menus and choices.

voicemail account

An account for a user who has been provisioned for voice access and assigned a phone number. A separate voicemail account is set up for a user at each site where the user has a phone number.

Voicemail & Fax Application

Eleven services that provide the voicemail features. The Voicemail & Fax Application uses the APIs provided by Intel NetMerge CCS to answer calls and pass calls between the different services.

Voicemail & Fax group

The Voicemail & Fax group is the highest level in the Oracle Voicemail & Fax hierarchy.

Voicemail & Fax Services

Eleven Voicemail & Fax Services that provide the voicemail features. The services include the Routing Service, Retrieval Service, Recording Service, Interactive Voice Response Service (IVR), Call Transfer Service, Message Delivery Monitor Service, Message Recovery Service, Telephony Monitor Service, Fax Receiving Service, SMDI (Simplified Message Desk Interface) Service, and MWI (Message Waiting Indicator) Service.

Voice over Internet Protocol (VoIP)

A category of hardware and software that uses the Internet as the transmission medium for telephone calls. Voice data is sent in digital form in packets rather than in the traditional circuit-committed protocols of the public-switched telephone network (PSTN). A major advantage of VoIP and Internet telephony is that it eliminates ordinary toll charges.

WAVE file

An abbreviation for WAVE form audio format, a Microsoft and IBM audio file format standard for storing audio data on personal computers. It supports a variety of bit resolutions, sample rates, and channels of audio.

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