

Cisco Personal Assistant Administration Guide

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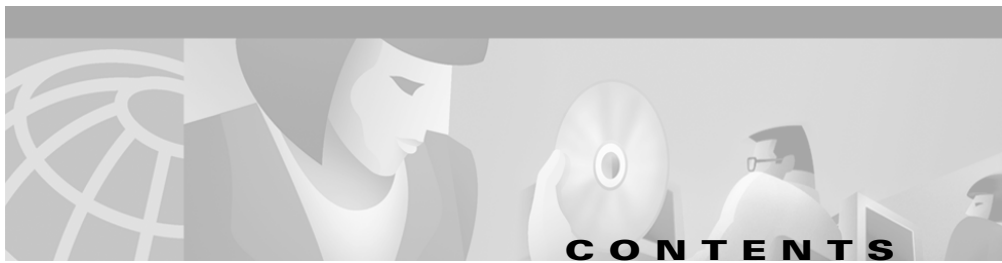
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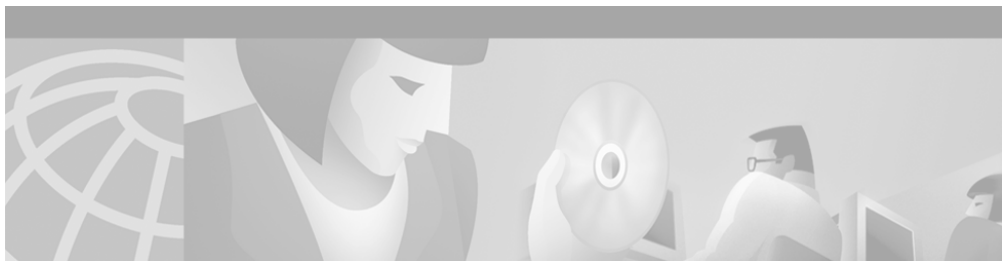
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Preface

This preface describes who should read this publication and its document conventions.

The preface includes the following topics:

- [Overview, page ix](#)
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- [Related Documentation, page xi](#)
- [Online Help and Document Conventions, page xi](#)
- [Obtaining Documentation, page xiii](#)
- [Obtaining Technical Assistance, page xiv](#)

Overview

The *Cisco Personal Assistant Administration Guide* provides you with the information you need to understand, install, configure, and manage the Cisco Personal Assistant application.

[Table 1](#) provides an overview of the organization of this guide.

Table 1 *Personal Assistant Administration Guide Organization*

Chapter	Description
Chapter 1, “Planning for Personal Assistant”	Explains what Personal Assistant does for your users, how it works, and how it fits into your IP telephony network.
Chapter 2, “Installing Personal Assistant”	Describes the hardware and software requirements for Personal Assistant and installation procedures.
Chapter 3, “Configuring Cisco CallManager for Personal Assistant”	Provides procedures for configuring Cisco CallManager for use with Personal Assistant
Chapter 4, “Configuring Personal Assistant”	Provides procedures for configuring Personal Assistant.
Chapter 5, “Preparing Users for Personal Assistant”	Describes information you should communicate to your users and tips for providing this information.
Chapter 6, “Troubleshooting Personal Assistant”	Provides tips for resolving problems with Personal Assistant, including how to resolve them, and other tasks associated with problem resolution.
Appendix A, “Personal Assistant Administration Page Reference”	Describes the fields on the pages used in the Personal Assistant administrator’s interface.

Audience

Network engineers, system administrators, and telecom engineers should review this guide to learn the steps required to properly set up Personal Assistant in the network.

The tasks described in this guide are considered to be administration-level tasks. Because of the close interaction of Personal Assistant with Cisco CallManager, these tasks require you to be familiar with Cisco CallManager as well.

Related Documentation

For information about Cisco CallManager and additional information about Personal Assistant, refer to these publications:

- *Cisco CallManager Administration Guide*
- Personal Assistant end-user interface online help

Online Help and Document Conventions

Personal Assistant's online help system provides task-oriented help and context-sensitive online help that is available from every window that contains a Help menu or button.

The help system includes an index and is organized the same way as the Personal Assistant documentation set.

Using the Online Help

You can access online help in any of these ways:

- From the Help menu:
 - Access help for the page you are viewing by selecting **Help > For This Screen**.
 - Access the contents of the online help system by selecting **Help > Contents and Index**.
- For a printed version of the manual associated with the application, or to view or search an Adobe Acrobat version of the help system, click the **PDF** button in the top left of the help system. If you have Adobe Acrobat installed (either as an independent application or as a plug-in to your browser), the document opens.

From Acrobat, you can search the entire manual, print the entire manual or selected pages, or read the manual online. Click the **Bookmarks and Page** button to view a table of contents for the document in the left-hand margin if it is not already displayed. These bookmarks provide an easy way to navigate through the document.

Document Conventions

This publication uses the following conventions:

Convention	Description
boldface font	Commands and keywords are in boldface .
<i>italic font</i>	Arguments for which you supply values are in <i>italics</i> .
string	A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks.
screen font	Terminal sessions and information the system displays are in <code>screen font</code> .
boldface screen font	Information you must enter is in boldface screen font .
<i>italic screen font</i>	Arguments for which you supply values are in <i>italic screen font</i> .
Action>Reports	Command paths in a graphical user interface (GUI).

Notes use the following conventions:



Note

Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the publication.

Cautions use the following conventions:



Caution

Means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.

Obtaining Documentation

The following sections provide sources for obtaining documentation from Cisco Systems.

World Wide Web

You can access the most current Cisco documentation on the World Wide Web at the following sites:

- <http://www.cisco.com>
- <http://www-china.cisco.com>
- <http://www-europe.cisco.com>

Documentation CD-ROM

Cisco documentation and additional literature are available in a CD-ROM package, which ships with your product. The Documentation CD-ROM is updated monthly and may be more current than printed documentation. The CD-ROM package is available as a single unit or as an annual subscription.

Ordering Documentation

Cisco documentation is available in the following ways:

- Registered Cisco Direct Customers can order Cisco Product documentation from the Networking Products MarketPlace:
http://www.cisco.com/cgi-bin/order/order_root.pl
- Registered Cisco.com users can order the Documentation CD-ROM through the online Subscription Store:
<http://www.cisco.com/go/subscription>
- Nonregistered Cisco.com users can order documentation through a local account representative by calling Cisco corporate headquarters (California, USA) at 408 526-7208 or, in North America, by calling 800 553-NETS(6387).

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To submit your comments by mail, use the response card behind the front cover of your document, or write to the following address:

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We appreciate your comments.

Obtaining Technical Assistance

Cisco provides Cisco.com as a starting point for all technical assistance. Customers and partners can obtain documentation, troubleshooting tips, and sample configurations from online tools. For Cisco.com registered users, additional troubleshooting tools are available from the TAC website.

Cisco.com

Cisco.com is the foundation of a suite of interactive, networked services that provides immediate, open access to Cisco information and resources at anytime, from anywhere in the world. This highly integrated Internet application is a powerful, easy-to-use tool for doing business with Cisco.

Cisco.com provides a broad range of features and services to help customers and partners streamline business processes and improve productivity. Through Cisco.com, you can find information about Cisco and our networking solutions, services, and programs. In addition, you can resolve technical issues with online technical support, download and test software packages, and order Cisco learning materials and merchandise. Valuable online skill assessment, training, and certification programs are also available.

Customers and partners can self-register on Cisco.com to obtain additional personalized information and services. Registered users can order products, check on the status of an order, access technical support, and view benefits specific to their relationships with Cisco.

To access Cisco.com, go to the following website:

<http://www.cisco.com>

Technical Assistance Center

The Cisco TAC website is available to all customers who need technical assistance with a Cisco product or technology that is under warranty or covered by a maintenance contract.

Contacting TAC by Using the Cisco TAC Website

If you have a priority level 3 (P3) or priority level 4 (P4) problem, contact TAC by going to the TAC website:

<http://www.cisco.com/tac>

P3 and P4 level problems are defined as follows:

- P3—Your network performance is degraded. Network functionality is noticeably impaired, but most business operations continue.
- P4—You need information or assistance on Cisco product capabilities, product installation, or basic product configuration.

In each of the above cases, use the Cisco TAC website to quickly find answers to your questions.

To register for Cisco.com, go to the following website:

<http://www.cisco.com/register/>

If you cannot resolve your technical issue by using the TAC online resources, Cisco.com registered users can open a case online by using the TAC Case Open tool at the following website:

<http://www.cisco.com/tac/caseopen>

Contacting TAC by Telephone

If you have a priority level 1 (P1) or priority level 2 (P2) problem, contact TAC by telephone and immediately open a case. To obtain a directory of toll-free numbers for your country, go to the following website:

<http://www.cisco.com/warp/public/687/Directory/DirTAC.shtml>

P1 and P2 level problems are defined as follows:

- P1—Your production network is down, causing a critical impact to business operations if service is not restored quickly. No workaround is available.
- P2—Your production network is severely degraded, affecting significant aspects of your business operations. No workaround is available.



Planning for Personal Assistant

Before you install Cisco Personal Assistant into your production network, you should take the time to understand it and how it fits in the rest of the IP telephony network. You should also determine the best server configuration to support your users.

Use these sections to learn about the features and components of Personal Assistant, how it works, and how it fits into your IP telephony network:

- [Understanding Personal Assistant, page 1-2](#)
- [Understanding the Personal Assistant Server and Speech-Recognition Server, page 1-13](#)
- [Creating Server Clusters, page 1-18](#)
- [Intercepting Calls with Personal Assistant, page 1-30](#)
- [Customizing Implementation of Personal Assistant, page 1-40](#)

Understanding Personal Assistant

Personal Assistant can selectively handle your incoming calls and help you make outgoing calls. These sections provide you with an overview of Personal Assistant and its role in the IP telephony network:

- [Personal Assistant Features, page 1-2](#)
- [Understanding Cisco IP Telephony Terminology, page 1-4](#)
- [Understanding the Role of Personal Assistant in the Cisco IP Telephony Network, page 1-8](#)
- [Understanding Personal Assistant and User Interactions, page 1-11](#)

Personal Assistant Features

Personal Assistant provides the following features:

Rule-Based Call Routing

Personal Assistant can forward and screen incoming calls based on rules that users devise. Incoming calls can be handled according to caller ID, date and time of day, or the user's meeting status based on the user's calendar (such as office hours, meeting schedules, vacations, holidays, and so forth). Personal Assistant can also selectively route calls to other telephone numbers. Thus, an incoming call to a desk phone can be routed to a cell phone, home phone, or other phone, based on the call routing rules that your users create. An incoming call can even generate an e-mail-based page.

To use rule-based call routing, you must allow Personal Assistant to intercept incoming calls. See the [“Intercepting Calls with Personal Assistant”](#) section on [page 1-30](#) for additional information.

Your users set up these rules through a web-based interface, and activate different sets of rules through the interface or by talking to Personal Assistant over the telephone. See [Chapter 5, “Preparing Users for Personal Assistant,”](#) for information on how users access the user interface.

Speech-Enabled Directory Dialing

Users can dial phone numbers by telling Personal Assistant the person's name. Personal Assistant obtains the telephone number from the corporate directory or personal address book.

To use any speech-enabled feature, you must add a sufficient number of speech and license servers to your Personal Assistant installation. See the [“Creating Server Clusters” section on page 1-18](#) for additional information.

Speech-Enabled Voice-Mail Browsing

Users can use voice commands to browse, listen to, and delete voice-mail messages.

Speech-Enabled Simple Ad Hoc Conferencing

Users can initiate conference calls by telling Personal Assistant to set up a conference call with the desired participants or groups.

Follow-Me Call Transferring

Users can tell Personal Assistant to use an alternate telephone number as their primary location for a period of time. Personal Assistant routes calls to the follow-me telephone. For example, a user could route calls to a hotel room telephone during a business trip.

Simple Automated Attendant for Dial by Name

You can set up a simple automated attendant to allow callers to reach people by saying their names rather than having to know their phone numbers. See the [“Creating a Simple Automated Attendant” section on page 4-10](#) for more information.

Understanding Cisco IP Telephony Terminology

Personal Assistant and other components of the IP telephony network, such as Cisco CallManager, use terminology and concepts that might not be familiar to you. These sections explain these concepts and how Personal Assistant uses them:

- [Understanding Personal Assistant Interceptor Ports, page 1-4](#)
- [Understanding CTI Route Points and Media Ports, page 1-5](#)
- [Understanding Partitions and Calling Search Spaces, page 1-6](#)
- [Understanding Cisco CallManager Clusters, page 1-6](#)
- [Understanding How Personal Assistant Uses Directories, page 1-7](#)

Understanding Personal Assistant Interceptor Ports

The Personal Assistant interceptor ports identify the telephone extensions that Personal Assistant will intercept from Cisco CallManager. You configure these ports in Cisco CallManager as CTI route points and translation patterns, and identify them in the Personal Assistant server configuration. The route points configuration allows Personal Assistant to intercept the calls; the translation patterns allow calls to go through to the extension if the Personal Assistant server is unavailable for some reason.

You can use variables when creating the route points so that one route point covers many extensions. For example, the route point 1XXX covers all extensions from 1000 to 1999. You must create a translation pattern for each route point you define for Personal Assistant's use.

Related Topics

- [Creating Personal Assistant Interceptor Ports, page 3-7](#)
- [Understanding CTI Route Points and Media Ports, page 1-5](#)
- [Configuring Personal Assistant Servers, page 4-20](#)
- [Intercepting Calls with Personal Assistant, page 1-30](#)
- [Creating Server Clusters, page 1-18](#)

Understanding CTI Route Points and Media Ports

When you assign a telephone number to a Personal Assistant server, you must define the extension as a Computer Telephony Integration (CTI) route point in Cisco CallManager (see the [“Setting Up the Personal Assistant Number”](#) section on page 3-11). The number you assign as the CTI route point is the telephone number your users use to access Personal Assistant.

A CTI route point is a virtual device that lets the Personal Assistant server receive multiple calls simultaneously. In contrast, a regular phone extension can only receive one call at a time; when busy with an active call, callers to the extension receive a busy signal.

When the Personal Assistant server’s phone number is defined as a CTI route point, Personal Assistant assigns incoming calls to media ports until there are no more available media ports on the server. In Cisco CallManager, you add one media port for each simultaneous Personal Assistant session you require (see the [“Adding Media Ports for Personal Assistant”](#) section on page 3-13). For example, if you need 24 simultaneous sessions, add 24 ports. Then, in the Personal Assistant server’s properties, you enter 24 as the number of media ports in the server’s properties (see the [“Server Configuration”](#) section on page A-31).

If all media ports on a Personal Assistant server are in use, subsequent callers receive a busy signal unless you have set up load balancing (see the [“Setting Up Personal Assistant Server Load Balancing”](#) section on page 1-23).

**Note**

If you create an automated attendant using Personal Assistant, you would also use a route point for the attendant’s telephone number. The attendant would use media ports in the same manner as the full-function Personal Assistant.

Related Topics

- [Setting Up the Personal Assistant Number](#), page 3-11
- [Adding Media Ports for Personal Assistant](#), page 3-13
- [Configuring Personal Assistant Servers](#), page 4-20
- [Creating Server Clusters](#), page 1-18

Understanding Partitions and Calling Search Spaces

In a Cisco CallManager setup, each telephone extension is assigned to a partition and a calling search space.

A *partition* is a group of devices with similar reachability characteristics. Devices you can place in partitions include IP phones, extensions, and gateways. By default, extensions are assigned to the “none” partition. The “none” partition is a default setting in Cisco CallManager that is treated as the null or non-existent partition.

A *calling search space* is an ordered list of partitions. When a user makes a call from an extension, the call can only be completed if the dialed number is within a partition identified in the calling search space. The calling search space always includes the none partition.

Calling search spaces and partitions make it possible to separate parts of your telephone network. This can be useful if you are providing telephone service to a large building occupied by separate companies or organizations (such as an office tower).

You must configure partitions and calling search spaces in Cisco CallManager to enable Personal Assistant to intercept calls and support rule-based call routing.

Related Topics

- [Intercepting Calls with Personal Assistant, page 1-30](#)
- [Setting Up Personal Assistant to Intercept Calls, page 3-5](#)

Understanding Cisco CallManager Clusters

Cisco CallManager allows you to create clusters of Cisco CallManager systems that share a common database. Cisco CallManager clusters provide a mechanism for distributing call processing seamlessly across a converged IP network infrastructure to support IP telephony, to facilitate redundancy, and to provide feature transparency and scalability.

If you are using Cisco CallManager clusters in your IP telephony network, it is important to understand how Personal Assistant interacts with them. The number of clusters you have affects the number of Personal Assistant servers you need: see the “[Supporting Multiple Cisco CallManager Clusters](#)” section on page 1-29 for more information.

Cisco CallManager Clusters and Personal Assistant

The pool of addresses that you create in Cisco CallManager to support Personal Assistant (interceptor ports, CTI route points, translation patterns, and media ports) is registered with the primary Cisco CallManager server in the cluster. Each Personal Assistant server might register with multiple primary Cisco CallManager servers, based on the telephony provider to which these route points and ports belong.

When the primary Cisco CallManager system of a media port goes down, the Personal Assistant server is notified and attempts to register with the secondary Cisco CallManager systems in the cluster, proceeding in a round-robin fashion. Once Personal Assistant establishes a connection with a secondary Cisco CallManager server, it registers the media port with it. When the primary Cisco CallManager system is online, the Personal Assistant server will re-register with it.

Cisco CallManager Clusters and Rule-Based Call Routing

To understand how Cisco CallManager clusters affect rule-based call routing, assume that you have two users whose IP phones are configured within the same Cisco CallManager cluster. User A configures a Personal Assistant rule that forwards all her calls to User B's extension. When the call is transferred to User B, the call is not intercepted as an incoming call; it is simply transferred. Any Personal Assistant rules configured by User B do not take effect.

However, if these two users are in separate Cisco CallManager clusters, calls are not simply transferred. Instead, the transferred call from User A (in Cisco CallManager Cluster 1) is treated as an incoming call to User B (in Cisco CallManager Cluster 2). Because it is treated as an incoming call, any rules that User B has configured go into effect. This might erroneously cause calls for User A to have rules processed and applied as if they were calls to User B.

Related Topics

- [Understanding Personal Assistant and User Interactions, page 1-11](#)
- [Intercepting Calls with Personal Assistant, page 1-30](#)

Understanding How Personal Assistant Uses Directories

Part of the network requirements for Personal Assistant is that you have a supported LDAP directory installed. The directory contains records for each user in your organization, and includes information such as name, phone extension,

e-mail address, office location, and so on. This is typically called the *corporate directory*. Personal Assistant accesses this directory when a user asks Personal Assistant to dial a number by telling Personal Assistant the person's name.

Personal Assistant also uses the directory to maintain Personal Assistant configuration information and some Personal Assistant user information (for example, a user's call routing rules and spoken name). For this information, Personal Assistant automatically uses the directory that Cisco CallManager is using.

You can also use the Cisco CallManager directory as the corporate directory, but this is not required. Many installations prefer to have a corporate directory that is independent from Cisco CallManager, and Personal Assistant fully supports this separation. In fact, your corporate directory might already be integrated with Cisco CallManager. See the [“Configuring the Corporate Directory” section on page 4-18](#) for information on identifying the directory to Personal Assistant.

The Personal Assistant system configuration includes a setting for unique user name attribute. This is the name of the field within your directory that is unique for each user. Ask your directory administrator for the name of this field if you do not know it. See the [“Miscellaneous Settings” section on page A-26](#) for information on updating the Personal Assistant configuration with this information.

Related Topics

- [Installing Personal Assistant On a New System, page 2-4](#)
- [Configuring the Corporate Directory, page 4-18](#)
- [Miscellaneous Settings, page A-26](#)

Understanding the Role of Personal Assistant in the Cisco IP Telephony Network

Personal Assistant interacts with many elements in your IP telephony network. Some network elements need to be informed of Personal Assistant's presence; other elements only interact indirectly with Personal Assistant and do not require such information. You should have a fully-functional voice-over-IP network in place before installing Personal Assistant in your telephony network.

Figure 1-1 illustrates Personal Assistant's connection to the IP telephony network.

Figure 1-1 Personal Assistant in the IP Telephony Network

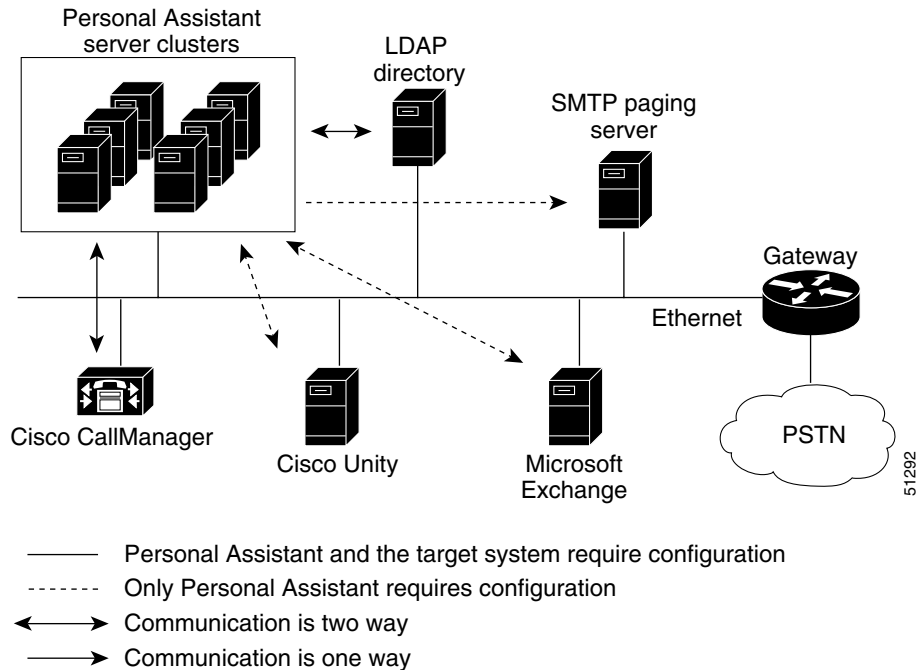


Table 1-1 further describes the components of the IP telephony network that are critical to using Personal Assistant.

Table 1-1 Software Requirements for Using Personal Assistant

System	Supported Software	Usage
Call Intercepting	Cisco CallManager 3.1 or higher	Cisco CallManager sends incoming calls to Personal Assistant for processing. Personal Assistant uses Cisco CallManager to connect Personal Assistant users to dialed numbers.
LDAP directory	LDAP-enabled directory services such as Cisco CallManager's integrated DC directory, Microsoft Active Directory, or Netscape Directory Services	The LDAP directory contains corporate and personal directories, with names, phone numbers, e-mail addresses, and so on. Personal Assistant uses the directory to look up numbers when a Personal Assistant user requests that Personal Assistant dial a number.
Voice mail	Cisco Unity 2.4.6 or higher, or Octel voice-mail systems	Personal Assistant connects users to their voice mailboxes, and sends incoming calls to voice mail when a Personal Assistant user's call routing rule indicates that a call should be directed to voice mail. With Octel systems, Personal Assistant can only redirect calls to the system. Users cannot browse Octel voice mail from within Personal Assistant.
Personal calendar	Microsoft Exchange 5.5 or higher	Personal Assistant accesses a user's Exchange calendar when evaluating a call routing rule that includes calendar-based options.
SMTP paging server	Any SMTP-compliant e-mail paging server	Personal Assistant sends e-mail pages to a Personal Assistant user when a call routing rule indicates that the user should be paged.
Web browser application	Netscape Navigator 4.5 or Internet Explorer 5.0 or higher.	To manage and use Personal Assistant, you access web-based interfaces.

Related Topics

- [Configuring Personal Assistant, page 4-1](#)
- [Configuring Cisco CallManager for Personal Assistant, page 3-1](#)

Understanding Personal Assistant and User Interactions

These sections can assist you in understanding how Personal Assistant interacts with users:

- [Understanding Interaction Terminology, page 1-11](#)
- [Understanding Incoming Call Handling, page 1-12](#)
- [Understanding Access to Personal Assistant, page 1-12](#)

Understanding Interaction Terminology

The following terms can be useful in understanding how Personal Assistant works:

- A *grammar* includes a list of words and possible sequences in which a user can state them.
- An *utterance* is a user response or command that Personal Assistant recognizes as valid.
- A *dialog* is a prompt from Personal Assistant, followed by a response from the user.
- A *session* represents any interaction with Personal Assistant or call interception by Personal Assistant. For example, a session occurs when a user uses the dial-by-name feature (interaction), or when Personal Assistant routes a call based on a user's rule (interception).

Related Topics

- [Configuring Speech Recognition, page 4-5](#)
- [Speech Services Configuration, page A-2](#)

Understanding Incoming Call Handling

The following sequence illustrates the processes involved when incoming calls arrive at extensions configured to use Personal Assistant:

1. An incoming call arrives at a Personal Assistant-enabled number.
2. Because a Personal Assistant interceptor port (CTI route point) is configured for this extension, Cisco CallManager routes the call to Personal Assistant.
3. Personal Assistant retrieves user information from the LDAP directory.
4. If the user has configured rules, the rules initiate depending on the type of destination included in the rules:
 - Calendar information—Personal Assistant accesses information from the Exchange Server.
 - An e-mail or page—Personal Assistant sends e-mail using the messaging system.
 - Phone number—Personal Assistant transfers the call through Cisco CallManager.

