



Avaya™ Interactive Response
Release 1.2
Install and Troubleshooting Guide

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Notice

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Preventing Toll Fraud

"Toll fraud" is the unauthorized use of your telecommunications system by an unauthorized party (for example, a person who is not a corporate employee, agent, subcontractor, or working on your company's behalf). Be aware that there may be a risk of toll fraud associated with your system and that, if toll fraud occurs, it can result in substantial additional charges for your telecommunications services.

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Select **Support**, then select **Escalation Lists**. This Web site includes telephone numbers for escalation within the United States. For escalation telephone numbers outside the United States, select **International Services Contacts**.

Providing Telecommunications Security

Telecommunications security (of voice, data, and/or video communications) is the prevention of any type of intrusion to (that is, either unauthorized or malicious access to or use of) your company's telecommunications equipment by some party.

Your company's "telecommunications equipment" includes both this Avaya product and any other voice/data/video equipment that could be accessed via this Avaya product (that is, "networked equipment").

An "outside party" is anyone who is not a corporate employee, agent, subcontractor, or working on your company's behalf. Whereas, a "malicious party" is anyone (including someone who may be otherwise authorized) who accesses your telecommunications equipment with either malicious or mischievous intent.

Such intrusions may be either to/through synchronous (time-multiplexed and/or circuit-based) or asynchronous (character-, message-, or packet-based) equipment or interfaces for reasons of:

- Utilization (of capabilities special to the accessed equipment)
- Theft (such as, of intellectual property, financial assets, or toll-facility access)
- Eavesdropping (privacy invasions to humans)
- Mischief (troubling, but apparently innocuous, tampering)
- Harm (such as harmful tampering, data loss or alteration, regardless of motive or intent)

Be aware that there may be a risk of unauthorized intrusions associated with your system and/or its networked equipment. Also realize that, if such an intrusion should occur, it could result in a variety of losses to your company (including but not limited to, human/data privacy, intellectual property, material assets, financial resources, labor costs, and/or legal costs).

Your Responsibility for Your Company's Telecommunications Security

The final responsibility for securing both this system and its networked equipment rests with you - an Avaya customer's system administrator, your telecommunications peers, and your managers. Base the fulfillment of your responsibility on acquired knowledge and resources from a variety of sources including but not limited to:

- Installation documents
- System administration documents
- Security documents
- Hardware-/software-based security tools
- Shared information between you and your peers
- Telecommunications security experts

To prevent intrusions to your telecommunications equipment, you and your peers should carefully program and configure:

- your Avaya-provided telecommunications systems and their interfaces
- your Avaya-provided software applications, as well as their underlying hardware/software platforms and interfaces
- any other equipment networked to your Avaya products.

Federal Communications Commission Statements

Part 15: Class A Statement

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Part 68: Answer-Supervision Signaling. Allowing this equipment to be operated in a manner that does not provide proper answer-supervision signaling is in violation of Part 68 rules. This equipment returns answer-supervision signals to the public switched network when:

- answered by the called station,
- answered by the attendant, or
- routed to a recorded announcement that can be administered by the CPE user.

This equipment returns answer-supervision signals on all direct inward dialed (DID) calls forwarded back to the public switched telephone network. Permissible exceptions are:

- A call is unanswered.
- A busy tone is received.
- A reorder tone is received.

Canadian Department of Communications (DOC) Interference Information

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

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To report problems or to request assistance setting up and using your system, contact the Avaya Technical Services Organization (TSO). The telephone number for support in the United States is 1-800-242-2121.

For additional support telephone numbers:

- Visit the [Avaya Support Centre Web site](http://support.avaya.com) (<http://support.avaya.com>).
- Select **Escalation Lists**. This Web site includes telephone numbers for escalation within the United States. For escalation telephone numbers outside the United States, click **International Services Contacts**.

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This document was written by the CRM Information Development group.

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Installation

Avaya IR systems are available from Avaya in the following ways:

- A complete bundled product that includes the required hardware and software components.
- A software-only product that includes the required software on a CD set. In this configuration, the required hardware components must be purchased separately.

This section describes how to install both the complete Avaya IR system and the software-only Avaya IR system.

This section includes the following topics:

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Overview of installation process

The process of installing the Avaya IR system includes the following basic steps. See the referenced topics for detailed information on each step.

1. Unpack and install the hardware platform. See [Installing the hardware platform](#) on page 13.
2. Unpack and install the telephony cards. This step is required if your system uses digital telephony (such as T1, E1, or ISDN). See [Installing telephony cards](#) on page 13.
3. Connect the platform to the local area network (LAN). See [Connecting the platform to the LAN](#) on page 15.
4. Connect the platform to the digital telephony network. This step is required if your system uses digital telephony. See [Connecting the platform to the telephone network](#) on page 18
5. Unpack and install the external modem. This step is required for remote access and maintenance and must be performed for customers with Avaya maintenance agreements. See [Installing the modem](#) on page 18.
6. Start your system and do one of the following:
 - If you have purchased the hardware platform from Avaya, IR system software is pre-installed. For this type of system, configure the pre-installed software. See [Setting up pre-installed software](#) on page 20.
 - If you have purchased the hardware platform from another vendor, IR system software is not pre-installed. For this type of system, install the base system software from CD. See [Installing system base software from CD](#) on page 29.
7. Install the appropriate package to provide voice communications for the system.
 - If you are using digital telephony, install the NMS package (AVnms). See [Installing the NMS package](#) on page 40.
 - If you are using VoIP, install the Voice over IP package (AVvoip). See [Installing the VoIP package](#) on page 41.
8. Install optional packages based on the purchased configuration. An Avaya provisioning engineer must perform this step, because installation of many optional packages is password-protected. See [Installing individual packages](#) on page 42 and [Installing optional packages](#) on page 44.
9. Install database software, if required. See [Installing database software](#) on page 45.
10. Install the service pack, if available. See [Working with service packs](#) on page 51.
11. Set up user accounts on the system. See [Setting up user accounts](#) on page 56.

12. Set up features. See [Configuring system features](#) on page 59.
13. Create a full backup of the entire system. See [Backing up the system for the first time](#) on page 60.

Hardware installation

The Avaya IR hardware consists of commercial off-the-shelf components. Installing those components requires that you follow the instructions provided by the manufacturer with additional information provided in this section.

This section includes the following topics:

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Hardware installation scenarios

If you purchased an Avaya IR system that includes hardware and software, the hardware components are usually installed by an Avaya service technician or third-party service provider as part of the product maintenance agreement.

If you purchased a software-only system, you are responsible for obtaining the hardware components and either installing the hardware platform or arranging for installation by an Avaya service technician or third-party service provider. For information about the recommended hardware platform, see [Hardware requirements](#) on page 12.

In either scenario, the Avaya IR hardware platform (either the Sun Blade 150 or Sun Fire 280R) must be installed on a local area network (LAN) and have connectivity to a telephony network with which the system will interact for voice communications. Connectivity to a LAN provides the required connection to a separate server for backing up and restoring the

system. LAN connectivity also provides connections to optional speech servers and other external systems. For more information, see [Connecting the platform to the LAN](#) on page 15.

Digital trunks (either T1 or E1) from a telecommunications switch can provide telephony connectivity. For more information, see [Connecting the platform to the telephone network](#) on page 18. If the Avaya IR solution uses Voice over IP (VoIP), the LAN provides the telephony connectivity to the switch.

In addition to LAN and telephony connectivity, the system requires an external modem for data communications with Avaya Services. The system uses this modem to send alarms to Avaya and to allow Avaya Services access to your system for maintenance purposes. If you do not have a maintenance agreement with Avaya or a third-party service provider, the modem is not required. For more information, see [Installing the modem](#) on page 18.

Required documents for hardware installation

The following documents are required to install the hardware platform.

For installation of the Sun Blade 150 platform:

- *Sun Blade 150 Getting Started*
- *Sun Blade 150 Service Manual*
- *AG4000 Installation and Developer's Manual*
- *System Administration Guide, Volume 3*

For installation of the Sun Fire 280R platform:

- *Sun Fire Server Owner's Guide*
- *Sun Fire 280R Server Service Manual*
- *AG4000 Installation and Developer's Manual*
- *System Administration Guide, Volume 3*

These documents are available in *Avaya IR System Help* (under "Print documents") or from the Sun Web site (<http://www.sun.com>) and NMS Web site (<http://www.nmscommunications.com>).

Hardware requirements

The Avaya IR system consists of several required hardware components.

This section includes the following topics:

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Platform requirements

The hardware platform for the Avaya IR system is one of the following:

| Sun Blade 150 with the following features | Sun Fire 280R with the following features |
|---|--|
| <ul style="list-style-type: none"> • Solaris 8 Update 7 • 650-MHz UltraSPARC-III processor • 256-KB Ecache • 512 MB memory • One 40 gigabyte hard drive with ATA66 interface • 1.44-MB diskette drive • CD-ROM drive • Three PCI connectors • ATI Rage XL on-board graphics, 8 Mbyte RAM • One serial port • One parallel port • 10/100 Ethernet network interface card (NIC) • Two IEEE 1394 ports (Firewire) • Four USB ports (two are required for keyboard and mouse) • Country Kit with power cord, keyboard, and mouse | <ul style="list-style-type: none"> • Solaris 8 Hardware 1/01 operating environment • Two 1.2 GHz UltraSPARC-III processors, each with 8-MB of Ecache • 2-GB memory (4 x 512 MB) • Two 72.8-GB FC-AL hard drives • DVD-ROM drive • Four PCI slots connected to two high performance PCI I/O buses • ATI Rage XL on-board graphics, 8 Mbyte RAM • Two serial ports • One parallel port • Gigabit Ethernet network interface card (NIC) • Two hot-swappable power supplies • Four USB ports (two are required for keyboard and mouse) • Country Kit with power cord, keyboard, and mouse |

Telephony card requirements

Telephony cards provide the telephony interface to the system. The telephony card required for the Avaya IR system is the Natural Microsystems (NMS) AG 4000/1600. The Avaya IR hardware platforms can have a maximum of two telephony cards. For more information on these cards, see AG4000 Installation and Developer's Manual. This document is available in *Avaya IR System Help* (under "Print documents") or from the NMS Web site (<http://www.nmscommunications.com>).

External modem requirements

A modem is required for Avaya remote maintenance and administration functions.

Note:

If you do not have a maintenance agreement with Avaya or a third-party service provider, the modem is not required.

Systems configured for US customers are shipped with an external modem, the U.S. Robotics Sportster 33.6 kB faxmodem and a set containing a cable and connectors used to connect the modem to the hardware platform.

International customers must obtain a modem and compatible cable that is approved for use in their respective countries. If obtained separately, the external modem must use the standard Hayes command set (also called the AT command set) to be compatible with the default configuration of the Avaya IR system.

Installing the hardware platform

The hardware platforms for Avaya IR are standard commercially available systems. To install these systems on site, see Sun Blade 150 Getting Started or Sun Fire 280R Server Owner's Guide for complete installation instructions. These documents are available in *Avaya IR System Help* (under "Print documents") or from the Sun Web site (<http://www.sun.com>).

Installing telephony cards

If you purchased an Avaya IR system for digital telephony, you must install the NMS telephony cards into the platforms PCI cards slots. Systems purchased from Avaya that include hardware components, arrive from the factory with the NMS telephony cards ready to be installed.

**IMPORTANT:**

You must install the NMS telephony cards according to the slotting rules for each platform. For more information, See [PCI slotting rules](#) on page 14.

**IMPORTANT:**

You must install the NMS telephony cards before installing the Avaya IR software. The NMS package (called AVnms) will not install properly if the cards are not in the PCI slots.

See the following documents for specific information about how to install the NMS telephony cards required for the Avaya IR system:

| | |
|--|---|
| <i>Sun Blade 150 Service Manual or Sun Fire 280R Server Owner's Manual</i> | These documents provide information about the platform and the PCI card slots for the telephony cards. These documents are available in <i>Avaya IR System Help</i> (under "Print documents") or from the Sun Web site (http://www.sun.com). |
|--|---|

| | |
|---|---|
| <i>AG4000 Installation and Developer's Manual</i> | This document describes specific procedures for installing the AG4000 cards in the PCI slots and connecting the cards to the telephone network. This document is available in <i>Avaya IR System Help</i> (under "Print documents") or from the NMS Web site (http://www.nmscommunications.com). |
|---|---|

PCI slotting rules

Each platform provides two PCI slots for use with the NMS telephony cards. You must install the telephony cards according to the specific rules for each Avaya IR platform.

Sun Blade 150 slotting rules

The Sun Blade 150 has three PCI slots (PCI-1, PCI-2, and PCI-3). The following rules govern the number and placement of the telephony cards for systems using this platform:

- System must have a minimum of 0 and a maximum of 2 telephony cards (T1 or E1).
- Install only the NMS AG-4000 dual telephony cards with two digital interfaces.
- Unused digital interfaces must be terminated with loop around plug (provided by NMS).
- If one telephony card is used, install in PCI-1 slot. If two cards are used, install in PCI-1 and PCI-2 slots.
- The third PCI slot (PCI-3) is always unused.

Sun Fire 280R slotting rules

The Sun Fire 280R has four PCI slots (PCI-1, PCI-2, PCI-3, and PCI-4). The following rules govern the number and placement of the telephony cards for systems using this platform:

- System must have a minimum of 0 and a maximum of 2 NMS telephony cards (T1 or E1).
- Every system has an additional Ethernet card in PCI-1 slot (default configuration from Sun).
- Install only the NMS AG-4000 quad telephony cards with four digital interfaces.
- Unused digital interfaces must be terminated with loop around plug (provided by NMS).
- If one telephony card is used, install in PCI-2 slot. If two cards are used, install in PCI-2 and PCI-3 slots.
- The fourth PCI slot (PCI-4) is always unused.

Connecting the platform to the LAN

An Avaya IR platform must be connected to a local area network (LAN) for use with a backup repository server and to communicate with other optional servers that provide speech services, ASAI or CTI functionality, and VoIP connectivity.

The Avaya IR platform contains a network interface card (NIC) to communicate with the LAN.

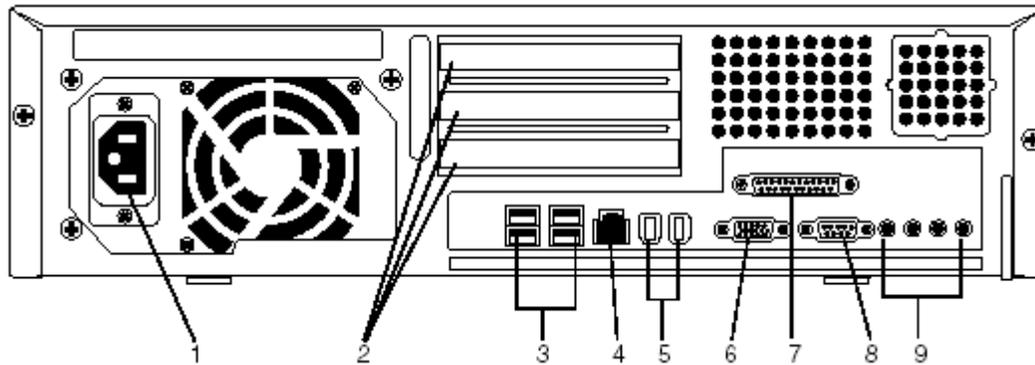
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Connecting a Sun Blade 150 platform to the LAN

A Category 5 (UTP-5 "data grade") cable from a LAN switch or hub is connected to the twisted-pair Ethernet (TPE) connector on the back panel of the Sun Blade 150 platform (location 4 in the diagram below).

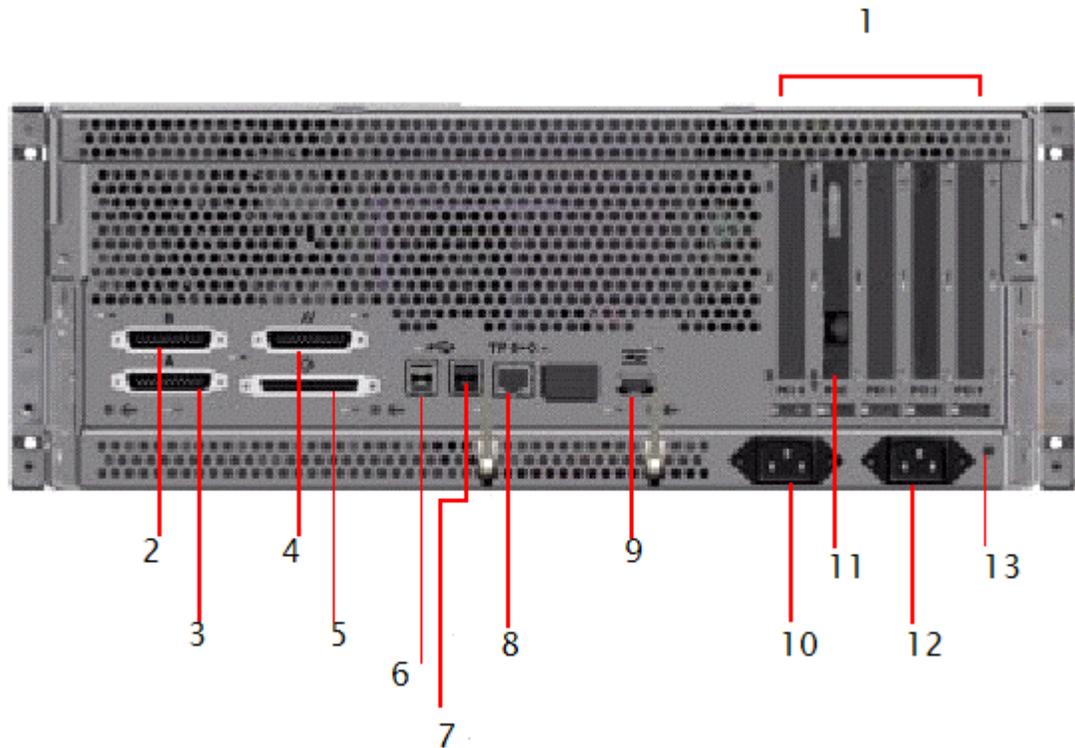
Installation



For information about signals at the TPE connector, see the "Twisted-Pair Ethernet Connector" section in the "Signal Descriptions" chapter of the Sun Blade 150 Service Manual. This document is available in *Avaya IR System Help* (under "Print documents") or from the Sun Web site (<http://www.sun.com>).

Connecting a Sun Fire 280R platform to the LAN

A cable from a LAN switch or hub is connected to the twisted-pair Ethernet (TPE) connector on the back panel of the Sun Fire 280R platform (location 8 in the diagram below).



For information about signals at the TPE connector, see the "Reference for Twisted-Pair Ethernet (TPE) Connector" section in the "Connector Signal Descriptions" appendix of the *Sun Fire 280R Server Service Manual*. This document is available in *Avaya IR System Help* (under "Print documents") or from the Sun Web site (<http://www.sun.com>).

Setting up the LAN to auto-detect

The hardware platform is set to auto-detect network speed and duplex. Avaya recommends setting the LAN switch or hub to auto-detect for optimal performance. If the LAN switch or hub is set to a specific speed, administer the NIC on the platform to match that speed. For information on how to administer the NIC, see *System Administration Guide, Volume 3*. This document is available in *Avaya IR System Help* (under "Print documents") or from the Sun Web site (<http://www.sun.com>).

Connecting the platform to the telephone network

For voice communications, the Avaya IR must be connected directly to:

- The Public Switched Telephone Network (PSTN)
- An Avaya MultiVantage system, or
- A non-Avaya switch that supports the required digital protocols

You can connect up to two trunks directly to each NMS dual port card or four trunks to each NMS quad port card installed on the Avaya IR system. Trunks may receive calls directly from the PSTN or they may connect to an Avaya MultiVantage system or to a non-Avaya switch

Trunks connect to back of the Sun Blade 150 platform (location 2 in the diagram shown in [Connecting a Sun Blade 150 platform to the LAN](#) on page 15) or to the back of the Sun Fire 280R platform (location 1 in the diagram shown in [Connecting a Sun Fire 280R platform to the LAN](#) on page 17).

See the AG 4000 Installation and Developer's Manual for more information on connecting trunks to the telephony cards. This document is available in *Avaya IR System Help* (under "Print documents") or from the NMS Web site (<http://www.nmscommunications.com>). See the appropriate MultiVantage or manufacturer's documentation for information on connecting trunks to a MultiVantage system or non-Avaya switch.

Installing the modem

US customers who purchase the Avaya IR system with hardware components receive an external modem and modem cable kit containing a cable and several connectors for attaching the modem to the different hardware platforms.

To install the external modem:

1. Verify that Avaya IR system power is off and the modem power is off.
2. Connect the 26-pin Remote Console connector to one end of the modem cable.
3. Connect the following connector to the other end of the modem cable:
 - If connecting to the Sun Blade 150, use the 9-pin Straight-Through connector.
 - If connecting to the Sun Fire 280R, use the 26-pin ACU/Modem connector.
4. Connect the 26-pin Remote Console connector to the serial port on the rear of the modem chassis.

5. Connect the other end of the cable to the serial port of the Sun Blade 150 platform or serial port B of the Sun Fire 280R platform.
6. Verify that the DIP switch, which is on the rear of the modem chassis, has the following settings:

| | | | | | | | | |
|----------------|----|----|------|------|----|----|----|------|
| Switch | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Setting | Up | Up | Down | Down | Up | Up | Up | Down |

If necessary, set the switches.

7. Turn on the modem.

The modem will initialize when the Avaya IR system boots up.

For US customers using the U.S. Robotics Sportster modem, see *Sportster Manual* for more information. This document is available in *Avaya IR System Help* (under "Print documents") or from the U.S. Robotics Web site (<http://www.usr.com/support/s-main-menu.asp>).

For international customers, see the documentation from the manufacturer of the modem you are using.

Configuring the modem

The system is pre-configured to automatically setup the modem for dial-in (for remote maintenance) and dial-out (for alarming).

If you have trouble with dialing in or out, reset the modem.

To reset the modem:

1. Log in as root.
2. At the command prompt, enter `resetModem`.
3. Enter `setDialInPort ttyx 19200` where `x` is `a` for the Sun Blade 150 and `b` for the Sun Fire 280R.
4. Enter `resetModem`
5. Enter `setDialInPort disable`
6. Enter `setDialInPort ttyx 19200`
7. Enter `resetModem`

Note:

If you want to modify the modem configuration after installation, use the Avaya IR Web Administration interface after the system is set up and running. See [Starting the Web Administration interface](#) on page 58.

Setting up pre-installed software

Follow the information in this section only if you purchased a Avaya IR system that includes the hardware platform with the IR software pre-installed. Configuring the pre-installed software is usually performed by an Avaya service technician or certified third-party service provider.

If you have purchased only the IR software from Avaya, see [Installing system base software from CD](#) on page 29 for information on how to install the system on a separately acquired hardware platform.

This section includes the following topics:

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Preparing for configuring the pre-installed software

You must have a console connection to the platform on which you configuring the pre-installed software. Each platform as the following minimum console requirements:

- Sun Blade 150 must have one of the following:
 - ASCII terminal connected to the serial port
 - Keyboard and mouse connected to the USB ports and a monitor connected to the VGA video connector
- Sun Fire 280R must have an ASCII terminal connected to serial port A

The following site-specific information is required to respond to system prompts when you start the system for the first time:

- Default router IP address (if applicable)
- Host name for the IR system
- IP address for the IR system
- Network mask (if part of a subnet)

- Type of name service to use (DNS or NIS)
- If DNS name service is used:
 - Domain name
 - IP addresses of DNS servers
 - DNS search domains
- If NIS name service is used:
 - Host name of NIS server
 - IP address of NIS server
- Geographic region
- Time zone for region
- Date and time
- Root password

Pre-installed software packages

The following packages are pre-installed by Avaya for systems that include both IR software and the hardware platform:

- Sun operating system Solaris 8 Update 7
- Solaris tools, packages, and patches (including for the Sun Fire 280R only: Remote System Console 2.2 and DiskSuite 4.2)
- Netscape 7.0
- Adobe Acrobat Reader 5.0
- Avaya IR packages:
 - Interactive Response Base System (AVir)
 - Transaction State Machine (AVtsm)
 - Web Administration (AVwebadm)
 - JDBC Integration (AVjdbcint)
 - Universal Call ID (AVucid)

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- Call Bridge Application (AVxferdip)
- Backup and Restore Utilities (AVbackrst)
- Service Creation (AVsc)
- Feature Test Script (AVfst)
- Disk Mirroring (AVdm) – Installed on the Sun Fire 280R only

Other IR packages, such as NMS, VoIP, and speech packages, must be installed after the pre-installed software is configured. For more information, see [Installing individual packages](#) on page 42.

