



DEFINITY[®]

Enterprise Communications Server

Release 1.1

Getting Started with the Avaya R300
Remote Office Communicator

555-233-769
Comcode 700226806
Issue 3
February 2002

Notice

Every effort was made to ensure that the information in this book was complete and accurate at the time of printing. However, information is subject to change.

Your Responsibility for Your System's Security

Toll fraud is the unauthorized use of your telecommunications system by an unauthorized party, for example, persons other than your company's employees, agents, subcontractors, or persons working on your company's behalf. Note that there may be a risk of toll fraud associated with your telecommunications system and, if toll fraud occurs, it can result in substantial additional charges for your telecommunications services.

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Part 68: Network Registration Number. This equipment is registered with the FCC in accordance with Part 68 of the FCC Rules. It is identified by FCC registration number AS593M-13283-MF-E.

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
- Routed to a recorded announcement that can be administered by the CPE user

This equipment returns answer-supervision signals on all 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

Industry Canada (IC) Interference Information

NOTICE: This equipment meets the applicable Industry Canada Terminal Equipment Technical Specifications. This is confirmed by the registration number. The abbreviation, IC, before the registration number signifies that registration was performed based on a Declaration of Conformity indicating that Industry Canada technical specifications were met. It does not imply that Industry Canada approved the equipment.

Le Présent Appareil Numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la class A prescrites dans le règlement sur le brouillage radioélectrique édicté par le Industrie Canada.

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See the preface of this document.

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European Union Declaration of Conformity

The "CE" mark affixed to the DEFINITY® equipment described in this book indicates that the equipment conforms to the following European Union (EU) Directives:

- Electromagnetic Compatibility (89/336/EEC)
- Low Voltage (73/23/EEC)
- Telecommunications Terminal Equipment (TTE) i-CTR3 BRI and i-CTR4 PRI

For more information on standards compliance, contact your local distributor.

Acknowledgment

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About this document

Overview

This document describes the Avaya R300 Remote Office Communicator. This system is based on Lucent-Ascend's MAX 3000 and provides an effective way to maintain remote digital (DCP) and analog phones and trunks from a DEFINITY Enterprise Communication Server (ECS). This book covers Releases 1.0 and 1.1 of this product.

Conventions used in this document

The following terms and conventions will help you use this book with your Avaya R300 system.

- To “move” to a certain field, you can use the TAB key, arrows, or the RETURN key.
- A “screen” is a screen form displayed on the terminal monitor.
- In this book we use the terms “phone” and “voice terminal” to refer to telephones.
- If you use terminal emulation software, you need to determine which keys correspond to ENTER, RETURN, CANCEL, HELP, NEXT PAGE, etc.
- Commands are printed in bold face as follows: **command**.
- Keys and buttons are printed as follows: KEY.
- Screen displays are printed in constant width as follows: `screen display`.
- Variables are printed in italics as follows: *variable*.
- We show complete commands in this book, but you can always use a truncated version of the command. For example, **list configuration station** can be entered as **list config sta**.

- We show commands and screens from the newest DEFINITY system and refer to the most current books. Please substitute the appropriate commands for your system and refer to the manuals you have available.
- If you need help constructing a command or completing a field entry, remember to use HELP.
- When you press HELP at any point on the command line, a list of available commands appears.
- When you press HELP with your cursor in a field on a screen, a list of valid entries for that field appears.
- The status line or message line can be found near the bottom of your monitor display. This is where the system displays messages for you. Check the message line to see how the system responds to your input. Write down the message if you need to call our helpline.
- When a procedure requires you to press ENTER to save your changes, the screen you were working on clears and the cursor returns to the command prompt. The message line shows "command successfully completed" to indicate that the system accepted your changes.



NOTE:

Draws attention to information that you must heed.



CAUTION:

Denotes possible harm to software, possible loss of data, or possible service interruptions.



WARNING:

Denotes possible harm to hardware or equipment.



SECURITY ALERT:

Indicates when system administration may leave your system open to toll fraud.

Trademarks and service marks

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On-line documentation

How to get this book on the web

If you have internet access, you can view and download the latest version of *Getting Started with the Avaya R300 Remote Office*. A copy of Acrobat Reader is required to view the book.

To access the latest version:

1. Access the Avaya support web site at <http://www.avaya.com/support>.
2. Click **Communications Systems**.
3. Click **DEFINITY Systems**.
4. Click **R300 Remote Office Communicator**.
5. Click **Technical Articles**.
6. Click **Getting Started with R300 Remote Office Communicator**.

How to get the latest R300 software

1. Access the Avaya support web site at <http://www.avaya.com/support>.
2. Click **Communications Systems**.
3. Click **DEFINITY Systems**.
4. Click **R300 Remote Office Communicator**.
5. Click **Software Downloads**.
6. Click **Avaya R300 Remote Office Communicator Software Upgrades**.

Downloading the latest R300 SNMP MIB file

1. Access the Avaya support web site at <http://www.avaya.com/support>.
2. Click **Communications Systems**.
3. Click **DEFINITY Systems**.
4. Click **R300 Remote Office Communicator**.
5. Click **Software Downloads**.
6. Click **Avaya R300 Remote Office Communicator SNMP MIB Files**.

How to get the latest Lucent-Ascend Max 3000 documentation

1. Access the Lucent support web site at <http://www.lucentdocs.com/ins/english/max3000.htm>

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- Write: Globalware Solutions
200 Ward Hill Avenue
Haverhill, MA 01835 USA
Attn: Avaya Account Manager
- Order: Document No. 555-233-769
Comcode 700058167, Issue 2, August 2001

How to get help

If you need additional help, the following services are available. You may need to purchase an extended service agreement to use some of these services. See your Avaya representative for more information.

- DEFINITY Helpline (for help with feature administration and system applications) +1-800-225-7585
- Avaya Technical Service Center Support Line – US and Canada (for help with maintenance and repair) +1-800-242-2121
- Avaya Toll Fraud Intervention +1-800-643-2353
- Avaya Corporate Security +1-800-822-9009
- Avaya Centers of Excellence +1-720-444-9998
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US Federal Communications Commission Statement

FCC Part 68 Information

This equipment complies with Part 68 of the FCC rules. The Certification number of the Interface assembly and associated circuit pack is: AV1USA-43029-CN-T.

The REN for this equipment is 0.5A.

If requested, this information must be provided to the telephone company.

Means of connection:

<i>Mfr's Port I.D.</i>	<i>FIC</i>	<i>SOC/REN/A.S. Code</i>	<i>USOC</i>
<i>Loop-start central office (LSCO) trunk</i>	<i>02LS2</i>	<i>0.5A</i>	<i>8 pin mod. jack (see below)</i>

LSCO (02LS2) interface jacks

The R300 Interconnect unit has two 8-pin modular jacks for connection to two-wire analog loop-start central office lines of the R300 product. Pins 4 and 5 of the jacks are ring and tip, respectively. All other pins are not connected. Either an 8-conductor modular plug, or a 6-conductor RJ11 plug can be used to connect the R300 Interconnect unit. Pins 3 and 4 of a 6-conductor RJ11 plug line up with pins 4 and 5 of an 8-pin modular jack. See [Figure 1](#).

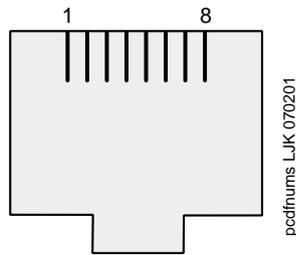


Figure 1. 8-pin Modular jack

Table 1. Pin Connections for 8-pin Modular jack and 6 or 8-Conductor Modular Plugs

Interconnect Unit	From Network Connection Point	
	8-conductor modular plug	6-conductor modular plug
1	1	
2	2	1
3	3	2
4 Ring	4 Ring	3 Ring
5 Tip	5 Tip	4 Tip
6	6	5
7	7	6
8	8	

This equipment is equipped with a FCC compliant jack and is designed to be connected to the telephone network or premises wiring using a compatible modular cord that is Part 68 compliant. See Installation Instructions for details.

The REN is used to determine the quantity of devices that may be connected to the telephone line. Excessive RENs on the telephone line may result in the devices not ringing in response to an incoming call. Typically, the sum of RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to a line (as determined by the total RENs) contact the local telephone company.

If this equipment (Avaya R300 Remote Office) causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes to its facilities, equipment, operations or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice so you can make the necessary modifications to maintain uninterrupted service.

If trouble is experienced with the Avaya R300 Remote Office, for repair or warranty information, please contact the Avaya Technical Service Center at 1-800-242-2121. If the equipment is causing harm to the telephone network, the telephone company may request that you disconnect the equipment until the problem is resolved.

This unit is to be repaired by authorized personnel only. There are no user serviceable parts.

Connection to party line service is subject to state tariffs. (Contact the state public utility commission, public service commission or corporation commission for information.)

Part 68 Answer supervision signaling

Allowing this equipment to be operated in such a manner as to not provide for proper answer supervision is a violation of Part 68 of the FCC's rules.

Proper answer supervision is when:

- a. This equipment returns answer supervision to the PSTN when DID calls are:
 - Answered by the called station
 - Answered by the attendant
 - Routed to a recorded announcement that can be administered by the CPE user.
 - Routed to a dial prompt
- b. This equipment returns answer supervision on all DID calls forwarded to the PSTN. Permissible exceptions are:
 - A call is unanswered
 - A busy tone is received
 - A reorder tone is received.

This equipment is capable of providing users access to interstate providers of operator services through the use of access codes. Modification of this equipment by call aggregators to block access dialing codes is a violation of the Telephone Operator Consumers Act of 1990.

Document Release History

Issue 1 (November, 2000)

This is the initial version of the document and contains a functional overview description of the R300 Release 1 product. This document contains installation and administrative material that serves as a product User's Manual. Chapters 4 and 5 provide a summary of the administration interfaces required to enable the features on the DEFINITY system and the R300 system respectively. Chapter 6 provides a description of maintenance and troubleshooting procedures.

Issue 2 (August, 2001)

This version provides an update to the entire document, with emphasis on the administration steps to operate the R300 Release 1.1 product feature set. The Release 1.1 is a software update that may be effected by a downloadable update in the field to existing R300 products. A second area of hardware model update is the introduction of an R300 model that supports ISDN Basic Rate WAN ports.

Specific documentation changes have been made as follows:

- a. Chapter 1 (new subsections added)
 - The application of Hop-on/Hof-off Gateway
 - ISDN Basic Rate WAN interface
 - BOOTP relay
- b. Chapter 2 (new subsections added)
 - Bandwidth Engineering
 - Shuffling
 - CLAN Resources
 - Call Connection Examples
 - VoIP Exhaustion
 - Loudspeaker Paging
 - Fax Support (circuit switched using WAN ports)
- c. Chapter 3 (new subsections added)
 - Explanation of front panel/back panel LEDs
 - DSP30 interface circuit pack
 - Use of 75 ohm impedance with E1 model of R300
- d. Chapter 4
 - Updates for DEFINITY administration screens

- e. Chapter 5
 - Updates for R300 administration screens
 - New section to explain R300's Main Editing and Status windows
 - New section to describe IP-routed-over-T1 interface administration
- f. Chapter 6
 - Updates for troubleshooting hints
- g. Appendix A (new)
 - Description of how to coordinate DEFINITY loss plan with R300 call routing

Issue 3 (February, 2002)

This version corrects some errata on the administration and provides some new administration information. Secondly, it corrects the list of features to show those that are available on the Release 1.1 product.

- a. Chapter 0 (new)
 - Update for web site access
 - Document Revision History section added
- b. Chapter 1
 - Removed reference to T.38 fax
 - Update to ordering information
- c. Chapter 2
 - New section for group paging/whisper paging
 - New section for data modem support
- d. Chapter 4
 - A few updates for DEFINITY administration screens
- e. Chapter 5
 - A few updates for R300 administration screens
 - New section for administration of ISDN-BRI
 - Description of analog trunk dial tone delay feature
- f. Chapter 6
 - Updates for troubleshooting hints

Overview of the Avaya R300

1

The DEFINITY system and Avaya R300

The Avaya R300 Remote Office Communicator supports the complete communication needs of a small office of 24 LAN data clients or digital and analog voice terminals. The Avaya R300 also supports IP routing through its integrated WAN interfaces (T1, E1, BRI, and serial V.35) to the DEFINITY system.

The DEFINITY system manages all call processing, call routing, and billing. The Avaya R300 Remote Office Communicator provides local access trunks (digital and analog), and the DEFINITY system manages these as IP signaling groups.

Based on Lucent-Ascend's MAX 3000, the Avaya R300 provides you with an effective way to connect Digital Communications Protocol (DCP) phones, analog phones, Fax machines, paging systems, and trunks at a remote site to a DEFINITY Enterprise Communication Server (ECS). The Avaya R300 provides full DEFINITY functionality and features to the remote site either through a WAN or LAN using the IP protocol.

Because the Avaya R300 is based on Lucent-Ascend's MAX 3000, you may see references to Lucent-Ascend's MAX documentation. You can find documentation of Lucent-Ascend's MAX 3000 on the DEFINITY Systems Library CD shipped with the Avaya R300.



Figure 2. Avaya R300 Remote Office Communicator and Interconnect module

DEFINITY Remote Office overview

DEFINITY Network

The “main” DEFINITY cabinet may be a G3, DEFINITY One, or an Avaya IP-600. The DEFINITY cabinet may either be a PPN (Processor Port Network) or an EPN (Expansion Port Network). The DEFINITY software must contain Release 9 or newer release software.

The Avaya R300 remote office requires two circuit packs in the DEFINITY system: the C-LAN (TN799C) and the IP Media Processor (TN2302AP). The C-LAN circuit pack conveys signaling and control streams over to remote station endpoints and to remote trunks that are supported on the Avaya R300. The IP Media Processor circuit pack serves as the voice bearer gateway and audio conference bridge for transporting TDM-based traffic from the DEFINITY backplane (supporting traditional line and trunk cards) out to the IP-based wide area network and on toward the Remote Office. The C-LAN and the IP Media Processor circuit packs must be in the same network region (as DEFINITY defines an IP networking region). [Figure 3](#) below shows the network topology for a DEFINITY ECS main system with two subtending remote office configurations.

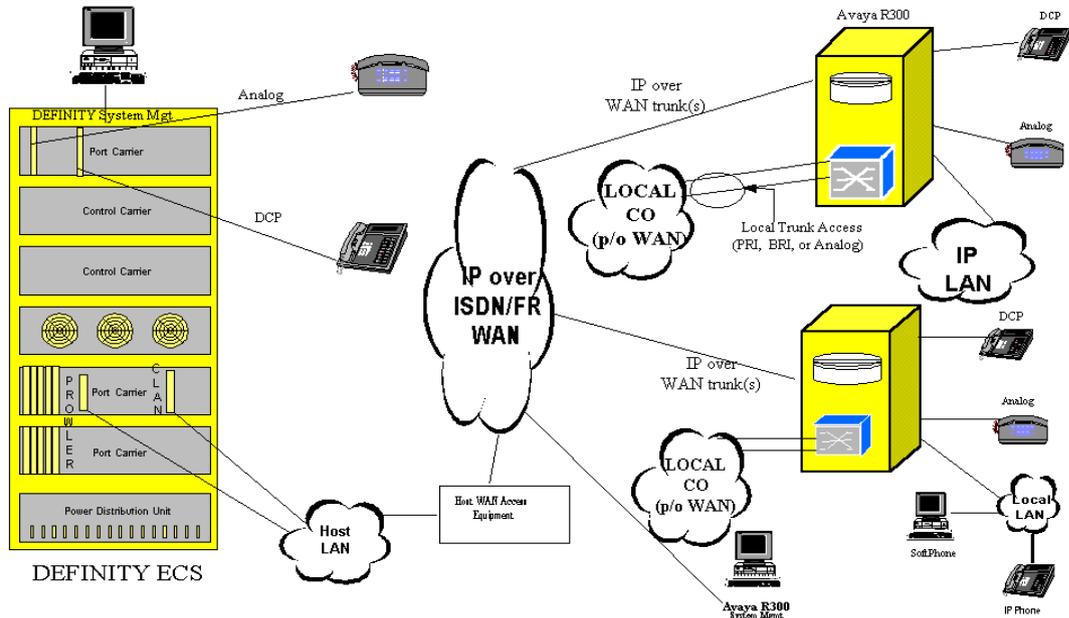


Figure 3. DEFINITY Remote Office Network Topology

The network connection to the C-LAN card is a 10 BaseT (half-duplex) Ethernet connection. The network connection to the IP Media Processor is a 10/100 BaseT (full-duplex) Ethernet connection. The Ethernet output from these two cards connects to the host LAN, which is a subnetwork consisting of data switches and/or hubs and interior routers.

Host WAN access equipment directs the control and bearer IP traffic streams from the host LAN network to the WAN. Host WAN access equipment typically would consist of the following components:

- A router to serve as the IP gateway from the enterprise premises out to the IP-based WAN.
- An access concentrator to multiplex the LAN and TDM-based enterprise traffic streams into an aggregated stream to present to the wide area network.
- A Virtual Private Network (VPN) service for providing enhanced security, particularly for data services (optional).
- A Frame Relay Access Device (FRAD) to wrap the traffic into a frame format suitable for transport over an enterprise network based upon frame relay PVC service (optional).

This WAN access equipment may be one or more separate products, and you can get them from varied vendors. However, the industry trend is for increased consolidation of this equipment.

The central wide area network services (shown as a cloud in the center of [Figure 3 on page 3](#)) can be an enterprise network, a PSTN switched network (including partnership with an Internet Service Provider) or a combination of the two. The technologies of the WAN may be a variety of services including frame relay, ATM, ISDN or digital T-carrier. In all cases, this DEFINITY Remote Office application will provide both the signaling and voice bearer traffic in IP -based protocol frames that are transported over the underlying physical frame formats.

The Avaya R300 network

At the far side of the WAN is the Avaya R300. You can have multiple Avaya R300 devices subtending a main DEFINITY system via the WAN.

The Avaya R300 supports:

- Up to 24 DCP digital two-wire sets: 6400-series, 8400-series, or 9031DCP Transtalk model (wireless base station).
- Two analog phones (6200-series or 2500-series) or analog fax machines, or one of these and a paging system.
- Local switching between the analog and DCP phones out through local central office trunks. These local trunks (local to the remote site) may be either digital through T1/E1/BRI WAN access trunks or, in North America, through 600 ohm analog trunks.

In addition to the voice telephony features that it provides for your remote office, the Avaya R300 provides integration of data and a conversion of voice and data applications, all in one product.

Specifically, the Avaya R300 provides:

- An Ethernet 10/100BaseT interface to provide IP routed connectivity to the local LAN in the Remote Office. (This interface is a dual-routed port.)
- An IP router that is capable of supporting both interior and exterior gateway routing protocols (RIP V2 and OSPF).
- A Voice over IP (VoIP) gateway to convert TDM-based audio streams (from DCP and analog phone sets or incoming digital and analog trunks) into IP-based streams for transport to/from the main DEFINITY site, or other IP-connected DEFINITY remote sites and/or IP phones and IP softphones.
- Support for CODECs including G.711 (A-law and μ -law), and G.729. See [“Network region design” on page 39](#) for more details.
- WAN access via E1, T1, BRI (BRI-S/T 4-wire), and serial WAN.

This digital WAN interface is based on three product models:

- MX30-2T1-DRM which contains two T1 interfaces (available in North American and Japanese models).
- MX30-2E1-DRM which contains two E1 interfaces.
- MX30-6ST-DRM which contains six BRI 4-wire S/T interfaces.

⇒ NOTE:

The T1/E1 WAN interfaces are capable of supporting robbed bit service, ISDN Primary Rate service (both in full T1/E1 and FT1/FE1 modes), and frame relay service. The North American T1 interface is capable of supporting up to twenty-three 64 Kbps channels for PRI and twenty-four channels for robbed bit signaling. The International E1 interface is capable of supporting up to thirty 64 Kbps bearer channels.

⇒ NOTE:

The ISDN Basic Rate interface is capable of supporting two 64 Kbps channels.

Ordering Information (with DSP30 VoIP card)

- Avaya R300 North America 2-T1 Model: Pec code 63657.
- Avaya R300 Japan 2-T1 Model: Pec code 63661.
- Avaya R300 Global 2-E1 Model: Pec code 63658.
- Avaya R300 Global 6-BRI ST Model: Pec code 63659.

All models include:

- Avaya R300 Interconnect module
- R300 Interconnect cable (Y-cable)
- 50-pin connector gender changer
- Serial RS232 cable
- AC power cord (varies with country)
- 120 ohm to 75 ohm conversion kit (E1 model only)

DEFINITY call processing for the Avaya R300 stations & trunks

The main DEFINITY switch manages the trunk facilities within the Avaya R300. The Avaya R300 operates as:

- a line-side gateway to represent the 24 digital and 2 analog stations to DEFINITY as IP phones.

It translates the TDM-based digital and analog telephone stations and presents them to DEFINITY as if they were “native” H.323 IP phones. Note that for the Avaya R300, the DEFINITY system maintains lamp displays and button control exactly in accordance with existing DEFINITY CCMS messages. The DEFINITY system sends these messages over TCP/IP connections to the Avaya R300.

- a trunk-side gateway to represent the PSTN wide area network (WAN) digital (T1, E1, or BRI depending on the product model) and analog services to DEFINITY as IP trunks.

The DEFINITY switch manages the trunks through H.323 protocol instructions via the C-LAN module. DEFINITY call processing sends H.323 signaling messages to establish, release, and send information over to the PSTN network. This is a virtual interface in that the DEFINITY system manages these resources as if they were B-channels on a DEFINITY DS1 interface card. To identify these virtual trunks to the DEFINITY system, administer the signaling group form and the trunk group form.

The actual direct control of these virtual trunks is provided by the R300. The R300 conducts that state machine instantiations for:

- T1 Robbed Bit signaling
- T1 ISDN PRI signaling
- E1 ISDN PRI signaling
- E1 R2 and R2MFC signaling
- BRI ISDN signaling

For outbound calls, the R300 terminates the H.323 IP signaling messages that come from the DEFINITY system and re-generates the communication signaling message out toward the PSTN network per the appropriate signaling facility on the given PSTN network trunk. For inbound calls, the R300 terminates the incoming signaling message from the PSTN and re-generates the signaling message as an H.323 uplink IP signaling message to the DEFINITY system.

The R300 “pools” all of the available channels (for example from both T1 interfaces) and assigns channels starting with channel one of the first physical WAN interface. It continues to use channels sequentially through that first WAN interface link. When these are fully utilized, and if the R300 administration has set up a second trunk interface, the R300 will continue to assign channels until there are no further channels. At that point, the R300 will deny call attempts from both the DEFINITY switch on the “IP side” and from the public network on the “PSTN side”.

The R300 is responsible for communicating normal error and call clearing messages across the respective signaling channel for the given PSTN interface such that the DEFINITY system is the "virtual" manager of that interface. The PSTN network has no knowledge that there is a PBX on the other side of the gateway. The DEFINITY switch has no precise knowledge of the PSTN network on the other side of the gateway.

The DEFINITY system will employ the shuffling feature to directly bind an IP endpoint (such as an R300 station) over to an IP trunk channel if the dial plan requires that both parties are to be engaged in a point-to-point call. Refer to the description of "Shuffling" and "Call Routing" for a full description of how this operation works.

Note that in the "Hop-on/Hop-off Gateway operation" description that the DEFINITY system is treating the connection to the trunk gateway as a virtual "tie trunk" to extend the capabilities of the main DEFINITY system over to the remote R300.

In effect, the Avaya R300 operates as a virtual "EPN" to the DEFINITY switch. Figure 4 shows how DEFINITY call processing views the resources within the Remote Office.

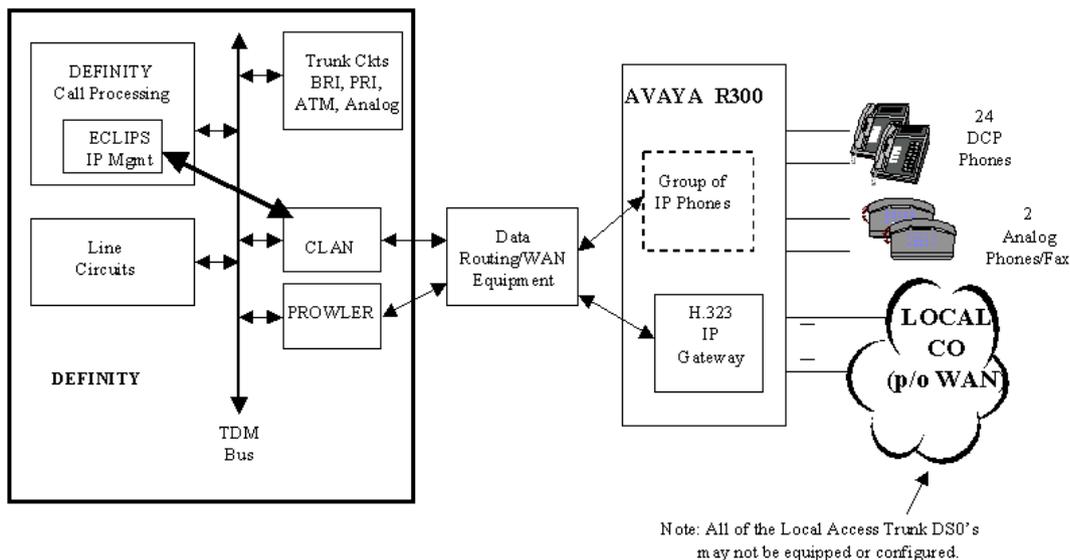


Figure 4. DEFINITY Call Processing for Remote Stations and Trunks

Signal flow from the DEFINITY system to the remote office

During call processing, signaling messages travel from the Switch Processor Element (SPE), across the internal DEFINITY backplane bus, and to the C-LAN module. The C-LAN board wraps the signaling information in IP packets and sends them out to a local Ethernet switch subnet. Host-side WAN router equipment would forward these IP packets across the WAN over to the Avaya R300. The Router Engine in the Avaya R300 directs these wrapped signaling packets across the API to the Remote Angel (on the Combo Blade).

For a digital phone supported at the main DEFINITY system site, the bearer information travels from the digital line card onto the DEFINITY TDM backplane bus and then over to the IP Media Processor. The Media Processor performs the TDM to IP gateway conversion per the H.323V2 protocol.

The IP based bearer stream travels across the WAN to the Avaya R300. The Avaya R300 receives the IP stream and routes it to its internal VoIP gateway, where the IP Voice stream is converted back to TDM and passed to the Combo Blade. Then the Combo Blade transforms this into an I-channel of the DCP communication channel and sends it to the DCP digital station.

Figure 5 depicts the detailed signal stream flow of the control messages, voice bearer channels, and the system management flows between the main DEFINITY site and the Avaya R300.

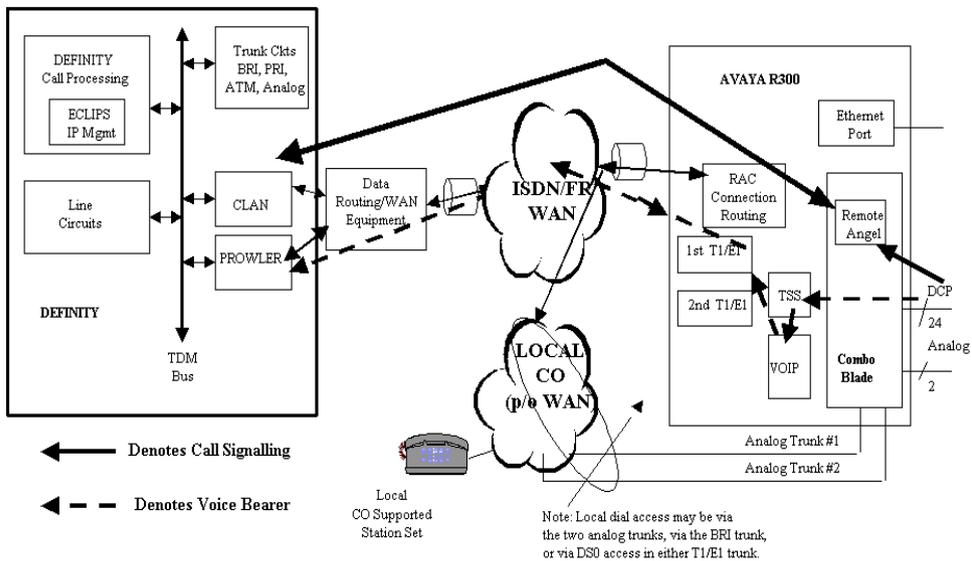


Figure 5. Avaya R300 Serving as the WAN Access Concentrator

Avaya R300 connection topologies

You can connect the Avaya R300 to a WAN using two principle topologies:

- Direct connection from its WAN ports (T1/E1, BRI, analog trunk) to the WAN service provider
- Connection through your existing equipment that serves as the principle WAN service access point.

Avaya R300 serving as the WAN access concentrator

The illustration in [Figure 5 on page 8](#) depicts the topology which could be more commonly used in deployments of newly configured Remote Offices. This topology has the Avaya R300 serving as the principle point of WAN access via its WAN ports. The Avaya R300 has either T1, E1, or BRI ports and also has two analog trunk ports. The configuration of available port types will depend on the model of the Avaya R300 unit (2-T1 or 2-E1 or 6 BRI) and the configuration of network resources (i.e. what you actually subscribe to from your WAN service provider). You can configure T1 or E1 trunks in a fractional mode. You can also connect the Avaya R300's Ethernet port to a subtending local LAN, provided that the bandwidth capacity and QoS performance is sufficient.

Avaya R300 subtending existing WAN access equipment

When the Avaya R300 is in this topology, you can configure it in one of two ways:

- Connect it via its Ethernet port over to the local IP LAN (see [Figure 6 on page 10](#))
- Connect it via its Serial WAN port (V.35) over to the Serial input of a WAN router (see [Figure 7 on page 10](#))

The Avaya R300 allows DEFINITY call routing to use local access trunks. You may directly connect these local access trunks to a WAN service provider network, or you can set the T1/E1 WAN trunks to subtend a drop-and-insert T1/E1 connection on the existing WAN access equipment.

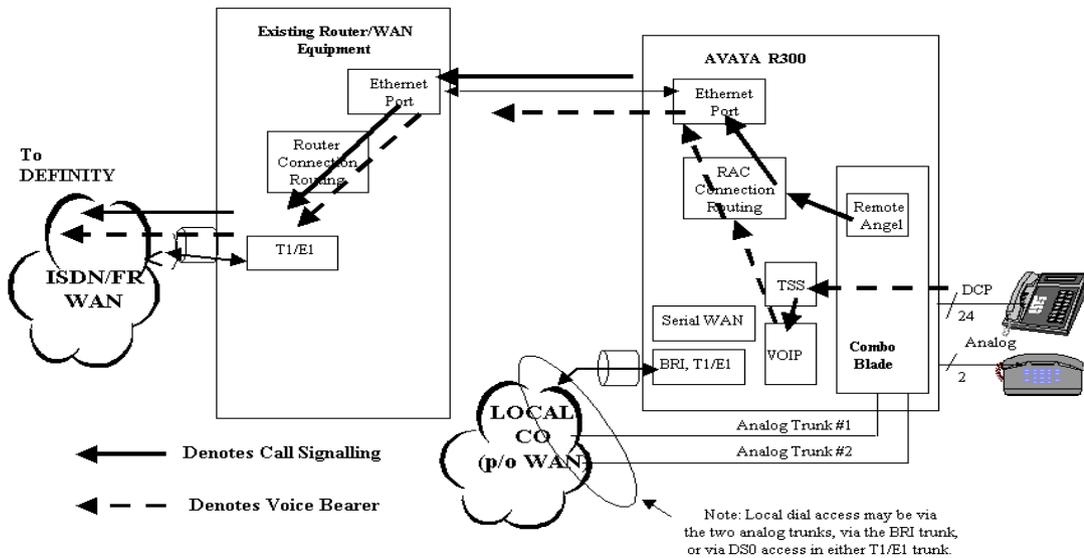


Figure 6. Avaya R300 Co-existing with WAN Access Concentrator

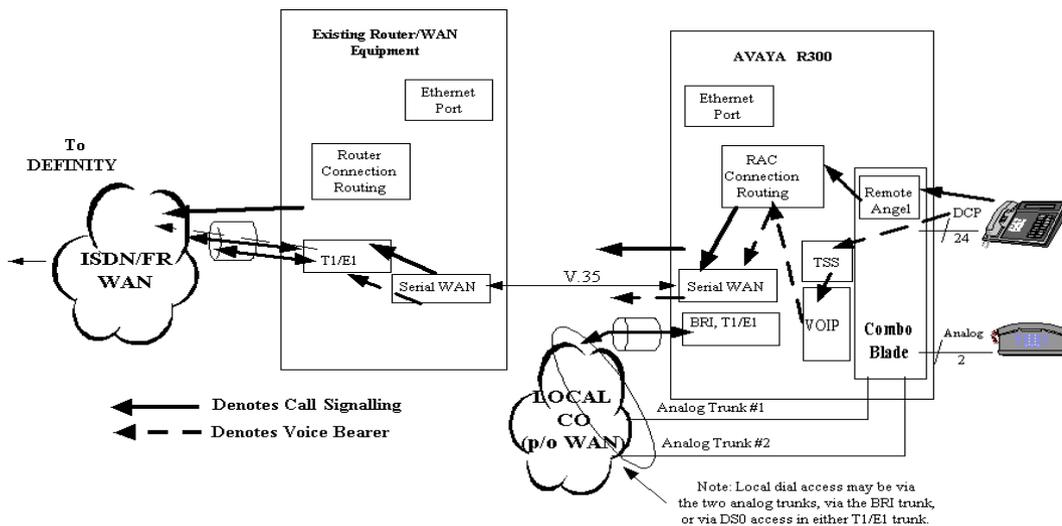


Figure 7. Avaya R300 Subtending to Existing WAN Access Concentrator (Serial WAN Connected to Router)

Avaya R300 as an IP network-region “hop-on/hop-off” point

In addition to the common application of the Avaya R300 as a remote office for a set of DCP and analog stations, you can deploy it in support of a remote PSTN trunk gateway. This will allow you to connect, with a shuffled IP connection, DEFINITY managed IP endpoints (such as IP phones, IP softphones, or other endpoints from another Avaya R300) to the IP trunk or signaling group whose virtual trunk members represent one of the PSTN channels (i.e. The two analog trunks, or the digital trunks (T1, E1, or BRI)).

This can provide great cost-savings if, for example, your DEFINITY headquarters switch is located in one city, and the R300 and IP phones are in another city. IP calls will not have to connect back to the IP Media Processor board (at the main DEFINITY site) and incur added WAN toll charges. Instead, the Avaya R300 allows the IP Media Processor to shuffle the calls back to a local PSTN gateway, thereby simplifying the toll charges.

⇒ NOTE:

DEFINITY shuffling must be enabled to optimize the network routing.

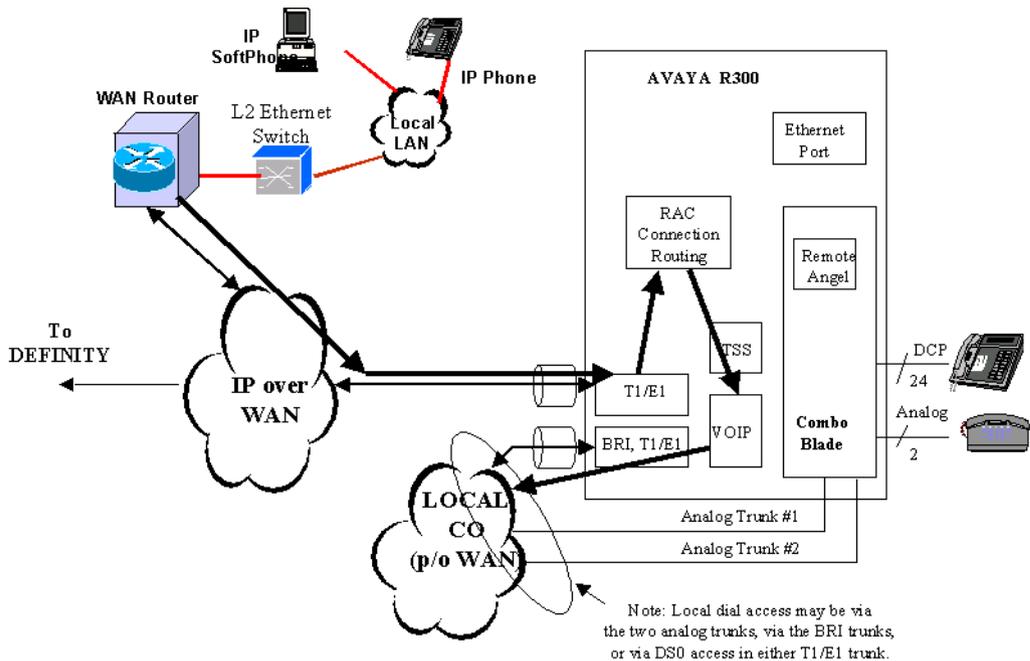


Figure 8. Avaya R300 as an IP network-region “hop-on/hop-off” point

Avaya R300 with local LAN supported IP Softphones and telephones

The Avaya R300 Ethernet interface can connect to your LAN with both native IP-based data clients and native IP-based voice clients. PC resident IP Softphones (IP voice client application) and the Model 46xx IP telephones are available.

The IP-based voice and data clients will be connected in a subnet (See Figure 9). This subnet is provided by point-to-point serial Ethernet connections to a Layer 2 Ethernet switch. The uplink of this subnet is connected to the Ethernet port on the Avaya R300. It is important that voice-over-IP clients be connected to switched Ethernet hubs rather than to shared Ethernet hubs, so that all of the uni-cast Ethernet bandwidth from an individual voice or data client does not necessarily impact the LAN access of a second LAN client.

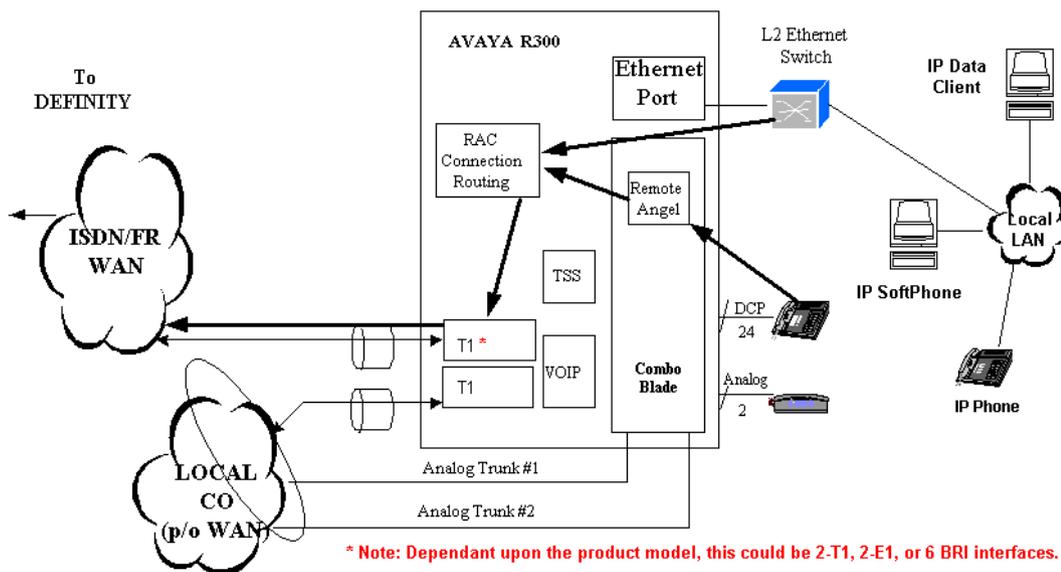


Figure 9. Interface Between the Avaya R300 and IP-based Data and Voice Clients

Emergency transfer to the Remote Office

The Avaya R300 emergency transfer feature provides some limited telephone service in the case of disaster. The R300 supports two, 600 ohm analog loop-start trunks that contain relay contacts. These contacts operate during a disaster to directly cut-through (hardware connection) the tip and ring pair of R300 analog station #1 and connect it to the tip and ring pair of R300 analog trunk #1. Similarly, in this emergency mode, the tip and ring pair for analog station #2 is connected over to the tip and ring pair of R300 analog trunk #2.

As long as the customer has subscribed to active central office service for these two analog trunks, in this disaster recovery scenario they will have “central office dial tone” when they go off-hook and can enjoy incoming and outgoing calls per the service agreements for those two analog trunk lines. See [Figure 10](#).

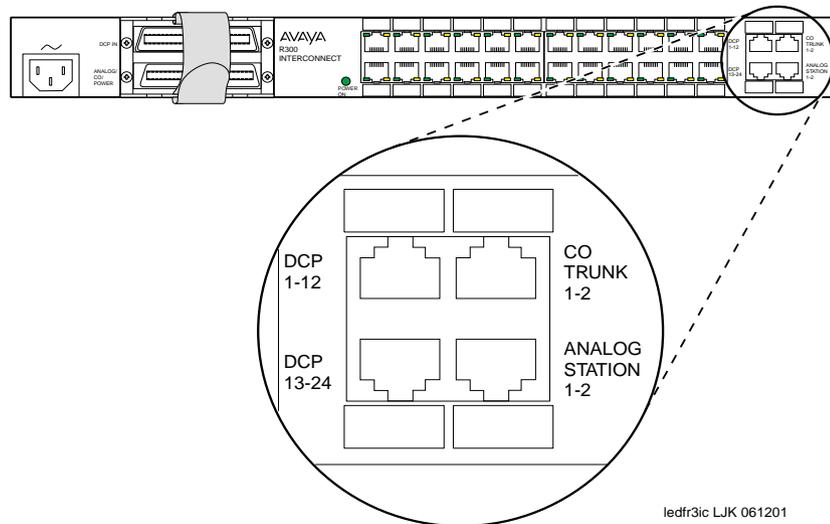


Figure 10. Analog Station and Trunk Ports for Emergency Transfer

⇒ NOTE:
DCP stations do not operate in this failure mode.

The emergency transfer relays operate in the following circumstances:

- Loss of power on the Avaya R300's Combo Blade
- Loss of H.323 registration message communication with the main DEFINITY switch.
 - This may be due to a failure of the host switch.
 - This may be due to a failure in the interconnecting IP network at either the host switch or the remote office.
 - This may be due to a failure in the WAN service links.

The emergency transfer will initiate within 60 seconds of loss of connectivity.

Avaya R300 with basic rate interface (BRI) support

New with Release 1.1, the product model MX30-6ST-DRM supports 6 Basic Rate Interface (BRI) ISDN WAN ports. With BRI, there are two 64 Kbps circuit switched B-channels, and one out-of-band D-channel which is used to carry call-processing information. This allows you to use this product model in network areas that offer significant cost savings for PSTN service.

Figure 11 illustrates that the R300 can use the BRI WAN interfaces for IP switched service connectivity over a BRI enterprise or public switched network. Alternatively, the BRI WAN interfaces may be used for the PSTN access trunks.