Related Topics

- [Understanding Access to Personal Assistant, page 1-12](#)
- [Intercepting Calls with Personal Assistant, page 1-30](#)

Understanding Access to Personal Assistant

The following sequence illustrates the processes involved when users access Personal Assistant:

1. Users dial the Personal Assistant's number (the extension of the CTI route-point configured for Personal Assistant in Cisco CallManager).
2. The call is routed to the first available media port. If no port is available, the call is rejected.
3. If a media port is available, the speech channel opens, and Personal Assistant plays a welcome prompt. Users can then dial other users by name or access voice mail.

If speech resources are not available, Personal Assistant opens a non-speech session with the user, enabling the user to use the telephone keypad for touch-tone dial-by-name.

4. If users use dial-by-name to call another user:
 - a. User states: “Call ‘John Smith’.”
 - b. The command is received and processed by the speech-recognition server.
 - c. The user name is passed to Personal Assistant, and Personal Assistant retrieves user information from the LDAP directory.
 - d. Based on the confidence level, Personal Assistant either prompts the user, or transfers the call.

Related Topics

- [Configuring Speech Recognition, page 4-5](#)
- [Understanding Incoming Call Handling, page 1-12](#)

Understanding the Personal Assistant Server and Speech-Recognition Server

Personal Assistant has a modular structure, which allows you to install various pieces of the product on different server platforms. This provides a fault-tolerant redundant structure that you need for ensuring that the Personal Assistant system is always available to your users.

These sections provide information about the Personal Assistant servers and their interactions with each other:

- [Understanding the Speech-Recognition Server, page 1-14](#)
- [Understanding the Personal Assistant Server, page 1-14](#)
- [Understanding the License and Resource Managers, page 1-15](#)
- [Understanding the Interactions of the Personal Assistant Server and Speech-Recognition Server, page 1-16](#)

Understanding the Speech-Recognition Server

If you plan to implement any of the speech-enabled features of Personal Assistant, you must install at least one speech-recognition server. During installation, you are given the option to install a speech-recognition server, and you can either install it on the same system as the Personal Assistant server or on a separate one.

The speech-recognition server prompts users and recognizes users' responses based on a pre-defined grammar, which includes a list of words and possible sequences in which a user can state them. During a call to Personal Assistant, you can ask for help and Personal Assistant will tell you the available commands. Also, the online help included with the Personal Assistant end-user interface helps define this grammar, using examples of valid prompts and responses.

For specific items, such as user names in the corporate directory, the grammar is generated and automatically compiled during the server refresh (see the [“Configuring Speech Recognition” section on page 4-5](#)). As new users are added to the directory, their names are automatically recognized after the refresh.

Related Topics

- [Configuring Speech Recognition, page 4-5](#)
- [Creating Server Clusters, page 1-18](#)

Understanding the Personal Assistant Server

The Personal Assistant server manages the interaction between the user and Personal Assistant, processes call routing and dial rules, and manages the overall configuration of the Personal Assistant system.

You must install the Personal Assistant server during installation, and you manage its functions and processes from the administrator web-based interface (see the [“Logging Into and Out of the Personal Assistant Administration Interface” section on page 4-4](#) for information about accessing the interface).

You can have more than one Personal Assistant server configured. In fact, you should do this if you want to provide failover protection (see the [“Creating Server Clusters” section on page 1-18](#) for details). When you configure multiple Personal Assistant servers, one acts as the primary server; the primary server is selected automatically based on alphabetical order.

Related Topics

- [Understanding the Interactions of the Personal Assistant Server and Speech-Recognition Server, page 1-16](#)
- [Overview of Personal Assistant Configuration, page 4-1](#)
- [Configuring Personal Assistant Servers, page 4-20](#)
- [Creating Server Clusters, page 1-18](#)

Understanding the License and Resource Managers

The license and resource managers are subcomponents of the Personal Assistant server; they are installed with it. However, they actually work in conjunction with the speech-recognition and Personal Assistant servers. Although the license manager and resource managers provide different services, they are closely linked, in that every system that functions as a license manager also functions as a resource manager.

License Manager

The license manager maintains the license for the speech-recognition software. The speech-recognition servers only work if there is at least one active license manager with a valid license. Although every Personal Assistant server includes a license manager, not every Personal Assistant server needs to have an active license manager.

You only need one license manager within a single Personal Assistant server cluster, although Cisco recommends that you define two license managers for redundancy.

Resource Manager

The resource manager manages the interaction between the Personal Assistant server cluster and the speech-recognition servers in the speech-recognition server cluster. Although every Personal Assistant server includes a resource manager, only one resource manager is used as the active connection between the Personal Assistant server cluster and the speech-recognition server cluster. Personal Assistant automatically chooses the resource manager to be used, and if that manager becomes disabled, another resource manager takes over.

Once a resource manager establishes a connection between a Personal Assistant server and an available speech-recognition server for a particular call, the Personal Assistant server and speech-recognition server interact directly for the duration of that call. The resource manager is not a permanent communication link between the servers.

The resource manager does not manage communication between Personal Assistant servers; Personal Assistant servers communicate directly.

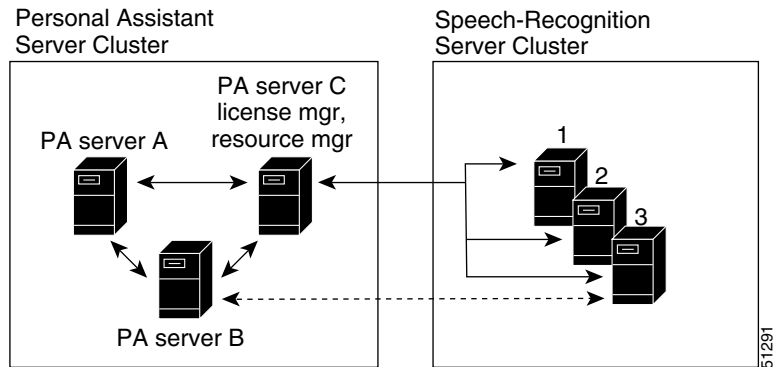
Related Topics

- [Understanding the Interactions of the Personal Assistant Server and Speech-Recognition Server, page 1-16](#)
- [Creating Server Clusters, page 1-18](#)
- [Configuring Speech Recognition, page 4-5](#)

Understanding the Interactions of the Personal Assistant Server and Speech-Recognition Server

Personal Assistant separates the speech-recognition functions from call routing and other basic functions of the Personal Assistant server. Because these functions are separate, you must configure the interaction between the cluster of Personal Assistant servers and the cluster of speech-recognition servers. This section describes how the clusters interact, and what you need to do to enable the interaction.

[Figure 1-2](#) illustrates the Personal Assistant server structure. The dotted line between Personal Assistant server B and speech-recognition server 3 illustrates the direct interaction between these servers after the connection is established through the resource manager on Personal Assistant server C.

Figure 1-2 Personal Assistant Server Structure

This illustration assumes that you are installing Personal Assistant servers and speech-recognition servers on separate platforms. However, you can install the Personal Assistant servers and speech-recognition servers on the same platform. When installed on the same platform, the servers still establish communications through a resource manager, even if the resource manager is on the same system. In fact, you could create a redundant Personal Assistant speech cluster with two systems, each running a Personal Assistant server, license manager, and speech-recognition server. Logically, this minimal cluster looks the same as the one illustrated in [Figure 1-2](#).

To enable the interaction between the Personal Assistant servers and speech-recognition servers, you must identify the license managers to a Personal Assistant server. See the “[Configuring Speech Recognition](#)” section on page 4-5 for information on how to do this.

Related Topics

- [Understanding the Personal Assistant Server and Speech-Recognition Server, page 1-13](#)
- [Configuring Speech Recognition, page 4-5](#)
- [Configuring Personal Assistant Servers, page 4-20](#)

Creating Server Clusters

Personal Assistant servers and speech-recognition servers work together in server clusters. This makes it possible to share the load among servers, and to set up failover relationships so that if a server becomes disabled, another server can take over with minimal interruption for your users.

To set up the server clusters, you must:

1. Determine your server and speech-recognition requirements and install the Personal Assistant server and speech-recognition software on an appropriate number of servers.

The number of servers required is based on the number of sessions each server supports, the number of users you are supporting, and how many users you are willing to support per session.

It is also affected by the number of Cisco CallManager clusters you have, and the distribution of WAN connections between them.

2. Configure the Personal Assistant servers.

During server configuration, you can configure the Personal Assistant servers either to balance the call load among themselves or to support failover. If you use failover, you need more servers than you would otherwise need for a given number of media ports.

3. Configure the speech-recognition servers.

You must also identify at least one license manager for the speech software. The speech software requires an active, valid license be available at all times for it to work. See the [“Configuring Speech Recognition” section on page 4-5](#) for information about adding speech-recognition servers to the server cluster.

See these topics for detailed discussions on determining the number of Personal Assistant servers required, how to use load balancing, and how failover affects your calculations:

- [Determining the Required Number of Personal Assistant Servers and Speech-Recognition Servers, page 1-19](#)
- [Setting Up Personal Assistant Server Load Balancing, page 1-23](#)
- [Creating a Personal Assistant Server Cluster With Failover, page 1-26](#)
- [Supporting Multiple Cisco CallManager Clusters, page 1-29](#)

Determining the Required Number of Personal Assistant Servers and Speech-Recognition Servers

The quantity of servers you install should be adequate to support the number of sessions defined in the Personal Assistant server cluster (that is, the sum of sessions on all active Personal Assistant servers in the cluster).

The number of Personal Assistant servers and speech-recognition servers that are required in your clusters depends on several factors:

- The number of concurrent calls to Personal Assistant that you need to support. For example, a sales and marketing organization that is very telephone-dependent would probably need more servers than an engineering group that uses the telephone less frequently.

When considering this, you should make separate calculations of the number of simultaneous sessions with Personal Assistant and the number of simultaneous sessions with the speech-recognition server. For example:

- Call-interception sessions—how many users are likely to set up rules to enable Personal Assistant to intercept calls for them.
- Speech-recognition sessions—how many users are going to be accessing voice mail and dialing other users by name.
- The server model you are using. A more powerful server can support more concurrent calls than a less powerful server.
- Whether you are running the Personal Assistant servers and speech-recognition servers on the same system. Running both servers on a single system reduces the number of concurrent calls the server can support.
- Whether you are enabling automatic failover for Personal Assistant server redundancy. Failover ensures that if a server goes down, another server takes over the failed server's responsibilities. If you configure failover, you should only enable half of the ports that would otherwise be supported on a server.
- The number of Cisco CallManager clusters in your network, and the distribution of WAN links between them. See the [“Supporting Multiple Cisco CallManager Clusters” section on page 1-29](#) section for information on how these considerations affect the number of servers you should install.

Because you can easily add and remove servers from a cluster, you do not have to be precise on your first estimate. As users become familiar with Personal Assistant, and their use of Personal Assistant increases, you can add servers to accommodate the increased usage.

Related Topics

- [Understanding the Personal Assistant Server and Speech-Recognition Server, page 1-13](#)
- [Configuring Personal Assistant Servers, page 4-20](#)
- [Configuring Speech Recognition, page 4-5](#)
- [Understanding the Estimated Number of Simultaneous Sessions, page 1-20](#)
- [Using the Session Estimates in Your Planning, page 1-22](#)

Understanding the Estimated Number of Simultaneous Sessions

[Table 1-2](#) explains the estimated number of simultaneous sessions supported on each server platform, based on server model and session type. Depending on your particular system usage, though, these values can vary considerably. Use the information in [Table 1-2](#) as a starting point to estimate your server needs.



Note

See the *Release Notes for Personal Assistant* for the most up-to-date information concerning session support information. Use [Table 1-2](#) and subsequent examples as a starting point for your planning, but use figures from the release notes for your final calculations.

Table 1-2 Estimated Number of Simultaneous Sessions

Server Installation	MCS-7825-800		MCS-7835-1000	
	Interceptor Ports ¹	Media Ports ²	Interceptor Ports ¹	Media Ports ²
Personal Assistant server and speech-recognition server installed on <i>different</i> systems	50 sessions	24 sessions	70 sessions	36 sessions ³
Personal-Assistant server and speech-recognition server installed on the <i>same</i> system	22 sessions	20 sessions ³	30 sessions	24 sessions

1. Cisco suggests that you estimate approximately 25 users per session using interceptor ports.
2. Cisco suggests that you estimate approximately 50 users per session using media ports.
3. These estimates represent the system capacities and might not necessarily reflect the number of licenses you have purchased.

When evaluating the information in [Table 1-2](#), keep in mind that:

- Media port sessions indicate how many simultaneous sessions use speech-recognition features such as dialing by name, browsing voice mail, and initiating conference calls. In these sessions, users are directly interacting with Personal Assistant.
- Interceptor port sessions indicate how many simultaneous sessions involve Personal Assistant intercepting incoming calls for users. In these sessions, once users have configured their dial rules, they do not directly interact with Personal Assistant. Personal Assistant seamlessly routes the incoming calls based on the dial rules.
- As an initial guideline, Cisco suggests that you estimate approximately 25 users per call interception session, and approximately 50 users per speech-recognition session.

Related Topics

- [Understanding the Personal Assistant Server and Speech-Recognition Server, page 1-13](#)
- [Configuring Personal Assistant Servers, page 4-20](#)
- [Configuring Speech Recognition, page 4-5](#)
- [Using the Session Estimates in Your Planning, page 1-22](#)

Using the Session Estimates in Your Planning

To estimate how many ports you need to support your users, consider the following example:

1. Determine the number of users, for example 1750.
2. Choose a server, for example the MCS-7835-1000.
3. Determine how to install the Personal Assistant components, for example, whether you want the Personal Assistant server and speech-recognition servers on separate systems.
4. Determine how many sessions you must support for your users:
 - 1750 users divided by 25: 70 call-interception sessions
 - 1750 users divided by 50: 35 speech-recognition sessions

You need enough servers to support at least this number of sessions. When you configure the servers, you specify the actual number of ports in use, so if you intend to use fewer than the maximum, take this into consideration when determining the number of servers that you need.

5. Use the information in [Table 1-2](#) to determine that if you install the Personal Assistant server and the speech-recognition server on separate MCS-7835-1000 systems (for a total of two systems) you can support:
 - 70 call-interception sessions
 - 36 speech-recognition sessions

Therefore, you can support 1750 users using two MCS-7835-1000 systems: one system for the Personal Assistant server and one system for the speech-recognition server.

6. Be sure to add the servers using the Personal Assistant administrative interface:
 - Add the speech-recognition servers to the System Configuration settings. See the [“Configuring Speech Recognition”](#) section on page 4-5.
 - Add the Personal Assistant servers to the Server Configuration settings. See [“Configuring Personal Assistant Servers”](#) section on page 4-20.

7. You also must add the number of supported ports using the Personal Assistant administrative interface:
 - Add the supported number of media ports in the Server Configuration settings. See [“Configuring Personal Assistant Servers” section on page 4-20](#). Although your selected server configuration supports up to 36 ports, you only need 35 ports for your users; enter 35.
 - Add the interceptor port addresses in Server Configuration settings. See [“Configuring Personal Assistant Servers” section on page 4-20](#). In this setting, enter the interceptor ports that cover all 1750 users. Although your configuration supports 70 simultaneous sessions, the interceptor ports must cover all users you are supporting.
8. Consider configuring load balancing (see [“Setting Up Personal Assistant Server Load Balancing” section on page 1-23](#)) or adding failover servers (see [“Creating a Personal Assistant Server Cluster With Failover” section on page 1-26](#)) for greater redundancy. If you have more than one Cisco CallManager cluster, see the [“Supporting Multiple Cisco CallManager Clusters” section on page 1-29](#).

Related Topics

- [Understanding the Estimated Number of Simultaneous Sessions, page 1-20](#)
- [Understanding the Personal Assistant Server and Speech-Recognition Server, page 1-13](#)
- [Configuring Personal Assistant Servers, page 4-20](#)
- [Configuring Speech Recognition, page 4-5](#)

Setting Up Personal Assistant Server Load Balancing

A single Personal Assistant server can handle a number of simultaneous sessions, which you define when you set the number of media ports (see the [“Server Configuration” section on page A-31](#)). When all media ports are being used, new callers receive a busy signal from Personal Assistant unless you set up load balancing among the Personal Assistant servers in each Personal Assistant server cluster.

If you are not using failover servers, if a Personal Assistant server becomes disabled, no other server takes over the disabled server's media ports. This reduces the number of available simultaneous sessions with Personal Assistant. However, you can set up load balancing in the cluster to mitigate the effects of a disabled server.

To create a simple Personal Assistant server cluster, do not specify failover servers in the server configurations when you configure each server through the Personal Assistant administration interface. (See the [“Configuring Personal Assistant Servers”](#) section on page 4-20 for information on configuring the Personal Assistant servers into a cluster, and the [“Server Configuration”](#) section on page A-31 for reference information on the server configuration settings.)

These topics describe how to configure load balancing:

- [Configuring Load Balancing, page 1-24](#)
- [Understanding Load Balancing's Effect on Users Accessing Personal Assistant, page 1-25](#)
- [Understanding Load Balancing's Effect on Rule-Based Call Routing, page 1-26](#)

Configuring Load Balancing

Personal Assistant load balancing is based on the “call forward busy” and “call forward no answer” numbers assigned to each Personal Assistant server's telephone number (CTI route point). If you configure these settings correctly in Cisco CallManager, the Personal Assistant servers in the cluster can answer calls for busy servers without the knowledge of your users.

If you create a chain of servers, your users will only need one telephone number to reach Personal Assistant. This can make it easier for your users to use Personal Assistant.

[Table 1-3](#) shows an example setup in which three Personal Assistant servers are chained so that they share the call load. In this example, users have been told to call extension 5600 to reach Personal Assistant. If Personal Assistant Server 1 has an available media port, it handles an incoming call. If it does not have an available media port, the call is forwarded to 5700 (Personal Assistant Server 2). If Personal Assistant Server 2 has an available media port, it handles the call; otherwise, the call is forwarded to 5800 (Personal Assistant Server 3). If Personal

Assistant Server 3 does not have an available media port, the call is forwarded to 5600 (Personal Assistant Server 1). Users can also reach Personal Assistant by calling Personal Assistant Server 2 or 3 directly.

Table 1-3 Personal Assistant Server Load Balancing

Cisco CallManager Setting	Personal Assistant Server 1	Personal Assistant Server 2	Personal Assistant Server 3
CTI route point (telephone number)	5600	5700	5800
call forward busy	5700	5800	5600
call forward no answer	5700	5800	5600

Related Topics

- [Understanding Load Balancing’s Effect on Users Accessing Personal Assistant, page 1-25](#)
- [Understanding Load Balancing’s Effect on Rule-Based Call Routing, page 1-26](#)
- [Determining the Required Number of Personal Assistant Servers and Speech-Recognition Servers, page 1-19](#)
- [Configuring Personal Assistant Servers, page 4-20](#)

Understanding Load Balancing’s Effect on Users Accessing Personal Assistant

If you are using load balancing without a failover server, if a Personal Assistant server becomes disabled, all calls that the server is currently handling are cut off. However, if Personal Assistant has already completed its role in the call process (for example, transferred a call based on call-routing rules), the call remains in progress. Subsequent calls to the disabled server are forwarded to another server based on the “call forward no answer number” configured in Cisco CallManager. However, the number of available simultaneous sessions is reduced because the active server must support the sessions from the disabled server in addition to its normal load.

Related Topics

- [Configuring Load Balancing, page 1-24](#)
- [Determining the Required Number of Personal Assistant Servers and Speech-Recognition Servers, page 1-19](#)
- [Configuring Personal Assistant Servers, page 4-20](#)

Understanding Load Balancing's Effect on Rule-Based Call Routing

If you are not using failover servers, and a Personal Assistant server becomes disabled, the interceptor port's route points registered with that particular server are unavailable. Because the remaining servers were not configured as failover servers, these interceptor ports cannot re-register with these servers. Instead, Personal Assistant cannot intercept calls for these extensions. Thus, all rule-based call routing for the affected users will be unavailable and all calls will ring directly through to the users' extensions.

Related Topics

- [Configuring Load Balancing, page 1-24](#)
- [Determining the Required Number of Personal Assistant Servers and Speech-Recognition Servers, page 1-19](#)
- [Configuring Personal Assistant Servers, page 4-20](#)

Creating a Personal Assistant Server Cluster With Failover

If load balancing, as explained in the [“Setting Up Personal Assistant Server Load Balancing” section on page 1-23](#), does not provide you with sufficient redundancy, you can configure failover servers in the Personal Assistant cluster.

If you are using failover and a Personal Assistant server becomes disabled, the failover server takes control of the media ports and interceptor ports that were configured on the disabled server. For example, if you configured 15 media ports on the disabled server, the failover server would add 15 media ports to its configuration. Thus, if you use failover servers, you must have twice as many servers for a given number of media ports as would be required if you were not using failover servers.

Although the failover server takes on the media and interceptor ports of the disabled server, it cannot take over active calls. Any active calls on the disabled server are dropped. However, if Personal Assistant has completed its role in the call process (for example, it had transferred a call based on call-routing rules), the call remains in progress.

In addition to taking over the disabled server's ports, the failover server registers itself with Cisco CallManager as the disabled server's CTI route point.

When the disabled server becomes active again, it asks the failover server to return its ports. The failover server returns the ports as they become available; no active calls are dropped. When the reactivated server regains all media ports, it reregisters itself as the CTI route point with Cisco CallManager.

There are two main techniques for setting up failover servers:

- [Using Active Personal Assistant Servers for Failover, page 1-27](#)
- [Using Spare Personal Assistant Servers for Failover, page 1-28](#)

Using Active Personal Assistant Servers for Failover

When you use an active Personal Assistant server as a failover server, the server works as a regular Personal Assistant server managing calls with users. The server is not idle.

However, if the primary server becomes disabled, the failover server must be able to handle the media and interceptor ports of the disabled server, as well as its own. Thus, you must have sufficient capacity on the failover server to accommodate the ports defined on the disabled server.

For example, if you are using two MCS-7835-1000 Personal Assistant servers, each server supports a maximum of 36 media ports (see [Table 1-2](#)). If you use the servers as failover servers for each other, you must reduce the media ports on each server to no more than 18. So, if server A goes down, server B will take over server A's 18 ports, and server B will temporarily run with 36 ports (its original 18 plus server A's 18).

If you defined more than 18 media ports on server A and server B, the servers will not be able to take on the full load of the other server if it becomes disabled. For example, if you define 18 ports on server A and 24 on server B, and server A fails, Personal Assistant assigns 42 ports to B. If the simultaneous call load exceeded 36, calls would be dropped (because each server supports a maximum of 36 media ports) and the quality of service experienced by your users would deteriorate.

In general, if you use active Personal Assistant servers as failovers, you should divide the ports per server in half, and double the number of Personal Assistant servers in the cluster.

Although you can assign more than one Personal Assistant server to handle failover for any given server (for example, server A could use server B and server C as failovers), only one server is actually used if a server becomes disabled. The disabled server's ports are not distributed among the designated failover servers.

Related Topics

- [Configuring Personal Assistant Servers, page 4-20](#)
- [Server Configuration, page A-31](#)

Using Spare Personal Assistant Servers for Failover

When you use a spare Personal Assistant server as a failover server, it sits idle unless an active server becomes disabled.

To create a spare server, do not define a CTI route point in Cisco CallManager for that server. When an active server becomes disabled, the spare server registers itself with Cisco CallManager as the CTI route point, in place of the disabled server.

When adding a spare server to a Personal Assistant server cluster, do not define any media ports or interceptor ports (see the [“Server Configuration” section on page A-31](#)). This prevents the server from being used for anything except failover.

Because a spare failover server does not have any active ports, it can take over for a fully-loaded Personal Assistant server. For example, if you are using MCS-7835-1000 systems for your active and spare servers, you can configure 36 media ports on the active server. If the active server becomes disabled, the spare will be able to take over the 36 media ports.

Because servers should become disabled infrequently, you can have fewer failover servers than you have active servers. For example, you might define two failover servers for six active servers. The ratio you use depends on your network reliability and uptime service level agreements. The key is that a failover server must be able to take over all the media ports you define on an active server.

Related Topics

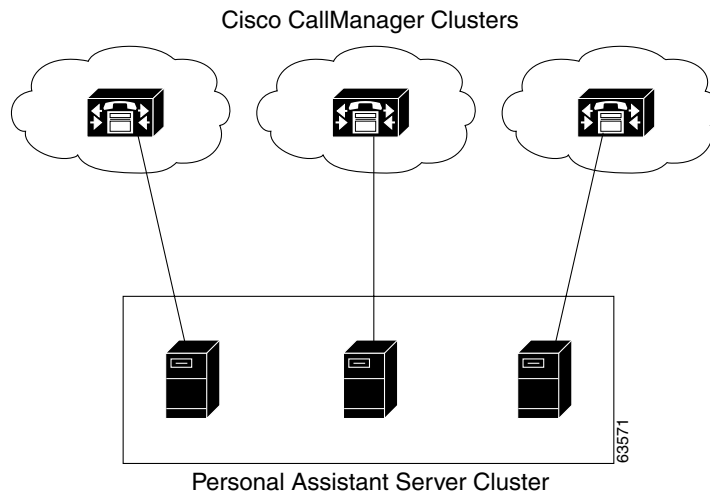
- [Configuring Personal Assistant Servers, page 4-20](#)
- [Server Configuration, page A-31](#)

Supporting Multiple Cisco CallManager Clusters

You can support multiple Cisco CallManager clusters with a single Personal Assistant server cluster. This can simplify the management of the Personal Assistant system. However, it might be more efficient to have separate Personal Assistant server clusters for some Cisco CallManager clusters, depending on the distribution of the clusters in relationship to WAN links.

[Figure 1-3](#) shows the relationship between the Personal Assistant servers in a cluster to multiple Cisco CallManager clusters.