Configuring the pre-installed software

Follow the steps in this topic to configure the pre-installed system software, which includes the Solaris 8 operating system and all the Avaya IR software.

All of the IR base packages are pre-installed. However additional packages are required to make the system operational. When you complete this procedure, see [Installing individual packages](#) on page 42 for information on how to install additional packages required by your system.

Note:

Many of the system prompts in this procedure require the use of function keys. Typically, if the function keys do not work, you can use them by pressing **Ctrl+F** then pressing **#** where **#** is the function key number. If the terminal type is **xterm**, then use the following procedure so the function keys will work properly:

1. Enter **export TERM=xterm**
2. Enter **export SMTERM=xterm**

Approximate time required:

| | |
|----------------|------------|
| Sun Blade 150: | 10 minutes |
| Sun Fire 280R: | 10 minutes |

Procedure:

| Step | System prompt | Action |
|------|--|---|
| 1 | None (system is powered off). | <p>Power up the system.</p> <p>The system displays various initialization messages. When initialization is complete, the system displays the Language selection prompt.</p> |
| 2 | <p>Select a Locale</p> <p>0. English (C - 7-bit ASCII)</p> <p>1. Canada-English (ISO8859-1)</p> <p>2. Thai</p> <p>3. U.S.A. (en_US.ISO 8859-1)</p> <p>4. U.S.A. (en_US.ISO 8859-15)</p> <p>5. Go Back to Previous Screen</p> <p>Please make a choice (0 - 5), or press h or ? for help:</p> | <p>Enter 0 for English.</p> <p>IMPORTANT: You must use English for the locale. The Avaya IR system will not function properly if you select another locale.</p> |
| 3 | <p>What type of terminal are you using?</p> <p>1) ANSI Standard CRT</p> <p>2) DEC VT52</p> <p>3) DEC VT100</p> <p>4) Heathkit 19</p> <p>5) Lear Siegler ADM31</p> <p>6) PC Console</p> <p>7) Sun Command Tool</p> <p>8) Sun Workstation</p> <p>9) Televideo 910</p> <p>10) Televideo 925</p> <p>11) Wyse Model 50</p> <p>12) X Terminal Emulator (xterms)</p> <p>13) Other</p> <p>Type the number of your choice and press Return:</p> | <p>This prompt appears on the Sun Fire 280R and the Sun Blade 150 if the Sun keyboard is not connected to the computer's USB port.</p> <p>Choose the terminal type you want to use and press Enter.</p> |

Installation

| Step | System prompt | Action |
|------|---|--|
| 4 | <p>The Solaris Installation Program</p> <p>The Solaris installation program is divided into a series of short sections where you'll be prompted to provide information for the installation. At the end of each section, you'll be able to change the selections you've made before continuing.</p> <p>About navigation...</p> <ul style="list-style-type: none">- The mouse cannot be used- If your keyboard does not have function keys, or they do not respond, press ESC; the legend at the bottom of the screen will change to show the ESC keys to use for navigation. | Press F2 to acknowledge the screen. |
| 5 | <p>Identify This System</p> <p>On the next screens, you must identify this system as networked or non-networked, and set the default time zone and date/time.</p> <p>If this system is networked, the software will try to find the information it needs to identify your system; you will be prompted to supply any information it cannot find.</p> <p>To begin identifying this system, press F2.</p> | Press F2 to acknowledge the screens. |
| 6 | Host name: | Enter the host name for the Avaya IR system and press F2. |
| 7 | Networked [] Yes [] No | If you plan to connect your system to a network, position the cursor between the Yes brackets using the arrow keys. Press Enter. An X appears in the brackets to indicate your selection. Press F2. |

| Step | System prompt | Action |
|------|---|---|
| 8 | Use DHCP <input type="checkbox"/> Yes <input type="checkbox"/> No | Select whether DHCP is to be used on your LAN. Press F2. If you choose No (the preferred option), the system uses static IP addresses for proxy connections. |
| 9 | IP address: | Enter the IP address of the Avaya IR system and press F2. |
| 10 | System part of a subnet <input type="checkbox"/> Yes <input type="checkbox"/> No | Choose whether your system is part of a subnet and press F2. If you choose Yes , the system prompts you for the subnet mask. In this case, enter the subnet mask and press F2. |
| 11 | Netmask: | Enter the subnet mask and press F2. |
| 12 | Enable IPv6 <input type="checkbox"/> Yes <input type="checkbox"/> No | Choose No and press F2. IMPORTANT: IPv6 is not supported in this release. After a short wait (approximately 30 seconds), the system displays the network information you entered similar to the following example: |
| 13 | Host name: <i>host</i> IP address: <i>IP address</i> System part of a subnet: <i>Yes</i> Netmask: <i>subnet mask</i> Enable IPv6: <i>No</i> | Review the information to make sure it is accurate and press F2 to continue. If the information is not correct, press F4 and correct the information starting with the Networked question. |
| 14 | Configure Kerberos Security <input type="checkbox"/> Yes <input type="checkbox"/> No | Choose No and press F2. IMPORTANT: Kerberos Security is not supported in this release. |
| 15 | Confirm the following information. If it is correct, press F2; to change any information, press F4. Configure Kerberos Security: No | Press F2 to confirm. |
| 16 | Configuring default router Set default network router IP address [y,n,?] | To configure the default network router IP address, Enter y for Yes. |
| 17 | Set Router IP Address (ex. 192.1.7.254): | Enter the IP address for the default router (if applicable). |
| 18 | The system asks if the address you entered is correct. | If it is, enter y for Yes. |

Installation

| Step | System prompt | Action |
|------|---|--|
| 19 | Name service <input type="checkbox"/> NIS+ <input type="checkbox"/> NIS <input type="checkbox"/> DNS <input type="checkbox"/> LDAP <input type="checkbox"/> None | Select your name service and press F2. This choice and the prompts that follow are specific to your site. If you selected DNS , the system displays the following series of messages to set up the name server: |
| 19a | Domain name: | Enter the domain name and press F2. |
| 19b | Server's IP address: Server's IP address: Server's IP address: | You can enter up to three IP addresses for DNS servers. Type the IP address and press Enter to move to the next field. When done, press F2. |
| 19c | Search domain: Search domain: Search domain: Search domain: Search domain: Search domain: | You can enter up to six search domains. Type the search domain and press Enter to move to the next field. When done, press F2. The system displays the information your entered, similar to the following: |
| 19d | Name service: DNS Domain name: domain.com Server address(es): 127.0.0.1 Search domain(s): search.domain.com | Review the information to make sure it is accurate and Press F2 to continue. If the list is not correct, press F4 and correct the information starting with the domain name prompt. After the system accepts your name service information, it displays a series of messages requesting information about the time zone for the system. |
| 20 | Regions <input type="checkbox"/> Asia, Western <input type="checkbox"/> Australia / New Zealand <input type="checkbox"/> Canada <input type="checkbox"/> Europe <input type="checkbox"/> Mexico <input type="checkbox"/> South America <input type="checkbox"/> United States <input type="checkbox"/> other - offset from GMT <input type="checkbox"/> other - specify time zone file | Select the region for the system and press F2. The system displays a menu for selecting the time zone for the region you selected. The following example shows the time zones for the United States: |

| Step | System prompt | Action |
|------|---|---|
| 21 | Time zones [] Eastern [] Central [] Mountain [] Pacific [] East-Indiana [] Arizona [] Michigan [] Samoa [] Alaska [] Aleutian [] Hawaii | Select your time zone and press F2. |
| 22 | Date and time: <i>date time</i> Year (4 digits): <i>year</i> Month (1-12) : <i>month</i> Day (1-31) : <i>day</i> Hour (0-23) : <i>hour</i> Minute (0-59) : <i>minute</i> | Verify that these values for year, month, day, hour, and minute are correct. If any values need to be changed, position the cursor in the appropriate field and type the correct value. Press Enter to move between field. When done, press F2. The system displays the time zone information you entered, similar to the following: |
| 23 | Time zone: US/Mountain Date and time: 2002-07-03 10:38:00 | Review the information to make sure it is accurate and press F2 to continue. If the information is not correct, press F4 and correct the information starting with the region prompt. |
| 24 | Root password: | Enter the root password to be used on the system. |
| 25 | Re-enter your root password. Root password: | Enter the root password again. |
| 26 | System identification is completed. Setting netmask of eri0 to XXX.XXX.XXX.X Setting default IPv4 interface for multicast: add net 224.0/4: gateway XXXXX syslog service starting. Print services started. volume management starting. Jul 3 10:48:56 XXXXX sendmail[293]: My unqualified host name (XXXXX) unknown; sleeping for retry The system is ready. | The system reboots and displays the console login prompt for Solaris 8. |

Installation

| Step | System prompt | Action |
|------|----------------|--|
| 27 | Console login: | Log in as root. You are now ready to install individual packages required for your particular site. See Installing individual packages on page 42 for more information. |

Installing the system base software from CD

This section explains how to install the system base software from CD media. You are required to install the system software from CD when:

- You purchase a software-only system and need to install the Avaya IR software on a separately obtained hardware platform
- You need to rebuild the Avaya IR system from CD media (such as for disaster recovery purposes).

Note:

Another method of rebuilding your system is to restore the system from backup, which may be preferable if you have applications, data, and feature administration that also needs to be restored. For more information, see [Restoring the system from backup](#).

If you purchased the IR system from Avaya with the hardware platform, see [Setting up pre-installed software](#) on page 20 for information on how to configure the pre-installed system software.

This section includes the following topics:

| | |
|---|----|
| Preparing for software installation | 29 |
| Software packages installed from CD | 30 |
| Installing system software | 31 |

Preparing for software installation

To install the Avaya IR system base software, you need the following CDs:

- *Avaya IR R1.2 Solaris OS for Sun Blade 150 - CD 1* or *Avaya IR R1.2 Solaris OS for Sun Fire 280R - CD 1*
- *Avaya IR R1.2 Software Packages - CD 2*
- *Avaya IR R1.2 Core Packages - CD 3*

You must have a console connection to the platform on which you are installing the software. Each platform has the following minimum console requirements:

- Sun Blade 150 must have one of the following:

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- ASCII terminal connected to the serial port
- Keyboard and mouse connected to the USB ports and a monitor connected to the VGA video connector
- Sun Fire 280R must have an ASCII terminal connected to serial port A

To respond to system prompts when you install the system, you need to know the following information:

- Default router IP address (if applicable)
- Host name for the IR system
- IP address for the IR system
- Network mask (if part of a subnet)
- Type of name service to use (DNS or NIS)
- If DNS name service is used:
 - Domain name
 - IP addresses of DNS servers
 - DNS search domains
- If NIS name service is used:
 - Host name of NIS server
 - IP address of NIS server
- Geographic region
- Time zone for region
- Date and time
- Root password

Software packages installed from CD

The following packages are installed when you install the software from CD:

- Sun operating system Solaris 8 Update 7
- Solaris tools, packages, and patches (including for the Sun Fire 280R only: Remote System Console 2.2 and DiskSuite 4.2)

- Netscape 7.0
- Adobe Acrobat Reader 5.0
- Avaya IR packages:
 - Interactive Response Base System (AVir)
 - Transaction State Machine (AVtsm)
 - Web Administration (AVwebadm)
 - JDBC Integration (AVjdbcint)
 - Universal Call ID (AVucid)
 - Call Bridge Application (AVxferdip)
 - Backup and Restore Utilities (AVbackrst)
 - Service Creation (AVsc)
 - Feature Test Script (AVftst)
 - Disk Mirroring (AVdm) – Installed on the Sun Fire 280R only

Other IR packages, such as NMS, VoIP, and speech packages, must be installed after the CD installation process is complete. For more information, see [Installing individual packages](#) on page 42.

Installing system software

Follow the steps in this topic to install the system software from the Avaya IR CD media, which includes the Solaris 8 operating system and all the Avaya IR software.

This installation process adds the IR base packages, but not all the packages required to make the system operational. When you complete this procedure, see [Installing individual packages](#) on page 42 for information on how to install additional packages required by your system.

Installation

Note:

Many of the system prompts in this procedure require the use of function keys. Typically, if the function keys do not work, you can use them by pressing **Ctrl+F** then pressing **#** where **#** is the function key number. If the terminal type is **xterm**, then use the following procedure so the function keys will work properly:

1. Enter **export TERM=xterm**
2. Enter **export SMTERM=xterm**

Approximate time required:

| | |
|----------------|---|
| Sun Blade 150: | 20 minutes |
| Sun Fire 280R: | 3 hours (includes hard disk synchronization for Disk Mirroring feature) |

Installation procedure:

| Step | System prompt | Action |
|------|---|--|
| 1 | None (system is powered off). | Power up the system. |
| 2 | The system displays messages indicating that it is attempting to boot the operating system from the hard disk. | At any point during or after the attempted boot process, display the open boot (<code>ok</code>) prompt by either: <ul style="list-style-type: none">• Pressing Stop-A from the Sun console• Pressing Ctrl-Break from a serial port console |
| 3 | <code>ok</code> | Open the CD-ROM drive bay. Depending on the hardware platform, insert the CD labeled <i>Avaya IR R1.2 Solaris OS for SunBlade 150 - CD 1</i> or <i>Avaya IR R1.2 Solaris OS for Sun Fire 280R - CD 1</i> . Close the CD-ROM drive bay. |
| 4 | <code>ok</code> | Enter <code>boot cdrom - install</code> The system displays messages indicating that it is resetting itself and rebooting from the CD. |
| 5 | Select a Language 0. English 1. French 2. German 3. Italian 4. Spanish 5. Swedish Please make a choice (0 - 5), or press h or ? for help: | Enter 0 for English. IMPORTANT: You must use English for the Language. The Avaya IR system will not function properly if you select another language. |

| Step | System prompt | Action |
|------|--|---|
| 6 | <p>Select a Locale</p> <ul style="list-style-type: none"> 0. English (C - 7-bit ASCII) 1. Albania (ISO8859-2) 2. Australia (ISO8859-1) 3. Belgium-Flemish (ISO8859-1) 4. Belgium-Flemish (ISO8859-15 - Euro) 5. Bosnia (ISO8859-2) 6. Brazil (ISO8859-1) 7. Bulgaria (ISO8859-5) 8. Canada-English (ISO8859-1) 9. Catalan, Spain (ISO8859-1) 10. Catalan, Spain (ISO8859-15 - Euro) 11. Croatia (ISO8859-2) 12. Czech Republic (ISO8859-2) 13. Denmark (ISO8859-1) 14. Denmark (ISO8859-15 - Euro) 15. Egypt (ISO8859-8) 16. Estonia (ISO8859-15) 17. Finland (ISO8859-1) 18. Finland (ISO8859-15 - Euro) <p>Press Return to show more choices.</p> <p>Please make a choice (0 - 50), or press h or ? for help:</p> | <p>Enter 0 for English.</p> <p>IMPORTANT: You must use English for the locale. The Avaya IR system will not function properly if you select another locale.</p> |
| 7 | <p>What type of terminal are you using?</p> <ul style="list-style-type: none"> 1) ANSI Standard CRT 2) DEC VT52 3) DEC VT100 4) Heathkit 19 5) Lear Siegler ADM31 6) PC Console 7) Sun Command Tool 8) Sun Workstation 9) Televideo 910 10) Televideo 925 11) Wyse Model 50 12) X Terminal Emulator (xterms) 13) Other <p>Type the number of your choice and press Return:</p> | <p>This prompt appears on the Sun Fire 280R and the Sun Blade 150 if the Sun keyboard is not connected to the computer's USB port.</p> <p>Choose the terminal type you want to use and press Enter.</p> |

Installation

| Step | System prompt | Action |
|------|--|--|
| 8 | <p>The Solaris Installation Program</p> <p>The Solaris installation program is divided into a series of short sections where you'll be prompted to provide information for the installation. At the end of each section, you'll be able to change the selections you've made before continuing.</p> <p>About navigation...</p> <ul style="list-style-type: none"> - The mouse cannot be used - If your keyboard does not have function keys, or they do not respond, press ESC; the legend at the bottom of the screen will change to show the ESC keys to use for navigation. | Press F2 to acknowledge the screen. |
| 9 | <p>Identify This System</p> <p>On the next screens, you must identify this system as networked or non-networked, and set the default time zone and date/time.</p> <p>If this system is networked, the software will try to find the information it needs to identify your system; you will be prompted to supply any information it cannot find.</p> <p>To begin identifying this system, press F2.</p> | Press F2 to acknowledge the screens. |
| 10 | Host name: | Enter the host name for the Avaya IR system and press F2. |
| 11 | <p>Networked</p> <p>[] Yes</p> <p>[] No</p> | If you plan to connect your system to a network, position the cursor between the Yes brackets using the arrow keys. Press Enter. An X appears in the brackets to indicate your selection. Press F2. |
| 12 | <p>Use DHCP</p> <p>[] Yes</p> <p>[] No</p> | <p>Select whether DHCP is to be used on your LAN. Press F2.</p> <p>If you choose No (the preferred option), the system uses static IP address for proxy connections.</p> |
| 13 | IP address: | Enter the IP address of the Avaya IR system and press F2. |

| Step | System prompt | Action |
|------|---|---|
| 14 | System part of a subnet <input type="checkbox"/> Yes <input type="checkbox"/> No | Select whether your system is part of a subnet and press F2. If you choose Yes , the system prompts you for the subnet mask. In this case, enter the subnet mask and press F2. |
| 15 | Netmask: | Enter the subnet mask and press F2. |
| 16 | Enable IPv6 <input type="checkbox"/> Yes <input type="checkbox"/> No | Select No and press F2. IMPORTANT: IPv6 is not supported in this release. After a short wait (approximately 30 seconds), the system displays the network information you entered similar to the following example: |
| 17 | Host name: <i>host</i> IP address: <i>IP address</i> System part of a subnet: <i>Yes</i> Netmask: <i>subnet mask</i> Enable IPv6: <i>No</i> | Review the information to make sure it is accurate and press F2 to continue. If the information is not correct, press F4 and correct the information starting with the Networked question. |
| 18 | Configuring default router Enter default router IP address (ex. 192.1.7.254) or 'none': | Enter the IP address of the default router (if applicable). The system verifies the default router. This activity takes a few minutes to complete. |
| 19 | Configure Kerberos Security <input type="checkbox"/> Yes <input type="checkbox"/> No | Choose No and press F2. IMPORTANT: Kerberos Security is not supported in this release. |
| 20 | Confirm the following information. If it is correct, press F2; to change any information, press F4. Configure Kerberos Security: No | Press F2 to confirm. |
| 21 | Name service <input type="checkbox"/> NIS+ <input type="checkbox"/> NIS <input type="checkbox"/> DNS <input type="checkbox"/> LDAP <input type="checkbox"/> None | Select your name service and press F2. Although this is specific to your site, the most common selection is DNS . If you selected DNS, the system displays the following series of messages to set up the DNS name service. |
| 21a | Domain name: | Enter the domain name and press F2. |

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| Step | System prompt | Action |
|------|---|--|
| 21b | Server's IP address: Server's IP address: Server's IP address: | You can enter up to three IP addresses for DNS servers. Type the IP address and press Enter to move to the next field. When done, press F2. |
| 21c | Search domain: Search domain: Search domain: Search domain: Search domain: | You can enter up to six search domains. Type the search domain and press Enter to move to the next field. When done, press F2. The system displays the information you entered, similar to the following: |
| 21d | Name service: DNS Domain name: domain.com Server address(es): 127.0.0.1 Search domain(s): search.domain.com | Review the information to make sure it is accurate and Press F2 to continue. If the list is not correct, press F4 and correct the information starting with the domain name prompt. After the system accepts your name service information, it displays a series of messages requesting information about the time zone for the system. |
| 22 | Regions [] Asia, Western [] Australia / New Zealand [] Canada [] Europe [] Mexico [] South America [] United States [] other - offset from GMT [] other - specify time zone file | Select the region for the system and press F2. The system displays a menu for selecting the time zone for the region you selected. The following example shows the time zones for the United States: |
| 23 | Time zones [] Eastern [] Central [] Mountain [] Pacific [] East-Indiana [] Arizona [] Michigan [] Samoa [] Alaska [] Aleutian [] Hawaii | Select your time zone and press F2. |

| Step | System prompt | Action |
|------|--|--|
| 24 | <p>Date and time: <i>date time</i></p> <p>Year (4 digits): <i>year</i></p> <p>Month (1-12) : <i>month</i></p> <p>Day (1-31) : <i>day</i></p> <p>Hour (0-23) : <i>hour</i></p> <p>Minute (0-59) : <i>minute</i></p> | <p>Verify that these values for year, month, day, hour, and minute are correct. If any values need to be changed, position the cursor in the appropriate field and type the correct value. Press Enter to move between field. When done, press F2.</p> <p>The system displays the time zone information you entered, similar to the following:</p> |
| 25 | <p>Time zone: US/Mountain</p> <p>Date and time: 2002-07-03</p> <p>10:38:00</p> | <p>Review the information to make sure it is accurate and press F2 to continue. If the information is not correct, press F4 and correct the information starting with the region prompt.</p> <p>The system installs the system software and configures the network. This takes a few minutes. When completed, the system displays the following prompt:</p> |
| 26 | <p>Welcome To Avaya Interactive Response R1 Installation and Recovery.</p> <p>Please select one of the choices below.</p> <p>I to Install or R for Restore</p> | <p>To begin installing the base packages for the Avaya IR system, enter I (for install).</p> <p>Note: To restore the system from backup at this prompt, see Restoring the system from backup on page 61.</p> <p>The system begins installing the base packages. After several minutes the system reboots and displays the following prompt:</p> |
| 27 | <p>Root password:</p> | <p>Enter the root password to be used on the system.</p> |
| 28 | <p>Re-enter your root password.</p> <p>Root password:</p> | <p>Enter the root password again.</p> <p>Lines similar to the following will appear:</p> |

Installation

| Step | System prompt | Action |
|------|---|--|
| 29 | <p>System identification is completed. Setting netmask of eri0 to XXX.XXX.XXX.X Setting default IPv4 interface for multicast: add net 224.0/4: gateway XXXXX syslog service starting.</p> <p>Print services started. volume management starting.</p> <p>Jul 3 10:48:56 XXXXX sendmail[293]: My unqualified host name (XXXXX) unknown; sleeping for retry The system is ready.</p> | <p>The system reboot process continues and returns to the console login prompt. However, you may need to press Enter to display it.</p> |
| 30 | Console login: | Enter root |
| 31 | Password: | <p>Enter your root password.</p> <p>The system logs you in and automatically opens the CD-ROM drive.</p> |
| 32 | <p>The installation process will now continue.</p> <p>Put the CD labeled AVAYA IR R1.2 Software Packages - CD 2 into the drive.</p> <p>Press enter when ready.</p> | <p>Remove the CD in the CD-ROM drive and insert the CD labeled <i>Avaya IR R1.2 Software Packages - CD 2</i>. Press Enter.</p> <p>The system copies files from the CD. This takes a few minutes.</p> <p>When it is complete, the system automatically opens the CD-ROM drive and displays the following message:</p> |
| 33 | <p>The contents of the AVAYA IR R1.2 Software Packages CD have been installed.</p> <p>Put the CD labeled AVAYA IR R1.2 Core Packages - CD 3 into the drive.</p> <p>Press enter when ready.</p> | <p>Remove the CD in the CD-ROM drive and insert the CD labeled <i>Avaya IR R1.2 Core Packages - CD 3</i>. Press Enter.</p> <p>The installation process continues for several minutes.</p> <p>When it is complete, the system displays the following message:</p> |

| Step | System prompt | Action |
|------|---|---|
| 34 | <p>Contents of the AVAYA IR R1.2 Core Packages CD have been installed.</p> <p>Software installation is complete.</p> <p>Press enter to reboot the system.</p> | <p>Press Enter.</p> <p>The system reboots.</p> <p>IMPORTANT: During the reboot process on the Sun Fire 280R, the system synchronizes the second hard disk drive to initialize the Disk Mirroring feature. The synchronization process takes approximately 2.5 hours. When it is complete the system displays the console login prompt.</p> |
| 35 | <p>Console login:</p> | <p>Login as root.</p> <p>You are now ready to install the individual packages required for your particular site. For more information, see Installing individual packages on page 42.</p> |

Installing packages

Systems with pre-installed software or have been installed from CD must have additional packages installed manually to meet the system requirements. For example, if the system is intended to use digital telephony for voice communications, the NMS package must be installed to provide that functionality.

