Advanced Speech Access

Release 1.1

Installation Guide

585-313-165
Issue 1
October 2002

Avaya Inc.
211 Mount Airy Road
Basking Ridge, New Jersey 07920

www.avaya.com

Your comments are welcome. They can assist us in improving our documentation. Please address your comments to infodev@avaya.com.

Document # 585-313-165
Release 1.1
Issue 1

Contents

About This Guide

Information in this guide is intended for the person responsible for installing Avaya Advanced Speech Access (ASA).

Using This Manual On Line

Following are guidelines for using this manual on line:

- Text that is underlined in green links to the underlined topic. Click the underlined text to jump to the topic.
- To jump to a topic from the Contents page, click the topic name or page number.
- To navigate forward and backward through the manual, use the tools provided by Acrobat Reader.

For Additional Information

For the latest product and support information, visit the Avaya Advanced Speech Access Web site at:

http://support.avaya.com/

ASA Components and Requirements

This section provides basic information about Avaya Advanced Speech Access (ASA) components and installation requirements. If you are already familiar with ASA and want to begin the installation now, skip to the step-by-step instructions ("Install ASA" on page 7).

Updated information about ASA is provided in the product *Release Notes* (available on the Avaya Advanced Speech Access Software CD subtitled Application Software). Be sure to read the *Release Notes* before performing any of the procedures in this guide. To install ASA successfully, the listed hardware and software prerequisites must have already been installed on the server.

To upgrade from ASA 1.0 to ASA 1.1, use the separate instructions that are available at the Web site:

http://support.avaya.com/

For more information about ASA, refer to the *Avaya Advanced Speech Access Administrator's Guide* (available on the Avaya Advanced Speech Access Software CD subtitled Application Software).

Note: With UCC Release 1.1, the ASA Server can be installed with or without a UCC Base Server; when the ASA Server is installed without a Base Server, it is known as a "standalone" ASA configuration. In addition, the ASA Server can be installed either in a configuration that includes access to both voicemail and Microsoft Exchange e-mail, contacts, tasks, and appointments or in a configuration that provides access to only voicemail, not Microsoft Exchange. This guide indicates the steps or sections that apply only to a particular configuration.

ASA Components

When you complete the ASA installation procedure (see "Install ASA" on page 7) you have a single-server implementation of ASA. The server on which you install and run the ASA components is referred to as the ASA *controller node*. Whether the implementation remains a single-server implementation or, in the future, the system is upgraded to a multiple-server configuration, the ASA installation is collectively referred to as a *serverset*.

Procedures for installing the following components are provided in this guide:

- **Nuance**. Software that provides ASA speech recognition facilities.
- **SpeechWorks Speechify**. Software that provides ASA text-to-speech facilities.
- **ASA Server.** Software platform on which ASA runs.
- **Avaya License Server.** Utility that enables you to manage software licenses obtained from Avaya, Inc.
- **VAOutlook.pub.** ASA application that runs on an ASA Server platform.
- **ASA Management Console**. Microsoft Management Console (MMC)-based utility from which you configure and manage ASA Server.
- **ASA Web Management**. Collection of the following browser-based utilities that support ASA administration over the Web:
  - **ASA Manager**. Enables you to perform many of the same ASA Server administration functions available on the ASA Management Console.
  - **ASA User Manager.** Enables you to perform user administration functions such as adding and deleting user accounts.
  - **ASA Reports**. Enables you to view system logs.
  - **ASA User Preferences.** Enables ASA subscribers to change their ASA settings.

Minimum Hardware Requirements

Table 1 lists the minimum hardware components for the ASA platform on which you install Avaya Advanced Speech Access.

Table 1 ASA Server Minimum Hardware Requirements

Hardware Component	Requirement
Processor	1 GHz Intel Pentium III processor (dual-processor recommended)
Memory	▪ 1.5 GB memory (up to 23 sessions) ▪ 3 GB memory (over 23 sessions)
Drives	▪ 20 GB available hard drive space ▪ CD-ROM drive
Network	100 Mbit PCI LAN Adapter
Slots	One available 5-volt 32-bit PCI slot (see Telephony Adapter requirement)
Telephony Adapter	One of the following Natural Microsystems adapters is required: ▪ NMS AG4000-2T1/800 (up to 23 ASR sessions) ▪ NMS AG4000-2T1/1600 (up to 46 ASR sessions) ▪ NMS AG4000-4T1/3200 (up to 46 ASR sessions and up to 46 outbound sessions) Following are the technical specifications associated with the AG4000 Series telephony adapter: ▪ Mechanical: PCI Rev. 2.2 for a long expansion card ▪ Physical dimensions: 4.2-inch (10.668 cm) x 12.283-inch (31.199 cm) ▪ Electrical: PCI Local Bus specification Revision 2.1 (requires PCI bus 5-volt signaling) ▪ Bus speed: DC to 33 MHz ▪ PCI SIG: PCI Specification Revision 2.1
Modem (optional)	Needed for remote troubleshooting of the ASA installation

Software Prerequisites

The following software must already be installed on the ASA Server before you begin the ASA installation:

- Windows 2000 Server Operating System, with Service Pack 2 or Service Pack 3

  The operating system must be configured to use the NTFS file system and pagefile of 4096 MB memory. It must also be optimized for background services.

- Microsoft Office XP, with CDO and Service Pack 2
- Microsoft Internet Explorer 5.5 or 6.0
- Internet Information Server (IIS)
- Windows 2000 Support Tools, available on the Windows 2000 Server installation media (optional tool for troubleshooting the ASA installation and sizing a large LDAP directory)
- Adobe Acrobat Reader (for accessing the user documentation)
- Java Runtime Environment 1.3.1 (standalone systems only, that is, configurations without a UCC Base Server)
- Remote access software, such as pcAnywhere (optional tool for remote administration)

Note: By default, IIS is added during the Windows 2000 Server operating system installation. If you are installing Windows 2000 just prior to beginning the ASA installation, do not disable this component. If the Windows 2000 installation on the ASA Server does not include IIS, you must install it as a prerequisite before installing ASA.

What You Need Before You Begin

Make sure you have the following before you begin the ASA installation:

- Access to telephone network information, including
  - Telephone numbers associated with the ISDN circuit
  - Brand and model of switch to which the ISDN is connected (and type of protocol used)
  - Information from the PBX programmer regarding the framing format and zero-code-suppression mode
- Three Avaya Advanced Speech Access Software CDs with inserts having the following subtitles:
  - Application Software
  - Automatic Speech Recognition
  - Text To Speech
- Working knowledge of Windows 2000 Server administration
- Working knowledge of Microsoft Exchange Server administration (if applicable)
- Administrator login privileges on the ASA Server, the Exchange server (if applicable), and the domain controller platforms
- For standalone ASA systems only, the License File that was sent to the customer or installer when ASA was purchased.
- SSL Certificate (where appropriate)
- The following information about the voicemail server:
  - Pilot number
  - IP address (Intuity voicemail servers only)
  - OAS configuration (Octel voicemail servers only)

Install ASA

This section provides step-by-step instructions to install the ASA software components from the CDs. See "ASA Components and Requirements" on page 1 for introductory information.

Updated information about ASA is provided in the product *Release Notes* (available on the Avaya Advanced Speech Access Software CD subtitled Application Software). Be sure to read the *Release Notes* before performing any of the procedures in this guide. To install ASA successfully, the listed hardware and software prerequisites must have already been installed on the server.

Pre-Installation Procedures

Procedure	Step-by-Step Instructions
I. **Run Prerequisite Tool**	1. Insert the CD subtitled Application Software into the CD-ROM drive. Use Windows Explorer to browse to the **ASAServer\Prerequisites\ Avaya ASA Prerequisite Tool** directory. 2. Double-click the Readme.doc file and follow its instructions to copy and run the ASA.exe program to verify that the hardware and software prerequisites for installing ASA are met.

Procedure	Step-by-Step Instructions
II. **Create (Enable) a Test Account and an ASA Mailbox** (Microsoft Exchange implementations only)	**Important:** Perform this step only for implementations that use Microsoft Exchange. Create (or enable) an Exchange mailbox for yourself so that you can test the ASA installation: 1. Access the **Exchange Administrator** program (Exchange Server 5.5 users) or the Windows **Active Directory Users and Computers** program (Exchange 2000 Server users). 2. Create a new test Domain User account. If you are using Exchange 5.5, next create your mailbox. If you are using Exchange 2000, mailbox-enable the test account.
III. **Create the ASA Service Account and Set Up a Mailbox**	In this procedure, we use the name **AvayaASA** for the ASA service account; you can select a different name. Create a new domain user (with a password) called **AvayaASA**, using the following criteria: 1. Create the user in the Windows domain in which the ASA platform servers will run. 2. Select a password for the new user and set the password options as follows: a. Make sure that the **User Must Change Password at Next Logon** check box is cleared. b. Make sure the **User Cannot Change Password** and **Password Never Expires** check boxes are selected. 3. For Microsoft Exchange implementations, create (for Exchange 5.5) or Enable (for Exchange 2000) a mailbox for the new service account.

Procedure	Step-by-Step Instructions
IV. **Set Permissions for the Service Account** (Microsoft Exchange implementations only)	**Important:** Perform this step IV only for implementations that use Microsoft Exchange. Perform step 1 ***or*** step 2 below, according to the version of Microsoft Exchange Server. 1. ***If you are using Microsoft Exchange Server 5.5,*** go to the Exchange Administrator screen and make the **AvayaASA** account a **Service Account Admin** for the ASA site. Then proceed to step 3. 2. ***If you are using Microsoft Exchange Server 2000,*** for each Exchange Server that will have ASA-enabled accounts, perform the following steps: a. Go to the Exchange System Manager window and navigate to the **Servers** folder and the specific Exchange server name. b. Right-click the Exchange server name and select **Properties**. c. Select the Security tab and add the **AvayaASA** account to the list. d. Ensure that ***only*** the following **AvayaASA** Permissions are allowed: **Administer information store** **Receive As** **Send As** 3. If you are using Active Directory on the Exchange server, ensure that Exchange server's Group policy allows the AvayaASA service account to do the following on the ASA Server: ■ Install or remove software ■ Edit the registry ■ Open the MMC in Author mode ■ Create a virtual directory in IIS

Procedure	Step-by-Step Instructions
IV. (Continued) **Set Permissions for the Service Account** (Microsoft Exchange implementations only)	4. If you are not already logged on as an administrator to the ASA Server, log on. ***Make the* AvayaASA *account a member of the local Administrators group***.
V. **Create an Outlook Profile for the ASA Service Account** (Microsoft Exchange implementations only)	**Important:** Perform this step only for implementations that use Microsoft Exchange. For this procedure, we use the service account name **AvayaASA**. If you called the service account anything other than **AvayaASA**, substitute your own profile name. 1. Log on to the ASA Server as the **AvayaASA** service account, using the password you selected earlier for that account. 2. Launch Microsoft Outlook and follow its Startup wizard. a. On the Outlook 2002 Startup dialog box, click **Next**. b. On the Account Configuration dialog box, select the **Yes** radio button to configure an E-mail account, and click **Next**. c. On the E-mail Accounts dialog box, select the **Microsoft Exchange Server** radio button and click **Next**. d. For Exchange Server Settings, in the Microsoft Exchange Server field enter the name of the Microsoft Exchange Server on which you previously established the AvayaASA account. In the User Name field enter **AvayaASA**. Click **Next**. e. When the wizard completes, click **Finish**. f. If Outlook opens, close it. 3. From the Windows desktop, right-click the Outlook icon, click **Properties**, and then click the **Show Profiles** button.