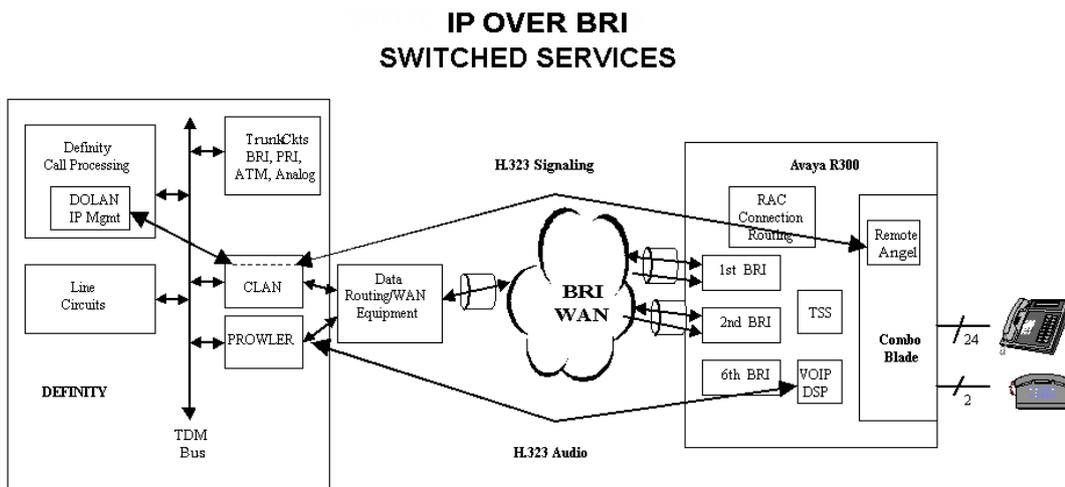


Figure 11. IP Over BRI Switched Services

Figure 12 illustrates how the Avaya R300 BRI-ST model can connect up to either an enterprise PBX or to a public network service provider. This application diagram shows the use of a terminating resistor (TR) adaptor, the 440A4, which is optional. When the T-interface requires this resistance unit to balance the cable plant between the receiver and the transmitter, then the TR adapter must be used. It may be built into a network termination (NT1) module. In this case, the user can configure the value of resistance with one of three options:

- 50 ohms for distances up to 250 feet (76 meters)
- 100 ohms for distances from 250 feet to 1800 feet (548 meters)
- High impedance for distances greater than 1800 feet

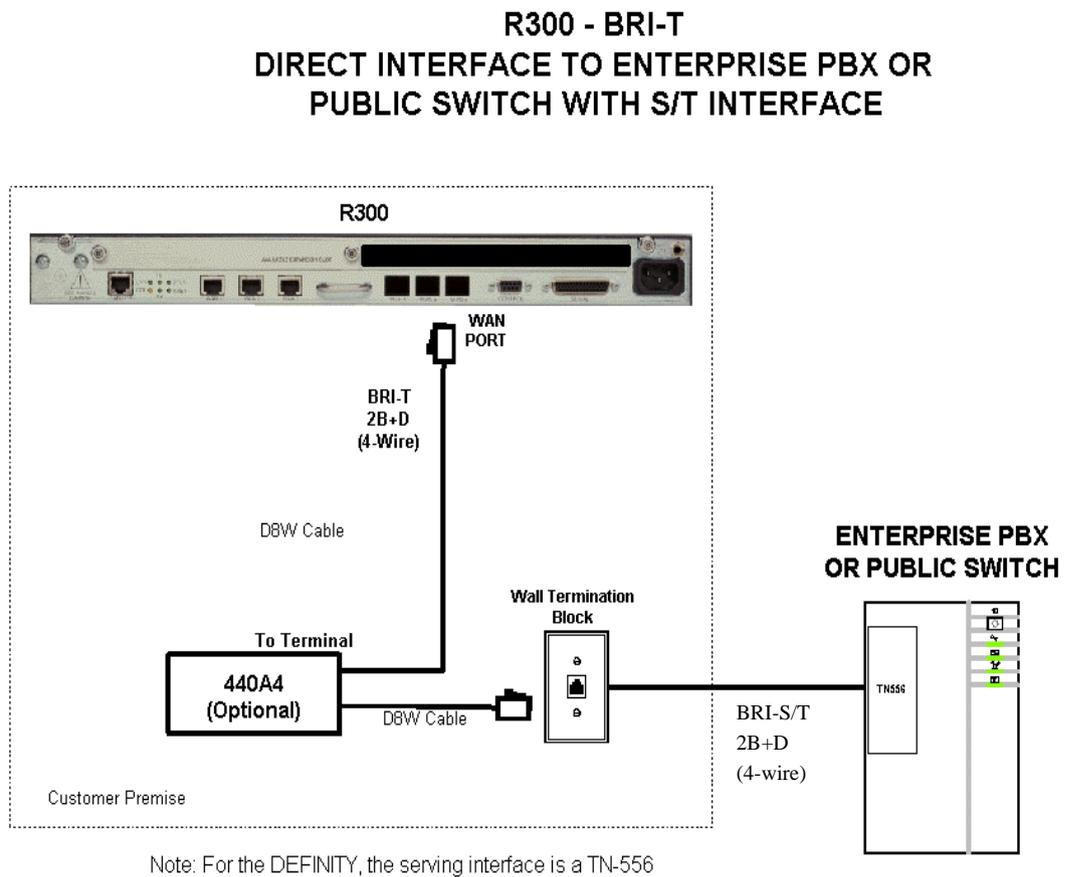


Figure 12. BRI-T Direct Interface to Enterprise PBX or Public Switch with S/T interface

The International Standard Organization’s ISO 8877 specifies the 8-pin connector (plug and jack) and the assignment of pins for the ISDN physical interface at the “S” and “T” reference points (also specified in ITU-T I.430). Table 2 contains the T-interface contact assignments. In common terminology, the 8-pin connector is an “RJ-45” connector.

Table 2. T-Interface Contact Assignments for Plugs and Jacks

Contact No.	TE	NT	Polarity
1	Not Used	Not Used	+
2	Not Used	Not Used	-
3	Transmit	Receive	+
4	Receive	Transmit	+
5	Receive	Transmit	-
6	Transmit	Receive	-
7	Power Sink 2	Power Source 2	-
8	Power Sink 2	Power Source 2	+

NT: This refers to "network" and is used to describe the actions of the network service provider as it relates to the transmit and receive actions for supporting the BRI interface.

TE: This refers to "terminal equipment" and is used to describe the actions of the end system equipment as it relates to the transmit and receive actions for supporting the BRI interface. The R300 operates in the “TE” mode.

For transmit and receive pairs, the contact designated “+” is the conductor of the pair for which the framing pulse should be relatively positive. It is not necessary to distinguish the individual conductors of transmit and receive circuit pairs in interface cables or extension cords in point-to-point interconnections. However, the polarity of individual conductors of the transmit and receive circuit must be common to all terminals in a multipoint arrangement. This means that the framing pulse will be relatively positive on the same conductor for all terminals (including test equipment) in a multipoint arrangement.

Figure 13 illustrates an environment in which the R300 has its S/T interface connected through a network termination device to convert the 4-wire S/T interface into a 2-wire U interface. Since the ISDN BRI standards efforts spanned several years, there were several “generations” of terminal equipment (and NT1’s). In the United States there is an older version of ISDN offered as “Custom ISDN”. This is served off of 5ESS switches and requires an NT1 device that supports an older physical layer encoding that requires an AMI data format. Subsequently in the United States a newer service definition (National ISDN-1 and National ISDN-2) were introduced. These require NT1 units that support the 2B1Q data encoding format.

Furthermore, the NT1 units must be powered by either a stand-alone power supply or some form of power transformer with wire cable translator to provide Power Source 2 powering of -40 volts and a ground potential on the fourth pair (pins 7 and 8). As one example, Figure 13 shows a 400B2 Adapter. This adaptor gets power from a AC to DC power transformer. It connects directly via a standard 8-wire modular cable to the input jack on the NT1 unit. The output of the NT1 device is connected directly via a 4-wire modular cable to the BRI WAN port on the R300.

⇒ NOTE:

For the connection between the R300 BRI WAN port and the NT1 device, pins 7 and 8 (power source 2) should not be used because the R300 shorts them to ground through an AC capacitively coupled path.

A practical technique to satisfy this is to use a 4-wire (D4W) modular cord that only allows pins 3, 4, 5, and 6 to be conducted.

**R300 - BRI-T
INTERFACE VIA NT-1 DEVICE TO ENTERPRISE PBX OR
PUBLIC SWITCH WITH U INTERFACE**

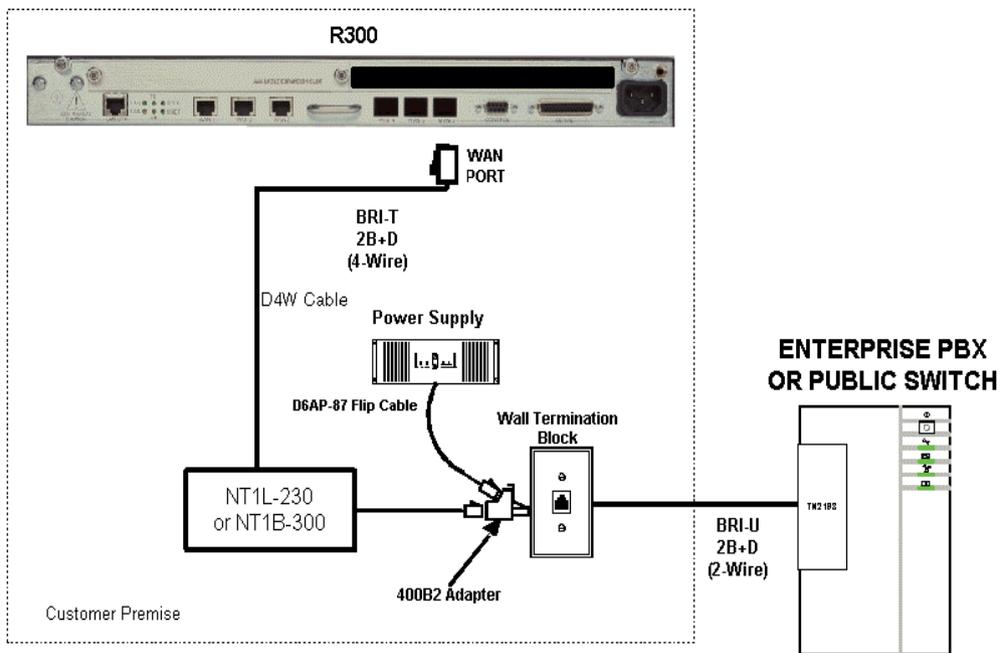


Figure 13. BRI-T Interface Via NT-1 Device to Enterprise PBX or Public Switch with U Interface

BRI Interface: Hints in Placing an order for ISDN Service

Before you contact your ISDN service provider, whether it's the telephone company or PBX administration, obtain answers to the following questions:

- What is the vendor and model of the switching equipment?

This would be the manufacturer of the central-office switch (examples would be Lucent Technologies 5ESS, Northern Telecom, Siemens). If you are interfacing to a PBX, you need to know which switch type that it conforms to.

- What is the type of ISDN service that you will receive?

In North America, this would be a choice between some form of custom ISDN or National ISDN service. In other countries in the EMEA and CALA and APAC regions, the specification would be for the country type. Some services will offer the choice of point-to-point or multi-point at the physical layer.

When you are ordering ISDN service, record the directory numbers (PSTN DN's) and the service profile identifiers (SPIDs) that the ISDN service provider assigns. Normally, the provider will assign two directory numbers and the appropriate SPIDs.

The administration of these parameters is discussed in [Chapter 5, "Avaya R300 Administration"](#).

Avaya R300 BOOTP Relay and DHCP

BOOTP Relay via the R300

The R300 supports the feature of BOOTP Relay. This allows an IP client (data or voice) located on the local Ethernet of the R300 to send a request to a DHCP server connected to the system IP network in front of the R300. The R300 will relay the information across itself to or from the IP network. [Figure 14](#) shows an illustration of this.

The operation of BOOTP proceeds as follows. Local clients (voice or data) send a DHCPDISCOVER message and the R300 will forward these messages across the IP WAN interface toward a DHCP server.

The network based DHCP server responds with a DHCPOFFER message which the R300 forwards back to the local client. See [Figure 14](#) for a graphical depiction.

In this application, clients may be an IP Softphone, an IP Telephone, or an IP-based data client (such as a PC).

Avaya R300 With Local Lan Devices Using BOOTP Relay

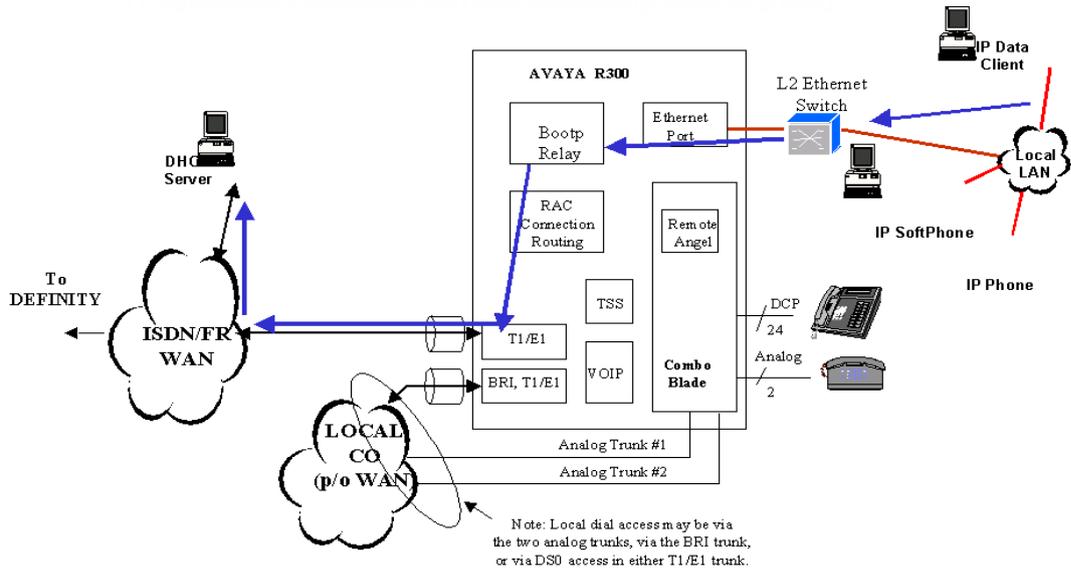


Figure 14. Avaya R300 With Local LAN Devices Using BOOTP Relay

DHCP for IP client support

⇒ NOTE:

The standard DHCPOFFER protocol message will assign an IP address in the method described in this section. This works fine for standard data clients, such as PCs. The Avaya IP phone, however, also requires that the following supplementary information can be provided:

- A CLAN IP address.
- A CLAN TCP port number.
- The address of the TFTP server and its file directory path (optional).

The support of exchanging this additional information as part of the DCHPOFFER protocol message is not available in the initial release of R300 Release 1.1 software. As soon as this feature code is tested, it will be made available on the Avaya R300 support website at <http://support.avaya.com/comsys/definity/r300>.

DHCP is a method of assigning IP addresses to end points on a dynamic (as-needed) basis as opposed to a static basis. The operation of the DHCP feature is covered in IETF specification RFC 2131. This feature allows for better management of IP addresses by an enterprise. If a customer wishes to have their IP clients operate with dynamic IP address assignment they can administer the R300 to act in the role of a DHCP server. In the administration (see [Chapter 5](#)) they would enable the DHCP Spoofing feature. R300 operation with this feature enabled is described in [Figure 15](#) and in the following text.

The R300 offers the following IP address assignment:

- Three unique IP addresses, which may be mapped to three unique Ethernet MAC addresses.
- Two 20-address pools of contiguous IP addresses.

The R300 shall respond to an incoming DHCPDISCOVER message by looking first to see if there is a match with one of three ‘reserved’ IP addresses. If it makes a match, it shall offer that reserved address in the DHCPOFFER message. If there is not a match, the R300 shall offer an address from its pool of 40 addresses (two pools of twenty) in a sequential fashion as the R300 traverses its pool. Note that administration commands in the R300 are used to load these DHCP server-supplied IP addresses.

DHCP Service to Local R300 LAN Supported CLIENTS

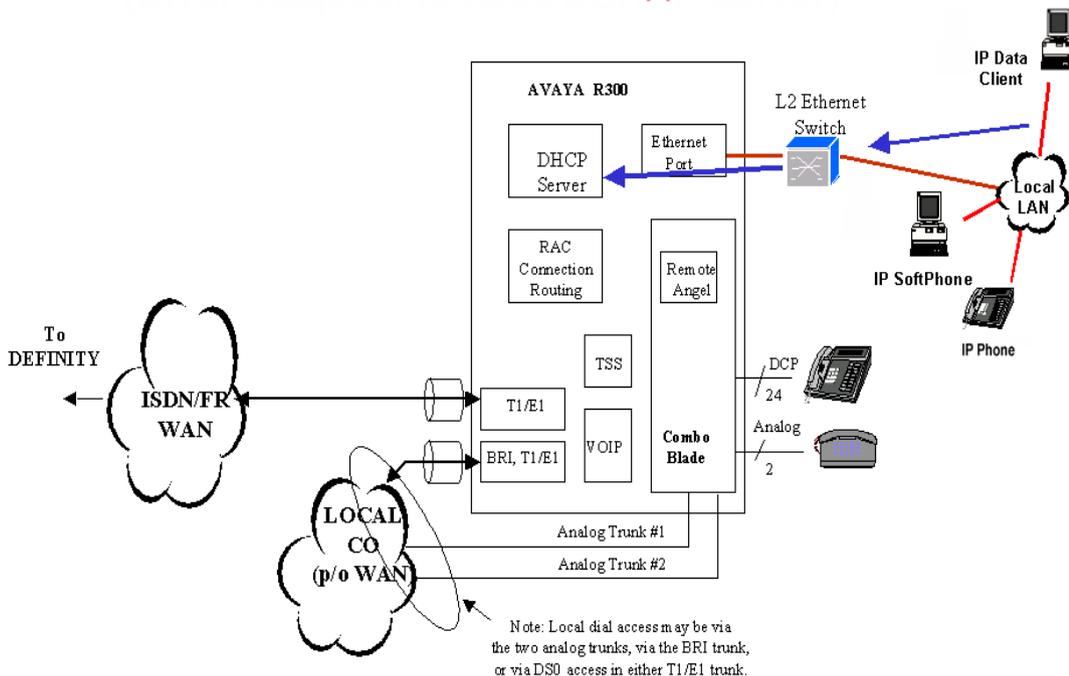


Figure 15. DHCP Service to Local R300 LAN Supported Clients

As a further application of the DHCP server feature, [Figure 16](#) illustrates the environment wherein other external IP equipment could make access through a routed IP network to access the DHCP server feature in the R300.

In this diagram, an IP client in a work-at-home-office, could send its DHCPDISCOVER message out via its WAN router (provided that the router supports BOOTP relay) and this message could be routed into the DHCP server on the R300. At this point in operation, the R300 would look first for a direct match with one the “three” reserved IP addresses. If there is not a match, the R300 would then offer an address from its pool of 40 addresses in a sequential fashion.

DHCP Service to Associated DEFINITY Managed IP Client Associated with the Remote Office

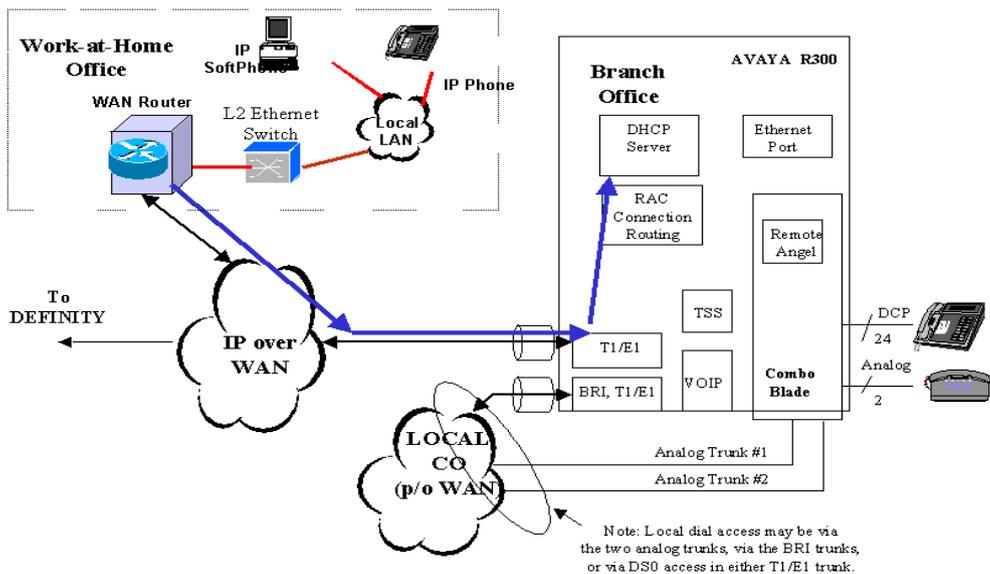


Figure 16. DHCP Service to Associated DEFINITY Managed IP Client Associated with this Remote Office

System management for the Remote Office

The system management of the Remote Office consists of two functional subsystems:

- DEFINITY main switch
- Avaya R300 voice/data switch

Administration of the DEFINITY system and the Avaya R300

You administer the DEFINITY system via a SAT interface and/or via the Avaya Site Administration or DEFINITY Network Administration (DNA) tools.

The Lucent-Ascend MAX 3000 Command Line Interface manages the administration of the Avaya R300. Within the Avaya R300, the TAOS operating system supports a menu-driven administration system. This system provides for the full administration of the Avaya R300 Combo Blade's voice features. [Figure 17](#) shows the current tools available for configuration management on the Avaya R300.

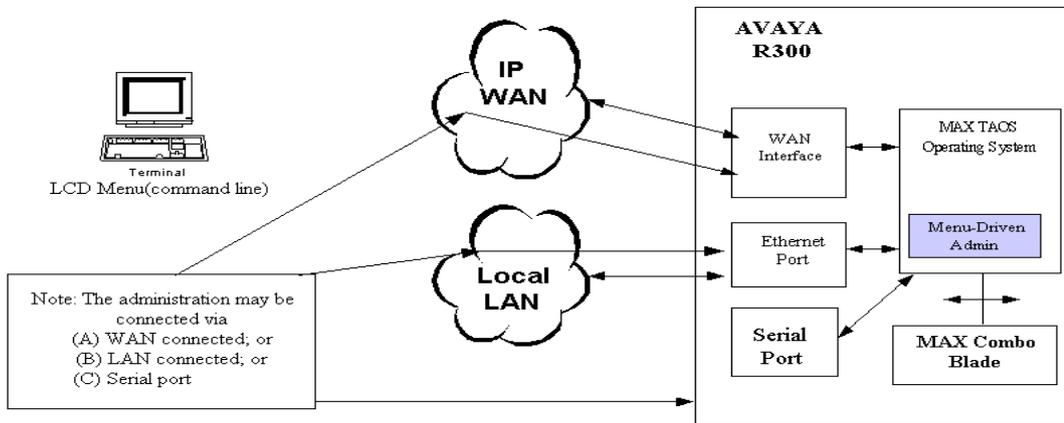


Figure 17. Avaya R300 Administration System

Fault management of the DEFINITY system and the Avaya R300

You can manage the DEFINITY system for fault and performance via a SAT interface and/or via the DEFINITY Network Management (DNM) system. The DEFINITY Network Management (DNM) product as well as Lucent-Ascend's NAVIS Network Management product operate on the HP OpenView network management application platform. In fact, they both concurrently can run together under a common platform. The NAVIS Access manager was specifically developed to support the Lucent-Ascend Max product family (including the MAX 3000, upon which the Avaya R300 is based).

The Avaya R300 is interoperable at the SNMP packet level with both HP Openview and University of California-Davis (UCD) network management applications.

The NAVIS Access network management tool or any generic SNMP manager with an MIB compiler tool set provides the Avaya R300 with fault management and performance management. As long as your network connection supports IP-based communication, these network management systems can communicate with the Avaya R300. The SNMP management tools may communicate with the Avaya R300 via a WAN-based IP network, a local LAN, or with a directly connected serial communications port. See [Figure 18](#).

Chapter 6 of the *Ascend Max 3000 Administration Guide* describes how to configure SNMP. It also describes how to configure the SYSLOG feature on the R300.

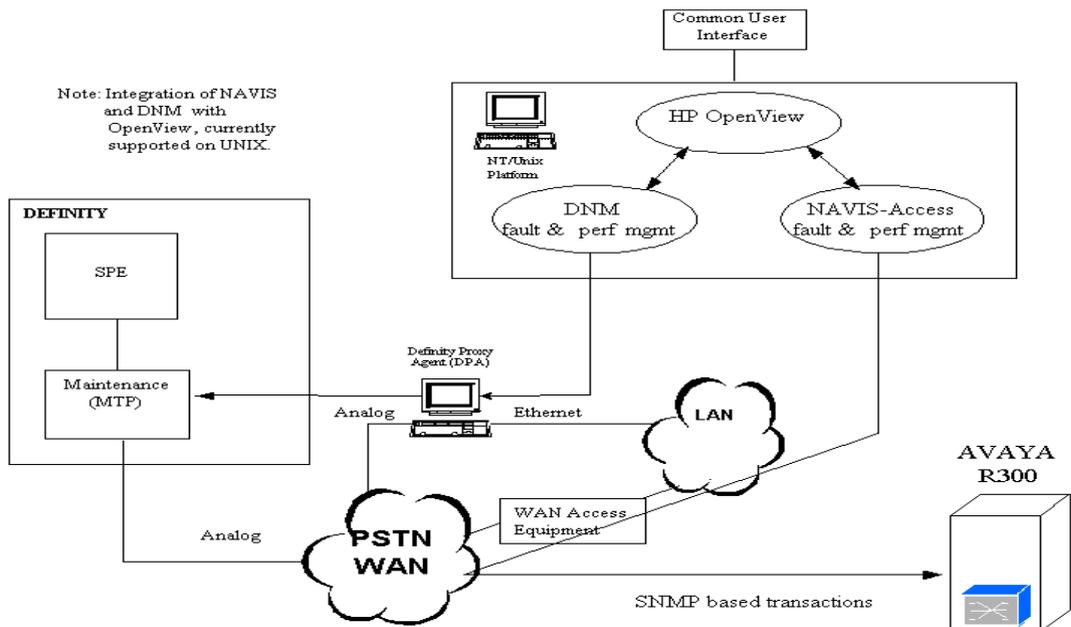


Figure 18. Avaya R300 Fault & Performance Management

What's new with Release 1.1

The Avaya R300 Release 1.1 contains the following new features and enhancements:

- Two analog, 600 ohm loop start trunks which are managed as a separate IP signaling group.
- A separate R300 product model (MX30-6ST-DRM) which supports a BRI-ST WAN interface.
- The introduction of a larger capacity DSP card (DSP30) which supports 30 VoIP channels.
- Support for a secondary gatekeeper (CLAN).
- The ability to provide re-order tone to stations and/or provide signaling to the DEFINITY system or the network that the DSP resources are not available to complete the call request.
- Support of DHCP and BOOTP Relay.
- SNMP MIP enhancements and HP Openview interoperability.

As more information about the R300 features becomes available, this document will be updated on the customer support website (see [“How to get this book on the web”](#) on page [ix](#)).

What is the Avaya R300?

The Avaya R300 Remote Office Communicator is a small, rack-mountable unit that features two expansion slots. The left slot, as you look at the back of the unit, houses a DSP blade (for Voice over IP option). Another slot houses the new Combo Blade which supports 24 two-wire Digital DCP stations, two analog stations, and two analog (600 ohm) loop start trunks. A single DEFINITY switch can support multiple Avaya R300 units as described in [Table 3](#).

Table 3. Number of Avaya R300 units supported on DEFINITY platforms

DEFINITY Platform	Max # of Avaya R300 units supported
G3r	250
G3si	80
G3csi	80
DEFINITY ONE	16
IP600	16

The Avaya R300 and DEFINITY IP Solutions endpoints use common DEFINITY call processing resources. This means that the number of endpoints connected to the Avaya R300 units and the number of IP Solutions endpoints supported by the main DEFINITY system are included in the total number of IP endpoints allowed by the system's capacity.

The Avaya R300 is a cost-effective method for providing the full range of DEFINITY functionality to a remote site. End users at the remote site will have the same capabilities as users "directly connected" to the DEFINITY switch at the main site. The Avaya R300 also provides voice and data convergence since voice and data can share the same WAN link between the DEFINITY system and the remote office.

A single DEFINITY switch can support multiple signaling groups as described in [Table 4](#).

Table 4. Number of signaling groups supported on DEFINITY platforms

DEFINITY Platform	Max # of signaling groups supported
G3r	416
G3si	110
G3csi	110
DEFINITY ONE	46
IP600	46

The digital trunks (2 T1 trunks for R300 T1 model, 2 E1 trunks for R300 E1 model, or 6 BRI trunks for R300 BRI model) are managed by a single DEFINITY signaling group. The analog trunks (2 for any given R300 model) are managed by a second DEFINITY signaling group. A customer is not required to use these local trunk interfaces, but if these are administered, there would be a maximum of two signaling groups per R300.

With the application of hop-on/hop-off gateway (see [Figure 8 on page 11](#)), it is possible for a station user on the DEFINITY system or a DEFINITY managed IP phone to dial a trunk access code to select routing out via the trunk gateway on the R300 and access the PSTN via its local access trunks. The call that is directed out to the R300's local access trunk would be utilizing an IP signaling group and virtual trunk group member to effect that call scenario.

Requirements and constraints for setting up the Avaya R300

The following sections describe requirements and constraints that may affect the setup of the Avaya R300 Remote Office Communicator.

DEFINITY system requirements

The main DEFINITY system may be a DEFINITY G3r, G3si, G3csi, DEFINITY ONE, or an IP600. It must use DEFINITY Release 9 (R9) or a newer release software. The remote office option must be enabled on the System-Parameters Customer-Options screen. The DEFINITY cabinet housing the connection to the Avaya R300 may be either a PPN (Processor Port Network) or an EPN (Expansion Port Network).

To administer analog or digital stations and analog or digital trunks on the Avaya R300, you must subscribe to the appropriate Right to Use (RTU) software.

Number of ports and Avaya R300 units

For a list of the maximum number of station and trunk ports, TN799C C-LAN boards, TN2302AP Media Processors supported, as well as the maximum number of Network Regions that can be administered, please see the *DEFINITY Enterprise Communications Server: System Description* for your software release

The number of TN2302AP IP Media Processors required to support your remote offices is based on the volume of traffic offered by the active calls on the Avaya R300 units. On average, a general assumption is that one third of the traffic is carried over the link between the Avaya R300 and the DEFINITY switch, but the traffic is also based on the percent of shuffled calls. For more information about shuffling, see [“Shuffling” on page 41](#).

Number of terminals and trunks supported by the Avaya R300

An individual Avaya R300 supports 26 stations (24 DCP and two analog). For countries which use 600-ohm impedances, the Avaya R300 also supports two 600-ohm loop-start CO analog trunks. These two analog trunks support the feature of emergency transfer. See [“Emergency transfer to the Remote Office” on page 13](#).

The following are the maximum number of DS0 trunks available:

- 24 DS0 trunks available per T1 interface with robbed bit signaling (the Avaya R300 supports a two-T1 model) or 23 with ISDN PRI T1.
- 30 DS0 trunks per E1 (European Standard) trunk (the Avaya R300 supports a two-E1 model)
- 2 DS0 trunks in another product model available per BRI trunk (the Avaya R300 supports a six-BRI model).

The total number of DS0 trunks in a given configuration is determined by the number of each type of trunk.

Types of terminals supported by the Avaya R300

The Avaya R300 can support DCP and analog phones directly and can support IP Telephones and IP Softphones through its networking component. DCP and analog phones (and other analog devices) can be connected directly through the Avaya R300 using the Interconnect unit. IP phones must be linked through a data switch or external routing device from the Avaya R300's Ethernet port.

Table 5 describes the DCP and analog phones supported by the Avaya R300.

Table 5. Supported telephones

2-wire DCP phones

(support for I1 channel only)

64xx Series:

- 6402 (non-display)
- 6402D (display)
- 6408+ (non-display with speakerphone)
- 6408D+ (display with speakerphone)
- 6416D+ (display with speakerphone)
- 6416D+M (display, with analog module)
- 6424D+ (display with speakerphone)
- 6424D+M (display with analog module)
- 8405D+ (display with two-way speakerphone)
- 8410 (non-display with two-way speakerphone)
- 8410D (display with two-way speakerphone)
- 8411D (display with analog and asynchronous connectors)
- 8434DX (display with two-way speakerphone)

84xx Series:

- 8403 (non-display with one-way speakerphone)
- 8405B (non-display with one-way speakerphone)

90xx Series:

- 9031DCP (supports transtalk wireless base station)

Callmaster Series:

- Callmaster IV
- Callmaster V
- Callmaster VI

Analog phones

- 6210
 - 6218
 - 6220
- model 2500 sets
(Post 1985 with electric ringers)

NOTE:

The R300 only supports the I1 channel for a given DCP station set. For modules that support both an analog port and the digital handset, one or the other may be in active use, but not both.

To set an 8411D phone to use the I1 channel, on the keypad of the phone type SHIFT - MUTE - 4 - 2



NOTE:

The 6416D+M, and the 6424D+M phone requires a model 100A Analog Interface Module in the base of the phone set. The dip switches for these phones must be set as follows:

- Left switch to “1”
- Right switch to “phone”

The majority of the DCP phones (see exceptions below) receive phantom power through the tip and ring (pins 4&5). This power is supplied by an electronic battery feed circuit on the Avaya R300's Combo Blade.

-48 volts DC is supplied to the Combo Blade via the 50-pin female connector on the Y-cable (see [“50-pin female connector on Y-cable”](#) on page 33 for details)

The following phones do not receive phantom power in the manner detailed above:

- 8411D phone:

All of the power comes through pins 7&8. This is aux-power, which may be supplied by either a separate local 1151A power supply, or by the Avaya R300 Interconnect.
- 6416 D+M phone:

The power for the DCP part of the set comes via phantom power over pins 4&5 (as above)

However, the power for the 100A aux-module comes through pins 7&8 to drive the analog port. This port will not function without power to these pins.
- 6424 D+M phone:

Power is supplied in exactly the same manner as for the 6416 D+M.

Power and physical attributes - Avaya R300

Table 6 describes the dimensions and power attributes of the Avaya R300 unit.

Table 6. Avaya R300 attributes

Attribute	Value
Input Power Voltage	100 VAC-240 VAC Universal Input
Input Power Frequency	50/60 Hz
Input Power	135 W maximum
Fuse	5A/250 V (not user-accessible)
Current	1.125 A maximum
Weight	17 lbs (7.7 kg)
Height	1.72" (4.37 cm)
Width	17.62" (44.76 cm) [19"(46.55 cm) rack mount]
Depth	16" (40.64 cm)
Max Heat Loss	460 BTU/hour

Avaya R300 Interconnect module

One Avaya R300 Interconnect module is included with each Avaya R300. This provides an effective way to interconnect stations and trunks with the Avaya R300. Each Interconnect module supports 24 DCP stations, two analog stations, and two analog CO trunk interfaces. You do not need to use all of these connections for every installation, and the Avaya R300 only supports the analog CO trunks in countries which support 600 ohm loop-start service.

The Interconnect module also supplies power to the Avaya R300's Combo Blade to power the DCP stations. Specifically, the Interconnect module provides 30W of -48VDC which is used to provide the native "phantom" power for each DCP station (pins 4&5). If the Interconnect module is not used, the installation must provide "phantom" power for each DCP station some other way (for example, 110-interconnect punch down wall-field using an Avaya 1145 or equivalent -48VDC power source).

The Avaya R300 Interconnect module provides auxiliary power to pins 7 and 8 for the 24 DCP connections so that a customer can use most auxiliary equipment without need or concern for local power. This allows customers to use auxiliary equipment such as adjunct speakerphones, headsets, and additional displays with auxiliary power already available. Specifically, each DCP connection has a current limited auxiliary power of 6 Watts (-48VDC). The yellow LED associated with the DCP modular jack will light, indicating a warning condition, if more than 6 Watts of auxiliary power is drawn (symptomatic of a short).

Power and physical attributes - Avaya R300 Interconnect module

Table 7 describes the dimensions and power attributes of the Interconnect Module.

Table 7. Avaya R300 Interconnect module attributes

Attribute	Value
Input Power Voltage	100 VAC-240 VAC Universal Input
Input Power Frequency	50/60 Hz
Input Power	192 W maximum
Fuse	Power supply is fused for protection (not accessible). Auto-protect for overcurrent, overvoltage on output, over temperature
Current	1.6 A maximum
Weight	2 lbs (0.9kg)
Height	1.72" (4.37 cm)
Width	17.62" (44.76 cm) [19"(46.55 cm) rack mount]
Depth	8" (20 cm)
Max Heat Loss	284 BTU/hour at full load

Cabling

The following cabling is provided with the Avaya R300:

- A power cord (appropriate for country of installation)
- A DB9-DB9 serial cable
- A 15-ft. (x-m) Y-cable (Comcode #84522991)
 - 64/68-pin connector on one end
 - DCP (male) amphenol connector on one leg of Y
 - analog (female) amphenol connector on other leg of Y

⇒ NOTE:

While the cable that comes with the Avaya R300 is fifteen feet long, you can add additional length to the cable. Additional length should not allow the distance between the Avaya R300 and the phone to exceed 1000 feet.

⇒ NOTE:

Off-premise DCP or analog phones may be used if a current protection device is used in series.

- A serial cable to connect external modem (optional). The control port uses a standard DB-9 female connector that conforms to the EIA RS-232 standard for serial interfaces.

The following cabling is provided with the Avaya R300 Interconnect module:

- A power cord (appropriate for country of installation)

Additionally, you will need CAT 3 or equivalent cables to connect analog and DCP stations to the R300 Interconnect unit. Also, all network (Ethernet) cable going to the Avaya R300 should be CAT 5 to provide the best voice quality possible.

For more information about cabling with the Avaya R300, see *MAX 3000 Hardware Installation Guide, Appendix D, Cables and Connectors*.

This provides a full description (including connector pin-out) for:

- RS-232 Control port.
- Ethernet LAN port.
- T1/PRI WAN interfaces (including cross-over cables).
- E1/PRI WAN interfaces (including cross-over cables).
- Serial WAN (V.35) port.

As a reminder, the document *MAX 3000 Hardware Installation Guide* is shipped in paper form and on the DEFINITY CD, with each R300 product. This may also be accessed with on-line documentation as described in [“On-line documentation” on page ix](#).

Wall field cabling

If you prefer to deploy the Avaya R300 with your existing wall field cabling, you can connect the Combo Blade Y-cable to a conventional wall field panel. The Avaya R300 Combo Blade must be powered with the Y-cable or the Avaya R300 will not function. The Y-cable has 50-pin, male and female connectors, which allows you to use standard, Telcom 50-pin cables to extend the reach of the Y-cable to the wall field location. The analog power plug has a gender changer, which makes the Y-cable compatible with existing 110-volt hardware.

50-pin male connector on Y-cable

The 50-pin male connector on the Y-cable provides a standard cut-down configuration for the 24, two-wire sets. For example:

- DCP-Tip 1 is connected to pin 26
- DCP-Ring 1 is connected to pin 1
- DCP-Tip 2 is connected to pin 27
- DCP-Ring 2 is connected to pin 2

This configuration pattern would continue for up to 24 DCP sets. The auxiliary power for the DCP sets is delivered on pins 7 & 8 of each set. Pin 7 is -48Vdc lead and pin 8 is ground (+48Vdc) lead.

The maximum power level for each DCP set is 6 watts or a 120-watt maximum of 48Vdc. The voltage range for operation must be greater than 42.5Vdc and less than 56.5Vdc. The current limit for each DCP set is 170mA.

50-pin female connector on Y-cable

The 50-pin female connector on the Y-cable provides the communication interconnection for the two analog stations and two analog loop start trunks, and provides the source of -48 volts to the Combo Blade (for phantom power of DCP sets).

When using analog sets, make the following pin connections:

1. Analog line-Tip 1 is connected to pin 26
2. Analog line-Ring 1 is connected to pin 1
3. Analog line-Tip 2 is connected to pin 30
4. Analog line-Ring 2 is connected to pin 5
5. Analog trunk-Tip 1 is connected to pin 42
6. Analog trunk-Ring 1 is connected to pin 17
7. Analog trunk-Tip 2 is connected to pin 46
8. Analog trunk-Ring 2 is connected to pin 21

The analog and power female connector on the Y-cable supplies 30 watts of -48Vdc to the Combo Blade (25 watts under load condition). The battery (-48Vdc) is connected to pins 9 & 13 while the ground (+48Vdc) is supplied on pins 34 & 38. You should provide both pairs of signals to maintain an appropriate impedance for the source to the -48 volts.

The voltage range for operation must be greater than 42.5Vdc and less than 56.5Vdc. The current must be limited to 750mA.

⇒ NOTE:

Power units must have safety and emission approvals appropriate for the country of installation. The power applied to the Combo Blade may require FCC part 68 registration or other country required registration.

⇒ NOTE:

Power supplied to the Avaya R300 Combo Blade must meet the following standards:

- Power Required: 48Vdc at 150W with a minimum of 42.5Vdc and a maximum of 56.5Vdc.
- Current Limit: Phantom Power 750mA total for the entire board.
- Current Limit: Auxiliary Power 170mA per DCP set.
- Line and Load Regulation: plus or minus 2%.
- Minimum Load: 0 Watts must regulate at no load.
- Protection: Overvoltage, Overcurrent.

Bandwidth engineering considerations

The bandwidth available for communication between the main DEFINITY ECS host and the Avaya R300 is dependent on several factors. The following gives a high level overview of the items for consideration. The remote office has three principle forms of traffic back to the host site (See Figure 19):

- Voice bearer traffic (carried on IP streams, over WAN network channels)
- H.323V2 call signaling or registration traffic (carried on IP streams, over WAN network channels) and tunneled maintenance
- IP routed data network traffic (carried on PPP streams, over WAN network channels)

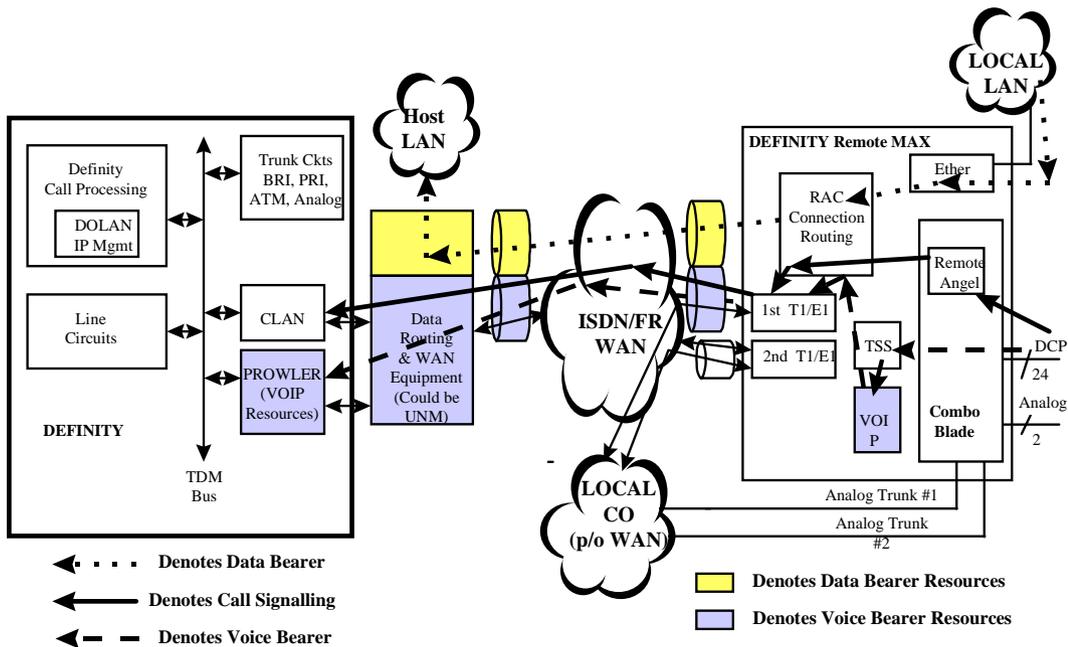


Figure 19. Bandwidth engineering for the Avaya R300

Five network components

The bandwidth traffic engineering depends on several components of the distributed network:

- IP Media Processors
- Host-side WAN or LAN access and routing equipment
- WAN Network Services Subscription
- Avaya R300 WAN Access Trunks
- Multi-Voice DSP Resources in the Avaya R300

IP Media Processor

In the DEFINITY system, the IP Media Processor (TN2302AP) supports audio conferencing and bearer conversion (from TDM based traffic to IP based traffic). To provide bearer conversion, this circuit pack supports voice processing algorithms that are housed in a DSP farm. This DSP farm currently is designed to support 32 channels of G.729 (compressed 8 Kbps encoding) and/or G.723 (compressed 5.3 Kbps) or 64 channels of G.711 (64 Kbps encoding) for voice bearer traffic. Although the TN2302AP supports G.723, this encoding scheme is not applicable to the Avaya R300. To scale to various switch processing needs, multiple IP Media Processors can be supplied in a switch configuration.

The DEFINITY system's call processing supervises the choice of CODECs used for voice. To conserve on bandwidth for WAN network services, use the G.729 CODEC.

Host-side WAN access and routing equipment

The WAN access equipment (access concentrator and router) support a variety of network interfaces and a certain capacity. For example, there may be multiple T1 or E1 interfaces available. With each physical interface, individual "pipes" may be used (these are most commonly DS0-based (64Kbps)). These pipes may use bonding to aggregate multiple DS0 components into a larger pipe.

For the WAN access equipment, there must be a negotiated service agreement between the customer and the enterprise or public network provider.

⇒ NOTE:

IP- based streams must always traverse some kind of physical channel.

WAN network services subscription

The supporting network is arranged or subscribed in terms of a negotiated network service between you and your service provider. This service is a function of the:

- service type such as fractional T1 or E1, full T1 or E1, frame relay, etc.
- number of network interfaces (for example, multiple T1 or E1)

Network requirements for any DEFINITY IP solutions customer is found in the *DEFINITY IP Solutions Voice Quality Network Requirements* or on the web at www.avaya.com.

Remote office WAN access trunks

The Avaya R300 offers a variety of WAN interfaces. The North American model offers two T1 interfaces. The Global models offer two E1 interfaces or six BRI interfaces. These interfaces are referred to as “digital trunks.” You can use them for network control or bearer communication to the host switch site, or local access trunks (to the local network central office).

Since the traffic within T1 or E1 trunks is actually a group of individually switched DS0 (64Kbps) pipes, you can direct traffic within these T1 or E1 facilities to two or more destinations. Therefore, both local trunk access traffic and traffic destined for the main switch host site may use a given Avaya R300 WAN trunk facility, depending on the facility configuration administered with the service provider.

With Release 1.1 on the Avaya R300, you have access to two analog loop-start trunks to provide additional bandwidth (two DS0's). You can use this added bandwidth for standard operational PSTN trunk bandwidth.

The Global 6-BRI S/T model offers six basic rate interface (BRI) ISDN ports.

MultiVoice DSP resources in the Avaya R300

In the Avaya R300, the bearer conversion (from TDM based traffic to IP based traffic) is performed in a Multi-Voice DSP module. The DSP-16 module supports 16 channels of TDM voice to IP voice conversion. Available with Release 1.1 software, the DSP-30 module supports 30 channels of TDM voice to IP voice conversion.

The Connection Management software module in the Avaya R300 determines if both parties are connected via local ports (either local access trunks or DCP or analog station sets) on the Avaya R300 unit. If the DEFINITY feature of “Shuffling” is enabled for both the R300 stations and the R300 trunks (known as IP signaling groups) and if both parties are local, the switch connection will be offered over a TDM based connection with that Avaya R300. Otherwise, a VoIP conversion channel is utilized for each party that is connected.

Engineering bandwidth for the five networking components

You must engineer the five networking components appropriately. Use the following equation as a guide:

- $\text{Total Bandwidth} = \text{Aggregate voice bandwidth} + \text{Aggregate data bandwidth}$

where:

- $\text{Aggregate Voice Bandwidth} = \text{Aggregate Voice Bearer bandwidth} + \text{Aggregate signaling bandwidth associated with these voice applications}$
- Aggregate data bandwidth is that bandwidth devoted for IP traffic between host and remote sites.