This section explains how to install Avaya IR packages for use on the system.

This section includes the following topics:

| | |
|-------------------------------------|----|
| Installing the NMS package | 40 |
| Installing the VoIP package | 41 |
| Installing individual packages..... | 42 |
| Installing optional packages | 44 |
| Provisioning feature channels | 44 |
| Installing database software..... | 45 |

Installing the NMS package



Important:

You must install the NMS telephony cards before installing NMS package. The package installation initializes the NMS software on the telephony cards. If the cards are not present when the package is installed, the software will not function properly.

To install the NMS package:

1. If you are not logged in, log in as root.
2. At the command prompt, enter `stop_vs`

The system displays the following message:

```
The Voice System is now stopping
Initiating request to clear all calls in the next 180 seconds.
Orderly idling of system succeeded
```

The Voice System has completely stopped, use the "Start Voice System" choice from the System Control menu to restart the Voice System

3. Enter `cd /export/optional_features`

This directory contains all of the optional and licensed packages.

4. Enter `pkgadd -d . AVnms`

The package installation starts and displays the following message:

```
This package contains scripts which will be executed with super-
user
```

```
permission during the process of installing this package.
```

```
Do you want to continue with the installation of <AVnms> [y,n,?]
```

5. Enter `y` for Yes.

The installation process continues. The system displays messages indicating progress. Finally, the system displays the following message:

```
Installation of <AVnms> was successful.
```

6. Enter `/vs/bin/nms.install` to install the NMS drivers.

The process for installing the NMS drivers begins. The system displays messages indicating progress. Finally, the system displays the following message:

```
*** IMPORTANT NOTICE ***
```

```
This machine must now be rebooted in order to ensure
sane operation. Execute
```

```
shutdown -y -i6 -g0
```

```
and wait for the Console Login: prompt.
```

This message indicates that the installation of the NMS drivers is complete.

7. Enter `shutdown -y -i6 -g0` to reboot the system.

Once this package has been installed, an Avaya provisioning engineer must provision the feature channels for the NMS feature. See [Provisioning feature channels](#) on page 44 for more information.

Installing the VoIP package

To install the VoIP package:

1. If you are not logged in, log in as root.
2. At the command prompt, enter `stop_vs`

Installation

The system displays the following message:

```
The Voice System is now stopping
Initiating request to clear all calls in the next 180 seconds.
Orderly idling of system succeeded

The Voice System has completely stopped, use the
"Start Voice System" choice from the System Control menu
to restart the Voice System
```

3. Enter `cd /export/optional_features`

This directory contains all of the optional and licensed packages.

4. Enter `pkgadd -d . AVvoip`

The package installation process starts and displays the following message:

```
This package contains scripts which will be executed with super-
user
permission during the process of installing this package.

Do you want to continue with the installation of <AVvoip> [y,n,?]
```

5. Enter `y` for Yes.

The system displays messages indicating the progress of the package installation. Finally, the system displays the following message:

```
Installation of <AVvoip> was successful.
```

This message indicates that the package installation is complete.

Once this package has been installed, an Avaya provisioning engineer must provision the feature channels for the VoIP feature. See [Provisioning feature channels](#) on page 44 for more information.

Installing individual packages

Install the following packages to provide base software functionality for speech recognition, TTS, and Two B-Channel Transfer on Avaya IR system:

- Proxy Text-to-Speech package (AVttsprxy)
- Speech Proxy package (AVsproxy)
- Speech Proxy - Speech Recognition package (AVsrproxy)
- TBCT package (AVtbct)

Use the **pkgadd** command to install these packages on the system. Once the packages have been installed, an Avaya provisioning engineer provisions the feature channels for each package as appropriate. See [Provisioning feature channels](#) on page 44 for more information.

To install individual packages:

1. If you are not logged in, log in as root.

2. At the command prompt, enter **stop_vs**

The system displays the following message:

```
The Voice System is now stopping
Initiating request to clear all calls in the next 180 seconds.
Orderly idling of system succeeded

The Voice System has completely stopped, use the
"Start Voice System" choice from the System Control menu
to restart the Voice System
```

3. Enter **cd /export/optional_features**

This directory contains all of the optional and licensed packages.

4. Enter **pkgadd -d . package_name** where *package_name* is the short name for the package you want to install.

The package installation process starts and displays the following message:

```
This package contains scripts which will be executed with super-
user
permission during the process of installing this package.

Do you want to continue with the installation of <package_name>
[y,n,?]
```

5. Enter **y** for Yes.

The system displays messages indicating the progress of the package installation. Finally, the system displays the following message:

```
Installation of <package_name> was successful.
```

This message indicates that the package installation is complete.

6. Repeat Step 4 for additional packages you need to install.

Installing optional packages

Optional software packages are password-protected and must be installed by an Avaya provisioning engineer.

Contact the Avaya Technical Services Organization (TSO) to have the following packages installed.

- WholeWord Recognition Base package (Avaya Recognizer)
- WholeWord speech recognition language packages
- VoiceXML package
- ASAI package
- CTI DIP package
- Enhanced Basic Speech packages
- Fax Actions package
- NG FAX package
- IC Integration package
- PDS Integration package
- SpeechWorks ASR package
- SpeechWorks TTS package

Provisioning feature channels

Once installed, an Avaya provisioning engineer must set up licensed features to allow use of the feature on the system. Provisioning is based on the number of channels of the feature purchased by the customer.

Contact the Avaya Technical Services Organization (TSO) to have the following features provisioned:

- Digital protocol - loop start
- Digital protocol - PRI
- Digital protocol - wink start
- Fax features
- WholeWord speech recognition (Avaya Recognizer)

- Natural Language Speech Recognition (NLSR)
- Proxy Text-To-Speech (PTTS)
- Voice over IP (VoIP)

After feature channels are provisioned, you may be required to install a service pack. For information about service packs, see [Working with service packs](#) on page 51.

Installing database software

If you are using a database with Avaya IR, you can install the database software on the LAN or locally on the Avaya IR system. Follow the instructions provided with your database software for installing the software. This section provides information to consider as part of the database installation process, including information on how to download and install certain JDBC drivers.

This section includes the following topics:

| | |
|--|----|
| Supported database software | 45 |
| Installing JDBC drivers..... | 46 |
| Network port usage..... | 49 |
| Guidelines for installing local Oracle | 49 |

Supported database software

The following database systems can be used with Avaya IR and accessed through the JDBC integration feature:

- Oracle 8i (8.1.5, 8.1.6, 8.1.7)
- Oracle 9i
- Sybase 12.x
- Informix 9.21UC4
- IBM DB2 v.7
- MS SQL Server 7.0 and 2000

Installation

If you are using Sybase, Informix, or DB2, you must download and install the JDBC drivers for those database systems. For more information, see [Installing JDBC drivers](#) on page 46. The drivers for Oracle and SQL server are installed as part of the base Avaya IR packages.

Installing JDBC drivers

To integrate the Avaya IR system with Sybase, Informix, or DB2 database management systems, you must download and install the JDBC drivers for those systems.

This section includes the following topics:

| | |
|---|----|
| Installing the Sybase JDBC driver..... | 46 |
| Installing the Informix JDBC driver | 47 |
| Installing the DB2 JDBC driver..... | 48 |

Installing the Sybase JDBC driver

To download the JDBC driver for Sybase:

1. From a Web browser, go to the [Sybase JDBC download page](http://www.sybase.com/detail/1,6904,1009796,00.html) (<http://www.sybase.com/detail/1,6904,1009796,00.html>).

The browser displays the Web page titled **jConnect 4.5 and 5.5 for JDBC Download**

2. Select **Download Now**

The browser displays the license agreement.

3. Select **Agree** at the end of the page.

The browser displays the customer information form.

4. Enter the required information in the form and select **Submit**.

The browser displays the download page.

5. Select **jconnect55.zip** and save the file to the /tmp directory on the Avaya IR system.

If you cannot directly download the file to the Avaya IR system, download it to a temporary location. Then transfer the file (using the **ftp** command or by some other method) to the /tmp directory on the Avaya IR system.

To install the Sybase JDBC driver:

1. If necessary, log in as root.
2. At the command prompt, enter `cd /tmp`

3. Enter `jar xvf jconnect55.zip`

The driver software is extracted from the zip file.

4. Enter `cp jConnect-5_5/classes/jconn2.jar /vs/java/sybase.jar`

The driver software is copied to the /vs/java directory where the Avaya IR software expects it to be. To enable the driver, you must restart the Apache Tomcat servlet engine.

5. Enter `/etc/init.d/tomcat stop`

The system displays messages indicating that the Tomcat engine is stopped.

6. Enter `/etc/init.d/tomcat start`

The system displays messages indicating that the Tomcat engine is started.

7. Configure and test the database DIP using the **JDBC Administration - Edit** screen in Web administration.

For more information, see "Administration > Administration procedures > Administering the JDBC database interface" in *Avaya IR System Help*.

Installing the Informix JDBC driver

To download the JDBC driver for Informix:

1. From a Web browser, go to the [Informix JDBC download page](http://www14.software.ibm.com/webapp/download/preconfig.jsp?id=2003-07-10+15%3A59%3A39.007148C&S_TACT=&S_CMP=&s=) (http://www14.software.ibm.com/webapp/download/preconfig.jsp?id=2003-07-10+15%3A59%3A39.007148C&S_TACT=&S_CMP=&s=)

The browser displays the Web page titled **IBM Informix JDBC Driver Downloads**

2. From the **Language** drop-down menu, select **English US**
3. Select **Continue**

The browser displays the download page.

4. Select **Download now** and save the file to the /tmp directory on the Avaya IR system.

If you cannot directly download the JDBC.2.21.JC5.tar file to the Avaya IR system, download it to a temporary location. Then transfer the file (using the **ftp** command or by some other method) to the /tmp directory on the Avaya IR system.

To install the Informix JDBC driver:

1. If necessary, log in as root.
2. At the command prompt, enter `cd /tmp`
3. Enter `tar xvf JDBC.2.21.JC5.tar`

The driver software is extracted from the tar file.

Installation

4. Enter `java -cp setup.jar run -silent -P product.installLocation=/tmp/infx`

The driver software is installed in the /tmp/infx directory.

5. Enter `cp /tmp/infx/lib/ifxjdbc.jar /vs/java`

The driver software is copied to the /vs/java directory where the Avaya IR software expects it to be. To enable the driver, you must restart the Apache Tomcat servlet engine.

6. Enter `/etc/init.d/tomcat stop`

The system displays messages indicating that the Tomcat engine is stopped.

7. Enter `/etc/init.d/tomcat start`

The system displays messages indicating that the Tomcat engine is started.

8. Configure and test the database DIP using the **JDBC Administration - Edit** screen in Web administration.

For more information, see "Administration > Administration procedures > Administering the JDBC database interface" in *Avaya IR System Help*.

Installing the DB2 JDBC driver

The JDBC driver for DB2 is included as part of the DB2 software installed on your database server. To install the driver, you must transfer the driver file from the database server to the Avaya IR system and then decompress the files.

To install the DB2 JDBC driver:

1. Locate the driver file (db2java.zip) on server on which DB2 is installed.

For Microsoft Windows installations, the driver file is usually in the directory **HD:\Program Files\SQLLIB\java** where *HD* is the hard disk drive containing the DB2 software.

For Unix installations, enter `find . -name db2java.zip -print` to locate the file on the DB2 server.

2. Transfer the file (using the **ftp** command or by some other method) to the /vs/java/ directory on the Avaya IR system.
3. If necessary, log in as root.

4. Enter `mv /vs/java/db2java.zip /vs/java/ibmdb2.jar`

5. Enter `jar tvf /vs/java/ibmdb2.jar`

The driver software is extracted from the jar file. To enable the driver, you must restart the Apache Tomcat servlet engine.

6. Enter `/etc/init.d/tomcat stop`

The system displays messages indicating that the Tomcat engine is stopped.

7. Enter `/etc/init.d/tomcat start`

The system displays messages indicating that the Tomcat engine is started.

8. Configure and test the database DIP using the **JDBC Administration - Edit** screen in Web administration.

For more information, see "Administration > Administration procedures > Administering the JDBC database interface" in *Avaya IR System Help*.

Network port usage

When installing database software, avoid conflicts with ports used by Avaya IR features. The following table shows which network ports are used.

| Feature | Network Ports | Protocol |
|------------------------------|---|----------|
| WholeWord (Avaya Recognizer) | 2345 to 2345+N-1 where N is the number of ASR ports. The default is 60. | TCP |
| Web Administration | 80 for Apache Web Server, 8081 for Tomcat Servlet Engine | HTTP |
| Web Administration | 8007 for Tomcat Servlet Engine | ajpv12 |

Guidelines for installing local Oracle

Of the supported databases, only Oracle can be installed locally on the Avaya IR platform. Oracle uses the same JDBC interface to integrate with IR applications whether it is local or remote. This section provides guidelines for installing and configuring Oracle as a local database.

This section includes the following topics:

Installing Oracle locally on the system..... 49

Specifying Oracle memory usage 50

Installing Oracle locally on the system

To install an Oracle database, follow the instructions provided with the software using the following guidelines:

Installation

- Install the Oracle software files in the `/export/oracle` directory.
- During the installation process, do *not* start the Oracle Apache Web Server. The Oracle Apache Web Server conflicts with the Apache Web Server that is installed as part of the Web Administration package. The Oracle Apache Web Server is not required for using Oracle on Avaya IR.

Specifying Oracle memory usage

Avaya recommends using a specific memory usage configuration for local installations of Oracle. The default configuration that is generated by the installation process causes Oracle to consume too much system memory.

Avaya provides the `/vs/data/init.ora` file as part of the base software installation for Avaya IR. This file contains the recommended configuration for running Oracle on the system. Use this file in place of the default `init.ora` file (usually located in the `$ORACLE_HOME/dbs` directory) or modify the file using the following values as guidelines:

```
#db_cache_size=67108864
db_block_buffers=500
hash_area_size=262144
#dispatchers=          - disable MTS
#java_pool_size=67108864
#large_pool_size=1048576
shared_pool_size=5000000
```

Working with service packs

Service packs are required to update the Avaya IR system with the most current software available.

Service packs are numbered in ascending order and each subsequent service pack contains the contents of all previous service packs. Also, each software release of the system contains the service packs from the previous software release. For example, release 2.0 contains all the service packs for release 1.0.

This section includes the following topics:

| | |
|--|----|
| When to install a service pack..... | 51 |
| Determining the software release | 52 |
| Verifying the service pack | 52 |
| Determining if a service pack is present | 53 |
| Obtaining a service pack..... | 53 |
| Installing a service pack..... | 54 |

When to install a service pack

If a service pack is available, you will need to install it in the following situations:

- After a system arrives from Avaya that does not have the service pack pre-installed.
- After a system has been installed from CD.
- After a system has been recovered using a full-backup image that did not have the service pack installed.
- After new features have been added and activated on a system. This is necessary to ensure service pack materials for the newly activated feature get installed, since the service pack package does not install fixes for features that are not present on the system.

Determining the software release

To know which service pack to install on your system, you must know the software release of the currently installed Avaya IR system.

To determine the current software release:

1. If necessary, log in as root.
2. At the command prompt, enter `pkginfo -l AVir`

The system displays a message similar to the following:

```
PKGINST: AVir
NAME: Interactive Response Base System 1.0
CATEGORY: IVR
ARCH: sparc.sun4u
VERSION: 1.0.026
VENDOR: Avaya Inc.
PSTAMP: mav220021112110202
INSTDATE: Nov 18 2002 11:59
STATUS: completely installed
FILES: 568 installed pathnames
28 shared pathnames
13 linked files
58 directories
150 executables
4 setuid/setgid executables
71869 blocks used (approx)
```

The first two numbers of the VERSION show the major release number, in this case 1.0.

Verifying the service pack

The service pack package is named after the software release number, using the following naming convention:

AVmajor-minorqp

where *major* is the major release number and *minor* is the minor or point release number. For example, the name of the service pack package for release 1.0 is *AV1-0qp*. The service pack package for release 1.2 would be *AV1-2qp* and so on.

To check the service pack package installed for a given release:

1. If necessary, log in as root.

2. At the command prompt, enter `pkginfo -l sp_package` where `sp_package` is the name of the service pack for the release you want to check. The service pack is indicated in the following ways:

- The system displays an error message, such as:

```
ERROR: information for "sp_package" was not found
```

In this case, make sure you used the correct name for the service pack package. If so, the error indicates that no service pack package has been loaded for the release.

- The system displays package information. The version of the service pack is indicated at the end of the **VERSION** number. For example, **VERSION** number `1.0.26.003` indicates that the third service pack for version 1.0 is currently installed.

If this is not the service pack that should be on the system, use the `pkgrm` command to remove the package. To install the correct service pack package, you may need to download it from the Avaya Support Centre Web site. See [Obtaining service packs](#) on page 53 for more information.

Determining if a service pack is present

Systems shipped after certain service pack releases may already have the service pack package loaded on the system.

To determine if the service pack is already on your system:

1. If necessary, log in as root.
2. At the command prompt, enter `ls /export/patch`

If the system displays a service pack file, such as `AV1-2qp.ds.Z`, you can install the package using the steps described in [Installing a service pack](#) on page 54. If there is no service pack file, follow the steps in [Obtaining a service pack](#) on page 53 to obtain the file from Avaya.

Obtaining a service pack

To obtain a service pack:

1. From a Web browser, go to <http://support.avaya.com> (<http://support.avaya.com>).
2. From the navigation menu (the area on the left of the browser window, under **Technical Database**), select **Call Center/CRM**.
3. From the navigation menu, select **Interactive Voice Response**.

Installation

4. From the navigation menu, select **Interactive Response**.
5. From the main display area of the browser window, select **Software Downloads** under the **R 1.2** subheading.

The browser displays a table listing the current software downloads.

6. In the **Software Downloads** table, select the link for the service pack you want to download.

The browser displays information about the service pack, including instructions for downloading, installing, and uninstalling the service pack.

7. Follow the download instructions, to copy the service pack file from the Web site.

For more information on service packs, see [Working with service packs](#) on page 51.

Installing a service pack

To install a service pack:

1. If necessary, log in as root.
2. At the command prompt, enter `cd /export/patch` to change to the directory containing the current service pack package (in compressed form).
3. Enter `stop_vs` to stop the voice system.
4. Enter `uncompress sp_package.ds.Z` where `sp_package.ds.Z` is the name of the compressed service pack file in the `/export/patch` directory.

The service pack uncompresses in the current directory.

5. Enter `pkgadd -d ./sp_package.ds sp_package` where `sp_package.ds` is the name of the uncompressed service pack package and `sp_package` is the name of the service pack you want to install.

For example, to install service pack AV1-0qp, enter `pkgadd -d ./AV1-0qp.ds AV1-0qp`

The package installation starts. The system displays various messages. In some cases, the message mentions *conflicting* files. These *conflicting* files are the files that will be updated by the service pack. Confirm these messages by pressing Enter (to choose the default **Yes** response).

Note:

If you do not confirm the package installation messages, the process will exit and the package will not be installed.

After a short time, the system displays the following message:

This package contains scripts which will be executed with super-user permission during the process of installing this package.
Do you want to continue with the installation of <AV1-0qp> [y,n,?]

6. Enter **y** for Yes.

Note:

Do not be alarmed by statement regarding super-user permission. The message means that the script will use highest level of permission on the system to install the various portions of the service pack.

The system continues installing the service pack. After a short time, it displays a message indicating that the installation is complete. You must reboot your system for the changes to take effect.

7. Enter **shutdown -y -i6 -g0** to reboot your system.

Setting up features

After you have installed all required software packages and provisioned feature channels, you must set up the features on the Avaya IR platform using the Web Administration interface.

This section includes the following topics:

| | |
|---|----|
| Setting up user accounts..... | 56 |
| Starting the Web Administration interface | 58 |
| Setting up features | 59 |

Setting up user accounts

To use the Web Administration interface to set up features on Avaya IR, you can use the root login and password, or you can set up one or more additional user accounts with the appropriate administrative privileges.

This section includes the following topics:

| | |
|---|----|
| Establishing platform user accounts..... | 56 |
| Assigning Web Administration privileges | 58 |

Establishing platform user accounts

Platform user accounts are required to log into the Avaya IR system. To establish user accounts, use Admintool, a graphical user interface for managing users and groups on the system.

Note:

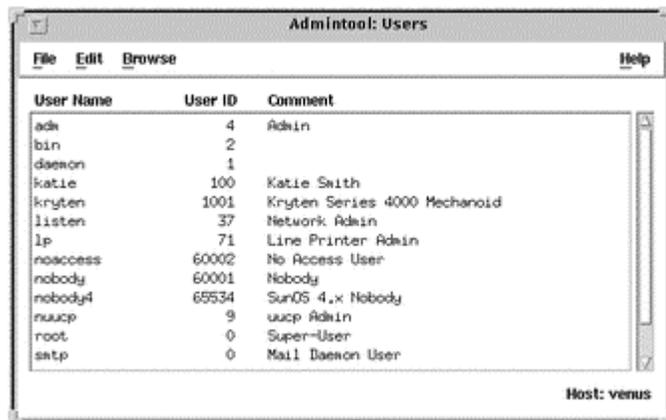
To use Admintool, you need to have an X Window environment, such as CDE (Common Desktop Environment) for Sun systems or Exceed for Microsoft Windows systems. If you do not have access to an X Window environment, you can establish user accounts with the Solaris command `useradd` and `groupadd`. For more information on how to use these commands, see the Sun Solaris 8 System Administration Guide, Volume 1. This document is

available in *Avaya IR System Help* (under "Print documents") or from the Sun Web site (<http://www.sun.com>).

To establish user accounts on the Avaya IR platform:

1. Log in as root.
2. At the command prompt, enter `admintool &`

The **Admintool** interface starts, as shown in the following figure.



3. On the Edit menu, choose **Add**.

The system displays the **Add User** window.

4. Complete the Add User window with information about the new user and select **OK**.

Consider the following points when entering data about the new user:

- User ID numbers must be a whole number less than or equal to 2147483647. They are required for both regular user accounts and special system accounts. Although User ID numbers 0 through 99 are reserved, you can add a user with one of these numbers. However, do not use them for regular user accounts. By definition, root always has User ID 0, daemon has User ID 1, and pseudo-user bin has User ID 2.
- When adding a user account, you must assign a primary group for a user or accept the default group, staff (group 10). The primary group should already exist (if it does not exist, specify the group by a GID number).

For more information user ID numbers and groups, see the Sun Solaris 8 *System Administration Guide, Volume 1*.