Procedure	Step-by-Step Instructions
V. (Continued) **Create an Outlook Profile for the ASA Service Account** (Microsoft Exchange implementations only)	4. On the Mail dialog box, do the following: a. Click the **Copy** button. b. On the Copy Profile dialog box, enter a New Profile Name of **AvayaASA**. c. Click **OK**. d. On the Mail dialog box, highlight the original profile you made a copy of, click **Remove**, and then **Yes** to confirm that you want to delete it. e. Click **Apply** and then click **OK**. 5. Log off the system.

ASA Installation Procedure

Make sure you have the *Avaya Advanced Speech Access Release Notes* on hand before beginning the installation.

Component Installation Procedure	Step-by-Step Instructions
I. **Install Avaya License Manager** (ASA standalone configurations only)	**Important:** Perform this step only for ASA standalone configurations. For configurations that include a UCC Base Server, ASA licensing is managed by the Base Server and you should skip this step and begin with step II, "Install the NMS Software and Patch" on page 13. 1. Log on to the ASA Server as a member of the local administrator's group. 2. Insert the CD subtitled Application Software into the CD-ROM drive. From the ASA installation menu, click **Prerequisites** and open the folder named Avaya License Manager. Then open the Install folder and launch the **setup.exe** program. **Note:** If you have installed the NMS card and if Windows launches the auto-hardware detect Wizard, exit from the wizard. 3. Follow the instructions that appear on the dialog boxes to install the licensing software. If SSL is already installed on the ASA Server, be sure to select the **SSL Enabled** check box to enable SSL. 4. When the installation is finished, answer **Yes** to restart the system. 5. Log in again as a local administrator to the ASA Server. 6. Click **Start->Programs->Avaya License Manager**. The WebLM page appears. 7. Click **License Administration** to access the login page. Then click **Continue**.

Component Installation Procedure	Step-by-Step Instructions
I. (Continued) **Install Avaya License Manager** (ASA standalone configurations only)	8. Follow the instructions for confirming a new password; then click **Continue**. When the password is accepted you see the **Password has been changed** message. 9. Click **Back to WebLM Main Page**. Enter the password and click **License Administration** to access the login page. 10. Click **Install License File** and browse to the .xml license file. 11. Click **Install** to upload the license file required for ASA.
II. **Install the NMS Software and Patch**	**Note:** If you have not yet installed the Natural Microsystems (NMS) Telephony Adapter, shut down the system and install it now before beginning this procedure. The NMS software and required software patch are provided on the CD subtitled Application Software. Proceed as follows to install this software: 1. Log on to the ASA Server as a local administrator. **Note:** If Windows launches the auto-hardware-detect Wizard, exit from the wizard. 2. Insert the CD subtitled Application Software into the CD-ROM drive. From the ASA installation menu, click **Prerequisites** and open the folder named **NMS2001-1**. (You will install its patch file later.) 3. Launch the **setup.exe** program and click **Install Products**. On the next screen click **NMS Products**. 4. On the Welcome screen, click **Next**, then accept the license agreement.

Component Installation Procedure	Step-by-Step Instructions
II. (Continued) **Install the NMS Software and Patch**	5. Select the following on the series of NMS installation dialog boxes: a. Board Family: **AG and CG** b. Select Countries: Scroll down the list and choose the appropriate country. c. Accept the default directory and program group. d. Setup Type: **Compact** e. Setting Environment Variables: **Let Setup modify your settings**. 6. When the installation is complete, click **Finish**, close the log file, and exit the NMS installation program. 7. From the ASA installation menu, click **Prerequisites** and open the folder named **NMS 2001-1 Patch**. 8. Run in numerical order all of the executable (**.exe**) programs (patch files) in the directory. When prompted, click **Unzip** to extract each patch file to the directory where you installed the NMS software (**c:\NMS** by default). **Note:** If the files fail to unzip, you might need to highlight the directory where you installed NMS, right-click the folder, and unselect read-only status for this folder and its subfolders. 9. When you have extracted all the patch files, close all open windows. 10. Remove the CD from the CD-ROM drive.

Component Installation Procedure	Step-by-Step Instructions
III. **Install and Configure Text to Speech Software**	1. Insert the CD subtitled Text To Speech into the CD-ROM drive. If the installation does not automatically launch, launch the **setup.exe** program. 2. Follow the instructions on the dialog boxes, accepting all defaults. Select a **Complete** installation. Click **Finish** when the installation completes. (Select **No** if you are prompted to restart the system.) 3. ***For American English,*** from the CD directory named **Speechify2.1****EN-US**, open the **mara_8** folder and run the setup program. ***OR*** ***For British English,*** from the CD directory named **Speechify2.1****en-GB**, run the setup program. Follow the dialog box prompts; accept defaults. 4. To access the Speechify Management console, select **Start->Program->Speechify-> Speechify Server Management**. 5. From the right pane of the Speechify console, right-click **mara_8** for American English or **helen** for British English, and then select **Properties**. 6. On the General tab, configure the following parameters: a. In the Port field, make sure the port is set to **5555**. b. In the Number of children to prestart field, change the value to **4**. 7. Click **Apply** and then **OK**. 8. Close all open windows. Answer **Yes** if you are asked whether you want to save the console settings. 9. Remove the CD from the CD-ROM drive.

Component Installation Procedure	Step-by-Step Instructions
IV. **Install Speech Recognition Software**	1. Insert the CD subtitled Automatic Speech Recognition into the CD-ROM drive. Click **Install Products**, accept the license agreement, and then click **Nuance 7.0.4 and Verifier 2.0**. 2. Accept all installation defaults, with the following exception: from the Setup Type dialog box, choose the **Compact** installation. 3. If you receive an error message that the path environment variable is too long, click **OK** and continue. 4. When the installation is complete, click **Finish** and remove the CD from the CD-ROM drive. 5. If you saw the error regarding the path environment variable length in step 3, open a DOS window, type **path** and verify that **c:\Nuance\v7.0.4\bin\win32** and **c:\Nuance\v7.0.4\scripts** are among the paths listed. Call for support if necessary. 6. Restart the ASA Server.
V. **Install Nuance Service Pack and Language Module**	1. Log on to the ASA Server as a local administrator. 2. Insert the CD subtitled Application Software into the CD-ROM drive. From the ASA installation menu, click **Prerequisites** and open the folder named **Nuance 7.0.4 Patches**. 3. Open the **Service Pack** folder and double-click it. In numerical order, run all of the executable (**.exe**) programs in the directory. ***Do not choose the Unzip option immediately.*** Instead, for each .exe, change the target folder to **c:\nutemp** and then click **Unzip.** 4. Close all open windows.

Component Installation Procedure	Step-by-Step Instructions
V. (Continued) **Install Nuance Service Pack and Language Module**	5. From Windows Explorer, open the **c:\nutemp** directory, **Copy** all the files and folders, then **Paste** them into the **c:\Nuance\V7.0.4** directory. Answer **Yes to All** when asked whether to overwrite the files and folders. 6. Close all open windows. 7. From the ASA installation menu, click **Prerequisites** and open the folder named **Nuance7.0.4.Patches\English Language Pack Module** 8. Run one of the following .exe files: ***For American English, run:*** **LanguageModule-EnglishAmerica-V7-0-R1.exe** ***OR*** ***For British English, run:*** **LanguageModule-EnglishUK-v7-0-r6.exe** 9. Click **Unzip**. 10. When prompted, enter the directory where you installed the Nuance 7.0.4 software (**c:\Nuance\v7.0.4** by default). **Note:** Later in these procedures, you will need to configure a global parameter if you installed British English. 11. Close all open Explorer windows. 12. Remove the CD from the CD-ROM drive.

Component Installation Procedure	Step-by-Step Instructions
VI. **Install Windows Media Encoder 7.0**	1. From the ASA installation menu, click **Prerequisites** and open the folder labeled **Windows Media Encoder 7.0**. 2. Double-click **wmencoder.exe** to install the software. 3. Accept all installation defaults. 4. Select **Yes** if you are prompted to create a new folder. 5. When the installation is complete, select the **Exit Setup** radio button and click **OK**. 6. Close all open Explorer windows.
VII. **Install Microsoft XML Parser 3.0 Service Pack 1**	1. From the ASA installation menu, click **Prerequisites** and open the folder labeled **MSXML Parser 3.0 SP1**. 2. Double-click **msxml3sp1.exe** to install the software. Follow the wizard and accept all installation defaults. 3. When the installation is complete, click **Finish**. 4. Close all open Explorer windows.
VIII. **Install DAO 2.1**	1. From the Microsoft Services window, stop the Windows Media Station service if it is present. 2. From the ASA installation menu, click **Prerequisites** and open the folder labeled **DAO 2.1**. 3. Open the folder labeled **DISK1** and run the **SETUP.EXE** program. Accept all defaults when prompted. 4. When you see the **...successfully installed** message, click **OK.** 5. Remove the CD from the CD-ROM drive. 6. Log off and restart the ASA Server.

Component Installation Procedure	Step-by-Step Instructions
IX. **Install ASA Server Software**	1. Log on to the ASA Server using the service account you created in step II of the Pre-Installation Procedures ("Create the ASA Service Account and Set Up a Mailbox" on page 8). 2. Insert the CD subtitled Application Software into the CD-ROM drive. From the ASA main installation menu, click **Install Components**. From the ASA Components dialog box, select **ASA Server.** 3. On the Welcome screen, click **Next**. 4. Select a language and click **Next**. 5. From the Setup Type dialog box, select **Avaya ASA Server**, and click **Next**. 6. From the Serverset Controller Decision dialog box, select **Yes, this is the Serverset Controller** and click **Next**. 7. On the Choose Destination Location dialog box, accept the default destination folder or browse to select a new folder. Click **Next**. 8. On the Install MSDE Decision dialog box, make sure the **Install MSDE** radio button is selected; then click **Next**. 9. On the Choose Destination Location dialog box, you are prompted for the directory in which to install the database (**C:\Program Files\MSSQL7** by default). Click **Next** to accept the default directory or click **Browse**, select a new folder, and then click **Next**. 10. On the Enter Information dialog box, enter the name for the ASA service account you created in step II of the Pre-Installation Procedures "Create the ASA Service Account and Set Up a Mailbox" on page 8 (for example, **AvayaASA**) and click **Next**.

Component Installation Procedure	Step-by-Step Instructions
IX. (Continued) **Install ASA Server Software**	11. On the Enter Avaya Service Password dialog box, enter the password for the service account and click **Next**. 12. On the Enter Information dialog box, enter the domain for the ASA service account and click **Next**. 13. On the Select Program Folder dialog box, you are prompted to select the program folder into which the ASA Server start menu icons are installed. Click **Next** to accept the default directory or click **Browse**, select a new folder, and then click **Next**. Installation begins. You see a series of progress messages as the ASA Server software is installed. 14. Click **OK** if you are told about SQL Service Pack 4. 15. When the installation is complete, click **Finish**. 16. On the ASA Installation screen, click **MENU** and then click **EXIT**. 17. Remove the CD from the CD-ROM drive. 18. Log off and restart the ASA Server.
X. **Install SQL Server Service Pack 4**	1. Log on to the ASA Server as the service account you created in step II of the Pre-Installation Procedures ("Create the ASA Service Account and Set Up a Mailbox" on page 8). 2. Bring up the Windows Services screen and stop the following services in the order listed: **VAManager** **VAServerManager** **SQLServerAgent** 3. Point to the MSSQL Service Manager icon (near the clock); right-click the icon and choose **Exit**.