Aggregate voice bearer bandwidth is a function of the call traffic model. Combine the amount of equipped stations (DCP and analog) with the amount of equipped local access trunks, and calculate the amount of average traffic that is networked back to the DEFINITY system host site. A typical configuration could have as many as half of the calls networked back to the DEFINITY switch. In this example, you would multiply the number of endpoints by the CODEC used, to determine needed bandwidth.

The bandwidth for call signaling and registration traffic is estimated to be two DS0's in size for a full deployment of 24 digital stations, 2 analog stations, and a full complement of trunk group members.

Voice over IP bandwidth requirements

To help you properly estimate the bandwidth necessary for your IP network to transport signals to the main DEFINITY system, the following section explains the bandwidth used with various CODEC selections.

The signaling information between the Avaya R300 and the C-LAN board consists of H.323 compatible messages, which are exchanged over TCP/IP control links. The control links for the analog and digital phones are permanently established for the length of time that a phone is registered. There are two additional control links, one that is a shared signaling connection for the analog trunks, and one that is a shared signaling connection for the digital trunks. With rough estimation, an active signaling channel consumes about 3 Kbps bandwidth.

Calculating the amount of bandwidth that voice encoded over IP requires is a little more complex. The R300 offers a choice of CODECs from the G.711 and G.729 family at the point of call registration. The DEFINITY system will select a particular CODEC at the point of call establishment.

Not including overhead, the CODEC bandwidth required for each call is as follows:

- For G.711: 64 Kbps
- For G.729: 8 Kbps

The packet “size” is sometimes expressed in units of time (in milliseconds). The following formula yields the packet size, expressed in bits:

- For G.711: (64 Kbits/sec) x (msec/packet) = number of bits of payload per packet
- For G.729: (8 Kbits/sec) x (msec/packet) = number of bits of payload per packet

These formulas can be applied to various packet sizes (expressed in ms) to obtain the number of bits of payload per packet for various packet sizes.

Table 8. The Number of Bits of Payload per Packet for Various Packet Sizes

Packet “size”	Number of bits of payload/packet (G.711)	Number of bits of payload/packet (G.729)
10 ms	640	80
20 ms	1280	160
30 ms	1920	240

⇒ NOTE:

The number of bits of payload per packet depends on the packet size, but is independent of the sizes of the individual frames contained in that packet. For example, a packet size of 60 ms could be referring to six 10 ms frames per packet, or three 20 ms frames per packet, or two 30 ms frames per packet, etc.

Next we consider overhead due to packet headers. Each packet includes a 464-bit header (regardless of CODEC and packet size) in addition to its payload.

The header is comprised of the following on a typical LAN based stream:

- Ethernet header: 14 Bytes
- IP header: 20 Bytes
- UDP header: 8 Bytes
- RTP header: 12 Bytes
- Ethernet tail: 4 Bytes
- **Total: 58 Bytes (464 bits)**

So, the following is an expression for the overall one-way bandwidth (assuming no silence suppression):

- $BW = (BW, \text{ no overhead}) \times [(464 + \text{ bits payload per packet}) / \text{ bits payload per packet}]$

Plugging the number of bits of payload per packet (determined earlier) into this formula yields the following values for one-way bandwidth (including overhead):

Table 9. Values for One-way Bandwidth (including Overhead) Per Packet Size

Packet size	Bandwidth required (Kbps) for G.711	Bandwidth required (Kbps) for G.729
10 ms	110.4	54.4
20 ms	87.2	31.2
30 ms	79.5	23.5
60 ms	71.7	15.7

Network region design

The Avaya R300 can receive data from a T1, E1 or BRI line (depending on the model) and pass information through PSTN trunks, through drop/insert trunks (on the T1 model, only), and through the Ethernet to a LAN/WAN.

The switch administrator can assign the Avaya R300 to a network region in the same manner as other DEFINITY IP resources (such as the TN2302AP IP media Processor). The DEFINITY system permits the administrator to specify one set of CODECs to be used for connecting endpoints within a region and to specify a different set to be used for connecting endpoints in the region to endpoints in another region. Separate Avaya R300 units within a single office, or in multiple offices that are in close proximity through an IP network, may be assigned the same network region in order to share the same type of interconnectivity. Endpoints in different regions may be assigned with limited or no interconnectivity.

The use of network regions can insure that intra-region office connections use a high-quality CODEC with low delay while inter-region office connections use a low-bandwidth CODEC to conserve network resources. However, it is reasonable to configure multiple Avaya R300 endpoints into the same region if they share sufficient network interconnectivity.

The Avaya R300 supports the following IP audio CODECs:

- G.729
- G.729 Annex A
- G.729 Annex B
- G.729 Annex A/Annex B
- G.711 A-law 64k
- G.711 A-law 56k
- G.711 μ -law 64k
- G.711 μ -law 56k

The Avaya R300 always advertises CODECs to the DEFINITY switch at registration time in the order shown above. The order of the CODECs that the Avaya R300 advertises to the DEFINITY system at registration time is more important in determining which CODEC is selected for a call than the order of the CODECs in the CODEC set on the DEFINITY switch. The DEFINITY system will always attempt to utilize a CODEC at or near the top of an endpoint's capability set, even if that CODEC is low in the CODEC set.

For example, suppose a CODEC set on the DEFINITY system consists of G.711 μ -law 64K, followed by G.729, and G.723.1. The DEFINITY system would select G.729 for the CODEC on a call involving an Avaya R300 endpoint since G.729 is at the top of the Avaya R300's capability set. In fact, the only way to force the DEFINITY system to select one of the other CODECs over G.729 is to have a CODEC set that does not include G.729 at all.

G.729 is at the top of the Avaya R300's capability set because it is a low bit-rate CODEC. Since most Avaya R300s will be across the WAN from their host DEFINITY system, it is desirable to use a low bit rate CODEC like G.729 (8k), as opposed to G.711 (64k) to conserve WAN bandwidth. To determine which CODEC will be used on a call by call basis, you will need to administer the DEFINITY system ip-codec-set, ip-network-region, and Inter Network Region Management (ip-network-region, page 2) forms.

When administering the DEFINITY switch, the administrator could place the Media Processor boards in network region 1, and place both the Avaya R300s in network region 2. The administrator would then create two CODEC sets. One of the CODEC sets (CODEC set 1) would contain G.729. The other CODEC set (CODEC set 2) would contain only G.711. The administrator would then specify that CODEC set 1 was to be used between network regions 1 and 2, and CODEC set 2 was to be used within network region 2.

If you do not identify network regions for the Avaya R300 endpoints, the switch will use the default network region for the C-LAN board that the Avaya R300 has registered to. The network region assigned to the Avaya R300 determines which C-LAN board calls will route through. The proper use of network regions will improve the quality of service to the Avaya R300 and the stations supported by the unit.

The stations supported by an Avaya R300 share the network region assigned to it.

You can also use network regions to define administrative considerations, in particular, Quality of Service (QoS) definitions. If different QoS values are used in different parts of the network, those parts should be defined as different regions. Use region-based CODEC selection algorithms and region-based interconnectivity rules when interconnecting IP-based endpoints.

Shuffling

Shuffling refers to an IP endpoint's ability to redirect its IP audio stream in the middle of a call. DEFINITY systems support shuffling, whereas most endpoints made by other companies are not capable of this feature. Shuffling reduces the resources required to switch audio calls, and eliminates the need to involve the Media Processor directly in an IP networked call.

For two IP endpoints' (softphone, IP phones, R300 stations) audio connections to be shuffled, both endpoints must be capable of handling the shuffling feature. This shuffling feature is based on the implementation of some optional procedures in H.245 for the "double-connect" stations and for some optional procedures in H.225 Fast Start for the "single connect" stations. The R300 has implemented the "single-connect" protocol. The DEFINITY system is made aware of the ability of endpoints to support shuffling by both the exchange of RAS procedures at registration time and through the DEFINITY system administration.

Prior to Release 9, all audio streams were set up between an endpoint and a Media Processor board on the DEFINITY system. If one IP endpoint called another, the IP audio was routed to an IP Media Processor board, converted to TDM audio, routed back to a Media Processor board, converted back to IP audio, and finally routed to the other IP endpoint.

This IP-TDM-IP model made things easier for the IP endpoints, but had drawbacks. First, the call between two IP endpoints used resources on the Media Processor board and DEFINITY backplane, even though the audio was simply looping back out to the IP network. Second, the audio quality suffered due to the unnecessary conversion from IP audio to TDM audio and back again to IP audio. Finally, the distance of the IP routed call was longer, causing increased network delays. For these reasons, it is preferable to set up the IP audio connection directly between two IP endpoints. For this to happen, however, the DEFINITY processor must have R9 or newer software and both IP endpoints must be capable of shuffling.

With shuffling enabled, the IP Media Processor actually establishes an H.323 audio connection temporarily to endpoint A and establishes a second connection to endpoint B, by opening logical channels to these endpoints. The channels are opened with a "null capability exchange" permission. When both channels are opened, the IP Media Processor closes the two channels and the H.323 signaling instructs the two endpoints to "shuffle" the call off the IP Media processor, and move it to the second IP endpoint.

The audio shuffling procedure may cause a disruption in the audio media exchange for a duration of approximately 200 milliseconds. The disruption may be longer for inter-network region call, or a call traversing multiple DEFINITY switches (PPN or EPN).

To implement shuffling on the Avaya R300, administer the DEFINITY system to shuffle all Avaya R300 stations and signaling groups. Specifically, enable the Direct IP-IP Audio Connections option on the following DEFINITY administration screens:

- Globally, on the Feature-Related System Parameters screen.
- On the IP Network Region screen that corresponds with the Avaya R300's network region.
- For each station on the Station screen (page 2).
- On the Signaling Group screen (only if using trunks on the Avaya R300).

C-LAN resources on the DEFINITY system

Each physically connected station that is administered as “TTI” or “named” on the Avaya R300 unit will require one active TCP/IP control link. Each trunk (digital or analog) will have a TCP/IP control link established for the duration of an active call. A control link will consume one socket in the C-LAN board, which has up to 442 sockets available for use.

The DEFINITY system needs a number of C-LAN circuit packs greater than or equal to the total socket usage divided by 442 and then rounded up.

Call connection examples

The DEFINITY system manages all calls from the Avaya R300 as IP network based calls. How each call is routed and what resources it uses depends upon what connection parties are involved, and whether the shuffling feature is enabled or disabled on the DEFINITY system host.

If the shuffling feature is disabled, or if one of the connected parties is a TDM based station or trunk, then the connection must transit through the R300’s VoIP conversion (DSP card), and travel across the IP network to the IP media processor card.

If the shuffling feature is enabled and the call involves two IP-based connections (IP softphone, IP phone, or station or trunk connected directly to the Avaya R300), then this call will be made without involving any connection to the IP media processor after the exchange of call progress tones and initial call establishment. In this situation, the DEFINITY system treats the call as if it were VoIP (connected as an IP-based call), provided that the Avaya R300 presents the call as VoIP. The Avaya R300 has an internal TDM-bus. If the R300’s connection management recognizes both parties are locally supported on the same Avaya R300 unit, it will direct the connection over the R300’s TDM backplane. This minimizes the delay on the call, and frees a DSP conversion channel.

The following are examples of call scenarios. They each contain a summary of the path by which the call would be established within the Avaya R300.

- a. DCP or analog station #1 connected to the Avaya R300 calls DCP or analog station #2 connected to the same R300.
 - This call would route over the TDM bus within the Avaya R300. It would not use VoIP conversion with the DSP 16 or DSP 30 card.
- b. DCP or analog station #1 connected to the Avaya R300 calls DCP or analog station #3 connected to another Avaya R300.
 - This call would route over the VoIP engine on the DSP 16 or DSP 30 card, which would convert it to voice over IP, then it would travel over the IP network to the second R300. This is known as a DEFINITY IP shuffled call.

- c. DCP or analog station #1 connected to the Avaya R300 calls an IP phone.
 - This call would route over the VoIP engine on the DSP 16 or DSP 30 card, which would convert it to voice over IP, then it would travel over the IP network to the second R300. This is known as a DEFINITY IP shuffled call.
- d. DCP or analog station #1 connected to the Avaya R300 calls DCP station #103 connected to the main DEFINITY switch.
 - This call would be routed over the DSP 16 or DSP 30 card which would convert it to voice over IP, then it would travel over the IP network to the IP media processor module on the DEFINITY system. The IP Media Processor module converts the call from IP-based to TDM-based. The call switches to the TDM bus, continues to the DCP line card and finally connects to the DCP station.
- e. DCP or analog station #1 connected to the Avaya R300 makes a local trunk call (either digital (T1, E1, or BRI) or analog trunk) out to the local PSTN network.
 - This call would route over the TDM bus within the Avaya R300. It would not use VoIP conversion with the DSP 16 or DSP 30 card.
- f. DCP or analog station #1 connected to the Avaya R300 makes a call via Dial access code to a trunk directly supported on the main DEFINITY switch.
 - This call would be routed over the DSP 16 or DSP 30 card which would convert it to voice over IP, then it would travel over the IP network to the IP media processor module on the DEFINITY system. The IP Media Processor module converts the call from IP-based to TDM-based. The call switches to the TDM bus, and continues to the trunk card.

VoIP Exhaustion

There may be situations during which the call conversion resources of the DSP 16 or DSP 30 card cannot support the number of calls being made from the Avaya R300. This is known as “VoIP exhaustion”. The following scenarios will help to explain how these calls are denied:

- a. VoIP exhaustion upon R300 station originated call request.
 - When a local R300 station (analog or DCP) goes off-hook and attempts to originate a call, if the R300 detects that there are no available VoIP DSP conversion channels, it shall issue re-order tone toward the R300 in accordance with the re-order tones listed in [Table 10](#).

Table 10. Re-order Tone Definitions for Avaya R300 Supported Countries

Country	Cadence	Frequency(ies)	Level	Duration	Footnotes
Global	Repeat	480Hz +620Hz	-24dBm	250ms on, 250ms off	1
Argentina	Repeat	425Hz	-11dBm	250ms on, 250ms off	
Australia	Repeat	425Hz	-11dBm	400ms on, 400ms off	
Belgium	Repeat	425Hz	-4dBm	200ms on, 200ms off	2
China	Repeat	440Hz	-11dBm	700ms on, 700ms off	1
Costa Rica	Repeat	425Hz	-11dBm	250ms on, 250ms off	6
Finland	Repeat	425Hz	-8dBm	250ms on, 250ms off	5
France	Repeat	440Hz	-11dBm	200ms on, 200ms off	
Germany	Repeat	425Hz	-4dBm	250ms on, 250ms off	
Hong Kong	Repeat	480Hz	-13dBm	250ms on, 250ms off	
Italy	Repeat	425Hz	-4dBm	200ms on, 200ms off	2
Japan	Repeat	404Hz	-16dBm	500ms on, 500ms off	3
Korea	Repeat	480Hz +620Hz	-24dBm	250ms on, 250ms off	1
Mexico	Repeat	425Hz	-4dBm	200ms on, 200ms off	2
Netherlands	Repeat	Repeat	-4dBm	200ms on, 200ms off	2
New Zealand	Repeat	400Hz +425Hz	0dBm	250ms on, 250ms off	
Singapore	Repeat	425Hz	-11dBm	500ms on, 250ms off	
Spain	Repeat	425Hz	-4dBm	200ms on, 200ms off	
Sweden	Repeat	425Hz	-45dBm	250ms on, 750ms off	
Switzerland	Repeat	425Hz	-4dBm	250ms on, 250ms off	4
UK	Repeat	404Hz	-16dBm	400ms on, 350ms off	
USA	Repeat	480Hz +620Hz	-24dBm	250ms on, 250ms off	1

Footnotes:

1. Same re-order tone as USA
2. Same re-order tone as Belgium
3. Same tone as busy tone
4. Same re-order tone as Germany
5. Estimated
6. Estimated
7. For those countries not listed, the 'GLOBAL' settings apply.

- b. VoIP exhaustion upon an incoming call request on an R300 analog trunk.
 - When an incoming voice call activation occurs on one of the analog trunks on the R300 and there are insufficient VoIP conversion channels to process the call, the R300's analog trunk state machine enters an ignore state. It stays in that state until the incoming analog trunk has quit ringing, and then the R300 returns to an idle state.
- c. VoIP exhaustion upon an incoming call request on an R300 ISDN trunk.
 - When an incoming voice call setup message is received on one of the digital message based signaling trunks (T1, E1, or BRI) and there are insufficient VoIP conversion channels to process the call, the R300's ISDN trunk state machine will return a "disconnect" message with an associated Cause IE value of "47". This will in turn cause the PSTN network switch to provide re-order tone to the calling party.
- d. VoIP exhaustion upon an incoming call request on an R300 robbed bit trunk.
 - When an incoming voice call activation occurs on one of the digital robbed-bit trunks on the R300 and there are insufficient VoIP conversion channels to process the call, the R300's trunk state machine enters an ignore state. It stays in that state until the incoming trunk has quit ringing and then the R300 returns to an idle state.
- e. VoIP exhaustion upon a DEFINITY system originated outgoing call toward the R300's trunks.
 - If the DEFINITY system sends an H.323 setup message to the R300 for a call directed toward the PSTN trunk gateway on the R300, and insufficient resources exist to process the call, the R300 shall return a "disconnect" or "release complete" message, along with a Cause IE value of "47". This will in turn cause the DEFINITY switch to provide re-order tone to the calling party.
- f. VoIP exhaustion upon a DEFINITY system (Legacy station, IP station, or station on another R300) originated outgoing call toward R300's station sets.
 - When an incoming voice call message is sent to the R300 and insufficient resources exist to process the call, the R300's state machine enters an ignore state. Since DEFINITY will have alerted the station via a tunneled control message (CCMS) over the signaling channel, this will cause the station set to ring. However, when the user picks up the handset, there will be no talk path. This is a function of the current DEFINITY architecture and will remain as the mode of operation.

Group Paging / Whisper Paging

These features are supported as part of the host DEFINITY's Conferencing feature. The invocation of these features does have an impact on the R300 operation because it requires that all of the parties must "meet" at the conference port of the Media Processor. For each party, there must be one DSP resource involved to provide the VoIP conversion.

Loudspeaker paging support

The Avaya R300 supports the use of an auxiliary loudspeaker paging system for the remote office. You may connect a paging system directly into one of the analog station ports on the R300 Interconnect module.

To access or test the paging system, you would originate a call at the DEFINITY system directed toward the analog station port on the Avaya R300. This call would activate a loudspeaker paging announcement in the remote office. You do not need to do any special administration of the analog station line on the Avaya R300 to enable this application. The analog station would be administered in “named” mode. This port will display as a registered endpoint in the host DEFINITY system after registration.

Fax support

You may connect a facsimile machine into one of the analog station ports on the Avaya R300 Interconnect module. Alternatively, you can connect the facsimile machine to the built-in analog port on a DCP station (such as the 8411D). If you use this alternative method, however, the individual station port cannot handle voice calls during simultaneous fax operation.

The Avaya R300 provides fax support over pure circuit-switched connections (group 3 fax).

All releases of the Avaya R300 support a group 3 fax operation (ITU-T standard T.4), provided that the entire pathway from the Avaya R300 analog port to the network connected facsimile machine contains only circuit-switched connections.

As explained in the “[Call connection examples](#)” on page 42, all calls involving two parties on the R300 are considered “IP Shuffled” from the perspective of the DEFINITY system call management programs. However the R300 does have the ability to constrain the calls between two local endpoints (in this application it would be an analog station and a local access trunk) to be switched over the TDM backplane of the R300. If the DEFINITY switch is set up with a TAC code or some other ARS dial code prefix to specify that the call be directed out toward the R300 local access trunk, this call connection will be preserved in a true circuit switching mode out to the PSTN network. The call will then traverse over the PSTN network and reach its destination G3 fax client.

Data Modem support

You may connect a data modem into one of the analog station ports on the Avaya R300 Interconnect module. Alternatively, you can connect the data modem to the built-in analog port on a DCP station (such as the 8411D). If you use this alternative method, however, the individual station port cannot handle voice calls during simultaneous data modem operation.

All releases of the Avaya R300 support a data modem operation, provided that the entire pathway from the Avaya R300 analog port to the network connected peer data modem contains only circuit-switched connections.

As explained in the [“Call connection examples” on page 42](#), all calls involving two parties on the R300 are considered "IP Shuffled" from the perspective of the DEFINITY system call management programs. However the R300 does have the ability to constrain the calls between two local endpoints (in this application it would be an analog station and an local access trunk) to be switched over the TDM backplane of the R300. If the DEFINITY switch is set up with a TAC code or some other ARS dial code prefix to specify that the call be directed out toward the R300 local access trunk, this call connection will be preserved in a true circuit switching mode out to the PSTN network. The call will then traverse over the PSTN network and reach its destination data modem client.

911 Emergency Assistance calls

The Avaya R300 serves to transparently extend the DEFINITY system’s capabilities to a remote location. In effect, the endpoints connected to the Avaya R300 function as if they were directly connected to the DEFINITY system. They share the same dial plan and have access to the full complement of functionality provided by the DEFINITY system. While feature and access-transparency are fundamental attributes of this solution, they have the potential to interfere with accurate delivery of 911 calls.

In the absence of an Avaya R300 E911 strategy, 911 emergency assistance calls from Avaya R300 endpoints could be improperly routed to the Public Safety Answering Point (PSAP) designated to receive emergency calls from the location of the main DEFINITY. These calls should be routed to the PSAP assigned to the Avaya R300 location. The E911 strategy for the Avaya R300 ensures that emergency assistance calls are routed to the appropriate PSAP. The Avaya R300 E911 strategy must account for two basic requirements:

- 911 calls originated from stations connected to an Avaya R300 must be selectively routed to the PSAP servicing the Avaya R300 location, and not to the PSAP servicing the controlling DEFINITY system.
- Avaya R300 - 911 calls must be accompanied by correct Automatic Numbering Identification (ANI) or caller ID information.

The Avaya R300 911 strategy takes advantage of the ability to associate a location designation with each Avaya R300 unit. Each DEFINITY system has the capacity to support up to 44 locations. Accordingly, each DEFINITY system provides the ability to accurately route 911 emergency access request calls to these locations. It is possible to support more than 44 Avaya R300 units using this strategy if multiple units are associated to a single location. In cases where one DEFINITY system needs to support more than 44 Avaya R300 units and these units do not map to 44 locations, this strategy must be augmented.

If a maximum of 44 locations is insufficient to accommodate a complex remote office configuration, accurate 911 call routing can be achieved using ARS Partitioning in conjunction with locations. This allows up to eight different routing options per location. Although the DEFINITY administration to accomplish this is fairly complex, this strategy provides sufficient routing alternatives to support the maximum number (250) of Avaya R300 units that can be maintained by a single DEFINITY system.

Possible remote office configuration

Figure 20 illustrates a plausible DEFINITY remote office configuration with two Avaya R300 units connected via a LAN or T1 interface to a central controlling DEFINITY system. One Avaya R300 is located in Holmdel, New Jersey and the other is located in Denver, Colorado. The controlling DEFINITY system is located in Chicago, Illinois. Consider the following diagram as a portion of a remote office configuration that exceeds 44 locations, and therefore requires the use of ARS Partitioning to support accurate delivery of 911 calls.

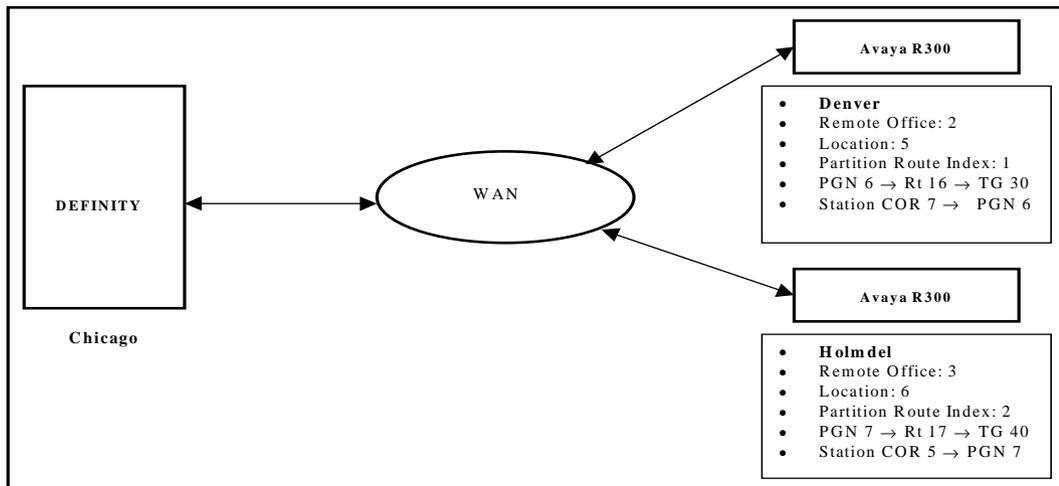


Figure 20. Remote office configuration for 911 strategy

Remote office 911 calling scenario

The following scenario applies to a remote office configuration that exceeds 44 locations, and therefore requires the use of ARS Partitioning to support accurate delivery of 911 calls.

1. An individual in Denver dials 911 from a station connected to remote office 2 in Denver, Colorado.
2. The digit string “911” is transmitted from the Avaya R300 to the DEFINITY system located in Chicago.

3. The DEFINITY system determines that the emergency call has originated from remote office 2, which is associated with Location 5. The COR assigned to the station used to place the call is 7 and the Partition Group Number (PGN) specified for COR 7 is 6.
4. ARS digit analysis of the string “911” for Location 5 indicates that the call should be routed based on criteria specified in Route Index 1, as administered in the Partition Routing Table.
5. Since the PGN assigned to the originating COR is 6, this indicates that the route pattern assigned to Route Index 1 - PGN 6 should be used to route this call. In this case the route pattern is 16.
6. Trunk Group 30 is the first, and only, preference in the list of trunk groups supported by Route Pattern 16. This trunk group is assigned to remote office 2.
7. The DEFINITY system sets up the call to be transmitted on a trunk interface connected to the Denver Avaya R300 and terminate to the correct PSAP in Denver.

DEFINITY system administration required to support the Avaya R300 E911 strategy

The following sections provide an overview of the DEFINITY system administration that is required to implement this strategy. This section does not provide a comprehensive overview of all of the administration that must be performed to support the remote office capability, but is focused on those parameters that are required to support a 911 strategy for the remote office capability.

System parameters customer options

To view the Feature-Related System-Parameters Customer-Options screen:

1. Type **display system-parameters customer-options** and press RETURN
2. Go to page 2 and look for the following:

```

Page 2 of X
OPTIONAL FEATURES

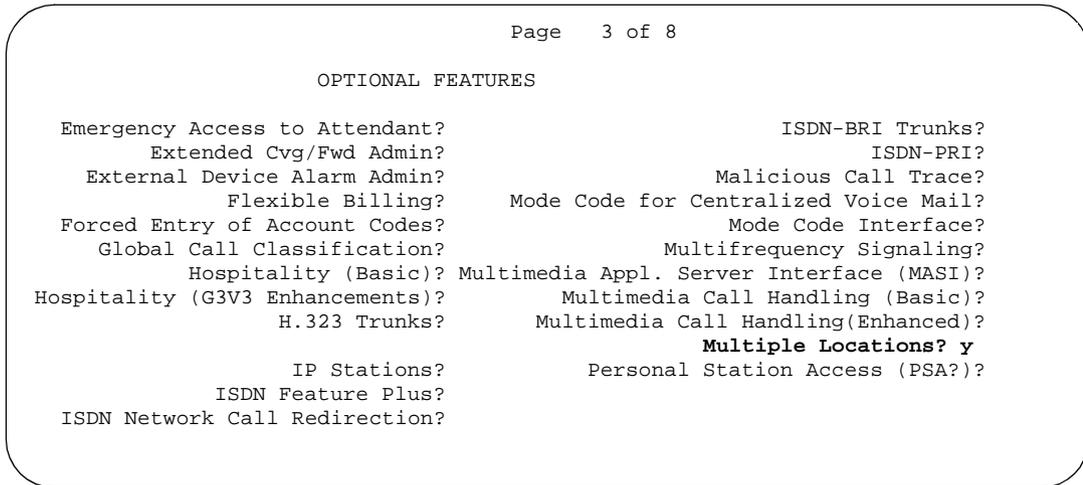
Abbreviated Dialing Enhanced List?
Access Security Gateway (ASG)?
Analog Trunk Incoming Call ID?
A/D Grp/Sys List Dialing Start at 01?
Answer Supervision by Call Classifier?
ARS? Y
ARS/AAR Partitioning? Y
ARS/AAR Dialing without FAC?
ASAI Interface?
ASAI Proprietary Adjunct Links?
Async. Transfer Mode (ATM) PNC?
Async. Transfer Mode (ATM) Trunking?
ATM WAN Spare Processor?
ATMS?

Attendant Vectoring?
Audible Message Waiting?
Authorization Codes?
CAS Branch?
CAS Main?
Change COR by FAC?
Cvg Of Calls Redirected Off-net?
DCS (Basic)?
DCS Call Coverage?
DCS with Rerouting?
DEFINITY Network Admin?
Digital Loss Plan Modification?
DS1 MSP?
DS1 Echo Cancellation?

```

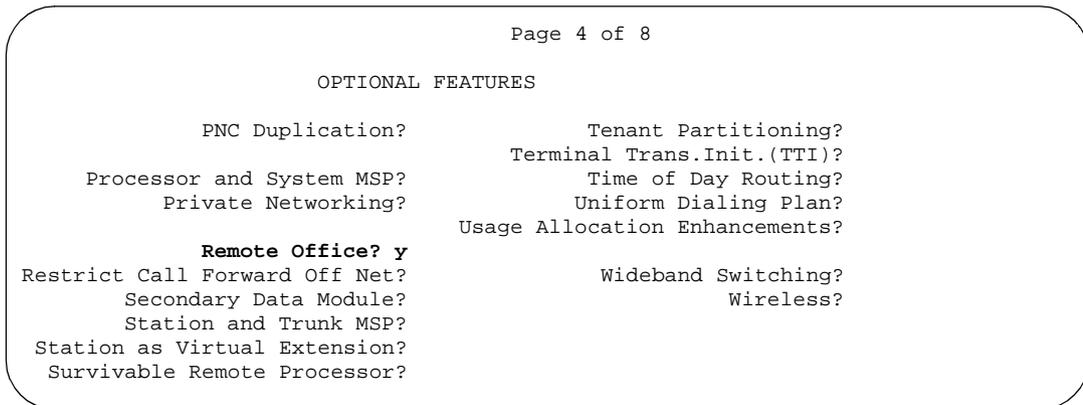
Screen 1. Optional Features screen (page 2)

3. Go to page 3 and look for the following:



Screen 2. Optional Features screen (page 3)

4. Go to page 4 and look for the following:



Screen 3. Optional Feature screen (page 4)

5. Check that each of these fields has been enabled (set as “Y” on the above screens):

- ARS
- ARS Partitioning
- Multiple Locations
- Remote Office

6. Press ENTER to effect the changes.

Multiple locations

The Multiple Locations capability, once restricted to the G3R platform, has now been extended to all DEFINITY platforms.

To administer Multiple Locations:

1. Type **change locations** and press RETURN

The following location form parameters must be administered to support the Avaya R300 E911 strategy

```

change locations                                     Page 1 of 3
                                     LOCATIONS
ARS Prefix 1 Required for 10-Digit NANP Calls? _

Number  Name                Timezone  Daylight-Savings  Number Plan
        Name                Offset    Rule              Area Code
1      Chicago-main          - 00:00   _1                312
2      Denver-R01           + 01:00   _1                303
3      Holmdel-R02          - 01:00   _1                953
4      _____          -  :    -           _____
5      _____          -  :    -           _____
6      _____          -  :    -           _____
7      _____          -  :    -           _____
8      _____          -  :    -           _____
9      _____          -  :    -           _____
10     _____          -  :    -           _____
11     _____          -  :    -           _____
12     _____          -  :    -           _____
13     _____          -  :    -           _____
14     _____          -  :    -           _____

```

Screen 4. Locations screen (page 1)

2. In the Name field, enter an alpha-numeric description of the location. For our example we have chosen Chicago-main, Denver-R01, and Holmdel-R02
3. In the Timezone Offset field, enter the offset, in hours and minutes, associated with the location relative to the main DEFINITY system location. For our example Chicago is the main site, so it has a 00:00 offset. Denver has a +01:00 offset, and Holmdel a -01:00 offset.
4. In the U.S., if the region associated with the location supports daylight savings time, a rule should be defined. Daylight savings rules are defined using the **change timezone** command. For our example, all of the regions support daylight savings time.
5. In the Number Plan Area Code field enter the area code assigned to the region associated with the location. For our example Chicago is 312, Denver is 303, and Holmdel is 953.
6. Press ENTER to effect the changes.

Remote office

The purpose of the remote office command is to assign parameters specific to a particular Avaya R300 unit.

To administer the remote office parameters:

1. Type **change remote-office <remote office number>** and press RETURN.

```
change remote-office 1
REMOTE OFFICE 1
      Node Name:
Network Region:
      Location:
      Site Data:
```

Page 1 of 1

Screen 5. Remote Office screen

2. Administer the fields as follows:

- The Node Name field should reflect the name as assigned the Avaya R300 in the IP Node Names form. To administer node names, type **change node-names ip <alphanumeric wild card>**.
- In the Network Region field, enter the number of the network region associated with the remote office. To administer network regions, type **change ip-network-region <region number>**. If a network region is not assigned to the remote office, the audio and QoS parameters associated with the C-LAN (TN799) that processes the connection will be used.
- In the location field, enter the number assigned to the location of the remote office. If no location is assigned, the field defaults to 1. For our example, the following locations would be assigned:
 - Chicago: 1
 - Denver: 5
 - Holmdel: 6
- In the site data field, enter an alpha-numeric identifier, such as the address of the remote office.

3. Press ENTER to effect the changes.

Class of restriction

For the purpose of ensuring that 911 calls are transmitted to the correct Public Safety Answering Point (PSAP), the Class Of Restriction (COR) associates a partition group number to a remote office station. For our example, we will change cor 7 for Denver and cor 5 for Holmdel.

To administer class of restriction:

1. Type **change cor <cor number>** and press RETURN.

```

change cor 10                                     Page 1 of 4
                                CLASS OF RESTRICTION

                                COR Number: 10
                                COR Description: supervisor

                                FRL: 0
                                APLT? y
Can Be Service Observed? n           Calling Party Restriction: none
Can Be A Service Observer? y         Called Party Restriction: none
Partition Group number:1           Forced Entry of Account Codes? n
                                Priority Queuing? n
                                Direct Agent Calling? y
                                Restriction Override: none
                                Facility Access Trunk Test? n
                                Restricted Call List? n
                                Can Change Coverage? n
Unrestricted Call List? _ _ _ _ _
                                Access to MCT? y
                                Fully Restricted Service? n
                                Category For MFC ANI: 7
                                Hear VDN of Origin Annc.? n
                                Send ANI for MFE? n_
                                Add/Remove Agent Skills? y
                                MF ANI Prefix: _____
                                Automatic Charge Display? n
Hear System Music on Hold? y         PASTE(Display PBX Data on telephone)? n
                                Can Be Picked Up By Directed Call Pickup? n
                                Can Use Directed Call Pickup? n

Group Controlled Restriction: inactive

```

Screen 6. Class of Restriction screen (page 1)

⇒ NOTE:

If time-of-day partitioning is turned on, the **partition group number** field will not appear on this screen. For information on administration of time-of-day partitioning, see the *DEFINITY ECS Administrator's Guide*.

2. Associate the partition group number to a remote office:
 - Assign a number from 1 to 8. The DEFINITY system will use this number to correlate a route pattern and a trunk group for 911 calls originated from this station. For our example we would use the following partition group numbers:
 - Denver: 6
 - Holmdel: 7
3. Press ENTER to effect the changes.

Partition routing table

The partition route table allows up to eight different routing options for a given dial string. For our example we will specify the following route indices:

- Denver: 1
- Holmdel: 2

To administer the partition route table:

1. Type **change partition-route-table index <index number>** and press RETURN.

```

change partition-route-table index 1                                     Page 1 of X
                          Partition Routing Table

                          Routing Patterns

Route
Index   PGN 1   PGN 2   PGN 3   PGN 4   PGN 5   PGN 6   PGN 7   PGN 8
1       _____  _____  _____  _____  _____  _____16  _____  _____
2       _____  _____  _____  _____  _____  _____  _____17  _____
3       _____  _____  _____  _____  _____  _____  _____  _____  _____
4       _____  _____  _____  _____  _____  _____  _____  _____  _____
5       _____  _____  _____  _____  _____  _____  _____  _____  _____
6       _____  _____  _____  _____  _____  _____  _____  _____  _____
7       _____  _____  _____  _____  _____  _____  _____  _____  _____
8       _____  _____  _____  _____  _____  _____  _____  _____  _____
9       _____  _____  _____  _____  _____  _____  _____  _____  _____
10      _____  _____  _____  _____  _____  _____  _____  _____  _____
11      _____  _____  _____  _____  _____  _____  _____  _____  _____
12      _____  _____  _____  _____  _____  _____  _____  _____  _____
13      _____  _____  _____  _____  _____  _____  _____  _____  _____
14      _____  _____  _____  _____  _____  _____  _____  _____  _____
15      _____  _____  _____  _____  _____  _____  _____  _____  _____
    
```

Screen 9. Partition Routing Table (page 1)

2. Administer the following fields:
 - PGN X: Enter the route pattern number assigned on the ARS digit analysis screen. For our example, the following route patterns would be used:
 - Denver: 16 under PGN 6 for index 1.
 - Holmdel: 17 under PGN 7 for index 2.
3. Press ENTER to effect the changes.

Installing the Avaya R300

The Avaya R300, a part of the Remote Office Solutions, allows you to support all the functionality available on your DEFINITY system from a remote location. The Avaya R300 is a combination switch and power supply that, along with an R300 Interconnect, connects your remote office to the main DEFINITY through a Wide Area Network (WAN) connection.

General instructions

- Follow all caution and warning labels and instructions marked on the equipment or included in these installation instructions.
- Installation and maintenance of the R300 Communicator and Interconnect units must be performed by service personnel. There are no user serviceable parts inside either the Communicator or Interconnect units.
- The maximum recommended operating ambient temperature for this equipment is 40°C (104°F). Allow sufficient air circulation or space between units when installing this product in a closed rack assembly. To ensure reliable operation and prevent overheating, the ventilation openings in the units must not be blocked or covered.
- If the equipment is to be mounted in a rack or cabinet that is not securely fastened in place, consideration must be given to avoid hazards due to uneven loading (overbalancing).
- For products installed in Nordic countries (except Central Office equipment), a type B plug or permanent connection must be used for connections to the main power supply.
- All intra-building communication wiring associated with the R300 system must be 26 AWG (0.13mm²) or larger.

AC power and ground



WARNING:

This equipment must only be installed and maintained by service personnel.



CAUTION:

Proper AC power and ground wiring is critical for proper and safe operation of this product and must be verified by trained service personnel. Any problems associated with this wiring must be corrected by a qualified electrician. Protective earthing The AC power circuit must be dedicated to the system and must not be shared with other equipment and must not be controlled by a wall switch. The AC receptacle should not be located under the MDF.



CAUTION:

The AC power circuit must be dedicated to the system and must not be shared with other equipment and must not be controlled by a wall switch. The AC receptacle should not be located under the MDF.



CAUTION:

System grounding must comply with the general rules for grounding contained in Article 250 of the National Electrical Code (NEC), National Fire Protection Agency (NFPA) 70, or the applicable electric code in the country containing the equipment.



CAUTION:

The R300 Communicator and Interconnect units contain auto-ranging power supplies (100 – 240 Vac, 50 – 60 Hz) and require 3 amps maximum current a piece. The AC power source can be 1 phase of 120 Vac with neutral (100 Vac for Japan) with a 15 amp circuit breaker, or 1 phase of 220 or 240 Vac (200 Vac for Japan) with a 10 amp circuit breaker. A single, dedicated AC branch can service both the R300 Communicator and Interconnect units. These units require a three-wire AC cord having either a NEMA 5-15P plug or an IEC 320 plug.



CAUTION:

To remove AC power from either the Communicator or Interconnect units, pull the AC power cord from the AC appliance coupler on the rear of the unit. Even when AC power is removed from the Communicator unit, the Communicator may still be receiving –48Vdc from the Interconnect unit. To remove all power from the Communicator, either the Interconnect unit AC power cord or the interconnection cable between the Communicator and the Interconnect unit must be disconnected.



CAUTION:

The Avaya R300 Unit does not support “Hot Plug-in”. The power cord must be disconnected when inserting or removing either the Combo Blade or the DSP card.

Equipment and information you will need

The main DEFINITY system requires the following:

- Release 9 or later software.
- A TN799C Control-LAN (C-LAN) circuit pack in a DEFINITY system to enable firmware download to the DS1 and the TN2302AP IP Media Processor modules (You can use a TN799B in the DEFINITY system as long as you have at least one TN799C C-LAN circuit pack to enable this feature).
- A TN2302AP IP Media Processor circuit pack.
- A Router or an access concentrator to serve as IP gateway.
- An IP address for the C-LAN circuit pack.
- An IP address for the IP Media Processor.
- A WAN Router (with Network Services).

The remote site requires the following:

- An Avaya R300 (and associated cables).
- An R300 Interconnect module (and associated cables).
- A Mounting rack (optional).
- A terminal or a PC for administration on the Avaya R300, that includes:
 - Terminal communications software (such as Microsoft HyperTerminal).
 - Optionally, a telnet session from an IP terminal.
 - TFTP server software (required only for R300 firmware upgrades).
 - FTP server software.
 - A directory for file storage.
- An IP Network Tap (valid IP address and subnet mask which is customer supplied).
- A U.S. Robotics 9.6 K modem or its equivalent for remote maintenance.

NOTE:

You will need a second modem, if you have a second Avaya R300 unit in case one of the modem links fails. If you have more than two, you may telnet from Avaya R300 units without modems to those with modems, or you will need modems for each Avaya R300 unit.

Tools you will need

- #2 cross (Phillips) screwdriver for the Avaya R300
- #2 cross (Phillips) screwdriver for the R300 Interconnect module
- #2 Standard blade screwdriver for the DSP16 or DSP30 card

Installation process

The following steps describe the process for installing the hardware into a rack:

- Unpack and inspect equipment.
- Mount the Avaya R300.
- Mount the R300 Interconnect module.
- Connect the Avaya R300 and Interconnect module.
- Connect DCP and analog phones, Ethernet, T1 lines, to the Avaya R300 and R300 Interconnect module.
- Administer the DEFINITY system ([Chapter 4](#)).
- Administer the Avaya R300 ([Chapter 5](#)).

Unpack and inspect equipment

Check the order and the packing lists to confirm that the following equipment is present. If any equipment is missing, report this to your Avaya representative.

The Avaya R300 package contains:

- A power cord (ensure the cord is correct for the country of installation).
- A DB9-DB9 serial cable.
- A 15-ft (x-m) Y cable (Comcode #84522991).
- A 25-to-9 pin adapter.
- Mounting brackets (For optional rack mounting).
- An Avaya R300 with
 - combo blade - preinstalled and preconfigured for the Avaya R300.
 - DSP30 or DSP16 card - preinstalled and preconfigured for the Avaya R300.
- *A MAX 3000 Installation and Basic Configuration Guide* book.
- *The Getting Started with the Avaya R300 Remote Office* book (this book).
- An Avaya DEFINITY Release 9 documentation CD.

The Avaya R300 Interconnect module comes with:

- A power cord (ensure the cord is correct for the country of installation).
- Mounting brackets (preinstalled).
- The Avaya R300 Interconnect module.
- Rubber Feet (packed in plastic).

Ground wrist strap

You should use a wrist strap connected to a ground when removing or installing the Combo Blade or the DSP card.

The Avaya R300 does not support “hot plug-in”, so you must disconnect the power cord before you remove or insert any circuit cards. Once you have removed the power cord, the Avaya R300 will no longer be grounded. Therefore, if you connect the wrist strap to the Avaya R300 it would not provide electrostatic discharge (ESD) protection.

A better option is to connect the wrist strap to some other telecommunication or data-communication equipment that provides a building ground.

Off-premises circuit protection

All off-premises (out-of-building) trunks require protection from hazardous voltages and currents. This includes both over-voltage (lightning, power induction, and so forth) and sneak current protection. Sneak current protectors must be either UL listed / CSA certified, or must comply with local safety standards.

Sneak current protectors must have a maximum rating of 350mA, and a minimum voltage rating of 600V. The following devices protect the system from over-voltages:

- Analog trunks use the 507B or SCP-110 sneak current protectors. The local phone company normally provides over-voltage protection.
- T1 / E1 / DS1 circuits require isolation from exposed facilities. You must provide a CSU (T1), LIU (E1), or other agency-approved equipment that provides this insulation external to the T1 / E1 / DS1 circuit pack.
- The DCP voice terminals and analog voice terminals used with the R300 system are restricted to on-premise use only, and do not require sneak current protection.

NOTE:

You may use off-premise DCP or analog phones if you use an external current protection device in series.

Sneak fuse panel installation

You must have sneak current protection between the incoming RJ21X or RJ2GX network interface and the system for both trunk and off-premises circuit packs.

Use the model 507B sneak current fuse panel or 110-SCP-9 sneak current protectors. The panel contains two 25-pair connectors, fuse removal tool, and fifty 220029 Sneak Fuses (and two spares).

Sneak fuse panel ordering information

Table 11. Sneak Fuse Panel Ordering Information

Description	Comcode
157B Connecting Block	403613003
SCP-110 Protector	406948976
507B Sneak Current Fuse Panel	107435091
220029 Sneak Current Fuse	407216316

⇒ NOTE:

The 507B includes 52 sneak fuses and 2 cables and you can order it using PEC code 63210. you can use the SCP-110 protectors with 110-type hardware and on the 507B Sneak Fuse Panel. You can order the SCP-110 Protectors separately and install them on the 157B connecting block. Each block requires fifty protectors.