Figure 1-3 Multiple Cisco CallManager Clusters



A Personal Assistant server “homes” to the cluster where its route points are defined. You should have at least one Personal Assistant server per Cisco CallManager cluster. When you create telephony providers for a Personal Assistant server (see [Configuring Telephony Providers, page 4-8](#)), you must create them for the cluster to which the server homes. However, you can create

telephony providers for any number of Cisco CallManager clusters within the Personal Assistant server cluster—thus, one Personal Assistant server cluster can support several Cisco CallManager clusters.

The location of Cisco CallManager clusters in relationship to WAN links should alter how you deploy Personal Assistant. If you have separate Cisco CallManager clusters on each side of a WAN link, it is also best for network performance to create separate Personal Assistant server clusters on each side of the WAN link.

In general, Cisco makes these recommendations for networks that have more than one Cisco CallManager cluster:

- Install at least one Personal Assistant server per Cisco CallManager cluster.
- When defining load balancing (see the [“Configuring Load Balancing” section on page 1-24](#)), use Personal Assistant servers that home to the same Cisco CallManager cluster. If this is not desirable, at least ensure that the servers used are on the same side of any WAN links.
- Likewise, when setting up failover servers (see the [“Setting Up Personal Assistant Server Load Balancing” section on page 1-23](#)), use Personal Assistant servers that home to the same Cisco CallManager cluster, or at least ensure that the servers used are on the same side of any WAN links.
- Have separate Personal Assistant server clusters on each side of WAN links that also have separate Cisco CallManager clusters.

Intercepting Calls with Personal Assistant

Personal Assistant interacts with Cisco CallManager to intercept incoming calls to users’ extensions. By intercepting these calls, Personal Assistant can redirect them based on user’s rules. For example, a user can configure a rule that instructs Personal Assistant to send all incoming calls to voice mail.

Although Cisco CallManager does not require that you set up partitions, you must create partitions if you install Personal Assistant and want to enable rule-based call routing and allow Personal Assistant to intercept users’ calls.

If you are not yet using these partitions and calling search spaces in Cisco CallManager, the following examples provide tips on setting them up with the minimum amount of effort. If you do not want to set up and configure partitions, and calling search spaces, Personal Assistant cannot intercept users’

calls. You can, however, still use the speech features provided by Personal Assistant, such as dial-by-name and speech-enabled voice-mail access (see the [“Understanding the Speech-Recognition Server”](#) section on page 1-14).

These sections provide examples of using partitions and calling search space in your IP telephony network before and after adding Personal Assistant:

- [Using Partitions and Calling Search Spaces Without Personal Assistant, page 1-31](#)
- [Defining Partitions and Call Search Spaces for Personal Assistant, page 1-33](#)

Using Partitions and Calling Search Spaces Without Personal Assistant

To illustrate partitions and calling search spaces, consider this simple example in which partitions and calling search spaces are used without Personal Assistant:

1. First, create partitions to support lobby phones, employee phones, and all calls destined for the PSTN.

Partition Name	Designated Devices Assigned to Partition
Lobby	All lobby phones
Employee	All employee IP phones
PSTN	All externally destined route patterns (local PSTN)

2. Next, create the calling search spaces and assign partitions to them, providing different services. For example, you do not want to allow external calls from the lobby phones, so you limit the `cssLobby` calling search space to include only the Employee and Lobby partitions.

Intercepting Calls with Personal Assistant

Calling Search Space	Partitions	Assigned To
cssLobby	Employee Lobby	Devices (such as lobby IP phones) that can dial internal numbers and access Personal Assistant.
cssEmp	Lobby Employee PSTN	Devices (such as employee IP phones) that can dial internal and external numbers and access Personal Assistant.
cssGW	Lobby Employee	PSTN voice gateway used for outside callers to access lobby phones, employees, and Personal Assistant.

- Assign these partitions and calling search spaces to individual's extensions.

Cisco CallManager Setting	User A	User B	User C	User D
Telephone extension	1006	1005	1200	5555
Partition	Employee	Employee	Lobby	PSTN
Calling search space	cssEmp	cssEmp	cssLobby	cssGW

- Finally, put all this information together to understand what happens when the users attempt to call each other.

When 1200 dials 1006, Cisco CallManager looks in the cssLobby calling search space, which includes both the Employee and Lobby partitions, so, the call goes through successfully.

However, if 1200 dials 5555, the call is not completed, because 5555 exists in the PSTN partition, and cssLobby does not include the PSTN partition. Effectively, this means that people using the lobby telephone cannot make outside calls.

On the other hand, 5555 can dial 1200, because its CSS (cssGW) includes the partition for 1200 (Lobby).

To understand how Personal Assistant uses partitions and call search spaces to intercept a user's calls, see the [“Defining Partitions and Call Search Spaces for Personal Assistant”](#) section on page 1-33.

Related Topics

- [Understanding Partitions and Calling Search Spaces, page 1-6](#)
- [Setting Up Cisco IP Phone Route Plans, page 3-2](#)

Defining Partitions and Call Search Spaces for Personal Assistant

You need to update partitions and calling search spaces in Cisco CallManager to support Personal Assistant. If you are already using these features, you simply need to update your existing settings and add ones specific to Personal Assistant. If you are not currently using these features in Cisco CallManager, you must add a minimal set to enable Personal Assistant to intercept calls.

These sections provide examples of using partitions and calling search spaces with Personal Assistant:

- [Adding Personal Assistant to Existing Partitions, page 1-33](#)
- [Adding Personal Assistant without Previously Defined Partitions, page 1-36](#)

Adding Personal Assistant to Existing Partitions

To understand how Personal Assistant uses partitions and calling search spaces, recall that in the previous example ([Using Partitions and Calling Search Spaces Without Personal Assistant, page 1-31](#)) we had configured partitions (Employee, Lobby, and PSTN) and calling search spaces (cssLobby, cssEmp, and cssGW). To add Personal Assistant to this scenario, you must do the following:

1. Create a Personal Assistant partition, such as **PA**, and a Personal Assistant managed phones partition, such as **PAManagedEmployee**.
2. Add the PA partition to the cssLobby, cssEmp, and cssGW calling search spaces. Be sure to add the PA partition to the top of the list to force Cisco CallManager to search the PA partition first.
3. Create the calling search space for Personal Assistant, such as **cssPA**.

Calling Search Space	Partitions	Assigned To
cssLobby	PA Employee Lobby	Devices (such as lobby IP phones) that can dial internal numbers and access Personal Assistant.
cssEmp	PA Lobby Employee PSTN	Devices (such as employee IP phones) that can dial internal and external numbers and access Personal Assistant.
cssGW	PA Lobby Employee	PSTN voice gateway used for outside callers to access lobby phones, employees, and Personal Assistant.
cssPA	PAManagedEmployee Lobby Employee PSTN	Devices that interact directly with the Personal Assistant server.

4. Using the example from the [“Using Partitions and Calling Search Spaces Without Personal Assistant”](#) section on page 1-31, add the following to Cisco CallManager:
 - CTI route point (to access Personal Assistant)
 - Media ports (to support Personal Assistant sessions)
 - Interceptor ports (to intercept incoming calls)
 - Change User B’s partition to PAManagedEmployee (see the [“Understanding Why You Need a Partition for Personal Assistant Managed Phones”](#) section on page 1-38 for a complete explanation why you need another partition for managed phones).

Cisco CallManager Setting	User A	User B	CTI Route Point	Media Port	Interceptor Port	
					Route Point	Translation Pattern
Telephone extension	1006	1005	4000	5001	1XXX	1XXX
Partition	Employee	PAManaged-Employee	Employee	Employee	PA	Employee
Calling search space	cssEmp	cssEmp	cssPA	cssPA	cssPA	cssPA

5. With Personal Assistant now added to this example, you can understand how users' calls are intercepted.

User A calls User B. Cisco CallManager recognizes that User B has cssEmp as its calling search space, which includes the PA partition, indicating that Cisco CallManager should send the call to Personal Assistant. Therefore, Cisco CallManager routes the call to Personal Assistant.

When Personal Assistant intercepts the call to User B (1005), it processes User B's call routing rules and applies whatever rule is appropriate. If no rule applies, or if the rule instructs Personal Assistant to transfer User B's calls to User A's telephone, Personal Assistant transfers the call to 1006.

If the call is transferred from User B (1005) to User A (1006), Personal Assistant does not intercept the transferred call because the interceptor port's route point for extension 1005 has a calling search space of cssPA, which does not contain the PA partition. Instead, Cisco CallManager routes the call directly to User A's phone without applying any rules. The exception to this is if the two users are in different Cisco CallManager clusters (see the [“Understanding Cisco CallManager Clusters”](#) section on page 1-6 for details.

Related Topics

- [Understanding Partitions and Calling Search Spaces, page 1-6](#)
- [Understanding Cisco CallManager Clusters, page 1-6](#)
- [Defining Partitions and Call Search Spaces for Personal Assistant, page 1-33](#)
- [Understanding Why You Need a Partition for Personal Assistant Managed Phones, page 1-38](#)
- [Setting Up Personal Assistant to Intercept Calls, page 3-5](#)

Adding Personal Assistant without Previously Defined Partitions

If you are not already using partitions, then you must create a minimal set in order to implement rule-based call routing using Personal Assistant.

Although you have not yet created any partitions or calling search spaces specific to your needs, all your IP phones currently exist in the none partition by default in Cisco CallManager. Because the none partition exists in all calling search spaces, you can selectively enable Personal Assistant for different extensions. If Personal Assistant is not intercepting the dialed number, Cisco CallManager will find the number in the none partition, and ring the appropriate telephone.

You can selectively support Personal Assistant depending on how you assign the partitions and calling search spaces. Consider this example:

1. First, create at least two partitions:
 - AllPhones (for phones, including employees, lobby, PSTN)
 - PA (for Personal Assistant)
 - PAManagedEmployee (for phones managed by Personal Assistant)
2. Next, create at least two calling search spaces:
 - cssPA—Add the PAManagedEmployee and AllPhones partition to it.
 - cssPhones—Add the PA and AllPhones partitions to it.
3. Then add the following to Cisco CallManager:
 - CTI route point (to access Personal Assistant)
 - Media ports (to support Personal Assistant sessions)
 - Route points and translation patterns for use as interceptor ports (to intercept incoming calls)

4. Update each IP phone extension that you want managed with the new PAManagedEmployee partition and the cssPhones calling search space.

If you do not want to enable Personal Assistant on a particular phone (such as a lobby phone), you can leave the extension assigned to the none partition, but you must update the calling search space. You could also assign the phone to the AllPhones partition.

If you need to update hundreds or thousands of users' extensions, consider using the Cisco CallManager Bulk Administration Tool (BAT).

Cisco CallManager Setting	User A	User C	CTI Route Point	Media Port	Interceptor Port	
					Route Point	Translation Pattern
Telephone extension	1006	1200	4000	5001	1XXX	1XXX
Partition	PAManaged-Employee	none	AllPhones	AllPhones	PA	AllPhones
Calling search space	cssPhones	cssPhones	cssPA	cssPA	cssPA	cssPA

5. It is important to understand how these changes affect User A and User C.

In this example, we have reconfigured User A's phone (1006) to use Personal Assistant by adding it to the PAManagedEmployee partition. We have also left User C's phone (1200) in the none partition. Finally, we have updated everyone's calling search space to search the Personal Assistant partition (PA).

These changes enable User A's call routing rules to be applied to all incoming calls. To complete the configuration, we have created the 1XXX interceptor port in the PA partition and its associated translation pattern in the AllPhones partition, so that Personal Assistant will intercept calls to 1006.

Now, when 1200 dials 1006, Cisco CallManager searches the Personal Assistant partition, and finds that it belongs to the Personal Assistant server. Personal Assistant receives the call, processes the user's rules and, if appropriate, rings the real 1006 extension.

Conversely, if 1006 dials 1200, Cisco CallManager searches the Personal Assistant partition and finds 1XXX, which matches, but because the match uses wildcards, Cisco CallManager continues and searches the none partition, where it finds 1200, and rings User C's telephone. Cisco CallManager gives priority to exact matches.

Related Topics

- [Understanding Partitions and Calling Search Spaces, page 1-6](#)
- [Understanding Cisco CallManager Clusters, page 1-6](#)
- [Defining Partitions and Call Search Spaces for Personal Assistant, page 1-33](#)
- [Understanding Why You Need a Partition for Personal Assistant Managed Phones, page 1-38](#)
- [Setting Up Personal Assistant to Intercept Calls, page 3-5](#)

Understanding Why You Need a Partition for Personal Assistant Managed Phones

When you create the partitions needed for Personal Assistant, you create a partition that will contain the phones that Personal Assistant will manage (in our examples, this partition is PAManagedEmployees). You also create a partition that will contain the interceptor port route points (in our examples, PA). This topic explains why you need both partitions.

Recall how Cisco CallManager routes calls:

1. Cisco CallManager identifies the calling search space assigned to the extension from which the call is made. For example, if extension 1005 calls 1006, the calling search space (such as cssEmployee) for extension 1005 is used.
2. Cisco CallManager tries to find the best match for the called extension, searching top to bottom in the list of partitions contained in the calling search space. If the first match uses wildcards (for example, 1XXX), subsequent partitions are searched to find an exact match (for example, 1006). If an exact match is found, it is used, even if a wildcard match exists in a partition higher in the list of partitions in the calling search space.

Because you are typically going to use wildcards when you create interceptor port route addresses, you must prevent Cisco CallManager from finding exact matches to use in place of the interceptor addresses.

Consider an example:

- The PA partition includes 1XXX as the interceptor route points.
- The Employee partition includes extensions 1005 and 1006.
- The cssEmployee calling search space includes PA, Employee, in that order.
- Extensions 1005 and 1006 use the cssEmployee calling search space.

Now, when 1005 calls 1006, Cisco CallManager first checks the PA partition, and finds a match: 1XXX. However, because this match uses wildcards, the search continues to the Employee partition, where an exact match, 1006, is found. Cisco CallManager then routes the call to 1006 found in the Employee partition. Thus, Personal Assistant fails to intercept the call, and cannot manage calls to extension 1006.

Now, reconfigure the example to use the PAManagedEmployee partition:

- The PA partition includes 1XXX as the interceptor route points.
- The Employee partition includes extension 1005.
- The PAManagedEmployee partition includes extension 1006.
- The cssEmployee calling search space includes PA, Employee, in that order.
- Extensions 1005 and 1006 use the cssEmployee calling search space.

Again in this example, when 1005 calls 1006, Cisco CallManager first checks the PA partition, and finds a match: 1XXX. Again, because this match uses wildcards, the search continues to the Employee partition, but this time, an exact match is not found because 1006 is no longer in the Employee partition.

Cisco CallManager must route the call based on the 1XXX route point found in the PA partition. Thus, Personal Assistant intercepts the call, and applies extension 1006's call routing rules to it.

If the Personal Assistant server is not available for some reason, Cisco CallManager will use the translation patterns you create for the interceptor addresses to successfully route calls between the Employee and PAManagedEmployee partitions.

Customizing Implementation of Personal Assistant

Personal Assistant provides users with the ability to access their voice mail, to call other users using speech commands, and to configure rules for handling incoming calls. If you choose not to use some of these features, the following sections can assist you in determining what you need to do:

- [Using Personal Assistant Without Speech Recognition, page 1-40](#)
- [Using Personal Assistant without Rule-Based Call Routing, page 1-40](#)

Using Personal Assistant Without Speech Recognition

You can use Personal Assistant without using the speech-recognition capability. Without speech recognition, your users can only interact with Personal Assistant using the touch-tone interface. Thus, instead of talking to Personal Assistant, the user must learn the key sequences required to navigate through voice mail, and they must spell out names using the keypad.

If you do not want to use speech recognition, do not install speech-recognition servers.

Related Topics

- [Understanding Personal Assistant, page 1-2](#)
- [Understanding the Personal Assistant Server and Speech-Recognition Server, page 1-13](#)

Using Personal Assistant without Rule-Based Call Routing

If you do not allow Personal Assistant to intercept incoming calls, you can use Personal Assistant without rule-based call routing. Without rule-based call routing, your users cannot have Personal Assistant intercept and handle their incoming calls.

If you do not want to use rule-based call routing, do not configure partitions and calling search spaces in Cisco CallManager. You also do not need to configure intercept ports. However, if you use speech recognition, you must configure the CTI route point and media ports in Cisco CallManager.

Related Topics

- [Understanding Personal Assistant, page 1-2](#)
- [Intercepting Calls with Personal Assistant, page 1-30](#)



Installing Personal Assistant

Before installing Personal Assistant, review the planning information in [Chapter 1, “Planning for Personal Assistant.”](#) You must have a clear understanding of how many users you need to support and the best configuration of the Personal Assistant components for your requirements. You need this information to make decisions during the installation process.

After installing Personal Assistant, you must configure Cisco CallManager and Personal Assistant; proceed with [Chapter 3, “Configuring Cisco CallManager for Personal Assistant”](#) and [Chapter 4, “Configuring Personal Assistant.”](#)

These topics cover the hardware and software requirements and installation instructions for Personal Assistant.

- [Installation Overview, page 2-2](#)
- [Hardware and Software Prerequisites, page 2-2](#)
- [Installing Personal Assistant On a New System, page 2-4](#)
- [Upgrading From a Previous Version of Personal Assistant, page 2-6](#)

Installation Overview

Personal Assistant consists of three components that you can install separately or together on one system. The pieces are: the Personal Assistant web interfaces for end users and administrators; the Personal Assistant server; and the speech recognition server. Refer to [Chapter 1, “Planning for Personal Assistant”](#) for tips on choosing where to install the components to address your specific needs.

Although some Personal Assistant settings are configured during installation, most of the configuration must be done after installation through the Personal Assistant administration interface.

To install Personal Assistant, you must complete these tasks:

1. Install the Personal Assistant server, speech recognition server, and user and administrative interfaces. See the [“Installing Personal Assistant On a New System”](#) section on page 2-4 for details.
2. Configure Cisco CallManager. See the [“Configuring Cisco CallManager for Personal Assistant”](#) section on page 3-1 for details.
3. Configure Personal Assistant. See the [“Configuring Personal Assistant”](#) section on page 4-1 for details.

Hardware and Software Prerequisites

Personal Assistant requires specific hardware and software to run properly. See [Table 1-1 on page 1-10](#) for a detailed description of all required software components and their purposes.

At a minimum, you must have Cisco CallManager 3.1 or later running in your network (on a separate system); have access to Microsoft Internet Explorer 5.0 or Netscape Navigator 4.5 or higher; and have a corporate directory using either the integrated DC directory in Cisco CallManager or other LDAP-enabled directory.

Also, if you want to integrate Personal Assistant with Cisco Unity 2.4.6 or higher or Microsoft Exchange 5.5 or higher, you must have those applications installed on your network on systems separate from Personal Assistant. If you are using Windows 2000 domains on your network, you must install Personal Assistant in the same domain as the Exchange server, or in a domain trusted by its domain.

Refer to [Table 2-1](#) for an overview of supported Cisco Media Convergence Server (MCS) hardware platforms. You can also use equivalent Cisco-certified servers.

Table 2-1 Supported Media Convergence Server Platforms

Component	MCS-7835-1000	MCS-7825-800
Processor	Intel Pentium III, 1 GHz	Intel Pentium III, 800 MHz
Cache	256-KB Level 2 ECC cache	256-KB Level 2 ECC cache
Memory	1-GB 133-MHz Registered ECC SDRAM	512-MB 133-MHz Registered ECC SDRAM
Network Connectivity	10/100BaseTX protocol control information unshielded twisted-pair (PCI UTP) controller	Two Fast Ethernet NIC Embedded 10/100 Wake On LAN (WOL). Currently only one NIC is supported.
Storage	<ul style="list-style-type: none"> • Dual 18.2-GB Ultra3 SCSI hot-plug drives • Integrated dual-channel wide Ultra SCSI-3 controller 	<ul style="list-style-type: none"> • Single 20-GB Ultra ATA/100 7200 RPM non-hot-plug drive • Integrated Ultra ATA/100 Controller Module
Floppy Drive	1.44-MB diskette drive	1.44-MB diskette drive
CD-ROM Drive	24X Max IDE CD-ROM Drive	Removable CD-ROM/Diskette drive assembly
Power Supply	Hot-plug redundant 275-watt power supply	180-watt PFC Power Supply
Video	Integrated ATI Rage IIC Video Controller with 4 MB video memory	Integrated ATI Rage XL Video Controller with 4 MB video memory
Backup Drive	Optional 12/24-GB internal DAT Drive	Not available

Installing Personal Assistant On a New System

This procedure describes how to install Cisco Personal Assistant on a system that is not running a previous version of Personal Assistant. If you are upgrading Personal Assistant, see the [“Upgrading From a Previous Version of Personal Assistant”](#) section on page 2-6.

Before You Begin

You cannot install Personal Assistant on the same system as any other Cisco IP Telephony applications, such as Cisco CallManager, Cisco Interactive Voice Response (IVR), Cisco Auto Attendant, and so on. The installation program will terminate if it detects any of these applications already installed on the system.

You cannot install Personal Assistant on a Windows domain controller.

You must log into the system from which you are running the Personal Assistant Installation program as the local administrator.

If you are integrating Personal Assistant with Cisco Unity or Microsoft Exchange in a Windows 2000 domain, you cannot use the same product code to install both Windows 2000 and Personal Assistant. You must first install Windows 2000, restart the system, and join the domain before proceeding with the Personal Assistant installation.

Procedure

-
- Step 1** Log onto the computer from which you are running the Personal Assistant Installation program as a local administrator.
 - Step 2** Insert the Personal Assistant Installation CD into the CD-ROM drive.
The Personal Assistant installation program automatically launches.
 - Step 3** If prompted, enter the product key.
 - Step 4** Click **OK**.
The welcome window displays.
 - Step 5** Click **Next**.
The End-User License Agreement window displays.
 - Step 6** Read the agreement, and click **I Agree** to accept the terms and continue. Or, click **Exit** to cancel the installation.

The Cisco Personal Assistant Components window displays.

Step 7 On the Cisco Personal Assistant Components window:

a. Choose the Personal Assistant components to install:

- Cisco Personal Assistant Server—manages the interaction between the user and Personal Assistant, processes call routing and dial rules, and manages the overall configuration of the Personal Assistant system
- Cisco Personal Assistant Speech Recognition Server—processes speech commands
- Cisco Personal Assistant Web Administration—used to administer and access Personal Assistant using a web browser

During installation, the selected components install on the same system. If you want to install components on different systems, choose only those components you want installed together at this time. You must perform subsequent installations to install the remaining components on different systems.

b. To install Personal Assistant on an Windows 2000 Domain, select **Use a Domain Account** and enter the following:

- Account—Domain administrator account
- Password—Password for the domain administrator account
- Domain—Domain in which you are installing Personal Assistant

If you are installing multiple Personal Assistant servers, you must install them in the same Windows 2000 domain.

If you chose to install only the Cisco Personal Assistant Speech Recognition Server, proceed to [Step 10](#). Otherwise, continue with the next step.

Step 8 Click **Next**.

The Cisco CallManager Database Location window displays.

Step 9 On the Cisco CallManager Database Location window, enter the settings from the primary Cisco CallManager system:

- Host name—The DNS name or IP address of the server running Cisco CallManager
- Windows2000 username and password—the settings on the server running the primary Cisco CallManager

- SQL Server username and password—the SQL server used by Cisco CallManager

These settings must match those on the system running Cisco CallManager. For example, if, on that system, you do not have passwords set for Windows2000 and the SQL Server, do not enter them here. User names are required, however.



Note You must be able to access the Cisco CallManager system from the computer on which you are installing Personal Assistant. When you click **Next**, the installer verifies connectivity to the Cisco CallManager system. If it cannot reach Cisco CallManager, it generates an error and installation cannot continue.

Step 10 Click **Next**.

The Ready to Install Cisco Personal Assistant window displays.

Step 11 Click **Next**.

The Personal Assistant components you selected are installed. Installation takes approximately 10 to 15 minutes to complete. Once complete, the Cisco Product Activation window displays.

Step 12 Click **Yes** to restart the computer. Click **No** to continue installing other applications.

You must restart before using Personal Assistant.

Step 13 Configure Cisco CallManager as described in [Chapter 3, “Configuring Cisco CallManager for Personal Assistant”](#).

Step 14 Configure Personal Assistant as described in the [“Overview of Personal Assistant Configuration”](#) section on page 4-1.

Upgrading From a Previous Version of Personal Assistant

This procedure describes how to upgrade Cisco Personal Assistant on a system that is currently running a previous version of Personal Assistant. This procedure assumes the currently-installed Personal Assistant component was installed

correctly and is functioning. If you are installing Personal Assistant on a server that does not have a version of Personal Assistant already installed, see the [“Installing Personal Assistant On a New System”](#) section on page 2-4.

Before You Begin

To upgrade Personal Assistant cleanly, you should disable the product on your telephony network. Plan to upgrade the product on a day and time where the elimination of the Personal Assistant service will have the least impact.



Caution

It is better to upgrade existing servers than to install a new server cluster. During upgrade, Personal Assistant preserves user and system settings, such as dialing rules, call routing rules, personal address books, destinations, and so forth. If you install a new server cluster to replace an existing cluster, these settings are not preserved, and users will have to recreate their configurations.

You cannot mix different versions of Personal Assistant components in the same cluster.

Before you upgrade Personal Assistant, you must upgrade Cisco CallManager to the required version. See [Table 1-1 on page 1-10](#) for the required version.

Procedure

-
- Step 1** Stop the Personal Assistant components to remove Personal Assistant services from the telephony network:
- a. In the Personal Assistant administration interface, select **System > Control Center**.
Personal Assistant opens the Control Center page.
 - b. Click **Stop All** in each of the three sections of the page to stop all Personal Assistant Servers, license managers, and speech recognition servers.
- Step 2** Upgrade the Personal Assistant components using the procedure described in the [“Installing Personal Assistant On a New System”](#) section on page 2-4.