Assigning Web Administration privileges

A user account other than root must be set up with an Avaya IR privilege of Administration or Operations to log in to Web Administration. The Operations privilege allows access to fewer Web Administration menu items than the Administration privilege. For example, a user with an Operations privilege cannot administer Backup and Restore.

To assign administrative privileges:

1. At the command prompt, enter **assign_permissions username Administration** where *username* is the user you added using the Admintool.

The system displays:

```
Assigning VIS permissions:      Administration
      for user login:          username
```

Confirm (Y/N)

2. Enter **y**

The system displays:

```
login:  username has been assigned VIS permissions level:
Administration
```

You can now access the Web Administration interface using the new user name. See [Starting the Web Administration interface](#) on page 58 for more information.

Starting the Web Administration interface

To set up the features on Avaya IR, you can use the Web Administration interface or the command-line interface.

Note:

Avaya recommends using the Web Administration interface until you are familiar with the administration commands.

To start the Web Administration interface:

1. Start a Web browser.

To run Netscape locally on the Avaya IR platform, from the UNIX prompt, type **netscape** and press **Enter**.

If you are accessing Avaya IR from another computer, start the browser as you normally do on that system. This computer must be on the same data network as the Avaya IR system.

2. In the browser address field, enter `http://domain` where *domain* is the domain name of the Avaya IR system.

The domain name is specified when the system is installed and set up for the first time.

If you are running the browser locally, you can use `http://127.0.0.1` in the address field.

The system displays the **Web Administration entry** screen.

3. Select **Web Administration**.

The browser displays the **Login** screen.

4. Log in to the system using an account with root or administration privileges.

The system displays the **Web Administration** screen, the entry point for the Web Administration interface.

Setting up features

Once packages have been installed, Avaya IR features must be configured to provide the required functionality. Use the Web Administration interface or the command-line interface to administer features on the Avaya IR system.

The initial features to set up include:

- Switch interfaces (such as T1/E1 or Voice over IP)
- JDBC interface for database access
- Call Data Handling (CDH) settings
- Universal Call ID (UCID) settings
- Backups
- VoiceXML settings, if required
- Speech configuration (such as PTTS, NLSR, or WholeWord), if required
- CTI DIP settings, if required
- ASAI settings, if required
- Fax settings, if required

The "Administration > Administrative procedures" section of the *Avaya IR System Help* provides step-by-step instructions for setting up features. To access *Avaya IR System Help*, select **Help** in the Web Administration interface.

Backing up the system for the first time

Avaya strongly recommends that you create a full backup of the system after you have completed administering the features for the first time. By doing so, you will preserve your setup and minimize the amount of work you will need to do if the system becomes disabled and has to be restored.

For complete information on how create a backup, see "Backing up and restoring data" in the "Administration > Administrative procedures" section of *Avaya IR System Help*.

Restoring the system

If a full backup of the Avaya IR system exists, the system can be completely restored without reconfiguring the system. This section provides information on how to restore the system from a full backup.

This section includes the following topics:

| | |
|---|----|
| Preparing for system restoration | 61 |
| Restoring the system from full backup | 61 |

Preparing for system restoration

To restore the system from full backup, you must have the following items:

- A full backup file on a server accessible to the Avaya IR system that you plan to restore
- *Avaya IR R1.2 Solaris OS for SunBlade 150 - CD 1* or *Avaya IR R1.2 Solaris OS for Sun Fire 280R - CD 1*

Restoring the system from full backup

To restore the system from full backup:

| Step | System prompt | Action |
|------|---|--|
| 1 | None (system is powered off). | Perform Steps 1 through 25 of Install system software on page 31. After Step 25, the system displays the following prompt: |
| 2 | <pre>Welcome To Avaya Interactive Response R1 Installation and Recovery. Please select one of the choices below. I to Install or R for Restore</pre> | Enter R for Restore. |
| 3 | The system prompts you to make sure the LAN cable is plugged in before proceeding. | If necessary, see Connecting the platform to the LAN on page 15 for more information. |

Installation

| Step | System prompt | Action |
|------|---|--|
| 4 | <p>You will next have to enter the nfs pathname to the backup image.</p> <p>The format is <code>backuphostip:/path/systemname.DmmddyThhmmss.full</code> Where: <code>backuphostip</code> is the ip address of the system where the backup file is located. <code>path</code> is the pathname to the directory on the backuphost where backup file is located. <code>systemname</code> is the host name of the system that back up was created from.</p> <p>There should be two files on the backuphost: <code>systemname.DmmddyThhmmss.full</code> and <code>systemname.DmmddyThhmmss.diskinfo</code>.</p> <p>Enter the nfs pathname to the backup image now.</p> | <p>Enter the NFS pathname to the backup file.</p> <p> CAUTION: You must use the IP address of the system where the backup is located (<i>backuphostip</i>). If you use a host name instead, the restore operation may fail depending on your network configuration.</p> <p>The system extracts the data from the backup file, install the data, then reboots. This process takes several minutes.</p> |
| 5 | <p>Configuring default router</p> <p>Set default network router IP address [y,n,?]</p> | <p>Enter y for Yes.</p> |
| 6 | <p>Set Router IP Address (ex. 192.1.7.254):</p> | <p>Enter the IP address of the router.</p> |
| 7 | <p>Is router address <192.1.7.254> correct [y,n,?]</p> | <p>Enter y for Yes if the router address is correct.</p> |

| Step | System prompt | Action |
|------|---|---|
| 8 | <p>On this screen you can create a root password.</p> <p>A root password can contain any number of characters, but only the first eight characters in the password are significant. (For example, if you create `alb2c3d4e5f6` as your rootpassword, you can use `alb2c3d4` to gain root access.)</p> <p>You will be prompted to type the root password twice; for security, the password will not be displayed on the screen as you type it.</p> <p>> If you do not want a root password, press RETURN twice.</p> <p>Root password:</p> | Enter the root password. |
| 9 | Press Return to continue. | Press Enter. |
| 10 | Re-enter your root password. | Enter the root password again. |
| 11 | Press Return to continue. | Press Enter. |
| 12 | <p>System identification is completed.</p> <p>The system boots and displays the console login prompt.</p> | <p>Log in as you normally do.</p> <p>If incremental backups were made after the full backup, restore them using the Web Administration interface.</p> <p>For more information, see <i>Creating and restoring backups in Avaya IR System Help</i>.</p> |

Obtaining release notes

In addition to the information provided in the *Avaya IR System Help*, the *Avaya IR Release Notes* provides documentation changes and information on existing system issues.

Release notes for Avaya IR are available at Avaya Support Centre Web site.

To obtain release notes:

1. From a Web browser, go to [Avaya Support Centre Web site](http://support.avaya.com) (<http://support.avaya.com>).

The browser displays the support site.

2. From the navigation menu (the area on the left of the browser window, under **Technical Database**), select **Call Center/CRM**.

3. Select **Interactive Voice Response**.

4. Select **Interactive Response**.

The browser displays a list of items available for Avaya IR in the main browser frame.

5. From the list, select **Release Notes** under the **R 1.2** subheading.

The browser displays a table listing the current Release Notes.

6. In the **Release Notes** table, select **Avaya IR R1.2 Release Notes**.

The browser displays information about the Release Notes, and links for different file formats.

7. Select the appropriate link in the **Download File** table.

The browser prompts you to choose a location on your computer to download the file.

8. Choose a location for the Release Notes document.

The browser downloads the file to the specified location.

Migration

This information defines the processes and tools needed to successfully migrate applications and data from V 6.1, V7, V8, or R9 CONVERSANT platforms (MAP40, MAP40P, MAP100, MAP100P, or UCS1000) or Avaya IR R1.0 platforms to the Avaya IR R1.2 platform using a LAN connection.

The migration process depends on the source and target platforms for the migration.

This section includes the following topics:

| | |
|--|----|
| Migrating from a CONVERSANT platform to an Avaya IR 1.2 platform | 66 |
| Migrating from Avaya IR R1.0 to Avaya IR R1.2 on the same box.. | 86 |
| Migrating between Avaya IR platforms..... | 89 |

Migrating from a CONVERSANT platform to an Avaya IR 1.2 platform

This section provides an overview of the steps involved in migrating data and applications from a CONVERSANT platform to an Avaya IR R1.2 platform.

This section includes the following topics:

| | |
|---|----|
| Overview of CONVERSANT to Avaya IR migration | 66 |
| Installing the CONVERSANT to Avaya IR migration package | 67 |
| Pre-migration phase..... | 68 |
| Migration phase..... | 76 |
| Post-migration phase | 81 |

Overview of CONVERSANT to Avaya IR migration

The basic steps you perform to migrate from a CONVERSANT platform to an Avaya IR R1.2 platform are listed below, organized by phases. See the identified topics for detailed procedures.

- Download the **mavscan.tar** file from the **support.avaya.com** web site onto the CONVERSANT platform and install the file to obtain the tools. (See [Installing the CONVERSANT to Avaya IR migration package](#) on page 67.)

Pre-migration

1. Run the **scanit** tool on the CONVERSANT platform to identify applications that use features that are not supported on the Avaya IR platform. (See [Running scanit](#) on page 71.)
2. If any unsupported features have been identified, make the appropriate changes to the applications.

Migration

1. Use the **tar_it** utility to package directories and files that need to be moved to the Avaya IR platform. (See [Migrating data](#) on page 76.)

Make sure that you include all host screen files. (See [Migrating host screen files](#) on page 78.)

2. Use FTP or a similar mechanism to transfer the generated tar file from the previous step to the Avaya IR platform.
3. Use the **tar** command to copy the archive files to their respective locations on the Avaya IR platform. (See [Migrating data](#) on page 76.)
4. Use Avaya IVR Designer to migrate any Voice@Work or Avaya IVR Designer applications. (See [Migrating applications](#) on page 79.)

Post-migration

1. FTP the `do_speech` script from the CONVERSANT platform to the Avaya IR platform.
2. Run the **do_speech** script to convert any ADPCM32 files to G.711 format. (See [Converting custom speech](#) on page 82.)
3. Convert any host screen capture files. (See [Converting host interface screen capture files](#) on page 83.)
4. Using Web Administration, set up the configuration for all the required features.
5. Recompile any IRAPI applications.

The libraries to include when compiling IRAPI applications have changed.

Installing the CONVERSANT to Avaya IR migration package

The migration tools and all related files for migrating from a CONVERSANT platform to an Avaya IR platform are delivered to the customer CONVERSANT system as a **tar** file named **mavscan.tar**, which includes the following files:

- **scanit** - Command to scan existing applications for unsupported features
- **tar_it** - Command to assist in packaging directories and files
- **do_speech** - Command to convert ADPCM32 files to G.711 format
- Other files used by scanit

The package is available for download from the support.avaya.com Web site.

To unpack and install the tools that will scan the CONVERSANT system:

1. Copy the **mavscan.tar** file to a directory where the tool will run.

Migration

2. On the command line, enter `tar -xvf mavscan.tar` to unpack and install the tool in the current working directory.

Installing the tool populates the current directory with the scripts and supporting utilities needed to run the migration tools.

Pre-migration phase

The purpose of the pre-migration phase is to use the **scanit** tool to determine the scope of the migration (by identifying changes required to the applications that will be moved from a CONVERSANT platform to an Avaya IR platform).

This section includes the following topics:

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| Overview of pre-migration phase | 68 |
| Pre-migration scanning tool (scanit)..... | 69 |
| Setting up an input file for scanit | 71 |
| Running scanit | 72 |
| Scanning Results | 73 |
| Customizing scanit..... | 74 |

Overview of pre-migration phase

The pre-migration phase for migrating from a CONVERSANT platform to an Avaya IR platform includes the use of the evaluation tool (scanit), resulting in a log of the evaluation results and a plan of action for each possible result. The evaluation does the following:

- Scans the customer's data, including the following:
 - Core Applications (Voice@Work, IVR Designer, Script Builder, IRAPI)
 - Utilities and tools
 - Custom external functions
 - Recorded speech (prompts)
 - Host screen files

Migrating from a CONVERSANT platform to an Avaya IR 1.2 platform

- Identifies any features or commands on the pre-migration platform that are not supported on the Avaya IR platform and logs the results.
- Includes a plan of action for each item identified by the evaluation tool. The plan of action for unsupported features or commands varies based on the items identified by the evaluation tool.

These activities prepare the customer data for the migration to the targeted platform. For example:

- If speech files are found, they must be converted using the do_speech utility.
- If an application has unsupported features, (for example, Brook Trout external functions), manual intervention is required.

Unsupported features or commands identified by the scanit tool can be addressed by:

- Manual changes made to the application
- Execution of a process to update the application
- Exclusion of the application from the data to be migrated to the Avaya IR platform.

After reviewing the action plans, the customer may update the applications to change or remove the unsupported features or may contact their ISV to assist with this process.

If a Script Builder application requires updates, update the application on the CONVERSANT platform and then move it to the Avaya IR platform. You cannot update Script Builder applications on the Avaya IR platform because the Script Builder development tool is not supported on the Avaya IR platform.

Pre-migration scanning tool (scanit)

scanit is the primary data gathering tool used to identify and quantify the changes required in the applications on the source CONVERSANT platform.

scanit should not be confused with the SCAN tool that is run by Avaya services. The SCAN tool captures an entire CONVERSANT configuration (boards, RTU licenses, etc). scanit is dedicated to applications and data and complements the SCAN tool.

This section includes the following topics:

| | |
|-------------------------------|----|
| Tokens..... | 70 |
| Default file extensions..... | 70 |
| Specifying files to scan..... | 70 |
| scanit reporting..... | 71 |

Tokens

scanit looks at application source files for occurrences of code that are out of compliance with the new Avaya IR release. These occurrences are referred to as tokens.

scanit provides the ability to assign a weighted value for each token type. This weighted value, is used to symbolize the complexity of the work required to replace the token. The complexity values may be used to determine hours of work. As with all other parameters in the scanning tool these values can be edited and changed in a configuration file. (See [Customizing scanit](#) on page 74.)

Default file extensions

scanit allows the user to configure the files to be scanned based on their file extensions. The default extension types are:

- **.c** for C source files including IRAPI and header files
- **.sh** for shell files, including Oracle SQL commands
- **.t** for TAS scripts and external functions
- **.prg** for Script Builder program files

scanit searches for files from a root directory by the above extensions. It searches in one pass starting from the specified root directory and continuing downward into all subordinate subdirectories for all source files.

Specifying files to scan

In addition to searching for files by extension type, **scanit** can also be configured to specifically look at particular files, regardless of extension type. The input list of files can be a set of files residing anywhere on the system. The user-supplied file list provides an option for the user to specify an explicit *file type* for each file. This allows the user the flexibility to input files to the tool that may not be readily identifiable by their extension type, and therefore would not be found in a standard search.

An example of an unsupported token would be **IRD_FLEXWORD**, which is a value that can be supplied to the `irSetParam` family of functions in IRAPI. If this token is found in a source file on a system being migrated to the Avaya IR system, the tool flags the parameter, identifies the file and line number, and logs this information into the log file.

scanit reporting

scanit generates a report in the form of a log file that identifies where unsupported tokens are found in the customer source code. The tool also provides a set of summary log file reports which include a list of files with specific token locations and total summaries of individual tokens found.

The log files from **scanit** are a primary input to determining the work effort involved in the migration to an Avaya IR platform. Actual effort estimates require analysis of the log files created from the pre-migration tool and are expected to be made by an experienced developer, an ISV, or Avaya professional services.

Setting up an input file for scanit

scanit's main purpose is to scan for tokens in the application source. The tool is designed to scan the source code of custom user-written applications and look for things not supported in Avaya IR.

scanit does not take any command line parameters. It prompts interactively for the user to enter a directory from which to search for source files. It also allows the user to supply an input file. The user must provide an input file or specify the directory to search.

The following example shows the format of an input file for the **scanit** tool. The input file includes a list of specific files the tool should scan.

```
TYPE t
/test/your.t
/tools/my.t
TYPE c
/tools/test/my.c
TYPE sh
/tools/test/hirunner
```

Note:

You must list all files of the same type after the TYPE declaration, valid types are c, t, sh, nam, and prg. These types correspond to C source/IRAPI, TAS, shell, screen capture, and Script Builder program file, respectively.

Listing specific files has an advantage over searching directories for unspecified files in that the tool is explicitly told each file's type. With the directory search option, the tool can only determine the file type through the file extension. For example, if the tool is given only a directory to search and this directory contains extensionless shell files, those shell files

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without the `.sh` extension, will not be discovered and will be ignored by the tool. If the specific shell files are listed in an input file, the shell files will be examined by the tool.

Running scanit

1. Type `scanit` at the command prompt to start the tool.

Verify that you are in the directory where `scanit` was loaded.

Note:

`scanit` outputs a large amount of information that scrolls by quickly. To capture the output in a file for future reference, use the `tee` or `script` utilities to capture the output. (For example, `scanit |tee file_name`)

The system responds with:

```
Scan Script Builder applications on this system?  
[y or n, default y]
```

2. Press **Enter** to accept the default.

Accepting the default causes `scanit` to find all the Script Builder program files to be scanned.

The system displays the following prompt:

```
Enter file name of source file list.  
<h for help, or CR to continue>
```

3. Enter the name of the input file that specifies the files to be scanned. (See [Setting up an input file for scanit](#) on page 71.)

As `scanit` reads the input file, it checks to see if the listed source files exist. It then captures the list of files to scan and displays the following prompt:

```
You may also enter directories to search.  
You will be reprompted for each directory
```

```
Enter a directory name  
<h for help, or CR to continue>
```

4. Enter the name of the directory where the scan should begin.

The response to this prompt should be the root directory of the application path. You do not need to supply a directory if all of the applications to be scanned are specified in the input file.

This prompt repeats after the system searches for files in the given directory and sub directories. You can scan additional source trees if all applications are not in the same directory tree.

5. Enter more directories, or press **Enter** to continue.

The system displays the following message:

```
The following source files will be scanned
press return to continue
```

```
[List of files found .....]
```

```
Press return to begin scanning.
```

scanit displays a summary of all the files to be scanned. This is the list of files discovered as a result of all the previous queries.

6. Press **Enter**.

As it begins scanning, **scanit** displays a series of processing messages. When the scanning process is complete it displays the following message.

```
Application scanning now complete.
Results can be found in the directory /current_directory/results
```

7. Press **Enter**.

The results of the scan are put into a **results** directory created from the current working directory where **scanit** is running.

Scanning Results

scanit creates a directory named **results** with the following log information:

- **source_outages.timestamp.file_type**

For every source file type (c, h, sh, t, nam, and prg), **scanit** lists the files where obsolete tokens were found. The following file is an example of the output:

```
/vs/examples/IRAPI/util_fcns.c
token name vsprintf found at line 79      vsprintf(mbuf, fmt, args);
token name getpid found at line 148      srand(getpid());
token name srand found at line 148      srand(getpid());
token name rand found at line 401      reg[1] = rand();
token name ctime found at line 463      strcpy(tbuf,
ctime(&reg[1]));
token name ctime found at line 466      irQTraceP(chan, TEE, TAREA,
vfmtstr( "%s: ctime = %s", fnName, tbuf ));
/vs/examples/IRAPI/test.c
token name signal found at line 22 #include <signal.h>
token name printf found at line 56 if (sgno == SIGTERM) {
printf("caught sigterm \n"); }
```

- **tokensummary.timestamp.file_type**

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For every source file type (c, h, sh, t, nam, and prg), **scanit** creates a summary file. The following file is an example of the output:

| Token Name | Occurrences | Rate | Cost |
|------------|-------------|------|------|
| I_ENOOP | 1 | 2 | 2 |
| ctime | 2 | 0 | 0 |
| exit | 23 | 1 | 23 |
| fprintf | 90 | 1 | 90 |
| getpid | 1 | 0 | 0 |
| printf | 5 | 1 | 5 |
| rand | 1 | 0 | 0 |
| send | 1 | 5 | 5 |
| srand | 1 | 0 | 0 |
| vsprintf | 1 | 5 | 5 |
| irFlash | 1 | 1 | 1 |
| ----- | | | |
| Totals | 127 | | 131 |

The **Rate** field is an educated guess at how much work will be involved in fixing the application, based on the weighted value of the token. The **Cost** field is the number of **occurrences** times the **Rate**.

- **token_information.file_type**

This is a static file, copied into the results area when **scanit** is installed. It gives a short textual explanation for every token and describes the Avaya IR issue.

Customizing scanit

scanit can be customized by adding tokens to the existing types or by adding new token types.

This section includes the following topics:

Adding tokens 74

Adding new token types 75

Adding tokens

Every token type has a file that lists all the tokens for which to scan. The default token files delivered with the tool are:

- **tokens_c** for IRAPI and C language tokens
- **tokens_t** for TAS language and external function tokens
- **tokens_sh** for anything that can appear in a shell script
- **tokens_prg** for Script Builder text files before they are converted into .t files

To add a new token for which to scan:

1. Add a new line with the new token to the end of the file corresponding to its type.

For example, if IRAPI function **irFPlay** were found to have a problem, and needed to be flagged by **scanit**, you would update the **tokens_c** file (IRAPI calls are found in C programs). The format of **tokens_c** files is a simple three column file that has the following format:

NAME: *token weight*

where NAME is fixed text and *token* and *weight* are required variables.

2. Update the **token_information** file (the file that contains a problem description for every token) for that file type.

Note:

When adding new tokens do not leave any blank lines at the bottom of the **token_type** file.

Adding new token types

To add a new type:

1. Identify a new type identifier.

For example, if you needed to scan java source files, **java** might be a logical new type identifier.

2. Add the new type to the **ext_type** file in the installed tool directory.
3. Create a **tokens_new_type** file, and populate it with tokens.

Use the same format as the other token type files.

Create a **token_information.type** file with resolutions and descriptions for each new token in the **tokens_new_type** file.

Migration phase

During the migration phase, you prepare data for migration and transfer the data to the new platform.

This section includes the following topics:

| | |
|-----------------------------------|----|
| Overview of migration phase..... | 76 |
| Migrating data | 76 |
| Migrating host screen files | 78 |
| Migrating applications | 79 |

Overview of migration phase

The migration phase includes data conversion and data transport activities. Data must be transported between platforms using a LAN connection and FTP or Solaris file sharing. Upgrade procedures and activities for pre-migration and migration occur on the originating platform.

Avaya supplied Enhance Basic Speech (EBS), IRAPI commands, DIPs, TAS scripts, and standard external functions are not migrated because they are a part of the base Avaya IR software.

Migrating data

You can move data using the **tar_it** utility that is part of the migration package or you can set up file sharing between the platforms.

This section includes the following topics:

| | |
|---|----|
| Creating an input file for tar_it..... | 77 |
| Transferring data with the tar_it utility | 77 |
| File sharing with Solaris Systems | 78 |

Creating an input file for tar_it

To specify the files to be transferred with the `tar_it` command, you can create a file that contains a list of the files and directories to be moved. The file should contain, each on a separate line, the directories and filename to be included. An example of an input file is:

```
/export/myarea  
/voice1/trace.lop  
/tmp/example.c
```

Transferring data with the tar_it utility

The `tar_it` utility is delivered with both of the migration tool packages to assist with the movement of custom files and data to the target Avaya IR platform. To archive files:

1. Run `tar_it` from the command prompt.

The `tar_it` utility prompts for the name of the file containing a listing of the directories and files to be put into a `tar` archive.

Note:

To capture a list of the files being archived, substitute the command `tar_it | tee file_name`.

2. Press **Enter** to use the default directories or enter the name of the file that lists the directories and files to archive.

If you choose the default the following directories are used:

```
/att/trans/sb  
/speech/talk  
/usr/add-on
```

The `tar_it` utility displays the directories to be archived and asks for confirmation prior to creating the archive. Custom external functions, which are stored in the `/vs/bin/ag/lib` directory, are not included in the default archive. You can specify them in an input file or transfer them directly.