Component Installation Procedure	Step-by-Step Instructions
X. (Continued) **Install SQL Server Service Pack 4**	4. Insert the CD subtitled Application Software into the CD-ROM drive. From the main menu, click **Prerequisites**, open the **SQL Server Service Pack** folder, and launch the **sql70sp4.exe** file. 5. The executable file uncompresses the SP4 files and extracts them to the **C:\70SP4** directory. Accept the defaults and follow the instructions. If prompted, create the installation folder as necessary. When this extraction process is complete, click **OK**. 6. Open the folder **C:\70SP4** and run the **setup.bat** file. Accept all defaults. Make sure the Connect to Server dialog box specifies: **The Windows NT account information I use to log on to my computer with (Windows NT authentication)** and proceed. 7. Accept the Windows Authentication mode default. 8. Clear the **View Readme** check box and click **Finish**. 9. Close all open windows.
XI. **Install the ASA Application**	1. From the ASA installation screen, click **Install Components** and then select **ASA Application.** 2. Click **Next** at the Welcome screen, select a language, and click **Next** at the licensing screen. 3. Follow the instructions that appear on the dialog boxes. When you are prompted to select the directory into which the **ASA** application files install (**C:\Program Files\ASA Application** by default), click **Next** to accept the default directory or click **Browse**, select a new folder, and then click **Next**.

Component Installation Procedure	Step-by-Step Instructions
XI. (Continued) **Install the ASA Application**	4. When the installation is complete, click **Finish**. 5. If prompted to restart the system, select **No**.
XII. **Install the ASA Web Interface**	1. From the ASA installation screen, select **ASA Web Management.** 2. Click **Next** at the Welcome, select a language, and click **Next** at the licensing screen. 3. Follow the instructions that appear on the dialog boxes. On the Enter Information dialog box, enter the name of the service account you created in step II of the Pre-Installation Procedures ("Create the ASA Service Account and Set Up a Mailbox" on page 8); in the Enter Avaya Service Password dialog box, enter the password you created for that service account. 4. When prompted, enter the domain name for the service account. 5. On the Choose Destination Location dialog box, accept the default folder (**C:\Program Files \ASA Web Management**) or click **Browse** and select a different location. Click **Next**. 6. When the installation is complete, click **Finish.** 7. Remove the CD from the CD-ROM drive. 8. Restart the ASA Server.

What To Do Next

Before you can use the ASA application, you must configure the ASA Server for the site environment. Proceed to the instructions that begin on page 23 to configure the ASA Server.

Configure ASA Server

This section provides information about the configuration tasks you must perform immediately after installing the ASA software. For additional information about ASA Server configuration, see the *Avaya Advanced Speech Access Administrator's Guide* (available on the Avaya Advanced Speech Access Application software CD-ROM)

What You Need to Configure the ASA Server

- Name or IP address of the Microsoft Exchange server, if applicable
- Name or IP address of the UCC Base Server, if used in this configuration (this is necessary for licensing)
- Name of the ASA service account
- ASA service account login privileges
- The following LDAP information:
  - Name of the LDAP server
  - Parameters supported on the LDAP server (see the LDAP server administrator)

Server Configuration Procedure

ASA Server Configuration Procedure	Step-by-Step Instructions
I. **Add ASA Processes**	1. Log in as a member of the local Administrators group. 2. From the desktop, click **Start->Programs->Avaya ASA Server->Avaya ASA Management Console**. 3. From the left pane of the ASA Management Console, expand **ASA Management**. You are prompted to add several processes (prompts appear only the first time you expand this node). 4. If prompted, click **OK** at the Add Controller Server dialog box. 5. Add the Telephony Server process: a. On the Add Telephony Server dialog box, enter a name for the telephony server process (**TelephonyProvider** by default). b. From the drop-down list, select **Natural Microsystems Telephony Server**. c. Click **OK**. 6. Add the Text-to-Speech process: a. On the Add TTS Server dialog box, enter a name for the text-to-speech process (for example, **ASA TTS**). b. From the drop-down list, select **Speechify TTSServer**. c. Click **OK**.

ASA Server Configuration Procedure	Step-by-Step Instructions
I. (Continued) **Add ASA Processes**	7. Add the Speech Recognition Server process: a. On the Add Recognition Server dialog box, enter a name for the speech recognition server (**Recognition Server** for example). b. From the drop-down list, select **Nuance Manager**. c. Click **OK**. 8. Add the VAServer Process: a. If you are using Microsoft Exchange with ASA, at the Add VAServer Process dialog box, enter a name for the process that monitors Microsoft Exchange (**VAServer** by default). b. From the drop-down list, select **VAServer**. c. Click **OK**. 9. Add the Names Download Application process: a. On the Names Download Application dialog box, enter a name for the Names Download process (**NamesDownload** by default). b. From the drop-down list, select **NamesDownload**. c. Click **OK**. 10. Add ASA Telephony Engines: a. On the Add ASA Engine dialog box, enter a name for the Telephony Engine process (for example, **ASA TelephonyEngine)**. b. From the drop-down list, select **Telephony Engine**.

ASA Server Configuration Procedure	Step-by-Step Instructions
I. (Continued) **Add ASA Processes**	c. Click **Multiple** to add more than one engine. (You would click OK to add only one engine for a single-port ASA Server, but this is a rarely used configuration.) The number of ASA engines you need is equivalent to the number of ports you are licensed for (for example, you would add 6 engines for 6 ports). d. In the Number of processes to create field, select the number of ASA engines to create. e. In the Name Prefix (a number will be appended as specified below) field, enter a prefix for the process names (for example, enter **Engine_** to create processes called Engine_1, Engine_2, and the like). f. Accept all other defaults and click **OK**. g. Click **OK** at the Done dialog box.
II. **Add the Application**	1. In the left pane of the ASA Management Console, click **ASA Manager.** Then click **ASA Applications.** 2. Right-click and select **New-> ASA Application**. 3. On the Set Application File dialog box, click **Browse** and highlight **VAOutlook.vapub**. Then click **Open**. 4. On the Set Application File dialog box, click **OK** to accept the default path for the application. If the Set Application File dialog box appears again, ignore this dialog and proceed to the next procedure.
III. **Associate Telephony Engines with the ASA Application**	1. On the left panel of the ASA Management Console, expand the **Server Set** node. Then expand the name of the ASA Server node. The list of telephony engines appears.

ASA Server Configuration Procedure	Step-by-Step Instructions
III. (Continued) **Associate Telephony Engines with the ASA Application**	**Important:** Perform ***only*** step 2 for implementations that use Microsoft Exchange. Perform ***only*** step 3 for non-Exchange implementations. 2. ***Only for implementations that use Microsoft Exchange:*** a. Click the first listed telephony engine of the ASA Server. b. From the **Default Application** dropdown list, select **VAOutlook**. c. Repeat the substeps above for every telephony engine of the ASA Server. d. Proceed to step IV, "Associate the ASA Application Process with the VAServer Process" on page 28. 3. ***Only for non-Exchange implementations:*** a. Click the first listed telephony engine of the ASA Server. b. From the **Default Application** dropdown list, select **VAOutlook**. c. Right-click on the same telephony engine and select **All Tasks**, then **Associate with Application**. The Select Application Instance dialog box appears. d. On this dialog box, select **VAOutlook** from the pulldown list and click **OK**. e. Repeat the substeps above for every telephony engine of the ASA Server. f. Proceed to step IV, "Associate the ASA Application Process with the VAServer Process" on page 28.

ASA Server Configuration Procedure	Step-by-Step Instructions
IV. **Associate the ASA Application Process with the VAServer Process** (Microsoft Exchange implementations only)	**Important:** Perform this step only for implementations that use Microsoft Exchange. 1. On the left panel of the ASA Management Console, expand the name of the ASA Server node. 2. Right-click **VAServer**; then click **All Tasks**. 3. Select **Associate with Application**. 4. On the Select Application Instance dialog box, select **VAOutlook** from the dropdown list. 5. Click **OK**.
V. **Configure British English Language Module, If Appropriate**	**Important:** Perform this step only for implementations that use the British English language module. If you installed the Nuance British English language module during step V of the ASA installation procedure ("Install Nuance Service Pack and Language Module" on page 16): 1. On the left panel of the ASA Management Console, right-click **ASA Manager** and select **Properties**. 2. Change the value of the SpeechRec.Nuance.RecognitionModel parameter to **English.UK.3.0.0** or **English.UK.1.6.0** Refer to the Release Note in the C:\Nuance\v7.0.4 directory for information about the differences between and usage of these versions.

ASA Server Configuration Procedure	Step-by-Step Instructions
VI. **Configure General Information**	1. In the left pane of the ASA Management Console, expand the Configuration node; then click **General Information**. 2. Complete the General Information fields as follows:

For this Field	Take this Action
Allow ASA to Access Microsoft Exchange	Select this check box for a configuration that uses Microsoft Exchange. Clear it for a non-Exchange configuration.
Exchange Server (Microsoft Exchange implementations only)	Enter the fully qualified name of the Exchange server, is used.
Time Zone of Exchange Server (Microsoft Exchange implementations only)	Select from the dropdown list the time zone used on the Exchange server, if. used.
Avaya ASA Service Account	Enter the name of the Service Account you created in step III of the Pre-Installation Procedures.
User Feedback E-mail Address (Microsoft Exchange implementations only)	For implementations that use Exchange, enter the e-mail account address to which ASA users can provide feedback on their ASA usage (usually the ASA administrator's e-mail address). (For non-Exchange implementations, leave this field blank; user feedback will be configured later, in the voicemail setup.)
Company Name	Enter the name of the company
Company Domain	(Not currently used)

ASA Server Configuration Procedure	Step-by-Step Instructions	
VI. (Continued) **Configure General Information**	**For this Field**	**Take this Action**
	Site Name	Enter the name to use for this ASA site (for (example **ASA Denver**).
	UCC License Server	**For implementations that include a UCC Base Server,** the UCC license manager runs there, so enter the name of the Base Server. **For ASA standalone systems,** enter the ASA Server name. If the license server uses a secure Web site (**https:**) you must also select the **Secure** check box next to the name.
	ASA Account Number Length	Enter the number of digits to use for ASA account numbers. For example, if this site will use the ASA user's telephone number for the account number, the length would be **7**.
	Use LDAP for people searches (**Note**: This field is also found on the LDAP Setup dialog box.)	Select this check box if this site will use an LDAP-based corporate directory to generate a list of the names ASA subscribers can call and send messages to.
	Use Voice Server Directory	Select this check box if this site will use the names from the Voice Mail Server to map names to voice mail addresses. **Note**: If you select this check box, you must also select the **Use LDAP for people searches** check box.

ASA Server Configuration Procedure	Step-by-Step Instructions
VI. (Continued) **Configure General Information**	**For this Field** / **Take this Action** **Skip startup of all the processes set for Auto Startup** — Select this check box if you do not want the processes marked for Auto Start to start up after a reboot. **Note**: Normally, leave this check box cleared. If you select this check box, you will need to clear it after publishing the application so that the processes autostart after a reboot. 3. Click **Accept** to record the configuration information. Then click **OK**. 4. If prompted, click **Yes** to start Web Services. 5. On the Save complete screen, click **OK**.
VII. **Set Up the Corporate Directory, If Used**	**Note:** ASA can use a corporate directory to build the list of names that subscribers can call and send messages to. ASA also gathers information about a person's telephone number and e-mail address. Refer to "Configure LDAP for Large Corporate Directories" on page 57 for additional information about configuring LDAP for a large corporate directory. **Note:** If the customer will not be using a corporate directory with ASA, skip to step VIII, "Configure Dialing Information" on page 35. 1. In the left pane of the ASA Management Console expand the **Configuration** node and click **LDAP Setup**.

ASA Server Configuration Procedure	Step-by-Step Instructions
VII. (Continued) **Set Up the Corporate Directory, If Used**	2. Complete the following fields on the LDAP Setup dialog box:

For this Field	Take this Action
Use LDAP for people searches	Select this check box to indicate that ASA should access the corporate directory. **Note:** Alternatively, you can select the **Use LDAP for people searches** check box when you Configure General Information.
Server	Enter the machine name or IP address of the LDAP server.
Port	Leave blank to use LDAP standard port **389** or enter the number of the port on which the LDAP server can be accessed.
Suffix	Enter the Base Domain Name (DN) or Search Root for ASA to retrieve from the LDAP server, for example: ou=people,o=company.com
User ID	Enter the account name (if any) for ASA to use to access the LDAP server.
User Password	Enter the password (if any) for the User ID account.
Static Grammar Filter	Leave this field blank if the corporate directory contains fewer than 5000 people (all names will be included in the ASA grammar).