- Step 3** Change the Cisco CallManager configuration to support the upgraded Personal Assistant product:
- a. Create a new partition for Personal Assistant managed telephones. The examples of the PAManagedEmployee partition in [Chapter 3, “Configuring Cisco CallManager for Personal Assistant,”](#) describe the use of the partition.
 - b. Remove the interceptor ports you configured for Personal Assistant 1.1.
 - c. Create route points and translation patterns to be used as interceptor ports. See the [“Creating Personal Assistant Interceptor Ports”](#) section on page 3-7 for the detailed steps. Personal Assistant now uses route points as interceptor ports to simplify the configuration. With route points, you can use wildcards to create one route point that covers many telephone numbers, rather than one interceptor port for each number.
 - d. Change the partition of telephones that should be managed by Personal Assistant to the partition you created for this purpose. Our examples call this partition PAManagedEmployee.
 - e. Update the Personal Assistant calling search space to include the Personal Assistant managed phones partition, making it the first partition in the list. Our examples call this calling search space cssPA. See the [“Creating the Personal Assistant Calling Search Space”](#) section on page 3-6 for the detailed steps.
- Step 4** Change the Personal Assistant configuration:
- a. Select **Servers>Server Configuration** in the Personal Assistant administration interface. See the [“Logging Into and Out of the Personal Assistant Administration Interface”](#) section on page 4-4 for information on accessing this interface.
Personal Assistant opens the Server Configuration page.
 - b. Select a server from the left-hand list of servers.
Personal Assistant shows you the server’s configuration.
 - c. Remove all old interceptor ports, and add in the new route points you configured for interceptor ports. Each Personal Assistant server must manage a unique set of interceptor ports—the new ports you created should correspond in a meaningful way to the old ports you are removing.

For example, if server A used to manage ports 1000 to 1999, and server B managed ports 2000 to 2999, you should have created route points 1XXX and 2XXX in Cisco CallManager. Then, configure server A to manage interceptor port 1XXX and server B to manage interceptor port 2XXX.

- d. Optionally, create new telephony providers and reconfigure the server to use these new providers. During upgrade, Personal Assistant uses your old telephony configuration to create a Skinny and a JTAPI provider, and uses these providers in every server configuration. See the [“Configuring Telephony Providers”](#) section on page 4-8 and the [“Configuring Personal Assistant Servers”](#) section on page 4-20 for more information about creating and using telephony providers.
- e. Reiterate steps b to d for each Personal Assistant server in the left-hand list.
- f. Optionally, configure additional voice-mail servers. See the [“Configuring Messaging”](#) section on page 4-11 for more information about configuring the connection to the voice-mail system.
- g. Determine which dialing rules were used to modify the telephone number of incoming calls so they could be looked up in the corporate directory. Redefine these rules as directory lookup rules, and delete them from the dialing rules. See the [“Creating Dialing Rules”](#) section on page 4-13 and the [“Configuring Directory Lookup Rules”](#) section on page 4-15 for more information about viewing and deleting dialing rules and creating directory lookup rules.
- h. Optionally, create directory hierarchies to improve speech recognition. See the [“Configuring Directory Hierarchies”](#) section on page 4-17 for more information.

Step 5 Select **System > Speech Services**, and click **Refresh** on the Speech Services Configuration page.

Personal Assistant refreshes the server configuration and reloads directory and speech recognition grammars. After the refresh is finished, Personal Assistant should be running correctly and available for use.

■ Upgrading From a Previous Version of Personal Assistant



Configuring Cisco CallManager for Personal Assistant

After installing Personal Assistant, you must perform the following tasks in Cisco CallManager:

- [Setting Up Cisco IP Phone Route Plans](#), page 3-2
- [Setting Up Personal Assistant to Intercept Calls](#), page 3-5
- [Setting Up the Personal Assistant Number](#), page 3-11
- [Adding a Personal Assistant User](#), page 3-12
- [Adding Media Ports for Personal Assistant](#), page 3-13
- [Configuring Cisco Unity in Cisco CallManager for Integration with Personal Assistant](#), page 3-15

Understanding the Cisco CallManager Examples

These sections represent an example setup, with sample values included for reference only. Your particular configuration depends on the needs of your network.

For these examples, you will be working with the following calling search spaces and partitions:

- EmployeeCSS—includes the PA and Employee partitions
- PACSS—includes the PAManagedEmployee and Employee partitions

The examples are based on a single Cisco CallManager cluster. If you have more than one cluster, you must repeat the configuration in each cluster. The route points and translation patterns will be different in each cluster, but you can use the same partition and calling search space names, and the same Personal Assistant user name.

For detailed information about how Personal Assistant uses calling search spaces and partitions, refer to the [“Understanding Partitions and Calling Search Spaces” section on page 1-6](#).

Setting Up Cisco IP Phone Route Plans

Before configuring Personal Assistant, you must ensure that the Cisco IP Phones are added and registered with Cisco CallManager. Refer to the documentation and online help included with Cisco CallManager if you need assistance completing this.

These sections provide an example setup for your network *before* adding Personal Assistant:

- [Creating a Phone Partition, page 3-2](#)
- [Creating a Phone Calling Search Space, page 3-3](#)
- [Assigning the Partition and Calling Search Space to Phones, page 3-4](#)
- [Using Partitions and Calling Search Spaces Without Personal Assistant, page 1-31](#)

Creating a Phone Partition

If you have not already created a partition for the Cisco IP Phones, follow this procedure to create one now.

Procedure

Step 1 Select **Route Plan > Partition** in Cisco CallManager.

The Find and List Partitions page displays.

- Step 2** Click **Add a New Partition**.
- The Partition Configuration page displays.
- Step 3** Enter a descriptive name, such as **Employee**, in the **Partition Name and Description** field. You can optionally include a description.
- Step 4** Click **Insert** to add the new partition.
-

Related Topics

- [Understanding Partitions and Calling Search Spaces, page 1-6](#)
- [Using Partitions and Calling Search Spaces Without Personal Assistant, page 1-31](#)
- [Creating a Phone Calling Search Space, page 3-3](#)

Creating a Phone Calling Search Space

If you do not already have a calling search space defined for the Cisco IP Phones, follow this procedure to create one.

Procedure

- Step 1** Select **Route Plan > Calling Search Space** in Cisco CallManager.
- The Find and List Calling Search Spaces page displays.
- Step 2** Click **Add a New Calling Search Space**.
- The Calling Search Space Configuration page displays.
- Step 3** Enter a descriptive name, such as **EmployeeCSS**, in the **Calling Search Space Name** field.
- Step 4** Select the **Employee** partition in the Available Partitions list box, and add it to the Selected Partitions list box by clicking the arrow buttons between the two list boxes.
- Step 5** Click **Insert** to add the new calling search space.
-

Related Topics

- [Understanding Partitions and Calling Search Spaces, page 1-6](#)
- [Using Partitions and Calling Search Spaces Without Personal Assistant, page 1-31](#)
- [Creating a Phone Partition, page 3-2](#)

Assigning the Partition and Calling Search Space to Phones

After you have created the Employee partition ([Creating a Phone Partition, page 3-2](#)) and calling search space ([Creating a Phone Calling Search Space, page 3-3](#)), you must configure the IP phones to use them.

Before You Begin

You can use the Bulk Administration Tool (BAT) to change the partition and calling search space on telephones in much less time than it takes to make the changes to each phone individually. This procedure describes the phone-by-phone procedure.

Procedure

-
- Step 1** Select **Device > Phones**.
- Cisco CallManager displays the Find and List Phones page.
- Step 2** Select “Device name is not empty” in the search fields and click **Find**.
- Cisco CallManager lists all of the phones in the bottom frame.
- Step 3** Click the phone whose configuration you want to change.
- Cisco CallManager displays the Phone Configuration page.
- Step 4** Click the line number you want to configure in the left-hand column.
- Cisco CallManager displays the Directory Number Configuration page.
- Step 5** Change the partition to **Employee**, and the calling search space to **EmployeeCSS**.
- Step 6** Click **Insert** to save your changes.
-

Related Topics

- [Understanding Partitions and Calling Search Spaces, page 1-6](#)
- [Using Partitions and Calling Search Spaces Without Personal Assistant, page 1-31](#)
- [Creating a Phone Partition, page 3-2](#)
- [Creating a Phone Calling Search Space, page 3-3](#)

Setting Up Personal Assistant to Intercept Calls

Personal Assistant can intercept incoming calls and route them according to user-defined rules. To enable Personal Assistant to intercept calls between two extensions, such as 1006 and 1007, you must configure two Personal Assistant partitions and a calling search space, create route points and translation patterns for use as Personal Assistant intercept ports, and update the calling search space and change the partition on the end-user phones.

These topics describe the steps involved in configuring Cisco CallManager to enable Personal Assistant to intercept calls:

- [Creating the Personal Assistant Partitions, page 3-5](#)
- [Creating the Personal Assistant Calling Search Space, page 3-6](#)
- [Creating Personal Assistant Interceptor Ports, page 3-7](#)
- [Updating the Calling Search Space for End-User Phones, page 3-9](#)
- [Updating the Partition for Managed Phones, page 3-10](#)

Creating the Personal Assistant Partitions

Follow this procedure to create the two Personal Assistant partitions:

- **PA**—The partition that will contain the route points used as Personal Assistant interceptor ports. Used to intercept calls to phones Personal Assistant manages.
- **PAManagedEmployee**—The partition for phones whose calls Personal Assistant will intercept.

Procedure

- Step 1** Select **Route Plan > Partition** in Cisco CallManager.
The Find and List Partitions page displays.
- Step 2** Click **Add a New Partition**.
The Partition Configuration page displays.
- Step 3** Enter a descriptive name, such as **PA**, in the **Partition Name** field.
- Step 4** Click **Insert** to add the new partition.
- Step 5** Repeat this procedure to create the **PAManagedEmployee** partition.
-

Related Topics

- [Intercepting Calls with Personal Assistant, page 1-30](#)
- [Understanding Partitions and Calling Search Spaces, page 1-6](#)

Creating the Personal Assistant Calling Search Space

Follow this procedure to create the Personal Assistant calling search space.

Procedure

- Step 1** Select **Route Plan > Calling Search Space** from Cisco CallManager.
The Find and List Calling Search Spaces page displays.
- Step 2** Click **Add a New Calling Search Space**.
The Calling Search Space Configuration page displays.
- Step 3** Enter a descriptive name, such as **PACSS**, in the **Calling Search Space Name** field.

- Step 4** Select the **PAManagedEmployee** and **Employee** partitions in the Available Partitions list box, and add them to the Selected Partitions list box by clicking the arrow buttons between the two list boxes. Arrange the partitions so that PAManagedEmployee is at the top of the list.
- If you are using any other partitions, add them to this list.
- Step 5** Click **Insert** to add the new calling search space.
-

Related Topics

- [Intercepting Calls with Personal Assistant, page 1-30](#)
- [Understanding Partitions and Calling Search Spaces, page 1-6](#)

Creating Personal Assistant Interceptor Ports

Follow this procedure to define the route points and translation patterns that will be used as Personal Assistant interceptor ports.

When you configure the Personal Assistant servers, you assign the route points you create here to the individual servers. Thus, you should define route points based on how you will divide the managed phones between servers.

These route points coincide to the phone extensions, but you can use variables to define a single route point that covers many extensions. For example, the single route point 1XXX covers extensions 1000 to 1999. This is the most efficient way to configure Personal Assistant. (However, you can configure route points to match extensions one-to-one if you prefer.)

Procedure

- Step 1** Create the route points:
- Select **Device > CTI Route Point** in Cisco CallManager.
The Find and List CTI Route Points page displays.
 - Click **Add a new CTI Route Point**.
The CTI Route Point Configuration page displays.

- c. Enter a unique meaningful name in the **Device Name** field to identify this as a Personal Assistant route point interceptor number. For example, if you are creating the 1XXX route point, **PA1XXX** or **PARP1XXX** might be useful names.
- d. Select the appropriate device pool from the **Device Pool** menu.
- e. Click **Insert** to add the new CTI route point.
- f. Select **line 1** in the left-hand column.
Cisco CallManager displays the Directory Number Configuration window.
- g. Enter the telephone number to be used for a Personal Assistant interceptor port, such as **1XXX**, in the **Directory Number** field.
- h. Select the phone partition you configured for Personal Assistant, such as **PA**, from the **Partition** menu.
- i. Select the Personal Assistant calling search space you configured, such as **PACSS**, from the **Calling Search Space** menu.
- j. Click **Insert**.
- k. Repeat this set to create the other route points you need to define.

Step 2 Create the translation patterns that correspond to the route points you just created:

- a. Select **Route Plan > Translation Pattern**.
Cisco CallManager opens the Find and List Translation Patterns window.
 - b. Click **Add a New Translation Pattern**.
Cisco CallManager opens the Translation Pattern Configuration window.
 - c. Enter one of the directory numbers of the route points you configured, such as **1XXX**, in the **Translation Pattern** field.
 - d. Select **Employee** in the **Partition** field.
 - e. Select **PACSS** in the **Calling Search Space** field.
 - f. Deselect **Provide Outside Dial Tone**.
 - g. Click **Insert** to save your changes.
 - h. Repeat this step for every route point you configured in [Step 1](#).
-

Related Topics

- [Intercepting Calls with Personal Assistant](#), page 1-30
- [Understanding Partitions and Calling Search Spaces](#), page 1-6
- [Configuring Personal Assistant Servers](#), page 4-20

Updating the Calling Search Space for End-User Phones

After adding Personal Assistant to your network, you need to update the calling search space assigned to the end-user phones.

Procedure

- Step 1** Select **Route Plan > Calling Search Space** from Cisco CallManager.
The Find and List Calling Search Spaces page displays.
- Step 2** Enter EmployeeCSS in the search field and click Find, or click Find with no search argument to list all calling search spaces.
- Step 3** Select **EmployeeCSS** from the calling search space list.
The Calling Search Space Configuration page displays.
- Step 4** Select the **PA** partition in the Available Partitions list box, and add it to the Selected Partitions list box by clicking the arrow buttons between the two list boxes.
- Step 5** Rearrange the order of the partitions to ensure that the Personal Assistant partition is first.
- Step 6** Click **Update** to update the calling search space.
- Step 7** If you are using other calling search spaces for phones, repeat these steps to update them.

**Note**

However, do not include the PA partition in the calling search space that you use for voice-mail ports. The calling search space of the voice-mail ports should include the PAManagedEmployees partition, but not the PA partition, or the message waiting indicator will not work. When setting the mwisearchspace for the Messaging interface in Cisco CallManager, make sure it contains PAManagedEmployees but not PA.

Related Topics

- [Understanding Partitions and Calling Search Spaces, page 1-6](#)
- [Intercepting Calls with Personal Assistant, page 1-30](#)

Updating the Partition for Managed Phones

To convert a phone to Personal Assistant management, assign the phone to the PAManagedEmployees partition. You can do a phased deployment of Personal Assistant by changing the partition of only a subset of your phones at a time.

Before You Begin

You can use the Bulk Administration Tool (BAT) to change the partition on telephones in much less time than it takes to make the changes to each phone individually. This procedure describes the phone-by-phone procedure.

Procedure

Step 1 Select **Device > Phones**.

Cisco CallManager displays the Find and List Phones page.

Step 2 Select “Device name is not empty” to view all phones, or enter a limited search string to view the phone subset you want to configure, and click **Find**.

Cisco CallManager lists the phones in the bottom frame.

- Step 3** Click the phone whose configuration you want to change.
Cisco CallManager displays the Phone Configuration page.
- Step 4** Click the line number you want to configure in the left-hand column.
Cisco CallManager displays the Directory Number Configuration page.
- Step 5** Change the partition to **PAManagedEmployee**.
- Step 6** Click **Insert** to save your changes.
-

Related Topics

- [Understanding Partitions and Calling Search Spaces, page 1-6](#)
- [Using Partitions and Calling Search Spaces Without Personal Assistant, page 1-31](#)
- [Creating a Phone Partition, page 3-2](#)
- [Creating a Phone Calling Search Space, page 3-3](#)

Setting Up the Personal Assistant Number

You must configure a CTI route point in Cisco CallManager to identify the telephone number used to access Personal Assistant. If you are also setting up an automated attendant, use this procedure to configure the automated attendant's number.

Procedure

- Step 1** In Cisco CallManager, select **Device > CTI Route Point**.
The Find and List CTI Route Points page displays.
- Step 2** Click **Add a new CTI Route Point**.
The CTI Route Point Configuration page displays.
- Step 3** Enter a unique name, such as **PA Number**, in the **Device Name** field to identify this as the Personal Assistant access number.
- Step 4** Select the appropriate device pool from the **Device Pool** menu.

- Step 5** Click **Insert** to add the new CTI route point.
- Step 6** Select an unassigned line (Line 1, Line 2, and so on) to add a line.
The Directory Number configuration options display in a separate window.
- Step 7** Enter the telephone number to be used for calling Personal Assistant, such as **4000**, in the **Directory Number** field.
- Step 8** Select the phone partition you configured, such as **Employees**, from the **Partition** menu.
- Step 9** Select the Personal Assistant calling search space you configured, such as **PACSS**, from the **Calling Search Space** menu.
- Step 10** Assign the Call Forward No Answer and Call Forward Busy to the **PACSS** calling search space.
- Step 11** If you want to use load balancing and have configured multiple CTI route points, enter the extension to forward to in the Call Forward No Answer and Call Forward Busy **Destination** field.
- Step 12** Click **Insert and Close**.
For additional assistance, refer to the documentation and online help included with Cisco CallManager.
-

Related Topics

- [Understanding CTI Route Points and Media Ports, page 1-5](#)
- [Adding Media Ports for Personal Assistant, page 3-13](#)

Adding a Personal Assistant User

You need to add Personal Assistant as a JTAPI user. The settings you enter here are used when configuring a JTAPI telephony provider in Personal Assistant.

Procedure

- Step 1** In Cisco CallManager, select **User>Add a New User**.

- Step 2** Complete the following required fields:
- **First Name**—use a descriptive name such as “Personal”
 - **Last Name**—use a descriptive name such as “Assistant”
 - **UserID**—use a descriptive name such as “PA”
 - **User Password and Confirm Password**—enter a password and enter it again for confirmation
 - **PIN and Confirm PIN**—enter a PIN and enter it again for confirmation
- Step 3** Click the **Enable CTI Application Use** check-box.
- Step 4** Click **Insert** to create the user.
- Step 5** Click **Device Association** in the left-hand column.
- Step 6** In the User Devices Assignment window, fill in the search field and click **Select Devices** to list the route points. Check the boxes associated with the Device Name fields for the route points used as the Personal Assistant number, the automated attendant number, and the interceptor ports.
- Step 7** Click **Update** to save your changes.
-

Tips

- If you do not select all of the CTI route points defined for Personal Assistant’s use, callers will hear a busy tone when calling Personal Assistant or the automated attendant, or calls to certain extensions will not be intercepted.

Related Topics

- [Configuring Telephony Providers, page 4-8](#)
- [Telephony Configuration, page A-8](#)


Adding Media Ports for Personal Assistant

Media ports terminate the media between Personal Assistant and the end-users’ Cisco IP Phones. Add a media port for each simultaneous Personal Assistant session you require. For example, if you need 24 simultaneous sessions, add 24 ports.

After configuring these ports in Cisco CallManager, you must also enter the number of ports in the Personal Assistant administration interface (see the [“Configuring Personal Assistant Servers”](#) section on page 4-20.)

You create media ports as Cisco7960 devices, even if you are using other types of telephones in your network.

Procedure

- Step 1** In Cisco CallManager, select **Device > Add a New Device**.
- Step 2** Select **Phone** from the Device Type drop-down list box and click **Next**.
- Step 3** Select Cisco7960.
- The Phone Configuration options display.
- Step 4** Enter the MAC address following these guidelines:
- Enter the extension number, preceded by an adequate number of nines (as a place holder for all unoccupied digits to the left of the extension) so that the end result is a 12-digit number. For example, if the extension is 5001, the MAC address should be 999999995001.
- Step 5** Select the appropriate device pool from the **Device Pool** menu.
- Step 6** Click Insert to add the **Device**.
- You are asked if you want to configure line 1. Click **OK**.
- The Directory Number Configuration page displays.
- Step 7** Enter the extension, such as 4001, assigned to this port in the **Directory Number** field.
- Step 8** Select the phone partition you configured, such as **Employees**, from the **Partition** menu.
-  **Note** Leave the **Voice Message Box** field empty.
-
- Step 9** Select the Personal Assistant calling search space you configured, such as **PACSS**, from the **Calling Search Space** menu.
- Step 10** Select **Off** from the Call Waiting menu.
- Step 11** Do not enter anything in the Call Forward settings.

Step 12 Click **Insert** to save your changes.

Step 13 Repeat Steps 1-12 for each port you need to add.

For example, if you need 24 simultaneous sessions, create 24 media ports. Assign the ports consecutive numbers, such as 4001-4024.

Tips

- You can use the Cisco Bulk Administrator Tool (BAT) to configure several ports at once.

Related Topics

- [Understanding CTI Route Points and Media Ports, page 1-5](#)
- [Configuring Personal Assistant Servers, page 4-20](#)

Configuring Cisco Unity in Cisco CallManager for Integration with Personal Assistant

When adding Cisco Unity to Cisco CallManager, be sure that the calling search space does not include the partition created for Personal Assistant (such as the PA partition). To do this, you could use the calling search space configured for Personal Assistant (such as PACSS).

Refer to the documentation included with it and Cisco CallManager for detailed instructions on integrating Cisco Unity with Cisco CallManager.

Related Topics

- [Understanding Partitions and Calling Search Spaces, page 1-6](#)
- [Setting Up Personal Assistant to Intercept Calls, page 3-5](#)



Configuring Personal Assistant

These topics describe how to configure Personal Assistant:

- [Overview of Personal Assistant Configuration, page 4-1](#)
- [Logging Into and Out of the Personal Assistant Administration Interface, page 4-4](#)
- [Configuring Speech Recognition, page 4-5](#)
- [Configuring Telephony Providers, page 4-8](#)
- [Creating a Simple Automated Attendant, page 4-10](#)
- [Configuring Messaging, page 4-11](#)
- [Creating Dialing Rules, page 4-13](#)
- [Configuring Directory Lookup Rules, page 4-15](#)
- [Configuring Directory Hierarchies, page 4-17](#)
- [Configuring the Corporate Directory, page 4-18](#)
- [Configuring Personal Assistant Servers, page 4-20](#)

Overview of Personal Assistant Configuration

Personal Assistant does not function until you complete a minimal configuration. After installing Personal Assistant, you must use the administration interface to create speech server clusters, Personal Assistant server clusters, and configure the connections between these clusters and the various directories, voice-mail systems, and other servers that Personal Assistant should use. This procedure

helps you understand what you must do to make Personal Assistant operational, and helps you understand the optional configuration steps. Other topics are cited that go into the details of each configuration step.

Procedure

- Step 1** Log into the Personal Assistant administration interface. See the [“Logging Into and Out of the Personal Assistant Administration Interface”](#) section on page 4-4 for more information.
- Step 2** Identify the operator to whom Personal Assistant will transfer calls in case a user has problems with Personal Assistant. See the [“Miscellaneous Settings”](#) section on page A-26 for more information.



Note While you are on this configuration page, you can also set up logging and modify other miscellaneous settings. These settings are all optional, and only need to be changed if you find the default settings inappropriate for your network.

- Step 3** If you are using Personal Assistant’s speech-recognition capabilities, create and configure the speech server clusters. See the [“Configuring Speech Recognition”](#) section on page 4-5 for more information.
- Step 4** Create the telephony providers that the Personal Assistant servers will require. You must create these providers before you create the server clusters. See the [“Configuring Telephony Providers”](#) section on page 4-8 for more information.
- Step 5** Identify the corporate directory to Personal Assistant. See the [“Configuring the Corporate Directory”](#) section on page 4-18 for more information.
- Step 6** Create and configure the Personal Assistant server clusters. See the [“Configuring Personal Assistant Servers”](#) section on page 4-20 for more information.

After you complete this step, the Personal Assistant system is operational, and users can start using most of the Personal Assistant features. The remaining steps enable optional features.

- Step 7** If you want to use Personal Assistant as a simple automated attendant, which would allow callers to dial users by name rather than by number (enabling callers to find an employee without knowing their phone number), configure the AA

prompt and route point. See the [“Creating a Simple Automated Attendant”](#) section on page 4-10 and the [“Configuring Personal Assistant Servers”](#) section on page 4-20 for more information.

Step 8 Configure these messaging features if you want to use them. See the [“Configuring Messaging”](#) section on page 4-11 for more information.

- If you want to enable calendar-based call routing rules, configure the calendar server attributes.
- If you want users to be able to create call routing rules that send them e-mail pages, configure the paging server attributes.
- If you want users to be able to access voice mail while calling Personal Assistant, or create call routing rules that send callers directly to voice mail, configure the voice-mail server attributes.

Step 9 If you want to make dialing easier for users, you can configure dial rules that will automatically modify the numbers they dial. For example, if your phone system requires you to dial 9 to get an outside line, you could have Personal Assistant look for dialed numbers that are 7 digits and automatically add a 9 to the front of the number. See the [“Creating Dialing Rules”](#) section on page 4-13 for more information.

Step 10 Personal Assistant looks up callers in the corporate directory when an internal caller calls one of your clients. In order for Personal Assistant to find the caller, the caller’s number must match the number as written in the corporate directory. If these numbers do not match, Personal Assistant will not be able to determine the caller. This can happen if you enable 5-digit calling on the internal network, but you use 7- or 10-digit numbers in the corporate directory.