PDS integration configuration information is saved in various files, so it is not archived. You must reconfigure PDS integration after migration.

3. Press **Enter** to confirm.

The `tar_it` utility lists all files discovered and puts them into an archive.

When all files are archived the `tar_it` utility responds with the following message:

```
You may now transfer /voice1/file_identifier.tar to target machine.  
Execute tar -xvf file_identifier.tar to unpack on the target machine.  
Please note there is no protection from overwriting existing  
files.
```

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4. Transfer the files across the network using an **ftp** command.

If you need to move individual files, an NFS mount between platforms might be more appropriate. For instructions on setting up NFS, see File sharing with Solaris Systems.

5. Run the command `tar -xvf file_identifier.tar` on the target platform to copy all the files in the archive onto the target system.

The system creates new directories if needed, and overwrites files on the target system if they are duplicated in the archive.

File sharing with Solaris Systems

You can use the following set of commands to set up file sharing between legacy SCO platforms and Solaris platforms:

1. On the legacy SCO platform, enter the following command:

```
cp /etc/dfs/dfstab /etc/dfs/dfstab.bak
echo "share -F nfs /export" >> /etc/dfs/dfstab
sh /etc/init.d/nfs stop
sh /etc/init.d/nfs start
```

2. Mount the SCO shared directory on the Solaris platform by running the following command on the Solaris platform:

```
mount -F nfs SCO Machine Name: /export /mnt
```

In the above example, the directory "/export" is shared out from the SCO system and mounted to the directory "/mnt" on the Solaris system.

3. After the desired files are copied over (using the **cp** command), run the following commands on the SCO platform to remove the sharing:

```
unshare -F nfs /export
mv /etc/dfs/dfstab.bak /etc/dfs/dfstab
```

Note:

On an Avaya IR R1 system, the above instructions can be reversed to share out a directory from the Solaris system and mount it on a SCO system. But in Avaya IR R1.2, this is not possible. Directories can be shared out only from a SCO system and mounted on to the Solaris system.

Migrating host screen files

During the migration phase, make sure that you move all **.sc** and **.nam** supported host screen files from CONVERSANT platforms to the Avaya IR platform. After you transfer the

files to the Avaya IR platform, convert them to run on the Avaya IR platform. For more information, see [Converting host interface screen capture files](#) on page 83.

Migrating applications

You can migrate Script Builder or IVR Designer applications between platforms.

This section includes the following topics:

| | |
|---|----|
| Migrating Script Builder applications | 79 |
| Migrating Script Builder applications that use the vesp_dip.t external function | 79 |
| Migrating IVR Designer applications | 80 |

Migrating Script Builder applications

you can migrate Script Builder applications from CONVERSANT systems to Avaya IR systems.

To migrate Script Builder applications to the Avaya IR system:

1. FTP the applications from the source CONVERSANT system to the target Avaya IR system.
2. Run the **Script Builder Install** script to compile each application using the following command:

/vs/bin/ag/install application name

3. Execute each Script Builder application.

Modifications to the Script Builder applications must be made while they are located on the CONVERSANT system. Script Builder applications can be executed but not modified on the Avaya IR system.

Migrating Script Builder applications that use the vesp_dip.t external function

The **vesp_dip.t** external function no longer requires applications to define the **vespbuf** variable that was required in previous Script Builder applications. For this reason, the following steps must be performed for Script Builder applications that use the **vesp_dip.t** external function and the **vespbuf** variable:

1. FTP the **vesp_dip.t** external function from the **vs/bin/ag/lib** directory on the Avaya IR system to the **vs/bin/ag/lib** directory on the V8 or R9 CONVERSANT system. If this directory does not exist, it must be created.

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2. FTP the **vesp_dip.h** and **vespdipi.h** header files from the **vs/bin/ag/lib/dip** directory on the Avaya IR system to the **vs/bin/ag/lib/dip** directory on the V8 or R9 CONVERSANT system. If this directory does not exist, it must be created.
3. Run **verify application name** on the V8 or R9 CONVERSANT system.
4. FTP the application to the Avaya IR system.
5. Run **/vs/bin/ag/install application name** on the Avaya IR system.
6. Execute the Script Builder application.
7. Assign the application to the appropriate channel or channels.

Migrating IVR Designer applications

You can migrate Voice@Work or IVR Designer applications from CONVERSANT platforms to Avaya IR R1.2 platforms.

To update applications to IVR Designer and migrate them to the Avaya IR platform:

1. Download the IVR Designer software to the PC.
2. Open the application to be migrated.
The software automatically updates the application, if necessary.
3. Generate source code for the application using the **Code Generation** process. Select the Avaya IR platform as the target platform.
This prepares the application to execute on the Avaya IR platform.
4. Transfer the updated application to the target Avaya IR platform by completing the following steps:
 - a) Select **Application Transfer**.
 - b) Set the Application Transfer options to identify the type of transfer and the correct target platform.
 - c) Select the files to move to the target platform and click **Transfer**.
If you use the default option when you use the **tar_it** utility to migrate the data, any recorded speech files are transferred with the data.
5. Install the application on the target Avaya IR platform and assign the application to a channel or channels.

The application now resides on the Avaya IR platform.

Post-migration phase

The post-migration process involves validating and updating data and applications that were migrated to the Avaya IR platform.

This section includes the following topics:

| | |
|---|----|
| Overview of post-migration phase | 81 |
| Converting custom speech | 82 |
| Specifying charset for Proxy Text-to-Speech | 82 |
| Converting applications that use libspp.so..... | 83 |
| Converting host interface screen capture files..... | 83 |

Overview of post-migration phase

In the post-migration phase, you verify that migrated components have reached the targeted platform successfully, without any errors. To do this, you can verify that applications compile without errors and you can place calls to test the call flows. You also update custom speech files and migrated Voice@Work, IVR Designer, and IRAPI applications. IRAPI applications migrated to the new platform must be compiled with a new library.

The bulk of post-migration work includes:

- Restoring the configuration (for Avaya IR R1.0 to Avaya IR R1.2 migrations)
- Updating custom speech files (for CONVERSANT to Avaya IR migrations)
- Debugging and fixing applications
- Designing and implementing workarounds for obsolete features
- Resolving database connectivity issues
- Testing applications

Most of these tasks cannot readily be automated or even captured in a repeatable process. This phase of migration involves mostly custom work, which can be performed by Avaya professional services, an ISV, or the customer.

Converting custom speech

Speech conversion to G.711 takes place after all the speech files are moved from the CONVERSANT platform and located on the Avaya IR platform. An automated speech conversion tool (**do_speech**) locates the speech files that were moved and partially converted during the migration phase, and completes the conversion to G.711 format. The tool determines the location of the speech files, using a log file placed on the Avaya IR system during the migration phase.

The speech conversion tool generates a report on converted files, and reports any errors.

To convert the speech files:

1. Transfer the **do_speech** utility, provided with the migration scanning tool, to the target Avaya IR system.
2. Run the command: **do_speech**.

The **do_speech** utility prompts for a directory where the speech files are located.

3. Enter the directory where the speech files are located.

When it is done running, the utility creates a log file in the current directory (for example, **speechlog.06-19-02:133205**).

The log file contains data in the following format:

```
TYPE: pcm64 File Name: /voicel/vfs/talkfiles/619/41 Bytes: 31304
TYPE: pcm64 File Name: /voicel/vfs/talkfiles/619/42 Bytes: 40512
TYPE: pcm64 File Name: /voicel/vfs/talkfiles/619/43 Bytes: 29760
TYPE: pcm64 File Name: /voicel/vfs/talkfiles/619/44 Bytes: 34368
TYPE: pcm64 File Name: /voicel/vfs/talkfiles/619/45 Bytes: 26184
TYPE: pcm64 File Name: /voicel/vfs/talkfiles/619/46 Bytes: 25672
TYPE: pcm64 File Name: /voicel/vfs/talkfiles/619/47 Bytes: 28232
TYPE: pcm64 File Name: /voicel/vfs/talkfiles/619/48 Bytes: 88168
TYPE: pcm64 File Name: /voicel/vfs/talkfiles/619/49 Bytes: 13368
Total Bytes Converted = 4192200
```

Every converted file is reported and logged. The utility overwrites the legacy Conversant ADPCM files with Avaya IR G.711 format.

Note:

Non-speech files are generally ignored, but it is good practice to make sure that only custom legacy speech files are in the directory.

Specifying charset for Proxy Text-to-Speech

On CONVERSANT systems, TAS applications using Proxy Text-to-Speech (TTS) had no way to specify the **charset** to be used by the Speechify TTS Engine. An alternative was to modify

the /vs/data/spwkttts.srvs file to specify this parameter. Changes to the /vs/data/spwkttts.srvs file are not carried forward during migration.

If these applications are transferred to an Avaya IR system, use Web Administration to set up the Speechify server name, IP address and remote connection port. Also, use the **Proxylang** and **Proxyvoice** external functions in the application to specify the **charset** to be used by the Speechify TTS engine.

Converting applications that use libspp.so

Most libspp.so functions have been replaced by IRAPI functions. If you are using any libspp.so functions in applications you are migrating to IR, you must rewrite the application to use the IRAPI equivalent listed below before recompiling on the IR platform:

| libspp.so Function | IRAPI Equivalent |
|---------------------------|-------------------------|
| db_init | irRegister |
| db_pr | irTrace |
| db_put | irTrace |
| mesgrcv | irWCheck |
| mesgsnd | irPostEvent |
| startup | irRegister |
| VStartup | irRegister |
| VStoQkey | irGetQkey |

Converting host interface screen capture files

When you migrate an existing IVR Designer, Voice@Work, or Script Builder application that uses the Cleo host interface, from a CONVERSANT platform to an Avaya IR platform, you must convert the screen capture files for the application before they can be used within the Avaya IR environment.

This section includes the following topics:

| | |
|---|----|
| Running the conversion utility | 84 |
| Returning files to the original version | 84 |
| Using other Cleo utilities | 85 |

Running the conversion utility

The conversion of host interface screen capture files is required before the host application is used on the Avaya IR platform by any of the following programs:

- IVR Designer
- Cleo **screen_capture** utility for capturing host screens on the Avaya IR system
- Cleo **hispy** utility that provides interactive navigation and screen capture of IVR Designer or Script Builder host screens on the Avaya IR platform

To run the Conversion utility:

1. Run the following command at the command prompt:

```
cleo_conv application
```

where *application* is the name of the IVR Designer or Script Builder application.

The **cleo_conv** utility creates the following files:

IVR Designer files:

| | |
|---|---|
| <code>/vs/data/host/appl.sc</code> | V8 formatted screen capture file |
| <code>/vs/data/host/appl.nam</code> | V8 formatted screen capture name file |
| <code>/vs/data/host/appl.sc.mav</code> | Avaya IR formatted screen capture file |
| <code>/vs/data/host/appl.nam.mav</code> | Avaya IR formatted screen capture name file |
| <code>/vs/data/host/appl.sc.org</code> | Original screen capture file |
| <code>/vs/data/host/appl.nam.org</code> | Original screen capture name file |

Script Builder files:

| | |
|---|--|
| <code>/att/trans/sb/appl/appl.sc</code> | V8 formatted screen capture file |
| <code>/att/trans/sb/appl/appl.sc.mav</code> | Avaya IR formatted screen capture file |
| <code>/att/trans/sb/appl/appl.sc.org</code> | Original screen capture file |

Note:

The **appl.sc** and **appl.nam** files are converted to V8 format on the Avaya IR system, even if they are being migrated from a V6 or V7 system.

Returning files to the original version

Cleo also provides the utility **cleo_convback** to return screen capture files that have been updated or created on an Avaya IR system, back to their original V6, V7, or V8 system.

To return screen capture files to V6, V7, or V8 format, use the following command at the command prompt:

```
cleo_convback application n
```

where *application* is the name of the IVR Designer or Script Builder application and *n* is the destination CONVERSANT system version (6, 7, or 8)

The **cleo_convback** utility converts the current Avaya IR capture files and creates the following files:

IVR Designer files:

| | |
|--|---|
| <code>/vs/data/host/appl.sc.Vn</code> | <code>Vn</code> (where <i>n</i> is 6, 7, or 8) formatted screen capture file |
| <code>/vs/data/host/appl.nam.Vn</code> | <code>Vn</code> (where <i>n</i> is 6, 7, or 8) formatted screen capture name file |

Script Builder files:

| | |
|--|--|
| <code>/att/trans/sb/appl/appl.sc.Vn</code> | <code>Vn</code> (where <i>n</i> is 6, 7, or 8) formatted screen capture file |
|--|--|

Using other Cleo utilities

Once you migrate screen capture files from an existing CONVERSANT platform (V6, V7, or V8) and convert them with the **cleo_conv** utility, the Cleo **screen_capture** and **hispy** utility programs use the Avaya IR formatted files (suffix of `.sc`).

These Cleo utilities also update the V8 formatted screen capture files (no suffix), whenever a change is made to the Avaya IR formatted files. IVR Designer always has access to the latest screen capture files on the Avaya IR platform.

When you use the Cleo **screen_capture** utility to create new screen capture files or update screen capture files on the Avaya IR platform, the screen capture files have the `.sc` suffix.

The Cleo **screen_capture** utility creates or updates the V8 formatted screen capture files (no suffix) when it exits, so the IVR Designer system has access to the latest screen capture files in the V8 format.

Migrating from Avaya IR R1.0 to Avaya IR R1.2 on the same box

This section describes the process for migrating data and applications from an Avaya IR R1.0 platform to an Avaya IR R1.2 platform on the same box.

This section includes the following topics:

| | |
|--|----|
| Overview of migration on the same box..... | 86 |
| Upgrading the installation on the same Sun Blade 150 platform | 86 |

Overview of migration on the same box

The basic steps for migrating data and applications from Avaya IR R1.0 to Avaya IR R1.2 on the same box are included below. See the identified topics for detailed procedures.



Important:

The tsc and craft login home directories are removed during migration from R1.0 to R1.2. To preserve the contents of these directories, back up the /export/home/tsc and /export/home/craft directories before beginning the migration process.

1. Insert the CD labeled *AVAYA IR R1.2 Software Packages - CD 2* into the CD drive.
2. Run the **upgrade** program to remove all Avaya software. (See [Upgrading the installation on the same Sun Blade 150 platform](#) on page 86.)

The **upgrade** program saves the existing configuration, removes all Avaya packages, applies Solaris patches, reloads Avaya packages, and restores the configuration.

3. Recompile all Avaya IVR Designer and IRAPI applications to ensure that they continue to execute successfully.

The libraries to include when compiling IRAPI applications have changed. For more information, see Introduction to the IRAPI.

Upgrading the installation on the same Sun Blade 150 platform

To upgrade from Avaya IR R1.0 to Avaya IR R1.2 on the same Sun Blade 150 platform:



Important:

The tsc and craft login home directories are removed during migration from R1.0 to R1.2. To preserve the contents of these directories, back up the /export/home/tsc and /export/home/craft directories before beginning the migration process.

1. Insert the CD labeled *AVAYA IR Software Packages - CD 2* into the CD drive.
2. Run the command:

```
/cdrom/cdrom0/upgrade
```

3. When prompted, confirm that you want to install the AVmigr package.
4. When prompted, confirm that you want to shutdown to single user mode.

The system begins to shutdown the system and identifies that you will need to enter the root password before you run the upgrade command.

5. When prompted, type the root password and press **Enter**.
6. Press **Enter** to accept the terminal type or enter the correct terminal type.
7. At the command prompt, run the command:

```
upgrade
```

System messages describe the upgrade process.

8. When prompted, press **Enter** to continue.

The system prompts with the default file to be used to save the configuration.

9. Press **Enter** to accept the default or specify another file name.

The system saves the configuration. For a list of the configuration information that is saved, see [Saving the configuration](#) on page 90.

Note:

If you choose to specify a different file name, it is recommended that you place the file in the **export** directory because other directories may be modified during the upgrade process. You will not be allowed to use the **/tmp** directory.

10. If NMS is installed on the system, confirm that you want to remove the listed packages.
11. If NMS is installed on the system, confirm that you want to remove the AVnms package.

The system removes the Avaya packages. It then installs a series of Solaris patches.

Note:

Installing the Solaris patches is a long process. Expect it to take close to 90 minutes.

Migration

When the Solaris patches are installed, the system ejects the CD and prompts for the CD labeled *AVAYA IR R1.2 Software Packages - CD 2*. This is the same CD that you used in step 1.

12. Return the CD to the drive and press Enter.

Files are copied to the hard disk and CD 2 is ejected.

13. Insert the CD labeled *AVAYA IR R1.2 Core Packages - CD 3* and press **Enter**.

More Sun and Avaya packages are installed. Adobe licensing information is displayed and accepted automatically. System message indicate encrypted packages that are not installed.

14. When prompted, press **Enter** to accept the default file that contains the configuration information or specify the file name used to save the configuration.

15. When prompted, confirm that you want to restore the configuration for each of the saved modules.

You may see an error message if a feature needs a package that was not installed. These packages are not restored. When all modules are restored, the system lists the encrypted packages that need to be installed by the Avaya Provisioning team. It also includes a reminder to reinstall the Vonetix packages. CD 3 is ejected.

16. When prompted, press **Enter** to reboot the system.

The system shuts down and reboots.

17. If missing or encrypted packages were identified, install those packages or arrange for Avaya Provisioning to install the encrypted packages.

18. Run **restore_conf** to restore the configuration for the modules that were not previously restored. (see [Restoring the configuration](#) on page 94.)

19. Check the configuration in Web Administration and make any corrections.

20. Check the directories and files and copy any missing files.

Migrating between Avaya IR platforms

This section describes the process for migrating data and applications from a Sun Blade 150 Avaya IR R1.0 platform to a Sun Fire 280R Avaya IR R1.2 platform.

This section includes the following topics:

| | |
|---|----|
| Overview of migration between platforms | 89 |
| Installing the Avaya IR R1.0 to Avaya IR R1.2 migration package.. | 90 |
| Saving the configuration | 90 |
| Migrating data | 91 |
| Restoring the configuration | 94 |

Overview of migration between platforms

The basic steps involved in migrating data and applications from a Sun Blade 150 Avaya IR R1.0 platform to a Sun Fire 280R Avaya IR R1.2 platform are included below. See the identified topics for detailed procedures.

1. Download the migration package from the **support.avaya.com** web site onto the Avaya IR R1.0 platform and install it using the **pkgadd** command. (See Installing the migration tools.)
2. Run the **save_conf** command to save the configuration of the current platform to a single XML file. (See [Saving the configuration](#) on page 90.)
3. Use the **tar_it** utility to package directories and files that need to be moved to the Avaya IR R1.2 platform. (See [Migrating data](#) on page 76.)

Speech and application files can be included because they do not require conversion when moved from a Sun Blade 150 Avaya IR R1.0 platform to a Sun Fire 280R
4. Make sure that all the required Avaya software is installed on the Sun Fire 280R Avaya IR R1.2 platform.
5. Verify that all the required RTU licenses are configured on the Sun Fire 280R Avaya IR R1.2 platform.
6. Use FTP or a similar mechanism to transfer the generated tar file from the previous step to the Avaya IR R1.2 platform.

Migration

7. Copy the archive files to their respective locations on the Avaya IR R1.2 platform. (See [Migrating data](#) on page 76.)
8. Run the **restore_conf** command to restore the configuration from the previously saved XML file. (See [Restoring the configuration](#) on page 94.)
9. Ensure that the voice system is up and running.
10. Verify through Web Administration that all the required features have been configured correctly.
11. If any discrepancies are found, correct them manually.
12. Recompile all Avaya IVR Designer and IRAPI applications to ensure that they continue to execute successfully.

The libraries to include when compiling IRAPI applications have changed.

Installing the Avaya IR R1.0 to Avaya IR R1.2 migration package

The migration tools and all related files for migration from an Avaya IR R1.0 platform to an Avaya IR R1.2 platform are delivered to the customer system in a typical UNIX package format. The package includes the following files:

- **config.jar** - Java classes to save the configuration to and restore the configuration from a single XML file
- **tar_it** - Command to assist in packaging directories and files
- **save_conf**, **restore_conf** - Shell scripts to launch the Java classes to save and restore the configuration
- **Xerces.jar**, **jdom.jar** - Required jar files for migration commands
- **Readme** - Text file with migration instructions

The package is available for download from the support.avaya.com Web site.

Use the **pkgadd** command to install the package.

Saving the configuration

The **save_conf** utility is delivered as part of the base software on the Avaya IR R1.0 to Avaya IR R1.2 migration package. This tool can be used to save the configuration of an already configured Avaya IR system. It cannot be used to save the configuration of a CONVERSANT system.

To save the configuration, run `save_conf` from the command line.

The configuration information for the following modules is saved to a single XML file:

- NMS - digital card configuration
- VOIP - Voice over IP configuration
- NLSR - natural language speech recognition configuration
- TTS - proxy text-to-speech configuration
- JDBC - database interface configuration
- ASAI - adjunct/switch application interface configuration
- CTI - computer telephony interface configuration
- VXML - VoiceXML configuration
- TBCT - two B-channel transfer configuration
- FAX - fax configuration
- ALERTER - logging configuration

The saved configuration includes the information configured in Web Administration. It does not include channel or phone number assignments or any other data or applications. RTU information is not removed during upgrade on the same box, but it is not carried over to a new box.

Migrating data

You can move data using the **tar_it** utility that is part of the migration package or you can set up file sharing between the platforms.

This section includes the following topics:

| | |
|--|----|
| Creating an input file for <code>tar_it</code> | 92 |
| Transferring data with the <code>tar_it</code> utility | 92 |
| File sharing with Solaris Systems | 93 |

Creating an input file for tar_it

To specify the files to be transferred with the `tar_it` command, you can create a file that contains a list of the files and directories to be moved. The file should contain, each on a separate line, the directories and filename to be included. An example of an input file is:

```
/export/myarea  
/voice1/trace.lop  
/tmp/example.c
```

Transferring data with the tar_it utility

The `tar_it` utility is delivered with both of the migration tool packages to assist with the movement of custom files and data to the target Avaya IR platform. To archive files:

1. Run `tar_it` from the command prompt.

The `tar_it` utility prompts for the name of the file containing a listing of the directories and files to be put into a `tar` archive.

Note:

To capture a list of the files being archived, substitute the command `tar_it | tee file_name`.

2. Press **Enter** to use the default directories or enter the name of the file that lists the directories and files to archive.

If you choose the default the following directories are used:

```
/att/trans/sb  
/speech/talk  
/usr/add-on
```

The `tar_it` utility displays the directories to be archived and asks for confirmation prior to creating the archive. Custom external functions, which are stored in the `/vs/bin/ag/lib` directory, are not included in the default archive. You can specify them in an input file or transfer them directly.

PDS integration configuration information is saved in various files, so it is not archived. You must reconfigure PDS integration after migration.

3. Press **Enter** to confirm.

The `tar_it` utility lists all files discovered and puts them into an archive.

When all files are archived the `tar_it` utility responds with the following message:

```
You may now transfer /voice1/file_identifier.tar to target machine.  
Execute tar -xvf file_identifier.tar to unpack on the target machine.
```

Please note there is no protection from overwriting existing files.

4. Transfer the files across the network using an **ftp** command.

If you need to move individual files, an NFS mount between platforms might be more appropriate. For instructions on setting up NFS, see File sharing with Solaris Systems.

5. Run the command `tar -xvf file_identifier.tar` on the target platform to copy all the files in the archive onto the target system.

The system creates new directories if needed, and overwrites files on the target system if they are duplicated in the archive.

File sharing with Solaris Systems

You can use the following set of commands to set up file sharing between legacy SCO platforms and Solaris platforms:

1. On the legacy SCO platform, enter the following command:

```
cp /etc/dfs/dfstab /etc/dfs/dfstab.bak
echo "share -F nfs /export" >> /etc/dfs/dfstab
sh /etc/init.d/nfs stop
sh /etc/init.d/nfs start
```

2. Mount the SCO shared directory on the Solaris platform by running the following command on the Solaris platform:

```
mount -F nfs SCO Machine Name: /export /mnt
```

In the above example, the directory "/export" is shared out from the SCO system and mounted to the directory "/mnt" on the Solaris system.