ASA Server Configuration Procedure	Step-by-Step Instructions
VII. (Continued) **Set Up the Corporate Directory, If Used**	**For this Field** — **Static Grammar Filter** (Continued) **Take this Action** — If the corporate directory contains more than 5000 people, use this field to limit the grammar to the 5000 people you want ASA subscribers to call or send messages to. Refer to page 57 for detailed instructions. You can filter on any valid LDAP field. Following are some sample search strings: **telephonenumber=+1408*** Returns all people in the corporate directory whose phone number is in area code 408. **(|(telephonenumber=+1 408*) (telephonenumber=+1 303*))** Returns all people in the corporate directory whose phone number is either in area code 408 or in area code 303. The | character designates "or." Do not use any spaces or line returns when actually entering a string. **(&(telephonenumber=+1 408*) (sn=Smith)** Returns all people in the corporate directory whose phone number is in area code 408 and whose last name is Smith. The & character designates "and." Do not use any spaces or line returns when actually entering a string.

ASA Server Configuration Procedure	Step-by-Step Instructions
VII. (Continued) **Set Up the Corporate Directory, If Used**	**For this Field** / **Take this Action** **DTMF Filter** Leave this field blank to permit ASA subscribers to use touchtones to make calls or address calls or messages to anyone in the corporate directory. (The 5000-name limit imposed on the Static Grammar Filter does not apply to DTMF filtering.) To limit the list of people that subscribers can call by spelling the name to the same list that they can call by speaking the name, set the value here to match that of the Static Grammar Filter. The syntax for this filter is identical to that of the Static Grammar Filter. 3. ASA uses the following LDAP attribute default values to identify destinations. If the LDAP directory has been customized with other attribute values, enter the customized values in the appropriate fields. **LDAP Attribute** / **Default Value** First Name — givenname Last Name — sn Display Name — cn Email — mail Telephone Number — telephonenumber Fax — facsimileTelephoneNumber

ASA Server Configuration Procedure	Step-by-Step Instructions
VIII. **Configure Dialing Information**	**Note:** Refer to "Dialing Parameters" on page 63 for additional information about the parameters and examples used in this procedure and other advanced dialing parameters. **Important:** After the system is up and running, any changes made to the dialing parameters require restarting the Telephony Provider Process for the changes to take effect. 1. From the ASA Server Management Console, expand the **Configuration** node and click **Telephony Setup** to display the Telephony Setup details pane. 2. Complete the Telephony Setup Details Pane as follows: **For this Field or Button** — **Take This Action** **Output Level (dBm) (toggle bar)** — Move the bar left or right to set the volume of the ASA Server (try **0** for the initial setting) **The Country Code for the ASA (U)** — Enter the country code at the ASA Server location (should match the numbering plan for the PBX). For example, the PBX code for the United States is **1.** **Note**: When this field is set to 1, the following settings are established: National Number Prefix = 1 International National Prefix = 011 Local Numbers Table = RRRRRRR Long Distance Numbers Table = RRRRRRRRRR **The Area Code for the ASA (G)** — Enter the area code at the ASA Server location. For example, the area code for Milpitas, CA is **408**.

ASA Server Configuration Procedure	Step-by-Step Instructions	
VIII. (Continued) **Configure Dialing Information**	**For this Field or Button**	**Take This Action**
	Local Numbering Plan Prefixes	Enter the digits to prepend to a telephone number for various types of calls: **Off PBX Prefix ("P" in the dialing tables)** Digits to prepend to a local number before it is dialed. In the United States, this number is often **9**. **National Prefix ("N" in the dialing tables)** Digits to prepend to a number for domestic long distance calls made from the ASA Server location. From the United States, this number is usually **1**. **International Prefix ("I" in the dialing tables)** Digits to prepend to an international call made from the ASA Server location. For example, the international prefix for call from the United States is **011**.

ASA Server Configuration Procedure	Step-by-Step Instructions	
VIII. (Continued) **Configure Dialing Information**	**For this Field or Button**	**Take this Action**
	Outbound Dialing	Select one of the following radio buttons: **Disable** Disables all outbound calls **Enable All Ports** Enables outbound calling on all ports. Recommended for systems configured with up to 46 ports. **Specify Enabled Ports** Specifies the port numbers that should be used for outgoing calls. You can separate individual numbers by a comma (**1, 4, 8**), use a hyphen to express a range of numbers (**5-10**), and combine individual numbers and ranges (**1,3,5-9,12**).
	Text Substitution Table **Note**: This table is used only for advanced telephony replacement strings (rarely used). Refer to Text Substitution Table in the "Dialing Parameters" section for more information.	Click to configure one or more templates that define text substitutions that should be done on input strings before any of the local dialing rules are applied. This table consists of a list of strings, and the values with which they should be associated. Before a number is dialed, this table is used to replace any matching strings with their associated values. This table can be useful in ASA environments that employ standardized dialing conventions for dialing plans, such as intra-company or extension dialing.

ASA Server Configuration Procedure	Step-by-Step Instructions
VIII. (Continued) **Configure Dialing Information**	**For This Field or Button** / **Take This Action** **Country Codes** — Click to configure the known list of established country code numbers and the associated country name. This list is initially populated, but may be updated by the ASA administrator. If a number fails to match the Private, Local or Long Distance Number Tables, ASA uses this table to determine if the number should be interpreted as an international call. Refer to the Dialing Parameters section for more information. **Note:** For advanced dialing plan configuration or to change the ANI (caller ID) that the ASA Server sends out when subscribers make calls, refer to the section "Dialing Parameters" on page 63. **Private Numbers Table** — Click to configure one or more templates used to define the set of numbers considered private (not part of the local, public numbering plan). **Important:** You should not necessarily accept the default entries provided in this table. Evaluate the entries considering the customer's requirements.

ASA Server Configuration Procedure	Step-by-Step Instructions
VIII. (Continued) **Configure Dialing Information**	**For This Field or Button** — **Take This Action** **Private Numbers Table** (Continued) The following example defines 4-digit extensions as private numbers. Therefore, when ASA receives an instruction to dial a 4-digit number, no area code or prefix is dialed (just the 4 digits are dialed). Ext: **RRRR** — Dial: **XXXX** The following example defines the range of extensions owned by the company where you are installing ASA (the **408** area code and **577** prefixes belong to the company). Therefore, if an ASA user says, "**Dial 408 577 1234,**" ASA dials only **1234**. When you add users, ASA see this range of extensions as private numbers. Area Code: **408** — Prefix: **577** — Ext: **RRRR** — Dial: **XXXX** **Note:** Setting up an ANI Substitution Table that is associated with the Private Numbers Table entries allows a called party to reply to messages left by ASA subscribers in the same manner as if the subscribers had sent their messages from their voice mailboxes. If you do not establish such an ANI Substitution Table, messages left by ASA subscribers might be treated as though they were from outside callers. For a particular entry in the Private Numbers Table, create an associated new ANI Sub TBl. Add an entry to the ANI Sub Tbl; in the ANI Template field enter **RRRRRRRRR**, and in the ANI Substitution field enter as many **X**'s as the number of digits in a mailbox (for example, **XXXX** for 4-digit mailbox numbers).

ASA Server Configuration Procedure	Step-by-Step Instructions
VIII. (Continued) **Configure Dialing Information**	**For This Field or Button** — **Take This Action** **Local Numbers Table** — This table defines the local numbers to the ASA Server and how the ASA Server will dial them. For detailed information about completing the Local Numbers Table, see the "Dialing Parameters" on page 63. **Important:** You should not necessarily accept the default entries provided in this table. Evaluate the entries considering the customer's requirements. In the following example, **P** represents the PBX prefix (usually **9**). Local numbers can contain any 7 digits. Therefore, an ASA user with Local Number privileges can ask ASA to dial any 7-digit number. When such a request is made, ASA dials only **P** followed by 7 digits. Area Code — Number — Dial **RRRRRRR** — **PXXXXXXX** In the following example, an ASA user with local number privileges is allowed to dial any number in the 408 area code. When such a request is made, ASA dials **P** followed by the 7 digits. **P** represents the PBX prefix (usually **9**). The local area code is **408**, and local numbers can contain any 7 digits. An ASA user with Local Number privileges can ask ASA to dial any 7-digit number. Area Code — Number — Dial **408** — **RRRRRRR** — **PXXXXXXX** **Note**: If the system is in an area with NANP and where you must dial 1+10 digits for all Off PBX calls, the Local Number Table entries would resemble the following: Area Code — Number — Dial RRRRRRR — PN408XXXXXXX 408 — RRRRRRR — PN408XXXXXXX

ASA Server Configuration Procedure	Step-by-Step Instructions
VIII. (Continued) **Configure Dialing Information**	**For This Field or Button** — **Take This Action** **Long Distance Numbers Table** — This table defines the long distance numbers to the ASA Server and how the ASA Server will dial them. For detailed information about completing the Long Distance Numbers Table, see "Dialing Parameters" on page 63. **Important:** You should not necessarily accept the default entries provided in this table. Evaluate the entries considering the customer's requirements. In the following example, any 10-digit number is a long distance number. The ASA user must have long distance privileges to dial this number. When ASA receives a request to dial a long distance number, it dials **P** (Off PBX prefix), then it dials **N** (national prefix), then it dials the 10-digit number. Area Code — Number — Dial **RRR** — **RRRRRRR** — **PNXXXXXXXXX** **Forbidden Numbers Table** — Click to configure one or more templates that describe numbers that users are forbidden to call from the local ASA Server. These could be any sort of number—local, national, or international. From the United States, examples might be 900 numbers (**900RRRRRRR**), **411**, and the like. For more information, see "Dialing Parameters" on page 63.
IX. **Select Card Type**	1. In the left pane of the ASA Management console, expand **Configuration**, expand **Telephony Setup**, and click **Natural**. From the Specific Board Type dropdown list, select the model of the installed telephony adapter. 2. Configure other advanced parameters according to the appropriate Configuration Note.

ASA Server Configuration Procedure	Step-by-Step Instructions
X. **Set Up Voice Mail**	1. In the left pane of the ASA Management Console, expand **Configuration** and click **Voicemail Setup**. 2. Right-click and select **New-> Voicemail Server**. 3. Enter the voicemail server information, as follows: **For This Field** / **Take This Action** **Voicemail Server** — Enter a descriptive name for the voicemail server. **Pilot Number** — Enter the On PBX number of the voicemail system. **Server Type** — Enter the type of voicemail server installed at this site. **Network Address** — For an INTUITY AUDIX voicemail server, enter the IP address of the voicemail server. For an Octel voicemail server, enter the address in the following format: **myvoiceserver@myoas.company.com** **Important!** If you are installing ASA in a configuration that includes a UCC Base Server, the value you enter in the Network Address field must be identical to the message server address you entered on the administration Web page for the Avaya Web Messaging Application. 4. Click **OK**. 5. In the left pane, expand **Voicemail Setup** and click the voicemail server you added in step 2. The voicemail server form appears in the details pane.

ASA Server Configuration Procedure	Step-by-Step Instructions
X. (Continued) **Set Up Voice Mail**	6. Configure the additional voicemail server fields as follows: **For This Field** / **Take This Action** **Call Answer** — Enter the pilot number on the voicemail server to be used for ASA call answering. **Subscriber Access** — If the pilot number for subscriber access is different from the Call Answer number, enter the subscriber access number here. **Internet Messaging Trusted Server Name** (appears only for INTUITY AUDIX voicemail servers) — Enter the name of each Intuity Audix server. **Voice Mail Feedback Address** — Click the first radio button to use the feedback e-mail address on the General Information screen ***OR*** Click the second radio button to use a voicemail address for the "leave a comment" function and enter either the Mailbox number or Network address where you want the user comments to be delivered.