Install the 507B near the network interface or main distribution frame (MDF) with locally-obtained #12 three-quarter-inch screws (or equivalent).

Mount the Avaya R300

Refer to the *MAX 3000 Hardware Installation Guide*, Chapter 2: “Setting Up and Testing the MAX Hardware,” for information on mounting the Avaya R300 in a 19" rack.



CAUTION:

Do not plug-in the Avaya R300's power cord until you have made all other connections.

Mount the R300 Interconnect module

NOTE:

If you are not using a mounting rack, place the R300 Interconnect module on top of the Avaya R300 with the backs aligned. Attach the rubber feet to the R300 Interconnect Module.

If mounting in the same rack as the Avaya R300, mount the Interconnect module above the Avaya R300 with the backs aligned (see [Figure 21](#)).

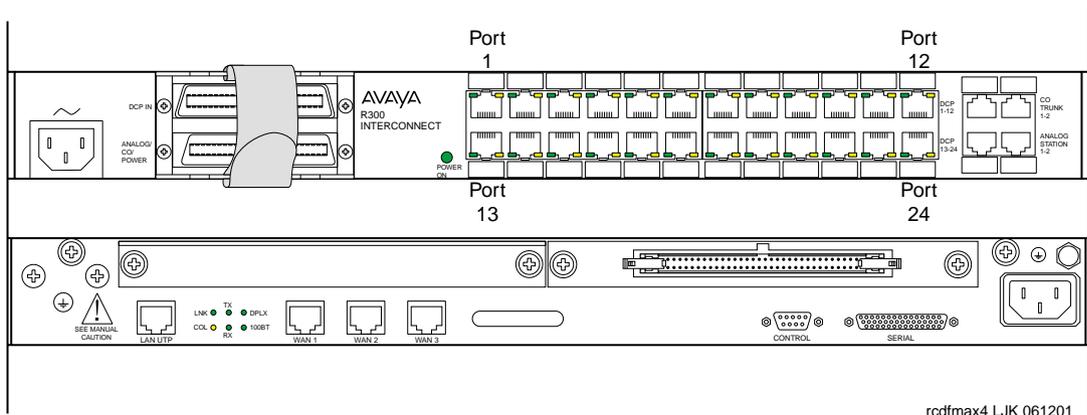


Figure 21. Avaya R300 Interconnect module and Avaya R300 mounted in rack

1. Attach the mounting brackets to the unit using the screws provided.
2. Secure the unit to the rack, leaving about 2 in. (5 cm) of space between the unit and the Avaya R300.

The Interconnect unit wall-mount:

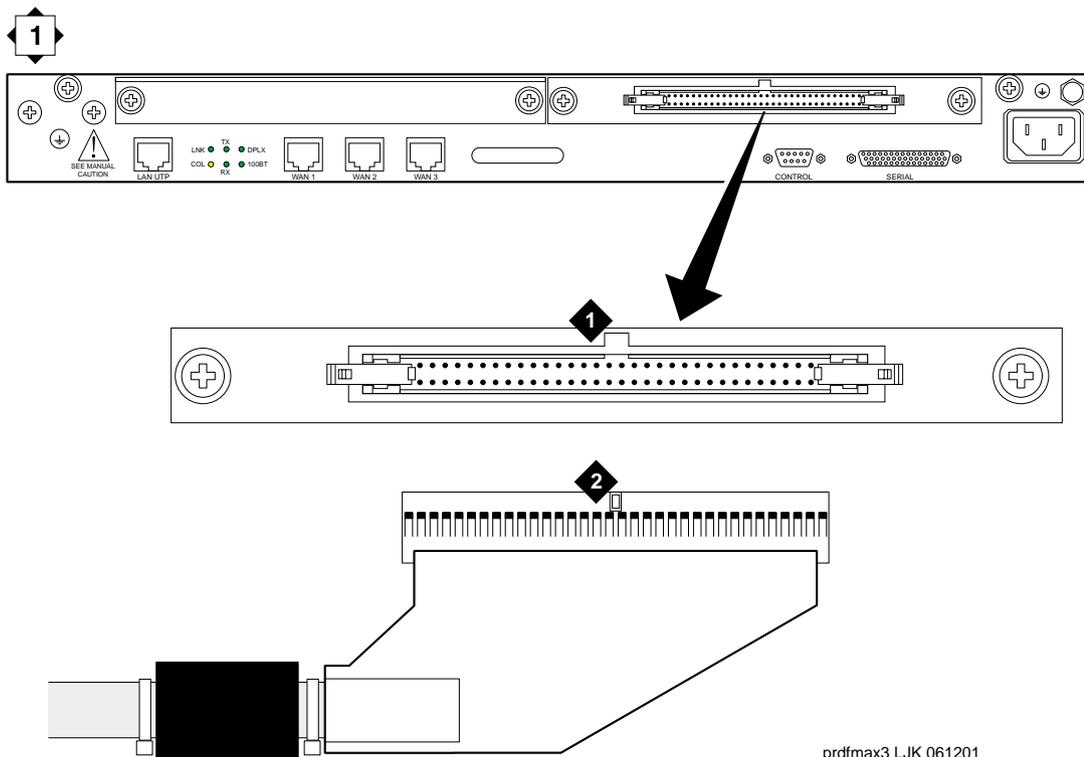
To wall-mount the Avaya R300 Interconnect unit, proceed as follows:

1. Secure a $\frac{3}{4}$ inch (2 cm.) thick sheet of 24" (61 cm.) x 4" (10 cm.) plywood to the wall using screws. At least one side of the plywood should be secured to a framing timber (i.e., 2 x 4) in the wall. The installer provides the plywood and the hardware.
2. Secure the interconnect unit to the plywood using the screws included with the interconnect unit.

Connect the Avaya R300 and R300 Interconnect module

On the Avaya R300:

1. Make sure the two connector tabs (ears) point away from the connection (at 45 degree angle).
2. Grab the 64-pin-connector end of the cable (part 700013642) so the “key” located on the connector is pointing up.
3. Align the key with its corresponding slot located on the Combo Blade (LAM2) connector.
4. Gently apply force to the connector until the two tabs are locked in place (see [Figure 22](#)).



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Figure Notes

1. Slot on LAM2 Connector

2. Key

Figure 22. 64-Pin-Connector Cable with Key and Slot Aligned

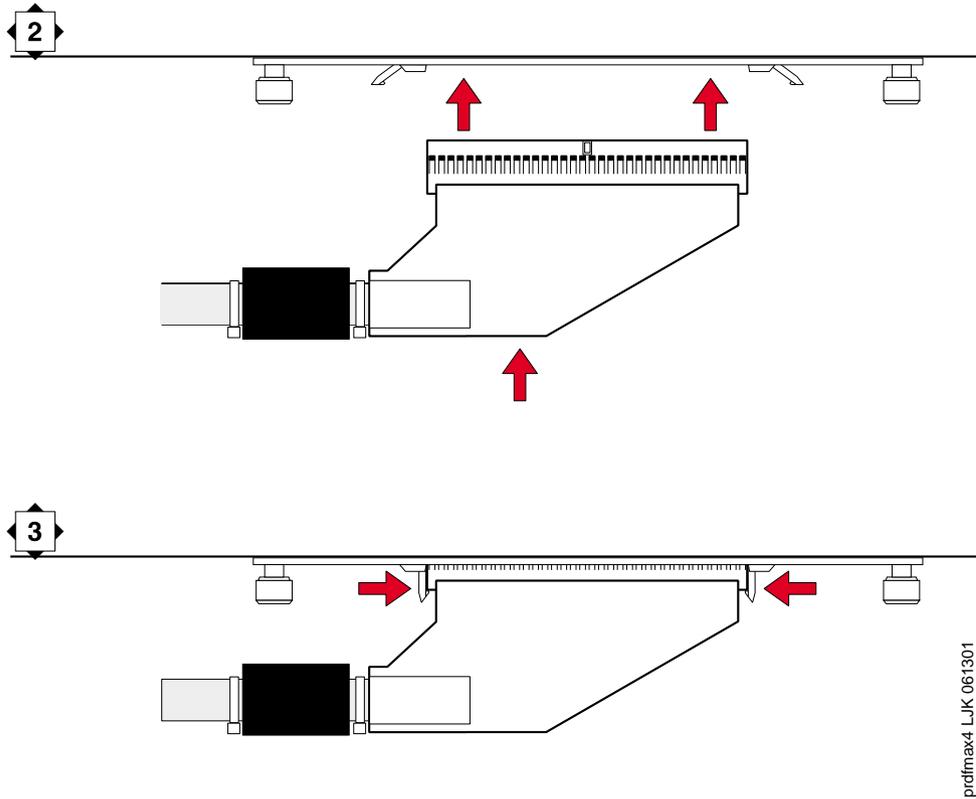


Figure 23. Securing the 64-Pin-Connector Cable with the Connector Tabs (Ears)



CAUTION:

Do not force the connector into place if it is not aligned properly. If you force the connector, you can bend the pins.

5. Secure the cable in place with the connector tabs (see [Figure 23](#)).
6. Plug in one end of the power plug.



CAUTION:

Do not plug into any electrical outlet until everything is connected.

On the Avaya R300 interconnect module:

1. Loosen the Velcro security strap over the socket and plug.
2. Plug in the DCP (male) Amphenol connector into the top socket.
3. Plug in the analog (female) Amphenol connector into the bottom plug.
4. Tighten the Velcro strap and lock it in place.
5. Plug in one end of the power plug.



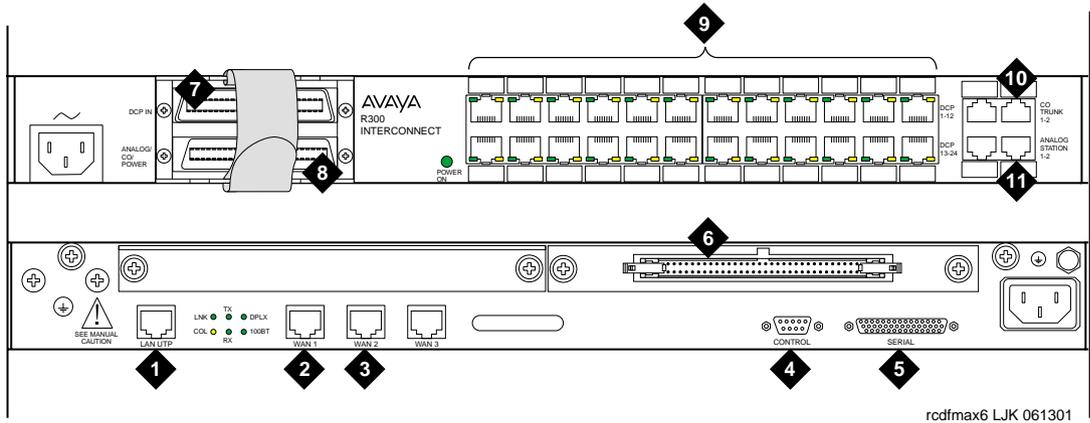
CAUTION:

Do not plug into wall outlet until everything is connected.

Connect DCP and analog phones, Ethernet, and T1 lines

Refer to [Figure 24](#) for port and connection descriptions for the Avaya R300 and R300 Interconnect module and [Figure 25](#) for connection diagram for the Avaya R300 and R300 Interconnect module.

1. Plug in the Ethernet connection (modular 8 wire telecommunications cable, D8W, or equivalent).
2. Plug in the T1, E1, or BRI connection(s).
3. Plug in the PC to the 9-pin DCE port with straight through serial cable.
4. Plug in DCP phones with D8W connector (up to 24, 6400 or 8400-series digital phones).
5. Plug in analog phones or CO trunks with D8W connector (up to 2 analog devices and up to 2 analog trunks).
6. Plug in the Interconnect module power cord to power the unit up.
7. Plug in the Avaya R300 power cord to power the unit up.
8. Familiarize yourself with Avaya R300 front-panel lights listed in [Table 12 on page 69](#).
9. Familiarize yourself with Avaya R300 back-panel lights listed in [Table 13 on page 70](#).
10. Observe LEDs on the front of the Avaya R300 to make sure everything is working properly (see [Figure 26 on page 68](#)).

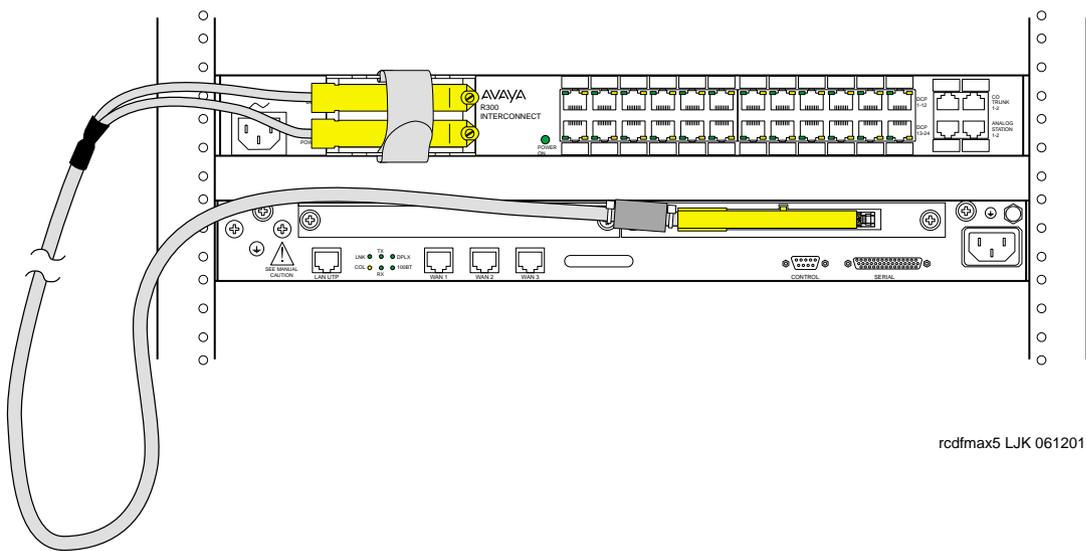


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Figure Notes

- | | |
|--|--|
| 1. Ethernet port | 6. Combo blade (LAM2) with Y-cable connector |
| 2. T1/E1 port (data) | 7. DCP connector (male) |
| 3. T1/E1 port (PSTN) | 8. Analog connector (female) |
| 4. 9-pin control port for administering the Avaya R300 from a PC | 9. DCP phone connectors |
| 5. DB44 port for serial WAN | 10. CO trunk ports |
| | 11. Analog Station ports |

Figure 24. Port and connections for the Avaya R300 and Interconnect module



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Figure 25. Connection Diagram for the Avaya R300 and R300 Interconnect Module

Avaya R300 front-panel lights

Figure 26 illustrates the Avaya R300 front-panel lights, and Table 12 is the key for interpreting these lights.

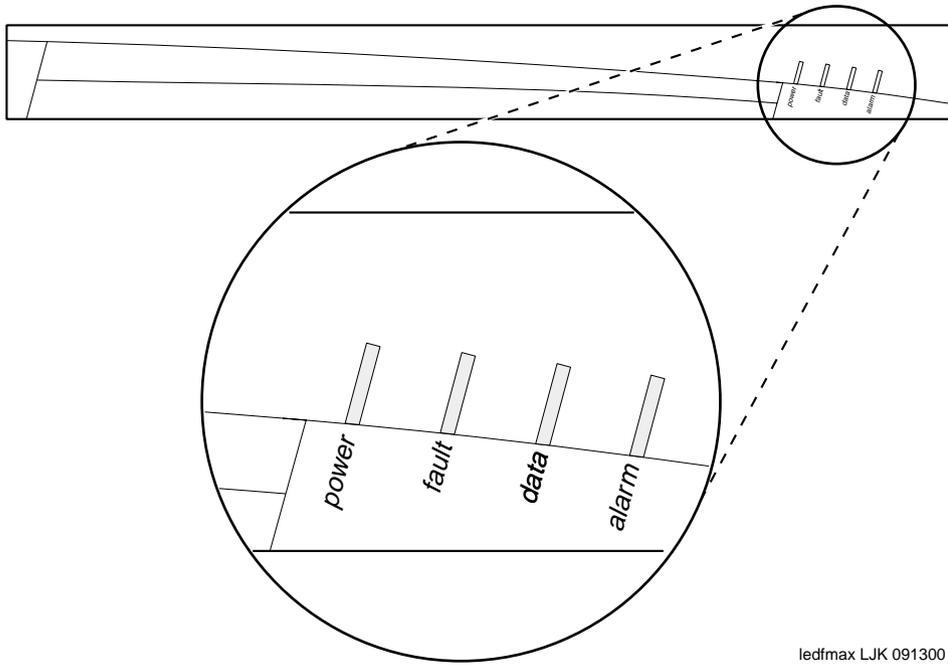


Figure 26. Avaya R300 Front-Panel Lights

Table 12. Avaya R300 Front-Panel Light description

Light	Description
Power	Green when the Avaya R300 power is on.
Fault	Yellow in one of two cases. Either a hardware self-test is in progress or there is a hardware failure. When a hardware self-test is in progress, the light is on. If any type of hardware failure occurs, the light flashes. If the failure is isolated to an expansion card, the Avaya R300 may continue functioning without the expansion card.
Data	Green at power-up and thereafter when packets are detected on the Ethernet interface.
Alarm	Amber at power-up. Thereafter, on indicates a low-power detection (Avaya R300 sends an SNMP trap), WAN alarm, or trunk out-of-service (for example, during line loopback diagnostics). WAN alarms include Loss of Sync, Red Alarm, Yellow Alarm, and All Ones (or AIS).

Avaya R300 back-panel lights

Table 13 is the key for interpreting the back-panel lights, as shown in Figure 27. From these lights you can determine the state of the R300's Ethernet connection.

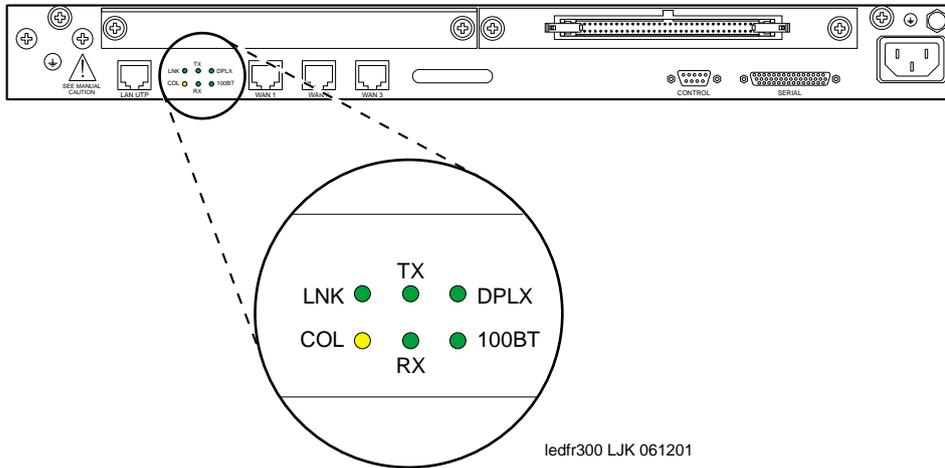


Figure 27. Avaya R300 back-panel lights

Table 13. Avaya R300 back-panel light description

Light	Description
LNK	During 10 Mbps operation, indicates Link Valid status. During 100 Mbps operation, indicates scrambler lock and receipt of valid Idle codes. The light is green when on.
TX	Indicates transmitter is active. The light is green when on.
DPLX	Indicates that the port is in Full Duplex Mode. The light is green when on. When the light is off, the port is in Half Duplex Mode.
100BT	Indicates that 100 Mbps operation is selected for the UTP port. the light is green when on.
RX	Indicates that the receiver is active. The light is green when on.
COL	Indicates a collision. The light is amber when on.

Modem connection

If maintaining the Avaya R300 remotely, you must install a 3 com U.S. Robotics 9.6 Kbps modem or the equivalent.

⇒ NOTE:

The U.S. Robotics 9.6 Kbps modem (alternate models Sportster 33.6 and Sportster 56K) available from Avaya comes preconfigured for the Avaya R300. Configure other modems using the process described in the next section.

1. Connect the RS232 port of the modem to the 9-pin port.
2. Connect an analog phone line to the left most analog-line port on the modem as shown in [Figure 28](#).
3. Make sure that the modem's DIP switches are set as shown in [Figure 28](#) and [Table 14](#) on page 72.
4. Plug the modem into an AC power outlet.
5. Turn on the modem using the DIP switches located on the front of the modem.
6. Power cycle the modem to allow these switch settings to take effect.

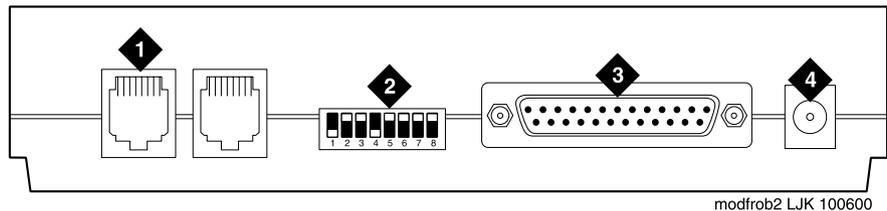


Figure Notes

1. Connect analog line here.
2. Set the DIP switches as [Table 14](#) describes them.
3. Connect MODEM connector here.
4. Connect power connector here.

Figure 28. External modem connections for U.S. Robotics modem

Table 14. U.S. Robotics Modem dip switch settings for 9.6K modem

Dip Switch	Setting	Description
1	UP DOWN	Data Terminal Ready normal Data Terminal Ready override (source DTR)
2	UP DOWN	Verbal result codes Numeric result codes
3	UP DOWN	Suppress result codes Display result codes
4	UP DOWN	Echo offline commands No echo, offline commands
5	UP DOWN	Auto answer on first ring or higher if specified in NVRAM Auto answer off
6	UP DOWN	Carrier detect normal (follows carrier) Carrier detect override (source DCD=on)
7	UP DOWN	Load NVRAM defaults Load factory defaults
8	UP DOWN	Dumb mode Smart mode (Hayes mode)

External modem configuration for non-U.S. Robotics modems

On a PC using a modem communication program such as MS HyperTerm, configure external modems that are not pre-configured U.S. Robotics 9.6K modems. Proceed as follows:

1. Connect the maintenance modem to the PC's serial port.
2. Set the Hyperterminal profile or other communication program to the following settings:
 - VT100 Emulation
 - 9600bps
 - 8 Data Bits
 - 1 Stop Bit
 - No Parity
 - No Flow Control

3. Set the modem DIP switches to the following:
 - Switch 1 - DOWN
 - Switch 2 - UP
 - Switch 3 - DOWN
 - Switch 4 - UP
 - Switch 5 - UP
 - Switch 6 - UP
 - Switch 7 - UP
 - Switch 8 - DOWN
4. Type BREAK AT to enter the Hayes command mode.
5. Enter the following AT commands, pressing ENTER after each:
 - AT&DO (ignore DTR)
 - AT&SO=1 (auto-answer on one ring)
 - AT&U6 (sets speed to 9600)
 - AT&E1 (turns on local echo)
 - AT&CO (assert DCD all of the time)
 - ATQ0 (suppress result messages)
 - AT&W0 (save configuration in buffer 0) (this is profile #0)
 - AT&Y0 (use buffer 0 on power-up)
6. Disconnect the modem from the PC.
7. Connect the modem to the Avaya R300 and reset the dip switches as described in [Table 14 on page 72](#).
8. When the modem is powered on, Avaya services personnel can dial into the modem. As there is no password on the console, the modem should be powered off when not in use.

Avaya R300 software upgrade

Information on upgrading an Avaya R300 is available at <http://support.avaya.com/comsys/definity/r300>.

The MAX 3000 upgrade instructions are the same as the Avaya R300 upgrade instructions.

To upgrade the Avaya R300, you need one of the following:

- Trivial File Transfer Protocol (TFTP) server software. TFTP server software is available at <http://support.avaya.com/telset/ipphone/4600/sd/4742.jhtml> or other websites but is not supplied with the Avaya R300
- Telnet capabilities or a connection via a PC com-port or modem to the “control” port on the back of the Avaya R300.

Upload the Avaya R300 software update

When you update the software on the Avaya R300, the system makes a copy of the current image as a backup then loads the new software image.

Upload the software update from the diagnostics mode of the Avaya R300.

1. From the diagnostics window, type **tloadcode server filename** where **server** is the IP address or the DNS name of the TFTP server and **filename** is the name of the software update.
2. Press ENTER.
3. Type **reset** at the prompt to reset the Avaya R300 after the software update is complete.

The DSP16 vs. the DSP30

Every Avaya R300 Unit uses a Digital signaling Processing (DSP) card. This can be either a DSP16 card or a higher capacity card the DSP30. The Avaya R300 can use a DSP30 if it has R1.1 software. This sections details the steps you will need to complete to update the DSP 16 card to the DSP 30 card.



WARNING:

Only trained service personnel should open the Avaya R300 Unit for any purpose.



CAUTION:

When installing any component, be sure to follow proper procedures (such as using a grounding mat and a wrist strap) to prevent build-up of static electricity.

Tools you will need

- #2 cross (Phillips) screwdriver
- #2 standard screwdriver

Update the Avaya R300 DSP card to the DSP30

⇒ NOTE:

Customers or Avaya Personnel working remotely can perform steps 1 through 3 before the arrival of the service technician.

Complete the following steps:

1. Download the R1.1 software for the Avaya R300 Unit from <http://support.avaya.com/comsys/definity/r300>.
2. Update the Avaya R300 Unit software to R1.1.
3. Change the DEFINITY signaling group translations as required by the R1.1 software load.
4. Attach an anti-static wrist strap.
5. Unpack the DSP30's box.
6. Power down the Avaya R300.
7. Remove the DSP16.
8. Insert the DSP30 (into the left-most card slot on the Avaya R300).
9. Place the DSP16 into the DSP30's anti-static bag.
10. Power-up the Avaya R300.
11. Repack the shipping box with the DSP16.
12. Return the DSP16 to Avaya.

⇒ NOTE:

While it is not necessary to remove the Avaya R300 Interconnect cable (Y-cable) before removal or insertion of the DSP card, it may be advantageous to do so to provide more working room.

The Avaya R300 unit 75-ohm vs. 120-ohm configuration

Check the Avaya R300 E1 unit for 75-ohm vs. 120-ohm configuration

The Avaya R300 E1 ships from the factory in a 120-ohm configuration. You can check the configuration by typing the debug command “bt -s” which returns “DXS-120E 3.8dB E1 B8ZS/HDB3 FAS R2” for the 120-ohm unit, and “DXS-75E 3.8dB E1 B8ZS/HDB3 FAS R2” for the 75-ohm unit.

Convert from the 75-ohm to the 120-ohm configuration

You can remove jumpers to change the impedance from 75 to 120-Ohms.



WARNING:

Only trained service personnel should open the Avaya R300 Unit's case for any purpose.



CAUTION:

When installing any component, be sure to follow proper procedures (such as using a grounding mat and a wrist strap) to prevent build-up of static electricity.

To change the Avaya R300 Unit's E1-terminal impedance to 120-Ohms, proceed as follows:

1. Make sure the Avaya R300 Unit is off and the power cord is unplugged.
2. Remove the chassis cover to expose the mother board.
3. Remove the RJ-BNC adapters if they are installed.
4. Remove the jumpers on each of the following four headers:
 - P34
 - P35
 - P36
 - P37

These headers are also marked with a 75 E1 notation.

5. Remove the jumper on header P16. This header is marked with an OPT1 notation.
6. Replace the Avaya R300 Unit's chassis cover.

DEFINITY Administration for the Avaya R300

4

The DEFINITY system must be configured to recognize the Avaya R300. Use the following instructions to help you configure and administer the Avaya R300.



NOTE:

Whenever you make substantial changes to the DEFINITY system, such as entering new stations and trunks, it is a good idea to **save translations** both before and after.

Administer customer options

Instructions

Verify that the following fields are administered on the System Parameters Customer Options screen. An Avaya representative must administer these fields.

1. Type **display system-parameters customer-options** and press ENTER to display the screen.

```

display system-parameters customer-options                               Page 1 of 9
                                Optional Features
      G3 Version: V9                                                    Maximum Ports: 300
      Location: 1                                                       Maximum XMOBILE Stations: 0

IP PORT CAPACITIES
                                Maximum Administered IP Trunks: 50
                                Maximum Concurrently Registered IP Stations: 100
                                Maximum Administered Remote Office Trunks: 10
                                Maximum Concurrently Registered Remote Office Stations: 10

Maximum Number of DS1 1 Boards with Echo Cancellation:0

(NOTE: You must logoff & login to effect permission changes.)

```

Screen 10. Optional Features screen (page 1)

2. Verify that the following fields are enabled:

- G3 Version:**V9** or greater
- Maximum Administered Remote Office Trunks: Total number of trunk group members for all Avaya R300 units supported by this DEFINITY system (a single B-channel of a T1, E1 or BRI is a trunk group member).
- Maximum Concurrently Administered Remote Office Stations: Total number of stations for all Avaya R300 units supported by this DEFINITY system

3. Go to page 3 of this screen.

```

display system-parameters customer-options                               Page 3 of 9
                                Optional Features

Emergency Access to Attendant: y                                       ISDN-BRI Trunks? n
  Extended Cvg/Fwd Admin? y                                           ISDN-PRI? y
  External Device Alarm Admin? y                                       Malicious Call Trace? n
    Flexible Billing? n                                                 Mode Code for Centralized Voice Mail? n
  Forced Entry of Account Codes? n
  Global Call Classification? n                                         Multifrequency Signaling? y
  Hospitality (Basic)? y                                               Multimedia Appl Server Interf(MASI)? y
  Hospitality (G3V3 Enhancements)? n
    H.323 Trunks? y                                                  Multimed Call Handl (Enhanced)? y
    IP Stations? y                                                     Multiple Locations? y
    ISDN Feature Plus? n                                               Personal Station Access (PSA)? y
  ISDN Network Call Redirection? n

(NOTE: You must logoff & login to effect permission changes.)

```

Screen 11. Optional Features screen (page 3)

4. Verify that the following fields are enabled:

- H.323 Trunks: **y** (yes)
- ISDN-PRI Trunks: **y** (yes)
- Multiple Locations: **y** (yes)

5. Go to page 4 of this screen.

```

display system-parameters customer-options                               Page 4 of 9
                               Optional Features

                               PNC Duplication? n
                               Processor and System NSP? n
                               Private Networking? y
                               Remote Office? y
Restrict Call Forward Off Net? y
Secondary Data Module? y
Station and Trunk NSP? n
Station as Wirtual Extension? n

                               Tenant Partitioning? n
Terminal Trans. Init. (TTI)? y
Time of Day Routing? n
Uniform Dial Plan? n
Usage Allocation Enhancements? n
Wideband Switching? n
Wireless? n

(NOTE: You must logoff & login to effect permission changes.)
    
```

Screen 12. Optional Features screen (page 4)

6. Verify that the Remote Office field is enabled.

7. Go to page 8 of this screen.

```

display system-parameters customer-options                               Page 9 of 9
                               Maximum IP Registrations by Product ID

Product ID Rel Limit  Product ID Rel Limit  Product ID Rel Limit
IP_Agent    ___: 50    _____ ___ 0_____  _____ ___ ___
IP_Phone    ___: 20    _____ ___ 0_____  _____ ___ ___
IP_ROMax    ___: 30    _____ ___ 0_____  _____ ___ ___
IP_Soft     ___: 50    _____ ___ 0_____  _____ ___ ___
Ascend Mul  ___: 5_____  _____ ___ 0_____  _____ ___ 0_____
_____     ___: 0_____  _____ ___ 0_____  _____ ___ 0_____
_____     ___: 0_____  _____ ___ 0_____  _____ ___ 0_____
_____     ___: 0_____  _____ ___ 0_____  _____ ___ 0_____
_____     ___: 0_____  _____ ___ 0_____  _____ ___ 0_____
_____     ___: 0_____  _____ ___ 0_____  _____ ___ 0_____

(NOTE: You must logoff & login to effect permission changes.)
    
```

Screen 13. Maximum IP Registrations by Product ID screen

8. Verify that the following fields are enabled:

- Product ID: **IP_ROMax**
- Limit: Total number of remote office stations for **IP_ROMax**.
- Product ID: **Ascend Mul**.
- Limit: Total number of remote office trunk group members for Ascend Mul.

⇒ NOTE:

The specification of “Ascend Mul” is not required for this screen in DEFINITY Release 9.5 or newer.

Direct IP-IP Audio and IP Hairpinning

Verify that the following fields are administered on the Feature-Related System Parameters screen.

1. Type **change system-parameters features** and press ENTER to display the screen.

```

change system-parameters features                                     Page 10 of 10
                                FEATURE-RELATED SYSTEM PARAMETERS

AUTOMATIC EXCLUSION PARAMETERS

                                Automatic Exclusion by COS? n

                                Recall Rotary Digit: 2
                                Duration of Call Timer Display (seconds): 3
WIRELESS PARAMETERS
Radio Controllers with Download Server Permission (enter board location)
1: _____ 2: _____ 3: _____ 4: _____ 5: _____

IP PARAMETERS
                                Direct IP-IP Audio Connections? y
                                IP Audio Hairpinning? y

```

Screen 14. Direct IP-IP Audio and IP Hairpinning screen

- This screen (system-parameters features) lets you enable/disable these features for the whole system.
- If these are disabled, no station will be able to use these features.
- Direct IP-IP Audio Connections should be set to ‘y’ to enable shuffling.
- If these features are disabled on ip-network-region form, no endpoint in that region will be able to use these features.

Administer IP Boards

Log into the system using a customer login with super-user permission.



NOTE:

The following information is required prior to performing the DEFINITY administration:

- The IP Address of the Avaya R300
- Security Codes (passwords) for each Remote Office station.

Instructions

Administer circuit packs

Verify that the system is administered to provide C-LAN and IP Media Processor support.

1. Type **display change circuit-packs** and press ENTER to display the Circuit Packs screen.

```

display change circuit-packs                                     Page 3 of 5
                    Circuit Packs
  Cabinet: 1                      Carrier: C
Cabinet Layout: five-carrier      Carrier Type: port

Slot Code  SF Mode Name                Slot Code SF Mode Name
00: TN748  D    Tone Detector           11 TN754 C    Digital Line
01: TN767  B    DSL Interface           12 TN754 C    Digital Line
02: TN746  B    Analog Line             13
03: TN2302 _    IP Media Processor      14
04: _____ _                          15
05: _____ _                          16
06: _____ _                          17
07: _____ _                          18
08: TN799  C                             19
09: _____ _                          20
10: _____ _

```

Screen 15. Circuit Packs screen (page 3)

2. Confirm the administration of the C-LAN (TN799) and IP Media Processor (TN2302). Verify these board codes are specified in the list of circuit packs supported by the system.



NOTE:

If administration was not performed on these circuit packs, refer to the Administration for Network Connectivity document for instructions.

Administer Ethernet data module

1. If you have a C-LAN, you need to add an Ethernet data module on the Data Module screen. Otherwise, go to the CODEC Administration procedures.
2. Type **add data-module next** and press ENTER to display the Data Module screen.

```
add data-module next                                Page 1 of X
                                         DATA MODULE

Data Extension: 2377      Name: ethernet_on link 2
  Type: ethernet
  Port: 01c0817
  Link: 2

Network uses 1's for broadcast addresses?: y
```

Screen 18. Data Module screen

3. Complete the following fields:
 - Type: Type **Ethernet**.
 - Port: Type **17**.
 - Link: The link must be in the range **1 – 33** for G3r, or **1 – 25** for G3si and G3csi, and not previously assigned on this switch.

Administer CODECs

The IP CODEC Set screen is used to establish an audio CODEC preference list, to associate silence suppression, and to assign frame and packet size attributes to each CODEC. You can specify up to 7 sets of different CODECs. By default, all the sets have one CODEC G.711 (μ -law) with no silence suppression and packet size 20ms in DEFINITY Release 9.5.

Instructions

1. Type **change ip-codec-set <number>** and press ENTER to display the screen.

```

change ip-codec-set 1                                     Page 1 of 1
                                     IP CODEC Set

CODEC Set:

  Audio      Silence      Frames      Packet
CODEC      Suppression    Per Pkt    Size(ms)
1:  G.711MU      n            2           20
2:  G.729        n            2           20

```

Screen 19. IP CODEC Set screen

- Administer a list of audio CODECs, in preference order, that are supported by the Avaya R300.
- Press ENTER to effect the changes.

For more information about CODECs used in the Avaya R300, see [“Network region design”](#) on page 39.

Administer network regions

Use these procedures to set up network regions, CODEC-sets for a region, QoS values, and Shuffling.

Instructions

- Type **change ip-network-region <number>** and press ENTER to display the IP Network Regions screen.

```

change ip-network-region 1                               Page 1 of 1
                                     IP Network Region

      Region: 1
      Name: Main

Audio Parameters
CODEC Set: 1

UDP Port Range
  Min:2048
  Max:65535

DiffServPHB Value:0                                Direct IP-IP Audio Connections? y
                                                    IP Audio Hairpinning? n

802.1p/Q Enabled? y
802.1p Priority: 0
802.1Q VLAN: 0

```

Screen 20. IP Network Region screen

2. On the IP Network Region screen, complete the following fields:
 - Name: Assign a unique name to the network region.
 - CODEC Set: Assign the CODEC set for the Avaya R300 associated with this Network Region.
 - Direct IP-IP Audio Connection: Type **y** (yes) to allow shuffling between Avaya R300 endpoints
3. Assign QoS values as appropriate.
 - UDP Port Range Min: Type **2048**. This is used by the Media Processor for audio RTP/RTCP connections.
 - UDP Port Range Max: Type **65535**. This is used by the Media Processor for audio RTP/RTCP connections.
 - DiffServPHB Value: Assign the per hop behavior to agree with the differentiated services setting in the network. The value "0" is the default.
 - 802.1p/Q Enabled?: Type **y** if you wish to use 802.1p or 802.1Q on the Ether connection of the TN2302 IP Media Processor.

In the R300, the ranges of 1900 to 2075 are used in fixed assignments for UDP ports for audio connections. For a given R300 station or trunk port, one UDP port is used for RTP and the next consecutive UDP port is used for RTCP. For example, DCP port 1 uses 1908 for the RTP/UDP connection and 1909 for the RTCP/UDP connection. Note that with the R300 diagnostic command interface, you can type **roras status** to get a full listing of active TCP/IP ports and UDP/IP ports.

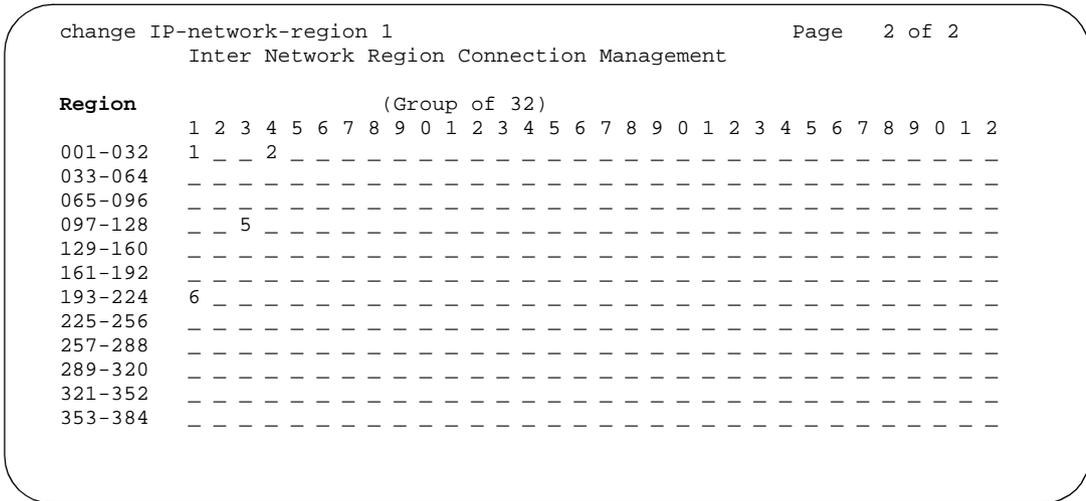
Table 15. Fixed ranges of UDP ports per port type

Port Type	UDP Ports Used
analog trunks	1900-1903
analog stations	1904-1907
DCP stations	1908-1955
T1/E1 trunks	1956-2075
BRI trunks	1956-1979

4. If C-LAN and IP Media Processing resources are shared between regions, go to page 2, which is the Inter Network Region Connection Management screen. Otherwise, go to the Multiple Location administration steps.

⇒ NOTE:

Sharing of resources between or among network regions is allowed *only* if you make an entry specifying the CODEC set to be used.



Screen 21. IP Network Region screen (page 2)

5. Specify CODEC sets for your shared network regions as done in the example above. In the example, network region 1 will share resources with the following other network regions, using the specified CODEC sets:
 - network region 1 using CODEC set 1.
 - network region 4 using CODEC set 2.
 - network region 99 using CODEC set 5.
 - network region 193 using CODEC set 6.

Administer multiple locations

The Locations screen allows you to assign time zone and daylight saving rule parameters by location. Since Avaya R300 units will most likely be remotely located from the DEFINITY switch, establish location parameters for each Avaya R300 region.

Instructions

1. Type **change locations** and press ENTER.

change locations		LOCATIONS			Page 1 of 3
ARS Prefix 1 Required for 10-Digit NANP Calls? _					
Number	Name	Timezone Offset	Daylight-Savings Rule	Number Plan Area Code	
1	<u>Chicago-Avaya R300</u>	- 00:00	_1	<u>312</u>	
2	<u>Denver-R01</u>	+ 01:00	_1	<u>303</u>	
3	<u>Holmdel-R02</u>	- 01:00	_1	<u>953</u>	
4	_____	- _: _	__	___	
5	_____	- _: _	__	___	
6	_____	- _: _	__	___	
7	_____	- _: _	__	___	
8	_____	- _: _	__	___	

Screen 22. Locations screen (page 1)

2. On the Locations screen, complete the following fields:
 - Name: Assign a name for this location, for example, Chicago- Avaya R300
 - Timezone Offset: Enter the time difference in hours and minutes from the DEFINITY system.
 - Daylight-Savings Rule: Assign the daylight-savings rule that applies to this location.
 TIP: Use display daylight-savings rules to see what rules are established for this system.
 - Number Plan Area Code: Type the appropriate area code for the location.
3. Press ENTER to effect the changes.

Administer Remote office

Perform Remote Office administration on the DEFINITY system before registering the Avaya R300 endpoints. This administration includes administering the Remote Office and Remote Office stations.

Instructions

Remote Office

1. Type **add remote-office <number>** and press ENTER to display the Remote Office screen.

```

add remote-office 6                                     Page 1 of 1
                                                    REMOTE OFFICE 6

  Node Name: Remote Office 6
Network Region: 22
  Location: 1
  Site Data: Contact: Joe Smith
              Phone: xxx-yyy-zzz
  
```

Screen 23. Remote Office screen

2. Complete the following fields:

- Node Name: Assign a node name to the Avaya R300. This names must correspond to the node name used on the IP Node Names screen.
- Network Region: Assign the number of a previously administered Network Region for the Avaya R300. If a Network Region is not assigned, use the region associated with the C-LAN.
- Location: Assign the number of a previously administered Location for the Avaya R300 on the Locations screen. If a location is not specified, this field defaults to 1.
- Site Data: Provide relevant location and site data.

3. Press ENTER to effect the changes.

4. Type **status remote-office n** and press ENTER to verify the addition of the Avaya R300.

```

status remote-office 6                               Page 1 of 1
                                                    REMOTE OFFICE 6

  Node Name: Remote Office 6                IP Address: 134.23 .107.22
Network Region: 22
  Location: 1

Trunk Signaling Groups: *5 *6

Stations Registered: 4131 4102 4103 4104 4105 4108
                    4109 tti 4111 4118 4119 4120
                    4121 4124 4112 4113 4116 4123
                    4115 4122 4117 4110 4114 4106
                    4101 4107

* Signaling group is currently registered
  
```

Screen 24. Status Remote Office screen

The following fields represent the administration of the Remote Office:

- Node Name
- IP Address
- Network Region
- Location

The **Trunk Signaling Groups** lists the active signaling groups. In this example 5 is the analog signaling group and 6 is the digital signaling group.

The **Stations Registered** field lists those stations that are either registered in “TTI” mode or registered in named mode.

Remote Office Stations

1. Type **add station <extension number>** and press ENTER to display the Station screen.

```

add station 4101                                     Page 1 of 4
                                                    STATION
Extension: 1014                                     Lock Messages? n      BCC: 0
  Type: 8410D                                       Security Code: 1234567 TN: 1
  Port: x                                           Coverage Path 1: ____ COR: 1
  Name: Remote main                                Coverage Path 2: ____ COS: 1
                                                    Map-to Station:
  Hunt-to-Station: _____
                                                    Hunt-to-Station: _____

STATION OPTIONS
  Loss Group: _                                     Personalized Ringing Pattern:
  Data Module? n                                   Message Lamp Ext: 6001
  Speakerphone: 2-way                               Mute button enabled? y
  Display Language? English
                                                    Media Complex Ext:
                                                    IP Softphone? n
                                                    Remote Office Phone? y

```

Screen 25. Station screen (page 1)

2. Complete the following fields:
 - Type: Assign the set type associated with the terminal.
 - Port: Type **x**.
 - Security Code: Assign a security code/password that is used to validate Avaya R300 registration using this extension.
 - Remote Office Phone: Type **y** (yes).