If you want Personal Assistant to be able to identify callers (which is required for effective call routing rule processing), configure directory lookup rules. See the [“Configuring Directory Lookup Rules”](#) section on page 4-15 for more information.

Step 11 If you have a large number of users, users might encounter problems when trying to dial a party by name. For example, there might be too many parties that have the same name. To help users narrow Personal Assistant’s search, you can create directory hierarchies that will let users specify a location or department to search. See the [“Configuring Directory Hierarchies”](#) section on page 4-17 for more information.

Logging Into and Out of the Personal Assistant Administration Interface

You must log in to Personal Assistant's administration interface to view or change the Personal Assistant configuration. Personal Assistant manages logins based on Windows 2000 local user accounts. You must use an account with administrative privileges on the Windows 2000 system running the administration interface in order to change the Personal Assistant configuration.

Procedure

- Step 1** From an Internet Explorer 5.0 or Netscape Navigator 4.5 or higher web browser window, open the Personal Assistant Administrator page using this format:

`http://PAhost/pasystemadmin`

where *PAhost* indicates the server on which you installed the administration interface.

For example, if you installed the administration interface on a server named *paserver*, the URL would be `http://paserver/pasystemadmin`.

The login screen displays.

- Step 2** Enter a Windows 2000 local user name, with administrator authority, and its password. The user name must be defined on the system running the administrator interface.

- Step 3** Click **OK**.

Personal Assistant logs you onto the system, and you can access the various configuration pages.

- Step 4** Click **Logout** in the menu bar to log out of the system when you are finished configuring Personal Assistant.

The system automatically logs you out after 30 minutes of inactivity.

Configuring Speech Recognition

You must configure speech services to create speech server clusters. This lets users talk to Personal Assistant over the telephone, for example, to dial parties by name rather than by telephone number. If you are not using speech recognition with Personal Assistant, you can skip this configuration.

You can also fine-tune speech recognition if you find that users are having problems using the speech recognition interface. Problems that you can address include:

- Users being asked too often to confirm their commands.
- Users being transferred to the operator too often because:
 - There are a large number of similarly named people in your corporate directory.
 - Frequent errors occur in Personal Assistant understanding a user's spoken commands.
 - Users ask for help from Personal Assistant too often during a session.

Before You Begin

Make sure you have the license document included in the Personal Assistant package.

Personal Assistant uses defaults for all speech recognition parameters, and these should work well with most installations. Before fine-tuning the speech recognition parameters, confirm that problems your users are having are widespread before making changes. If changes are necessary, trial and error is the only way to determine effective settings for these parameters for your specific needs.

Procedure

-
- Step 1** Select **System > Speech Services**.
Personal Assistant opens the Speech Services Configuration page.
- Step 2** Enter your speech recognition license key in the **License Code** field.

Step 3 Create the speech server cluster:

- a. For each speech server, enter the server's IP address or DNS name in the **Speech Recognition Server Hosts** edit box, and click **Add**. This list creates the speech server cluster. The speech servers are not activated until the next refresh. You can click **Refresh** to activate immediately, but this procedure might take some time to complete.
- b. Identify one or two Personal Assistant servers that should be used as the license manager hosts. All Personal Assistant servers include license managers, but you must identify which ones will be actively used for distributing licenses.

Enter the IP address or DNS name of the Personal Assistant server you want to use in the **Speech Recognition License Manager Hosts** edit box and click **Add**. Cisco recommends that you identify two servers, so that there is a backup license manager. Speech recognition only works if there is at least one active license manager.

Step 4 Pick a time of day for Personal Assistant to automatically refresh cached user information from the corporate directory in the **Refresh User Information** field. This ensures that information is up-to-date, and that the speech recognition software has the data required to understand spoken commands.

Depending on the size of your corporate directory, it can take a significant amount of time to download this information, compile it, and publish it to the speech servers. Therefore, the default setting is 2:00 a.m. when the usage load is likely to be low.

Step 5 If you are trying to resolve problems in which users are being transferred to the operator too quickly, you can make these changes:

- If users are being transferred to the operator because there are a lot of similarly named people in your phone directory, change the **Max Disambiguate** parameter.

This setting determines the number of options (people, numbers, and so on) a user can select from when trying to call a person with a common name, such as John Smith. By increasing this number, Personal Assistant presents additional selections and reduces transfers to the operator.

If Max Disambiguate is 3, a user will be presented with up to three selections if there are two or three people with the requested name. Therefore, if three people in your company share the name "John Smith", Personal Assistant

plays the spoken voice and extension for each of the three, allowing users to select the appropriate one. If there are more than three people with the name John Smith, the user is transferred to the operator.

- If users are being transferred to the operator because they are encountering speech-recognition errors, you can increase the number of errors allowed. When the **Max Error Count** is reached during a dialog, or the **Max Total Error Count** is reached during an entire session, the user is transferred to the operator. However, if you set the value too high, users might become frustrated with using Personal Assistant.
- If users are being transferred to the operator because they are requesting help too often, you can increase the number of times they are allowed to request help. When the **Max Help Count** is reached during a dialog, or the **Max Total Help Count** is reached during an entire Personal Assistant session, the user is transferred to the operator.
- If Personal Assistant is being interrupted too often and fails to provide the users with the appropriate prompts, change the **Allow Barge-In** setting to **False**.

Barge-in allows a user to interrupt Personal Assistant and issue a command in the middle of a prompt. However, in situations with excessive background noise, Personal Assistant might be accepting the noise as valid interruptions.

- Step 6** If you are trying to resolve problems in which users are being asked to confirm their commands too often, you can change the **Rejection Confidence Level** and **Reconfirm Confidence Level** parameters.

The speech-recognition software assigns a percentage confidence level to every recognized utterance.

- If the software is less confident that it understood the speaker than the Rejection Confidence Level (default is 50%), Personal Assistant tells the user it did not understand the request: “Sorry I didn’t understand.” The user can then repeat or rephrase the request.
- If the confidence level is between Rejection Confidence Level and the Reconfirm Confidence Level percentages, Personal Assistant tells the speaker its interpretation of the request and asks the speaker to confirm the interpretation: “John Smith? Is this correct?” The speaker can then say yes or no. If yes, Personal Assistant completes the request. If no, the speaker must repeat or rephrase the request.

- If the confidence level is higher than the Reconfirm Confidence Level, Personal Assistant initiates the speaker's request without asking for confirmation: "Calling John Smith." The speaker can stop Personal Assistant by saying "cancel" or "no."

If you set Reconfirm Confidence Level too high, users will have to reconfirm most commands. If you set it too low, Personal Assistant might initiate too many unintended tasks.

Step 7 Click **Save** to save and activate your changes.

Step 8 If you added or removed a speech server or license manager, click **Refresh** to update the Personal Assistant configuration and load the new servers with the information required for them to operate correctly.

Tips

- Select **System > Miscellaneous Settings** and enter the operator's extension so that users are transferred to the operator if they encounter too many speech recognition problems.

Related Topics

- [Speech Services Configuration, page A-2](#)
- [Miscellaneous Settings, page A-26](#)
- [Understanding the Interactions of the Personal Assistant Server and Speech-Recognition Server, page 1-16](#)
- [Creating Server Clusters, page 1-18](#)

Configuring Telephony Providers

You must configure the telephony interface between Personal Assistant and the Cisco CallManager clusters so that Personal Assistant can successfully receive and transfer telephone calls. The settings you enter here must correspond to the Personal Assistant user you created in Cisco CallManager (see the ["Adding a Personal Assistant User"](#) section on page 3-12).

Before You Begin

You must create one JTAPI provider and one Skinny provider for every Cisco CallManager cluster in which Personal Assistant servers have their telephone numbers and route points defined. For example, if you have 5 Cisco CallManager clusters in which Personal Assistant servers have numbers defined, you must define at least 10 providers (5 JTAPI, 5 Skinny).

Personal Assistant uses both JTAPI and Skinny protocols, and must have providers for both. JTAPI is used for interceptor ports and route points; Skinny is used for media ports.

See the [“Configuring Personal Assistant Servers” section on page 4-20](#) for more information on server configuration.

Procedure

-
- Step 1** Select **System > Telephony**.
- The Telephony Configuration page displays.
- Step 2** Enter a name for the provider group you are adding in the **Provider Group Name** field. Enter a name you will find meaningful. When configuring Personal Assistant servers, you will select providers based on the names you enter in this field.
- Step 3** Select the type of telephony service the group is providing in the **Provider Type** field.
- Step 4** Identify the provider, based on provider type:
- **JTAPI**—For JTAPI providers, enter the DNS name or IP address of the CTI Manager for the Cisco CallManager cluster, and click **Add**. You can identify more than one CTI Manager, but they must be in the same cluster.

Also, enter the user name and password for the Personal Assistant user added to Cisco CallManager. Personal Assistant uses this to log into Cisco CallManager.
 - **Skinny**—Enter the DNS name or IP address of the Cisco CallManager server, and click **Add**. You can identify more than one server, but they must be in the same cluster.
- Do not enter a user name and password for Skinny providers.

Step 5 Click **Insert** to add the provider to the left-hand list of providers.

Tips

- To view or modify the configuration for a provider, or delete it, click the provider name in the left-hand list. The provider's settings are loaded into the page, and you change them if required.

Related Topics

- [Configuring Personal Assistant Servers, page 4-20](#)
- [Telephony Configuration, page A-8](#)
- [Adding a Personal Assistant User, page 3-12](#)
- [Supporting Multiple Cisco CallManager Clusters, page 1-29](#)

Creating a Simple Automated Attendant

You can use Personal Assistant as an automated attendant to provide callers with the ability to dial parties by saying the party's name. This allows callers to reach people without knowing their extensions, and without involving a live operator.

When someone calls the automated attendant, Personal Assistant plays a welcome prompt you supply, and then presents the caller with the dial-by-name speech interface, including spoken help. This is the same interface your regular clients can use, but it does not include any features other than dial-by-name.

If a caller enters a number on the keypad, Personal Assistant verifies that a user is associated with the number in the corporate directory before transferring the caller. Callers to the automated attendant can only reach telephone numbers that are associated with a person in the corporate directory.

Procedure

Step 1 Create a route point for the automated attendant in Cisco CallManager. This is the telephone number people will use to connect to the automated attendant.

- Step 2** Record a welcome prompt for the automated attendant. The file must be a .wav file in CCITT u-Law format (G.711 u-Law). You can use any recording software that will save a file in this format: Personal Assistant does not include a recorder.
- Step 3** In the Personal Assistant administration interface, select **System > AA Prompt**, and select the prompt file.
- Step 4** Select **Servers > Server Configuration**, and select the Personal Assistant server that you want to manage the automated attendant from the left-hand column list of servers. (Alternatively, configure a new Personal Assistant server for the automated attendant to use.)

Enter the route point created in [Step 1](#) in the AA Route Address field. When finished, click **Save**.

The automated attendant is now operational.

Related Topics

- [AA Prompt Configuration, page A-11](#)
- [Server Configuration, page A-31](#)

Configuring Messaging

Personal Assistant can provide e-mail paging, calendar-based call routing services, and direct access to the voice-mail system. Personal Assistant integrates with Microsoft Exchange to provide calendar-based call routing, and if you are using Cisco Unity, Personal Assistant can integrate with the Exchange server you are already using. You must configure the messaging parameters to enable these services for your users. If you do not want to enable one these services, leave the settings for the service blank.

Before You Begin

Personal Assistant must have administrator access to Microsoft Exchange to obtain a user's calendar information. This information is used when evaluating call routing rules that include calendar-based conditions.

You must have the voice-mail server set up and configured on a separate system from Personal Assistant.

Personal Assistant must have administrator access to the voice-mail system to obtain users' mailbox account information and stored voice-mail messages. These voice-mail settings are also used to redirect calls to a user's voice mail without ringing the user's phone, based on the user's rules that include voice mail as a destination.

Procedure

- Step 1** Select **System > Messaging**.
- The Messaging Configuration page displays.
- Step 2** To enable calendar-based call routing rule services, enter the following information:
- The Exchange server name, in **Calendar Server Name**.
 - The first and last name of the Exchange administrator account, in **Calendar Mailbox Name**. See the [“Messaging Configuration” section on page A-12](#) for detailed information on the account name you must enter.
- Step 3** To enable e-mail paging, enter the following information:
- The DNS name or IP address of your e-mail paging server, in **Paging SMTP Server Name**.
 - The SMTP port used to send messages to SMTP server, in **Paging SMTP Server Port**.
 - The domain in which the paging SMTP server belongs, in **Paging SMTP Domain Name**.
- Step 4** To allow users to access their voice mail through Personal Assistant, or create call routing rules that send incoming calls directly to voice mail, identify the voice-mail servers to Personal Assistant:
- a. If you are using Cisco Unity, enter the mailbox name for the Cisco Unity system profile in **Mailbox Name**, and the number of ports allowed by your license in the **Number of Unity Licenses** field. The number of ports determines the allowed number of simultaneous voice-mail sessions. These fields are optional for other voice-mail systems.
 - b. Enter the time, in milliseconds, to delay transferring the call to the desired voice mailbox after a call is transferred to the voice-mail system in the **Redirection Delay** field. This delay ensures that a call connects to the

voice-mail system before Personal Assistant enters the DTMF sequence to redirect the call to the desired mailbox. This is used when a call routing rule directs a call to voice-mail.

- c. Add each voice-mail server to the list of servers by entering the **Voicemail Server Name** (for example, unity1), **Pilot Number** (the telephone number used to reach voice mail), and the internal and external **DTMF Redirection Sequences** required to direct a call to a specific voice mailbox. Click **Add Server** after entering the information.

Voice-mail server name is only required for Cisco Unity voice-mail systems. The name must be an unqualified DNS name, for example, unity1 instead of unity1.cisco.com. Do not use IP addresses. See the “[Messaging Configuration](#)” section on page A-12 for more information about these fields.

- d. If you are using Cisco Unity, you can also synchronize the spoken name recorded for each Personal Assistant user with the name already recorded in the voice-mail system by clicking **Synchronize**. This name is presented to callers when trying to call the user.

Step 5 Click **Save** to save and activate your changes.

Related Topics

- [Messaging Configuration, page A-12](#)

Creating Dialing Rules

You can create global dialing rules to automatically modify outgoing telephone numbers. These changes only affect the user’s use through Personal Assistant; they do not apply to the telephony system outside of Personal Assistant. For example, if a user simply picks up the telephone and dials a number, these rules will not be applied. The user must be connected to Personal Assistant, and must be dialing the number through Personal Assistant, for the rules to be applied.

These global rules are applied before any dialing rules that users create for Personal Assistant.

Procedure

Step 1 Select **System > Dial Rules**.

The Dial Rules Configuration page displays.

The page is divided into two sections:

- **Add Rule**—This section contains a fill-in-the-blank sentence and the **Add Rule** button.
- **List of Dial Rules**—This is a list of your rules, in order of priority. Rules are applied top to bottom. If a number satisfies the rule's conditions, the rule is applied and no subsequent rules are considered.

Step 2 Fill in the blanks in the Add Rule section to create the desired dialing rule. Each blank is optional, but you must fill in at least one condition and one consequence for the rule to be applied.

- **Conditions**—You can distinguish between telephone numbers based on the initial string of digits or by the length of the number, or both. The distinguishing string of digits can be as long as the number. When determining the length, do not count hyphens or spaces in the number. For example, a number such as 510-555-1212 is a 10-digit number; the hyphens are ignored.
- **Consequences**—You can remove numbers from the front of the dialed number, or you can add numbers to the front, or both.

For example, you could create a rule that states: “If the phone number begins with *blank* and the number of digits is **7**, then remove *blank* digits from the beginning and prefix it with **9**.” This rule then automatically enters a 9 when dialing an outside number.

Step 3 Click **Add Rule** when satisfied with the rule.

Personal Assistant adds the rule to the bottom of the list of rules.

Step 4 If the rule is not positioned where you want it in the list of rules, use the up and down arrows until it is correctly positioned.

Tips

- To change a rule, find it in the list of rules, modify the properties as desired, and click the **Update** button on the line with the rule.

- To delete a rule, find it in the list of rules, and click the delete icon on the same line as the rule.

Related Topics

- [Dial Rules Configuration, page A-16](#)

Configuring Directory Lookup Rules

You can create directory lookup rules to automatically modify incoming internal telephone numbers so that the user information associated with the number can be found in the corporate directory.

For example, if you can use 5-digit numbers to call within your telephone network, but the corporate directory uses the 7- or 10-digit number versions of the 5-digit numbers, Personal Assistant will be unable to match a 5-digit number to the caller. By creating directory lookup rules, you can convert the 5-digit number to the type of number used in the directory, so that Personal Assistant can find the caller associated with the number.

Directory lookup rules do not modify the number that is dialed. These rules only convert the number to something that can be found in the corporate directory for information lookup purposes.

Procedure

Step 1 Select **System > Directory Lookup Rules**.

The Directory Lookup Rules page displays.

The page is divided into two sections:

- **Add Rule**—This section contains a fill-in-the-blank sentence and the **Add Rule** button.
- **List of Directory Lookup Rules**—This is a list of your rules, in order of priority. Rules are applied top to bottom. If a number satisfies the rule's conditions, the rule is applied and no subsequent rules are considered.

Step 2 Fill in the blanks in the Add Rule section to create the desired dialing rule. Each blank is optional, but you must fill in at least one condition and one consequence for the rule to be applied.

- **Conditions**—You can distinguish between telephone numbers based on the initial string of digits or by the length of the number, or both. The distinguishing string of digits can be as long as the number. When determining the length, do not count hyphens or spaces in the number. For example, a number such as 510-555-1212 is a 10-digit number; the hyphens are ignored.
- **Consequences**—You can remove numbers from the front of the dialed number, or you can add numbers to the front, or both.

For example, you could create a rule that states: “If the phone number begins with *blank* and the number of digits is **7**, then remove *blank* digits from the beginning and prefix it with **9**.” This rule then automatically enters a 9 when dialing an outside number.

Step 3 Click **Add Rule** when satisfied with the rule.

Personal Assistant adds the rule to the bottom of the list of rules.

Step 4 If the rule is not positioned where you want it in the list of rules, use the up and down arrows until it is correctly positioned.

Tips

- To change a rule, find it in the list of rules, modify the properties as desired, and click the **Update** button on the line with the rule.
- To delete a rule, find it in the list of rules, and click the delete icon on the same line as the rule.

Related Topics

- [Dial Rules Configuration, page A-16](#)

Configuring Directory Hierarchies

A directory hierarchy is a set of groupings of directory entries. These groupings can make directory searches more accurate and manageable for callers who are trying to dial a party by name rather than by telephone number. For example, a caller can narrow down the search by first stating the location or department in which to search. Locations and departments are the types of directory hierarchy groups you can define.

Create directory hierarchies if callers are having problems with speech recognition due to the large number of similarly-named people in the corporate directory.

Procedure

Step 1 Select **System > Directory Hierarchy**.

Personal Assistant opens the Directory Hierarchy Configuration page. This page includes a list of the nodes in the hierarchy that already exist at the bottom of the page. Select the type of hierarchy (Location or Department) in the **Hierarchy Type** field to see the nodes for each type of hierarchy.

Step 2 To create a node:

- a. Select the type of node you want to create in the **Hierarchy Type** field. The type you select will determine how callers can select the group. For example, if you create a location, callers can select it by saying “Location” while talking to Personal Assistant on the telephone.
- b. Enter a meaningful name for the group in the **Name** field. This name is only meaningful within the Personal Assistant administration interface (as shown in the list at the bottom of this page).
- c. Enter the primary name that callers will use to select the group in the **Primary Spoken Name** field. This can be the same name used in the Name field.
- d. Enter any aliases for the primary spoken name in the **Alternate Spoken Name** field, clicking **Add** after entering each alias. Adding aliases allows callers to select the group by different names. For example, if the primary name is NewYorkCity, a likely aliases might be NYC, NewYork, BigApple, and so forth.

- e. Enter the LDAP search filter that defines the group in the **LDAP Search Filter** field. You must know the correct LDAP expression used by your corporate directory, and the specific names of the fields in your directory, to create a valid filter. Click the Test Filter button to see if the expression is valid and returns the entries that you expect.
 - f. Click **Save** when you are satisfied with the node definition.
Personal Assistant adds the node to the list of nodes.
-

Tips

- To change a node, click it in the list of nodes. Personal Assistant opens the Update Hierarchy Node page, where you can change certain node characteristics. You cannot change the hierarchy type: to change the hierarchy type, you must create a new node of the desired type.
- The list of nodes includes a count of the number of entries in the corporate directory that match the node's filter. This number is determined when Personal Assistant refreshes directory information.

Related Topics

- [Directory Hierarchy, page A-20](#)

Configuring the Corporate Directory

You must identify the corporate directory so that Personal Assistant can look up information about callers and parties. The corporate directory contains information, such as phone numbers and locations, on all of the employees in the corporation. Personal Assistant uses this information to find the phone number for an employee when someone tries to phone the employee using the employee's name.

Before You Begin

You must know some details about the corporate directory before completing this procedure. Review the procedure and contact your directory administrator to obtain any information you do not know.

Procedure

- Step 1** Select **System > Corporate Directory Settings**.
- Personal Assistant opens the Corporate Directory Settings page.
- Step 2** Enter the unique identifier field used in the corporate directory in the **Unique User Attribute Name** field.
- If you are using Cisco CallManager's DC directory, the unique name is **cn**. If you are using a separate directory, ask the directory administrator for the name. Personal Assistant uses this to uniquely identify each user. For example, even if two users have the same name (John Smith), they would have unique e-mail addresses, and this is what Personal Assistant uses to uniquely identify them.
- Step 3** Enter the URL for the directory in the **Directory Server URL** field. For example, `ldap://server.domain.com`.
- Step 4** If the directory requires authentication for access, enter the administrator name in the **Directory Admin DN** field, and the password in the two password fields.
- Step 5** Enter the distinguished name for the user node in the directory in the **Directory Search Base DN for Users** field. For example, `ou=active,ou=employees,o=domain.com`
- Step 6** Enter the search filter that distinguishes the types of directory entries that you want Personal Assistant to find in the **Directory Search Filter** field. For example, `(objectclass=person)`.
- Step 7** Click **Save** to save your changes.
-

Related Topics

- [Corporate Directory Settings, page A-22](#)

Configuring Personal Assistant Servers

You must configure each Personal Assistant server to define its operating characteristics and to add it to the server cluster.

Procedure

Step 1 Select **Servers>Server Configuration**.

The Server Configuration page displays.

This page has two columns:

- The left column lists the Personal Assistant servers you have already added to the Personal Assistant server cluster. Click a server name to view and change the server's properties.

The primary Personal Assistant server is indicated by the red arrow that points to it. The primary server is chosen automatically, based on alphabetical order.

- The right column contains the settings for the selected server. When you initially open the page, this column contains empty settings, so that you can add a new Personal Assistant server. When viewing an existing server's properties, click **New** to add a new server.

Step 2 Fill in the settings for a new server, or change the existing settings, as appropriate. See the [“Server Configuration” section on page A-31](#) for explanations of each setting. At a minimum, you must configure the following settings to enable a fully-functional server:

- **Server Name**—A unique name for the server. This is not the same as the DNS name or IP address of the server. Instead, it is a name used internally by Personal Assistant. Choose a naming convention that is meaningful to you.
- **Hostname or IP Address**—The DNS name or IP address of the Personal Assistant server.
- **Route Address Provider**—The telephony provider you created to supply JTAPI services for the route point. See the [“Configuring Telephony Providers” section on page 4-8](#) for information on creating the provider. The provider you select must be in the same Cisco CallManager cluster where the route points are defined.

- **Route Address**—The CTI route point for the Personal Assistant server, as defined in Cisco CallManager. This is the telephone number users dial to contact their personal assistant. See the [“Understanding CTI Route Points and Media Ports” section on page 1-5](#) and the [“Setting Up Personal Assistant Server Load Balancing” section on page 1-23](#) for detailed information on the CTI route address.
- **Media Port Provider**—The telephony provider you created to supply Skinny services for the media ports. See the [“Configuring Telephony Providers” section on page 4-8](#) for information on creating the provider. The provider you select must be in the same Cisco CallManager cluster where the Personal Assistant route point is defined.
- **Number of Media Ports**—The number of ports you want to support on the server. This number determines how many simultaneous speech-recognition sessions the server can handle. The number you choose depends on the server platform you are using, and whether you are using failover with your servers (see the Failover Servers setting below). See the [“Creating Server Clusters” section on page 1-18](#) for information about the maximum ports that are available for the various hardware platforms and installation configurations.
- **Interceptor Port Provider**—The telephony provider you created to supply JTAPI services for the route points used as Personal Assistant interceptor ports. See the [“Configuring Telephony Providers” section on page 4-8](#) for information on creating the provider. The provider you select must be in the same Cisco CallManager cluster where the route points are defined.
- **Interceptor Port Range**—The telephone extensions for which you want this Personal Assistant server to intercept incoming calls. Personal Assistant intercepts calls to these extensions so that it can apply the user’s call routing rules. This list is central to Personal Assistant’s functioning; getting Personal Assistant to intercept calls to these extensions requires careful planning and changes to the extension’s properties in Cisco CallManager.

The extensions you enter must be defined in Cisco CallManager. If you defined route points using placeholders, such as 25XX, you can enter them here.