3. After the desired files are copied over (using the **cp** command), run the following commands on the SCO platform to remove the sharing:

```
unshare -F nfs /export
mv /etc/dfs/dfstab.bak /etc/dfs/dfstab
```

Note:

On an Avaya IR R1 system, the above instructions can be reversed to share out a directory from the Solaris system and mount it on a SCO system. But in Avaya IR R1.2, this is not possible. Directories can be shared out only from a SCO system and mounted on to the Solaris system.

Restoring the configuration

You can use the **restore_conf** tool to restore the configuration of an Avaya IR system from a single XML file. The XML file that contains the configuration must be specified when prompted by the tool, which also prompts for the specific modules to be restored.

To restore the configuration, run `restore_conf` from the command line.

When restoring the NMS configuration, the **restore_conf** tool performs a check to see if the current number and type of NMS boards installed in the system match those of the system on which the configuration was originally saved. If they do not match, the NMS configuration is not restored and an error is displayed.

The **restore_conf** tool also performs a check on the IP address before restoring the VoIP configuration. If the IP address of the machine on which the configuration was saved is different from the IP address of the machine on which the configuration is being restored, the VoIP configuration is not restored and an error is displayed.

The format and some of the parameters in the configuration files for TTS, NLSR and VoIP modules have changed in the Avaya IR R1.2 system. To compensate for this change, when a configuration from an Avaya IR R1.0 system is being restored on an Avaya IR R1.2 system, the **restore_conf** tool automatically maps to the new parameters and creates the configuration files accordingly.

Troubleshooting

An Avaya IR system interacts with other systems and relies on them for critical functions. Consequently, troubleshooting may involve testing connections and checking other systems where databases, speech functions, and host services reside. This section guides you in resolving many Avaya IR system problems and includes information on basic LAN, server, and host troubleshooting. Additionally, Avaya technical support provides troubleshooting assistance that is specific to your Avaya IR system and the current problem.

This section includes the following topics:

| | |
|---|-----|
| Troubleshooting overview | 96 |
| Troubleshooting procedure | 103 |
| Troubleshooting based on observations | 108 |

Troubleshooting overview

This overview explains how the Avaya IR system works and identifies potential problem areas.

This section includes the following topics:

| | |
|---|-----|
| Requirements for successful operations | 96 |
| Possible malfunctions and errors | 98 |
| Identifying possible causes of problems | 101 |

Requirements for successful operations

Interactions between the IR system and other systems and applications are essential to voice response operations. The information this section explains the requirements for successful operations to help you to prevent problems and identify them more quickly when they occur.

This section includes the following topics:

| | |
|--|----|
| The public switched telephone network (PSTN) | 96 |
| Switches | 97 |
| Voice response applications | 97 |
| Speech | 97 |
| Connections and communications | 98 |
| System and LAN capacity | 98 |

The public switched telephone network (PSTN)

Calls come into the IR system from the public switched telephone network (PSTN). Calls from the PSTN may reach the IR system in one of three ways:

- A MultiVantage (DEFINITY) system receives the calls from the PSTN and passes them to the IR system through direct digital connections between the two systems.

- An IP-enabled DEFINITY or MultiVantage system receives calls from the PSTN, converts them to packet-based signals, and sends them to the IR system over a Local Area Network (LAN) connection.
- Calls come from the PSTN directly to the IR system through digital connections.

For successful voice response operations, all the connections described above, the DEFINITY or MultiVantage system, and the telephony network that supports them—including central offices—must be working and free from errors.

Switches

IR systems may be linked to DEFINITY or MultiVantage systems that route calls to and from the IR system and perform call handling functions. For successful operations, switches must be free of hardware problems and administered correctly. Additionally, connections between the switch and the IR system must be operating properly and free from overload.

DEFINITY and MultiVantage systems come with a comprehensive set of self-tests that you can use to troubleshoot problems with the switch and with connections, such as trunks. Procedures are documented in detail in the various administration manuals. Switch troubleshooting should be done with the aim of bringing connections into service. Once the connections are in service, there is a good chance that the problem is not with the switch.

Voice response applications

Voice response applications manage the interactions between callers and play the information that callers hear. For successful operations, voice response applications must perform a variety of tasks, such as:

- Interpreting caller input and taking appropriate action
- Communicating with hosts, databases, and proxy speech servers
- Transferring values entered by callers to other applications
- Providing information to callers in the form of recorded speech or speech generated through the Proxy Text-to-Speech feature

As you can see, voice response applications are central to the successful operation of an IR system.

Speech

The IR system provides information to callers through recorded or generated speech. For successful operations:

Troubleshooting

- Recorded speech must exist, be of acceptable quality, and be accessible to voice response applications.
- Generated speech must be constructed properly by the Proxy Text-to-Speech feature and the voice response application.
- Recorded speech must be transferred from a server, so that the application can play it for the caller.

Communications between the IR system and the server or host must be adequate to deliver speech in a timely manner.

Connections and communications

Connections to other systems, and the communications that take place across them, are critical to smooth voice operations. Major connections and communications are as follows:

- Digital lines and LAN connections that bring calls in from and send calls out to the public switched telephone network (PSTN)
- Connections between any MultiVantage systems and the IR system
- Connections from the back of the IR system to other devices, and to the LAN
- LAN connections between the IR system and servers that provide speech functions, database information, or both

A breakdown in any of these connections can affect voice response operations.

System and LAN capacity

Like any computer, the IR system has a certain amount of memory, drive space, and CPU capacity to support system operations. Additionally, the IR system requires LAN capacity to communicate with servers that provide critical functions. For successful operations, both IR system capacity and LAN capacity must be adequate.

Possible malfunctions and errors

This section explains the types of problems that may affect voice response operations.

This section includes the following topics:

| | |
|--|-----|
| Hardware malfunctions and failures..... | 99 |
| Incorrect system administration | 99 |
| Application errors | 99 |
| Connection and communication problems..... | 100 |
| Overloading..... | 100 |

Hardware malfunctions and failures

Hardware malfunctions and failures may stop or interfere with voice operations. These include problems in:

- The IR system itself
- Servers providing speech functions, database information, or both
- Connected MultiVantage (DEFINITY) systems

Hardware malfunctions and failures are relatively easy to identify. However, but they are rarely a cause of problems.

Incorrect system administration

Errors in IR system administration may cause problems with voice operations. Examples:

- A service may not be assigned to a channel, resulting in the service not functioning when calls come in.
- TCIP/IP connections between the IR system and a server may be set up incorrectly, so that required data is not available to callers.

Application errors

Applications manage voice response functions, so errors can be devastating to operations. For instance, an application may call for the playing of recorded speech that does not exist, or try to access the wrong server for speech. Applications that are not sufficiently tested, or not tested under realistic conditions, can function poorly when used for business operations. Voice response applications that are large and complex, or use system resources inefficiently, are the most common cause of performance problems.

Connection and communication problems

When any connection that supports voice response applications experiences a problem, operations may be affected. Disruptions may occur in the public switched telephone network (PSTN), MultiVantage (DEFINITY) system, servers that support operations, or in the LAN.

Circuit-based configurations

Circuit-based configurations allocate a physical cable (or part of a cable by using Time Division Multiplexing) to each telephone call. Obviously, problems with these cables may affect voice response applications.

Packet-based configurations

When the VoIP feature is used, the voice data is transmitted in small packets that contain a fraction of the entire spoken transmission. Rather than a dedicated cable being used between the end-points, packets traverse the network between the end-points via one or more available routes. With this type of transmission, packets may get lost. An overloaded network is more likely to delay or lose packets.

Overloading

Overloading may occur in these ways:

- The IR system may become overloaded by:
 - Voice response applications that use system resources inefficiently or are too complex or lengthy.
 - Excessive system processes that are external to voice response operations.

The result of such overloading is performance problems.

- LAN overloading may result from competition with other processes for LAN capacity. The result can be delays and breaks in the availability of required data and functions.

If the call load increases beyond the capacity of the IR system, call handling problems are likely to occur. A new system, or re-routing of calls, is generally required.

Identifying possible causes of problems

Generally, you will work with Avaya support representatives to identify the cause of the problem and correct it. However, you may find that some problems are easy to identify and resolve on your own.

The following table describes common problems and suggests actions you can take to identify them:

| Problems | Effects | Actions |
|--|--|---|
| Disconnection or poor connection of cables to the back of the IR system | Possible effects include: <ul style="list-style-type: none"> • Monitor, keyboard, or mouse are not operating. • Speech functions and data resident on servers are not accessible. | Check the cable connections. See Checking cable connections on page 131 for more information. |
| Inadequate or expired feature licensing Note: Renaming the IR system may cause loss of feature licensing. | Affected features are not functioning, or are not functioning as expected. | <ul style="list-style-type: none"> • Go to the Feature Licensing screen (Configuration Management > Feature Licensing) to identify the features licensed for the system. • Contact your Avaya support representative if you have renamed the IR system or to purchase more features, if you require them. |
| Poor communication or no communication with required servers across the LAN | Possible effects include: <ul style="list-style-type: none"> • Response times for speech functions and data retrieval are slow, interrupted, or both. • Speech functions and data resident on servers are not accessible to voice response applications. | <ul style="list-style-type: none"> • Test the LAN connection. See Checking LAN communications on page 123 for more information. • Work with your LAN administrator as needed to resolve the problem. |
| Incorrect system administration, such as errors in channel assignments, server assignments, and other configuration information. | Degraded or non-functional voice response services | <ul style="list-style-type: none"> • Go to the Display Equipment screen (Configuration Management > Voice Equipment > Display Equipment) and check the system settings. • Make corrections as needed. |

Troubleshooting

| Problems | Effects | Actions |
|---|--|--|
| Inadequate system resources (memory, CPU, disk) | Poor response times, speech breaks, load-related messages and alarms, increased hold times and blocking of calls | Assess the load and reduce it, if necessary. Better manage the performance of your system in the future. |
| Voice response application coding errors | <ul style="list-style-type: none">• Degraded or non-functional voice response services• Dropped calls | Contact the vendor or internal staff who develop your applications. |

Troubleshooting procedure

If a problem develops with voice response operations, follow this general procedure to resolve it:

1. Go to the **Message Log Report** screen (Reports > Message Log Report) and check for messages about events related to the problem.

Events may generate alarms. The level of the alarm (critical, major, or minor) is an indication of the severity of the problem.

2. Follow repair procedures for any events related to the problem.

On the Message Log Report screen, you may display repair procedures by using the **Explain** function. Explanations of messages and related repair procedures are included in this online help as well.

3. If you cannot resolve the problem based on events and related repair procedures, check the indications of the problem against information in [Troubleshooting based on observations](#) on page 108 and take action based on your findings there.

4. Before contacting others for assistance, gather data on the problem:

- Alarms received
- Application involved
- Type of channel protocol in use
- Type of card
- Type of switch
- System history related to the problem

5. Contact other resources for assistance as needed. Contact your:

- Avaya support representative for problems related to IR system operations.
- Application developer for problems related to voice response applications.
- LAN administrator for problems with remote access that are not related to configuration of remote resources on the IR system.
- Database administrator for problems with database functions.
- Host support personnel for problems with host operations.

Using IR system events

The first step in the general troubleshooting procedure is to check for messages about events related to the problem. This topic provides more information about troubleshooting based on events.

Events on the Avaya IR system are logged, and alarms are generated when those events cause or may cause a problem with voice response operations.

To troubleshoot using Avaya IR system alarms and errors:

1. When a problem arises, check the **Message Log Report** screen (Reports > Message Log Reports) for messages about events related to the situation.

Events include a time stamp, event ID, and brief explanatory text. See the sample event that follows:

```
Mon May 12 00:15:05 2003 CDH CDH007 -- -- --- (CDH_TRASUM) trasum
failed. Reason: Could not connect to the database
```

2. If you find events that are relevant to the problem, view additional information on the event.

Additional information includes priority, description, and repair procedures. You may display additional information by using the **Explain** option in the Message Log Report screen, or by going to the online help topic for the message.

3. Follow the repair procedure for the event.

The repair procedure may provide specific instructions, direct you to contact your Avaya support representative, or link to other topics in the online help or to other resources.

Gathering information on a problem

Step 4 of the general procedure for troubleshooting is to gather information on the problem. The topics in this section explain how to gather the information. You may do this on your own, or under the direction of an Avaya support representative.

This section includes the following topics:

Reviewing the Display Equipment screen..... 105

Monitoring live operations 105

Checking system history 106

Using Sun diagnostic tests..... 106

Using commands 106

Reviewing the Display Equipment screen

Go to the **Display Equipment** screen (Configuration Management > Voice Equipment > Display Equipment) to view configuration information, such as:

- Type of card
- Type of channels
- Services (voice response applications) assigned to channels
- Service state

The following table shows state descriptions and their meanings.

| State | Meanings |
|--------|---|
| INSERV | In service |
| MANOOS | Manually out of service |
| FOOS | Facility out of service |
| BROKEN | Not functioning, possibly needing replacement |

Monitoring live operations

Use the **sysmon** command to observe voice response operations as they occur. You see calls coming in, digits entered by callers, and line conditions, such as off-hook.

Note:

Monitoring live operations places a heavy demand on system resources. Using

Troubleshooting

the **sysmon** command at times of heavy system activity may result in overload and interference with call processing.

Checking system history

Researching the history of your IR system helps you to identify the current problem. Talk to others and check records external to the system to find out about:

- Previous problems and support calls
- Recent changes to the system, including upgrades and repairs
- Changes to the LAN configuration in your organization

Check the **Message Log Report** (Reports > Message Log Report) for previous intermittent problems that may indicate a pattern

Using Sun diagnostic tests

Three types of diagnostic tests are available through Sun applications. Use the following Sun diagnostic tests:

- Validation Test System (VTS) to test and validate major hardware components.
- OpenBoot Diagnostics system to perform root cause failure analysis on various IR devices.
- PROM Diagnostics to check system processes, such as the error rate and type for Ethernet packets

The Sun Blade 150 Service Manual explains how to run these diagnostic tests on the Sun Blade 150 platform. The Sun Fire 280R Server Service Manual explains how to run these diagnostic tests on the Sun Fire 280R platform.

These documents are available in *Avaya IR System Help* (under "Print documents") or from the Sun Web site (<http://www.sun.com>).

Using commands

Execute IR system administrative commands to check components and processes. Information available through administrative commands includes:

- The allocation of resources for all devices
- Resources and space available in the database

- Feature packages installed on your IR system
- A report of all active fax jobs

Since the Solaris operating system is UNIX-based, you also can run UNIX commands that check devices, processes, and files.

Troubleshooting based on observations

Troubleshoot based on observations when:

- You have reviewed the **Message Log Report** screen and cannot identify any events related to the problem.
- The suggested repair procedure for the event does not completely resolve the problem.
- Further investigation is required, such as when you are investigating an intermittent problem.

This section includes the following topics:

| | |
|---|-----|
| Investigating operations problems | 108 |
| Checking communications..... | 123 |
| Checking hardware..... | 130 |

Investigating operations problems

Problems central to voice response functions can affect business operations and may result in missed calls and caller frustration. Most of the problems described in this section require prompt attention. To investigate these problems, you should have a good understanding of the Requirements for successful operations on page 96.

This section includes the following topics:

| | |
|---|-----|
| Investigating call handling problems | 109 |
| Investigating fax problems | 114 |
| Host interaction problems | 116 |
| Speech delayed or cut off..... | 117 |
| Speech recognition not working | 118 |
| Speech not playing..... | 119 |
| Investigating system process problems | 121 |
| Investigating database problems | 122 |

Investigating call handling problems

Call handling problems include issues related to responding to and transferring voice and fax calls.

This section includes the following topics:

| | |
|--|-----|
| Voice system not answering | 109 |
| Calls dropped..... | 110 |
| Calls not transferred properly..... | 111 |
| No DTMF tones (WINK protocol)..... | 112 |
| Poor audio quality on VoIP calls | 113 |
| Touchtone not interpreted correctly..... | 113 |

Voice system not answering

The voice system will not take calls. The voice system rings but does not answer, or the voice system is busy.

Note:

If you depend on a host system for caller services, refer to [Host system malfunctions](#) on page 116.

To check on possible causes of the problem:

1. Determine whether the voice response application required for the service is running.
 - If the application is a permanent process, use the Solaris `ps` command to list the running processes and look for the application process.
 - If the application is started on demand, the AD (application dispatch) process starts it when a call arrives for that application.
2. If the application is *not* running, take any required actions to correct the operation of the voice response application.

The application may not be installed or there may be errors in coding. For instance, the voice response application should contain an action to answer the phone. Check with the person responsible for development of voice response applications for more information.

Troubleshooting

3. If the voice response application is running correctly and does not contain errors, ensure that all cards are in the in service (INSERV) state by taking one of the following actions:
 - Enter **display card all** and press **Enter**.
 - Go to the **Display Equipment** screen (Configuration Management > Voice Equipment > Display Equipment).
4. If cards are not in service, either try to restore them or contact your Avaya support representative.

See Restoring cards and channels on page 135 for procedures that may bring cards back into service.
5. If cards are in service, go to the **Channel Services** screen (Voice Equipment > Voice Services > Channel Services) and verify that required voice response applications are assigned to the appropriate channels.
6. If Speech Recognition or Text-to-Speech are in use, make sure that those applications are working and that servers running the applications are accessible.
7. Go to the **Message Log Report** screen (Reports > Message Log Report) and check for messages indicating that the Transaction State Machine process (TSM) is respawning due to an excessive number of channels in the system.

The message MTC017 (MTC_RESPAWN) indicates respawning of a system maintenance process.
8. If TSM is respawning due to an excessive number of channels, reassign channels to another Avaya IR system or contact your Avaya support representative to order more channels.

Calls dropped

The Avaya IR system can drop calls at the initial prompt or at any other time.

This section includes the following topics:

Calls dropped at initial prompt..... 110

All calls dropped..... 111

Calls dropped at initial prompt

The IR system may drop calls when the initial prompt is playing if the prompt was recorded over background noise, such as a fan or ventilation system. The background noise may be detected as dial tone following connection by the caller. If this happens, the call is dropped by the IR system. To fix the problem, re-record the prompt without the background noise.

Note:

For sound quality, you should record in an environment that is free of background noise.

All calls dropped

Take these actions when all calls are dropped:

Note:

If you depend on a host system to provide information to callers, refer to [Host interaction problems](#) on page 116.

1. Go the **Message Log Report** screen (Reports > Message Log Report) and scan it for messages related to the trouble.

Look for messages that occurred just before and at the time when calls began dropping. If calls are handled by VoIP, look for the messages VOIP_DISABLED_CALL_PROC or VOIP_CALL_FORCE_CLEARED.

2. Type `who -rpb` and press **Enter** to display a log of system processes.
3. Search for different time stamps on the processes.
A recent date different from most of the others may indicate the process respawned.
4. If you find different time stamps, record the situation that caused the problem and take steps to correct it.

Calls not transferred properly

A transfer may fail simply because the number receiving the call is busy. However, there are repeated problems with transfer operations, the cause may be:

- Digits are being dialed incorrectly.
- The switch does not support transfer operations.
- There are mismatches between the anticipated number of digits in an ANI or DID pass and the actual number received (This situation applies to the R2MFC protocol only).

To resolve the problem:

1. Ensure that digits are being dialed correctly:
 - a) Type `sysmon` and press **Enter** to observe system operations.
 - b) Observe transfer operations to determine if the correct digits are being dialed.
 - c) If the wrong digits are being dialed, make the required correction in the voice response application.

Troubleshooting

2. If the correct digits are being dialed, verify that the transfer number is valid, and that the switch supports transfer operations.
3. If the R2MFC protocol is in use, try to match the anticipated number of digits in an ANI or DID pass and the actual number received:
 - a) Type **sysmon** and press **Enter** to observe system operations.
 - b) Observe transfer operations to determine the number of digits passed in ANI and DID operations.
 - c) Use the **nms** command to specify the correct number of digits.

Note:

It may not be possible to specify the correct number of digits for each call instance.

No DTMF tones (WINK protocol)

If voice response applications are not responding correctly to caller input, you may suspect that DTMF tones (the tones that identify the called number) are missing. For calls handled with the WINK start protocol, run a trace to determine if the NMS card is receiving the tones.

To set up the trace:

1. Set the following values in the **cta.cfg** file:

- Tracemode=1
- Tracemask=allvt
- Tracefile=cta.log

2. Stop and start the voice system.
3. Review the **ctdaemon** file.

The system displays trace output.

4. Check the trace output to determine whether digits are being sent.

In the trace output, the digits in parentheses for the **val** field identify digits sent. In the sample trace output that follows, val entries indicate that the digits 1, 2, and 3 were sent. (The digit 3 is not significant, and the val entries are in bold here to help you find them.)

```
MESG: Tue May 13 17:08:48 2003
```

```
| pid=580 tid=578 ctahd=80000001 (CTATEST) uid=0 tag=4006 sev=0  
  
| DISPEVT: ? NCCEVN_RECEIVED_DIGIT (1c201d) (val=31) objhd=1  
src=1c dst=2000 time=235a9a97 uid=0 size=0 buf=0
```

MESG: Tue May 13 17:08:48 2003

```
| pid=580 tid=578 ctahd=80000001 (CTATEST) uid=0 tag=14001
sev=0
```

```
| ? Msg:854D Ch#01 Obj:0000 Np=16 Nb=0 0032 0000 0000 0000 0000
0000 ...
```

MESG: Tue May 13 17:08:48 2003

```
| pid=580 tid=578 ctahd=80000001 (CTATEST) uid=0 tag=4006 sev=0
```

```
| DISPEVT: ? NCCEVN_RECEIVED_DIGIT (1c201d) (val=32) objhd=1
src=1c dst=2000 time=235a9b32 uid=0 size=0 buf=0
```

MESG: Tue May 13 17:08:48 2003

```
| pid=580 tid=578 ctahd=80000001 (CTATEST) uid=0 tag=14001
sev=0
```

```
| ? Msg:854D Ch#01 Obj:0000 Np=16 Nb=0 0033 0000 0000 0000 0000
0000 ...
```

MESG: Tue May 13 17:08:48 2003

```
| pid=580 tid=578 ctahd=80000001 (CTATEST) uid=0 tag=4006 sev=0
```

```
| DISPEVT: ? NCCEVN_RECEIVED_DIGIT (1c201d) (val=33) objhd=1 src=1c
dst=2000 time=235a9bd7 uid=0 size=0 buf=0
```

This trace output shows that digits were sent.

Poor audio quality on VoIP calls

The performance of the self-service IP network has impact on the quality of the audio during calls. A busy network can delay or loose packets with audio information, causing poor audio performance. To help in troubleshooting such problems, you can set up the VoIP subsystem to send copies of RTCP packets to a VoIP Monitoring Manager (VMM), which is a call-quality monitoring application for calls that use packet-forwarding technology. VMM helps you to identify audio quality problems and take steps to resolve them.

Touchtone not interpreted correctly

If touchtone is not working properly:

- Verify that the action to collect data from the caller matches the intended use in the voice response application.
- If there is no problem with the action and its use in the voice response application, contact your Avaya support representative for assistance.

Investigating fax problems

Fax problems are often caused by simple errors, so understanding the common causes of problems saves you time. If you need to investigate further, the Avaya IR system provides detailed information on fax processes.

This section includes the following topics:

| | |
|--|-----|
| Typical fax problems | 114 |
| Locating fax errors | 114 |
| Interpreting negative fax values | 115 |
| Reviewing fax repair procedures..... | 115 |
| Fax text or file not found..... | 115 |

Typical fax problems

The most common reasons that a fax is not sent are:

- The remote fax machine is busy or out of paper.
- There is no fax machine at the remote number.