3. Press ENTER to save your changes and go to page 2 of the Station screen.

```

change station 4101                               Page 2 of 4
                                         STATION
FEATURE OPTIONS
    LWC Reception: spe      Auto Select Any Idle Appearance? n
    LWC Activation? y      Coverage Msg Retrieval? y
LWC Log External Calls? n      Auto Answer:
    CDR Privacy? n      Data Restriction? n
Redirect Notification? y      Idle Appearance Preference? n
Per Button Ring Control? n
Bridged Call Alerting? n      Restrict Last Appearance? y
Active Station Ringing: single
    H.320 Conversion? y Per Station CPN - Send Calling Number?
    Service Link Mode: as-needed
    Multimedia Mode: enhanced
                                Display Client Redirection? n
                                Select Last Used Appearance?
Messaging Server Name:      Coverage After Forwarding?
                                Direct IP-IP Audio Connections? y
                                IP Audio Hairpinning? n

```

Screen 26. Station screen (Page 2)

4. On page 2 of the Station screen, in the Direct IP-IP Audio Connections field, type **y** to enable station shuffling.

⇒ NOTE:

Refer to [Chapter 5](#) in this guide for information on administering the Avaya R300.

5. Make sure that the IP Audio Hairpinning field is **n**.
6. Press ENTER to save your changes.

Set up a signaling group and digital trunk group

⇒ NOTE:

Important: You will only need to administer an H.323 signaling group or trunk group between the Avaya R300 and the DEFINITY system if the trunks to your central office are terminated *at the R300*. If you are using the Avaya R300 solely for DCP and/or analog station connectivity, then you will not need an H.323 trunk or signaling group between the R300 and the DEFINITY system.

Each Avaya R300 has its own listening port and signaling group for the digital trunks (T1, E1 or BRI). Set up a new signaling group and trunk group administered for H.323 signaling.

⇒ NOTE:

DEFINITY only supports one Digital Signaling group to an individual R300. All trunk group members will be part of this single managed signaling group. For example, if you are deploying the T1 model of the R300 and have two T1 WAN ports connected to the PSTN network, all of the 64Kbps circuit switched channels utilized are part of this one signaling group.

Instructions**Setting up a signaling group**

Set up the signaling group for remote office:

1. Type **add signaling-group <signaling group number or next>** and press ENTER to display the Signaling Group screen.

```

add signaling-group 6                                     Page 1 of 5
                                     SIGNALING GROUP
Group Number 6           Group Type: H.323
Remote Office? y         Max Number of NCA TSC: 0
                                     Max number of CA TSC: 0
Trunk Group for Channel Selection: 6           Trunk Group for NCA TSC:
Supplementary Service Protocol: a             Network Call Transfer? n

Near-end Node Name:  clan                       Far-end Node Name: remote office 6
Near-end Listen Port: 5005                     Far-end Listen Port:1720

LRQ Required? n           Calls Share IP Signaling Connection? y
RRQ Required? y
                                     Bypass If IP Threshold Exceeded? n
Direct IP-IP Audio Connections? y
                                     IP Audio Hairpinning? n
Interworking Message: PROgress

```

Screen 27. Signaling Group screen (page 1)

2. On the signaling group screen, complete the following fields:
 - Group Type: type **H.323**.
 - Remote Office: type **y**.
 - Trunk Group for Channel Selection: type trunk group number.
 - Near-end Node Name: assign the node name assigned to the C-LAN that supports this Avaya R300.
 - Far-end Node Name: type the node name assigned to the remote office.
 - Near-end Listen Port: type a port number in the 5000-9999 range.
 - Far-end Listen Port: type **1720**. This is the dedicated TCP port in the Avaya R300
 - Calls share IP Signaling Connection: Type **y** for R300 Release 1.1 or newer, otherwise type **n**.

- Direct IP-IP audio connections: Type **y** to enable IP call shuffling.
- IP Audio Hairpinning: type **n** to disable.

**NOTE:**

The far-end port must be 1720. The near-end port must be unique; it must be different from the far-end port.

3. Press ENTER to save your changes.

Setting up a digital trunk group

You can modify an existing trunk group or add a new one.

1. Type **add trunk group <trunk group number or next>** and press ENTER.

```

add trunk-group 6                                     Page 1 of 22
                                                    TRUNK GROUP
Group Number: 6                                     Group Type: isdn          CDR Reports: y
Group Name: ro6-digital                             COR: 1                   TN: 1          TAC: 6
Direction: two-way                                  Outgoing Display? n     Carrier Medium: IP
Dial Access? y                                       Busy Threshold: 255     Night Service:
Queue Length: 0
Service Type: tie                                     Auth Code? n           TestCall ITC: unre
Far End Test Line No:
TestCall BCC: 4
TRUNK PARAMETERS
Codeset to Send Display: 0   Codeset to Send National IEs: 6
Max Message Size to Send: 260 Charge Advice: none
Supplementary Service Protocol: a   Digital Handling (in/out): enbloc/enbloc

Trunk Hunt: cyclical

Calling Number - Delete:      Insert:
Bit Rate: 1200               Synchronization: async    Number Format:
Disconnect Supervision - In? y Out? n   Duplex: full
Answer Supervision Timeout: 0

```

Screen 28. Trunk Group screen (page 1)

2. On the Trunk Group screen, complete the following fields:

- Group Type: Type **isdn**.
- Carrier Medium: Type **IP**.
- Service Type: Type **tie**.
- Codeset to Send Display: Type **0**.

The default is 6, and this should be changed to 0 to support interoperability with non-DEFINITY systems.

- Digital Loss Group: Type **17**. The default is 13, the Loss Group used for H.323 trunks.

Because this is an H.323 signaling group, the DEFINITY system cannot tell that this ultimately terminates in a digital trunk (for instance, does not know if this is PRI signaling or in-band signaling). Loss group 17 is the correct loss group for digital trunks on the R300.

- Go to the group member assignments screen to associate the trunk group with the signaling group.

```

add trunk-group 6                                     Page 6 of 22
                                                    TRUNK GROUP
                                                    Administered Members (min/max): 1/2
GROUP MEMBER ASSIGNMENTS                          Total Administered Members: 2

  Port      Code 5Fx Name   Night      Sig Grp
1:IP        ro6-digital co 1      6
2:IP        ro6-digital co 2      6
3:
4:
5:
6:
7:
8:
9:
10:

```

Screen 29. Group Member Assignments screen

- On the Group Member Assignments screen, complete the following fields to add trunk group members:
 - Port: Type **IP**.
 - Sig Grp: Assign the number of the signaling group that provides the signaling channel for this trunk group.

⇒ NOTE:

On the Avaya R300 there is a maximum of 23 trunk group members for each T1 interface, 30 trunk group members for each E1 interface, and 2 trunk group members for each BRI interface. All six BRI interfaces may be deployed and are represented by this one signaling group.

⇒ NOTE:

Due to a current trunk group capacity limitation in DEFINITY Release 9.5, the maximum membership shall be limited to 31 trunks within this one digital signaling group.

- Type **change signaling-group <number of signaling group>** and press ENTER to return to the signaling group screen. See [Screen 27](#).
- In the Trunk Group for Channel Selection field, type the number of the trunk group that should be associated with this signaling channel.
- Press ENTER to save your changes.

Set up a signaling group and an analog trunk group

⇒ NOTE:

Important: You will need only to administer an H.323 signaling group or trunk group between the Avaya R300 and the DEFINITY system if the trunks to your central office are terminated *at the R300*. If you are using the Avaya R300 solely for DCP and/or analog station connectivity, then you will not need an H.323 trunk or signaling group between the R300 and the DEFINITY system.

⇒ NOTE:

DEFINITY only supports one analog signaling group to an individual R300. All trunk group members will be part of this single managed signaling group. For example, if you are deploying any model of the R300 and have two analog WAN ports connected to the PSTN network, both of the 64Kbps circuit switched channels utilized are part of this one signaling group.

Each Avaya R300 that uses one or both of its central office loop-start analog trunks has a listen port, a signaling group, and a trunk group that are unique to those analog trunks, and separate from the listen port, signaling group, and trunk group used by the T1 or E1 digital trunk. Set up a new signaling group and trunk group administered for H.323 signaling.

Instructions

Setting up a signaling group

Set up the signaling group for remote office:

1. Type **add signaling-group <signaling group number or next>** and press ENTER to display the Signaling Group screen.

```
add signaling-group 5                                     Page 1 of 5
                                           SIGNALING GROUP

Group Number 5           Group Type: H.323
                        Remote Office? y           Max Number of NCA TSC: 0
                                           Max number of CA TSC: 0
                                           Trunk Group for NCATSC:

Trunk Group for Channel Selection: 5
Supplementary Service Protocol: a           Network Call Transfer? n

Near-end Node Name: clan           Far-end Node Name: remote office 6
Near-end Listen Port: 5005         Far-end Listen Port:1721

LRQ Required? n           Calls Share IP Signaling Connection? y
RRQ Required? y           Bypass If IP Threshold Exceeded? n
                           Direct IP-IP Audio Connections? y
                           IP Audio Hairpinning? n
                           Interworking Message: PROgress
```

Screen 30. Signaling Group screen (page 1)

2. On the signaling group screen, complete the following fields:

- Group Type: type **H.323**.
- Remote Office: type **y**.
- Trunk Group for Channel Selection: type trunk group number.
- Near-end Node Name: assign the node name assigned to the C-LAN that supports this Avaya R300.
- Far-end Node Name: type the node name assigned to the remote office.
- Near-end Listen Port: type a port number in the 5000-9999 range.
- Far-end Listen Port: type **1721**. This is the dedicated TCP port in the Avaya R300
- Calls share IP Signaling Connection: Type **y**.
- Direct IP-IP audio connections: Type **y** to enable IP call shuffling, otherwise type **n**.
- IP Audio Hairpinning: type **n** to disable.

⇒ NOTE:

The far-end port must be 1721. The near-end port must be unique; it must be different from the far-end port.

3. Press ENTER to save your changes.

Setting up an analog trunk group

You can modify an existing trunk group or add a new one.

1. Type **add trunk group <trunk group number or next>** and press ENTER.

```

add trunk-group 5                                     Page 1 of 22
                                                    TRUNK GROUP
Group Number: 5                                     Group Type: isdn           CDR Reports: y
  Group Name: ro6-analog                            COR: 1                   TN: 1          TAC: #05
  Direction: two-way                               Outgoing Display? n      Carrier Medium: IP
  Dial Access? y                                   Busy Threshold: 255      Night Service:
  Queue Length: 0
Service Type: tie                                Auth Code? n            TestCall ITC: unre
                                                    Far End Test Line No:
TestCall BCC: 4
TRUNK PARAMETERS
  Codeset to Send Display: 0                       Codeset to Send National IEs:6
  Max Message Size to Send: 260                   Charge Advice: none
  Supplementary Service Protocol: a               Digital Handling (in/out): enbloc/enbloc

  Trunk Hunt: cyclical

                                                    Digital Loss Group: 6
Calling Number - Delete:                          Insert:                   Number Format:
  Bit Rate: 1200                                  Synchronization: async  Duplex: full
Disconnect Supervision - In? y Out? n
Answer Supervision Timeout: 0

```

Screen 31. Trunk Group screen (page 1)

2. On the Trunk Group screen, complete the following fields:
 - Group Type: Type **isdn**.
 - Carrier Medium: Type **IP**.
 - Service Type: Type **tie**.

- Codeset to Send Display: Type **0**.
The default is 6, and this should be changed to 0 to support interoperability with non-DEFINITY systems.
 - Digital Loss Group: Type **7**. The default is 13, the loss group used for H.323 trunks. Because this is an H.323 signaling group, the DEFINITY system cannot tell that this ultimately terminates in an analog trunk. Loss group 7 is the correct loss group for analog trunks on the R300.
3. Go to the Group Member Assignments screen to associate the trunk group with the signaling group.

```

add trunk-group 5                                     Page 6 of 22
                                                    TRUNK GROUP
                                                    Administered Members (min/max): 1/2
GROUP MEMBER ASSIGNMENTS                          Total Administered Members: 2

  Port      Code 5Fx Name   Night      Sig Grp
1:IP        ro6-analog co 1      5
2:IP        ro6-analog co 2      5
3:
4:
5:
6:
7:
8:
9:
10:

```

Screen 32. Group Member Assignments screen

4. On the Group Member Assignments screen, complete the following fields to add trunk group members:
 - Port: Type **IP**.
 - Sig Grp: Assign the number of the signaling group that provides the signaling channel for this trunk group. There are two trunks which may be designated in this group.
5. Type **change signaling-group <number of signaling group>** and press ENTER to return to the signaling group screen. See [Screen 30](#).
6. In the Trunk Group for Channel Selection field, type the number of the trunk group that should be associated with this signaling channel.
7. Press ENTER to save your changes.

Administer loss plan

To administer a loss plan, see [Appendix A, “Loss Plan Settings”](#).

These are used to optimize the transmission path gain/loss for a given communication call.

Add phones to remote office location

When administering an IP telephones, the extensions you add must match your dial plan.

Instructions

R300 phones

1. Type **add station nnnn**, where *nnnn* is the extension you are adding to display the Station screen.

⇒ NOTE:

To set the 8411D to use the I1 channel press **shift mute 42** on the keypad of the phone.

⇒ NOTE:

The 6416D+M and the 6424D+M require a model 100A analog interface module in the base of the phone set. Set the left dip switch to **1**.

```

add station 4101                                     Page 1 of X
                                                    STATION
Extension: 4101                                     Lock Messages? n      BCC: 0
  Type: 8410D                                       Security Code: 1234567 TN: 1
  Port: x                                           Coverage Path 1: ___  COR: 1
  Name: Remote main                                Coverage Path 2: ___  COS: 1
                                                    Map-to Station:
                                                    Hunt-to-Station: ___

STATION OPTIONS
  Loss Group: _                                     Personalized Ringing Pattern:
  Data Module? n                                   Message Lamp Ext: 4101
  Speakerphone: 2-way                             Mute button enabled? y
  Display Language? English

                                                    Media Complex Ext:
                                                    IP Softphone? n
                                                    Remote Office Phone? y

```

Screen 33. Station screen (page 1)s

2. On the Station screen, complete the following fields:
 - Type: Type in the model of the phone you are adding, either analog or digital.
 - Port: Type **x**.
 - Name: Identify the phone for your records.
 - Security Code: Match the password set up on the Avaya R300 administration.
 - Remote Office Phone: Type **y** (yes).

- Go to page 2 of the Station screen.

```

change station 4101                                     Page 2 of 4
                                     STATION
FEATURE OPTIONS
    LWC Reception: spe      Auto Select Any Idle Appearance? n
    LWC Activation? y       Coverage Msg Retrieval? y
LWC Log External Calls? n      Auto Answer:
    CDR Privacy? n         Data Restriction? n
    Redirect Notification? y   Idle Appearance Preference? n
Per Button Ring Control? n
    Bridged Call Alerting? n      Restrict Last Appearance? y
Active Station Ringing: single
    H.320 Conversion? y Per Station CPN - Send Calling Number?
    Service Link Mode: as-needed
    Multimedia Mode: enhanced
                                     Display Client Redirection? n
    AUDIX Name:                Select Last Used Appearance?
    Messaging Server Name:      Coverage After Forwarding?
                                     Direct IP-IP Audio Connections? y
                                     IP Audio Hairpinning?

```

Screen 34. Station screen (page 2)

- In the Direct IP-IP Audio Connections field (second page), type **y** (yes).
- In the IP Audio Hairpinning field, type **n**.
- Press ENTER to save your changes.

You can set up a telnet session on your remote office administration program to verify that the phone is registered.

IP Softphone: Roadwarrior & Telecommuter

- Type **add station** and press ENTER to display the Station screen.

```

add station 6001                                     Page 1 of X
                                     STATION
Extension: 6001                                     Lock Messages? n      BCC: 0
  Type: 8410D                                       Security Code: 1234567  TN: 1
  Port: x                                           Coverage Path 1: ___  COR: 1
  Name: Remote main                                Coverage Path 2: ___  COS: 1
                                     Map-to Station:
                                     Hunt-to-Station: ___

STATION OPTIONS
    Loss Group: _                                     Personalized Ringing Pattern:
    Data Module? n                                   Message Lamp Ext: 6001
    Speakerphone: 2-way                               Mute button enabled? y
    Display Language? English
                                     Media Complex Ext: 6002
                                     IP Softphone? y
                                     Remote Office Phone? n

```

Screen 35. Station screen (page 1)

2. On the Station screen, complete the following fields:

- Type: Type in the model of the phone you are adding, either analog or digital.
- Port: Type **x**.
- Name: Identify the phone for your records.
- Security Code: Match the password set up on the Avaya R300 administration.
- IP Softphone: Type **y** (yes).
- Media Complex Ext: Type the H.323 extension.
- Remote Office Phone: Type **n** (no).

3. Go to page 2 of the Station screen.

```

change station 6001                                     Page 2 of 4
                                     STATION
FEATURE OPTIONS
    LWC Reception: spe          Auto Select Any Idle Appearance? n
    LWC Activation? y           Coverage Msg Retrieval? y
LWC Log External Calls? n           Auto Answer:
    CDR Privacy? n             Data Restriction? n
    Redirect Notification? y    Idle Appearance Preference? n
Per Button Ring Control? n
    Bridged Call Alerting? n    Restrict Last Appearance? y
Active Station Ringing: single
    H.320 Conversion? y        Per Station CPN - Send Calling Number?
    Service Link Mode: as-needed
    Multimedia Mode: enhanced
                                     Display Client Redirection? n
    AUDIX Name:                Select Last Used Appearance?
    Messaging Server Name:      Coverage After Forwarding?
                                     Direct IP-IP Audio Connections? y
                                     IP Audio Hairpinning?
    
```

Screen 36. Station screen (page 2)

4. On page 2 of the Station screen, complete the following fields:

- Multimedia Mode: Type **enhanced**.
- Direct IP-IP Audio Connection: Type **y** (yes).

5. Press ENTER to save your changes.

The Avaya R300 user interface is a menu-driven interface accessed through a VT100 terminal or VT100 emulation software running on a PC or workstation. Refer to the *MAX 3000 Installation and Basic Configuration Guide*, Chapter 3: “MAX User Interfaces,” for information on:

- Setting up your PC or workstation to work with the Avaya R300
- Using the VT100 interface
- Using the command line interface.

Use the control serial port to administer an IP address and a default Gateway on the Avaya R300. You can do the remaining configuration in a telnet session to the Avaya R300.

The Avaya R300 interface

The interface for the Avaya R300 is through a VT100 interface. The menus are text-based and are displayed in the left side of the window. The interface consists of the Main Edit Menu and eight status windows. The Main Edit Menu is located on the left side of the screen, and the right side of the screen contains status windows for the Avaya R300. The system sets the status windows to a default. You can manually change them using the up arrow key to display the system menu.

Main Editing Window

The Main Edit Menu appears as follows:

```

|----- MAX EDIT -----| |-----| |-----|
|Main Edit Menu          | |10-100 1234567890   | |30-000 Line Stat   |
| 00-000 System         | | L1/RA nnnnnnnnnn  | | 123456789012 A    |
| 10-000 Net/T1        | | 12345678901234    | | --- .....-      |
| 20-000 Empty         | | nnnnnnnnnnnnnn   | | .....-          |
| 30-000 Empty         | |-----| |-----|
| 40-000 Ethernet      | |10-200 1234567890   | |00-200 15:10:34    |
|>50-000 Enter Date    | | L2/DS @@@@@@@@@@  | |>M31 Line   Ch     |
| 60-000 Serial WAN    | | 12345678901234    | | Ethernet up      |
| 70-000 Not Available  | | @@@@@@@@@@@@@@@@  | |-----|
|                       | |40-300 WAN Stats    | |40-400 Ether Stat  |
|                       | |>Rx Pkt: 118^      | |>Rx Pkt: 3486092   |
|                       | | Tx Pkt: 511      | | Tx Pkt: 10056     |
|                       | | CRC: 0v          | | Col: 3530         |
|                       | |-----| |-----|
|                       | |00-100 Sys Option  | |40-100 Sessions    |
|                       | |>Security Prof: 1 ^| |> 1 Active         |
|                       | | SW +8.0-148a0e0+  | | 0 Answer          |
|                       | | S/N: 9320027     | | v                 |

```

Press Ctrl-n to move cursor to the next menu item. Press return to select it.
Press Tab to move to another window --- thick border indicates active window.

Virtual Slot Description

The numbers in the Main Edit Menu correspondent to "virtual slots". This is a way that the Lucent-Ascend product differentiates portions of the hardware into descriptions that suggest that each portion is actually on a real physical circuit pack. In fact, there is only a large motherboard and two expansion slot boards (the DSP card and the Combo Blade card). The slot description is as follows:

- Slot 0 (menu 00-000) This is the main system slot.
- Slot 1 (menu 10-000) This is the T1 or E1 or BRI slot. The physical built-in ports for both T1 (E1) network configuration parameters are provided at this menu level. For the BRI model, all six physical WAN ports are provided.
- Slot 2 (menu 20-000) This is the expansion slot that houses the DSP16 or DSP30 card.
- Slot 3 (menu 30-000) This is the expansion slot that houses the Combo Blade card. The parameters for the 24 DCP station interfaces, the 2 analog station interfaces and the 2 analog loop-start trunks are provided at this menu level.
- Slot 4 (menu 40-000) This is Ethernet slot. The Ethernet menu contains the submenus and profiles related to the local network, routing, bridging and WAN connections.
- Slot 5 (menu 50-000) This is the Ether Data slot. This is used for the HDLC channels for data modems.

- Slot 6 (menu 60-000) This is for the serial WAN slot. This is contains the menu related to the serial WAN V.35 connection.
- Slot 7 (menu 70-000) This is for the on-board (Motherboard) data modems. These are not existent on the standard manufactured R300. This slot will typically display "Not Available" at this menu setting.

Status Windows

The default status window setup uses the items in [Table 16](#) in the appropriate status window:.

Table 16. Default Status Window Items

Screen Name	Purpose
Status 1 - 10-100	First WAN interface status
Status 2 - 30-000	Combo Blade station and trunk status
Status 3 - 10-200	Second WAN interface status
Status 4 - 00-200	System events (last 31 tasks completed)
Status 5 - 40-300	WAN receive and transmit status
Status 6 - 40-400	Ethernet receive and transmit status
Status 7 - 00-100	System options
Status 8 - 40-100	Ethernet sessions

If you want to change the default information, changes are made in the System Config menu at the bottom. For example, to change the default information for the Status 2 (Combo Blade) window, you would proceed as follows:

1. From the Main Edit Menu, select System>Sys Config>Status
2. Type 30-000 on Status 2.
3. Press 2 to save your changes.
4. Press the left arrow key or ESC key twice to return to the Main Edit Menu.

Reset the system to implement the default status window setup.

You can find additional information on the status windows in *Max Reference, Chapter 1, Status-Window Reference*.

The status indicator panes are listed from left to right starting at the top:

- **Line 1 Status** - This shows the status of each channel on the first T1/E1/BRI line remoted through the Avaya R300 unit. L1 indicates this is line one. The information following the slash indicate the status of the line (YA=Yellow Alarm, RA=Red Alarm, LA=Line Active).
- **30-000 Line Stat** - This shows the status of the lines on the Combo Blade.
 - The top row of symbols represent the first 12 DCP lines, and the bottom row of symbols represent DCP lines 13-24.
 - The two symbols under the **A** represent the 2 analog lines.
 - When a line has a . (dot), it is not registered with the DEFINITY system.
 - When a line has a - (dash), it is registered, but not active on a call.
 - When a line has a * (star), it is active on a call.
- **Line 2 Status** - This shows the status of each port on the second T1 or E1 line remoted through the Avaya R300 unit. Status indicators are the same for both lines.
- For ISDN-BRI, this shows the B1 and B2 (64 kbps) channel status in six rows, starting with WAN part 1.
- **Message Log** - This shows messages generated by the system.
- **WAN Stats** - This shows the status of the WAN connection and the number of packets transferred through the WAN.
- **Ethernet Status** - This shows the status of the ethernet connection, the number of packets transferred through the ethernet connection, and collisions.
- **System Options** - This shows the system options for the Avaya R300 including the software version and security profile. You can scroll through this pane to view all system options set.
- **Sessions** - This shows active sessions on the Avaya R300 unit.

To move between status indicator panes, press **Tab** until the pane has a thick double line around it. Use the arrow keys to scroll up and down in a pane to display all information.

The Avaya R300 IP address

Assign an IP address to the Avaya R300 using a dumb terminal, workstation, or PC connected by a serial connection. Refer to the *MAX 3000 Installation and Basic Configuration Guide*, Chapter 3: “MAX User Interfaces,” for instructions on configuring your PC or workstation.

⇒ NOTE:

You must complete this step, at minimum, for Telnet administration to work.

To assign an IP address, set the IP Adrs field in the Ether Options profile, which is located in Ethernet > Mod Config > Ether Options. Proceed as follows:

1. From the Main Edit Menu, select Ethernet > Mod Config > Ether Options.

The following list of parameters appears. (The settings shown are examples only.)

```

----- MAX EDIT -----
|40-100 Mod Config      | |10-100 1234567890   | |30-000 Line Stat   | | |
| Ether options...     | | L1/RA nnnnnnnnnn  | | 123456789012 A   |
| >IP Adrs=111.1.111.11/24 | | 12345678901234   | | ..... -         |
| 2nd Adrs=0.0.0.0/0   | | nnnnnnnnnnnnnn  | | ..... -         |
| RIP=Off              | |-----|          | |-----|          |
| 2nd RIP=Off          | |10-200 1234567890   | |00-200 15:10:34   |
| RIP2 Use Multicast=No | | L2/DS @@@@@@@@@@ | |>M31 Line Ch      |
| Ignore Def Rt=Yes    | | 12345678901234   | | Ethernet up      |
| Proxy Mode=Off       | | @@@@@@@@@@@@@@@@ | |-----|          |
| Filter=0             | |-----|          | |-----|          |
| IPX Frame=None       | |40-300 WAN Stats   | |40-400 Ether Stat |
| IPX Enet#=N/A        | |>Rx Pkt: 118^      | |>Rx Pkt: 3486092 |
| IPX Pool#=N/A        | | Tx Pkt: 511      | | Tx Pkt: 10056 |
| IPX SAP Filter=N/A   | | CRC: 0v          | | Col: 3530 |
| Handle IPX Type20=N/A | |-----|          | |-----|          |
|                       | |00-100 Sys Option  | |40-100 Sessions   |
|                       | |>Security Prof: 1 ^| |> 0 Active        |
|                       | | SW +8.0-148a0e0+ | |-----|          |
|                       | | S/N: 9320027     | | v |             |

```

Press Ctrl-n to move cursor to the next menu item. Press return to select it.
 Press Tab to move to another window --- thick border indicates active window.

2. Complete the IP Adrs field with the IP address and (optional) subnet mask of the Avaya R300. A slash (/) separates the address and the mask. For example, 198.5.248.40/24 indicates that 24 bits (for example, 255.255.255.0) of the IP address are interpreted as network bits.

3. Press the left arrow or ESC key to exit the Ether Options profile.

A confirmation menu appears.

```

|----- MAX EDIT -----| |-----| |-----|
|EXIT?                   | |10-100 1234567890   | |30-000 Line Stat   |
|>0=ESC (Don't exit)    | |L1/RA nnnnnnnnnn   | | 123456789012 A   |
|1=Exit and discard     | | 12345678901234   | | -----.-----|
|2=Exit and accept      | | nnnnnnnnnnnnnn   | | .....-----|
|                         | |-----| |-----|
|                         | |10-200 1234567890   | |00-200 15:10:34   |
|                         | |L2/DS @@@@@@@@@@   | |>M31 Line  Ch     |
|                         | | 12345678901234   | | Ethernet up      |
|                         | | @@@@@@@@@@@@@@   | |                   |
|                         | |-----| |-----|
|                         | |40-300 WAN Stat     | |40-400 Ether Stat |
|                         | |>Rx Pkt: 118^       | |>Rx Pkt: 3486092 |
|                         | |Tx Pkt: 511        | |Tx Pkt: 10056   |
|                         | |CRC: 0v           | |Col: 3530       |
|                         | |-----| |-----|
|                         | |00-100 Sys Option   | |40-100 Sessions   |
|                         | |>Security Prof: 1 ^| |> 0 Active        |
|                         | |SW +8.0-148a0e0+   | |                   |
|                         | |S/N: 9320027      | |v                |
  
```

Press Ctrl-n to move cursor to the next menu item. Press return to select it.
 Press Tab to move to another window --- thick border indicates active window.

4. Press 2 to save your changes.
5. Press the left arrow or ESC key twice to return to the Main Edit Menu.

The Avaya R300 gateway

To assign a default gateway to the Avaya R300 proceed as follows:

1. From the Main Edit Menu, select Ethernet > Static Rtes.

```

|----- MAX EDIT -----| |-----| |-----|
|E40-000 Ethernet       | |10-100 1234567890   | |30-000 Line Stat   |
|Static Rtes            | |L1/RA nnnnnnnnnn   | | 123456789012 A   |
|>Name:Default         | | 12345678901234   | | -----.-----|
|Active=Yes            | | nnnnnnnnnnnnnn   | | .....-----|
|Dest=0.0.0.0/0        | |-----| |-----|
|Gateway=111.11.11.11   | |10-200 1234567890   | |00-200 15:10:34   |
|Metric=1              | |L2/DS @@@@@@@@@@   | |>M31 Line  Ch     |
|Preference=100        | | 12345678901234   | | Ethernet up      |
|Private=Yes           | | @@@@@@@@@@@@@@   | |                   |
|Ospf-Cost=1           | |-----| |-----|
|LSA type=ExternalType1| |40-300 WAN Stat     | |40-400 Ether Stat |
|NSSA-ASE1=N/A         | |>Rx Pkt: 118^       | |>Rx Pkt: 3486092 |
|ASE-tag=c0000000      | |Tx Pkt: 511        | |Tx Pkt: 10056   |
|Third-party=No        | |CRC: 0v           | |Col: 3530       |
|                         | |-----| |-----|
|                         | |00-100 Sys Option   | |40-100 Sessions   |
|                         | |>Security Prof: 1 ^| |> 0 Active        |
|                         | |SW +8.0-148a0e0+   | |                   |
|                         | |S/N: 9320027      | |v                |
  
```

Press Ctrl-n to move cursor to the next menu item. Press return to select it.
 Press Tab to move to another window --- thick border indicates active window.

2. Type the IP address of the gateway in the Gateway field. Set this to the default gateway for your subnet.
3. Press the left arrow or ESC key to exit the Static Rtes profile.
A confirmation menu appears.
4. Press 2 to save your changes.
5. Press the left arrow or ESC key twice to return to the Main Edit Menu.

Refer to the *MAX 3000 Installation and Basic Configuration Guide*, Chapter 4: “Preparing to Configure the MAX,” for information on

- Securing the Avaya R300 from unauthorized configuration changes
- Setting Avaya R300 system options

IP assignment confirmation

⇒ NOTE:

You should first enter the Avaya R300’s “terminal Server” mode by pressing CTRL+D and then type **E**. Then invoke the ping command toward a host PC or router on your own subnet. This will cause all of the host devices on your subnet to update their address resolution protocol (ARP) tables.

After assigning an IP address, ping the gateway machine from the Avaya R300 to verify the Avaya R300 network connection.

1. Ping from the terminal server window on the Avaya R300.
2. Type **ping nnn.nnn.nnn.nnn** and press ENTER where nnn.nnn.nnn.nnn is the IP address of the gateway machine.

Ping the Avaya R300 from another system to make sure the IP assignment is correct.

1. Ping from a DOS or UNIX prompt.
2. Type **ping nnn.nnn.nnn.nnn** and press ENTER where nnn.nnn.nnn.nnn is the IP address of the Avaya R300.

Avaya R300 system information

Do the remaining configuration and administration either by using the serial connection to the Avaya R300 or by opening a telnet session to the Avaya R300.

System information for the Avaya R300 identifies it to the rest of the network and provides the date and time to the phones connected through the Avaya R300.

To assign system information to the Avaya R300, proceed as follows:

⇒ NOTE:

You must move the “>” scroll arrow downward to show more parameters in the system configuration (Sys Config) list.

1. From the Main Edit Menu, select System > Sys Config.
2. In the System> Sys Config menu, complete these fields:
 - Name: (Give the Avaya R300 a unique name of no more than sixteen characters. In general, use the same name for the Avaya R300 as the DNS name assigned to it. The name is case-sensitive.)
 - Location: (This can be the physical address of the Avaya R300, or it can be a location on a rack.)
 - Contact: (This is generally the system administrator for the Avaya R300.)
 - Max Dialout Time: (This field should be set to 225.)
 - Analog Encoding: (This field should be set to a-law or μ -law.)

```

|----- MAX EDIT -----| |-----| |-----|
|00-100 Sys Config      ^| |10-100 1234567890   | |30-000 Line Stat   |
|>Name=                  | |L1/RA nnnnnnnnnn   | |123456789012 A    |
| Location=              | |12345678901234    | |---.....-        |
| Contact=               | |nnnnnnnnnnnnnn   | |.....-          |
| Date=07/19/2000       | |-----| |-----|
| Time=16:21:23         | |10-200 1234567890 | |00-200 15:10:34   |
| Term Rate=9600        | |L2/DS @@@@@@@@@@ | |>M31 Line Ch     |
| Console=Standard     | |12345678901234   | | Ethernet up     |
| Console Security=None | |@@@@@@@@@@@@@@@@ | |-----|
| Remote Mgmt=Yes       | |-----| |-----|
| Max Dialout Time=20   | |40-300 WAN Stat   | |40-400 Ether Stat |
| Parallel Dial=5       | |>Rx Pkt: 118^    | |>Rx Pkt: 3486092 |
| Single Answer=Yes    | |Tx Pkt: 511     | |Tx Pkt: 10056   |
| Sub-Adr=None         | |CRC: 0v        | |Col: 3530      |
| Serial=0             | |-----| |-----|
| LAN=0                | |00-100 Sys Option | |40-100 Sessions  |
| DM=0                 | |>Security Prof: 1 ^| |> 0 Active       |
|                      | |SW +8.0-148a0e0+ | |-----|
|                      | |S/N: 9320027    | |v              |
    
```

Press Ctrl-n to move cursor to the next menu item. Press return to select it. Press Tab to move to another window --- thick border indicates active window.

3. Check the Date and Time fields and correct them, as needed.
4. Press the left arrow or ESC key to exit the Sys Config profile.

A confirmation menu appears.
5. Press 2 to save your changes.
6. Press the left Arrow or ESC key twice to return to the Main Edit Menu.

Avaya R300 T1 line (PSTN) configuration

To configure the T1 slot, you must set the parameters that specify the lines' connection to the Central Office switch.

For the T1 slot configuration, you open the Factory profile to the slot's Line 1 profile, and specify signaling mode, framing type, encoding, channel service unit (CSU) usage, cable length, line attenuation, and channel usage. If you are using inband signaling, you need to configure incoming call routing. If you want to use dynamic IP addressing, you need to configure the address pool characteristics.

Specify and configure signaling mode

To specify the signaling mode, open the Net/T1 > Line Config > Factory profile > Line 1 profile for the line.

Set the Sig Mode parameter to specify the type of signaling to be used on the T1 line: ISDN, ISDN_NFAS, or Inband.

To configure the signaling mode you selected, do the following:

- If you selected ISDN_NFAS as the signaling mode, set the NFAS ID Num field to specify a number from 0 to 31 for each NFAS line. You must set this field to a unique number. The default is 1 for line 1 and 2 for line 2.
- If you selected Inband as the signaling mode, set the Rob Ctl field to specify the robbed-bit call-control mechanism.

In order to use inband or robbed-bit signaling on a T1 trunk, configure incoming call routing and also set the following parameters:

- Ethernet>Mod Config>VOIP Options>Single Dial Enable: Set to **No** to enable two-stage dialing.
- NET/T1>Line Config>Line 1>Rob-Ctl: Set to **Idle-start** to enable immediate-start.
- NET/T1>Line Config>Line 1>Collect DNIS/ANI: Set to **Yes** to enable secondary prompt for digits.

The R300 will work with a PSTN robbed-bit trunk that is configured as immediate/immediate. Note that the default setting for Single Dial Enable is **Yes** to enable single-stage dialing. However, incoming trunk calls will fail to complete if the far-end switch appends a “#” sign to the dialed string. This does not apply to ISDN trunk calls or to two-stage dialing.

- If you selected ISDN as the signaling mode:
 - set the Switch Type field to specify the type of WAN switch used at the t1 interface line's service provider point of presence. The choices are AT&T, NTI for Northern Telecom, NI-2 for National ISDN2, and Japan for the Japanese mode.
 - set the ISDN TE/NT Mode field to specify TE (terminal equipment).

```

|----- MAX EDIT -----| |-----| |-----|
|10-1** isdn-pri          | |10-100 1234567890    | |30-000 Line Stat   |
|Line 1...                ^| |L1/RA nnnnnnnnnnn   | |123456789012 A    |
|>Sig Mode=ISDN          | |12345678901234      | |---.....-         |
|NFAS ID num=N/A         | |nnnnnnnnnnnnnnnn   | |.....-           |
|Rob Ctl=N/A             | |-----| |-----|
|Switch Type=AT&T        | |10-200 1234567890    | |00-200 15:10:34   |
|ISDN TN/NT mode=TE      | |L2/DS @@@@@@@@@@    | |>M31 Line Ch      |
|Framing Mode=ESF        | |12345678901234      | |Ethernet up       |
|Front End=CSU           | |@@@@@@@@@@@@@@@@    | |-----|
|Encoding=B8ZS           | |-----| |-----|
|FDL=None                | |40-300 WAN Stat     | |40-400 Ether Stat |
|Length=N/A              | |>Rx Pkt: 118^       | |>Rx Pkt: 3486092  |
|Buildout=0 dB           | |Tx Pkt: 511        | |Tx Pkt: 10056     |
|Clock Source=Yes        | |CRC: 0v           | |Col: 3530         |
|Collect DNIS/ANI=N/A    | |-----| |-----|
|InterDigit Timeout=N/A  | |00-100 Sys Option   | |40-100 Sessions   |
|Pbx Type=N/A            v| |>Security Prof: 1 ^ | |> 0 Active         |
|                          | |SW +8.0-148a0e0+   | |-----|
|                          | |S/N: 9320027       v| |-----|
    
```

Press Ctrl-n to move cursor to the next menu item. Press return to select it.
 Press Tab to move to another window --- thick border indicates active window.

```

|----- MAX EDIT -----| |-----| |-----|
|10-1** isdn-pri          | |10-100 1234567890    | |30-000 Line Stat   |
|Line 1...                ^| |L1/RA nnnnnnnnnnn   | |123456789012 A    |
|Pbx Type=N/A            | |12345678901234      | |---.....-         |
|Delete Digits=N/A       | |nnnnnnnnnnnnnnnn   | |.....-           |
|Add Number=N/A          | |-----| |-----|
|Call-by-Call=N/A        | |10-200 1234567890    | |00-200 15:10:34   |
|T1 PRI:PRI # Type=N/A   | |L2/DS @@@@@@@@@@    | |>M31 Line Ch      |
|T1 PRI:NumPlanID =N/A   | |12345678901234      | |Ethernet up       |
|Ans #=N/A               | |@@@@@@@@@@@@@@@@    | |-----|
|Ans Service=N/A         | |-----| |-----|
|Input Sample Count=N/A  | |40-300 WAN Stat     | |40-400 Ether Stat |
|Send Disc=0             | |>Rx Pkt: 118^       | |>Rx Pkt: 3486092  |
|Net2Net Incoming Calls...| |Tx Pkt: 511        | |Tx Pkt: 10056     |
|Net2Net ChanGroup ID... | |CRC: 0v           | |Col: 3530         |
|Ch 1=Switched           | |-----| |-----|
|Ch 1 #=                 | |00-100 Sys Option   | |40-100 Sessions   |
|Ch 1 Slot=0            v| |>Security Prof: 1 ^ | |> 0 Active         |
|                          | |SW +8.0-148a0e0+   | |-----|
|                          | |S/N: 9320027       v| |-----|
    
```

Press Ctrl-n to move cursor to the next menu item. Press return to select it.
 Press Tab to move to another window --- thick border indicates active window.

Specify the other required parameters

In addition to setting signaling mode, you must perform the following steps for the profile:

1. Set the Framing Mode field to D4 or ESF to specify the type of framing the line uses.
2. Set the Front End field to CSU to enable the internal CSU. Disable the internal CSU by setting Front End to DSX.
3. Set the Encoding field to None (identical to AMI, but without density enforcement), AMI, or B8ZS to specify the encoding used on this line.
4. Set the FDL field to N/A (appropriate for Framing Mode=D4), None, AT&T, ANSI, or Sprint to specify the Facility Data Link (FDL) used on the line.
5. Set the Length parameter as appropriate for your site. If you are using the internal CSU, keep it at the default value.
6. Set the Buildout field to specify proper line attenuation. Obtain this information from your service provider. The default is 0dB.
7. Set the Clock Source field to **Yes** if you wish to have the T1 line as the master clock source for synchronous connections, otherwise set this to **No**.
8. If you cannot accept the default channel usage of **switched** for every channel on the line, set the Ch *N* field to Switched (the default), Nailed (dedicated), or Unused (not in service).
9. Use the Collect DNIS/ANI parameter to enable the Avaya R300 to collect the Automatic Number Identifier (ANI) and the Dialed Number Identification String (DNIS) signals. From the Main Edit Menu, select Net/T1>Line Config>10-1**>Line 1 Menu to use the Collect DNIS/ANI parameter.

NOTE:

These signals support ANI authentication of Avaya R300 users and single-stage dialing. DNIS and ANI can be collected for three network signal types:

- DTMF tones in T1 inband
- MF tones in E1 R2
- D channel messages in T1/E1 PRI or BRI

NOTE:

To process DNIS and ANI signals, the telephone switch connected to the Avaya R300 must support DNIS and ANI pass-through signaling

10. You may configure each of the 24 channels to one of the following uses:
 - Switched (default) -
Supports switched connections. This can be robbed-bit or a B-channel depending on the signaling mode.
 - Nailed -
A clear-channel 64 Kbps circuit.
 - D channel -
The channel that conveys signaling information for ISDN.
Assigned automatically when you select ISDN signaling mode.
 - NFAS-Prime
Primary D channel for two T1 lines that support NFAS signaling.
You would use this as the D channel for both lines, unless it became unavailable.
 - NFAS-Second
Secondary D channel for two T1 lines that support NFAS signaling.
You would use this as the secondary (backup) D channel.
 - Unused
Unavailable for use. For example, in fractional T1 usage set the channels that are unavailable to “unused”.

Save the line profile for WAN interfaces

A T1, E1, or BRI WAN configuration has many parameters. Because they are so numerous, you may find it helpful to save them into a profile, and give the profile a symbolic name.

To save a profile:

1. From the Main Edit Menu, select T1>Net/T1>Line Config
2. Enter the “Save File” mode by pressing CTRL+D and then type **S**. You will be prompted to store in one of four places:

10-1** factory

- 10-101
- 10-102
- 10-103
- 10-104

The presence of “**” indicates the active profile.

3. Complete the task by typing ENTER.

To provide a name for this profile:

4. Type ENTER to select one of the four profiles.
5. Select the Name field and type in the name.

To load this profile to make it active:

6. Enter "Load File" mode by pressing CTRL+D and then type **L**. The display will now show a double asterisk to indicate that this is the active profile.

⇒ NOTE:

Lines 1 and 2 for T1 or E1 interfaces are both saved into one of the four WAN interface profile files.

The Avaya R300 T1 line (IP routed over T1) configuration

Specify and configure signaling mode and channel usage

The following example is for an In-band signaling trunk. If the user wishes to set this up over an ISDN trunk, he can do the administration by setting the "Sig Mode" parameter to select "ISDN".

To configure one of the T1 interfaces so that the all of the traffic destined to be IP-routed back to the host DEFINITY uses that path:

1. Open the Net/T1>Line Config>Factory Profile>Line 1:

⇒ NOTE:

Instead of "Factory Profile", you could enter one of the other four profiles as described in the last section (Save the Line Profile for WAN Interfaces). In the example below, profile "10-101" has been named "T1-Non Channel" to refer to the application of a nailed service T1 that is used for IP routing. If you wish to select the second T1 interface, you would enter "Line 2".

```

|----- MAX EDIT -----| |-----| |-----| |
|10-1** T1-Non Channel   | |10-100 1234567890   | |30-000 Line Stat   |
| Line 1...               ^ | | L1/RA nnnnnnnnnn   | | 123456789012 A   |
| >Sig Mode=Inband        | | 12345678901234   | | ---.....-   |
| NFAS ID num=N/A        | | nnnnnnnnnnnnnn   | | .....-   |
| Rob Ctl=Wink-Start      | |-----| |-----|
| Switch Type=N/A        | |10-200 1234567890   | |00-200 15:10:34   |
| ISDN TN/NT mode=N/A    | | L2/DS @@@@@@@@@@   | |>M31 Line Ch   |
| Framing Mode=ESF       | | 12345678901234   | | Ethernet up   |
| Front End=DSX          | | @@@@@@@@@@@@@@   | |-----|
| Encoding=B8ZS         | |-----| |-----|
| FDL=None              | |40-300 WAN Stat   | |40-400 Ether Stat |
| Length=1-133          | |>Rx Pkt: 118^   | |>Rx Pkt: 3486092 |
| Buildout=N/A          | | Tx Pkt: 511   | | Tx Pkt: 10056 |
| Clock Source=Yes      | | CRC: 0v   | | Col: 3530 |
| Collect DNIS/ANI=No   | |-----| |-----|
| InterDigit Timeout=N/A | |00-100 Sys Option | |40-100 Sessions |
| Pbx Type=N/A          | |>Security Prof: 1 ^ | |> 0 Active |
| | | SW +8.0-148a0e0+ | | | |
| | | S/N: 9320027 | | v |

```

Press Ctrl-n to move cursor to the next menu item. Press return to select it.
 Press Tab to move to another window --- thick border indicates active window.

```

|----- MAX EDIT -----| |-----| |-----| |
|10-1** T1-Non Channel   | |10-100 1234567890   | |30-000 Line Stat   |
| Line 1...               ^ | | L1/RA nnnnnnnnnn   | | 123456789012 A   |
| Pbx Type=N/A           | | 12345678901234   | | ---.....-   |
| >Delete Digits=N/A     | | nnnnnnnnnnnnnn   | | .....-   |
| Add Number=N/A        | |-----| |-----|
| Call-by-Call=N/A      | |10-200 1234567890   | |00-200 15:10:34   |
| T1 PRI:PRI # Type=Unknown | | L2/DS @@@@@@@@@@   | |>M31 Line Ch   |
| T1 PRI:NumPlanID =ISDN | | 12345678901234   | | Ethernet up   |
| Ans #=N/A             | | @@@@@@@@@@@@@@   | |-----|
| Ans Service=N/A       | |-----| |-----|
| Input Sample Count=N/A | |40-300 WAN Stat   | |40-400 Ether Stat |
| Send Disc=0           | |>Rx Pkt: 118^   | |>Rx Pkt: 3486092 |
| Net2Net Incoming Calls... | | Tx Pkt: 511   | | Tx Pkt: 10056 |
| Net2Net ChanGroup ID... | | CRC: 0v   | | Col: 3530 |
| Ch 1=Nailed           | |-----| |-----|
| Ch 1 #=N/A           | |00-100 Sys Option | |40-100 Sessions |
| Ch 1 Slot=N/A        | |>Security Prof: 1 ^ | |> 0 Active |
| | | SW +8.0-148a0e0+ | | | |
| | | S/N: 9320027 | | v |

```

Press Ctrl-n to move cursor to the next menu item. Press return to select it.
 Press Tab to move to another window --- thick border indicates active window.