Read these topics for detailed explanations and examples:

- [Creating Personal Assistant Interceptor Ports, page 3-7](#)
- [Understanding Partitions and Calling Search Spaces, page 1-6](#)

- [Defining Partitions and Call Search Spaces for Personal Assistant, page 1-33](#)
- [Adding Personal Assistant without Previously Defined Partitions, page 1-36](#)
- **Failover Server Names**—The ordered list of servers that should take over for the server if it becomes disabled. Using Personal Assistant’s failover capability requires careful planning, and affects the number of telephony ports you can define for the servers. See the [“Creating Server Clusters” section on page 1-18](#) for an explanation of configuring Personal Assistant clusters with and without failover.

Step 3 Save your changes:

- If you are creating a new server, click **Insert**. Personal Assistant saves the server’s settings and adds it to the servers listed in the left column.
- If you are updating an existing server, click **Save**. Personal Assistant saves and activates your changes.

Tips

- Do not configure the debug or trace settings unless instructed to by Cisco Technical Support. Debug and trace affect server performance, and generate a large amount of data that only Cisco can interpret. These features exist for Cisco’s use to help identify and fix any problems you encounter with the software. See the [“Collecting Trace and Debug Information” section on page 6-17](#) for more information.
- You can remove a server by selecting it in the left column, and then clicking **Delete** when the server’s properties are displayed.
- The Personal Assistant server restarts automatically when any changes, except those made to the trace and debug settings, are saved. To manually start or stop the servers, or to verify that a particular server is up and running, use the Control Center by selecting **System > Control Center**. See [“Starting and Stopping the Servers and License Manager” section on page 6-16](#) for details.

Related Topics

- [Server Configuration, page A-31](#)
- [Starting and Stopping the Servers and License Manager, page 6-16](#)

- [Creating Server Clusters, page 1-18](#)
- [Understanding Partitions and Calling Search Spaces, page 1-6](#)
- [Defining Partitions and Call Search Spaces for Personal Assistant, page 1-33](#)
- [Adding Personal Assistant without Previously Defined Partitions, page 1-36](#)
- [Configuring Cisco CallManager for Personal Assistant, page 3-1](#)



Preparing Users for Personal Assistant

There are some configuration changes that you can make that affect how users use Personal Assistant. You should communicate these changes if you make them.

In general, you might find deployment of Personal Assistant to be easier if you link the user interface to your corporate intranet in a location that can be easily found. This will relieve your users of having to find the URL some other way, making it easy for them to access Personal Assistant for the first time and bookmark it for subsequent use. A corporate web page is also a good place to list the telephone numbers that users should use to access Personal Assistant through the telephone.

The following sections can assist you in determining what information to communicate with your users to prepare them to use Personal Assistant:

- [Accessing the User Interface, page 5-2](#)
- [Dialing Personal Assistant, page 5-2](#)
- [Obtaining Help, page 5-3](#)
- [Managing Users, page 5-3](#)
- [Understanding How Administrative Changes Affect Users, page 5-4](#)

Accessing the User Interface

To enable users to access the Personal Assistant user interface, you must provide to them the URL and the user name and password.

URL

To access the Personal Assistant user interface, users must open an Internet Explorer 5.0 or Netscape Navigator 4.5 or higher web browser and enter the following URL:

`http://PAhost/pauseradmin`

where *PAhost* is the computer name of the server on which you install the Personal Assistant web administration component.

User Name and Password

Users must log in to Personal Assistant using the unique user attribute configured for your system, for example their e-mail address.

The password is the same password defined for access to the Cisco CallManager user interface for configuring speed dial, and so forth. To change or reset the password, use the Cisco CallManager user interface.

Related Topics

- [Miscellaneous Settings, page A-26](#)

Dialing Personal Assistant

You need to tell users what number to dial to access Personal Assistant in order to use the dial-by-name feature, access their voice mail, or use other features of the telephony interface. The Personal Assistant access number is the extension you configured as the CTI route point.

Related Topics

- [Setting Up the Personal Assistant Number, page 3-11](#)
- [Understanding CTI Route Points and Media Ports, page 1-5](#)

Obtaining Help

Your users can access help with the Personal Assistant web user interface in any of these ways:

- From the Help menu:
 - Access help for the page you are viewing by selecting **Help > For This Screen**.
 - Access the contents of the online help system by selecting **Help > Contents and Index**.
- To print a copy of the manual associated with the application, or to view or search an Adobe Acrobat version of the help system, click the **PDF** button in the top left corner of the help system. If you have Adobe Acrobat Reader installed (either as an independent application or as a plug-in to your browser), the document opens.

From Acrobat Reader, you can search the entire manual, print the entire manual or selected pages, or read the manual online. If the table of contents for the document is not already displayed on the left side of the page, click the **Bookmarks and Page** button to view it. These bookmarks provide an easy way to navigate through the document.

Your users can access help in the telephony interface at any time by saying “help.”

Managing Users

You can manage some Personal Assistant users through the User Settings Administration page. Select **System > User Settings** to open the page.

These are the changes you can make:

- Reset PIN—You can reset the user’s PIN to blank, which forces the user to select a new PIN the next time the user calls Personal Assistant. This is useful if a user forgets a PIN. This does not affect the user’s configuration.
- Reset Spoken Name—You can erase the spoken name a user recorded, which forces the user to rerecord the name the next time the user calls Personal Assistant. The user can also reset the spoken name through the user interface.

- **Delete User**—When you delete a user from the regular telephony system, some user information will remain in the Personal Assistant system. You should also delete a user from Personal Assistant when you delete him from the network.

Deleting a user can also be helpful if some information has become associated with another user incorrectly. For example, if a user is assigned a cell phone that used to be someone else's, that cell phone number might still be in the original user's call routing rules, and the new owner might get unexpected and undesired calls.

You cannot use the Personal Assistant interface to reset a user's password. The password Personal Assistant uses is the same one used for accessing the Cisco CallManager user interface for configuring speed dial, and so forth. To change or reset the password, use the Cisco CallManager user interface.

Related Topics

- [User Settings Administration, page A-24](#)

Understanding How Administrative Changes Affect Users

Some changes you make using the Personal Assistant Administrative interface directly affect how users can use Personal Assistant, including:

- **Stopping or restarting servers**—If you do not have multiple Personal Assistant servers and speech recognition servers configured on your network, this can temporarily disrupt users' access to Personal Assistant.
- **Configuring dial rules**—Both you and users have the ability to configure dial rules. Administrative dial rules take priority over user-configured dial rules.
- **Setting call pickup duration**—Both you and users can modify the call pickup time. The user-configured setting takes priority.

Related Topics

- [Unable to Use Speech Commands, page 6-2](#)
- [Dial Rules Not Working Properly, page 6-4](#)
- [Calls Dropping, page 6-4](#)
- [Calls Transferred to Voice Mail Too Quickly, page 6-3](#)



Troubleshooting Personal Assistant

These topics address problems you might encounter, and provide ways to resolve them; also included are other tasks associated with problem resolution.

- [Resolving Problems Using Personal Assistant, page 6-1](#)
- [Resolving Problems Managing Personal Assistant, page 6-9](#)
- [Starting and Stopping the Servers and License Manager, page 6-16](#)
- [Monitoring Server Status, page 6-12](#)
- [Monitoring Performance, page 6-12](#)
- [Collecting Call History Information, page 6-15](#)
- [Collecting Trace and Debug Information, page 6-17](#)
- [Integrating with Network Management Systems, page 6-19](#)

Resolving Problems Using Personal Assistant

These topics provide resolutions to problems users might encounter:

- [Unable to Access User Interface, page 6-2](#)
- [Unable to Use Speech Commands, page 6-2](#)
- [Directed to Operator Too Often, page 6-3](#)
- [Too Many Available Options, page 6-3](#)
- [Calls Transferred to Voice Mail Too Quickly, page 6-3](#)
- [Dial Rules Not Working Properly, page 6-4](#)

- [Calls Dropping](#), page 6-4
- [Callers Hear “We Are Experiencing Technical Difficulties, Please Call Back Later”](#), page 6-5
- [It Takes Too Long For Personal Assistant to Answer Calls](#), page 6-6
- [Callers Hear a Busy Tone When Calling Personal Assistant](#), page 6-6
- [Messaging Waiting Indicator Does Not Work](#), page 6-7
- [All Users Cannot Browse Voice Mail](#), page 6-7
- [Some Users Cannot Browse Voice Mail](#), page 6-7
- [Users Cannot Log Into Voice Mail](#), page 6-8
- [Calendar-Based Call Routing Rules Do Not Work](#), page 6-8
- [Users Hear Text-to-Speech Names Too Often](#), page 6-9

Unable to Access User Interface

If users cannot log in to the Personal Assistant user interface, verify that they are using the correct log-in name. The log-in name should match the unique user attribute you defined in the Corporate Directory settings. For example, if your company is using the employee e-mail address as the unique user attribute, verify that users are entering their e-mail address and not another attribute, such as their phone number.

Related Topics

- [Configuring the Corporate Directory](#), page 4-18

Unable to Use Speech Commands

If users cannot use speech commands and are forced to use touch-tone dialing to interact with Personal Assistant:

- Verify that the speech recognition server is up and running. See the [“Starting and Stopping the Servers and License Manager”](#) section on page 6-16.

- Establish whether you have recently added a new speech-recognition server or additional license manager hosts. If you have, you must refresh the servers before they can support users. See the [“Configuring Speech Recognition” section on page 4-5](#).
- Consider whether you have an adequate number of speech-recognition servers to handle the number of users. See the [“Creating Server Clusters” section on page 1-18](#). You might want to add more speech licenses to accommodate your clients’ usage.

Directed to Operator Too Often

If users report that they are being directed to the operator too often when using Personal Assistant, check the speech recognition settings on the Personal Assistant server. See the [“Configuring Speech Recognition” section on page 4-5](#).

Related Topics

- [Speech Services Configuration, page A-2](#)

Too Many Available Options

If users report they are given too many options when using dial-by-name, you should reduce the **Max Disambiguate** parameter of the speech recognition settings on the Personal Assistant server.

Related Topics

- [Configuring Speech Recognition, page 4-5](#)

Calls Transferred to Voice Mail Too Quickly

Using the miscellaneous settings in the Personal Assistant Administration interface, you can designate the call pickup time. This determines how long Personal Assistant waits for a call to be picked up before it moves on to the next defined dial rule.

However, users can also configure the call pickup time (by selecting **Preferences>Settings** from the user interface), and this setting takes precedence. For example, if the server setting is 20 seconds, but a user has set their setting to 10 seconds, Personal Assistant uses 10 seconds as the call pickup time.

If users state that they are being transferred too quickly to voice mail, check the call pickup setting in both the administrator and user interfaces.

Related Topics

- [Miscellaneous Settings, page A-26](#)

Dial Rules Not Working Properly

You can configure dial rules through the Personal Assistant administration and user interfaces. However, rules configured in the administration interface take priority over those configured through the user interface. Therefore, if a user has configured a dial rule that conflicts or produces different results than one you configured as the administrator, their rules are ignored.

Related Topics

- [Creating Dialing Rules, page 4-13](#)

Calls Dropping

Under normal circumstances, users should not experience dropped calls while using Personal Assistant. However, if you have recently changed settings on the Personal Assistant server and saved the settings, the server might have restarted. If you do not have any failover servers, Personal Assistant might have been unavailable during this restart.

If a user is actively interacting with Personal Assistant when the server becomes unavailable, the call will drop. However, if Personal Assistant has already completed its role in the call, such as a successful transfer, the call will not be dropped.

To prevent calls from being dropped while Personal Assistant is being used, limit the changes and restarts to the Personal Assistant server to off-peak or other times of lower demand. Also, if you do not have a failover server, consider adding one in order to more reliably support your users.

Related Topics

- [Setting Up Personal Assistant Server Load Balancing, page 1-23](#)
- [Configuring Personal Assistant Servers, page 4-20](#)

Callers Hear “We Are Experiencing Technical Difficulties, Please Call Back Later”

If users call Personal Assistant and consistently get this message, there are two main problems to check for:

- Problems with the speech recognition subsystem—The speech or license servers are not running, or the speech package is not available in the expected location in `\speech\grammar\static\pa\` in the Personal Assistant installation directory.
 - Use the control center (**System > Control Center**) to see if the speech servers and license managers are running. Try stopping and restarting them to see if this resolves the problem.
 - Refresh the speech grammar by clicking **Refresh** on the Speech Services Configuration page (**System > Speech Services**). If the problem persists, verify that the package was created. Look for xcopy errors in the Personal Assistant log on the primary server. Contact Cisco Technical Support.
- The time changed on the Personal Assistant server, or there is a large time difference between the speech servers and the Cisco CallManager servers. Ensure the times are consistent on these machines, which typically get their time from the domain controller if the servers reside in a Windows domain.

Related Topics

- [Starting and Stopping the Servers and License Manager, page 6-16](#)
- [Control Center, page A-28](#)
- [Speech Services Configuration, page A-2](#)

It Takes Too Long For Personal Assistant to Answer Calls

If it takes a long time for Personal Assistant to answer calls to the Personal Assistant number, it is likely that you are using IP addresses for speech server or license managers in your configuration, and your DNS server is not set up to resolve an IP address to an IP address.

To resolve the problem, either reconfigure your DNS server to add IP address to the same IP address mapping, or change the Personal Assistant configuration to identify the speech servers and license managers using DNS host names.

Callers Hear a Busy Tone When Calling Personal Assistant

When people calling the Personal Assistant number hear a busy tone, you might have these problems:

- Callers always hear busy tone—If callers always get a busy signal, it could mean any of these problems exist:
 - Personal Assistant is not running. Check the status of the servers using the control center (**System > Control Center**).
 - No media ports are defined. Check the server configuration (**Servers > Server Configuration**) and add ports if necessary. You must also create the ports in Cisco CallManager. See the “[Configuring Personal Assistant Servers](#)” section on page 4-20 and the “[Adding Media Ports for Personal Assistant](#)” section on page 3-13 for more information.
 - The Personal Assistant CTI route points are not assigned to the JTAPI user for Personal Assistant. You must assign the route points used for the Personal Assistant number, the automated attendant number (if any), and all route points used as Personal Assistant interceptor ports.
- Callers occasionally hear a busy tone—Either add more media ports or install additional Personal Assistant servers. The call load from your users is heavier than the existing setup can handle.

Related Topics

- [Starting and Stopping the Servers and License Manager](#), page 6-16
- [Control Center](#), page A-28
- [Server Configuration](#), page A-31

Messaging Waiting Indicator Does Not Work

If the message waiting light on the telephones no longer lights when a new message is received, the problem might be in the calling search space configuration.

Do not include the PA partition in the calling search space that you use for voice-mail ports. The calling search space of the voice-mail ports should include the PAManagedEmployee partition, but not the PA partition, or the message waiting indicator will not work. When setting the mwisearchspace for the Messaging interface in Cisco CallManager, make sure it contains PAManagedEmployee but not PA.

Related Topics

- [Updating the Calling Search Space for End-User Phones, page 3-9](#)

All Users Cannot Browse Voice Mail

If users are transferred to the main voice-mail number when they say try to access voice-mail in Personal Assistant, rather than being taken directly to their voice mailbox, check the messaging configuration (**System>Messaging**). Ensure that the voice-mail servers are identified by unqualified DNS name, for example, unity1 rather than unity1.domain.com. Do not use IP addresses.

If that is not the problem, reinstall the Personal Assistant servers and specify a Unity domain and administrative user when asked for Windows domain information.

Some Users Cannot Browse Voice Mail

If users in general can access voice mail, but some users cannot, there is probably a problem with the Unity user setup information, or a consistency problem with Cisco CallManager.

Make sure the user's voice mailbox number matches with the user's extension in Cisco CallManager, and that the user ID is the same in Unity and Cisco CallManager.

If that is not the problem, check the Personal Assistant messaging configuration (**System > Messaging**), and ensure the user's voice-mail server is configured in Personal Assistant.

Finally, if you are using more than one voice-mail server, users can select the voice-mail number when configuring Personal Assistant user settings. Check the user's configuration to ensure they have selected the correct voice-mail number.

Users Cannot Log Into Voice Mail

If users cannot log into the voice-mail system from Personal Assistant, it is likely that the voice-mail profile was not correctly created. Search the registry on the Personal Assistant server for "Unity System Profile." This profile is created the first time someone accesses voice-mail through the Personal Assistant server.

If it is not there, and you are running the Personal Assistant server, create it using PA/bin/PAUnityTmp.prf.

Calendar-Based Call Routing Rules Do Not Work

If a user has set up calendar-based call routing rules, and the rules are not working, you might have an incorrect messaging configuration, or the user's meeting information might not yet be synchronized (making it unavailable for Personal Assistant).

Check the messaging configuration (**System > Messaging**) to ensure the correct server name and mailbox name are configured. See the "[Messaging Configuration](#)" section on page A-12 for information on the correct mailbox name.

If that is not the problem, create a schedule in Outlook for the user and make sure the information is getting published to the Exchange server.

If users are also not able to access voice-mail, see the "[All Users Cannot Browse Voice Mail](#)" section on page 6-7.

Users Hear Text-to-Speech Names Too Often

When a user calls Personal Assistant and tries to dial a party by name, Personal Assistant plays back the recorded name of the party before dialing the party, if a recorded name is available. Otherwise, Personal Assistant uses text-to-speech to generate a spoken version of the name. This text-to-speech version is often not a close pronunciation match to the real name.

To populate the system with recorded names (that is, with names recorded by the parties themselves, so the name is not only pronounced correctly but is spoken in the voice of the party), you have two options:

- If you are using Cisco Unity voice mail, you can synchronize the Unity spoken name with the Personal Assistant spoken name. Select **System > Messaging**, and click the **Synchronize** button in the Synchronize with Unity Spoken Name section. This will take the recording that already exists in Unity and reuse it for Personal Assistant.
- Encourage users to call Personal Assistant. When a user calls Personal Assistant, Personal Assistant checks whether a spoken name exists. If one does not exist, the user is prompted to record one.

Users can erase and rerecord their name at any time using the user interface. You can also erase a user's spoken name by selecting **System > User Settings**, and clicking **Reset** in Reset Spoken Name.

Related Topics

- [Messaging Configuration, page A-12](#)
- [User Settings Administration, page A-24](#)

Resolving Problems Managing Personal Assistant

These topics provide resolutions to problems you might encounter when managing Personal Assistant:

- [Speech Server or License Manager Not Recognized, page 6-10](#)
- [Servers Displaying Connectivity Problem, page 6-10](#)
- [The Server Processor is Running at Maximum, page 6-11](#)
- [Personal Assistant is Not Intercepting Calls, page 6-11](#)

Speech Server or License Manager Not Recognized




If you recently added a new speech recognition server or additional license manager hosts, you must refresh the servers before they can support users. See [“Configuring Speech Recognition”](#) section on page 4-5.

Servers Displaying Connectivity Problem

The Personal Assistant Control Center provides you with information about the status of the Personal Assistant servers. To access the Control Center, select **System > Control Center** from the Personal Assistant administration web interface.

[Table 6-1](#) indicates the possible server status. Use this information to determine the current server status and to resolve any problems.

Table 6-1 Server Status

Icon	Explanation	Solution
	Server is stopped.	You or Personal Assistant have stopped the server. Personal Assistant stops the servers during a normal refresh.
	Server is experiencing connectivity or permission errors.	Verify that the Personal Assistant servers are connected and up and running properly. If you have added Personal Assistant to a Windows 2000 domain, ensure that the server has administrator privileges in the domain. This is configured during installation.
	Server is started.	Server is functioning normally.

Related Topics

- [Starting and Stopping the Servers and License Manager, page 6-16](#)
- [Control Center, page A-28](#)

The Server Processor is Running at Maximum

If the Personal Assistant server is running at 100% consistently, where nlm and recserver are consuming all of the CPU cycles, you have a network connection problem. Possible causes include the cable getting unplugged or a DHCP release/renew event.

To resolve the problem, restart all license managers and speech servers from the control center (**System > Control Center**).

If the problem recurs frequently, and you are using DHCP, consider using static IP addresses for the Personal Assistant and speech servers.

Related Topics

- [Starting and Stopping the Servers and License Manager, page 6-16](#)
- [Control Center, page A-28](#)

Personal Assistant is Not Intercepting Calls

If Personal Assistant is not intercepting calls (which means it cannot apply call routing rules), make sure you have created the required interceptor ports and configured the Personal Assistant servers correctly for those ports.

If Personal Assistant never intercepts calls, potential problems might be:

- The CTI route points and translation patterns are not configured with the correct partition or calling search space.
- The calling phone's calling search space might not include the PA partition as the first partition.
- The Personal Assistant server is not configured to intercept calls for the called phone.
- The CTI route points used as interceptor ports are not assigned to the Personal Assistant JTAPI user.

If the problem is intermittent, check to see if call screening is enabled for the user. If it is, it is likely that a media port was not available for the call. Add more media ports or additional Personal Assistant servers.

Monitoring Server Status

You can view the current status of a Personal Assistant server by selecting **Servers>Server Status**. The “[Server Status](#)” section on page A-37 explains how to read the status and includes suggestions on resolving problems that might be displayed.

Monitoring Performance

Personal Assistant uses the Windows Performance Monitor to collect and display performance statistics. You can use these statistics to help identify suspected problems with the system, or to generally view system use.

These statistics are accumulated since the last time the server was restarted.

Procedure

- Step 1** Start Performance Monitor, for example, by selecting **Start>Programs>Administrative Tools>Performance**.
Read the online help for information on using Performance Monitor.
- Step 2** Click the **Add** button.
Performance Monitor opens the Add Counter window.
- Step 3** Select the Personal Assistant server you want to monitor, either by selecting **Use local computer counters** or by selecting **Select counters from computer** and entering the UNC of the server.
- Step 4** Select the CiscoPA performance counter.
- Step 5** Performance Monitor loads the Personal Assistant counters in the Select Counters window.
- Step 6** Either select **All counters** to view statistics for all counters, or use select **Select counters** from list and use Ctrl+click to highlight the counters you want. You can use Shift+click to select a range of counters.
- Step 7** Click **Add**, then **Close**.
Performance Monitor returns to the main window, where it shows a graphical and numeric representation of the counters.

Table 6-2 Personal Assistant Performance Monitor Counters

Counter	Description
Calls Answered	The total number of calls that Personal Assistant answered.
Call Failure	The total number of calls to Personal Assistant that did not succeed in completing a task. If the caller hangs up without completing a task, the call is considered a failure (for example, if the caller could not get Personal Assistant to recognize the name of a party to be called).
Calls to PA	The total number of calls made to Personal Assistant.
Calls Transferred to DTMF	The total number of calls that were transferred from speech recognition to DTMF response.
Call Success	The total number of calls to Personal Assistant that succeeded in completing a task (such as getting Personal Assistant to dial a party by saying the party's name).
Dial-By-Name	The total number of times users tried to dial a party by name.
Dial-By-Name: Disambiguations	The total number of times Personal Assistant found more than one match to the spoken name, and asked the caller to pick from a list of possible parties.
Dial-By-Name: Implicit Confirmations	The total number of times speech recognition confidence was high enough that Personal Assistant did not ask the caller to confirm the name of the party to be dialed.
Dial-By-Name: Operator	The total number of times callers to Personal Assistant explicitly asked to be transferred to the operator while trying to use dial-by-name.
Dial-By-Name: PA Rules Applied	The total number of times call routing rules were applied when a caller was using dial-by-name.

Table 6-2 Personal Assistant Performance Monitor Counters (continued)

Counter	Description
Dial-By-Name: Reconfirmations	The total number of times Personal Assistant asked users to confirm that the party Personal Assistant identified was the intended party.
Dial-By-Name: Speech Help Invoked	The total number of times callers explicitly ask Personal Assistant for help when trying to dial a party by name.
Dial-By-Name: Speech System Error	The total number of errors in the speech system while callers were trying to dial a party by name.
False Acceptance	The total number of times a call was accepted incorrectly.
Incoming Calls	The total number of calls to Personal Assistant, including calls that Personal Assistant did not answer.
PA Login Failure	The total number of times users tried to log into Personal Assistant but failed, for example, because they gave the wrong PIN.
Speech Channel Create Failure	The total number of times Personal Assistant failed to create a speech channel.
Speech Recognition: Total Error	The total number of times the speech recognition software failed to understand a spoken command.
Total Active Sessions	The number of sessions currently active, whether the session is a speech session or a non-speech session.
Total Speech Sessions	The number of currently active speech sessions.
Transfer Failed	The total number of times Personal Assistant tried but failed to transfer a call to another number.
Voice Mail	The total number of times callers asked to access voice mail.

Table 6-2 *Personal Assistant Performance Monitor Counters (continued)*

Counter	Description
Voice Mail: Disambiguation	The total number of times Personal Assistant found more than one match to the spoken name, and asked the caller to pick from a list of possible parties, while using voice mail.
Voice Mail: Implicit Confirmation	The total number of times speech recognition confidence was high enough that Personal Assistant did not ask the caller to confirm the name of the party to be dialed while using voice mail.
Voice Mail: Login Failure	The total number of unsuccessful attempts to log into the voice-mail system while using Personal Assistant.
Voice Mail: Reconfirmation	The total number of times Personal Assistant asked users to confirm that the party Personal Assistant identified was the intended party while using voice mail.

Collecting Call History Information

Personal Assistant maintains call history logs that you can use to help identify toll fraud. These logs are not to be used for call billing.

If you configure Personal Assistant to use the CiscoWorks2000 Syslog facility, call history information is written to syslog. See the [“Collecting System Logs with Syslog” section on page 6-21](#) for information on using syslog.

If you do not use syslog, Personal Assistant writes call history records to a series of files call PACallHistoryxx.log in the /logs folder on the Personal Assistant server, where xx is a number from 00 to 99. These files are limited to 2MB each, and when all logs are full, Personal Assistant begins reusing the logs.

The first line in the log documents how to read the call history records.