ASA Server Configuration Procedure	Step-by-Step Instructions	
X. (Continued) **Set Up Voice Mail**	**For This Field**	**Take This Action**
	Dialing Sequence	**Note:** The Fax Answer field allows you to enter a separate transfer sequence for ASA to transfer fax calls to Octel 200/300 voicemail servers. The field is not required for Octel 250/350 or INTUITY AUDIX message servers to receive faxes. Using the following parameters, enter the appropriate dialing sequence in the Call Answer, Subscriber Access, and Fax Answer fields: **,** (1/2-second) **.** (1 second) **M** (mailbox number) P (password) ***** **,** **#** **0** through **9** **A** through **D** **a** through **d**
	Download Enabled	Select this option if you want to schedule names downloads from the voicemail server. **Note**: This must be done if you check the **Use Voicemail Directory** option on the General Information dialog box.
	Perform Retrieval	Select the frequency, and the day and time for the names download from the voicemail server
	Retrieval Time	Schedule the time of day at which the names download from the voicemail server should occur.

<table>
<tr><th>ASA Server Configuration Procedure</th><th>Step-by-Step Instructions</th></tr>
<tr><td>X. (Continued)

Set Up Voice Mail</td><td>
<table>
<tr><th>For This Field</th><th>Take This Action</th></tr>
<tr><td>Mailbox
(For INTUITY AUDIX voicemail servers only)</td><td>Enter the mailbox number to use for the names download (any mailbox on the system).</td></tr>
<tr><td>Password
(For INTUITY AUDIX voicemail servers only)</td><td>Enter the mailbox password</td></tr>
<tr><td>Last Download Time</td><td>Displays the time of the last names download from the voicemail server.</td></tr>
<tr><td>Last Download Status</td><td>Displays the status of the last names download from the voicemail server.</td></tr>
</table>
7. Click Accept.
</td></tr>
<tr><td>XI.

Publish the Application</td><td>
1. In the left pane of the ASA Management Console, expand ASA Applications and click VA Outlook.

2. Select the Rebuild dynamic grammar database check box.

3. Click Publish. This might take several minutes (longer if you are using a large LDAP directory). The application is published when you see a message similar to the following.

VAOutlook: Done publishing application

4. If you previously checked the Skip startup of all the processes set for Auto Startup check box in step VI, “Configure General Information” on page 29, clear this check box now (in the left pane of the ASA Management Console, expand Configuration and click General Information).
</td></tr>
<tr><td>XII.

Start All Processes</td><td>
1. In the left pane of the ASA Management console, select the ASA Server.

2. Right-click and select Start Processes.

3. Verify that all processes are running.
</td></tr>
</table>

Test the ASA Installation

In this section, you create an ASA user to test Avaya ASA by speaking commonly used ASA commands.

ASA Test Account Setup

1. Use the ASA User Manager Web page (http://<*yourservername*>/asaum) to add a test user. Make sure the test user has a voice mailbox and, for Microsoft Exchange implementations, an Exchange account. Refer to the *Avaya Advanced Speech Access Administrator's Guide* (available on the CD subtitled Application Software) for instructions on adding a user.
2. To test ASA, make sure the test user has the following:
   - Some voice mail messages
   - ***For implementations using Microsoft Exchange:***
     - Some e-mail messages in the Inbox
     - Some Contacts with telephone numbers, including yourself and someone else at the site if possible.
     - Some Tasks
     - Some Appointments

Test ASA Speech Commands

1. Call the ASA pilot number for the system and enter the test user's account number and voicemail password when prompted.
2. Record your name and greeting.
3. Speak a variety of voice commands to ASA and make sure you obtain the expected result. At a minimum, give the following commands:

   - **"Read my messages."** Verify that all voicemail messages are read. If this is an implementation that uses Microsoft Exchange, verify that all e-mail messages are read.
   - **"Dial a number."** In separate calls, speak local, long distance, and international telephone numbers, as allowed.
   - **"Send a message."** Record a voice message and send it to the test user.

   If ASA is configured to use the LDAP directory:

   - **"Make a call."** Speak the name (not the number) of someone who is in the LDAP directory but is not a contact in Microsoft Exchange. (Perform this test whether or not the Microsoft Exchange is being used.)

   For implementations that use Microsoft Exchange:

   - **"Send a message to <*contact*>."** Record a voice message and send it to one of the test user's contacts.
   - **"Make a call."** Speak the name (not the number) of a contact.
   - **"How many tasks do I have?"**
   - **"Read my appointments."** Follow the spoken prompts.
   - **"Create an appointment."** Follow the spoken prompts.

   - **"Good-bye."** Verify that ASA says *"Good-bye"* and hang up to end the ASA session.

If You Have A Problem

If you encounter difficulties with the installation or test process, first try reading "Troubleshoot the ASA Installation" on page 51. Next, refer to the troubleshooting chapter in the *Avaya Advanced Speech Access Administrator's Guide* (available on the Avaya Advanced Speech Access Application software CD). If you still have problems, contact your ASA support representative.

What To Do Next

This section briefly describes how to access subscriber and administrator functions and information.

ASA subscribers are provided a Web-based tool from which they can customize how ASA works for them. They access these user preferences from the UCC launch page (in configurations that include a UCC Base Server) or directly from http://<*yourservername*>/asaonline. User documentation is accessible from these pages.

Administrators can obtain system reports and troubleshoot user sessions by using the Web-based ASA Reports at http://<*yourservername*>/asareports.

Administrators who want to remotely access the ASA Server management console can create a separate Administration Station by installing AvayaASA Server Administration Station on a machine not running the ASA Server software. See the *Avaya Advanced Speech Access Administrator's Guide for more* information.

The *Avaya Advanced Speech Access Administrator's Guide* also provides a conceptual overview of ASA, includes detailed instructions about managing and troubleshooting the ASA Server, and explains how to use the Web-based User Manager to add and delete users.

Troubleshoot the ASA Installation

ASA Prerequisite Tool

The best initial approach to troubleshooting in general is to run the ASA Prerequisite Tool. Refer to step I of ''Pre-Installation Procedures'' on page 7.

Installation Log Files

If the VAServerManager service does not display a status of **Started**, an error probably occurred during **ASA** installation. The ASA installation program generates a set of log files that are useful for diagnosing a failed installation. These files can be found in the following location:

<*installroot*>**\Log**

where <*installroot*> is the path to which the ASA Server software was installed (**C:\Program Files\ASA Server** by default).

If you received a warning or saw error messages during installation, check the log files first to see whether they contain more detailed messages. Table 2 describes the log files in the Log directory.

Table 2. Installation Log Files

File Name	Description
AvayaASAInstallLog_Server.log	The primary installation log for the Avaya ASA Server. Contains entries of MSDE, MSSQL7, and Nuance installations performed on local platform. Check this file first.
AvayaASAInstallLog_ASAApplication.log	Contains log files of the initial ASA application installation. Validation can be viewed on process entries. Check this file second.
AvayaASAInstallLog_ASAWebManagement.log	Contains log files of the initial ASA Web management installation. Monitors security on product root directory when enabled. Validation can be viewed on process entries. Check this file third.
VAServiceControl_VAMGR0.log	Contains a log of the install routine's NT Service operations (e.g. creating the VA Manager and VAServerManager services)
VAServiceControl_SS.log	Contains a log of the install routine's NT Service operations for the MSSQLServer service
VAServiceControl_SSA.log	Contains a log of the install routine's NT Service operations for the SQL Server Agent service
VLADCOM.log	Contains a log of the install routine's setting of DCOM permissions for the various platform objects

File Name	Description
VAServiceControl_VASM0.log	Contains output from the install routine's configuration of NT service characteristics of the VAServerManager service
SetDBSec.log	Contains a log of the install routine's database security configuration
VADatabaseManager.log	Contains output from the install routine's initialization and maintenance of the VADB Manager

Common Installation Problems

The most common installation problems, and their solutions, are listed on Table 3.

Table 3. Common Installation Problems

Problem	Description	Comments
Software Prerequisites Not Installed	The ASA install program does not check for the presence of all the prerequisite software packages. Use the ASA Prerequisites tool for this purpose. Refer to step I of "Pre-Installation Procedures" on page 7.	Also refer to "Software Prerequisites" on page 4 to determine if all necessary software components have been installed.
General Errors	A variety of ASA-specific errors are logged in the Event Viewer under AvayaASALog.	Review the errors and warnings in AvayaASALog. If you call for support, you might be asked to provide this log.
Out of Space Errors	The installation of ASA requires approximately 800 MB of free space on the system drive for temporarily files.	Increase the amount of available disk space by adding or upgrading hard disks; then run the installation again.

Problem	Description	Comments
Improperly Configured Service	If the service account is not configured correctly, the installation could fail.	See Pre-Installation step III "Create the ASA Service Account and Set Up a Mailbox" on page 8 and step IV "Set Permissions for the Service Account" on page 9. Ensure that the service account was set up properly. **Note:** The ASA installation program enables certain local rights on the ASA service account. If you did not create the account, or you created the account incorrectly, you must rerun the ASA installation.
Speech Recognition DLLs fail to register during installation	You probably did not restart the system after installing the Nuance software.	Restart the system, then run the ASA installation again.
Processes start OK, but the service account cannot connect to TTS server (TTS server is running)	You may have assigned an empty password to the service account.	See the "ASA Installation Procedure" on page 12. Run the ASA installation again and select a password for ASA service account.
Processes start OK, but VA Engine displays the message **Can't load XML**	XML Parser not installed	Using step VII, "Install Microsoft XML Parser 3.0 Service Pack 1" on page 18, install the XML Parser. Then reinstall the ASA Server software (see "Install ASA Server Software" on page 19).
RecServer process will not start	License server not configured ***OR*** Invalid UCC license file on the UCC Base Server	Specify license server location on the General Information dialog box. For UCC implementations, verify that a valid license file is properly installed on the UCC Base Server.

Problem	Description	Comments
Publication process fails	The following error appears during the publication process: **Error extracting directory <*directory name*> from storage--0x80070003**	This message occurs if the disk is full. It can also appear if the entire path to the application's **.vapub** file, or the path to one of the files in the application's directory, exceeds the system limit of 256 characters. If you receive this message, delete the application instance you just created and recreate the application with a shorter name. If you still receive this error, you might need to modify the directory structure to shorten the file path.
Microsoft Outlook is not the default mail client	Error message appears to this effect	Open Internet Explorer, click **Tools** on the menu bar, click **Internet Options**, and select the **Programs** tab. From the pulldown list for E-mail, select **Microsoft Outlook**.

Configure LDAP for Large Corporate Directories

As part of the Windows 2000 Support Tools, Microsoft provides an LDAP browser called LDP. Use LDP to test the directory query that ASA makes on the corporate directory, and to verify that the data returned is what you expect.

Install and Connect LDP

1. Insert the Windows 2000 CD into the CD-ROM drive, access the **\Support\Tools** directory, and run the **setup.exe** program
2. From the Windows 2000 desktop, click

   Start->Programs->Windows 2000 Support Tools->Tools->Active Directory Administration Tool

   and use the LDP menu option to launch LDP.

3. Select **Connection->Connect.** Then direct LDP to connect to the directory server by entering the following information on the dialog box:

For This Field	Take This Action
Server	Enter the name of the corporate LDAP directory server. This name is the same as the value you entered on the LDAP Setup configuration dialog box (see "Set Up the Corporate Directory, If Used" on page 31).
Port	Enter the TCP port that the corporate directory server listens on. The default value (**389**) is usually correct. This is the same value you entered in the Port field during LDAP setup (see "Set Up the Corporate Directory, If Used" on page 31).
Connectionless	Leave this check box cleared.