2. Set the Sig Mode parameter to specify the type of signaling to be **Inband**.
3. Set the Clock Source parameter to **Yes**.
4. Set the Channel 1 to be set to **nailed**. Repeat for as many channels as are to be used over this T1 interface for the "nailed transmission pipe".

Specify the IP-routed connection

1. Open the administration path to Ethernet>Connections:

```

----- MAX EDIT -----
|40-101 remote office 6 |10-100 1234567890 |30-000 Line Stat |
|>Station=remote office 6 ^| L1/LA ----- | 123456789012 A T |
| Active=Yes | 12345678901234 | ----- - |
| Encaps=PPP | -----s | ..... - |
| PRI * Type=National | | |
| NumPlanID =ISDN |10-200 1234567890 |00-200 15:10:34 |
| Dial #=N/A | L2/DS @@@@@@@@@@ |>M31 Line Ch |
| Calling #= | 12345678901234 | Call Terminated |
| Called #= | @@@@@@@@@@@@@@@@ | |
| Route IP=Yes | | |
| Route IPX=N/A |40-300 WAN Stat |40-400 Ether Stat |
| Framed Only=No |>Rx Pkt: 3976^ |>Rx Pkt: 364473 |
| Bridge=N/A | Tx Pkt: 5251 | Tx Pkt: 88966 |
| Dial Brdcast=N/A | CRC: 0v | Col: 0 |
| Shared Prof=No | | |
| Encaps options... |00-100 Sys Option |40-100 Sessions |
| IP options... v |>Security Prof: 1 ^ |> 0 Active |
| | SW +8.0-148a0e0+ | |
| | S/N: 10341016 v | |
Press Ctrl-n to move cursor to the next menu item. Press return to select it.
Press Tab to move to another window --- thick border indicates active window.

```

```

----- MAX EDIT -----
|40-101 remote office 6 |10-100 1234567890 |30-000 Line Stat |
| IP options... ^ | L1/LA ----- | 123456789012 A T |
|>Ipx options... | 12345678901234 | ----- - |
| Session options... | -----s | ..... - |
| OSPF options... | | |
| Telco options... |10-200 1234567890 |00-200 15:10:34 |
| Accounting... | L2/DS @@@@@@@@@@ |>M31 Line Ch |
| Interface Options... | 12345678901234 | Call Terminated |
| | @@@@@@@@@@@@@@@@ | |
| | | |
| |40-300 WAN Stat |40-400 Ether Stat |
| |>Rx Pkt: 3976^ |>Rx Pkt: 364473 |
| | Tx Pkt: 5251 | Tx Pkt: 88966 |
| | CRC: 0v | Col: 0 |
| | | |
| |00-100 Sys Option |40-100 Sessions |
| |>Security Prof: 1 ^ |> 0 Active |
| | SW +8.0-148a0e0+ | |
| | S/N: 10341016 v | |
Press Ctrl-n to move cursor to the next menu item. Press return to select it.
Press Tab to move to another window --- thick border indicates active window.

```

2. Set the Station parameter to its functional name.

⇒ NOTE:

This will be used as the "destination" name in the IP sessions status window (40-100) in the eighth status window.

3. Set the Active parameter to **Yes** to enable this static IP routed path.
4. Set the Encaps parameter to **PPP** to enable the Point-to-Point WAN protocol to be used to convey the IP routed voice/data stream.

Specify the telco dial options

- Go to the Telco options subprofile by opening ethernet>connections>Telco Options:

```

----- MAX EDIT -----
|40-101 remote office 6 | |10-100 1234567890 | |30-000 Line Stat |
| Telco options...     | | L1/RA nnnnnnnnnn | | 123456789012 A |
|  AnsOrig=N/A         | ^| 12345678901234   | | ---.....- |
|>Callback=N/A        | | nnnnnnnnnnnnnn   | | .....- |
| Exp Callback=N/A    | |-----| |-----|
| Callback Delay=N/A  | |10-200 1234567890 | |00-200 15:10:34 |
| Call Type=Nailed    | | L2/DS @@@@@@@@@@ | |>M31 Line Ch |
| Group=1             | | 12345678901234   | | Ethernet up |
| FT1 Caller=N/A     | | @@@@@@@@@@@@@@@@ | |-----|
| Data Svc=64K       | |-----| |-----|
| Force 56=No        | |40-300 WAN Stat   | |40-400 Ether Stat|
| Bill *=            | |>Rx Pkt: 118^    | |>Rx Pkt: 3486092|
| Call-by-Call=0    | | Tx Pkt: 511    | | Tx Pkt: 10056 |
| Transit #=        | | CRC: 0v        | | Col: 3530 |
| Dialout OK=No     | |-----| |-----|
| NAS Port Type=Any  | |00-100 Sys Option | |40-100 Sessions |
|                   | |>Security Prof: 1 ^| |> 0 Active |
|                   | | SW +8.0-148a0e0+ | |-----|
|                   | | S/N: 9320027    | v|-----|

```

Press Ctrl-n to move cursor to the next menu item. Press return to select it.
Press Tab to move to another window --- thick border indicates active window.

- Set the Call type parameter to be **nailed**.
- Set the Data Svc parameter to be **64K**. This allows the non-channelized T1 pipe to be built with channels that are 64 Kbps in size.

Specify the IP options

1. Go to the IP Options (for routing over a WAN interface) subprofile by opening ethernet>connections>Ip options:

```

----- MAX EDIT -----
40-101 remote office 6 | 10-100 1234567890 | 30-000 Line Stat
IP options...         | L1/RA nnnnnnnnnn | 123456789012 A
LAN Adrs=135.9.76.118/32 ^ | 12345678901234 | -----.-----
>WAN Alias=0.0.0.0    | nnnnnnnnnnnnnn | .....-
IF Adrs=0.0.0.0/0    | -----
Preference=60        | 10-200 1234567890 | 00-200 15:10:34
Metric=1             | L2/DS @@@@@@@@@@ | >M31 Line Ch
DownPreference=120   | 12345678901234 | Ethernet up
DownMetric=7         | @@@@@@@@@@@@@@@@ |
Private=No           | -----
SourceIP Check=No    | 40-300 WAN Stat   | 40-400 Ether Stat
RIP=Off              | >Rx Pkt:          118^ | >Rx Pkt:          3486092
Pool=0               | Tx Pkt:           511 | Tx Pkt:           10056
Multicast Client=No  | CRC:              0v | Col:              3530
Multicast Rate Limit=100 | -----
Multicast Grp Leave Delay=0 | 00-100 Sys Option | 40-100 Sessions
Client Pri DNS=0.0.0.0 v | >Security Prof: 1 ^ | > 0 Active
| S/N: 9320027 v |

```

Press Ctrl-n to move cursor to the next menu item. Press return to select it.
Press Tab to move to another window --- thick border indicates active window.

```

----- MAX EDIT -----
40-101 remote office 6 | 10-100 1234567890 | 30-000 Line Stat
IP options...         | L1/RA nnnnnnnnnn | 123456789012 A
Client Pri DNS=0.0.0.0 ^ | 12345678901234 | -----.-----
>Client Sec DNS=0.0.0.0 | nnnnnnnnnnnnnn | .....-
Client Assign DNS=No   | -----
Client Pri WINS=0.0.0.0 | 10-200 1234567890 | 00-200 15:10:34
Client Sec WINS=0.0.0.0 | L2/DS @@@@@@@@@@ | >M31 Line Ch
Client Assign WINS=Yes | 12345678901234 | Ethernet up
Client Gateway=0.0.0.0 | @@@@@@@@@@@@@@@@ |
TOS Enabled=Yes       | -----
Precedence=000       | 40-300 WAN Stat   | 40-400 Ether Stat
TOS=Normal           | >Rx Pkt:          118^ | >Rx Pkt:          3486092
Apply To=Both        | Tx Pkt:           511 | Tx Pkt:           10056
TOS Filter=0         | CRC:              0v | Col:              3530
Virtual Router=N/A    | -----
| 00-100 Sys Option | 40-100 Sessions
| >Security Prof: 1 ^ | > 0 Active
| S/N: 9320027 v |

```

Press Ctrl-n to move cursor to the next menu item. Press return to select it.
Press Tab to move to another window --- thick border indicates active window.

2. Set the LAN Adrs parameter to the dotted decimal number of the router/gateway device that is at the other end of this T1 routed IP-based network.

Specify the encap options

- Go to the Encap Options (for routing over a WAN interface) subprofile by opening ethernet>connections>Encap options:

```

----- MAX EDIT -----
|40-101 remote office 6 | |10-100 1234567890 | |30-000 Line Stat
|Encaps options... | |L1/RA nnnnnnnnnn | |123456789012 A
|>Send Auth=PAP ^ | |12345678901234 | |---.....-
|Bi-dir Auth=N/A | |nnnnnnnnnnnnnn | |.....-
|Send Name=rem-off X | |-----|
|Send PW=**** | |10-200 1234567890 | |00-200 15:10:34
|Recv Name=N/A | |L2/DS @@@@@@@@@ | |>M31 Line Ch
|Recv PW=**** | |12345678901234 | |Ethernet up
|MRU=1524 | |@@@@@@@@@@@@@@ | |
|MTU=1524 | |-----|
|LQM=No | |40-300 WAN Stat | |40-400 Ether Stat
|LQM Min=600 | |>Rx Pkt: 118^ | |>Rx Pkt: 3486092
|LQM Max=600 | |Tx Pkt: 511 | |Tx Pkt: 10056
|Link Comp=Stac | |CRC: 0v | |Col: 3530
|VJ Comp=Yes | |-----|
|CBCP Mode=N/A | |00-100 Sys Option | |40-100 Sessions
|CBCP Trunk Group=N/A v | |>Security Prof: 1 ^ | |> 0 Active
| | |SW +8.0-148a0e0+ | |
| | |S/N: 9320027 v | |

```

Press Ctrl-n to move cursor to the next menu item. Press return to select it.
Press Tab to move to another window --- thick border indicates active window.

```

----- MAX EDIT -----
|40-101 remote office 6 | |10-100 1234567890 | |30-000 Line Stat
|Encaps options... | |L1/RA nnnnnnnnnn | |123456789012 A
|CBCP Trunk Group=N/A ^ | |12345678901234 | |---.....-
|IPX Header Compression=N/A | |nnnnnnnnnnnnnn | |.....-
|Split Code.User=N/A | |-----|
|InterfaceType=HDLC-LIKE | |10-200 1234567890 | |00-200 15:10:34
| | |L2/DS @@@@@@@@@ | |>M31 Line Ch
| | |12345678901234 | |Ethernet up
| | |@@@@@@@@@@@@@@ | |
| | |-----|
| | |40-300 WAN Stat | |40-400 Ether Stat
| | |>Rx Pkt: 118^ | |>Rx Pkt: 3486092
| | |Tx Pkt: 511 | |Tx Pkt: 10056
| | |CRC: 0v | |Col: 3530
| | |-----|
| | |00-100 Sys Option | |40-100 Sessions
| | |>Security Prof: 1 ^ | |> 0 Active
| | |SW +8.0-148a0e0+ | |
| | |S/N: 9320027 v | |

```

Press Ctrl-n to move cursor to the next menu item. Press return to select it.
Press Tab to move to another window --- thick border indicates active window.

- Set the Send Auth parameter to the desired type of sending authorization protocol: PAP, CHAP, PAP-Token, Cache-Token, MS-Chap, or None. This sets up the authorization protocol to be associated with the setting up of a PPP (point-to-point protocol) exchange.

⇒ NOTE:

You have the ability to set up both a receive name/password and a send name/password for this authorization exchange.

3. Set the sender name as appropriate (rem-off X in this example).
4. Set the sender password. This must match the password that the peer WAN router will be using to receive the authorization handshake.
5. Set the receiver password. This must match the password the peer WAN router will be using to transmit authorization handshake.

Use the iproute show command to view routing tables

As a final step, you should enter the terminal server mode by entering "cntrl D E". Then execute the traceroute command to perform traceroutes back to the CLAN and the Media Processor to confirm that the correct routed gateway is being used.

You may also use the terminal server command "iproute show" to get a display of the routed destinations, and enable you to add an delete IP routes.

```
-----  
|  
| ** Ascend Pipeline Terminal Server **  
|  
| ascend% iproute show  
|  
| Destination      Gateway          IF      Flg   Pref Met    Use   Age  
| 0.0.0.0/0        135.9.76.118    wan9    SGP   60  1    38632 362485  
| 127.0.0.0/8      -                bh0     CP    0  0     0    362485  
| 127.0.0.1/32     -                local   CP    0  0     0    362485  
| 127.0.0.2/32     -                rj0     CP    0  0     0    362485  
| 135.9.75.0/24    -                ie0     C     0  0    55072 362485  
| 135.9.75.116/32  -                local   CP    0  0    17232 362485  
| 135.9.76.118/32  135.9.76.118    wan9    rT    60  1     0    362473  
| 135.9.76.118/32  135.9.76.118    wan9    *S    120 7     1    362485  
| 224.0.0.0/4      -                mcast   CP    0  0     0    362485  
| 224.0.0.1/32     -                local   CP    0  0     0    362485  
| 224.0.0.2/32     -                local   CP    0  0     0    362485  
| 224.0.0.9/32     -                local   CP    0  0     0    362485  
| 255.255.255.255/32 -                ie0     CP    0  0    5178 362485  
|  
|-----
```

Refer to Chapter 5 "Managing IP Routes and Sessions" in the Lucent-Ascend MAX 3000 Administration Guide for more details. You can find documentation of Lucent-Ascend's MAX 3000 on the DEFINITY Systems Library CD shipped with the Avaya R300.

The Avaya R300 BRI line (PSTN) configuration

To specify the WAN ports on the R300 that are to be configured for PSTN use, open the Net/BRI>Line Config>Factory profile and you will see the following administration screen.

Note that this example illustrates the use of using one of the four line profiles so that different configurations can be saved/referred to more easily (refer to [“Save the line profile for WAN interfaces” on page 112](#)).

```

----- MAX EDIT -----
|10-1** def-1 TN556      | |10-100 123456      | |30-000 Line Stat      |
|>Name=def-1 TN556     | |Link P-----     | |123456789012 A T     |
|Switch Type=AT&T     | |B1   -@@@@       | |----- . . . . .   |
|Line 1...             | |B2   -@@@@       | |. . . . . - .       |
|Line 2...             | |-----          | |-----          |
|Line 3...             | |10-200 B1   B2   | |00-200 17:22:05     |
|Line 4...             | |> 1:  0     0   ^ | |>M31 Line  Ch       |
|Line 5...             | |  2:  0     0   | |Call Terminated    |
|Line 6...             | |  3:  0     0   v | |                     |
|                       | |-----          | |-----          |
|                       | |40-300 WAN Stat   | |40-400 Ether Stat    |
|                       | |>Rx Pkt:  409810^ | |>Rx Pkt:  1549357    |
|                       | |Tx Pkt:  408340   | |Tx Pkt:  1100660    |
|                       | |CRC:           0v | |Col:         0       |
|                       | |-----          | |-----          |
|                       | |00-100 Sys Option | |40-100 Sessions      |
|                       | |>Security Prof: 1 ^| |> 0 Active           |
|                       | |SW +8.0-148.0e4+  | |                     |
|                       | |S/N: 10451090   v | |                     |

```

Press Ctrl-n to move cursor to the next menu item. Press return to select it.
Press Tab to move to another window --- thick border indicates active window.

- Set the Switch Type parameter to the type of switch that you are working with. The choices are:
 - ATT (designates ATT Custom, used in older USA service. This also may be used if connecting to a DEFINITY PBX).
 - NTI (designates Northern Telecom custom, used in older USA service)
 - NI-1 (designates National ISDN-1 used in North America)
 - France
 - UK
 - NET3 (designates multi-point)
 - NET3 PTP (designates point-to-point)
 - Japan
 - Belgium
 - Australia

- Swiss
- German (designates point-to-point)
- MP German (designates multi-point)

Note that this switch type will cover ALL six of the BRI WAN ports.

2. Open the first BRI line by selecting Net/BRI>Line Config>profile>line 1. You now see the administration screen change as shown below.

```

|----- MAX EDIT -----| |-----| |-----| | |
|10-1** def-1 TN556      | |10-100 123456      | |30-000 Line Stat      |
|Line 1..              | |Link P-----      | |123456789012 A T      |
|>Enabled=Yes          | |B1  -@@@@         | |----- - -          |
|Clock Source=Yes      | |B2  -@@@@         | |..... - .           |
|Link Type=P_T_P       | |-----| |-----|
|B1 Usage=Switched     | |10-200 B1   B2     | |00-200 17:22:05      |
|B1 Slot=0             | |> 1:  0     0   ^  | |>M31 Line   Ch      |
|B1 Prt/Grp=0          | |  2:  0     0     | |Call Terminated    |
|B1 Trnk/Grp=N/A       | |  3:  0     0   v  | |-----| |-----|
|B2 Usage=Switched     | |-----| |-----|
|B2 Slot=0             | |40-300 WAN Stat    | |40-400 Ether Stat    |
|B2 Prt/Grp=0          | |>Rx Pkt:  409810^  | |>Rx Pkt:  1549357    |
|B2 Trnk/Grp=N/A       | |Tx Pkt:  408340    | |Tx Pkt:   1100660    |
|Pri Num=2541000       | |CRC:             0v| |Col:       0         |
|Pri SPID=N/A          | |-----| |-----|
|Sec Num=N/A           | |00-100 Sys Option  | |40-100 Sessions     |
|Sec SPID=N/A          | |>Security Prof: 1 ^| |>  0 Active          |
|                       | |SW +8.0-148.0e4+  | |                       |
|                       | |S/N: 10451090   v  | |                       |

```

Press Ctrl-n to move cursor to the next menu item. Press return to select it.
 Press Tab to move to another window --- thick border indicates active window.

3. Set the Enabled field to **Yes** if you want to enable this interface. Otherwise set to **No**.

Since the R300 pools all of the BRI interfaces into one IP Signaling Group in DEFINITY, it is very important to disable those WAN ports that are not to be used in PSTN service.

4. Set the Clock Source field to **Yes** if you want to use the network as the clock source for synchronous connections. Otherwise set to **No**.
5. Set the link type to one of the following:
 - P_T_P (this is point-to-point)
 - Multi_P (for multi-point connections)

In this example, we have set it to point-to-point. This causes the uses of Service Profile Identifiers (SPIDs) to become N/A.

6. Set the B1 usage to **Switched**. This is the standard manner in which the service would be used for a service provider. The choices are:
 - Switched (default) (Supports switched connections per ISDN D-channel signaling)
 - Nailed (A clear-channel 64 kbps circuit. This may be used for some form of private networking connection directly into a WAN multiplexer/router.)
 - Unused (A channel is not to be used. This is a very unlikely arrangement since most service providers do offer both B channels as part of the basic service package.)
7. Leave the B1 Slot set to **0** (default).
8. Leave the B1 Prt/Grp set to **0** (default).
9. The B1 TrnkGrp is left **N/A**.
10. Set the B2 usage to **Switched**.
11. Leave the B2 Slot set to **0** (default).
12. Leave the B2 Prt/Grp set to **0** (default).
13. The B2 TrnkGrp is left **N/A**.
14. The Pri Num field designates the PSTN directory number associated with the entire interface. It also may be associated with just the B1 channel. This is to be supplied by your PSTN Service Provider. For many types of point-to-point application, this may be left blank.
15. The PRI SPID is the Service Profile Identifier associated either with the entire interface or with just the B1 channel. This is to be supplied by your PSTN Service Provider. For point-to-point application, this is **N/A**.
16. The Sec Num field designates the PSTN directory number associated with the B2 channel. This is not always associated with a given BRI interface. This is to be supplied by your PSTN Service Provider. For many types of point-to-point application, this may be left blank.
17. The Sec SPID is the Service Profile Identifier associated with the B2 channel. This is to be supplied by your PSTN Service Provider. For point-to-point application, this is **N/A**.
18. Press the left arrow or Esc to exit this configuration.
19. Press 2 to save your changes.
20. Press the left arrow or Esc to return to the next high editing window.

ISDN Basic Rate Status Window

Referring to the above R300 Status window (screen 10-100) there are four lines. The first line is a format header that refers to the BRI lines (1 2 3 4 5 6).

The second line "Link" displays the status of the layer 1 (physical) and Layer 2 (LAPD) per the ISDN standards. The interpretation key is:

"-" - Disabled

"X" - No physical connection

." - No logical connection, for instance, no LAPD link established

"P" - Point-to-Point link

"M" - Multi-point link

The third line "B1" displays the status of the B1 channel for each of the six lines. The interpretation key is:

"@" - Disabled

"-" - Enabled, but not active

"r" - Enabled and ringing

"*" - Enabled and on an active call

The fourth line "B2" displays the status of the B2 channel for each of the six lines. It has the same interpretation as with the B1 channel.

Configure analog lines

Administer the following common analog information.

1. From the Main Edit Menu, select **DEFINITY Combo Blade > Mod Config.**
2. Select **Analog Common.**

```

|----- MAX EDIT -----| |-----| |-----|
|30-100 Mod Config       | |10-100 1234567890   | |30-000 Line Stat   |
| Analog Common         | | L1/LA -----    | | 123456789012 A T |
|>Country Code=USA     | | 12345678901234   | | ----- -      |
| Balance Network=R    | | -----s        | | ..... -      |
| Codec Gain=Low       | |-----| |-----|
| Ringer Freq=By Country| |10-200 1234567890   | |00-200 15:10:34   |
| Ringing Pattern=USA  | | L2/DS @@@@@@@@@@ | |>M31 Line Ch      |
| Recall Window Min=10 | | 12345678901234   | | Call Terminated|
| Recall Window Max=50 | | @@@@@@@@@@@@@@@@ | |-----|
| Forward Disconnect Timer=20| |-----| |-----|
|                       | |40-300 WAN Stat   | |40-400 Ether Stat  |
|                       | |>Rx Pkt: 3976^    | |>Rx Pkt: 364473    |
|                       | |Tx Pkt: 5251     | |Tx Pkt: 88966     |
|                       | | CRC: 0v         | | Col: 0           |
|                       | |-----| |-----|
|                       | |00-100 Sys Option | |40-100 Sessions    |
|                       | |>Security Prof: 1 ^| |> 0 Active         |
|                       | | SW +8.0-148a0e0+ | |-----|
|                       | | S/N: 10341016   | | v               |

```

Press Ctrl-n to move cursor to the next menu item. Press return to select it.
 Press Tab to move to another window --- thick border indicates active window.

3. Complete the following fields:
 - **Country Code:** Select the appropriate country code.
 This controls the parameters used for processing analog signals on the attached analog stations.
 - **Balance Network:** Select **R** - (Not currently used in R300).
 - **CODEC Gain:** Select **Low** - (Not currently used in R300).
 - **Ringer Freq:** Select **By Country**.
 This will use the default ringer frequency for the country code you have chosen. You would select this in most circumstances, unless you are using non-native phones.
 If the phone on this analog line has a ringer frequency that differs from the default for your country code, select the appropriate ringer frequency: 20 Hz, 25 Hz or 50 Hz.
 - **Ringing pattern:** Select the appropriate ringing pattern for your country.
 This controls the set of ring cadences the analog phone connected to the analog line will use.
 - **Recall Window Min:** Select a time interval in units of **10ms**.
 Disconnects (caused, for example, by momentarily depressing the switch hook on the analog phone) of less than this time interval will not be a “flash” signal to the DEFINITY system.

- Recall Window Max: Select a time interval in units of 10ms.
Disconnects (caused, for example, by momentarily depressing the switch hook on the analog phone) of more than this time interval will not be a “flash” signal to the DEFINITY system.
 - Forward Disconnect Time: Select a time interval in units of 25ms.
Disconnects (caused, for example, by momentarily depressing the switch hook on the analog phone) of less than this time interval, will not be a “hang up” signal to the DEFINITY system. Also, a disconnect originated by the DEFINITY system will be at least this long.
4. Press the left arrow or ESC key to exit the Analog Common profile and return to the Mod Config menu.
 5. Begin by configuring the first analog line; Select Analog Line 1 from the Mod Config menu.

```

----- MAX EDIT -----
| 30-100 Mod Config | | 10-100 1234567890 | | 30-000 Line Stat |
| >Analog Line 1... | | L1/RA nnnnnnnnnn | | 123456789012 A |
| Registration Mode:=Named | | 12345678901234 | | ----- |
| Extension Number=3601 | | nnnnnnnnnnnnnn | | .....- |
| Extension Password=**** | | ----- | | ----- |
| | | 10-200 1234567890 | | 00-200 15:10:34 |
| | | L2/DS @@@@@@@@@@ | | >M31 Line Ch |
| | | 12345678901234 | | Ethernet up |
| | | @@@@@@@@@@@@@@ | | ----- |
| | | 40-300 WAN Stat | | 40-400 Ether Stat |
| | | >Rx Pkt: 118^ | | >Rx Pkt: 3486092 |
| | | Tx Pkt: 511 | | Tx Pkt: 10056 |
| | | CRC: 0v | | Col: 3530 |
| | | ----- | | ----- |
| | | 00-100 Sys Option | | 40-100 Sessions |
| | | >Security Prof: 1 ^ | | > 0 Active |
| | | SW +8.0-148a0e0+ | | |
| | | S/N: 9320027 v | | |

```

Press Ctrl-n to move cursor to the next menu item. Press return to select it.
Press Tab to move to another window --- thick border indicates active window.

6. Complete the following fields:
 - Registration Mode: Select TTI, Named or Disabled.
In TTI Mode, the Avaya R300 follows DEFINITY rules for operator access codes and TTI access codes. In Named Mode, registration occurs at the switch even if a phone is not plugged into the interconnect unit. Administer unavailable phones as DISABLED to conserve resources on the switch.
 - Extension Number: If registration mode is named, enter the extension number. Otherwise this will remain N/A.
 - Extension Password: If registration mode is Named, enter the extension password (This must match the security code in the display station form on the DEFINITY system). Otherwise this will remain N/A.
(If in TTI or Disabled mode, Extension Password is marked N/A.)

7. Press the left arrow or ESC key to exit the Analog Line 1 profile.
8. Select Analog Line 2 and repeat the process for the second analog line port.
9. Press the left arrow or ESC key to exit the Analog Line 2 profile.

A confirmation menu appears.

10. Press 2 to save your changes.
11. Press the left arrow or ESC key twice to return to the Main Edit Menu.

Configure central office loop-start analog trunks

1. From the Main Edit Menu, select **DEFINITY Combo Blade>Mod Config>Trunk Common**.

```

|----- MAX EDIT -----| |-----| |-----|
|30-100 Mod Config       | |10-100 1234567890   | |30-000 Line Stat   |
|Trunk Common           | | L1/RA nnnnnnnnnn  | | 123456789012 A   |
|>Country Code=USA     | | 12345678901234   | | ----- ..     |
|Balance Network=RC    | | nnnnnnnnnnnnnn  | | ..... ..     |
|Codec Gain=High      | |-----| |-----|
|Dial Tone Delay=0    | |10-200 1234567890   | |00-200 15:10:34   |
|                       | | L2/DS @@@@@@@@@@ | |>M31 Line Ch     |
|                       | | 12345678901234   | | Ethernet up     |
|                       | | @@@@@@@@@@@@@@   | |-----|
|                       | |-----| |-----|
|                       | |40-300 WAN Stat    | |40-400 Ether Stat  |
|                       | |>Rx Pkt: 118^     | |>Rx Pkt: 3486092  |
|                       | |Tx Pkt: 511     | |Tx Pkt: 10056    |
|                       | |CRC: 0v         | |Col: 3530       |
|                       | |-----| |-----|
|                       | |00-100 Sys Option | |40-100 Sessions   |
|                       | |>Security Prof: 1 ^| |> 0 Active        |
|                       | |SW +8.0-148a0e0+ | |                   |
|                       | |S/N: 9320027   v | |                   |

```

Press Ctrl-n to move cursor to the next menu item. Press return to select it.
 Press Tab to move to another window --- thick border indicates active window.

2. Complete the following fields:
 - Country Code: Select **USA** (this is the only country currently supported).
 - Balance Network: Select **R** or **RC**.

Select **R** balance if the distance between the Avaya R300 Unit and the nearest Public Switched Telephone Network (PSTN) office or repeater is less than 3000 feet.

You can use either R or RC balance if that distance is between 3000 and 4000 feet. The VoIP echo canceler takes the greatest amount of time to converge (settle) in this range.

Select **RC** balance when the distance between the Avaya R300 unit and the PSTN office or repeater is greater than 4000 feet but less than 5 miles.

- **Codec Gain:** Select **High** or **Low**

Set the codec gain to **High** to induce 0dB of gain in the codec for the analog trunk.

Set the codec gain to **Low** to induce -2 dB of gain in the codec for the analog trunk.

As a standard mode of operation, use the high setting. Only if you are experiencing unusual levels of echo, change the value to low. The low setting may cause the amplitude of the audio call to sound too soft (lower level of sound) for some users.

- **Dial Tone Delay:** Set this in units of 100 milliseconds (the default is **0**). The timer setting has a range of 0-20 - which specifies an operational range of 0-2 seconds. This is the amount of time that the Avaya R300 will wait upon activation of an outbound analog trunk call before it will issue the dialed number string. This is to compensate for slowness of receive registers in older central office switches. If you are experiencing a problem with outbound calls, it is recommended that you try setting this register to **3** (for a timer delay of 3 x 100 milliseconds for a total of 300 milliseconds).

3. Press the left arrow or ESC key to exit the Trunk Common profile.

4. Configure the first analog trunk by selecting trunk 1.

```

----- MAX EDIT -----
| 30-100 Mod Config      | | 10-100 1234567890    | | 30-000 Line Stat    |
| >Trunk 1...           | | L1/RA nnnnnnnnnnn  | | 123456789012 A T    |
|   Enabled=Yes        | | 12345678901234     | | ----- - -       |
|   Destination Number=3532 | | nnnnnnnnnnnnnnn  | | ..... - -        |
|   Dialing=DTMF       | | -----            | | -----            |
|   Connect Timer=10   | | 10-200 1234567890  | | 00-200 15:10:34     |
|                       | | L2/DS @@@@@@@@@@   | | >M31 Line Ch        |
|                       | | 12345678901234     | | Call Terminated   |
|                       | | @@@@@@@@@@@@@@    | | -----            |
|                       | | 40-300 WAN Stat     | | 40-400 Ether Stat   |
|                       | | >Rx Pkt: 3976^      | | >Rx Pkt: 357090     |
|                       | | Tx Pkt: 5251       | | Tx Pkt: 84048      |
|                       | | CRC: 0v           | | Col: 0             |
|                       | | -----            | | -----            |
|                       | | 00-100 Sys Option   | | 40-100 Sessions     |
|                       | | >Security Prof: 1 ^ | | > 0 Active          |
|                       | | SW +8.0-148a0e0+   | | -----            |
|                       | | S/N: 10341016     | | v                   |

```

Press Ctrl-n to move cursor to the next menu item. Press return to select it. Press Tab to move to another window --- thick border indicates active window.

6. Complete the following fields.

- **Enabled:** Set this field to **Yes** if the analog trunk port is connected (for example to a Central Office trunk), otherwise set it to **No** to disable the port.

- **Destination Number:** Set this to the number of the phone to which all incoming calls on this trunk should be forwarded. The default is **0** for operator. This can be any number 24 digits long or less.

The Avaya R300 will direct any incoming call on this analog trunk to this number as if it had been dialed from one of the Avaya R300 DCP or analog stations. If you are using the analog trunks for FAX transmissions through a FAX machine attached to one of the Avaya R300 analog line ports, you probably will want to administer the FAX machine's number here.

- **Dialing:** If the analog trunk is tone-dialed, then set this to **DTMF**. If it is pulse-dialed, set it to **Pulse**. **DTMF** is the default.
- **Connect Timer:** Set this in units of seconds (the default is 10). This is the number of seconds which the Avaya R300 will wait after dialing an outgoing analog trunk before assuming the call has been answered. Use this when the central office does not provide Line Side Answer Supervision. If the central office does not implement this feature, the DEFINITY system will assume the call has been answered after this timer expires, and marks this point as when the call began.

7. Press the left arrow or ESC key to exit the Trunk 1 profile.
8. Select Trunk 2 and repeat the process for the second analog trunk port.
9. Press the left arrow or ESC key to exit the Trunk 2 profile.
A confirmation message appears.
10. Press 2 to save your changes.
11. Press the left arrow or ESC key twice to return to the Main Edit Menu.

Avaya R300 DNS information

Configuring Domain Name Server (DNS) information is optional, but it is a good idea. DNS information allows a user to use symbolic names for servers, etc. from the diagnostic prompt and terminal server prompt. The DNS information is the name of the computer network domain of which the Avaya R300 is a member (for example dr.avaya.com). The DNS information is also a primary and secondary DNS IP address, and optionally a primary and secondary Windows Internet Name Service (WINS) IP address.

If you don't configure DNS information, an R300 unit still has full functionality. In this case you would make reference to the IP endpoints by dotted decimal nomenclature (for example 216.25.242.138).

Contact your IS department if you are unsure of the values to administer here.

1. From the Main Edit Menu, select Ethernet > Mod Config > DNS.



NOTE:

You cannot see the DNS menu from the Ethernet > Mod Config menu until you press the down arrow. Scroll until you reach the DNS menu item.

2. In the Ethernet > Mod Config > DNS menu, complete the following fields:

- Domain Name: (This is the name of the domain in which the Avaya R300 is located.)
- Pri DNS: (This is the IP address of the primary DNS server.)
- Sec DNS: (This is the IP address of the secondary DNS server.)
- Pri WINS (optional): (This is the IP address of the primary WINS server.)
- Sec WINS (optional): (This is the IP address of the secondary WINS server.)

```

|----- MAX EDIT -----| |-----| |-----|
|40-100 Mod Config       | |10-100 1234567890   | |30-000 Line Stat     |
| DNS...                | | L1/RA nnnnnnnnnn  | | 123456789012 A     |
|>Domain Name=yourcompany.com | | 12345678901234   | | -----          |
| Sec Domain Name=      | | nnnnnnnnnnnnnn  | | .....          |
| Pri DNS=111.11.11.1   | |-----| |-----|
| Sec DNS=111.11.12.2   | |10-200 1234567890   | |00-200 15:10:34     |
| DNS Qry Type=UDP      | | L2/DS @@@@@@@@@@  | |>M31 Line Ch        |
| Allow As Client DNS=Yes | | 12345678901234   | | Ethernet up        |
| Pri WINS=111.11.110.1 | | @@@@@@@@@@@@@@   | |-----|
| Sec WINS=111.11.110.4 | |-----| |-----|
| List Attempt=No       | |40-300 WAN Stat     | |40-400 Ether Stat   |
| List Size=N/A         | |>Rx Pkt:          118^| |>Rx Pkt:          3486092|
| Client Pri DNS=0.0.0.0 | | Tx Pkt:           511| | Tx Pkt:           10056|
| Client Sec DNS=0.0.0.0 | | CRC:              0v| | Col:              3530|
| Enable Local DNS Table=No | |-----| |-----|
| Loc.DNS Tab Auto Update=N/A | |00-100 Sys Option   | |40-100 Sessions     |
| Loc.DNS Name#1=N/A    | |>Security Prof: 1 ^| |> 0 Active          |
|                        | | SW +8.0-148a0e0+  | |                     |
|                        | | S/N: 9320027      v| |                     |

```

Press Ctrl-n to move cursor to the next menu item. Press return to select it. Press Tab to move to another window --- thick border indicates active window.

3. Press the left arrow or ESC key to exit the DNS profile.
A confirmation menu appears.
4. Press 2 to save your changes.
5. Press the left arrow or ESC key twice to return to the Main Edit Menu.

Avaya R300 VoIP information

The recommended parameter settings below can be found as follows:

1. From the Main Edit Menu, select Ethernet > Mod Config > VOIP Options.
2. In the Ethernet > Mod Config > VOIP Options menu, complete the following fields:

```

----- MAX EDIT -----
|40-E00 Mod Config      | |10-100 1234567890    | |30-000 Line Stat     |
|VOIP Options          ^| |L1/RA nnnnnnnnnnn   | | 123456789012 A     |
|>GK IP Adrs=123.45.67.89| | 12345678901234     | |-----|
| 2nd GK IP=135.9.76.104| | nnnnnnnnnnnnnnn   | | .....|
| Keepalive Timer=120   | |-----|
| Reg Retries=5         | |10-200 1234567890    | |00-200 15:10:34     |
| Reg Retry Timer=5     | |L2/DS @@@@@@@@@@    | |>M31 Line Ch        |
| Pri GK Retries=1     | | 12345678901234     | | PRI GK Registered  |
| VPN Mode=Yes         | | @@@@@@@@@@@@@@    | |-----|
| Frames/Packet=4      | |-----|
| Silence Detect/CNG=No| |40-300 WAN Stat      | |40-400 Ether Stat   |
| Silence Thresh (dB inc)=N/A| |>Rx Pkt: 118^      | |>Rx Pkt: 3486092    |
| Enable Adaptive Jtr Buf=Yes| |Tx Pkt: 511      | |Tx Pkt: 10056      |
| Max Jtr Buf Size=3   | |CRC: 0v          | |Col: 3530          |
| Initial Jtr Buf Size=1| |-----|
| TOS Enabled=No       | |00-100 Sys Option    | |40-100 Sessions     |
| Precedence=N/A       v| |>Security Prof: 1 ^  | |> 0 Active          |
|                       | |SW +8.0-148a0e0+    | |-----|
|                       | |S/N: 9320027       v| |-----|

```

Press Ctrl-n to move cursor to the next menu item. Press return to select it.
 Press Tab to move to another window --- thick border indicates active window.

- **GK IP Adrs:** Enter the IP address of the C-LAN board which is the gatekeeper on the DEFINITY system.
- **2nd GK IP (With Release 1.1 or newer):** Enter the IP address of a secondary C-LAN board. This will be a back-up gatekeeper in the DEFINITY system.
- **Keepalive Timer:** Enter the number of seconds between messages to the Gatekeeper registered with. Recommended setting is **120**.
- **Reg Retries:** Enter the number of times registration is retried [1-200]. Recommended setting is **5**.
- **Reg Retry Timer:** Enter the time in seconds between retries to the Gateway [1-120]. Recommended setting is **5**.
- **Pri GK Retries:** Recommended setting is **1**.
- **VPN Mode:** Set this to **Yes**. This disables the need to enter a Personal Identification Number (PIN).
- **Frames/Packet:** Enter the number of audio frames sent per packet. Match your audio frame information on the Avaya R300 with the same information on the DEFINITY system.

 In Release 1.0, the R300 uses 5mSec audio frames for G.711 CODEC sampling and 10mSec audio frames for G.729 CODEC sampling.

 For Release 1.1 or newer, the R300 uses 10mSec voice frame samples for all CODECS.

 Recommended setting is **2**.
- **Silence Detect/CNG:** Recommended setting is **No**.
- **Silence Thresh (db inc):** Recommended setting is **N/A**.

- Enable Adaptive Jtr Buf: Set this to **Yes** to turn on the adaptive jitter buffer.
- Max Jtr Buf: Set the maximum range for the jitter buffer. Recommended setting is **3**.
- Initial Jtr Buf Size: The buffer is equal to the voice packet size. Recommended setting is **1**.
- TOS Enabled: Recommended setting is **No**.
- Precedence: Recommended setting is **N/A**.
- TOS: Recommended setting is **N/A**.
- Max VOIP Calls: Enter the number of maximum simultaneous VOIP calls. Recommended setting is **30**. This feature exists for only the DSP30 module.
- Near End Cut Through: Recommended setting is **No**.
- Single Dial Enable: Enables extraction of the Dialed Number Identification Service (DNIS) string from a single dialed entry. Recommended setting is **Yes**.

Setting this value to **Yes** enables the Avaya R300 to extract the Dialed Number Identification Service (DNIS) string from a single dialed entry.

Setting this value to **No** disables DNIS string collection, requiring users to dial the Avaya R300, first, wait for a dial tone from the MultiVoice Gateway, then dial the called phone number. This value defaults to **No**. Changes to this value become effective with the next VoIP call.

Single stage dialing works with the Avaya R300 under the following conditions:

- You are using T1 inband trunks, and the switch can relay DTMF signals to the MultiVoice Gateway.
- You are using T1 PRI trunks.
- You enabled collection of DNIS on the Avaya R300.

- True Connect Enable: Allows the Gatekeeper to handle answer supervision. Recommended setting is **Yes**.

Setting this to **Yes** will delay transmission of the answer signal to the PSTN until the call is answered by the host DEFINITY system (via IP trunk signaling). This avoids incurring PSTN charges if the called party is busy.

Setting this to **No** disables this feature. The Avaya R300 will transmit the answer signal immediately.

Set this parameter to **Yes** when implementing single stage dialing.



NOTE:

Never enable True Connect when using two-stage dialing. Only enable True Connect when the entire gateway is used for single stage dialing.

- Hairpin: Recommended setting is **No**.
- Keep Alive Timeout: Recommended setting is **0**.
- Inter Digit Timer: Recommended setting is **6000**.
- Voice Ann Enbl: Recommended setting is **No**.
- Voice Ann Serv: Recommended setting is **0.0.0.0**.
- DTMF Tone Passing: Strips DTMF tones from the audio stream and sends them out of band. Recommended setting is **Out of Band**.
- G.711 Transparent Data: Recommended setting is **No**.
- Allow G.711 Fallback: Recommended setting is **N/A**.
- Allow Coder Fallback: Recommended setting is **Yes**.
- Early Ringback Enable: Recommended setting is **No**.

The above frames/packet settings for the R300 are what R300 advertises to the Gatekeeper (DEFINITY). The DEFINITY administration on IP Codec Set and IP Network Region Connection Management screens negotiate the actual Codec and packet sizes between different IP endpoints. The R300 frame size is 10msec for both G.711 and G.729 Codec types. The recommended Codec for R300 is G.711 or G.729 (which is compressed) depending on the customer's IP bandwidth limitations. The packet size is recommended to be 20msec for most cases (or 30msec second choice) which impacts endpoint-to-endpoint delay and network/processor performance (quantity of packets).

3. Press the left arrow or ESC key to exit the VOIP profile.
A confirmation menu appears.
4. Press 2 to save your changes.
5. Press the ESC key twice to return to the Main Edit Menu.

Profile saving and restoration

You can save your profiles to use as backups for your Avaya R300 unit, or you can use the saved profiles to configure additional Avaya R300 units.

Profiles are plain text files so you can edit them with any text editor and then restore them to the Avaya R300.



CAUTION:

If you use save and restore to configure multiple Avaya R300 units, make certain that you change the IP address on the Avaya R300 unit to match the IP address in the saved profile before you restore that profile. If your restore does not update the configuration of the Avaya R300 correctly, ensure that the IP address in the saved profile and the IP address on the Avaya R300 are the same.

You must enter all save and restore commands listed below from the diagnostic window of the Avaya R300. For more information on the diagnostic window and how to access it, see [“Diagnostics Mode” on page 162](#).

Save a profile with TFTP

Saving a profile with TFTP requires a TFTP server set up. Save from the diagnostic prompt on the Avaya R300.

For more information about the diagnostic prompt, see [“Diagnostics Mode” on page 162](#).

1. At the diagnostic prompt, type **tsave server filename** where *server* is the name or IP address of the TFTP server and *filename* is the name of the profile you want to save.
2. Press ENTER to save the profile as a flat text file for editing later.

Restore a profile with TFTP

Restoring a profile with TFTP requires a TFTP server setup. Restore from the diagnostic prompt on the Avaya R300 where you want to upload the profile.

For more information about the diagnostic prompt, see [“Diagnostics Mode” on page 162](#).

1. At the diagnostic prompt, type **trestore server filename** where *server* is the name or IP address of the TFTP server and *filename* is the name of the profile you want to restore.
2. Press ENTER to save the profile as a flat text file that you can edit later.



CAUTION:

The updates to the Avaya R300 profile configurations take place as the restore happens. Ensure that the IP address assigned to the Avaya R300 matches the IP address assigned in the configuration file for the configuration to complete properly.

Save a profile with Save Cfg

The **Save Cfg** command enables you to save the Avaya R300 configuration to a file. It does not save Security profiles or passwords.