Starting and Stopping the Servers and License Manager

You can start and stop the Personal Assistant servers, speech recognition servers, and license managers through the Personal Assistant administrative web interface. This can help you add or remove servers from the Personal Assistant and speech server clusters in an orderly manner. It can also help you bring down a server that is not functioning properly.

Procedure

Step 1 Select **System > Control Center**.

Personal Assistant opens the control center. The control center is divided into three sections:

- **Personal Assistant Server**—lists the Personal Assistant server systems in the cluster
- **Speech License Manager**—lists the license manager systems in the cluster
- **Personal Assistant Speech Server**—lists the speech server systems in the cluster

The status of one type of server does not affect the status of any other type of server on the same system. For example, you can stop a license manager without stopping the Personal Assistant server on the same system, and vice versa.

Step 2 Find the Personal Assistant server, speech-recognition server, or license manager you want to start or stop, and click the **Start** or **Stop** button that is on the same line as the server.

You can start or stop all of the Personal Assistant servers, speech-recognition servers, or license managers as a group by clicking the **Start All** or **Stop All** button associated with the group.

Tips

- At least one license manager must be started in order for Personal Assistant to use the speech-recognition servers. When you are stopping and starting license managers, start and stop them in an order that ensures that at least one is always active.
- During a refresh, the speech-recognition servers are automatically stopped and started in an order that ensures that at least one is always active.

Related Topics

- [Control Center, page A-28](#)
- [Installing Personal Assistant On a New System, page 2-4](#)
- [Servers Displaying Connectivity Problem, page 6-10](#)

Collecting Trace and Debug Information

When you contact Cisco Technical Support for help with a problem you are having with Personal Assistant, Cisco might request that you collect trace and debug information.

Because collecting trace and debug information will affect Personal Assistant's performance, you should only turn on tracing and debugging at Cisco's request. The generated information is for Cisco's use in resolving product problems.

To collect trace and debug information, perform the following steps.

Procedure

-
- Step 1** From the Personal Assistant web interface, select **Servers>Server Configuration**.
Personal Assistant opens the Server Configuration page.
 - Step 2** From the left column, select the server from which you need to collect debug or trace information.
Personal Assistant displays the settings for the server.
 - Step 3** Scroll down to the Personal Assistant Debug Package List and Personal Assistant Trace Package List sections. Select the packages that Cisco Technical Support has requested. The lists in each section are identical; make sure that you select the

package in the list Cisco requested. Packages selected in the Debug list generate trace information plus extra debug data. If Cisco request you select all packages, click **Select All** from the appropriate list.

These settings apply to both the server and user interfaces unless noted otherwise.

The available packages include:

- PASRV—The main Personal Assistant server system. This applies only to the server.
- SS_PA_TEL—The telephony subsystem.
- SS_PA—The Personal Assistant subsystem for LDAP access.
- SS_PA_MAIL—The subsystem that interacts with voice mail and paging.
- PASCCP—The Skinny protocol subsystem.
- PARULES—The rules-based call routing subsystem. This applies only to the user interface.
- PADtmf—The DTMF interface.
- Perfmon—The performance monitoring subsystem.
- PASpeech—The speech recognition subsystem.

Step 4 Click **Save Settings** to save and activate your changes.

Personal Assistant begins generating the requested trace and debug information.

The information is placed in a log file in the /log subdirectory of the Personal Assistant installation directory. Or, if you configured Personal Assistant to use the CiscoWorks 2000 Syslog facility when you installed Personal Assistant, the data is sent to syslog. Send this information to the Cisco Technical Support group with which you are working. See the [“Collecting System Logs with Syslog” section on page 6-21](#) for information on using syslog.

Step 5 When you have finished generating debug and trace information, turn off debug and trace by clicking **Clear All** for each section in which you have made a selection. Then, click **Save** to complete the change.

Related Topics

- [Collecting System Logs with Syslog, page 6-21](#)
- [Installing Personal Assistant On a New System, page 2-4](#)
- [Server Configuration, page A-31](#)

Integrating with Network Management Systems

You can manage the status of the Personal Assistant server remotely using CiscoWorks2000 or another SNMP-based network management system. CiscoWorks2000 is the standard Cisco network management system, but it is not bundled with Personal Assistant. For more information about CiscoWorks2000, Campus Manager, and Topology Services, refer to the documentation, available at the following URL:

<http://www.cisco.com/univercd/cc/td/doc/product/rtrmgmt/cw2000/index.htm>

These topics provide information to assist you in integrating Personal Assistant with network management systems:

- [Understanding CDP Support, page 6-19](#)
- [Monitoring Personal Assistant Subsystem Status, page 6-20](#)
- [Collecting System Logs with Syslog, page 6-21](#)

Understanding CDP Support

Personal Assistant uses the Cisco Discovery Protocol (CDP) to periodically send out CDP messages, on the active interface, to a designated multicast address. These messages contain information such as device identification, interface name, system capabilities, SNMP agent address, and time-to-live. Any Cisco device with CDP support can locate a Personal Assistant server by listening to these periodic messages.

Using information provided through CDP, the CiscoWorks2000 Server can detect the Personal Assistant Server, and the Campus Manager application, Topology Services, can build topology maps displaying the Personal Assistant server.

Monitoring Personal Assistant Subsystem Status

Personal Assistant supports the SYSAPPL-MIB that allows you to use CiscoWorks2000 or a third-party SNMP browser to remotely access information about the following Personal Assistant components:

- Personal Assistant Server
 - PAServer.exe
 - PASPRM.exe
 - PASPNLM.exe
- Personal Assistant Web Administration
 - PAWebAdmin.exe
- Personal Assistant Speech Recognition
 - PASPREC.exe
 - PASPCS.exe

The SYSAPPL-MIB uses the Simple Network Management Protocol (SNMP). Personal Assistant supports the following SYSAPPL-MIB tables:

- SysApplInstallPkgTable—provides installed application information such as Manufacturer, Product Name, Version installed, Date installed, and Location, which is a partial URL for accessing the associated Application Administration web page (when applicable).
- SysApplRunTable—describes the application starting time and run-time status.
- SysApplInstallElmtTable—describes the individual application elements, or associated executables, which comprise the applications defined in the SysApplInstallPkgTable.
- SysApplElmtRunTable—describes the processes, or executables, that are currently running on the host system.

Collecting System Logs with Syslog

You can configure Personal Assistant to use the Cisco Syslog Collector. Cisco Syslog Collector and Cisco Syslog Analyzer are offered with CiscoWorks2000 as part of the Resource Management Essentials package. You can also adapt Syslog output from Personal Assistant for use with other network management systems.

The Cisco Syslog Collector keeps common system logs of messages reported to the Personal Assistant.

The Cisco Syslog Analyzer controls and displays all events efficiently so they can easily be read, interpreted, and used for system maintenance and problem solving.

Procedure

- Step 1** Select **System > Miscellaneous Settings**.
- Step 2** Personal Assistant opens the Miscellaneous Settings page.
- Step 3** Enter the fully-qualified DNS name of the CiscoWorks2000 server in **CiscoWorks2000 Host Name**, for example, server.domain.com.
- Step 4** Select true in **Write to Syslog**.
- Step 5** Click **Save** to save your changes.

Personal Assistant immediately begins writing messages to syslog.

Tips

- You can change the frequency with which Personal Assistant writes to syslog by changing the number of lines buffered between writes (Number of Buffered Trace Lines). The more lines you buffer, the less frequently data is written to syslog, which improves performance. However, if you buffer too many lines, syslog data might become too out-of-date to be unusable to you.

Related Topics

- [Miscellaneous Settings, page A-26](#)



Personal Assistant Administration Page Reference

These topics describe the fields on the pages of the Personal Assistant administrator's interface.

- [Speech Services Configuration, page A-2](#)
- [Telephony Configuration, page A-8](#)
- [AA Prompt Configuration, page A-11](#)
- [Messaging Configuration, page A-12](#)
- [Dial Rules Configuration, page A-16](#)
- [Directory Lookup Rules, page A-18](#)
- [Directory Hierarchy, page A-20](#)
- [Corporate Directory Settings, page A-22](#)
- [User Settings Administration, page A-24](#)
- [Miscellaneous Settings, page A-26](#)
- [Control Center, page A-28](#)
- [Server Configuration, page A-31](#)
- [Server Status, page A-37](#)

Speech Services Configuration

The Speech Services Configuration page is opened when you select **System > Speech Services**.

Description

Use the Speech Services Configuration page to configure the speech servers and the speech-recognition characteristics used when a user dials a number by speaking the name of the party to be called or when accessing voice mail.

Personal Assistant comes preconfigured for dialing by name, so you only need to change these settings if you find they do not work well for your organization. You might want to change these settings if there are a large number of similarly named people in your organization, or if accents in your group prevent the speech-recognition software from confidently interpreting their requests. Trial and error is the only effective way to determine whether you need to make changes to these settings to best suit your needs.

If the speech-recognition software has too many problems understanding a caller, the caller is sent to the operator. Select **System > Miscellaneous Settings** to enter the operator extension.

Table A-1 Speech Services Configuration Page

Field	Description	Notes
Refresh User Information from Directory	<p>The schedule for Personal Assistant to update user information from the corporate directory.</p> <p>Designate the time you desire for Personal Assistant to update its user information. Pick a time when directory updates are complete for the day, and there is reduced user access to Personal Assistant and the directory.</p> <p>Click Refresh to force Personal Assistant to update user information immediately. You might want to force a refresh if a large number of updates have been made to the directory and Personal Assistant is encountering a large number of speech-recognition errors.</p>	<p>Changes to the corporate directory require Personal Assistant to recompile its speech-recognition grammar and to update various information that is kept in cache, such as telephone numbers for call routing.</p> <p>The default time is 2:00 a.m.</p> <p>Refresh can take several minutes.</p>
Speech License Configuration		
License Code	The license key for the speech-recognition software. You must enter a valid key to enable speech recognition.	<p>Cisco provides this based on how many speech-recognition license ports you purchased.</p> <p>Changes to this setting take effect only after refresh.</p>
Max License Capacity	Shows the maximum number of simultaneous speech ports available using this license code.	If users complain that they are too frequently routed to touch-tone dialing rather than dial-by-name, consider adding additional speech ports.

Table A-1 Speech Services Configuration Page (continued)

Field	Description	Notes
Speech Recognition Parameters		
Max Disambiguate	<p>The number of selections to present the user when more than one party matches the spoken name.</p> <p>For example, if you enter 3, and the user tries to call John Smith, if there are two or three John Smiths in the directory, Personal Assistant plays the spoken name or extension, allowing the user to choose the correct one.</p> <p>If more numbers match the spoken name than the Max Disambiguate value, Personal Assistant sends the user to the operator for assistance in reaching the person.</p>	<p>If only one number matches the spoken name, the number is dialed immediately.</p> <p>The default is 3.</p>
Allow Barge-In	<p>Whether a user can interrupt Personal Assistant's prompts before they are finished. If you select true, a user can enter commands in the middle of a Personal Assistant prompt. If you select false, users must always wait until Personal Assistant finishes speaking.</p>	<p>The default setting is true.</p> <p>Use caution in disabling this feature. Typically, you should not disable it unless there is excessive background noise at the users' locations.</p>

Table A-1 *Speech Services Configuration Page (continued)*

Field	Description	Notes
Rejection Confidence Level	<p>The percentage confidence level below which the user's request is rejected. Personal Assistant tells the user that the request could not be understood. The user can then repeat the request or try phrasing it differently.</p> <p>The speech-recognition software assigns a percentage confidence level to every session. If the software is less than the Rejection Confidence Level, Personal Assistant tells the user that the request could not be understood. The user can then repeat the request or try phrasing it differently.</p>	<p>The default is 45. Enter a number between 0 and 100. Do not include the percentage sign in the field.</p>
Reconfirm Confidence Level	<p>The percentage confidence level below which the user is asked to confirm the speech-recognition software's interpretation of the request.</p> <p>If the software's confidence level is between the Rejection Confidence Level and the Reconfirm Confidence Level, Personal Assistant tells the speaker its interpretation of the request and asks the speaker to confirm the interpretation.</p>	<p>If the speech-recognition software's confidence level is higher than the Reconfirm Confidence Level, Personal Assistant completes the speaker's request without asking for confirmation. However, the speaker can tell Personal Assistant to cancel or stop the action.</p> <p>If you set this level too high, users will have to reconfirm most commands. If you set it too low, Personal Assistant might perform too many unintended tasks.</p> <p>The default is 60. Enter a number between 0 and 100. Do not include the percentage sign in the field.</p>

Table A-1 Speech Services Configuration Page (continued)

Field	Description	Notes
Max Error Count	<p>The maximum number of speech-recognition errors allowed in a single dialog. One user session with Personal Assistant or voice mail consists of several dialogs; for example, the attempt to dial a person would be a single dialog.</p> <p>If the user exceeds this error count, Personal Assistant transfers the user to the operator.</p>	
Max Total Error Count	<p>The maximum number of speech-recognition errors allowed in an entire Personal Assistant or voice-mail session (that is, the sum of errors in each dialog).</p> <p>If the user exceeds this error count, Personal Assistant transfers the user to the operator.</p>	<p>The Max Total Error Count must be larger than Max Error Count.</p> <p>When the user is in voice mail, the user must encounter three times the error count configured here before the count is considered exceeded.</p>
Max Help Count	<p>The maximum number of times the user can ask Personal Assistant or the voice-mail system for help within a single dialog.</p> <p>If the user asks for help more times than this number, Personal Assistant transfers the user to the operator.</p>	<p>When a user asks for help, Personal Assistant or the voice-mail system tells the user the various actions the user can perform at that point in the dialog.</p>
Max Total Help Count	<p>The maximum number of times the user can ask Personal Assistant for help in an entire Personal Assistant or voice-mail session.</p> <p>If the user asks for help more times than this number, Personal Assistant transfers the user to the operator.</p>	<p>The Max Total Help Count must be larger than Max Help Count.</p> <p>When the user is in voice mail, the user must ask for help three times the count configured here before the count is considered exceeded.</p>

Table A-1 Speech Services Configuration Page (continued)

Field	Description	Notes
Speech Recognition Server Hosts	<p>A list of the speech servers. This list creates the speech-recognition server cluster.</p> <ul style="list-style-type: none"> To add a speech-recognition server to the cluster, enter the server's DNS name or IP address in the left edit box and click Add. To remove a speech-recognition server, select it in the right list box, and click Remove. 	<p>Use the Control Center to manage which speech servers are active. See the “Control Center” section on page A-28.</p> <p>Changes to this setting take effect only after refresh.</p>
Speech Recognition License Manager Hosts	<p>A list of the speech-recognition license managers. This list identifies which Personal Assistant servers in the cluster will manage the licenses for the speech-recognition server cluster. The speech-recognition servers will not operate without a license manager that has a valid license.</p> <ul style="list-style-type: none"> To add a license manager to the cluster, enter the associated Personal Assistant server's DNS name or IP address in the left edit box, and click Add. To remove a license manager, select it in the right list box, and click Remove. 	<p>Cisco recommends that you identify two license managers. This ensures that a backup is available if one manager is disabled.</p> <p>Use the Control Center to manage which Personal Assistant servers have active license managers. See the “Control Center” section on page A-28.</p> <p>Changes to this setting take effect only after refresh.</p>
Save button	Click Save to save and activate changes.	

Related Topics

- [Configuring Speech Recognition, page 4-5](#)
- [Server Configuration, page A-31](#)

Telephony Configuration

The Telephony Configuration page is opened when you select **System > Telephony**.

Description

Use the Telephony Configuration page to configure the telephony providers that create the connection between Personal Assistant and Cisco CallManager.



Note

You must create at least one JTAPI provider and one Skinny provider before you can configure a Personal Assistant server. These providers must be in the same Cisco CallManager cluster as the one to which the Personal Assistant server homes (that is, where the Personal Assistant server's telephone numbers are defined). See the [“Server Configuration” section on page A-31](#) for more information on server configuration.

Table A-2 Telephony Configuration Page

Field	Description	Notes
Provider List	The left-hand column lists the providers you have already created. They are listed according to the provider group names you create when defining the provider. Click on a provider name to view the provider's characteristics.	
Insert button	Click Insert , after filling in the fields, to add the provider to the provider's list.	This button only appears when you first enter the Telephony Configuration page, when you click the New button, or after you delete a provider.
New button	Click New to open a clear page so that you can add a new provider.	This button only appears if you click on a provider in the Providers List (left column).
Save button	Click Save to save and activate your changes.	This button only appears if you click on a provider in the Providers List (left column).

Table A-2 Telephony Configuration Page (continued)

Field	Description	Notes
Delete button	Click Delete to delete the provider that you are currently viewing. You are prompted to confirm the deletion.	This button only appears if you click on a provider in the Providers List (left column).
Provider Group Name	<p>The name of the provider group you are adding. Enter a name you will find meaningful. When configuring Personal Assistant servers, you will select providers based on the names you enter in this field.</p> <p>You cannot change this name once you add it to the list. To change the name, you must create a new provider group, change the configuration of any Personal Assistant server using the old group name, then delete the old provider group.</p>	You must create one JTAPI provider and one Skinny provider for every Cisco CallManager cluster in which Personal Assistant server's have their telephone numbers and route points defined. For example, if you have 5 Cisco CallManager clusters in which Personal Assistant servers have numbers defined, you must define at least 10 providers (5 JTAPI, 5 Skinny).
Provider Type	The type of telephony provider, JTAPI or Skinny.	<p>Personal Assistant uses both JTAPI and Skinny protocols, and must have providers for both.</p> <p>JTAPI is used for interceptor ports and route points; Skinny is used for media ports.</p>

Table A-2 Telephony Configuration Page (continued)

Field	Description	Notes
Telephony Providers	<p>A list of the providers you want to use as a provider group:</p> <ul style="list-style-type: none"> • JTAPI provider groups—The DNS name or IP address of the CTI Manager for a Cisco CallManager cluster. • Skinny provider groups—The DNS name or IP address of the Cisco CallManager server. <p>All CTI Managers or Cisco CallManager servers you specify for a single provider group must be within the same Cisco CallManager cluster.</p> <p>To add a provider to the list, enter the DNS name or IP address in the edit box and click Add.</p> <p>To remove a provider, select the provider in the list and click Remove.</p>	
User Name and Password	<p>A CTI user name and password, as defined in Cisco CallManager, that Personal Assistant will use to access the Cisco CallManager system for a JTAPI provider.</p> <p>In Cisco CallManager, you must associate the Personal Assistant devices and ports with this user name, so that Personal Assistant can control the CTI route points.</p>	<p>Do not specify a user name and password for a Skinny provider.</p> <p>The password appears as asterisks (***) to ensure security.</p>

Related Topics

- [Configuring Telephony Providers, page 4-8](#)

AA Prompt Configuration

The AA Prompt Configuration page is opened when you select **System > AA Prompt**.

Description

Use the AA Prompt Configuration page to upload the prompt for a simple automated attendant, if you create one. A Personal Assistant automated attendant can only support dialing by name: you cannot use it to provide access to conferencing, voice mail, or other Personal Assistant features.



Note

You must identify the automated attendant telephone number in the Personal Assistant server configuration. See the [“Server Configuration” section on page A-31](#) for more information.

Table A-3 AA Prompt Configuration Page

Field	Description	Notes
Prompt File Name	<p>The file to use as the automated attendant prompt. Click Browse to locate the file on a local or network-attached file system.</p> <p>The file must be a .wav file in CCITT u-Law format (G.711 u-Law).</p> <p>Because the Personal Assistant automated attendant only supports dial by name, your prompt should at least tell the caller to say the name of the person they are trying to reach.</p>	<p>Personal Assistant does not include a recording facility: you must create this file with an appropriate voice recording application.</p>

Table A-3 AA Prompt Configuration Page (continued)

Field	Description	Notes
Upload button	Click Upload to upload the prompt file into the directory.	After the file is uploaded, and you have configured an AA number in the Personal Assistant server configuration, callers to AA number will hear your prompt and can then ask Personal Assistant to dial an employee by saying the employee's name.

Related Topics

- [Creating a Simple Automated Attendant, page 4-10](#)

Messaging Configuration

The Messaging page is opened when you select **System > Messaging**.

Description

Use the Messaging page to enable paging and calendar-based dial rule processing, and to configure the connection with the voice-mail system.

Table A-4 Messaging Configuration Page

Field	Description	Notes
Calendar Server Attributes		
Calendar Server Name	DNS name or IP address of the Microsoft Exchange Server.	

Table A-4 Messaging Configuration Page (continued)

Field	Description	Notes
Calendar Mailbox Name	<p>First name and last name of the administrator account on the Microsoft Exchange server.</p> <ul style="list-style-type: none"> If you are using Unity with an embedded or external Exchange server, use “Unity Messaging” unless you have configured the account using a different name. If you are not using Unity, but are using Exchange, use the first and last name of the administrator account on the Exchange server. 	<p>To find the administrator’s first and last name:</p> <ul style="list-style-type: none"> For Exchange 5.5, run Exchange Administrator and select Recipients under your exchange site. Double-click the Administrator user to bring up the properties. For Exchange 2000, run Active Directory Users and Computers and select Users. Double-click the Administrator user to bring up the properties.
Paging Server Attributes		
Paging SMTP Server Name	The DNS name or IP address of the e-mail paging server. Personal Assistant uses this server to send e-mail pages to users who configure an e-mail paging address and define rules that use the address.	
Paging SMTP Server Port	The SMTP port used to send messages to the SMTP server.	The default setting is 25.
Paging SMTP Domain Name	The domain to which the paging SMTP server belongs.	
Voice-mail Server Attributes		
Mailbox Name	The Exchange mailbox name for the Unity profile created on every Personal Assistant server, for example, “Unity Messaging System.”	This name is required if you are using any Cisco Unity voice-mail servers, optional otherwise.

Table A-4 *Messaging Configuration Page (continued)*

Field	Description	Notes
Number of Unity Licenses	<p>The number of voice-mail ports allowed by your Cisco Unity license, which indicates the maximum number of simultaneous voice-mail sessions in Personal Assistant.</p> <p>You must determine the number of ports on the Cisco Unity system and enter this value for Personal Assistant.</p>	<p>The default setting is 2.</p> <p>This field is only required if you are using at least one Cisco Unity voice-mail server.</p>
Redirection Delay	<p>The delay (in milliseconds) between making a connection to the voice-mail system and submitting the DTMF redirection sequence for transferring a caller to the appropriate voice mailbox. The delay ensures that the connection to the voice-mail system is successful before entering the DTMF sequence.</p> <p>Redirection is used when processing call routing rules that transfer calls to voice-mail.</p>	<p>If you make this delay too long, the caller might get confused and hang up before getting the voice-mail for the party.</p> <p>If you make it too short, calls might get dropped due to a missed connection.</p> <p>Try 2000 for Cisco Unity systems, and 3000 for Octel systems. Experiment to determine if the setting is appropriate.</p>
Voice-mail Server Name	<p>The unqualified DNS name of the voice-mail server you want to add, for example, unity1.</p> <p>Do not use fully-qualified names (such as unity1.domain.com) or IP addresses for the server name. If you use one of these, users will not be able to access voice-mail from Personal Assistant.</p>	<p>This field is optional for non-Cisco Unity servers. For Octel systems, leave the field blank.</p>
Pilot Number	<p>The telephone extension used to access the voice-mail system you are adding.</p>	<p>This field is required for all voice-mail servers.</p>

Table A-4 Messaging Configuration Page (continued)

Field	Description	Notes
DTMF Redirection Sequence (Internal)	<p>The redirection DTMF sequence for transferring a call internal to the corporate telephone network to the voice-mail system. This sequence is defined in the voice-mail system used on the server you are adding.</p> <p>For example, the default sequence, #X#2 for the Cisco Unity system, indicates that internal calls can be transferred to voice mail by pressing #, then the extension (represented by the variable X), # again, and then 2. Personal Assistant issues this DTMF sequence when a user's call processing rule says to transfer a call directly to voice mail.</p>	See the documentation for your voice-mail system to determine the appropriate DTMF sequence.
DTMF Redirection Sequence (External)	The redirection DTMF sequence for transferring a call external to the corporate telephone network (that is, from the PSTN) to the voice-mail system. This sequence is defined in the voice-mail system used on the server you are adding.	
Add Server button	Click Add Server to add the server to the list.	You must fill in the voice-mail server name (for Unity systems only), pilot number, and both DTMF fields before you can add a server.
List of Voice-mail Servers	<p>A list of the voice-mail servers you have configured for use with Personal Assistant.</p> <p>To modify a server, change the server's attributes and click Update.</p> <p>To delete a server, click the trash can icon.</p>	

Table A-4 Messaging Configuration Page (continued)

Field	Description	Notes
Synchronize with Unity Spoken Name	Click Synchronize to force Personal Assistant to load the spoken names kept in Cisco Unity for each user to the Personal Assistant spoken name for each user. By synchronizing the spoken names with Cisco Unity, users only need to record their spoken name once.	Synchronization is not supported with other voice-mail systems.
Save button	Click Save to save and activate your changes.	

Related Topics

- [Configuring Messaging, page 4-11](#)

Dial Rules Configuration

The Dial Rules Configuration page is opened when you select **System > Dial Rules**.

Description

Use the Dial Rules Configuration page to create global dialing rules. These rules can help you automatically strip numbers from or add numbers to telephone numbers that your users dial. For example, you could automatically add 9 in front of seven-digit numbers to permit users to access an outside line. These rules are applied when a user is dialing a number through Personal Assistant.