Perform LDP Test Queries

Once LDP connects to the directory server, it displays some initial information that it retrieves from the directory server. You can then perform test queries, as follows:

1. From the menu, select **Browse->Search**.
2. Enter the following information in the dialog box and click **Run**.

For This Field	Take This Action
Base Dn	Enter the base distinguished name that identifies the records to be returned by the query. Conceptually, this is similar to a directory path. Obtain this information from the LDAP directory administrator. This is the same value you entered in the Suffix field during LDAP setup (see "Set Up the Corporate Directory, If Used" on page 31).
Filter	Initially, leave the default value of **objectclass=*** for this field. This setting instructs LDP to display all records returned by the base DN you specified in the last field. Later, you can experiment with different filters to limit the number of records returned. Once you have determined the filter setting that you need to obtain no more than 5000 records from the LDAP server, enter this value into the Static Grammar Filter field on the LDAP Setup dialog box (see "Set Up the Corporate Directory, If Used" on page 31). Following is an example Filter for area codes: **(telephonenumber=+1 408*)** **(telephonenumber=+1 510*)** **(telephonenumber=+1 303*)** **(telephonenumber=+1 732*)**
Scope	Select the **Subtree** radio button. This instructs LDP to recursively return all records under the specified base DN. In other words, the **Subtree** selection lists all files in the specified directory AND all files in subdirectories under the specified directory.

Display Records with LDP

When you run the LDAP query, LDP first displays a count of records returned. It then displays each record.

LDP uses a fixed-size buffer to display the results of the LDAP query. If the number of records returned is too large, you will be unable to scroll the display window all the way back to the record count displayed at the beginning.

To adjust the LDP buffer display size:

1. Select **Options->General**.
2. On the dialog box, increase the values of Page and/or Line.

Rerun the query. Scroll back to see the header.

To control what information LDP displays from each record returned by the query:

1. Select **Options->Search**.
2. On the dialog box, change the value of Attributes to list the fields from each record you want information about.

   For example, to have LDP display each person's telephone number, add **telephonenumber** to the string in Attributes. Note that, within Attributes, multiple attributes are separated by a semicolon (;).

If necessary, refer to the Microsoft Web site for more information about this tool.

Test LDP with ASA

After using LDP to experiment with different query filters, you are ready to test the LDAP configuration with ASA, as follows:

1. Start at the ASA Management Console, and enter the configuration information on the LDAP Setup

dialog box (see "Set Up the Corporate Directory, If Used" on page 31).

2. Go to the VAOutlook screen under ASA Applications, and click **Compile** to instruct ASA to rebuild the static grammar that it creates from the LDAP directory.

Note: Doing an application compile does NOT take the application out of service. However, an application compile is computationally expensive, so may have performance ramifications. Also, once the compile is done, the new grammar will not actually be used by ASA until a **Distribute** is done.

The grammar that ASA builds from the LDAP directory is placed in a text file called **ExternGAL.grammar** in the directory **C:\Program Files\ASA Server\ VAApplications\#VAOutlook_tmp#\Nuance** (provided you used the default installation path). Later, after doing a **Distribute** or **Publish**, you will find this file in the directory **c:\Program Files\ASA Server\VAApplications\VAOutlook\Nuance**.

3. Use a text editor to open **ExternGAL.grammar**, and verify that the file contains the names you expect it to contain. If the text editor tells you how many lines are in the file, you can also learn approximately how many names ASA retrieved from the corporate directory.

Note: Because there are a few extra lines at the top and bottom of the file, the number of lines in the file will slightly exceed the number of names retrieved.

Implement the New Grammar

If you are satisfied with the contents of **ExternGAL.grammar**, you are ready to put into use the new grammar you just built. From the Avaya ASA Management Console, select **Distribute** button (button next to the **Compile** button).

Note: The **Distribute** function takes the application out of service.

Dialing Parameters

Step VII, “Configure Dialing Information” on page 35 in the section Configure ASA Server provides step-by-step instructions for configuring ASA dialing information.

This section describes the parameters you can use to set rules for the ASA outcall numbering plan. These same rules are used to determine whether the ANI of an incoming call matches any of the subscriber’s Reach-Me Caller Filter entries.

Important: For any changes to dialing parameters to take effect, you must stop and restart the Telephony Provider process. Stopping this process stops all engines from taking calls and takes ASA out of service. After you restart the Telephony Provider process, you will also need to start the engines.

Number Table Characteristics

Each ASA number table provides a sequence of entries (consisting of three to five fields) that match a particular series of numbers. Matched numbers are then marked as private, local, or long distance.

Important: In all tables, rules are evaluated from top to bottom. If a number matches a table entry, further entries are not checked.

For each number table, the default value for the ANI Substitution Table field is Blank.

Number Template Fields

You use a Number Template field to describe a series of digits to match a number. These fields consist of a sequence of digits or wildcards, and are restricted by the rules explained in Table 3.

Table 3 Number Template Rules

Digit or Character	Description	Example(s)
0 through **9**	Valid digits	
R	Represents the *any digit* wildcard. Matches any digit (0-9), but must be present in the matched number	**RRR** Matches any 3-digit number, and *only* 3-digit numbers**.**
[or **]**	Matches any one of the digits between the brackets. Sets a conditional wildcard. The characters between the brackets can consist of **0**-**9**, and **-**, to specify the digits or range of digits that must be matched.	**[159]RR** Matches 3-digit numbers that start with 1,5, or 9 **[16-8]RR** Matches 3-digit numbers that start with 1,6,7,or 8
(and **)**	Matches the sequence of all the digits between parentheses. Useful when you follow the) with ? to make a sequence optional.	**(518)?RRRR** Matches 7-digits numbers that start with 518 or 4-digit numbers
?	Follows any digit or wildcard to make it optional. Allows numbers to be of variable length.	**[12]?RR** Matches 3-digit numbers beginning with 1 or 2; also matches any 2-digit number
O	Optional digit wildcard; shorthand notation for **R?**, which optionally matches any digit.	**ORR** Matches any 3-digit number or any 2-digit number (same as **R?RR**)

Dial Template Fields

A Dial template field is a companion to one or more Number Template fields, and specifies how a matched number will be dialed. Valid characters are described on Table 4

Table 4 Dial Template Rules

Digit or Character	Description
0 through **9** **A** through **D**	Each character represents a single explicit DTMF digit to be dialed.
X	Replaced by a digit matched by a wildcard in an associated Number Template. A series of Xs is replaced in the order in which they match wildcards. The number of X's in a Dial Template field should be the same as the number of wildcards in the associated Number Template field. (See "Sample Template Entries" on page 66 for more information.)
S	Used to skip a wildcard field. If a matched wildcard is not needed in the final dialed number, this character can be used to skip it.(See "Sample Template Entries" on page 66 for more information.)
G	Replaced by the value of the Area code for ASA field on the main Telephony Setup dialog box.
I	Replaced by the value of the International Prefix field on the main Telephony Setup dialog box.
N	Replaced by the value of the National Prefix field on the main Telephony Setup dialog box.
P	Replaced by the value of the Off PBX Prefix field on the main Telephony Setup dialog box.
U	Replaced by the value of the Country code for ASA field on the Telephony Setup dialog box.
Z	Replaced by the authorization code administered for the user performing the outcall.

ANI Sub Tbl (ANI Substitution Table) Field

The ANI Sub Tbl field provides a drop-down list of options. It is similar to the Text Substitution Table (see "Text Substitution Table" on page 77), except that you apply it to the Calling Number (ASA user's phone number) instead of the Called Number.

The ANI Sub Tbl field is only applied when the associated dialing rule is applied. Therefore, the administrator can control the display of Calling Numbers on outcalls, based on the destination of the call (called number) and the original Calling Number. For more information, see "ANI Substitution Table" on page 75.

Sample Template Entries

Table 5 provides a list of sample Number and Dial Templates entries, and their results.

Table 5 Template Input/Output Information

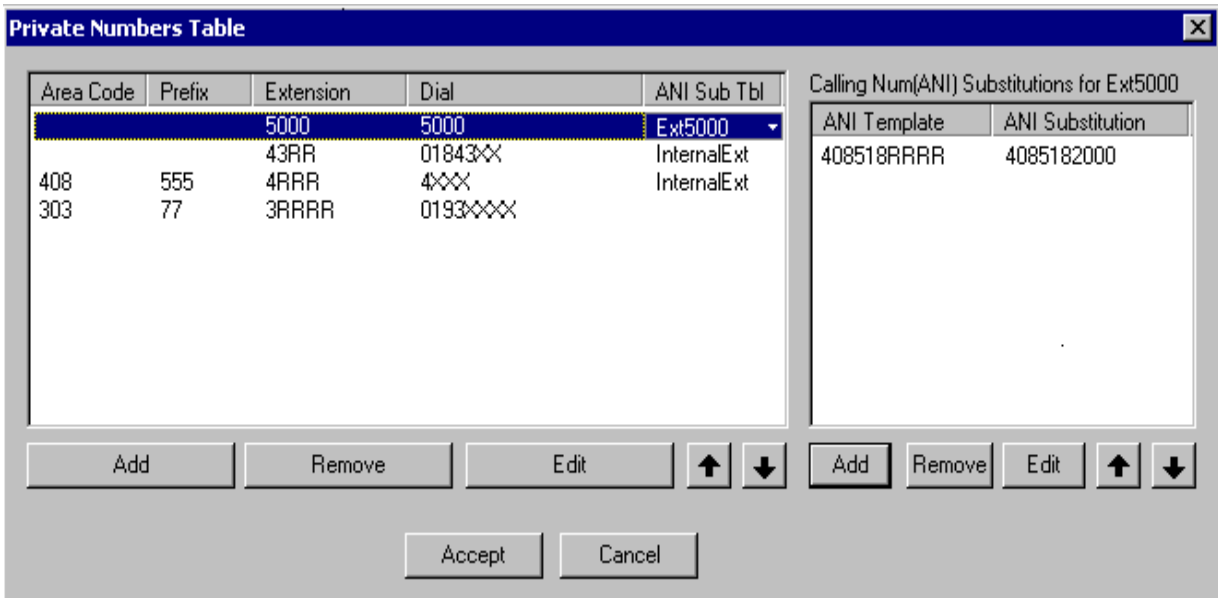
If this number is input...	And the Number Template is set to...	And the Dial Template is set to...	Then this number is output...	Notes
123	RRR	XXX	123	
155	[157]5R	X5X	155	
555	ORR	XXX	555	Optional digit matched '5'.
55	ORR	XXX	55	Optional digit matched nothing.
1255	[147]ORR	XXXX	1255	Optional digit matched '2'.
1255	[147]ORR	222SSXX	22255	Skipped first and second wild cards.
155	[147]ORR	SXXX	55	Optional digit matched nothing.

Important: As the last sample shows, you must take care when more than one match is possible. The **1** could have matched the **O** wildcard, but the **[147]** was matched first. Wildcards are evaluated in left to right order.

Private Numbers Table

Figure 3 illustrates the Private Numbers Table. This table describes both Private and On PBX numbers. Any number that matches an entry in this table is classified as private for purposes of enforcing outcall restrictions. The Area Code, Prefix, and Extension columns are Number Template fields (see "Number Template Fields" on page 64). Dial is a Dial Template field (see "Dial Template Fields" on page 65). ANI Sub Tbl specifies the associated ANI Substitution Table (see "ANI Sub Tbl (ANI Substitution Table) Field" on page 66).

Figure 3. Private Numbers Table.



Private Numbers Table, Example 1

For the first entry, the number needs no translation to be dialed. However, it has been administered to alter the display of the Calling Number. When extension 5000 is dialed by an ASA user, the number is converted; but the result is the same as the input. Thus, 5000 is translated to 5000 and dialed. The purpose of such a rule is to explicitly apply the Ext5000 ANI Substitution Table. For more information, see "ANI Substitution Table" on page 75.