Once you have checked these two possibilities, troubleshoot fax problems using the information in this section.

Locating fax errors

For internal errors:

1. Check for fax errors by taking one of the following actions:
 - Go to the **Message Log Report** (Reports > Message Log Report) and check for fax errors *or*
 - Type `trace date FAXOOC sbFaxProc NMSIP chan # area all level all` and press **Enter**.
2. Provide the output to technical support.

You may also learn of errors through negative return values on a FAX action. Refer to [Interpreting negative fax values](#) on page 115 for explanations of negative errors.

Interpreting negative fax values

Review the `fax_tool.h` file for negative return values for FAX actions. Negative return values indicate that an error has occurred in a FAX process. Use the following list of return values to determine the cause of the error. .

| Value | Meaning |
|-------|--|
| -1 | Another <code>faxit</code> command is executing. |
| -2 | Fax transmission failed (internal). |
| -3 | Channel was denied (internal). |
| -4 | File cannot be opened or does not exist |
| -5 | There are no previous queued faxes. |
| -8 | <code>faxit</code> command timed out (internal). |
| -12 | Cannot set timer (internal). |
| -13 | File was not specified. |
| -14 | Unix call failed (internal). |
| -15 | Destination was not supplied. |
| -17 | Command was not supplied. |
| -18 | Return string was not supplied. |
| -19 | Cover page merging failed (internal). |
| -20 | Subprog to <code>sbFaxHpr</code> failed (internal). |
| -21 | IRAPI call failed (internal). |
| -23 | Wrong subprog message was received (internal). |
| -24 | Max. <code>sbFaxHpr</code> instances was reached (internal). |

Reviewing fax repair procedures

When problems arise with fax operations, the **Message Log Report** screen may display various events related to fax operations. The **Explain** text and help topics for these events include suggested repair procedures. If you see fax events in the Message Log Report screen, review the related repair procedures to determine your course of action.

Fax text or file not found

Take action depending on whether the problem occurred in transmission or receipt of the fax:

Troubleshooting

- Request to transmit a fax file to the caller failed: Verify that the fax file exists either in the **Fax Loading and Printing** screen or at the full path specified in the voice response application.
- Caller did not receive the fax: Consider manually transmitting the fax message to the caller by using the delivery number contained in the error message.

Host interaction problems

This section contains very basic information on problems that may occur when a IR system interacts with a host system. Most often, you will work with the vendor of your host system to resolve these issues.

Host sessions recover repeatedly

To resolve the problem:

1. Go to the **Message Log Report** screen (Reports > Message Log Report) and check for messages related to the trouble.

Alarms related to host interaction begin with the letters HOST, and range in severity from minor to critical.

2. Verify that a **Transaction Base** screen has been specified.
3. Verify that the Login and Recovery sequences both leave the host session at a Transaction Base screen.

No response for application with host interface

A voice response application that relies on a host system for data may receive no answer intermittently or consistently.

To resolve the problem:

1. Go to the **Message Log Report** screen (Reports > Message Log Report) and check for event related to the trouble.

The event HOST001 (HOST_NORESP) should appear in the log.

2. Follow the repair procedure for the event.

Calls to host dropped

When all calls to the host are dropped, take these steps:

- Type `hstatus a11` and press **Enter** to check the status of the host.

If all sessions are recovering or logging in, this could explain the trouble.

- If the problem occurs frequently, consider speeding up connections between the IR system and the host.

Speech delayed or cut off

Delayed or cut off speech can cause callers to disconnect.

This section includes the following topics:

| | |
|------------------------------|-----|
| Speech response delayed..... | 117 |
| Messages cut off..... | 117 |

Speech response delayed

Delays in speech response may be caused by:

- Inadequate IR system or LAN resources. Managing the performance of your IR system helps to prevent delays in speech response.
- Limited recognition resources in a speech recognition application. All remote application resources may be busy and not available for allocation to other calls. You must wait for resources to become available or increase the number of resources the system can use.
- Overloaded host communications. If interactions between the host and the IR system are too busy, the result may be delays in speech response.
- Mismatches between the anticipated number of digits in an ANI or DID pass and the actual number received (R2MFC protocol only). You use the `nms` command to specify the anticipated number of digits.

Messages cut off

When messages are cut off, make the following changes in the voice response application to correct the problem:

- Add a few seconds of initial silence (0.2 to 0.5 seconds) to the beginning of the message to be played.
- Construct a phrase consisting of a few seconds of silence and play that phrase first.
- Ensure that the prompt does not allow voice barge-in. If it does, any background noise or talk by the caller will interrupt the prompt.

Speech recognition not working

If Avaya speech recognition is not working, the cause may be:

- Incorrect or incomplete administration of the Natural Language Speech Recognition feature or proxy speech server on the IR system
- Disconnection or malfunction of the proxy speech server

The procedures in this section explain what to do when speech recognition is not working at all. PROXY alarms and messages contain repair procedures for a variety of speech recognition problems.

This section includes the following topics:

| | |
|---|-----|
| Speech recognition not available as resource..... | 118 |
| Cannot configure speech recognition..... | 118 |
| All ports BROKEN on speech server | 119 |
| Speech resource bad or non-configured | 119 |

Speech recognition not available as resource

To resolve the problem:

1. Go to the **Speech Resource Status** screen (Features > Speech Administration > Display Status > Speech Resource Status), select a speech resource type from the drop-down list, and select **Submit**.

The configuration listing for the selected type of speech resource appears.

2. Review the speech resource listing to verify that the resource is administered and is in the IN SERV (in service) state.
3. Repeat the previous steps with all types of speech resources.
4. If no speech resource is administered, go to the **Speech Recognition Configuration** screen (Features > Speech Administration > Administration > Speech Recognition Configuration) and make the required entries to configure speech resources.
5. If speech resources are configured, but are not in the IN SERV (in service) state, verify that the speech server or servers and related connections are operating.

Cannot configure speech recognition

If the **Speech Recognition Configuration** option is not available on the **Speech Proxy Administration** screen, the Natural Language Speech Recognition packages are *not*

installed. The AVSproxy and AVsrproxy packages are required for the Natural Language Speech Recognition feature. If WholeWord speech recognition is required (AVasr, AVwwasr), one or more of the language packages (AVwwau, AVwwbp, AVwwcf, AVwwcs, AVwwfr, AVwwgr, AVwwit, AVwwjn, AVwwms, AVwwnl, AVwwuk, Avwwus) are also needed. For SpeechWorks OpenSpeech Recognizer (OSR), either AVosr111 or AVosr114 is required.

All ports **BROKEN** on speech server

If all ports for a proxy speech server are in the BROKEN state when viewed either by recognition type or by server type, the speech recognition proxy is not able to connect to the specified server with the configured port.

To correct the problem:

1. Ensure that the speech recognition server is up and running.
See [Troubleshooting speech server disconnections](#) on page 124 for more information.
2. Run the `netstat -a` command on the recognition server to verify that the recognition server is listening on the configured port.

Speech resource bad or non-configured

If you see the following system message when you try to display a speech configuration resource, there is no server administered for the specified recognition type.

```
Error: Bad or Non-configured Resource type
```

Go to the **Speech Recognition Configuration** screen (Feature Packages > Speech Administration > Administration > Speech Proxy Administration > Speech Recognition Administration > Speech Recognition Configuration) and administer a server.

Speech not playing

Speech may not play for a variety of reasons, including the following:

- The voice response application does not contain, or fails to find, the required phrase.
- The required voice response application is not assigned to the channel.
- A proxy server providing Text-to-Speech service is disconnected or experiencing intermittent problems.

Troubleshooting

This section includes the following topics:

| | |
|---|-----|
| Checking the voice response application and system administration | 12 |
| Checking the server connection | 120 |
| Checking for errors | 120 |

Checking the voice response application and system administration

To check the application and the administration settings:

1. If a particular phrase of recorded speech is not playing, check to see that it is recorded and record it, if necessary.
2. Go to the **Display Equipment** screen (Configuration Management > Voice Equipment > Display Equipment) and check to see if the correct service is assigned to the channel or channels.
3. If the correct service is not assigned, go to the **Channel Services** screen (Configuration Management > Voice Equipment > Voice Services > Channel Services) and make the required changes.

Checking the server connection

See [Troubleshooting speech server disconnections](#) on page 124 for a complete procedure on checking and testing the connection.

Checking for errors

To check for errors:

1. Go to the **Message Log Report** screen (Reports > Message Log Report) and check for messages related to the trouble.
2. Enter the following commands as needed to analyze operations:
 - Type `trace tsm chan all | tee /tmp/trace.out` and press **Enter** to trace all levels of operations for the call.
 - Type `trace tsm chan date | tee /tmp/trace.out` and press **Enter** to trace operations for the identified date. (Trace output will be prefixed by the date and timestamp.)
 - Type `trace tsm chan VROP | tee /tmp/trace.out` and press **Enter** to trace voice response operations specifically.

The trace output from the above commands is sent to the console and to the file **/tmp/trace.out**.

3. Place a call to the server.
4. Review the trace output for failure indications or error messages and take action to correct the problems.

Investigating system process problems

Problems with system processes can affect callers and voice response operations, causing speech breaks, delays, and interruptions in call handling.

This section includes the following topics:

| | |
|--|-----|
| UNIX commands failing or disk errors | 121 |
| Execute UNIX command failed | 121 |
| vi editor causes core dump | 121 |

UNIX commands failing or disk errors

If UNIX commands are failing, or the system reports disk failures, go to the **Message Log Report** screen (Reports > Message Log Report), check for events related to the problem, and follow the repair procedures in the related **Explain** text or online help topic.

- DSKMG messages report file access failures that affect speech or data operations.
- UNIX messages report problems with the UNIX operating system.

Execute UNIX command failed

Most likely, the problem is with the command or shell script. Make sure that the command or shell script that was attempted works when executed manually. If it does, verify that its full path name is provided to the script.

vi editor causes core dump

If the vi editor causes a core dump, split the file into multiple segments:

- Type **split - n filename name** and press **Enter**, where *n* is the number of lines in each piece (1000 is the default), *filename* is the name of the files you want to split, and *name* is the new segment you are creating.

Investigating database problems

If you are using databases on the LAN, communications problems with those databases may affect voice operations. [Troubleshooting database server disconnections](#) on page 125 covers what to do when the IR system is not communicating with the database server at all. The following topics explain how to check on less serious problems with databases.

This section includes the following topics:

| | |
|--|-----|
| Checking JDBC operations | 122 |
| Checking Oracle object size limits | 122 |

Checking JDBC operations

Use the following commands to check JDBC function:

- `netstat -a` lists port usage. Review the output to determine verify that ports are functioning and are not overloaded.
- `trace chan all DBDIP3` traces DIP activity. Review the output to verify that all DIPs are functioning in the desired way.

Review the following system processes related to JDBC operations:

- `/vs/bin/vrs/idbcint DIP num`
- `/vs/bin/vrs/jdbcdip dipnumber`
- `/usr/bin/./java/bin/./bin/SPARC/routine_threads/java -Dpname=ais3 -cp /webadm`
- `/usr/bin/./java/bin/./bin/SPARC/routine_threads/java -Dpname=ais(dip number) -cp /webadm`

Checking Oracle object size limits

An *extent* is a user-defined unit of storage in the Oracle **storage** clause used when defining an Oracle object. It is used as MINEXTENTS or MAXEXTENTS in the storage clause. An Oracle object (that is, a table, an index, a rollback segment) grows one extent in size each time the object needs to be expanded.

When the maximum allowed number of extents is reached, the object will not be able to grow further. The object needs to be redefined so that either the size of each extent is increased or the initial object size is increased, to reduce the number of extents required for the storage of this object. The maximum allowed number of extents in a system is 2,147,483,645.

To check the number of extents:

1. Type `dbused` and press **Enter**.
The system displays the **Space Allocated** screen.
2. Compare the value in the **EXTENTS** column to the value in the **MAX_EXTENTS** column.
If the value in the **EXTENTS** column is greater than or equal to the value in the **MAX_EXTENTS** column, the table has reached its maximum size.
3. Redefine the database table storage, if necessary.

Note:

Contact your internal database administrator or your database vendor for help with this and other database tasks.

Checking communications

Because voice system functions may be reliant on servers, checking LAN communications is an important aspect of troubleshooting. You may need to work with your LAN administrator to completely investigate LAN problems.

This section includes the following topics:

| | |
|-----------------------------------|-----|
| Checking LAN communications | 123 |
| Tracing LAN activities | 128 |

Checking LAN communications

To support voice response operations, an Avaya IR system may communicate with remote servers that store databases, with proxy servers for Text-to-Speech and speech recognition, or both. Using servers outside the IR system provides flexibility and increased storage capacity.

However, problems with LANs and with servers can interrupt or stop access to required functions. Understanding how to check LAN communications helps you to identify the cause of voice response problems faster when servers are involved. If the VoIP feature is used, LAN operations are critical to transmitting calls. With VoIP, the goal of troubleshooting the network is to enable the DEFINITY or MultiVantage system and the Avaya IR system to communicate with each other using the UDP and TCP protocols on the network.

Troubleshooting

This section includes the following topics:

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| Typical causes of LAN problems | 124 |
| Resources for LAN troubleshooting | 124 |
| Troubleshooting speech server disconnections | 124 |
| Troubleshooting database server disconnections | 125 |
| Troubleshooting intermittent LAN problems | 126 |
| Troubleshooting persistent server problems | 126 |
| Pinging server connections | 127 |
| Monitoring Ethernet packets | 127 |

Typical causes of LAN problems

The following are typical causes of problems with server communications over the LAN:

- Incorrect administration of server communication settings, such as IP addresses
- Breakdowns in the LAN system or malfunction of the server itself
- Overloading the Avaya IR system or the LAN

Resources for LAN troubleshooting

The following resources are available to help you troubleshoot problems with LAN communications:

- Technical books and websites in the public realm explain how to analyze LAN problems.
- The Solaris operating system provides network troubleshooting tools.
- DEFINITY and MultiVantage systems come with built-in network troubleshooting tools.

Additionally, you can receive help with troubleshooting server problems from your LAN administrator and from Avaya. Before seeking assistance, be sure to:

- Research the situation
- Make sure that servers are administered correctly in the Avaya IR system

Troubleshooting speech server disconnections

To investigate the problem:

1. Go to the **Speech Server Status** screen (Feature Packages > Speech Administration > Display Status > Speech Server Status) to check server status and settings.
2. Select the desired speech server from the list and select **Submit**.
The system displays setting and status information for the server.
3. Verify that the correct ports, server name, and IP address are in use.
If you have recorded the server name and IP address on the *IR System Data Form*, refer to it now.
4. If there are errors in the configuration of the server, take the following actions:
 - a) Go to the appropriate proxy configuration screen and make the required corrections.

To correct speech recognition configuration errors, go to the **Speech Recognition Configuration** screen (Feature Packages > Speech Administration > Administration > Speech Proxy Administration > Speech Recognition Configuration).

To correct text-to-speech configuration errors, go to the **Text-to-Speech Configuration** screen (Feature Packages > Speech Administration > Administration > Text-to-Speech Configuration).
 - b) Return to the Speech Server Status screen to see if the server status is **INSERV** (in service).
5. If the server status is not **INSERV**, go to the Solaris operating system and execute the **ping** command to test the connection.
6. If the **ping** command fails, take the following actions:
 - a) Verify that the LAN cables are correctly connected between the Avaya IR, the server, and the LAN hub (where applicable).
 - b) Make sure that the voice response application is referring to the correct server.
 - c) Contact your LAN administrator to determine whether there are problems with the server or with network connections.
7. If no network problems exist, check license administration on the remote server to ensure that the maximum number of licenses has not been exceeded.
8. If the server remains disconnected, contact your Avaya technical support representative for assistance.

Troubleshooting database server disconnections

To investigate the problem:

1. Go to the **JDBC Administration** screen (Configuration Management > JDBC Administration) to check server status and settings.

Troubleshooting

2. Select the database data interface process (DIP) that interacts with the server in question.

The system displays the **JDBC Administration - Edit** screen.

3. Check the DIP settings, particularly those for ports, hostname and DB name, and make any required corrections.

If multiple DIPs interact with the server, you will need to check them separately.

4. Click **Test** to check communications between the Avaya IR system and the database server.

The connection between the Avaya IR system and the database server is tested and the results are reported. If the connection is not working, the related error message is included in the output.

5. Continue checking settings, testing connections, and making corrections for all DIPs that communicate with the database server.

6. If the database server is still not responding, take the following actions:

- a) Check the **/etc/hosts** file to make sure that it has the correct IP address and name for the server.

- b) Verify that the LAN cables are correctly connected between the Avaya IR system, the server, and the LAN hub (where applicable).

- c) Make sure that the voice response application is referring to the correct server.

- d) Contact your LAN administrator to determine whether there are problems with the server or with network connections.

7. If the **/etc/hosts** file is correct and no network problems exist, check license administration on the remote server to ensure that the maximum number of licenses has not been exceeded.

8. If the server remains disconnected, contact your Avaya technical support representative for assistance.

Troubleshooting intermittent LAN problems

Slow or interrupted LAN communications may result in failed processes for speech recognition, Text-to-Speech, or database checking. The cause is generally overloading of the Avaya IR system or the LAN.

Troubleshooting persistent server problems

If you experience persistent problems with a server, you may want to reconfigure and retest the server.

To reconfigure and retest the server:

1. Put all systems used in the application that is experiencing problems on a dedicated LAN hub, completely isolated from the rest of the LAN.
2. Configure the systems to communicate with each other over the dedicated LAN hub.
3. Use the `ping` command to verify that the server responds.
4. If none of these solutions work, contact your field support representative.

Pinging server connections

The `ping` command indicates whether a remote host can be reached. It can also display statistics about packet loss and delivery time.

The `ping` command is available through the Solaris operating system. Use it with the attributes shown in the table that follows.

| Attribute | Function |
|---------------------|--|
| <code>-d</code> | Set the <code>SO_DEBUG</code> socket option. |
| <code>-l</code> | Send the packet to the given host and back again. |
| <code>-L</code> | Turn off loopback of multicast packets. |
| <code>-n</code> | Display the network addresses as numbers. |
| <code>-r</code> | Bypass the normal routing tables and send directly to a host on an attached network. |
| <code>-R</code> | Set the IP record route option and store the route of the packet inside the IP header. |
| <code>-v</code> | List any ICMP packets, other than <code>ECHO_RESPONSE</code> , that are received. |
| <code>-i</code> | Specify the outgoing interface to use for multicast packets. |
| <code>-I</code> | Specify the interval between successive transmissions. |
| <code>-t ttl</code> | Specify the IP time to live for multicast packets. |

Monitoring Ethernet packets

The Sun Solaris operating system provides Watch-Net and Watch Net-All diagnostics that monitor Ethernet packets to identify good packets and packets with errors. The Sun Blade 150 Service Manual explains how to use these diagnostics on the Sun Blade 150 platform. The *Sun Fire 280R Server Service Manual* explains how to use these diagnostics on the SunFire 280R platform. These documents are available in *Avaya IR System Help* (under "Print documents") or from the Sun Web site (<http://www.sun.com>).

Tracing LAN activities

LAN trace utilities help you to understand how LAN communications are operating and identify problems. The LAN trace utilities have the following disadvantages; however, they are still very helpful:

- Only traffic on the subnet to which the IR system is attached can be traced.
- When traffic on the LAN is very heavy, some packets may be lost because the server cannot keep up with the flow.

To better understand the results, you may want to seek support from your Avaya support representative when running the LAN utilities.

This section includes the following topics:

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|---|-----|
| Detecting incorrect IP addresses (arp)..... | 128 |
| Displaying network statistics (netstat) | 129 |
| Displaying packet route (traceroute) | 129 |

Detecting incorrect IP addresses (arp)

The `arp` command provides information about Ethernet/IP address translation. You can use the command to detect systems on the LAN that are configured with an incorrect IP address. The table that follows identifies the different options and functions for the `arp` command.

| Command | Function |
|---|--|
| <code>arp -a [unix[kmem]]</code> | Display all of the current ARP entries by reading the table from the file kmem (default /dev/kmem), based on the kernel file unix (default /kernel/unix) |
| <code>arp -d hostname</code> | Delete an entry for the host called hostname . Note: This option may be used only by the super-user. |
| <code>arp -s hostname ether_address [temp] [pub] [trail]</code> | Create an ARP entry for the host called hostname with the Ethernet address ether_address . |
| <code>arp -f filename</code> | Read the file named filename and set multiple entries in the ARP tables |

Displaying network statistics (netstat)

The `netstat` command is used to display statistics about each network interface and socket and statistics about the network routing table. Use the `netstat` command with the attributes shown in the table that follows.

| Attribute | Function |
|--------------------------------|---|
| <code>-a</code> | Display the state of all sockets and all routing table entries. |
| <code>-f address_family</code> | Limit the statistics or address control block reports to those of the specified family. (The address family can be inet for the AF_INET family or UNIX for the AF_UNIX family.) |
| <code>-g</code> | Display the multicast group memberships for all interfaces. |
| <code>-i</code> | Display the state of the interfaces that are used for TCP/IP traffic. |
| <code>-m</code> | Display the STREAMS statistics. |
| <code>-n</code> | Displays the network addresses as numbers. |
| <code>-p</code> | Display the address resolution tables, using the <code>-p</code> option. |
| <code>-r</code> | Display the routing tables. |
| <code>-s</code> | Display the per-protocol statistics. |
| <code>-v</code> | Display additional information for the sockets and the routing table. |
| <code>-I interface</code> | Display the state of a particular interface. |
| <code>-M</code> | Display the multicast routing tables. |
| <code>-P protocol</code> | Limit the display of statistics or state of all sockets to those applicable to protocol. |

Displaying packet route (traceroute)

The `traceroute` command displays the route that packets take when going to a remote system. Use the `traceroute` command with the attributes shown in the table that follows.

| Attribute | Function |
|-----------------|--|
| <code>-f</code> | Set the initial time-to-live used in the first outgoing probe packet |
| <code>-F</code> | Set the don't fragment bit |
| <code>-d</code> | Enable socket level debugging |
| <code>-g</code> | Specify a loose source route gateway |
| <code>-i</code> | Specify a network interface to obtain the source IP address for outgoing probe packets |

| Attribute | Function |
|-----------|---|
| -I | Use the ICMP ECHO instead of UDP datagrams |
| -m | Set the max time-to-live (max number of hops) used in outgoing probe packets |
| -n | Print hop address numerically rather than symbolically |
| -p | Set the base UDP port number used in probes. (Default is 33434.) |
| -r | Bypass the normal routing tables and send directly to a host on an attached network |
| -s | Use the following IP address (which usually is given as an IP number) as the source address in outgoing probe packets |
| -t | Set the type of service in probe packets to the following value |
| -v | List the ICMP packets other than TIME_EXCEEDED and UNREACHABLE |
| -w | Set the time (in seconds) to wait for a response to a probe |
| -x | Toggle checksums |

Checking hardware

Hardware failures and malfunctions can stop or interfere with voice system operations. This section explains how to check various types of hardware connections and components.