NOTE:

Using the **Save Cfg** command to save the configuration and then restoring it from the saved file clears all passwords.

You must enter all save and restore commands from the diagnostic window of the Avaya R300. For more information on the diagnostic window and how to access it, see *“Diagnostics Mode” on page 162*.

To save your configuration, proceed as follows:

1. Verify that the Download permission is enabled in the active Security profile.
2. Verify that the Term Rate parameter in the System profile is set to **9600**.
3. Verify that the terminal-emulation program has a disk-capture feature, that it has an autotype feature, and that its data rate is set to 9600 bps or lower.
4. Connect the backup device to the Avaya R300 unit’s control port.
5. Turn on the autotype function on your emulator, and start the save process by pressing any key on the emulator.
6. Highlight **Save Cfg** and press ENTER.
7. Verify that configuration data is being echoed to the terminal-emulation screen and that the captured data is being written to a file on the disk.
8. The save process is complete when the message
“Download complete--type any key to return to menu”
appears on the emulator’s display. The backup file is an ASCII file.
9. Turn off the autotype feature.

Restore a profile with Restore Cfg

The **Restore Cfg** command restores an Avaya R300 configuration that was saved with the **Save Cfg** parameter, or transfers the profiles to another Avaya R300. Because the **Save Cfg** command does not save passwords, the **Restore Cfg** command does not restore them.

You must enter all save and restore commands from the diagnostic window of the Avaya R300. For more information on the diagnostic window and how to access it, see *“Diagnostics Mode” on page 162*.

Follow these instructions to restore your configuration from backup, proceed as follows:

1. Verify that the Upload and Edit Security permissions are enabled in the active Security profile.
2. Verify that the Term Rate parameter in the System profile is set to **9600**.
3. Verify that your terminal-emulation program has a disk-capture feature and an autotype feature, and that its data rate is set to 9600 bps.
4. Connect the backup device to the Avaya R300 unit's control port.
5. Highlight **Restore Cfg** and press ENTER.
6. When the
"Waiting for upload data"
prompt appears, turn on the autotype function on your emulator and supply the filename of the saved Avaya R300 data.
7. Verify that the configuration data is going to your terminal-emulation screen and is being restored to the target Avaya R300.
8. The restore process is complete when the message
"Upload complete--type any key to return to menu"
appears on your emulator's display.

Avaya R300 software upgrade

A software upgrade may be available for your Avaya R300. For detailed instructions and to download software, go online to <http://support.avaya.com/comsys/definity/r300>. Click on Software Downloads, and then Avaya R300 Remote Office Communicator Software Upgrades.

Before going online, you may want to determine what hardware model you have, and what your current software version is. See below.

How to tell what hardware model you have

Look at the bottom of the R300. The serial number label shows the model number:

Table 17. Hardware Model Number and Type

Model Number	Type
MX30-2T1-DRM	T1
MX30-2E1-DRM	E1
MX30-6ST-DRM	BRI-S/T

How to tell what software version you have today

If you telnet into the R300 and look in the “00-100 Sys Option” status box, you will see a “SW” followed by a number. For instance, the base version for the Release 1.1 (December 2001) is +8.0-148.0+.

Avaya R300 reset

You need to reset the Avaya R300 unit if you upload a new system software configuration (not a new Avaya R300 profile configuration). You can reset the Avaya R300 unit in one of the following ways:

- Choose System > Sys Diag > Sys Reset from the VT100 menu interface.
- Type **reset** at the diagnostic prompt.
- Power cycle the unit by pulling the plug out of the outlet and then plugging it back into the outlet.

⇒ NOTE:

Power cycling is not the preferred method of shutting down the Avaya R300. When you reset the Avaya R300 unit using one of the other methods, the peer-to-peer communication protocol suites involved with signaling and audio transport between the R300 and the host DEFINITY switch perform a systematic removal of call connections.

Avaya R300 default parameter settings

When the R300 is upgraded to software load 8.0-148.0 or a newer version, the following parameters will be set to the default values shown in [Table 18](#).

Table 18. Default Parameter Settings Following Upgrade

Field	Parameter Default Setting
System>Sys Config>Name=	Disables digital trunk registration. It is recommended to leave field blank if R300 digital trunks are not used.
Etnernet>Mod Config>VOIP Options>VPN Mode	Disables secondary prompt for a P.I.N. Recommended setting is Yes .
Etnernet>Mod Config>VOIP Options>Frames/Packet	Recommended setting is 3 .

Continued on next page

Table 18. Default Parameter Settings Following Upgrade — Continued

Field	Parameter Default Setting
Etnernet>Mod Config>VOIP Options>Max Jtr Buf Size	Recommended setting is 3 .
Etnernet>Mod Config>VOIP Options>Initial Jtr Buf Size	Recommended setting is 1 .
Etnernet>Mod Config>VOIP Options>Single Dial Enable	Disables two-stage dialing. Recommended setting is Yes for T1-PRI, E1-PRI, BRI WAN ports.
Etnernet>Mod Config>VOIP Options>True Connect	Enables DEFINITY answer supervision. Recommended setting is Yes .
Etnernet>Mod Config>VOIP Options>DHCP client	Disable DHCP activity. Recommended setting is No if DHCP is not used.
Etnernet>Mod Config>VOIP Options>DHCP spoofing	Disable DHCP activity. Recommended setting is No if DHCP is not used.
Etnernet>Mod Config>VOIP Options>Boot Relay Enable	Disable BOOTP activity. Recommended setting is No if BOOTP is not used.
Definity Combo Blade>Mod Config>Trunk 1>Enabled	Disable analog trunk 1 interface. Default is No . Change to Yes if Trunk 1 is used.
Definity Combo Blade>Mod Config>Trunk 2>Enabled	Disable analog trunk 2 interface. Default is No . Change to Yes if Trunk 2 is used.
Net/T1>Line Config>1st Line	Disable T1 Line 1 interface. Default is Disabled . Change to Enabled if Trunk 1 is used.
Net/T1>Line Config>2nd Line	Disable T1 Line 2 interface. Default is Disabled . Change to Enabled if Trunk 2 is used.
Net/T1>Line Config>3rd Line	Disable T1 Line 3 interface. Default is Disabled .  NOTE: This is not to be used.
Net/E1>Line Config>1st Line	Disable E1 Line 1 interface. Default is Disabled . Change to Enabled if Trunk 1 is used.

Continued on next page

Table 18. Default Parameter Settings Following Upgrade — Continued

Field	Parameter Default Setting
Net/E1>Line Config>2nd Line	Disable E1 Line 2 interface. Default is Dis-abled . Change to Enabled if Trunk 2 is used.
Net/BRI>Line Config>Line 1>Enabled	Disable BRI Line 1 interface. Default is No . Change to Enabled if Trunk 1 is used.
Net/BRI>Line Config>Line 2>Enabled	Disable BRI Line 2 interface. Default is No . Change to Enabled if Trunk 2 is used.
Net/BRI>Line Config>Line 3>Enabled	Disable BRI Line 3 interface. Default is No . Change to Enabled if Trunk 3 is used.
Net/BRI>Line Config>Line 4>Enabled	Disable BRI Line 4 interface. Default is No . Change to Enabled if Trunk 4 is used.
Net/BRI>Line Config>Line 5>Enabled	Disable BRI Line 5 interface. Default is No . Change to Enabled if Trunk 5 is used.
Net/BRI>Line Config>Line 6>Enabled	Disable BRI Line 6 interface. Default is No . Change to Enabled if Trunk 6 is used.

After an upgrade to a newer load or a downgrade to an older load, verify that the following parameters are set as shown in [Table 19](#).

Table 19. Parameters Following Upgrade to a Newer Load or Downgrade to an Older Load

Parameter Default Setting	Reason
Ethernet>Mod Config>DHCP client	If the DHCP feature is not required. Recommended setting is No .
Ethernet>Mod Config>DHCP spoofing	If the DHCP feature is not required. Recommended setting is No .
Definity Combo Blade>Mod Config>Trunk x>Enabled	If analog trunk “x” is required. Recommended setting is Yes .
Net/y>Line Config>Line 1>1st Line=Trunk	If local access digital trunks are required. Where “y” represents E1, T1, or BRI.
Ethernet>Mod Config>Voip Options>Single Dial Enable	If PRI/BRI signaling is required, refer to “Specify and configure signaling mode” on page 109. Recommended setting is Yes .
Ethernet>Mod Config>Voip Options>True Connect Enable	If PRI/BRI signaling is required. Recommended setting is Yes .

Troubleshooting

The following sections help you troubleshoot your Avaya R300. It provides assistance for the following symptoms:

Symptom	page
There is no IP connectivity between the Avaya R300 and the DEFINITY IP Resource	144
The R300 phone(s) are not registered with the DEFINITY system	145
The TTI endpoint is not registered with the DEFINITY system	146
The named endpoint is not registered with the DEFINITY system	146
The digital phones are not receiving power (all digital phone LED displays are dark)	148
The phones are not receiving audio (no dial tone)	149
The voice quality is poor	150
The stations repeatedly register and unregister	150
The digital trunk interface only allows one call to be established	150

Symptom	page
The message “PRI GK Unregister” displays in status window 00-200	151
The digital trunks signaling group is registered but calls fail to complete	151
There is a question on TCP/UDP port usage and with the state of the R300 analog/digital stations	152

There is no IP connectivity between the Avaya R300 and the DEFINITY IP Resource

If the Avaya R300 cannot “ping” to a DEFINITY IP resource board (C-LAN or IP Media Processor), do the following:

- Verify the physical connection from the Avaya R300 and DEFINITY IP resource board to network.
- Attempt to ping, via a dotted decimal IP address(xxx.xxx.xxx.xxx), another host on the subnet to which the R300 is connected. The routed gateway would be a good choice. This will force the host clients and routed gateway to update their address resolution protocol (ARP) tables.
- Attempt to ping the Avaya R300 from another system on the LAN. If there is no response from the Avaya R300, check that the IP address, subnet mask, and Default Gateway are correctly administered on the Avaya R300.
- Attempt to ping the DEFINITY system C-LAN and IP media processor from another system on the LAN. If there is no response from these boards, verify that each of their IP address, subnet mask, and Default Gateway are correctly administered on the DEFINITY system.
- Attempt to verify network connectivity using systems not directly associated with the Avaya R300 or the DEFINITY switch (for example, Personal Computers). The network could be at fault. Ping from a system on the Avaya R300's LAN to a system on the DEFINITY IP resource's LAN. If this does not work, you have a network problem. The traceroute tool (“traceroute <Destination IP address>” from the Avaya R300 terminal server prompt) can help you pinpoint the source of the network failure.

The R300 phone(s) are not registered with the DEFINITY system

If the endpoint you are testing is not registered with the DEFINITY switch, do the following:

- Verify that endpoint you are testing is in TTI or named mode, and not in disabled mode by checking DEFINITY Combo Blade> Mod Config> DCP Line (x)> Registration Mode on the Avaya R300.
- If endpoint being tested is in TTI mode, refer to “The TTI endpoint is not registered with the DEFINITY system”.
- If endpoint being tested is in named mode, refer to “The named endpoint is not registered with the DEFINITY system”.
- Verify that the Avaya R300’s IP address is correct in the DEFINITY System’s Administration Node Names screen (“**change node-names ip**” from SAT), and that the remote office is using the correct node names (“**change remote-office x**” from SAT).

If the IP endpoint registration is rejected by the DEFINITY system, do the following:

1. Press CTRL+D and then type **d.** to enter R300 diagnostic mode.
2. Type **comblade monitor oam print** and press ENTER.
3. View the combo blade state information as shown in the example below. For key information, type **comblade**.

```
>comblade monitor oam print
Sending 5 bytes to Combo Monitor
>Combo-3 : Remote Office - Oct 24 2001
Combo-3 : Versions: Application/Boot/Hardware 4.0.0/0.1.5/13
Combo-3:      -48Vdc is good ETR is off Slot is 3 GK ping/fail is 1181/1
Combo-3:      Line           Active      Power      Registration and Unregistration
Combo-3:      Trunk 1*         Yes        0/0        2/1:Success      Sig Grp reg/Null
Combo-3:      Trunk 2             Yes**      0/0        2/1:Success      Disabled/Null
Combo-3:      Analog 1           Yes        0/0***     2/1:Success      Named reg/Null
Combo-3:      Analog 2           Yes        0/0        7/5:Security denial# Named reg req/Null
Combo-3:      DCP 1              Yes        0/0        2/1:Success      Named reg/Null@
Combo-3:      DCP 2              Yes        8/0        4/2:GRJ term excluded Named reg req/Null
Combo-3:      DCP 24            No         1/0        0/0:Null         TTI unreg/Null
```

Legend:

- * IP endpoint identifier
- ** Signaling state
- *** -48Vdc state
- # Last reject reason
- @ Current registration state

Below is an explanation of the registration information shown in this example.

- The interconnect unit and cable are supplying nominal power, i.e., “-48Vdc is good.”
- Emergency transfer is disabled on the R300, i.e., “ETR is off.”
- The combo blade is in slot 3 of the R300, i.e., “Slot is 3.” The motherboard is in slot 1.
- There have been 1181 gatekeeper pings with 1 failure, i.e., “GK ping/fails 1181/1.”

- The analog trunk signaling group was registered after 2 attempts and 1 failure. Trunk 1 is enabled but Trunk 2 is disabled.
- Analog 1 was named registered after 2 attempts and 1 failure.
- Analog 2 is in the named register request state and has attempted to register 7 times and failed 5 times. The last attempt failed with the reason code “Security Denial” because the Extension Password was wrong.
- DCP 1 was named registered after 2 attempts and 1 failure and it has a telephone connected to port 1 of the interconnect unit that is powered and in an active signaling state.
- DCP 2 is in the named register request state and has attempted to register 4 times and failed 2 times. The last attempt failed with the reason code “Gatekeeper Reject Terminal Excluded” because the Extension Number was wrong.
- DCP 24 is in TTI unregistered state and has not attempted to register because there is no telephone connected to port 24 of the interconnect unit.

The TTI endpoint is not registered with the DEFINITY system

If the TTI endpoint you are testing is not registered with the DEFINITY switch, do the following:

- Verify that registration attempts are being made. Enter the diagnostic prompt, and type **roRAS rasdebug**. Every 30 seconds you should see messages printing out indicating that registration attempts are being made. If you do not see these messages, registration attempts are not being made. One possible source of this problem would be if the endpoint being tested is a digital (DCP) phone, and the phone is not communicating successfully with the combo blade. Try a different phone. If still unsuccessful, reset the Avaya R300.
- Verify that TTI is enabled on the DEFINITY switch. TTI is enabled on page 2 of the Change System-Parameters Features screen.

The named endpoint is not registered with the DEFINITY system

If the Named endpoint being tested is not registered with the DEFINITY switch, do the following:

- Verify that registration attempts are being made. Enter the diagnostic prompt, and type **roRAS rasdebug**. Every 30 seconds you should see messages printing out indicating that registration attempts are being made. If you do not see these messages, registration attempts are not being made. Try a different phone. If still unsuccessful, reset the Avaya R300.
- Verify that the extension number and password administered on the Avaya R300 match the extension number and security code administered on the DEFINITY switch.

- Analyzing the **roRAS rasdebug** messages at the diagnostic prompt. You should see registration attempts every 30 seconds. Be sure to type “roRAS rasdebug” again when finished troubleshooting. This will turn off the debug prints to not “clutter” the diagnostic prompt.

⇒ NOTE:

The endpoint numbers shown in registration attempts are computed as follows:

- Analog Trunks: Port number - 1 (range is 0 to 1)
- Analog Lines: Port number + 1 (range is 2 to 3)
- DCP Lines: Port number + 3 (range is 4 to 27)

The following example shows a registration attempt that has timed out for DCP port 1 (endpoint 4). This would have been caused by a bad IP connection from the Avaya R300 to the DEFINITY C-LAN, or a problem internal to the DEFINITY switch or the C-LAN. Three time-out messages printed because the Avaya R300 retries the registration three times.

- h323ReceivedRegRequest endpoint 4
- allocSignalingPort: allocated port 7018
- RAS Address for endpoint 4 = 870996df
- h323GRQTimeout for endpoint 4
- RAS Address for endpoint 4 = 870996df
- h323GRQTimeout for endpoint 4
- RAS Address for endpoint 4 = 870996df

The next example shows a registration attempt for DCP port 1 (endpoint 4) that was Gatekeeper Rejected. This would happen if the extension number associated with DCP port 1 on the Avaya R300 was not an administered station on the DEFINITY switch.

- h323ReceivedRegRequest endpoint 4
- allocSignalingPort: allocated port 7038
- RAS Address for endpoint 4 = 870996df
- Received data on connection 4
- Received Gate Reject
- freeSignalingPort: freed port 7038

This last example depicts a registration attempt for DCP port 1 (endpoint 4) that was Register Rejected. This would happen if any of the following were true.

- The IP address for the Avaya R300 on the Node Names screen on the DEFINITY switch is incorrect.
- The extension number associated with DCP port 1 on the Avaya R300 is correctly administered on the DEFINITY switch, but the security code for the station on the DEFINITY switch does not match the password for the station on the Avaya R300.

- Another Avaya R300 station, IP telephone, or IP softphone is registered with that extension number. If you type **status station** at the DEFINITY switch, and the “Service State” field is anything other than “No hardware assigned,” then another endpoint already registered this extension number. The other endpoint must unregister before the Avaya R300 will be able to register using this extension number.
 - h323ReceivedRegRequest endpoint 4
 - allocSignalingPort: allocated port 7004
 - RAS Address for endpoint 4 = 870996df
 - Received data on connection 4
 - Received Gate Confirm
 - Address for registration is c00b8280:6b7
 - Received a token of 35 bytes
 - Received data on connection 4
 - Received Register Reject
 - freeSignalingPort: freed port 7004

The digital phones are not receiving power (all digital phone LED displays are dark)

If the DCP phones connected through the Avaya R300 are not receiving power, do the following:

- Verify the phones are supported by the Avaya R300. For valid phones types, see [Table 5 on page 28](#).
- Verify that the phones are properly plugged into the Avaya R300 Interconnect. (Hit the “Test” Button.)
- Verify that the R300 Interconnect unit’s power cord is plugged into the outlet and that the outlet is live.
- Verify the -48 volt power source works properly.
- Verify that both plugs from the Y-cable (DCP and analog/power) are correctly plugged into the R300 Interconnect unit.
- Verify the Y-cable is correct plugged into the Combo Blade Card on the Avaya R300 unit.

When stations are not registering and/or do not have power, verify that the combo blade is operational. Type the following at the R300 diagnostic prompt:

> **comboblade test**

```
Testing Combo Blade in slot 3
Combo Blade Test Slot 3: SUCCESS
```

If the “comoblade test” command fails with the message “Combo Blade Slot 3: FAIL” reset the combo blade by typing “comoblade restart” at the R300 diagnostic prompt.

> **comoblade restart**

```
_readImageFnc:inflated image at 0x202c70ba length:661672(0xa18a8)
Starting Combo Blade loader task for slot 3
Combo 3: Combo loader for slot 3 - started straps 1
Combo 3: Waiting for FPGA Done bit
Combo 3: Waiting for 850 Done bit
Combo 3: Waiting for 850 ready flag
Starting loading Combo Blade in slot 3
:
Combo 3: Image loaded successfully
```

Repeat the combination of **comoblade test** and **comoblade restart** commands if there is a failure after the image has been loaded successfully. Reset the R300 only if the failures persist.

The phones are not receiving audio (no dial tone)

If the phones connected through the Avaya R300 are not receiving an audio signal, do the following:

- Verify the phones are getting power by pressing the TEST button (DCP phones only). The LED next to the Test button should light. If the LED does not light then the phone is not getting power; You should refer to [“The digital phones are not receiving power \(all digital phone LED displays are dark\)”](#) on page 148 for a solution.
- Verify IP connectivity between the Avaya R300 and the DEFINITY Gatekeeper (C-LAN). Go to terminal server mode (by pressing CTRL and typing **d e.** at the same time). Type “ping <C-LAN IP address>”. If this fails, refer to [“There is no IP connectivity between the Avaya R300 and the DEFINITY IP Resource”](#) on page 144.
- Verify IP connectivity between the Avaya R300 and the DEFINITY Media Processor. Go to terminal server mode (by pressing CTRL and typing **d e.** at the same time). Type “ping <Media Processor IP Address>.” If this fails, refer to [“There is no IP connectivity between the Avaya R300 and the DEFINITY IP Resource”](#) on page 144.
- Verify that the endpoints are registered with the DEFINITY switch. Check status screen 30-000 for the Combo Blade. The endpoint that being tested should have a dash '-' (if phone is on-hook) or a star '*' (if phone is off-hook) displayed on this status screen. If it does not, refer [“The R300 phone\(s\) are not registered with the DEFINITY system”](#) on page 145.
- Verify that the Avaya R300 is opening the audio channel to the DEFINITY switch. Check status screen 30-000 for the Combo Blade. The endpoint being tested should have a '*' displayed on this status screen when the phone goes off-hook. If this is not the case, attempt the same procedure with a different phone. If you still do not have success, reboot the Avaya R300. Rebooting should only be attempted if your phone is registered with the DEFINITY switch, and a dash '-' is displayed when the phone is on-hook.

The voice quality is poor

If the voice quality on the phones connected to the Avaya R300 is poor, or below standard, review the following:

- Verify that the DEFINITY Administration screen parameter “Direct IP-IP Audio Connection” is set to **Yes** for the station, for the station’s signaling group, for its network region, and for the system.

Check the following DEFINITY Administration screens:

- Station, page 2
- Feature-Related System Parameters, page 10
- Signaling Group, page 1
- IP Network Region, page 1

If the field is set to **No** in any of these locations, then the quality of voice over an IP connection may be poor.

- Verify that the DEFINITY Administration screens for **ip-network-region** and **ip-codec-set** are administered correctly.
- Verify that any hubs between the phone and the Avaya R300 are switched, not shared, in the uplink direction.
- Verify the wiring between the phone and the Avaya R300 is CAT 5.
- Verify that the Avaya R300 and the switched hub connected to the TN2302 IP Media Processor are set to 100mbit operation.

The stations repeatedly register and unregister

If the phones connected through the Avaya R300 register and unregister repeatedly (see Line Stat in the next screen), do the following:

- Verify that the R300 LCD Menu System>Sys Config>Name is not blank. If it is not blank, the R300 will attempt to register the digital trunks’ signaling group. A symbolic name should be entered only if there is an IP signaling group currently administered on DEFINITY for this R300.
- On the DEFINITY switch, check the signaling group for the R300. Verify that the Near-end Listen Port is not set to **1720** on the signaling group screen. The C-LAN uses port **1720** to listen for new connections in H.323. If the Near-end Listen Port is **1720**, change it to some other value in the TCP port range 5000 to 9999.

NOTE:

1720 is the far-end TCP listen port for digital trunks, while **1721** is the far-end TCP listen port for the analog trunks on the R300.

```

|----- MAX EDIT -----| |-----| |-----| |
|40-000 Ethernet          | |10-100 1234567890    | |30-000 Line Stat      |
| 40-100 Connections      | | L1/LA -----      | | 123456789012 A      |
| 40-200 Names / passwords| | 12345678901234      | | r..u.....u r      |
| 40-300 Bridge Adrs     | | -----ooooooooo    | | ..r..r.r.... .    |
| 40-400 Static Rtes     | |-----| |-----|
| 40-500 Filters          | |10-200 1234567890    | |00-200 11:43:42     |
| 40-600 Firewalls       | | L2/DS @@@@@@@@@@    | |>M31 Line Ch        |
| 40-700 Frame Relay     | | 12345678901234      | | PRI GK Registered  |
| 40-800 X.25            | | @@@@@@@@@@@@@@     | |-----|
| 40-900 Answer          | |-----| |-----|
| 40-A00 SNMP Traps      | |40-300 WAN Stat     | |40-400 Ether Stat   |
| 40-B00 SNMPv3 USM Users| |>Rx Pkt: 0^         | |>Rx Pkt: 44741      |
| 40-C00 IPX Routes      | | Tx Pkt: 0         | | Tx Pkt: 44864      |
| 40-D00 IPX SAP Filters | | CRC: 0v          | | Col: 0             |
| 40-E00 Virtual Routers | |-----| |-----|
|>40-F00 Mod Config      | |00-100 Sys Option   | |40-100 Sessions     |
|                          | |>Security Prof: 1 ^ | |> 0 Active          |
|                          | | SW +8.0-148a0e0+   | |                     |
|                          | | S/N: 10341015     | | v|                 |
Press Ctrl-n to move cursor to the next menu item. Press return to select it.
Press Tab to move to another window --- thick border indicates active window.

```

The message “PRI GK Unregister” displays in status window 00-200

This indicates a failure to successfully register the digital trunks signaling group. A symbolic name should only be entered into “System>Sys Config>Name=” if there is an IP signaling group (for this R300) administered on DEFINITY. 1720 is the far-end TCP listen port for the digital trunks while 1721 is the far-end TCP listen port for the analog trunks.

The digital trunks signaling group is registered but calls fail to complete

Verify physical connectivity on the R300 trunk interface. If that is good, then verify that the correct companding law is administered on both the R300 and the far-end switch. Finally, the symbolic name under “System>Sys Config>Name=” may be deleted and saved to unregister the signaling group. Then the name can be entered and saved again to re-register the signaling group.

1. Type list trance station and press ENTER.
2. Verify that the Trunk Access Code (TAC) dialing works. Note this bypasses the ARS feature.
3. Verify that the Automatic Route Selection (ARS) administration is correct.

The digital trunk interface only allows one call to be established

If the user can make one successful call, and upon completion of a second call, the first call disconnects, then do the following:

- Verify that the R300 is operating with Release 1.1 or newer software. (see also [“Avaya R300 software upgrade” on page 137](#))



NOTE:

You can view the R300 Status Window: 00-100 Sys Option>sw = +8.0-148xxx+ (see above screen), to see that the R300 has software Release 1.1.

- Look at the DEFNITY system IP signaling group form. Verify that the “Calls Share IP Signaling Connection” parameter is set to **Yes**.

There is a question on TCP/UDP port usage and with the state of the R300 analog/digital stations

If there is a question regarding what TCP ports are used for signaling or a question regarding what UDP ports are used by registration or for audio connections by the R300 on behalf of its 24 digital stations and 2 analog station, you can perform the following:

1. Type **CNTRL-d d** and press ENTER to enter the diagnostic mode on the R300 main editing screen.
2. Type roras status and press ENTER.

The following screen displays.

Slot	3	Reg Mode	Ext Number		RAS State	H225 State	OLC State
		RAS Port	Signal Port	RTP Port	RTCP Port		
Analog	1	Named	4131		Sig EST	Active	Null
		6002	7007	1904	1905		
Analog	2	Named	4132		Sig EST	Active	Null
		6003	7008	1906	1907		
DCP	1	Named	4101		Sig Est	Active	Null
		6004	7009	1908	1909		
DCP	2	Named	4102		Sig EST	Active	Null
		6005	7010	1910	1911		

DCP	3	Named	4103			Sig Est	Active	Null
			6006	7004	1912	1913		
DCP	4	Named	4104			Sig Est	Active	Null
			6007	7005	1914	1915		
DCP	5	Named	4105			Sig Est	Active	Null
			6008	7006	1916	1917		
DCP	6	Dis	N/A			Null	Null	Null
			6009	None	1918	1919		
DCP	7	Dis	N/A			Null	Null	Null
			6010	None	1920	1921		
DCP	8	Dis	N/A			Null	Null	Null
			6011	None	1922	1923		
DCP	9	Dis	N/A			Null	Null	Null
			6012	None	1924	1925		
DCP	10	Dis	N/A			Null	Null	Null
			6013	None	1926	1927		
DCP	11	Dis	N/A			Null	Null	Null
			6014	None	1928	1929		
DCP	12	Dis	N/a			Null	Null	Null
			6015	None	1930	1931		
DCP	13	Dis	N/A			Null	Null	Null
			6016	None	1932	1933		
DCP	14	Dis	N/A			Null	Null	Null
			6017	None	1934	1935		
DCP	15	Dis	N/A			Null	Null	Null
			6018	None	1936	1937		

DCP	16	Dis	N/A		Null	Null	Null
		6019	None	1938	1939		
DCP	17	Dis	N/A		Null	Null	Null
		6020	None	1940	1941		
DCP	18	Dis	N/A		Null	Null	Null
		6021	None	1942	1943		
DCP	19	Dis	N/A		Null	Null	Null
		6022	None	1944	1945		
DCP	20	Dis	N/A		Null	Null	Null
		6023	None	1946	1947		
DCP	21	Dis	N/A		Null	Null	Null
		6024	None	1948	1949		
DCP	22	Dis	N/A		Null	Null	Null
		6025	None	1950	1951		
DCP	23	Dis	N/A		Null	Null	Null
		6026	None	1952	1953		
DCP	24	Dis	N/A		Null	Null	Null
		6027	None	1954	1955		

Alarms and MIBs

DEFINITY Alarming Strategy

The DEFINITY host PBX performs on-line diagnostics in various components of the R300 and keeps error counters. When these error counters reach the assigned thresholds, alarms are raised on the DEFINITY alarm interface. It should be noted that these alarms are separate from the R300 SNMP-based MIBs and provide an integrated view of network operation from a DEFINITY system point of view. Specifically, the DEFINITY maintenance system creates a maintenance object for

- a. each R300 analog station
- b. each R300 digital station
- c. each IP signaling group (in this case, one for the digital trunks and one for the analog trunks, if used)
- d. the R300 as a separate network node entity

For the R300 digital stations, the following diagnostics are run periodically on a time available basis:

- Electronic battery feed test
- Station display updates test
- Audit tests

When an error event counter reaches its threshold, an “off-board warning” alarm is raised, depending upon the type of error condition.

For the R300 analog station, the following diagnostics are run periodically on a time available basis:

- Ringer update test
- Message lamp update test
- Switch-hook audit test

When an error event counter reaches its threshold, either an “off-board warning” or an “off-board minor” alarm is raised depending upon the type of error condition.

For the IP signaling group (for either digital or analog trunk management) DEFINITY maintenance will run the following tests on a time available basis:

- Keep alive (H.323) tests
- Gateway Registration tests

When an error occurs, a “minor” alarm will be raised.

For the R300 as an integral managed device, DEFINITY maintenance will run the following tests on a time available basis:

- Keep alive (H.323) tests
- Gateway Registration tests

When an error occurs, a “minor” alarm will be raised.

For a complete detailed description of DEFINITY maintenance and alarm strategy, refer to the DEFINITY Systems Maintenance documentation.

R300 Combo Blade Recovery

An on-board Motorola MPC850 microprocessor governs the R300 Combo Blade. This processor communicates across an API (via the backplane) to the main processor on the R300 MotherBoard (this processor is a Motorola MPC860). As part of emergency transfer detection, the Combo Blade sends an “API Gatekeeper Request” message to the MotherBoard processor once a minute. In response the main R300 processor is obligated to send a ping message to the CLAN board as part of a “keep-alive” process.

This main processor performs error detection as follows:

- a. If no “API Gatekeeper Request” is received within a 2-minute interval, then the Combo Blade is prompted by the main R300 processor via an “API Combo Blade Test” command.
- b. If there is no “API Test Pass” message, the main processor updates an error counter and includes a time stamp.
- c. At this point, the main R300 processor attempts to reset the Combo Blade and free up allocated memory resources. This impacts digital trunk calls with the reset action.

An error message is sent “R300 Combo Blade not responding....resetting.”

- d. After five unsuccessful recovery attempts, an alarm message is sent to Syslog “Unable to restore Combo Blade services after 5 recovery attempts, please reset the R300.”
- e. The craftsperson should:
 1. Type **comboblade clear** and press ENTER to just reset this part of the R300.
 2. If step 1 fails, type **reset** and press ENTER to reset the entire R300.
 3. If step 2 fails, cycle the R300 main power by unplugging and then reinserting the AC cord.

At any point in time, the main diagnostic mode may be entered.

1. Type **comblade errors** and press ENTER to be able to read a timestamped error event list.
2. You then may type **comblade clear** and press ENTER to clear this test event counter.

Avaya R300 native MIBs

For information about the Alarms and MIBs native to the Avaya R300 machine, refer to *Lucent-Ascend's Max Administration Guide*, Chapter 9, SNMP Traps to Monitor Performance. You can find documentation of Lucent-Ascend's MAX 3000 on the DEFINITY Systems Library CD shipped with the Avaya R300.

Downloading the latest R300 SNMP MIB file

1. Access the Avaya support web site at <http://www.avaya.com/support>.
2. Click **Communications Systems**.
3. Click **DEFINITY Systems**.
4. Click **R300 Remote Office Communicator**.
5. Click **Software Downloads**.
6. Click **Avaya R300 Remote Office Communicator SNMP MIB Files**.

Combo Blade MIBs

The use of Simple Network Management Protocol (SNMP) is popular because it provides a tool for multivendor, interoperable network management. Network Management, Performance Management, and Security Management are achieved on the Avaya R300 through an Avaya R300 SNMP agent that accesses a slot card's Management Information Base (MIB). The main MIB, called `ascend.mib` can be downloaded at <http://support.avaya.com>. Click on "online-services" and find the R300 software for downloading as well as the Avaya SNMP MIB files.

This approach was adopted in defining the Combo Blade MIB since the Combo Blade resides in an Avaya R300 slot. It is called the `combladeGroup` in `ascend.mib` with an object identifier (OID) of 36, giving it a full OID 1.3.6.1.529.36, or `iso.org.dod.internet.private.enterprise.ascend.combladeGroup`. This MIB is used primarily for Fault, Configuration, and Performance Management.

Some of the SNMP traps sent from the Combo Blade are:

- Enabled or disabled state of emergency transfer
- Presence or absence of -48 D.C. volts
- Connection state of the Telecom connector

The remaining MIBs are performance statistics and can be accessed with queries through an SNMP manager.

SNMP MIB

Chapter 6 of the *MAX 3000 Administration guide*, “*SNMP and Syslog configuration*” describes how to configure the R300 for SNMP. This addresses access security issues, lists the supported MIBs, and shows where to find the most up-to-date versions.

To reach the SNMP options form on the Avaya R300, select:

- Ethernet>Mod Config>SNMP options from the Main Edit Menu.

```

|----- MAX EDIT -----| |-----| |-----|
|40-E00 Mod Config      | |10-100 1234567890 | |30-000 Line Stat      |
| SNMP options...      | | L1/DF -----| | 123456789012 A T      |
| >Read Comm=public     | |      12345678901234 | | .....|
| R/W Comm Enable=No   | | ----oooooooooos | | .....|
| R/W Comm=N/A         | |-----| |-----|
| Security=No          | |10-200 1234567890 | |00-200 15:10:45      |
| RD Mgr1=0.0.0.0     | | L2/DS @@@@@@@@@@ | |>M31 Line Ch         |
| RD Mgr2=0.0.0.0     | |      12345678901234 | | SEC GK Unregister+ |
| RD Mgr3=0.0.0.0     | |      @@@@@@@@@@@@@@ | |-----|
| RD Mgr4=0.0.0.0     | |-----| |-----|
| RD Mgr5=0.0.0.0     | |40-300 WAN Stat    | |40-400 Ether Stat    |
| WR Mgr1=0.0.0.0     | |>Rx Pkt:      31756^ | |>Rx Pkt:      60091   |
| WR Mgr2=0.0.0.0     | | Tx Pkt:      25672 | | Tx Pkt:      62749   |
| WR Mgr3=0.0.0.0     | | CRC:         0v    | | Col:         0       |
| WR Mgr4=0.0.0.0     | |-----| |-----|
| WR Mgr5=0.0.0.0     | |00-100 Sys Option  | |40-100 Sessions      |
| Queue Depth=0       | |>Security Prof: 1 ^ | |> 0 Active           |
|                      | | SW +8.0-148a0e0+  | |                      |
|                      | | S/N: 10470701    | | v                    |

```

Press Ctrl-n to move cursor to the next menu item. Press return to select it.
 Press Tab to move to another window --- thick border indicates active window.

The default settings for SNMP operation (including related security access) are shown in the above table. Following is a brief explanation of some key parameters.

- Read Comm - This parameter specifies the SNMP community name for ready access (up to 32 characters).
- R/W Comm Enable - This parameter disables SNMP Set commands by default. Before you can execute an SNMP Set (write action) command for some central SNMP network management site, you first must set R/W Comm Enable to **Yes**.
- R/W Comm - This parameter specifies the SNMP community name for read/write access.
- Security - If this parameter is set to **No** (its default value), any SNMP manager that presents a valid community name will be allowed access. If you set this parameter to **Yes**, the R300 checks the source IP address of the SNMP manager and allows access only to those IP addresses listed in the RD MgrN and WR MgrN parameter list (there may be a maximum of five host addresses listed for each determination of host read and host write privileges).

- RD Mgr1 - RD Mgr5 - The RD MGRx parameter operates in conjunction with the Security parameter. If the Security parameter is set to **Yes**, then this parameter specifies a host IP address for an SNMP manager that has privileges to issue GET (read) commands to this R300 site.
- WR Mgr1 - WR Mgr5 - The WR MGRx parameter operates in conjunction with the Security parameter. If the Security parameter is set to **Yes**, then this parameter specifies a host IP address for an SNMP manager that has privileges to issue SET (write) commands to this R300 site.

In summary, the default R300 settings specifies the read access community string, disables SNMP set commands, and allows read access to any SNMP manager that specifies the correct read community string.

Example of SNMP Security Configuration

This example specifies the read access community string “r300get,” enables SNMP set commands with the write access community string “r300set” and allows read/write access to an SNMP manager with the IP address of 10.11.12.13.

```

|----- MAX EDIT -----| |-----| |-----| | |
|40-E00 Mod Config      | |10-100 1234567890 | |30-000 Line Stat |
| SNMP options...      | | L1/DF ----- | | 123456789012 A T |
| >Read Comm=r300get   | | 12345678901234 | | ..... |
| R/W Comm Enable=Yes | | ----oooooooooos | | ..... |
| R/W Comm=r300set     | |-----| |-----|
| Security=Yes         | |10-200 1234567890 | |00-200 15:10:45 |
| RD Mgr1=10.11.12.13 | | L2/DS @@@@@@@@@@ | |>M31 Line Ch |
| RD Mgr2=0.0.0.0     | | 12345678901234 | | SEC GK Unregister+ |
| RD Mgr3=0.0.0.0     | | @@@@@@@@@@@@@@@@ | |-----|
| RD Mgr4=0.0.0.0     | |-----| |-----|
| RD Mgr5=0.0.0.0     | |40-300 WAN Stat | |40-400 Ether Stat |
| WR Mgr1=10.11.12.13 | |>Rx Pkt: 31756^ | |>Rx Pkt: 60091 |
| WR Mgr2=0.0.0.0     | | Tx Pkt: 25672 | | Tx Pkt: 62749 |
| WR Mgr3=0.0.0.0     | | CRC: 0v | | Col: 0 |
| WR Mgr4=0.0.0.0     | |-----| |-----|
| WR Mgr5=0.0.0.0     | |00-100 Sys Option | |40-100 Sessions |
| Queue Depth=0       | |>Security Prof: 1 ^ | |> 0 Active |
| | | | SW +8.0-148a0e0+ | | | |
| | | | S/N: 10470701 v | | | |

```

Press Ctrl-n to move cursor to the next menu item. Press return to select it.
Press Tab to move to another window --- thick border indicates active window.

- Read Comm - Set the read access community string name to **r300get**.
- R/W Comm Enable - Set to **Yes** to enable read/write access.
- R/W Comm - Set the write access community string name to **r300set**.
- Security - Set to **Yes** to enable security to hosts specified in “RD Mgrx” and “WR Mgrx.”
- RD Mgr1 - Set to IP address **10.11.12.13** for read permission from a host manager possessing this IP address.
- WR Mgr1 - Set to IP address **10.11.12.13** for write permission from a host manager possessing this IP address.

See the MAX 300 Series Administration Guide, “SNMP and Syslog Configuration” for more information how to configure SNMP security.

Configuring SNMP Traps for Combo Blade

To reach the SNMP traps on the R300:

1. From the Main Edit Menu, select Ethernet>SNMP Traps>“40-901” profile.

You will see the following screen.

```

----- MAX EDIT -----
40-901 r300Traps
>Name:r300Traps
Alarm=Yes
Port=Yes
Security=No
OSPF=No
Comm=public
Dest=135.9.76.101
Enable traps...

10-100 1234567890
L1/DF .....
12345678901234
.....

30-000 Line Stat
123456789012 A T
rrrrr..... r .
.....F .

10-200 1234567890
L2/LA -----
12345678901234
-----

00-200 16:27:50
>M31 Line Ch
SEC GK Unregister+

40-300 WAN Stat
>Rx Pkt: 0^
Tx Pkt: 0
CRC: 0v

40-400 Ether Stat
>Rx Pkt: 165544
Tx Pkt: 23103
Col: 0

00-100 Sys Option
>Security Prof: 1 ^
SW +8.0-148.1c0+
S/N: 10470701 v
    
```

Press Ctrl-n to move cursor to the next menu item. Press return to select it. Press Tab to move to another window --- thick border indicates active window.

2. Now select the “Enable traps” and press Enter.

You now will see the following traps options.

```

----- MAX EDIT -----
40-901 r300Traps
Enable traps...
>Cold start=Yes
Warm start=Yes
Link Down=Yes
Link Up=Yes
Ascend=Yes
Console=Yes
Use exceeded=Yes
Telnet password=Yes
FR link up=Yes
FR link down=Yes
Event overwrite=Yes
Radius change=Yes
Multicase monitor=Yes
LAN Modem=Yes
Power supply=No

10-100 1234567890
L1/DF .....
12345678901234
.....

30-000 Line Stat
123456789012 A T
..... r
..... r

10-200 1234567890
L2/LA -----
12345678901234
-----

00-200 16:28:16
>M31 Line Ch
SEC GK Unregister+

40-300 WAN Stat
>Rx Pkt: 0^
Tx Pkt: 0
CRC: 0v

40-400 Ether Stat
>Rx Pkt: 165868
Tx Pkt: 23194
Col: 0

00-100 Sys Option
>Security Prof: 1 ^
SW +8.0-148.1c0+
S/N: 10470701 v
    
```

Press Ctrl-n to move cursor to the next menu item. Press return to select it. Press Tab to move to another window --- thick border indicates active window.

```

----- MAX EDIT -----
| 40-901 r300Traps | | 10-100 1234567890 | | 30-000 Line Stat |
| Enable traps... | | L1/DF ..... | | 123456789012 A T |
| Power supply=No | | 12345678901234 | | rrrrr..... r . |
| >SNMP authentication=Yes | | ..... | | .....r . |
| Configuration change=Yes | |-----| |-----|
| Clock drafted=Yes | | 10-200 1234567890 | | 00-200 16:28:42 |
| Suspect access resource=Yes | | L2/LA ----- | | >M31 Line Ch |
| OSPF If ConfigError=No | | 12345678901234 | | SEC GK Unregister+ |
| OSPF If AuthFailure=No | | ----- | | ----- |
| OSPF If StateChange=No | |-----| |-----|
| OSPF If RxBadPacket=No | | 40-300 WAN Stat | | 40-400 Ether Stat |
| OSPF TxRetransmit=No | | >Rx Pkt: 0^ | | >Rx Pkt: 166226 |
| OSPF Nbr StateChange=No | | Tx Pkt: 0 | | Tx Pkt: 23280 |
| OSPF VirtIf ConfigError=No | | CRC: 0v | | Col: 0 |
| OSPF VirtIf AuthFailure=No | |-----| |-----|
| OSPF VirtIf StateChange=No | | 00-100 Sys Option | | 40-100 Sessions |
| OSPF VirtIf RxBadPacket=No | | >Security Prof: 1 ^ | | > 0 Active |
| | | SW +8.0-148.1c0+ | | |
| | | S/N: 10470701 v | |

```

```

OSPF VirtIf TxRetransmit=No | | ..... | | ..... r r |
| OSPF VirtNbr StateChange=No | | qqqqqqqqqqqqqqqqqqq | | qqqqqqqqqqqqqqqqqqq |
| OSPF OriginateLsa=No | | 10-200 1234567890 | | 00-200 16:29:34 |
| >OSPF MaxAgeLsa=No | | L2/LA ----- | | >M31 Line Ch |
| OSPF LsdbOverflow=No | | 12345678901234 | | SEC GK Unregister+ |
| OSPF LsdbApprchngOvrflw=No | | ----- | | ----- |
| Call Log Dropped Pkt=Yes | | qqqqqqqqqqqqqqqqqqq | | qqqqqqqqqqqqqqqqqqq |
| Call Log Server Change=Yes | | 40-300 WAN Stat | | 40-400 Ether Stat |
| VIOP Gatekeeper Change=Yes | | >Rx Pkt: 0^ | | >Rx Pkt: 166943 |
| WAN Line State Change=Yes | | Tx Pkt: 0 | | Tx Pkt: 23465 |
| Watchdog=No | | CRC: 0v | | Col: 0 |
| Combo Blade=Yes | | qqqqqqqqqqqqqqqqqqq | | qqqqqqqqqqqqqqqqqqq |
| | | 00-100 Sys Option | | 40-100 Sessions |
| | | >Security Prof: 1 ^ | | > 0 Active |
| | | SW +8.0-148.1c0+ | | |
| | | S/N: 10470701 v | |

```

Press Ctrl-n to move cursor to the next menu item. Press return to select it.
 Press Tab to move to another window --- thick border indicates active window.

3. Use the scroll arrow key to scroll all of the way until you see “Combo Blade=.”
4. Enter **yes** for the “Combo Blade=” parameter to enable the use of SNMP trap notification for the MIB trap elements.

Configuring Syslog

You can configure the R300 to send messages to an IP host running a syslog daemon. The messages contain call and system events including:

- digital trunk call status
- telnet login attempts
- “comboblade test” results
- “comboblade trap” events

See Chapter 9 of the *MAX 3000 Administration guide*, “*SNMP and Syslog configuration*” for more details. Enabling syslog with message logging and archiving on an IP host can help with troubleshooting.