Private Numbers Table, Example 2

For the second entry in Figure 3 (Extension **43RR** and Dial **01843XX**) only 4-digit extensions starting with **43** would be matched.

Remember that rules are evaluated in sequence and if a number matches an entry, further entries are not checked. Even though this entry **43RR** is a subset of the next entry in Figure 3, **4RRR**, the **43RR** entry is evaluated first and

the number dialed will be the 4-digit extension that starts with **43**, prefixed by a trunk access code of **018**.

Here, the ANI Substitution Table named InternalExt is applied as described in "ANI Substitution Table" on page 75.

Private Numbers Table, Example 3

For the third entry in Figure 3 (Area Code **408**, Prefix **555**, Extension **4RRR**, Dial **4XXX**), the following list of numbers are matched:

4***	4 digits starting with 4
5554***	7 digits starting with 5554
4085554***	10 digits starting with 4085554
14085554***	10 digits starting with 4085554 and prefixed by the National Dialing prefix
14085554***	10 digits starting with 4085554 and prefixed by the Country Code
01114085554***	10 digits starting with 4085554 and prefixed by the International Dialing Prefix and Country Code
95554***	7 digits starting with 5554 and prefixed by the Off PBX prefix
94085554***	10 digits starting with 4085554 and prefixed by the Off PBX prefix
914085554***	10 digits starting with 4085554 and prefixed by the Off PBX prefix and the National Dialing Prefix
914085554***	10 digits starting with 4085554 and prefixed by the Off PBX prefix and Country Code
901114085554***	10 digits starting with 4085554 and prefixed by the Off PBX prefix, International prefix, and Country Code

Any number that matches this list is dialed as a 4-digit extension that begins with **4** (as per the Dial field).

Here, the ANI Substitution Table named InternalExt is applied as described in "ANI Substitution Table" on page 75.

Private Numbers Table, Example 4

For the fourth entry in Figure 3 (Area Code **303**, Prefix **77**, Extension **3RRRR**, Dial **0193XXXX**), non-local numbers can be dialed using the private network. The following list of numbers are matched:

3****	5 digits starting with 3
303773****	10 digits starting with 303773
1303773****	10 digits starting with 303773, prefixed by the national dialing prefix
1303773****	10 digits starting with 303773, prefixed by the country code
0111303773****	10 digits starting with 303773, prefixed by the international dialing prefix and country code
9303773****	10 digits starting with 303773, prefixed by the off PBX prefix
91303773****	10 digits starting with 303773, prefixed by the off PBX prefix and national dialing prefix
91303773****	10 digits starting with 303773, prefixed by the off PBX prefix and country code
90111303773****	10 digits starting with 303773, prefixed by the off PBX prefix, international dialing prefix and country code

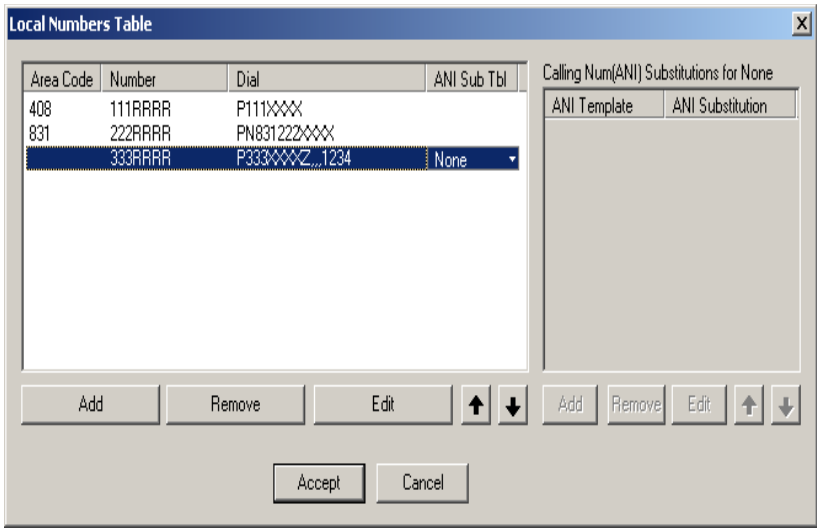
Any number that matches this list is dialed using the private network, as a 5-digit extension starting with **3**, and using the trunk access code **019**. 7-digit numbers are not accepted, because the Area Code field does not match what you entered in the main Telephony Setup dialog box.

For this entry, no ANI Substitution Table would be processed.

Local Numbers Table

The Local Numbers Table (see Figure 4) is similar in form and function to the Private Numbers Table. However, the Local Numbers Table has only two Number Template fields (Area Code and Number), one Dial Template field, and an ANI Substitution Table field. Any number that matches an entry in this table is classified as a local number for purposes of enforcing outcall restrictions.

Figure 4. Local Numbers Table



For this table, the Area Code need not match for the entry to be considered a match--provided that the Area Code matches the value on the main Telephony Setup dialog box. The following examples illustrate the rules for this table.

For the following examples, assume that the main form has been configured with the following values:

Country Code = 1
Area Code = 408
Off PBX Prefix =
National Prefix = 1
International Prefix = 011

Local Numbers Table, Example 1

For the first entry in Figure 4 (Area Code **408**, Number **111RRRR**, and Dial **P111XXXX**), the following list of numbers would be matched by this entry:

111****	seven digits starting with 111
408111****	ten digits starting with 408111

1408111****	ten digits starting with 408111, prefixed by the national dialing prefix
1408111****	ten digits starting with 408111, prefixed by the country code
0111408111****	ten digits starting with 408111, prefixed by the international dialing prefix and country code
9111****	seven digits starting with 111, prefixed by the off PBX prefix
9408111****	ten digits starting with 408111, prefixed by the off PBX prefix
91408111****	ten digits starting with 408111, prefixed by the off PBX prefix and national dialing prefix
91408111****	ten digits starting with 408111, prefixed by the off PBX prefix and country code
90111408111****	ten digits starting with 408111, prefixed by the off PBX prefix, international dialing prefix and country code

In this example numbers matching the above restrictions are dialed as a seven-digit number, starting with **111**, prefixed by the off PBX prefix. Thus, given the number **4081115555** as input, ASA dials **91115555**.

For this entry, no ANI Substitution Table would be processed.

Local Numbers Table, Example 2

The second entry in Figure 4 (Area Code **831**, Number **222RRRR**, and Dial **PN831222XXXX**) represents a series of numbers that are outside the local area code, but that still should be considered local (they are non-toll calls).

Following is a list of matching numbers for this entry:

831222****	10 digits starting with 831222
1831222****	10 digits starting with 831222, prefixed by the National Dialing Prefix

1831222****	10 digits starting with 831222, prefixed by the Country Code
0111831222****	10 digits starting with 831222, prefixed by the International Dialing Prefix and Country Code
9831222****	10 digits starting with 831222, prefixed by the Off PBX prefix
91831222****	10 digits starting with 831222, prefixed by the Off PBX prefix and National Dialing Prefix
91831222****	10 digits starting with 831222, prefixed by the Off PBX prefix and Country Code
90111831222****	10 digits starting with 831222, prefixed by the off PBX prefix, International Dialing Prefix and Country Code

Unlike Example 1, this entry matches only a 10-digit number, because the Area Code does not match the value on the Telephony Setup main dialog box. Thus, the number **8312221111** would be dialed as **918312221111**, a 10-digit number prefixed by the Off PBX prefix and National Dialing prefix, as specified in the Dial field.

For this entry, no ANI Substitution Table would be processed.

Local Numbers Table, Example 3

The third entry in Figure 4 (blank Area Code field, Number **333RRRR**, and Dial **P333XXXXZ,,,1234**) matches only 7-digit numbers starting with **333**.

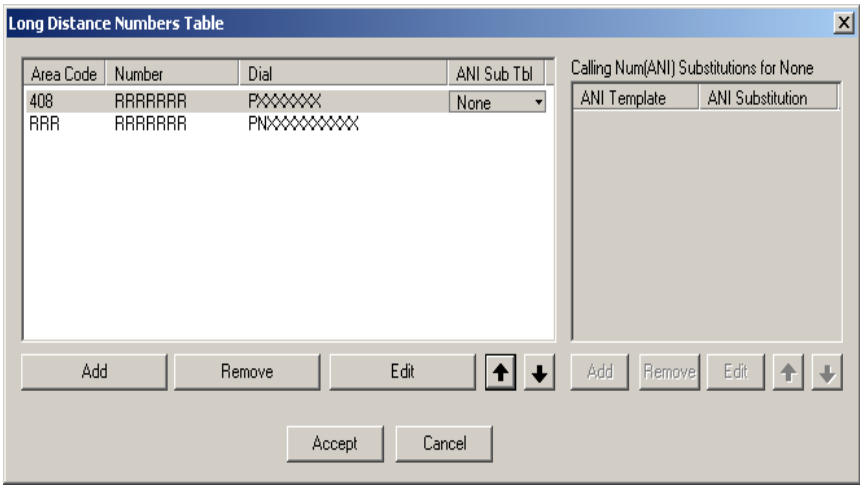
As per the Dial field, these numbers are dialed with the Off PBX prefix, followed by the 7-digit number, the users authorization code, and an extension of **,,,1234**. The extension is output as DTMF tones by ASA after the call is answered.

For this entry, no ANI Substitution Table would be processed.

Long Distance Numbers Table

The Long Distance Numbers Table (see Figure 5) has the same fields and functionality as the Local Numbers table. Any number that matches an entry in this table is classified as a long distance number for purposes of enforcing outcall restrictions.

Figure 5. Long Distance Numbers Table



Long Distance Numbers Table, Example 1

The first entry in Figure 5 (Area Code **408**, Number **RRRRRRR**, and Dial **PXXXXXXX**) matches numbers for the local area code that were not matched by the rules in the Local Numbers Table. The following numbers are matched.

*******	7 digits
408*******	10 digits starting with 408
1408*******	10 digits starting with 408, prefixed by the National Dialing prefix
1408*******	10 digits starting with 408, prefixed by the Country Code
0111408*******	ten digits starting with 408, prefixed by the International Dialing prefix and Country Code
9*******	7 digits, prefixed by the off PBX prefix
9408*******	10 digits starting with 408, prefixed by the Off PBX prefix

91408*******	10 digits starting with 408, prefixed by the Off PBX prefix and National Dialing prefix
91408*******	10 digits starting with 408, prefixed by the Off PBX prefix and Country Code
90111408*******	10 digits starting with 408, prefixed by the Off PBX prefix, International Dialing prefix and Country Code

Numbers matching these restrictions are dialed with the Off PBX prefix followed by the 7-digit number.

For this entry, no ANI Substitution Table would be processed.

Long Distance Numbers Table, Example 2

The second entry in Figure 5 (Area Code **RRR**, Number **RRRRRRR**, and Dial **PNXXXXXXXXX**) provides a description for all national numbers. This entry is last in the table, because previous entries are a subset of this entry.

The following numbers are matched with this entry:

**********	10 digits
1**********	10 digits, prefixed by the National Dialing prefix
1**********	10 digits, prefixed by the Country Code
0111**********	10 digits, prefixed by the international dialing prefix and country code
9**********	10 digits, prefixed by the off PBX prefix
91**********	10 digits, prefixed by the off PBX prefix and national dialing prefix
91**********	10 digits, prefixed by the off PBX prefix and country code
90111**********	10 digits, prefixed by the off PBX prefix, international dialing prefix and country code

Forbidden Numbers Table

The Forbidden Numbers Table (see Figure 6), is a list of Number Template fields that specify numbers that users should not be permitted to dial. This table is checked before and after the number is converted by the Number Tables. Numbers matching the entries in this table are marked with the DISALLOWED dial type.

Figure 6. Forbidden Numbers Table

The entry in Figure 6, **900RRRRRRR**, prevents subscribers from dialing any **900** long distance numbers.