This section includes the following topics:

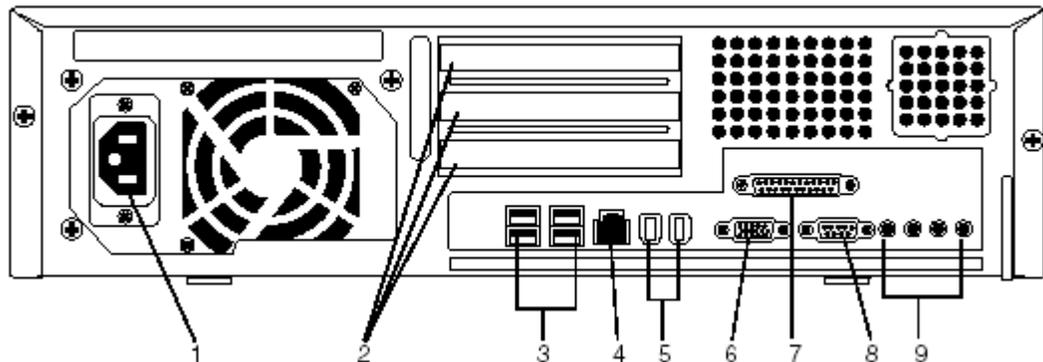
| | |
|---|-----|
| Checking cable connections | 131 |
| Testing platform hardware | 133 |
| Checking NMS card configuration..... | 134 |
| Checking card and channel states | 134 |
| Performing root cause failure analysis | 135 |
| Restoring cards and channels..... | 135 |
| Replacing a failed hard disk drive | 141 |
| Restoring the system if both hard disk drives fail..... | 144 |
| Disabling disk mirroring..... | 144 |

Checking cable connections

Make sure that the cables that connect your IR system to other devices and systems are firmly in place and functioning properly.

Sun Blade 150 cable connections

The diagram below shows where cables connect to the back of the back of the Sun Blade 150 platform.



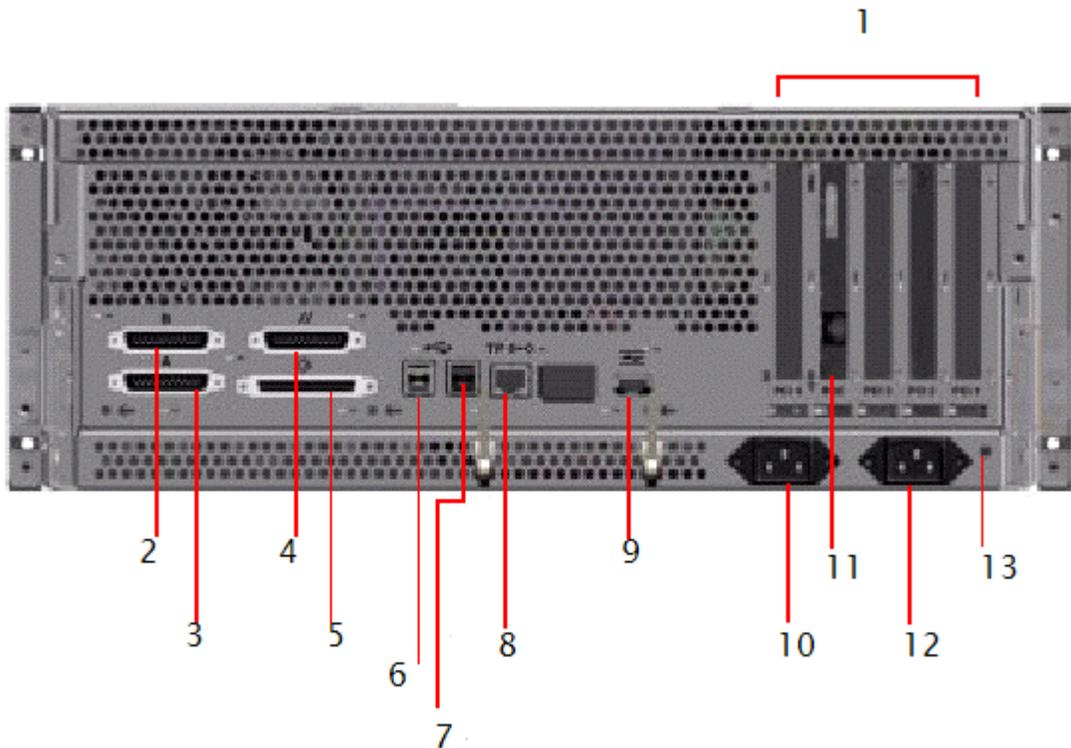
| Label | Function and Troubleshooting Considerations |
|-------|--|
| 1 | Power connector - Cable here provides power to the IR system. Disconnection from the plug results in loss of power and function. |
| 2 | PCI card slots - Cables here connect NMS cards to the MultiVantage (DEFINITY) system or to digital telephony lines. Problems here may interfere with receiving and handling calls. |
| 3 | USB connectors (four) - Two of these connectors are reserved for the keyboard and mouse that are part of the country kit. If a keyboard is not connected, and the IR system is rebooted, you may not be able to log into the IR system. Your organization may use the remaining USB connectors for other purposes. |
| 4 | Twisted-pair Ethernet connector - Cable here connects the IR system to the LAN. Problems here may interfere with access to voice response applications, databases, proxy speech servers, and other IR system components that reside on servers on the LAN. If VoIP is in use, a loose connection here may cause problems with call processing. |
| 5 | IEEE 1394 (Firewire) connectors (two). |
| 6 | VGA video connector - The cable connects the video monitor to the IR system. Problems here may cause the video monitor to appear blank, even though the IRsystem is still processing calls. |
| 7 | Parallel connector |

Troubleshooting

| Label | Function and Troubleshooting Considerations |
|-------|--|
| 8 | Serial connector (RS-232) - Cables here connect the IR system to the external modem, which controls dial up access to the system for Avaya support technicians. Problems here may mean that Avaya support technicians are unable to access the IR system for troubleshooting purposes. |
| 9 | Audio module connectors |

Sun Fire 280R cable connections

The diagram below shows where cables connect to the back of the back of the Sun Fire 280R platform.



| Label | Function and Troubleshooting Considerations |
|-------|---|
| 1 | PCI card slots - Cables here connect NMS cards to the MultiVantage (DEFINITY) system or to digital telephony lines. Problems here may interfere with receiving and handling calls. |
| 2 | Serial connector a - The cable connects the video monitor to the IR system. Problems here may cause the video monitor to appear blank, even though the IR system is still processing calls. |

| Label | Function and Troubleshooting Considerations |
|--------|--|
| 3 | Serial connector b - Cables here connect the IR system to the external modem, which controls dial up access to the system for Avaya support technicians. Problems here may mean that Avaya support technicians are unable to access the IR system for troubleshooting purposes. |
| 4 | Parallel connector |
| 5 | UltraSCSI connector |
| 6, 7 | USB connectors (four) - Two of these connectors are reserved for the keyboard and mouse that are part of the country kit. If a keyboard is not connected, and the IR system is rebooted, you may not be able to log into the IR system. Your organization may use the remaining USB connectors for other purposes. |
| 8 | Twisted-pair Ethernet connector - Cable here connects the IR system to the LAN. Problems here may interfere with access to voice response applications, databases, proxy speech servers, and other IR system components that reside on servers on the LAN. If VoIP is in use, a loose connection here may cause problems with call processing. |
| 9 | FC-AL |
| 10, 12 | Power connectors - Cables here provide power to the IR system. Disconnection from the plug results in loss of power and function. |
| 11 | RSC card |

You can also test port function. The Sun OpenBoot Diagnostics system performs root cause failure analysis on the ports. The Sun Blade 150 Service Manual and the Sun Fire 280R Server Service Manual explain how to run OpenBoot Diagnostic tests. These documents are available in *Avaya IR System Help* (under "Print documents") or from the Sun Web site (<http://www.sun.com>).

Testing platform hardware

When hardware problems occur with the IR system, you can use the Sun Validation Test System (VTS) to test and validate the hardware. You use Sun VTS in the event of failures in:

- Powering on
- Video output
- The hard drive, CD-ROM, or DVD ROM drives
- Dual in-line memory module (DIMM) function

Refer to the service manual for your platform:

- Sun Blade 150 Service Manual

Sun Fire 280R Server Service Manual

Troubleshooting

These documents are available in *Avaya IR System Help* (under "Print documents") or from the Sun Web site (<http://www.sun.com>).

Checking NMS card configuration

Check the configuration of the NMS card or cards with the commands described in the table that follows.

| Commands | Functions |
|------------------------|--|
| <code>nmsboards</code> | Identifies boards, their types, and their slot numbers (E1 or T1). |
| <code>pcidev</code> | Identifies board type and communicates with PCI files. Can be run without having to configure an NMS board or run <code>ctdaemon</code> . |
| <code>boardinf</code> | Provides detailed information on the board, communicates with board, and provides real-time memory display. Requires an installed NMS board and <code>ctdaemon</code> running. |
| <code>trunkmon</code> | Identifies trunk status |
| <code>shows95</code> | Shows trunks ABCD bits being toggled and is a good tool for Loop or Wink (E&M) protocols. Requires an installed NMS board and <code>ctdaemon</code> running. |
| <code>showcx95</code> | Provides board timeslot information. Requires an installed NMS board and <code>ctdaemon</code> running. |
| <code>ctavers</code> | Identifies version of NMS software |

Checking card and channel states

If you think a problem is caused by the failure or malfunction of an Avaya IR system channel, NMS card, or VoIP card, you can check the state of the component. To check card and channel states, go to the **Display Equipment** screen (Configuration Management > Voice Equipment > Display Equipment). The IR system displays information about cards and channels, which should show an in service (INSERT) state. If cards and channels are not in the INSERT state, you may be able to restore them. See [Restoring cards and channels](#) on page 135.

Performing root cause failure analysis

The Sun OpenBoot Diagnostics system performs root cause failure analysis on various IR devices by testing internal registers, confirming subsystem integrity, and verifying device functionality. Refer to the service manual for your platform:

- Sun Blade 150 Service Manual
- Sun Fire 280R Server Service Manual

These documents are available in *Avaya IR System Help* (under "Print documents") or from the Sun Web site (<http://www.sun.com>).

Restoring cards and channels

Channels and voice operations cards on the IR system can go out of service for a variety of reasons. When that happens, following the procedures presented in this section may restore channels, NMS cards, or VOIP cards to service. Most out-of-service conditions are the result of administration errors or intermittent problems, rather than actual hardware failures. By taking the time to troubleshoot, you may be able to resolve the problem yourself.

When you troubleshoot problems with cards and channels, bear in mind that as long as even one channel on a card is operating, the card will be in the in service (INSERV) state. If a card is out of service, *all* channels connected to the card are not operating.

This section includes the following topics:

| | |
|--|-----|
| Restoring MANOOS cards and channels | 135 |
| Restoring NETOOS cards and channels | 136 |
| Restoring FOOS cards and channels | 137 |
| Restoring BROKEN NMS and VoIP cards | 137 |
| Gathering data on card operations | 140 |
| Performing root cause failure analysis | 141 |

Restoring MANOOS cards and channels

The MANOOS (manually out of service) state is the result of one of the following events:

- A user requested that the card or channel be taken out of service.
- An internal error put the card or channel in this state to allow for an attempted recovery.

Troubleshooting

To restore a channel or card in the MANOOS state:

1. Type **restore channel *channel #*** or **restore card *card#*** and press **Enter**.
channel # and *card #* represent the number of card or channel you want to restore.
2. Go to the **Display Equipment** screen (Configuration Management > Voice Equipment > Display Equipment) to determine if the card or channel has returned to the INSERTV state.
The card or channel may remain in the MANOOS state or go to another out-of-service state.
3. If the card or channel has not returned to the INSERTV state, contact your Avaya support representative.

Restoring NETOOS cards and channels

The NETOOS state indicates that the card or channel was taken out of service by some network or physical channel error. This state refers only to channels that are defined as PRI protocol.

To restore a card in the NETOOS state:

1. Go to the **Message Log Report** screen (Reports > Message Log Report) and review any messages related to the particular card or channel.
2. Check connections and indicators on the back of the IR system and re-seat the connection, if necessary:
 - a) Check the physical connection to the card and determine if it is seated correctly.

The card should not have worked its way out of the connection. See [Checking cable connections](#) on page 131 for more information.
 - b) If the connection is loose, re-seat it.
3. If you have resealed the connection, go to the **Display Equipment** screen (Configuration Management > Voice Equipment > Display Equipment) to see if the card or channel is now in the INSERTV state.
4. If the card or channel is still not in service, take the following actions:
 - a) Check the status of the card or channel on the switch system administration interface.
 - b) Run diagnostics from the switch system administration interface to identify any errors with the switch connections
 - c) If errors are identified, correct them.
 - d) Busy out and release the card or channel on the switch to try to clear the problem.

- e) If necessary, re-check the status of the card or channel on the Display Equipment screen.
5. If the card or channel is still not in service, contact your Avaya support representative about the problem and share the information you have gathered.

Restoring FOOS cards and channels

The FOOS state indicates that the card or channel was taken out of service by some physical channel error.

To restore a card or channel in the FOOS state:

1. Go to the **Message Log Report** screen (Reports > Message Log Report) and review any messages related to the particular card or channel.
2. Check connections and indicators on the back of the IR system and reseal the connection, if necessary:
 - a) Check the physical connection to the card and determine if it is seated correctly.

The card should not have worked its way out of the connection. See [Checking cable connections](#) on page 131 for more information.

VoIP may use a network interface (NIC) card that is different from the one used by other web-based processes for the Avaya IR system. If this is the case, check the connection for the card.

- b) If the connection is loose, re-seat it.
 - c) Make note of other information about the card, such as lit LEDs, connection to the telephony switch for T1/E1 connections, LAN status for VoIP connections, and so forth.
3. If you have reseated the connection, go to the **Display Equipment** screen (Configuration Management > Voice Equipment > Display Equipment) to see if the card or channel is now in the INSERV state.
4. If the card or channel is still not in service, contact your Avaya support representative about the problem and share the information you have gathered.

Restoring BROKEN NMS and VoIP cards

The BROKEN state can result from conditions other than actual malfunction of the card or channel. For example, the card or channel may be unconfigured, or configured incorrectly. Note that individual channels do not come up in the BROKEN state, so the procedures in this section apply only to NMS and VoIP cards.

Troubleshooting

This section includes the following topics:

| | |
|--|-----|
| Inspecting the IR system platform..... | 138 |
| Checking card administration..... | 138 |
| Removing and restoring cards | 140 |

Inspecting the IR system platform

When an NMS or VoIP card is in the BROKEN state, inspect the IR system platform:

1. If the BROKEN card is an NMS card, there should be a card in the identified slot.

VoIP function is provided through the Ethernet connection, so there will not be a card in the slot.

2. If there is no NMS card in the slot, take one of the following actions:

- Install an NMS card.
- Disregard the BROKEN state if no card is required in the slot.

An IR system may operate using one or two NMS cards. If the system is configured for two NMS cards, but has only one, system messages and screens report a BROKEN card for the empty slot.

3. Check the connection for the BROKEN card or channel on the back of the IR system.

The card or channel should not have worked its way out of the connection. See [Checking cable connections](#) on page 131 for more information.

4. If the connection is loose, re-seat it.

5. If you have resealed the connection, go to the **Display Equipment** screen (Configuration Management > Voice Equipment > Display Equipment) to see if the card or channel is now in the INSERT state.

6. If the card is still not in service, verify that it is administered correctly.

See [Checking card administration](#) on page 138 for more information.

Checking card administration

If a card is present in the slot and securely connected, the next step is to check the IR system administration settings for the card.

To check administration settings:

1. Check configuration settings for the BROKEN card:

- For the NMS card, go to the **Display Digital Interface Card** screen (Configuration Management > Switch Interfaces > > Digital Interfaces Protocols > Display Parameters > Display Digital Interface Card) to view the card parameters.
- For the VoIP card, go to the **Display VoIP Parameters** screen (Configuration Management > Switch Interfaces > Voiceover IP > Display Parameters > Display VoIP Parameters) to view card parameters.

Configuration settings should match the type of card installed. VoIP cards should be enabled.

2. If the card is configured incorrectly, make the required corrections:
 - For the NMS card, go to the **Change Card** screen for the appropriate type of digital interface (Configuration Management > Switch Interfaces > Digital Interfaces > Digital Interfaces Protocols > Change Parameters > Change Card - Digital Interfaces), and choose subsequent screens based on card type.

See [Checking NMS card configuration](#) on page 134 for useful commands related to NMS cards.
 - For the VoIP card, go to the **Change VoIP Card** screen (Configuration Management > Switch Interfaces > Voiceover IP > Change Parameters > Change VoIP Parameters > Change VoIP Card) and change parameters.
3. If you have corrected the card configuration, go to the **Display Equipment** screen (Configuration Management > Voice Equipment > Display Equipment) to verify the card state.
4. If the card is still not in service, type `display card card _number` and press **Enter** and verify that the card is found.

Note:

If there are problems with licensing, there may be no usable channels on the card, and the card will not be found when the `display card` command is run.

5. If the card is not found, go to the **Feature Licensing** screen (Configuration Management > Feature Licensing) and verify that there are enough Right-to-Use licenses (RTUs) for the channels supported by the card.
6. If you do not have an adequate number of RTUs for channels in operation, contact your Avaya support representative to arrange to acquire more RTUs.
7. If RTUs are not an issue, and the card is still not in service, you may be able to bring it back into service by removing and restoring it.

See [Removing and restoring cards](#) on page 140 for more information.

Removing and restoring cards

If the connection to a card is seated properly, and the card is configured correctly, try removing and restoring the card. Repeat the remove and restore process anytime that you change a configuration parameter or reseal a cable. Removing and restoring causes the IR system to attempt re-initialization of the card.

To remove and restore a card:

1. To remove the card, type **remove card *card number*** and press **Enter**.
2. To restore the card, type **restore card *card number*** and press **Enter**.

The IR system attempts to configure the card again. The reconfiguration process may bring the card back into service.

3. If the card remains in the BROKEN state, check the card configuration in the switch and make any required corrections.
4. Remove and restore the card again on the IR system.
Even if you have made no changes to the card configuration on the switch, removing and restoring the card at this point may clear the problem.
5. If the card is still BROKEN, busy out and release the card on the switch.
6. Remove and restore the card once more on the IR system.

If the card remains in the BROKEN state, you need to find out more and then contact your Avaya support representative. See [Gathering data on card operations](#) on page 140 for more information.

Gathering data on card operations

Follow the procedures in this section to learn more about the exact nature of the problem. Then contact your Avaya support representative for assistance in troubleshooting the card.

This section includes the following topics:

| | |
|-------------------------------------|-----|
| Displaying data on NMS cards | 140 |
| Displaying data on VoIP cards | 141 |

Displaying data on NMS cards

To display information about NMS cards:

1. Type **trunkmon-b *card#*** and press **Enter** to display information about a specific card.
— *card#* represents the number of the card you want to check.

- The **alarms** column should show a steadily-displayed entry of **NONE**, and the **Frame sync** column should show a steadily-displayed entry of **OK**. If either of these entries is fluctuating between the identified values and another value, note the other value for discussion with your Avaya support representative.
2. Press **Esc** to return to the command-line interface.

Displaying data on VoIP cards

To display information about VoIP cards:

1. Run the following diagnostics:
 - SunVTS OpenBoot diagnostics for the network connection
 - Watch-Net and Watch Net-All diagnostics

All of these diagnostics monitor Ethernet packets and identify both good packets and packets with errors. Refer to the service manual for your platform:

- Sun Blade 150 Service Manual
- Sun Fire 280R Server Service Manual

These documents are available in *Avaya IR System Help* (under "Print documents") or from the Sun Web site (<http://www.sun.com>).

2. Note the results for discussion with your Avaya support representative.

Performing root cause failure analysis

The Sun OpenBoot Diagnostics system performs root cause failure analysis on various IR devices by testing internal registers, confirming subsystem integrity, and verifying device functionality. Refer to the service manual for your platform:

- Sun Blade 150 Service Manual
- Sun Fire 280R Server Service Manual

These documents are available in *Avaya IR System Help* (under "Print documents") or from the Sun Web site (<http://www.sun.com>).

Replacing a failed hard disk drive

For systems with the disk mirroring feature, a failed hard disk drive must be replaced.

This section includes the following topics:

| | |
|---|-----|
| Checking for hard disk drive failures | 142 |
| Removing a failed hard disk drive | 143 |
| Activating disk mirroring for a new hard disk drive | 143 |

Checking for hard disk drive failures

To check the hard disk drives from problems:

1. If you are not logged in, log in as root.
2. At the command prompt, enter **metadb**

The system displays information about each hard disk drive.

The following example shows the results of the **metadb** command for a system with hard disk drive problems.

```
      flags          first blk   block count
a m p luo          16           1034      /dev/dsk/c1t0d0s4
a  p luo          1050           1034      /dev/dsk/c1t0d0s4
a  p luo          2084           1034      /dev/dsk/c1t0d0s4
a  p luo          3118           1034      /dev/dsk/c1t0d0s4
a  p luo          4152           1034      /dev/dsk/c1t0d0s4
a  p luo          5186           1034      /dev/dsk/c1t0d0s4
a  p luo          6220           1034      /dev/dsk/c1t0d0s4
a  p luo          7254           1034      /dev/dsk/c1t0d0s4
W  p l            16           1034      /dev/dsk/c1t1d0s4
W  p l            1050           1034      /dev/dsk/c1t1d0s4
W  p l            2084           1034      /dev/dsk/c1t1d0s4
W  p l            3118           1034      /dev/dsk/c1t1d0s4
W  p l            4152           1034      /dev/dsk/c1t1d0s4
W  p l            5186           1034      /dev/dsk/c1t1d0s4
W  p l            6220           1034      /dev/dsk/c1t1d0s4
W  p l            7254           1034      /dev/dsk/c1t1d0s4
o - replica active prior to last mddb configuration change
u - replica is up to date
l - locator for this replica was read successfully
c - replica's location was in /etc/lvm/mddb.cf
p - replica's location was patched in kernel
m - replica is master, this is replica selected as input
W - replica has device write errors
a - replica is active, commits are occurring to this replica
M - replica had problem with master blocks
D - replica had problem with data blocks
```

```
F - replica had format problems
S - replica is too small to hold current data base
R - replica had device read errors
```

The Ws in the first column indicate that there is a problem writing to partitions on the secondary disk (c1t1d0s4).

If you detect problems with the hard disk drive, you must remove the failed drive and replace it with a good one. For more information, see [Removing a failed hard disk drive](#) on page 143.

Removing a failed hard disk drive

If you detect failure in disk drive on a mirrored system, you must remove and replace it with a good one.

To remove a failed hard disk drive:

1. If you are not logged in, log in as root.
2. At the command prompt, enter `stop_vs`.

The voice system stops.

3. Enter `mirror_admin detach`.

The system displays the following prompt:

```
Prompt for hard disk drive to detach
```

4. Type the number that corresponds to the hard disk drive to detach and press **Enter**.

The system detaches all submirrors from the failed hard disk drive.

5. Physically remove the failed hard disk drive.

For information on how to remove a disk drive, see Sun Fire 280R Server Service Manual. This document is available in *Avaya IR System Help* (under "Print documents") or from the Sun Web site (<http://www.sun.com>).

When you are ready to install the replacement drive, see [Activating disk mirroring for a new hard disk drive](#) on page 143.

Activating disk mirroring for a new hard disk drive

To activate disk mirroring for a new hard disk drive:

1. If you are not logged in, log in as root.
2. Enter `stop_vs` to stop the voice system.

Troubleshooting

3. Install the new hard disk drive that has the same geography and size as the drive that failed.

For information on how to remove a disk drive, see Sun Fire 280R Server Service Manual. This document is available in *Avaya IR System Help* (under "Print documents") or from the Sun Web site (<http://www.sun.com>).

4. Enter `mirror_admin replace`.

The new hard disk drive is partitioned and synchronized to the other hard disk. It takes approximately 20 minutes for each 10 GB to copy data to the new hard disk.

Restoring the system if both hard disk drives fail

If both hard disk drives fail, after replacing the hard disk drives, you must do one of the following:

- Rebuild your system from CD media.
- Rebuild your system by restoring the system from backup, which may be preferable if you have applications, data, and feature administration that also needs to be restored.

Disabling disk mirroring

Use the following procedure to disable disk mirroring.

1. If you are not logged in, log in as root.
2. Stop the voice system by typing `stop_vs` and pressing **Enter**.
3. To disable disk mirroring, type `mirror_admin cleanup` and press **Enter**.

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