Table A-5 Dial Rules Configuration Page

Field	Description
Add Rule	<p>The section at the top of the page, which contains a fill-in-the-blanks sentence, where you can create a new dialing rule. Fill in the necessary blanks (you do not have to fill in every blank) and click Add Rule.</p> <p>A rule is only applied to a dialed number if all the conditions are met.</p> <p>The available conditions are:</p> <ul style="list-style-type: none"> • If the phone number begins with <i>blank</i>—This is one or more digits at the beginning of the number the user dialed. For example, if you enter 1, 1500, or 1500555, each would match the dialed number 1-500-555-6262. • and the number of digits is <i>blank</i>—The total number of digits in the telephone number your user dialed. For example, if the user dials 9-1-500-555-6262, the number of digits is 12. <p>The available actions are:</p> <ul style="list-style-type: none"> • then remove <i>blank</i> digits from the beginning—Personal Assistant should delete this number of digits from the front of the dialed number. For example, if you specify 4, and the dialed number is 1-500-555-6262, 1500 is removed, leaving 555-6262. • and prefix it with <i>blank</i>—After removing the specified number of digits, this string of numbers is added to the front of the dialed number. For example, adding a 9 to dial an external number.
List of Rules section	<p>An ordered list of the rules you have created. The rules are applied top to bottom, and the first rule that matches the dialed number is applied. Once a rule is applied, no subsequent rules are processed. You can modify, rearrange their priority, or delete rules:</p> <ul style="list-style-type: none"> • To modify a rule, change the rule and click Update. • Click the up or down arrows to move the rule within the list, changing its priority. • Click the trash icon to remove a rule.

Related Topics

- [Creating Dialing Rules, page 4-13](#)

Directory Lookup Rules

The Directory Lookup Rules page is opened when you select **System > Directory Lookup Rules**.

Description

Use the Directory Lookup Rules page to create rules for converting dialed numbers to numbers that exist in the corporate directory. This makes it possible for Personal Assistant to match the dialed number with the directory entry for the calling party. For example, if the incoming call is from 51234, but the corporate directory uses 10-digit numbers, you can create a rule to convert 51234 to 5555551234. This does not affect the number dialed, it only provides Personal Assistant with a valid number for looking up the user in the corporate directory.

The directory lookup rules only apply to incoming calls that are internal to the corporate telephone network.

Table A-6 Directory Lookup Rules Page

Field	Description
Add Rule	<p>The section at the top of the page, which contains a fill-in-the-blanks sentence, where you can create a new directory lookup rule. Fill in the necessary blanks (you do not have to fill in every blank) and click Add Rule.</p> <p>A rule is only applied to an incoming number if all conditions are met.</p> <p>The available conditions are:</p> <ul style="list-style-type: none"> • If the phone number begins with <i>blank</i>—This is one or more digits at the beginning of the incoming number. For example, if you enter 1, 1500, or 1500555, each would match the number 1-500-555-6262. • and the number of digits is <i>blank</i>—The total number of digits in the incoming telephone number. For example, if the number is 56565, the number of digits is 5. <p>The available actions are:</p> <ul style="list-style-type: none"> • then remove <i>blank</i> digits from the beginning—Personal Assistant should delete this number of digits from the front of the number. For example, if you specify 4, and the number is 1-500-555-6262, 1500 is removed, leaving 555-6262. • and prefix it with <i>blank</i>—After removing the specified number of digits (if any), this string of numbers is added to the front of the number. For example, you can add an area code and initial digits to a 5-digit extension, turning 56565 into 5555556565. Personal Assistant uses the resulting number to look up the calling party in the corporate directory.
List of Rules section	<p>An ordered list of the rules you have created. The rules are applied top to bottom, and the first rule that matches the incoming number is applied. Once a rule is applied, no subsequent rules are processed. You can modify, rearrange their priority, or delete rules:</p> <ul style="list-style-type: none"> • To modify a rule, change the rule and click Update. • Click the up or down arrows to move the rule within the list, changing its priority. • Click the trash icon to remove a rule.

Related Topics

- [Configuring Directory Lookup Rules, page 4-15](#)

Directory Hierarchy

The Directory Hierarchy page is opened when you select **System > Directory Hierarchy**.

Description

Use the Directory Hierarchy page to create locations and departments that a client can use to narrow a dial by name directory search. For example, if you create a location called NewYork, clients can tell Personal Assistant to search the NewYork location for Roger Smith. This can help clients get the correct party when dialing a person with a common name.

Table A-7 Directory Hierarchy Page

Field	Description	Notes
Hierarchy Type	Whether you are defining a location or a department. The selection you make here determines what is listed at the bottom of the page in the list of nodes in the hierarchy.	When talking to Personal Assistant, clients will use this feature by saying “location” or “department.” Choose the type most users will associate with the directory search you are creating here.
Node Configuration		
Name	The name for the location or department. This is only displayed in the list at the bottom of the page; it is not part of the spoken interface to Personal Assistant.	
Primary Spoken Response	The primary phrase a client would use to access this location or department search. This can be the same as the name.	For example, if you are creating a location, and enter NewYork here, clients can use this feature by saying “location NewYork.”

Table A-7 Directory Hierarchy Page (continued)

Field	Description	Notes
Alternate Spoken Name	<p>A list of aliases for the primary spoken name. Include all likely alternatives to your primary name. For example, if the primary name is NewYork, some likely aliases could be:</p> <pre>BigApple NYC MainOffice TheCity</pre> <p>To enter an alias, type the alias in the edit box and click Add. The alias is added to the list on the right.</p> <p>To remove an alias, select it in the list and click Remove.</p>	<p>The primary and alternate names do not have to be defined in the database. It is the LDAP search filter you define on this page that determines which directory entries match, not the words your client's might use.</p>
DTMF Sequence	<p>The keypad sequence a user can enter to select the node.</p>	<p>A DTMF sequence is optional.</p>
LDAP Search Filter	<p>An LDAP expression for limiting the search to directory entries that satisfy the filter.</p> <p>For example, if you are creating a NewYork location, and your directory has a "city" field, the filter might be:</p> <pre>(city=newyork)</pre> <p>Click Test Filter to test if the filter works against the corporate directory. Personal Assistant will tell you if the query worked, and display some matching entries.</p>	<p>The expression you enter must be valid for the directory you are using. See the documentation supplied with the directory, and your directory administrator, for information on valid LDAP expressions for your corporate directory.</p>
Save button	<p>Click Save to save and activate your changes. Personal Assistant adds the location or department to the list at the bottom of the page</p>	

Table A-7 Directory Hierarchy Page (continued)

Field	Description	Notes
List of Nodes in Hierarchy	<p>A list of the locations or departments defined in Personal Assistant. The list includes the number of matches for the node in the corporate directory.</p> <p>To view or change a node, click on the node in the list. Personal Assistant opens the Update Hierarchy Node page, which shows the attributes of the node (as defined in this table). Make your changes and click Update. You cannot change the name or type of the node.</p> <p>To delete a node, click the trash can icon on the same line as the node.</p>	Whether locations or departments are listed depends on what you select in the Hierarchy Type field.

Related Topics

- [Configuring Directory Hierarchies, page 4-17](#)

Corporate Directory Settings

The Corporate Directory Settings page is opened when you select **System > Corporate Directory Settings**.

Description

Use the Corporate Directory Settings page to identify the corporate directory server. This is the directory that contains information, such as phone numbers and locations, on all of the employees in the corporation. Personal Assistant uses this information to find the phone number for an employee when someone tries to phone the employee using the employee's name.

Table A-8 Corporate Directory Settings Page

Field	Description	Notes
Unique User Attribute Name	<p>The field within the directory that is unique for each record. This helps Personal Assistant correctly locate numbers when your users attempt to dial a person by name.</p> <p>If you are using the Cisco CallManager DC directory as your corporate directory, the unique user attribute name is cn. If you are using a different directory, ask the directory administrator for the unique name.</p>	<p>See the “Understanding How Personal Assistant Uses Directories” section on page 1-7 for an explanation of how Personal Assistant uses directories.</p>
Directory Server URL	The URL for the corporate directory, for example, ldap://server.domain.com.	
Directory Admin DN	The administrator name for the directory if authentication is required for accessing the directory.	
Directory Admin Password and Reconfirm Password	The administrative password for the directory if authentication is required for accessing the directory.	
Directory Search Base DN for Users	The Distinguished Name (DN) for the user node of your corporate directory.	
Directory Search Filter	<p>An LDAP expression for limiting the number of entries retrieved. For example, you could limit Personal Assistant’s directory lookups to a specific location, thus only allowing clients to use name dialing for employees in the selected area. For example, if your directory includes a “location” field, and “newyork” is a valid location in your directory, a directory search filter for limiting searches to New York might be:</p> <p>(location=newyork)</p>	<p>The expression you enter must be valid for the directory you are using. See the documentation supplied with the directory, and your directory administrator, for information on valid LDAP expressions for your corporate directory.</p>

Table A-8 Corporate Directory Settings Page (continued)

Field	Description	Notes
Save button	Click Save to save and activate your changes.	

Related Topics

- [Understanding How Personal Assistant Uses Directories, page 1-7](#)
- [Understanding the Role of Personal Assistant in the Cisco IP Telephony Network, page 1-8](#)
- [Configuring the Corporate Directory, page 4-18](#)

User Settings Administration

The User Settings Administration page opens when you select **System > User Settings**.

Description

Use the User Settings Administration page to manage Personal Assistant users.

**Note**

You cannot reset the user's password through Personal Assistant. Personal Assistant uses the Cisco CallManager password for the user. To change or reset the password, you must use the Cisco CallManager interface.

Table A-9 User Settings Administration Page

Field	Description	Notes
User ID	One or more users who you want to administer. If you enter more than one user ID, separate them with commas or spaces. For example: jones, smith	The User ID is the unique name used in the corporate directory, for example, email address.

Table A-9 User Settings Administration Page (continued)

Field	Description	Notes
Reset Pin	Click Reset in Reset Pin to clear the user's Personal Identification Number for Personal Assistant. The user must select a new PIN the next time he logs into Personal Assistant.	Resetting the PIN does not affect the user's data.
Reset Spoken Name	Click Reset in Reset Spoken Name to erase the user's spoken name for Personal Assistant. The user must record his name again the next time he logs into Personal Assistant.	The user can also reset the spoken name through the Personal Assistant user interface.
Delete Users	Click Delete to delete the users from the Personal Assistant directory. For example, if an employee leaves the company, deleting the employee's record from the corporate directory will not clear the Personal Assistant data from the directory. Similarly, if a cell phone is transferred from one employee to another, the cell phone number might stick with the old employee. Deleting the employee will clear the data.	Revise your company's procedures to ensure you delete the Personal Assistant data for former employee's along with the directory record.

Related Topics

- [Managing Users, page 5-3](#)

Miscellaneous Settings

The Miscellaneous Settings page displays when you select **System > Miscellaneous Settings**.

Description

Use the Miscellaneous Settings page to configure some system-wide settings for Personal Assistant.

Table A-10 Miscellaneous Settings Page

Field	Description	Notes
Operator Extension	<p>The phone extension of the telephone operator for your organization. Enter a valid extension for a number dialed within your phone network.</p> <p>For example, if you can reach the operator within your phone network by dialing 5 digits, enter the 5-digit number (for example, 12345).</p>	<p>Personal Assistant might transfer a call to the operator for a variety of reasons, including when a call to Personal Assistant contains more speech-recognition errors than you allow for. You can configure settings that control when a call is transferred to the operator. See the “Speech Services Configuration” section on page A-2.</p>
Call Pickup Timeout	<p>The time, in seconds, that the receiver of a call is allotted to answer a call when Personal Assistant is processing a rule that requires Personal Assistant to ring a series of phone numbers.</p>	<p>If the call is not answered within the timeout window, Personal Assistant rings the next phone number as defined in the rule.</p>
Peer Keep-Alive Interval	<p>The interval, in seconds, for which each Personal Assistant server sends keep-alive messages to the other Personal Assistant servers within the cluster. If the other servers in the cluster do not receive a keep-alive message from a server within the expected interval, they assume the server is disabled and take over its calls.</p>	<p>The default is 30 seconds. Only change this setting if you find it does not suit your network (for example, disabled servers are not being identified quickly enough, or the cluster is creating too much keep-alive traffic).</p>

Table A-10 Miscellaneous Settings Page (continued)

Field	Description	Notes
Peer TCP Port	The TCP port on which Personal Assistant servers listen for Personal Assistant inter-server communication.	The default is 2000. Only change this if another application on the server is already using this TCP port.
CiscoWorks2000 Host Name	The fully-qualified DNS name of the CiscoWorks2000 server, for example, server.domain.com.	This name is only required if you select true for Write to Syslog. Do not use an IP address.
Write to Syslog	Whether Personal Assistant should write log messages to the CiscoWorks2000 Syslog facility (true), or simply write messages to a local log on the Personal Assistant server (false).	Personal Assistant must be able to contact the server for you to enable syslog. If the server is not reachable, Personal Assistant resets this setting to false.
Number of Buffered Trace Lines	The number of messages to collect before writing them to syslog. The larger the number, the less frequently data is written to syslog (improving system performance). However, if you buffer too many messages, syslog information might not be sufficiently up-to-date to be useful to you.	The default is 4 messages.
Save button	Click Save to save and activate changes.	

Related Topics

- [Collecting System Logs with Syslog, page 6-21](#)

Control Center

The Control Center page is opened when you select **System > Control Center**.

Description

Use the Control Center page to start and stop the major services on the servers within the Personal Assistant and speech-recognition server clusters.

Table A-11 Control Center Page

Field	Description	Notes
Personal Assistant Server	<p>Controls the status of the Personal Assistant server service on the listed system. A server is started if there is an arrow icon beside it; it is stopped if there is a square icon beside it.</p> <ul style="list-style-type: none"> To start the servers on all listed systems, click the Start All button for the server group. To stop the Personal Assistant servers on all listed systems, click the Stop All button for the Personal Assistant server group. To start an individual Personal Assistant server, click the Start button on the same line as the server name. To stop an individual Personal Assistant server, click the Stop button on the same line as the server name. 	<p>A change to the status of the Personal Assistant server does not change the status of a license manager or resource manager on the same system.</p> <p>When you stop a server, the other servers in the cluster automatically take over the responsibilities of the stopped server.</p>

Table A-11 Control Center Page (continued)

Field	Description	Notes
Speech License Manager	<p>Controls the status of the license manager service on the listed system. A license manager is started if there is an arrow icon beside it; it is stopped if there is a square icon beside it.</p> <ul style="list-style-type: none"> • To start the license managers on all listed systems, click the Start All button for the license manager group. • To stop the license managers on all listed systems, click the Stop All button for the license manager group. • To start an individual license manager, click the Start button on the same line as the server name. • To stop an individual license manager, click the Stop button on the same line as the server name. 	The license manager controls how many simultaneous speech requests can be handled.

Table A-11 Control Center Page (continued)

Field	Description	Notes
Personal Assistant Speech Server	<p>Controls the status of the speech server service on the listed system. A server is started if there is an arrow icon beside it; it is stopped if there is a square icon beside it.</p> <ul style="list-style-type: none"> • To start the speech servers on all listed systems, click the Start All button for the speech server group. • To stop the speech servers on all listed systems, click the Stop All button for the speech server group. • To start an individual speech server, click the Start button on the same line as the server name. • To stop an individual speech server, click the Stop button on the same line as the server name. 	<p>When you stop a server, the other servers in the cluster automatically take over the responsibilities of the stopped server.</p>

Related Topics

- [Starting and Stopping the Servers and License Manager, page 6-16](#)
- [Servers Displaying Connectivity Problem, page 6-10](#)

Server Configuration

The Server Configuration page is opened when you select **Servers>Server Configuration**.

Description

Use the Server Configuration page to add Personal Assistant servers to the Personal Assistant server cluster and configure them. These settings determine which user telephone extensions are assigned to each server, as well as how the server manages its resources.

Table A-12 Server Configuration Page

Field	Description	Notes
Server List	A list of the Personal Assistant servers that you have inserted into the Personal Assistant server cluster (shown in the left column). Click a server to view or change its configuration.	
Insert button	Click Insert , after filling in the fields, to add the Personal Assistant server to the server cluster.	The Insert button only appears when you first enter the Server page, or when you click the New button.
New button	Click New to add a new Personal Assistant server to the cluster. If the New button is not displayed on the page (and the Insert button is displayed), then you can add a server without first clicking New .	The New button only appears if you click on a server in the Personal Assistant server list (left column).
Save button	Click Save to save and activate your changes.	The Save button only appears if you click on a server in the Personal Assistant server list (left column).

Table A-12 Server Configuration Page (continued)

Field	Description	Notes
Delete button	Click Delete when viewing the configuration of a Personal Assistant server that you want to remove from the server cluster. You must click on the server you want to delete, in the server list, before you can delete it.	The Delete button only appears if you click on a server in the Personal Assistant server list (left column).
Server Name	A unique name for the Personal Assistant server. This is not the same as the server's DNS name or IP address. It is a name that Personal Assistant uses internally for identifying the server.	The name must be unique within the Personal Assistant cluster. Choose a naming convention that is meaningful to you.
Hostname or IP Address	The DNS name or IP address of the Personal Assistant server.	
Media Termination UDP Port Begin	The start of the range of UDP ports that the Personal Assistant server will use for telephone calls. The number should be even: Personal Assistant will only use even port numbers. For example, if you use 32000 as the starting port, Personal Assistant will use ports 32000, 32002, 32004, and so forth.	The number of UDP ports used is based on the Personal Assistant Number of Telephony Ports setting.
Route Address Provider	The CTI Manager that will provide the JTAPI service required for the Personal Assistant and automated attendant CTI route points (telephone number). You must select a provider that resides in the same Cisco CallManager cluster in which the CTI route points are configured.	You must first configure a JTAPI provider. See the “Telephony Configuration” section on page A-8 for more information.

Table A-12 Server Configuration Page (continued)

Field	Description	Notes
Route Address	The telephone extension for the Personal Assistant server, which you must define as a CTI route point in Cisco CallManager.	Users call this number to reach Personal Assistant. If you are using more than one Personal Assistant server, you should consider configuring the “call forward busy” and “call forward” no answer extensions for the CTI route point to use the number of another Personal Assistant server. This ensures that a user can reach Personal Assistant even if the server the user calls is busy. See the “Setting Up Personal Assistant Server Load Balancing” section on page 1-23.
AA Route Address	The telephone extension for a simple auto-attendant that will use Personal Assistant to allow callers to reach a user by saying the user’s name. You must define this extension as a CTI route point in Cisco CallManager.	You must also record and configure a prompt for the auto-attendant. See the “Creating a Simple Automated Attendant” section on page 4-10 for more information.
Media Port Provider	The Cisco CallManager server that will provide the Skinny service required for the media ports. You must select a provider that resides in the same Cisco CallManager cluster in which the Personal Assistant’s CTI route point is configured.	You must first configure a Skinny provider. See the “Telephony Configuration” section on page A-8 for more information.
Media Port Begin Address	The start of the range of ports that will be used to terminate calls to Personal Assistant. When Personal Assistant answers a call, it is assigned to an available port in this range.	The number of telephony ports used is based on the Personal Assistant Number of Telephony Ports setting.

Table A-12 Server Configuration Page (continued)

Field	Description	Notes
Number of Media Ports	<p>The number of ports available for user calls. The number you select must be based on how you have installed Personal Assistant, the hardware platform you are using, and whether you are configuring failover for the server (see the “Fail-over Server Names” section on page A-36 setting).</p> <p>See the “Creating Server Clusters” section on page 1-18 for information about the maximum available ports for the various hardware platforms and installation configurations.</p>	<p>For example, if you enter 12, Personal Assistant can handle 12 simultaneous calls with users. If the server fails, and you have configured a failover server, the failover server must be able to take on 12 additional ports.</p>
Interceptor Port Provider	<p>The CTI Manager that will provide the JTAPI service required for the Personal Assistant interceptor ports.</p> <p>You must select a provider that resides in the same Cisco CallManager cluster in which the Personal Assistant’s CTI route points are configured. The provider you select here can be a different CTI Manager than the one selected for Route Address Provider.</p>	<p>You must first configure a JTAPI provider. See the “Telephony Configuration” section on page A-8 for more information.</p>

Table A-12 Server Configuration Page (continued)

Field	Description	Notes
Interceptor Port Range	<p>The telephone extensions of the users that are using Personal Assistant. The numbers you list here must be defined as CTI route points in Cisco CallManager. Any number you enter here must already be configured in the Cisco CallManager cluster controlled by the CTI Manager identified in the Interceptor Port Provider field.</p> <p>You can specify:</p> <ul style="list-style-type: none"> • An extension that uses variable placeholders, such as 5XXXX, which transfers to extensions 50000 to 59999. • Individual extensions, such as 55002. • A range of extensions, such as 55500-55599, which transfers calls that come in to extensions 55500, 55501, 55502, and so forth to 55599. Every number in the range must be individually configured in Cisco CallManager. <p>If you are using more than one Personal Assistant server, you should divide the supported extensions among the Personal Assistant servers.</p> <ul style="list-style-type: none"> • To add an extension or range of extensions, enter it or them in the edit box and click Add. • To remove an extension or range, select it in the list box and click Remove. 	<p>Calls are directed to Personal Assistant so that the users' call-routing rules can be evaluated for incoming calls.</p> <p>Configuring an extension for Personal Assistant Interceptor Port Range is not enough to get a user's calls transferred to Personal Assistant. In Cisco CallManager, you must also update the partitions and calling search spaces. See the “Defining Partitions and Call Search Spaces for Personal Assistant” section on page 1-33 and the “Setting Up Personal Assistant to Intercept Calls” section on page 3-5 for more details.</p>

Table A-12 Server Configuration Page (continued)

Field	Description	Notes
Fail-over Server Names	<p>A list of Personal Assistant servers that can take over for a server if it fails.</p> <ul style="list-style-type: none"> To add a failover server, enter the server's Personal Assistant name in the edit box and click Add. You must use the Personal Assistant's name for the server (the name that appears in the left column); do not use the server's DNS name or IP address. To remove a server, select it in the list box, and click Remove. 	<p>Establishing failover servers requires careful planning. If you specify failover servers, your Personal Assistant servers must have enough available ports to take over for a failed server. See the “Creating Server Clusters” section on page 1-18 and the “Creating Server Clusters” section on page 1-18.</p>
Trace Package List	<p>A selection of subsystems for which you need to collect brief trace information. Only select subsystems at the request of Cisco Technical Support; the trace information is for Cisco's use to help resolve problems that you cannot solve yourself.</p> <p>If you select a subsystem for debug, you do not have to select it for trace.</p>	<p>See the “Collecting Trace and Debug Information” section on page 6-17 for an explanation of each field.</p>
Debug Package List	<p>A selection of subsystems for which you need to collect detailed debug information. Debug information includes trace messages as well as more detailed messages. Only select subsystems at the request of Cisco Technical Support; the debug information is for Cisco's use to help resolve problems that you cannot solve yourself.</p>	<p>See the “Collecting Trace and Debug Information” section on page 6-17 for an explanation of each field.</p>

Related Topics

- [Configuring Personal Assistant Servers](#), page 4-20
- [Configuring Telephony Providers](#), page 4-8

- [Configuring Cisco CallManager for Personal Assistant](#), page 3-1
- [Creating Server Clusters](#), page 1-18
- [Understanding Partitions and Calling Search Spaces](#), page 1-6
- [Defining Partitions and Call Search Spaces for Personal Assistant](#), page 1-33
- [Collecting Trace and Debug Information](#), page 6-17

Server Status

The Server Status page is opened when you select **Servers>Server Status**.

Description

Use the Server Status page to view the current status of the Personal Assistant servers and their subsystems. The status can help you identify problems that need to be addressed. The status is given using icons:



Icon	Meaning
	Up. The server, port, or other item is running correctly.
	Down. The server, port, or other item is not running correctly.

Table A-13 Server Status Page

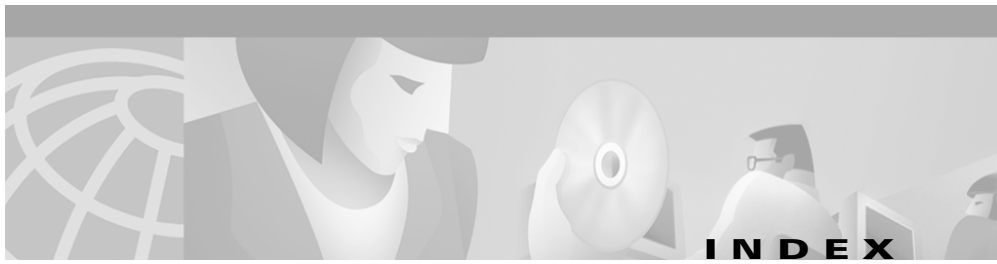
Field	Description	Notes
Server List	<p>A list of the Personal Assistant servers that you have inserted into the Personal Assistant server cluster (shown in the left column).</p> <p>Click a server to view its status.</p>	

Table A-13 Server Status Page (continued)

Field	Description	Notes
Server	Whether the Personal Assistant server is available (up) or unavailable (down).	If the server is unavailable, try restarting it using the Control Center (see Control Center, page A-28). If that does not solve the problem, check the server itself to determine the problem. The problem might also be the network connection to the server or the subnet where the server resides.
Fail Over Server	The name of the server that has taken over for this server if it is unavailable and you have configured a failover server.	
Route Point	The status of the Personal Assistant route point.	If the route point is unavailable, check it in Cisco CallManager to determine the problem.
AA Route Point	The status of the automated attendant route point.	If the route point is unavailable, check it in Cisco CallManager to determine the problem.
Media Ports	The status of each media port you defined.	
Interceptor Ports	The status of each interceptor port you defined.	
Active Calls	The number of calls the server is currently handling.	

Related Topics

- [Monitoring Server Status, page 6-12](#)



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