ANI Substitution Table

An ANI Substitution Table is a list of substitution rules that are applied when an associated Dialing Rule is applied. This table is considered a sub-table of a particular Dialing Rule and consists of two fields:

- **Number Templates field**. A Number Template with the same restrictions as those applied to other Number Template fields.
- **ANI Substitution field**. A Dial Template field with the same restrictions as other Dial Template fields.

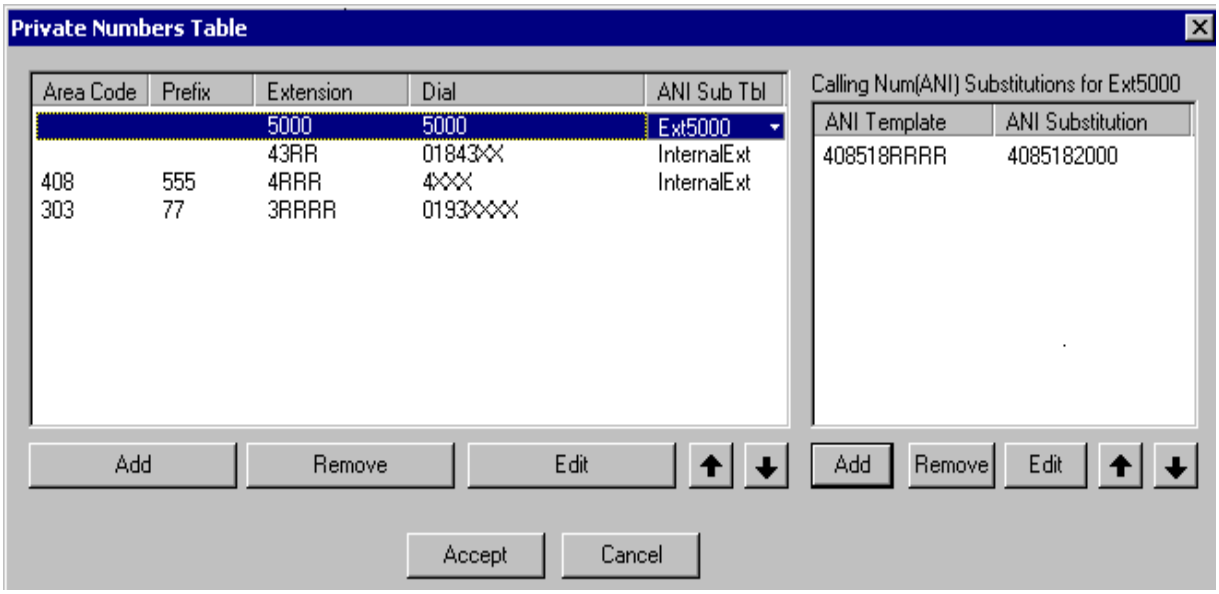
Although it is possible for each Dialing Rule to have its own associated ANI Substitution Table, it is desirable to share an ANI Substitution Table among several Dialing Rules.

Each ANI Substitution Table is given a unique name upon creation. You can utilize this name to associate other Dialing Rules with the same ANI Substitution Table. You can apply an ANI Substitution Table with a given name to Dialing Rules in Private, Local, or Long Distance Dialing Tables. Changes you make to a shared ANI Substitution Table apply to all of the Dialing Rules in all of the Dialing Tables you associate with that ANI Substitution Table.

Take care when editing the ANI Substitution Tables, because a change can affect several different Dialing Rules.

Figure 7 and Figure 8 provide examples of the ANI Substitution Table and its use.

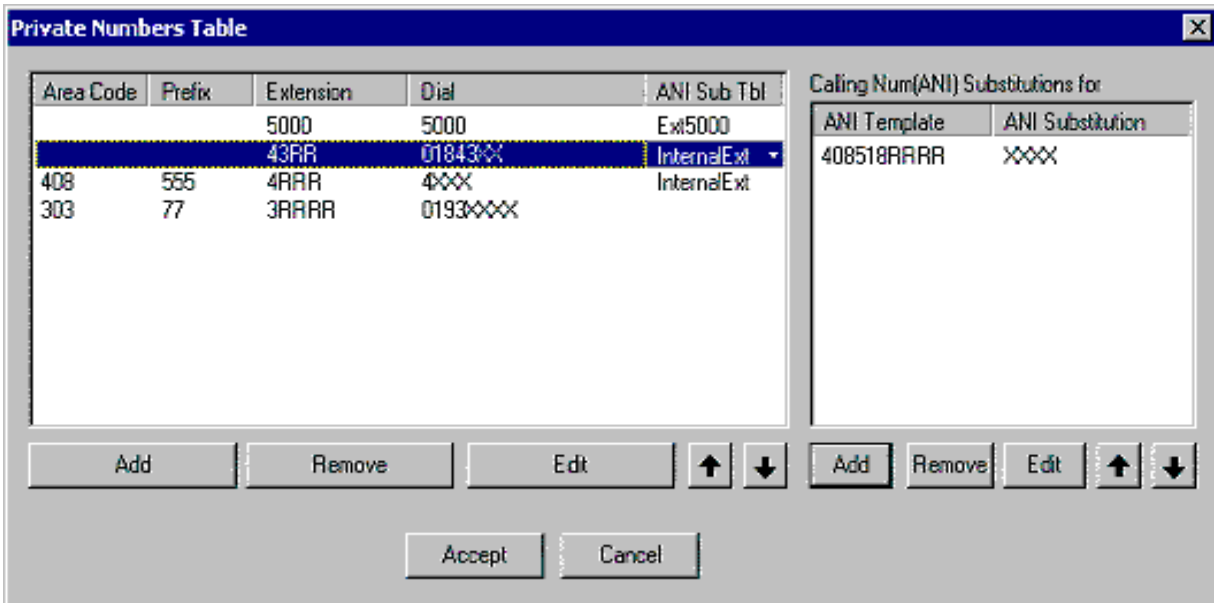
Figure 7. Private Numbers Table with Ext5000 ANI Substitution Table



ANI Substitution Table, Example 1

Figure 7 illustrates the case where an administrator wants outgoing calls to the associated destinations to appear as though they are being sent from a central number. For example, if a user was assigned the phone number 4085551234 in his User Profile and used ASA to make a call to extension 5000, the first rule in the Private Numbers Table would apply, invoking the associated Ext5000 ANI Substitution Table and converting the caller ID from 4085181234 to 4085182000. For any caller ID outside of the (408) 518-0000 to (408) 518-9999 range, the caller ID would be sent without changes.

Figure 8. Private Numbers Table with InternalExt ANI Substitution Table



ANI Substitution Table, Example 2

Figure 8 illustrates the case where an administrator wants the caller ID to be stripped to fewer digits. In this example, a user would have 10 digits assigned to the telephone number field in his User Profile, but the administrator wants only four digits of ANI to be sent when calling the associated destination. Thus, if a user has a phone number of 4085181234 in his User Profile and makes a call to extension 4300, the Dialing Rule in the Private Numbers Table would apply, invoking the associated ANI Substitution Table named InternalExt, changing the caller ID from 4085181234 to 1234. For any caller IDs outside the (408)518-0000 to (408)518-9999 range, the caller ID remains unchanged.

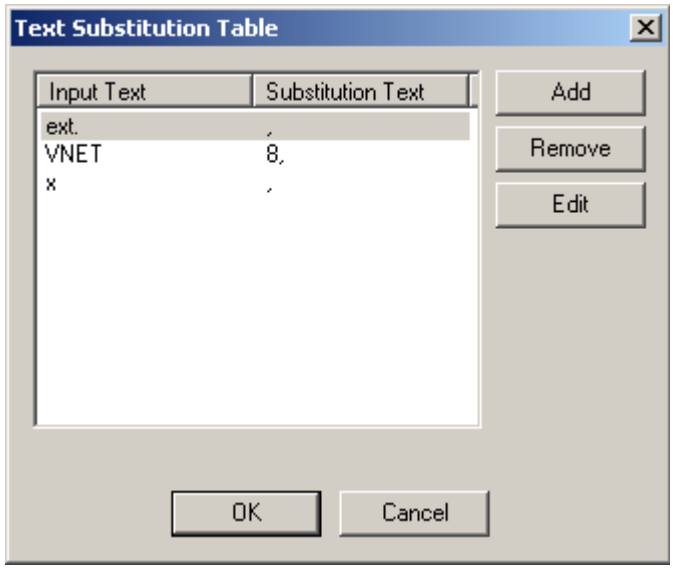
Text Substitution Table

A Text Substitution Table is a list of strings and values with which they should be substituted. Before a number is dialed, ASA uses this table to replace any matching strings with their associated values. You cannot use wildcards in this table.

This table can be useful in ASA environments that employ standardized dialing conventions for dialing plans, such as intra-company or extension dialing.

Figure 9 shows an example of a Text Substitution Table.

Figure 9. Text Substitution Table



Following are examples of the resulting substitutions:

Text Input	Table Substitution	Substitution Example
VNET	8	VNET111-2222 to **81112222**
ext.	,	978-2555 ext. 421 to **9782555,421**
x	,	978-2555 x421 to **9782555,421**

Note: Avoid using ambiguous input such as EXT and EXTENSION, or numbers at the end of input text such as EXT1.

How the Dialing Parameter Tables Operate

ASA verifies a number's dialing parameters as follows:

1. **Check the Text Substitution Table**. Apply to the number appropriate text substitutions.
2. **Check the Forbidden Numbers Table**. Determine if the number should be dialed. Compare the number to Forbidden Numbers Table entries. If a match is found, do not dial the number; mark the number DISALLOWED and you are done.

3. **Check the Private Numbers Table**. If a match is found:

   a. Convert the number by the appropriate Dial Template and set the type to PRIVATE.

   b. Apply all of the rules in an associated ANI Substitution Table (if any) to the calling number.

   c. Skip to step 8.

4. **Check the Local Numbers Table**. If a match is found:

   a. Convert the number by the appropriate Dial Template and set the type to LOCAL.

   b. Apply all of the rules in an associated ANI Substitution Table (if any) to the calling number.

   c. Skip to step 8.

5. **Check the Long Distance Numbers Table**. If a match is found:

   a. Convert the number by the appropriate Dial Template and set the type to LONG_DISTANCE.

   b. Apply all of the rules in an associated ANI Substitution Table (if any) to the calling number.

   c. Skip to step 8.

6. **Check the Country Codes Table**. If the number contains a valid country code, compare the number's country code with the country code configured for the site on the Telephony Setup screen. If the two country codes are different:

   a. Set the number type to INTERNATIONAL.

   b. If the number does not contain the international dialing prefix (set on the Telephony Setup dialog box), prepend the international dialing prefix.

   c. Prepend the Off PBX prefix.

   d. Skip to step 8.

7. **Handle unknown numbers.** If the number type has not been determined by any of the rules above, set the number type to UNKNOWN. Do not alter the number in any way.

8. **Check the Forbidden Numbers Table**. Once the number has been classified and possibly converted, check the Forbidden Numbers Table again. If the number matches on the second attempt, mark the number DISALLOWED regardless of its previous disposition.

Dialing Plan Default Values

If no values are set on the Telephony Setup dialog box, ASA uses the following default values:

Site Area Code	None	
Site Country Code	**1**	
Off PBX Prefix	None	
National Dialing Prefix	**1**	
International Dialing Prefix	**011**	
Private Numbers Table	Blank	
Local Numbers Table	Area Code	Blank
	Number	**RRRRRRR**
	Dial	**PXXXXXXX**
	ANI Sub Tbl	Blank
Long Distance Number Table	Area Code	**RRR**
	Number	**RRRRRRR**
	Dial	**PNXXXXXXXXX**
	ANI Sub Tbl	Blank

Note: For each number table, the default value for the ANI Substitution Table field is Blank.