Diagnosics Mode

To access the diagnostic mode, you must set the Field Service privilege to Yes in the active Security profile. (If you have any questions about how to activate Security profiles, see the *MAX Security Supplement*.)

Use one of the following two methods to access diagnostic mode:

- From the Avaya R300 VT100 interface, display the DO menu by pressing CTRL and typing **D** at the same time. Then press D or select D=Diagnosics.
- From the Avaya R300 VT100 interface, type the following key sequence in rapid succession:

Esc [Esc =

Press the Escape key, followed by the Left Bracket key, then the Escape key again, followed by the Equals key. You must press all four keys within one second for the MAX to recognize the escape sequence.

To display an abbreviated list of the most commonly used commands in diagnostic mode, enter a question mark:

MAX>?

To display a complete listing, append **ascend** to the question mark:

MAX>? ascend

To exit diagnostic mode, type **quit** and press Enter.

For a list of commands available from the DO menu and a description of those commands, see *MAX Reference, Chapter 2, DO Menu Commands*.

Because most diagnostic commands are designed to give a developer information about specific aspects of MAX functionality, you might find it helpful to use commands in combination to troubleshoot different problems.

For example, when troubleshooting modem related issues, you might want to use ModemDrvState, ModemDiag, and MDialout (if modem dial-out is supported on your MAX) to get all modem related information for your calls.

Using several commands simultaneously not only gives you a clearer picture of what is happening, but also shows you a chronology of the events.

The MAX provides system diagnostic commands which appear in the System > Sys Diag menu:

```
System
  Sys Diag
    Restore Cfg
    Save Cfg
    Use MIF
    Sys Reset
    Term Serv
    Upd Rem Cfg
```

To enter a command, highlight the command in the Sys Diag menu and press Enter.

⇒ NOTE:

To use these commands, the operator must have sufficient permissions in the active Security profile.

Terminal Server mode

Use the terminal server to ping or telnet to another Avaya R300 unit. You can access the terminal server mode in either of two ways:

- From the Avaya R300 diagnostics window, type `term serv`.
- From the MAX VT100 interface, display the DO menu by pressing CTRL and typing **D** at the same time. Then press E or select `E=terminal server`.

When you access the terminal-server mode of the Avaya R300, the system displays the terminal server command-line prompt (by default, `ascend%`). For information about the terminal server commands, enter a question mark at the prompt.

For a list of commands available in the terminal server mode and a description of those commands, see *MAX Reference, Chapter 3, Terminal Server Commands*. For more details about the terminal server interface, see the *Network Configuration Guide* for your MAX.

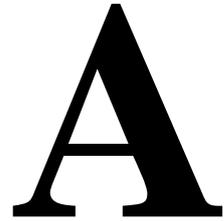
Type `quit` to exit the terminal server mode.

External maintenance modem

The external maintenance modem can be used either by Avaya support, or by the customer to dial into the Avaya R300 unit to troubleshoot problems.

Installation of the external maintenance modem and the required modem settings is covered in [Chapter 5, “Avaya R300 software upgrade”](#).

Loss Plan Settings



This appendix lists the loss plan settings for the following country codes:

Settings	Country codes
Australia settings	2
Belgium settings	8, 11, 18
France settings	12
Germany settings	13, 25
Italy settings	4, 23
Japan settings	3
Netherlands settings	5
Nordic settings	24
United Kingdom (UK) settings	10
United States (US) settings	1, 6, 7, 9, 14-17, 19-22

In the host DEFINITY system, there is the ability to administer the loss/gain of the “outbound” signal on the line, trunk, and media processor circuit packs.

This appendix discusses how this is done for optimization of transmission audio amplitude.

Note that all values listed are relative to “loss.” Therefore, a negative value actually refers to a “gain.”

The following sequence is needed to change the DEFINITY loss plan to accommodate proper transmission loss/gain so as to mitigate the effects of echo and provide proper audio levels:

1. Make sure that you have subscribed to the feature of loss plan administration in the System-Parameters Customer-Options screen on DEFINITY by typing **display system-parameters customer-options** and pressing ENTER. Check that the parameter Digital Loss Plan Modification field is set to **y** to allow the customer to modify loss/gain settings.
2. Type **change system-parameters country-options** and press ENTER. On the System-Parameters Country-Options screen, page 2, set the correct country code in the Digital Loss Plan field. For this example, let us assume that we have programmed **1** for the USA.
3. If you wish to customize the screen for the R300, change the Customize field to **y**.
4. Proceed to change the FROM rows and the TO columns to affect the directional loss or gain.

		2 PARTY LOSS PLAN																
		Digital Loss Plan: 1																Customize? y
		TO																
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	1:	0	0	0	0	0	0	2	0	0	3	0	0	0	0	0	5	5
	2:	0	0	0	0	0	0	2	0	0	3	0	0	0	0	0	5	5
	3:	3	6	0	0	0	0	2	0	0	3	0	0	0	0	11	5	
	4:	0	0	-3	0	0	3	5	3	2	3	0	0	0	0	2	5	5
	5:	0	0	-3	0	0	3	5	3	2	3	0	0	0	0	5	5	5
	6:	0	0	-3	3	3	6	8	6	5	5	3	3	3	5	5	10	
F	7:	-3	-3	-3	-3	-3	-2	0	-2	-3	-3	-3	-3	-3	-3	-3	-3	2
R	8:	0	0	-3	3	3	6	8	6	3	5	3	3	0	0	3	5	8
O	9:	0	0	-3	2	2	5	7	3	0	0	2	-3	-3	-3	0	5	7
M	10:	3	3	0	3	3	5	7	5	0	0	3	-3	-3	-3	3	8	8
	11:	0	0	-3	0	0	5	7	3	2	3	0	0	0	-3	0	5	5
	12:	6	6	3	6	6	9	11	9	3	3	6	0	0	0	6	11	11
	13:	6	6	0	6	6	9	11	6	3	3	6	0	0	0	6	11	11
	14:	6	6	0	6	6	9	11	6	3	3	3	0	0	0	6	11	8
	15:	0	0	-3	2	0	5	7	3	0	3	0	0	0	0	0	5	5
	16:	-3	-3	-3	-3	-3	-3	-3	-3	-2	-3	-3	-3	-3	-3	0	0	0
	17:	-3	-3	-3	-3	-3	0	2	-2	-3	-2	-3	-3	-3	-3	0	0	0

Screen 37. Sample digital loss plan setting

In this example, if a call is to traverse from an analog station that is connected to the host DEFINITY, you would go to row 1 of the FROM coordinate. Then if the destination party is to be an IP routed call out to a digital trunk (T1 or E1 or BRI) on the R300, you would locate row 17 of the TO column. This is highlighted in [Screen 37](#).

The legend for this transaction is shown as follows:

Loss Group	Port Type
1	DEFINITY ECS Analog Line
2	DEFINITY ECS Digital Station
6	DEFINITY ECS Analog Central Office Trunk
11	DEFINITY ECS Digital Central Office Trunk
16	R300 Digital Station and Analog Station
7	R300 Analog Central Office Trunk
17	R300 Digital Central Office Trunk

Looking at the legend, an analog station on the host DEFINITY would be 1 in the FROM row if it were the originator of the call. If the call were to connect to the digital trunk on the R300, you would find column 17 in the TO side of this loss plan table. Highlighted at this intersection is the recommended setting of **5**, which represents 5 dB of loss (remember that positive numbers are expressed in loss). This programmable setting would be done on the Media Process card, since it is the “output” path leaving DEFINITY.

If the customer were to find that this lowered the amplitude too much, you might try a setting of 4, which represents 4 dB of loss. But in general, it is recommended that the settings in Appendix A for the **Customize=y** screens be the first loss plan optimization of choice and these values should be entered as the table is built.

 **NOTE:**

Remember that the “Digital Loss Group” parameter in the Station screen and Trunk Group screen must be set to the correct loss group for this feature to work correctly.

Australia settings

		2 PARTY LOSS PLAN																
		Digital Loss Plan: 2								Customize? n								
		TO																
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	1:	0	1	1	0	0	0	0	0	1	1	2	2	2	2	2	-2	1
	2:	0	1	1	0	0	0	0	0	1	1	2	2	2	2	2	-2	1
	3:	0	1	1	0	0	0	0	0	1	1	2	2	2	2	2	-2	1
	4:	0	1	1	0	0	2	2	2	1	1	2	2	2	2	2	0	1
	5:	0	1	1	0	0	2	2	2	1	1	2	2	2	2	2	0	1
	6:	0	1	1	2	2	11	11	11	3	3	4	4	4	4	4	3	4
F	7:	0	1	1	2	2	11	11	11	3	3	4	4	4	4	4	3	4
R	8:	0	1	1	2	2	11	11	11	3	3	4	4	4	4	4	3	4
O	9:	1	1	1	1	1	3	3	3	0	0	0	0	0	0	0	3	1
M	10:	1	1	1	1	1	3	3	3	0	0	0	0	0	0	0	3	1
	11:	1	2	2	1	1	3	3	3	0	0	1	1	1	1	1	3	2
	12:	1	2	2	1	1	3	3	3	0	0	1	1	1	1	1	3	2
	13:	1	2	2	1	1	3	3	3	0	0	1	1	1	1	1	3	2
	14:	1	2	2	1	1	3	3	3	0	0	1	1	1	1	1	3	2
	15:	1	2	2	1	1	3	3	3	0	0	1	1	1	1	1	3	2
	16:	-3	-2	-2	-1	-1	3	3	3	3	3	3	3	3	3	3	3	3
	17:	0	1	1	0	0	3	3	3	1	1	2	2	2	2	2	3	3

Screen 38. Default loss plan settings for country code 2

		2 PARTY LOSS PLAN																
		Digital Loss Plan: 2								Customize? y								
		TO																
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	1:	0	1	1	0	6	0	0	0	1	1	2	2	2	7	2	-2	1
	2:	0	1	1	0	6	0	0	0	1	1	2	2	2	7	2	-2	1
	3:	0	1	1	0	6	0	0	0	1	1	2	2	2	7	2	-2	1
	4:	0	1	1	0	6	2	2	2	1	1	2	2	2	7	2	0	1
	5:	-3	-3	-3	-3	1	-3	-3	-3	-3	-3	-3	-3	-3	2	-3	-3	-3
	6:	0	1	1	2	6	11	11	11	3	3	4	4	4	9	4	3	4
F	7:	0	1	1	2	6	11	11	11	3	3	4	4	4	9	4	3	4
R	8:	0	1	1	2	6	11	11	11	3	3	4	4	4	9	4	3	4
O	9:	1	1	1	1	6	3	3	3	0	0	0	0	0	5	0	3	1
M	10:	1	1	1	1	6	3	3	3	0	0	0	0	0	5	0	3	1
	11:	1	2	2	1	7	3	3	3	0	0	1	1	1	6	1	3	2
	12:	1	2	2	1	7	3	3	3	0	0	1	1	1	6	1	3	2
	13:	1	2	2	1	7	3	3	3	0	0	1	1	1	6	1	3	2
	14:	-3	-3	-3	-3	2	-2	-2	-2	-3	-3	-3	-3	-3	1	-3	-2	-3
	15:	1	2	2	1	7	3	3	3	0	0	1	1	1	6	1	3	2
	16:	-3	-2	-2	-1	3	3	3	3	3	3	3	3	3	8	3	3	3
	17:	0	1	1	0	6	3	3	3	1	1	2	2	2	7	2	3	3

Screen 39. Customized loss plan settings for country code 2

- These instructions apply when you use country code 2 in the Digital Loss Plan field of the System-Parameters Country-Options screen (page 2).
- The loss plan does not apply to shuffled calls.
- Turn on shuffling (IP direct) for all R300 facilities.
- The 1st plan represents the default Australian loss plan.
- The 2nd plan represents the customized Australian loss plan for the R300 if you are using US terminal-parameter levels, defined on the Terminal Parameters screen.

If the terminal parameters are set for Australia, no loss plan modifications are necessary. If you use the US terminal-parameters, you must customize the loss plan as shown above and make the following administration changes. There are 2 modified loss groups (5 and 14). When administering an R300 station, use loss group 5 instead of the default (1 or 2). When administering an R300 digital CO (T1) trunk group, use loss group 14 instead of the default (13).

Here is the legend.

Loss Group	Port Type
1	DEFINITY ECS Analog Line
2	DEFINITY ECS Digital Station
6	DEFINITY ECS Analog CO
11	DEFINITY ECS Digital CO
5	R300 Digital Station and Analog Line
14	R300 Digital CO

Belgium settings

2 PARTY LOSS PLAN																		
Digital Loss Plan: 8										Customize? n								
	1	2	3	4	5	6	7	8	9	TO	10	11	12	13	14	15	16	17
1:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	
2:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	
3:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	
4:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	
5:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	
6:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	
F 7:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	
R 8:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	
O 9:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	
M 10:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	
11:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	
12:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	
13:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	
14:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	
15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	
16:	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	
17:	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	

Screen 40. Default loss plan settings for country codes 8, 11, and 18

2 PARTY LOSS PLAN																		
Digital Loss Plan: 8										Customize? y								
	1	2	3	4	5	6	7	8	9	TO	10	11	12	13	14	15	16	17
1:	0	0	0	0	5	0	0	0	0	0	0	0	0	5	0	3	3	
2:	0	0	0	0	5	0	0	0	0	0	0	0	0	5	0	3	3	
3:	0	0	0	0	5	0	0	0	0	0	0	0	0	5	0	3	3	
4:	0	0	0	0	5	0	0	0	0	0	0	0	0	5	0	3	3	
5:	-3	-3	-3	-3	0	-3	-3	-3	-3	-3	-3	-3	-3	0	-3	-2	-3	
6:	0	0	0	0	5	0	0	0	0	0	0	0	0	5	0	3	3	
F 7:	0	0	0	0	5	0	0	0	0	0	0	0	0	5	0	3	3	
R 8:	0	0	0	0	5	0	0	0	0	0	0	0	0	5	0	3	3	
O 9:	0	0	0	0	5	0	0	0	0	0	0	0	0	5	0	3	3	
M 10:	0	0	0	0	5	0	0	0	0	0	0	0	0	5	0	3	3	
11:	0	0	0	0	5	0	0	0	0	0	0	0	0	5	0	3	3	
12:	0	0	0	0	5	0	0	0	0	0	0	0	0	5	0	3	3	
13:	0	0	0	0	5	0	0	0	0	0	0	0	0	5	0	3	3	
14:	-3	-3	-3	-3	0	-3	-3	-3	-3	-3	-3	-3	-3	0	-3	-2	-2	
15:	0	0	0	0	5	0	0	0	0	0	0	0	0	5	0	3	3	
16:	3	3	3	3	8	3	3	3	3	3	3	3	3	8	3	3	3	
17:	3	3	3	3	8	3	3	3	3	3	3	3	3	8	3	3	3	

Screen 41. Customized loss plan settings for country codes 8, 11, and 18

- These instructions apply when you use country codes 8, 11 or 18 2 in the Digital Loss Plan field of the System-Parameters Country-Options screen (page 2).
- The loss plan does not apply to shuffled calls.
- Turn on shuffling (IP direct) for all R300 facilities.
- The 1st plan represents the default Belgian loss plan.
- The 2nd plan represents the customized Belgian loss plan for the R300 if you are using US terminal-parameter levels, defined on the Terminal Parameters screen.

If the terminal parameters are set for Belgium, no loss plan modifications are necessary. If you use the US terminal-parameters, you must customize the loss plan as shown above, and make the following administration changes. There are 2 modified loss groups (5 and 14). When administering an R300 station, use loss group 5 instead of the default (1 or 2). When administering an R300 digital CO (T1) trunk group, use loss group 14 instead of the default (13).

Here is the legend.

Loss Group	Port Type
1	DEFINITY ECS Analog Line
2	DEFINITY ECS Digital Station
6	DEFINITY ECS Analog CO
11	DEFINITY ECS Digital CO
5	R300 Digital Station and Analog Line
14	R300 Digital CO

France settings

2 PARTY LOSS PLAN																	
Digital Loss Plan: 12										Customize? n							
										TO							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1:	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	3
2:	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	3
3:	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	3
4:	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	3
5:	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	3
6:	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	3
F 7:	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	3
R 8:	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	3
O 9:	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	3
M 10:	-3	-3	-3	-3	-3	-3	-3	-3	-3	0	-3	-3	-3	-3	-3	3	3
11:	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	3
12:	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	3
13:	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	3
14:	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	3
15:	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	3
16:	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
17:	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

Screen 42. Default loss plan settings for country code 12

2 PARTY LOSS																	
Digital Loss Plan: 12										Customize? y							
										TO							
PLAN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1:	0	0	0	0	5	0	0	0	0	3	0	0	0	5	0	3	3
2:	0	0	0	0	5	0	0	0	0	3	0	0	0	5	0	3	3
3:	0	0	0	0	5	0	0	0	0	3	0	0	0	5	0	3	3
4:	0	0	0	0	5	0	0	0	0	3	0	0	0	5	0	3	3
5:	-3	-3	-3	-3	0	-3	-3	-3	-3	-2	-3	-3	-3	0	-3	-2	-2
6:	0	0	0	0	5	0	0	0	0	3	0	0	0	5	0	3	3
F 7:	0	0	0	0	5	0	0	0	0	3	0	0	0	5	0	3	3
R 8:	0	0	0	0	5	0	0	0	0	3	0	0	0	5	0	3	3
O 9:	0	0	0	0	5	0	0	0	0	3	0	0	0	5	0	3	3
M 10:	-3	-3	-3	-3	2	-3	-3	-3	-3	0	-3	-3	-3	2	-3	3	3
11:	0	0	0	0	5	0	0	0	0	3	0	0	0	5	0	3	3
12:	0	0	0	0	5	0	0	0	0	3	0	0	0	5	0	3	3
13:	0	0	0	0	5	0	0	0	0	3	0	0	0	5	0	3	3
14:	-3	-3	-3	-3	0	-3	-3	-3	-3	-2	-3	-3	-3	0	-3	-2	-2
15:	0	0	0	0	5	0	0	0	0	3	0	0	0	5	0	3	3
16:	3	3	3	3	8	3	3	3	3	3	3	3	3	8	3	3	3
17:	3	3	3	3	8	3	3	3	3	3	3	3	3	8	3	3	3

Screen 43. Customized loss plan settings for country code 12

- These instructions apply when you use country code 12 in the Digital Loss Plan field of the System-Parameters Country-Options screen (page 2).
- The loss plan does not apply to shuffled calls.
- Turn on shuffling (IP direct) for all R300 facilities.
- The 1st plan represents the default French loss plan.
- The 2nd plan represents the customized French loss plan for the R300 if you are using US terminal-parameter levels, defined on the Terminal Parameters screen.

If the terminal parameters are set for France, no loss plan modifications are necessary. If you use the US terminal-parameters, you must customize the loss plan as shown above, and make the following administration changes. There are 2 modified loss groups (5 and 14). When administering an R300 station, use loss group 5 instead of the default (1 or 2). When administering an R300 digital CO (T1) trunk group, use loss group 14 instead of the default (13).

Here is the legend.

Loss Group	Port Type
1	DEFINITY ECS Analog Line
2	DEFINITY ECS Digital Station
6	DEFINITY ECS Analog CO
11	DEFINITY ECS Digital CO
5	R300 Digital Station and Analog Line
14	R300 Digital CO

Germany settings

		2 PARTY LOSS PLAN																
		Digital Loss Plan: 13										Customize? n						
		TO																
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	1:	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	3	3
	2:	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	3	3
	3:	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	3	3
	4:	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	3	3
	5:	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	3	3
	6:	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	3	3
F	7:	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	3	3
R	8:	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	3	3
O	9:	-3	-3	-3	-3	-3	-3	-3	-3	2	2	-3	-3	-3	-3	-3	3	3
M	10:	-3	-3	-3	-3	-3	-3	-3	-3	2	2	-3	-3	-3	-3	-3	3	3
	11:	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	3	3
	12:	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	3	3
	13:	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	3	3
	14:	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	3	3
	15:	0	0	0	0	0	0	0	0	4	4	0	0	0	0	0	3	3
	16:	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	17:	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

Screen 44. Default loss plan settings for country codes 13 and 25

		2 PARTY LOSS PLAN																
		Digital Loss Plan: 13										Customize? y						
		TO																
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	1:	0	0	0	0	5	0	0	0	4	4	0	0	0	5	0	3	3
	2:	0	0	0	0	5	0	0	0	4	4	0	0	0	5	0	3	3
	3:	0	0	0	0	5	0	0	0	4	4	0	0	0	5	0	3	3
	4:	0	0	0	0	5	0	0	0	4	4	0	0	0	5	0	3	3
	5:	-3	-3	-3	-3	0	-3	-3	-3	-1	-1	-3	-3	-3	0	-3	-2	-2
	6:	0	0	0	0	5	0	0	0	4	4	0	0	0	5	0	3	3
F	7:	0	0	0	0	5	0	0	0	4	4	0	0	0	5	0	3	3
R	8:	0	0	0	0	5	0	0	0	4	4	0	0	0	5	0	3	3
O	9:	-3	-3	-3	-3	2	-3	-3	-3	2	2	-3	-3	-3	2	-3	3	3
M	10:	-3	-3	-3	-3	2	-3	-3	-3	2	2	-3	-3	-3	2	-3	3	3
	11:	0	0	0	0	5	0	0	0	4	4	0	0	0	5	0	3	3
	12:	0	0	0	0	5	0	0	0	4	4	0	0	0	5	0	3	3
	13:	0	0	0	0	5	0	0	0	4	4	0	0	0	5	0	3	3
	14:	-3	-3	-3	-3	0	-3	-3	-3	-1	-1	-3	-3	-3	0	-3	-2	-2
	15:	0	0	0	0	5	0	0	0	4	4	0	0	0	5	0	3	3
	16:	3	3	3	3	8	3	3	3	3	3	3	3	3	8	3	3	3
	17:	3	3	3	3	8	3	3	3	3	3	3	3	3	8	3	3	3

Screen 45. Customized loss plan settings for country codes 13 and 25

- These instructions apply when you use country code 13 or 25 in the Digital Loss Plan field of the System-Parameters Country-Options screen (page 2).
- The loss plan does not apply to shuffled calls.
- Turn on shuffling (IP direct) for all R300 facilities.
- The 1st plan represents the default German loss plan.
- The 2nd plan represents the customized German loss plan for the R300 if you are using US terminal-parameter levels, defined on the Terminal Parameters screen.

If the terminal parameters are set for Germany, no loss plan modifications are necessary. If you use the US terminal-parameters, you must customize the loss plan as shown above, and make the following administration changes. There are 2 modified loss groups (5 and 14). When administering an R300 station, use loss group 5 instead of the default (1 or 2). When administering an R300 digital CO (T1) trunk group, use loss group 14 instead of the default (13).

Here is the legend.

Loss Group	Port Type
1	DEFINITY ECS Analog Line
2	DEFINITY ECS Digital Station
6	DEFINITY ECS Analog CO
11	DEFINITY ECS Digital CO
5	R300 Digital Station and Analog Line
14	R300 Digital CO

Italy settings

2 PARTY LOSS PLAN																		
Digital Loss Plan: 4										Customize? n								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
	1:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
	2:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
	3:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
	4:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
	5:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
	6:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
F	7:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
R	8:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
O	9:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
M	10:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
	11:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
	12:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
	13:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
	14:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
	15:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
	16:	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	17:	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

Screen 46. Default loss plan settings for country codes 4 and 23

2 PARTY LOSS PLAN																	
Digital Loss Plan: 4										Customize? y							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	1:	0	0	0	0	5	0	0	0	0	0	0	0	5	0	3	3
	2:	0	0	0	0	5	0	0	0	0	0	0	0	5	0	3	3
	3:	0	0	0	0	5	0	0	0	0	0	0	0	5	0	3	3
	4:	0	0	0	0	5	0	0	0	0	0	0	0	5	0	3	3
	5:	-3	-3	-3	-3	0	-3	-3	-3	-3	-3	-3	-3	0	-3	-2	-3
	6:	0	0	0	0	5	0	0	0	0	0	0	0	5	0	3	3
F	7:	0	0	0	0	5	0	0	0	0	0	0	0	5	0	3	3
R	8:	0	0	0	0	5	0	0	0	0	0	0	0	5	0	3	3
O	9:	0	0	0	0	5	0	0	0	0	0	0	0	5	0	3	3
M	10:	0	0	0	0	5	0	0	0	0	0	0	0	5	0	3	3
	11:	0	0	0	0	5	0	0	0	0	0	0	0	5	0	3	3
	12:	0	0	0	0	5	0	0	0	0	0	0	0	5	0	3	3
	13:	0	0	0	0	5	0	0	0	0	0	0	0	5	0	3	3
	14:	-3	-3	-3	-3	0	-3	-3	-3	-3	-3	-3	-3	0	-3	-2	-2
	15:	0	0	0	0	5	0	0	0	0	0	0	0	5	0	3	3
	16:	3	3	3	3	8	3	3	3	3	3	3	3	8	3	3	3
	17:	3	3	3	3	8	3	3	3	3	3	3	3	8	3	3	3

Screen 47. Customized loss plan settings for country codes 4 and 23

- These instructions apply when you use country code 4 or 23 in the Digital Loss Plan field of the System-Parameters Country-Options screen (page 2).
- The loss plan does not apply to shuffled calls.
- Turn on shuffling (IP direct) for all R300 facilities.
- The 1st plan represents the default Italian loss plan.
- The 2nd plan represents the customized Italian loss plan for the R300 if you are using US terminal-parameter levels, defined on the Terminal Parameters screen.

If the terminal parameters are set for Italy, change them to US, use the customized loss plan above, and make the following administration changes. There are 2 modified loss groups (5 and 14). When administering an R300 station, use loss group 5 instead of the default (1 or 2). When administering an R300 digital CO (T1) trunk group, use loss group 14 instead of the default (13).

Here is the legend.

Loss Group	Port Type
1	DEFINITY ECS Analog Line
2	DEFINITY ECS Digital Station
6	DEFINITY ECS Analog CO
11	DEFINITY ECS Digital CO
5	R300 Digital Station and Analog Line
14	R300 Digital CO

Japan settings

		2 PARTY LOSS PLAN																
		Digital Loss Plan: 3										Customize? n						
		TO																
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	1:	0	0	0	0	0	0	0	0	0	5	0	0	-3	0	0	3	3
	2:	0	0	0	0	0	0	0	0	0	8	0	0	0	0	0	3	3
	3:	3	6	0	0	0	0	0	0	0	4	0	0	0	0	0	3	3
	4:	0	0	-3	0	0	3	3	3	2	5	0	0	0	0	2	3	3
	5:	0	0	-3	0	0	3	3	3	2	5	0	0	0	0	0	3	3
	6:	0	0	-3	3	3	6	8	6	5	7	5	3	3	3	5	3	3
F	7:	0	0	-3	3	3	8	8	6	5	9	5	3	3	3	5	3	3
R	8:	0	0	-3	3	3	6	6	6	3	7	3	3	0	0	3	3	3
O	9:	0	0	-3	2	2	5	5	3	0	4	2	-3	-3	-3	0	3	3
M	10:	5	8	-3	5	5	7	9	7	4	4	3	-3	0	-3	3	3	3
	11:	0	0	-3	0	0	5	5	3	2	3	0	0	0	-3	0	3	3
	12:	6	6	3	6	6	9	9	9	3	3	6	0	0	0	6	3	3
	13:	5	6	0	5	5	6	6	3	3	8	6	0	0	0	6	3	3
	14:	6	6	0	6	6	9	9	6	3	3	3	0	0	0	6	3	3
	15:	0	0	-3	2	0	5	5	3	0	3	0	0	0	0	0	3	3
	16:	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	17:	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

Screen 48. Default loss plan settings for country code 3

		2 PARTY LOSS PLAN																
		Digital Loss Plan: 3										Customize? y						
		TO																
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	1:	0	0	0	0	5	0	0	0	0	5	0	0	-3	5	0	3	3
	2:	0	0	0	0	5	0	0	0	0	8	0	0	0	5	0	3	3
	3:	3	6	0	0	11	0	0	0	0	4	0	0	0	5	0	3	3
	4:	0	0	-3	0	5	3	3	3	2	5	0	0	0	5	2	3	3
	5:	-3	-3	-3	-3	0	-3	-3	-3	-3	3	-3	-3	-3	0	-3	-2	-2
	6:	0	0	-3	3	5	6	8	6	5	7	5	3	3	10	5	3	3
F	7:	0	0	-3	3	5	8	8	6	5	9	5	3	3	5	5	3	3
R	8:	0	0	-3	3	5	6	6	6	3	7	3	3	0	8	3	3	3
O	9:	0	0	-3	2	5	5	5	3	0	4	2	-3	-3	7	0	3	3
M	10:	5	8	-3	5	13	7	9	7	4	4	3	-3	0	8	3	3	3
	11:	0	0	-3	0	5	5	5	3	2	3	0	0	0	5	0	3	3
	12:	6	6	3	6	11	9	9	9	3	3	6	0	0	11	6	3	3
	13:	5	6	0	5	11	6	6	3	3	8	6	0	0	11	6	3	3
	14:	-3	-3	-3	-3	0	0	0	-2	-3	-2	-3	-3	-3	0	-3	-2	-2
	15:	0	0	-3	2	5	5	5	3	0	3	0	0	0	5	0	3	3
	16:	3	3	3	3	8	3	3	3	3	3	3	3	3	8	3	3	3
	17:	3	3	3	3	8	3	3	3	3	3	3	3	3	8	3	3	3

Screen 49. Customized loss plan settings for country code 3

- These instructions apply when you use country code 3 in the Digital Loss Plan field of the System-Parameters Country-Options screen (page 2).
- The loss plan does not apply to shuffled calls.
- Turn on shuffling (IP direct) for all R300 facilities.
- The 1st plan represents the default Japan loss plan.
- The 2nd plan represents the customized loss plan to be used with the R300. There are 2 modified loss groups (5 and 14). When administering an R300 station, use loss group 5 instead of the default (1 or 2). When administering an R300 digital CO (T1) trunk group, use loss group 14 instead of the default (13).

Here is the legend.

Loss Group	Port Type
1	DEFINITY ECS Analog Line
2	DEFINITY ECS Digital Station
6	DEFINITY ECS Analog CO
11	DEFINITY ECS Digital CO
5	R300 Digital Station and Analog Line
14	R300 Digital CO

Netherlands settings

2 PARTY LOSS PLAN																	
Digital Loss Plan: 5										Customize? n							
										TO							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	1:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
	2:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
	3:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
	4:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
	5:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
	6:	0	0	0	0	0	8	8	8	0	0	8	8	8	8	3	3
F	7:	0	0	0	0	0	8	8	8	0	0	8	8	8	8	3	3
R	8:	0	0	0	0	0	8	8	8	0	0	8	8	8	8	3	3
O	9:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
M	10:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
	11:	0	0	0	0	0	1	1	1	0	0	0	0	0	0	3	3
	12:	0	0	0	0	0	1	1	1	0	0	0	0	0	0	3	3
	13:	0	0	0	0	0	1	1	1	0	0	0	0	0	0	3	3
	14:	0	0	0	0	0	1	1	1	0	0	0	0	0	0	3	3
	15:	0	0	0	0	0	1	1	1	0	0	0	0	0	0	3	3
	16:	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	17:	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

Screen 50. Default loss plan settings for country code 5

2 PARTY LOSS PLAN																		
Digital Loss Plan: 5										Customize? y								
										TO								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
	1:	0	0	0	0	5	0	0	0	0	0	0	0	5	0	3	3	
	2:	0	0	0	0	5	0	0	0	0	0	0	0	5	0	3	3	
	3:	0	0	0	0	5	0	0	0	0	0	0	0	5	0	3	3	
	4:	0	0	0	0	5	0	0	0	0	0	0	0	5	0	3	3	
	5:	-3	-3	-3	-3	0	-3	-3	-3	-3	-3	-3	-3	0	-3	-2	-2	
	6:	0	0	0	0	5	8	8	8	0	0	8	8	8	13	8	3	3
F	7:	0	0	0	0	5	8	8	8	0	0	8	8	8	13	8	3	3
R	8:	0	0	0	0	5	8	8	8	0	0	8	8	8	13	8	3	3
O	9:	0	0	0	0	5	0	0	0	0	0	0	0	5	0	3	3	
M	10:	0	0	0	0	5	0	0	0	0	0	0	0	5	0	3	3	
	11:	0	0	0	0	5	1	1	1	0	0	0	0	5	0	3	3	
	12:	0	0	0	0	5	1	1	1	0	0	0	0	5	0	3	3	
	13:	0	0	0	0	5	1	1	1	0	0	0	0	5	0	3	3	
	14:	-3	-3	-3	-3	0	-3	-3	-3	-3	-3	-3	-3	0	-3	-2	-2	
	15:	0	0	0	0	5	1	1	1	0	0	0	0	5	0	3	3	
	16:	3	3	3	3	8	3	3	3	3	3	3	3	8	3	3	3	
	17:	3	3	3	3	8	3	3	3	3	3	3	3	8	3	3	3	

Screen 51. Customized loss plan settings for country code 5

- These instructions apply when you use country code 5 in the Digital Loss Plan field of the System-Parameters Country-Options screen (page 2).
- The loss plan does not apply to shuffled calls.
- Turn on shuffling (IP direct) for all R300 facilities.
- The 1st plan represents the default Netherlands loss plan.
- The 2nd plan represents the customized Netherlands loss plan for the R300 if you are using US terminal-parameter levels, defined on the Terminal Parameters screen.

If the terminal parameters are set for the Netherlands, no loss plan modifications are necessary. If you use the US terminal-parameters, you must customize the loss plan as shown above, and make the following administration changes. There are 2 modified loss groups (5 and 14). When administering an R300 station use loss group 5 instead of the default (1 or 2). When administering an R300 digital CO (T1) trunk group, use loss group 14 instead of the default (13).

Here is the legend.

Loss Group	Port Type
1	DEFINITY ECS Analog Line
2	DEFINITY ECS Digital Station
6	DEFINITY ECS Analog CO
11	DEFINITY ECS Digital CO
5	R300 Digital Station and Analog Line
14	R300 Digital CO

Nordic settings

		2 PARTY LOSS PLAN																
		Digital Loss Plan: 24															Customize? n	
		TO																
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	1:	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	3	3
	2:	0	0	0	-2	-2	0	3	0	0	0	0	0	0	0	0	3	3
	3:	0	0	0	-2	-2	0	0	0	0	0	0	0	0	0	0	3	3
	4:	0	0	0	0	0	0	2	0	0	0	0	4	0	4	0	3	3
	5:	0	2	2	0	0	2	4	2	2	2	7	2	2	4	2	3	3
	6:	0	0	-3	-2	-2	0	3	0	0	0	0	0	0	0	0	3	3
F	7:	3	3	0	0	0	3	3	3	0	0	0	0	0	0	0	3	3
R	8:	0	0	-3	-2	-2	0	3	0	0	0	0	0	0	0	0	3	3
O	9:	0	0	0	-2	-2	0	3	0	0	0	0	0	0	0	0	3	3
M	10:	0	0	0	-2	-2	0	3	0	0	0	0	0	0	0	0	3	3
	11:	0	0	0	-2	4	0	3	0	0	0	0	0	0	0	0	3	3
	12:	0	0	0	-2	-2	0	3	0	0	0	0	0	0	0	0	3	3
	13:	0	0	0	-2	-2	0	3	0	0	0	0	0	0	0	0	3	3
	14:	0	0	0	-2	1	0	3	0	0	0	0	0	0	0	0	3	3
	15:	0	0	0	-2	-2	0	3	0	0	0	0	0	0	0	0	3	3
	16:	3	3	3	1	1	3	3	3	3	3	3	3	3	3	3	3	3
	17:	3	3	3	1	1	3	3	3	3	3	3	3	3	3	3	3	3

Screen 52. Default loss plan settings for country code 24

		2 PARTY LOSS PLAN																
		Digital Loss Plan: 24															Customize? y	
		TO																
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	1:	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	5	5
	2:	0	0	0	-2	-2	0	3	0	0	0	0	0	0	0	0	5	5
	3:	0	0	0	-2	-2	0	0	0	0	0	0	0	0	0	0	5	5
	4:	0	0	0	0	0	0	2	0	0	0	0	4	0	4	0	5	5
	5:	0	2	2	0	0	2	4	2	2	2	7	2	2	4	2	7	12
	6:	0	0	-3	-2	-2	0	3	0	0	0	0	0	0	0	0	5	5
F	7:	3	3	0	0	0	3	3	3	0	0	0	0	0	0	0	8	5
R	8:	0	0	-3	-2	-2	0	3	0	0	0	0	0	0	0	0	5	5
O	9:	0	0	0	-2	-2	0	3	0	0	0	0	0	0	0	0	5	5
M	10:	0	0	0	-2	-2	0	3	0	0	0	0	0	0	0	0	5	5
	11:	0	0	0	-2	4	0	3	0	0	0	0	0	0	0	0	5	5
	12:	0	0	0	-2	-2	0	3	0	0	0	0	0	0	0	0	5	5
	13:	0	0	0	-2	-2	0	3	0	0	0	0	0	0	0	0	5	5
	14:	0	0	0	-2	1	0	3	0	0	0	0	0	0	0	0	5	5
	15:	0	0	0	-2	-2	0	3	0	0	0	0	0	0	0	0	5	5
	16:	-3	-3	-3	-3	-3	-3	-2	-3	-3	-3	-3	-3	-3	-3	-3	0	0
	17:	-3	-3	-3	-3	-1	-3	-2	-3	-3	-3	-3	-3	-3	-3	-3	0	0

Screen 53. Customized loss plan settings for country code 24

- These instructions apply when you use country code 24 in the Digital Loss Plan field of the System-Parameters Country-Options screen (page 2).
- The loss plan does not apply to shuffled calls.
- Turn on shuffling (IP direct) for all R300 facilities.
- The 1st plan represents the default Nordic loss plan.
- The 2nd plan represents the customized Nordic loss plan for the R300 if you are using US terminal-parameter levels, defined on the Terminal Parameters screen.

If the terminal parameters are set for Nordic countries, no loss plan modifications are necessary. If you use the US terminal-parameters, you must customize the loss plan as shown above, and make the following administration changes. There are 2 modified loss groups (16 and 17). When administering an R300 station use loss group 16 instead of the default (1 or 2). When administering an R300 digital CO (T1) trunk group use loss group 17 instead of the default (13).

Here is the legend.

Loss Group	Port Type
1	DEFINITY ECS Analog Line
2	DEFINITY ECS Digital Station
6	DEFINITY ECS Analog CO
11	DEFINITY ECS Digital CO
16	R300 Digital Station and Analog Line
17	R300 Digital CO

United Kingdom (UK) settings

		2 PARTY LOSS PLAN																
		Digital Loss Plan: 10										Customize? n						
		TO																
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	1:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
	2:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
	3:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
	4:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
	5:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
	6:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
F	7:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
R	8:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
O	9:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
M	10:	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3
	11:	6	6	6	6	6	0	0	0	0	0	0	0	0	0	0	3	3
	12:	6	6	6	6	6	0	0	0	0	0	0	0	0	0	0	3	3
	13:	6	6	6	6	6	0	0	0	0	0	0	0	0	0	0	3	3
	14:	6	6	6	6	6	0	0	0	0	0	0	0	0	0	0	3	3
	15:	6	6	6	6	6	0	0	0	0	0	0	0	0	0	0	3	3
	16:	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	17:	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

Screen 54. Default loss plan settings for country code 10

		2 PARTY LOSS PLAN																
		Digital Loss Plan: 10										Customize? y						
		TO																
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	1:	0	0	0	0	5	0	0	0	0	0	0	0	0	5	0	3	3
	2:	0	0	0	0	5	0	0	0	0	0	0	0	0	5	0	3	3
	3:	0	0	0	0	5	0	0	0	0	0	0	0	0	5	0	3	3
	4:	0	0	0	0	5	0	0	0	0	0	0	0	0	5	0	3	3
	5:	-3	-3	-3	-3	0	-3	-3	-3	-3	-3	-3	-3	-3	0	-3	-2	-2
	6:	0	0	0	0	5	0	0	0	0	0	0	0	0	5	0	3	3
F	7:	0	0	0	0	5	0	0	0	0	0	0	0	0	5	0	3	3
R	8:	0	0	0	0	5	0	0	0	0	0	0	0	0	5	0	3	3
O	9:	0	0	0	0	5	0	0	0	0	0	0	0	0	5	0	3	3
M	10:	0	0	0	0	5	0	0	0	0	0	0	0	0	5	0	3	3
	11:	6	6	6	6	11	0	0	0	0	0	0	0	0	5	0	3	3
	12:	6	6	6	6	11	0	0	0	0	0	0	0	0	5	0	3	3
	13:	6	6	6	6	11	0	0	0	0	0	0	0	0	5	0	3	3
	14:	1	1	1	1	6	-3	-3	-3	-3	-3	-3	-3	0	-3	-2	-2	-2
	15:	6	6	6	6	11	0	0	0	0	0	0	0	0	5	0	3	3
	16:	3	3	3	3	8	3	3	3	3	3	3	3	3	8	3	3	3
	17:	3	3	3	3	8	3	3	3	3	3	3	3	3	8	3	3	3

Screen 55. Customized loss plan settings for country code 10

- These instructions apply when you use country code 10 in the Digital Loss Plan field of the System-Parameters Country-Options screen (page 2).
- The loss plan does not apply to shuffled calls.
- Turn on shuffling (IP direct) for all R300 facilities.
- The 1st plan represents the default UK loss plan.
- The 2nd plan represents the customized UK loss plan for the R300 if you are using US terminal-parameter levels, defined on the Terminal Parameters screen.

If the terminal parameters are set for the UK, no loss plan modifications are necessary. If you use the US terminal-parameters, you must customize the loss plan as shown above, and make the following administration changes.

There are 2 modified loss groups (5 and 14). When administering an R300 station use loss group 5 instead of the default (1 or 2). When administering an R300 digital CO (T1) trunk group use loss group 14 instead of the default (13).

Here is the legend.

Loss Group	Port Type
1	DEFINITY ECS Analog Line
2	DEFINITY ECS Digital Station
6	DEFINITY ECS Analog CO
11	DEFINITY ECS Digital CO
5	R300 Digital Station and Analog Line
14	R300 Digital CO

United States (US) settings

		2 PARTY LOSS PLAN																
		Digital Loss Plan: 1										Customize? n						
		TO																
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	1:	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	3
	2:	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	3	3
	3:	3	6	0	0	0	0	0	0	0	3	0	0	0	0	0	3	3
	4:	0	0	-3	0	0	3	3	3	2	3	0	0	0	0	2	3	3
	5:	0	0	-3	0	0	3	3	3	2	3	0	0	0	0	0	3	3
	6:	0	0	-3	3	3	6	8	6	5	5	5	3	3	3	5	3	3
F	7:	0	0	-3	3	3	8	8	6	5	5	5	3	3	3	5	3	3
R	8:	0	0	-3	3	3	6	6	6	3	5	3	3	0	0	3	3	3
O	9:	0	0	-3	2	2	5	5	3	0	0	2	-3	-3	-3	0	3	3
M	10:	3	3	0	3	3	5	5	5	0	0	3	-3	-3	-3	3	3	3
	11:	0	0	-3	0	0	5	5	3	2	3	0	0	0	-3	0	3	3
	12:	6	6	3	6	6	9	9	9	3	3	6	0	0	0	6	3	3
	13:	6	6	0	6	6	9	9	6	3	3	6	0	0	0	6	3	3
	14:	6	6	0	6	6	9	9	6	3	3	3	0	0	0	6	3	3
	15:	0	0	-3	2	0	5	5	3	0	3	0	0	0	0	0	3	3
	16:	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
	17:	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

Screen 56. Default loss plan settings for country codes 1, 6, 7, 9, 14-17, 19-22

		2 PARTY LOSS PLAN																
		Digital Loss Plan: 1										Customize? y						
		TO																
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	1:	0	0	0	0	0	0	2	0	0	3	0	0	0	0	0	5	5
	2:	0	0	0	0	0	0	2	0	0	3	0	0	0	0	0	5	5
	3:	3	6	0	0	0	0	2	0	0	3	0	0	0	0	0	11	5
	4:	0	0	-3	0	0	3	5	3	2	3	0	0	0	0	2	5	5
	5:	0	0	-3	0	0	3	5	3	2	3	0	0	0	0	0	5	5
	6:	0	0	-3	3	3	6	8	6	5	5	5	3	3	3	5	5	10
F	7:	-3	-3	-3	-3	-3	-2	0	-2	-3	-3	-3	-3	-3	-3	-3	-3	2
R	8:	0	0	-3	3	3	6	8	6	3	5	3	3	0	0	3	5	8
O	9:	0	0	-3	2	2	5	7	3	0	0	2	-3	-3	-3	0	5	7
M	10:	3	3	0	3	3	5	7	5	0	0	3	-3	-3	-3	3	8	8
	11:	0	0	-3	0	0	5	7	3	2	3	0	0	0	-3	0	5	5
	12:	6	6	3	6	6	9	11	9	3	3	6	0	0	0	6	11	11
	13:	6	6	0	6	6	9	11	6	3	3	6	0	0	0	6	11	11
	14:	6	6	0	6	6	9	11	6	3	3	3	0	0	0	6	11	8
	15:	0	0	-3	2	0	5	7	3	0	3	0	0	0	0	0	5	5
	16:	-3	-3	-3	-3	-3	-3	-3	-3	-2	-3	-3	-3	-3	-3	-3	0	0
	17:	-3	-3	-3	-3	-3	0	2	-2	-3	-2	-3	-3	-3	-3	-3	0	0

Screen 57. Customized loss plan settings for country codes 1, 6, 7, 9, 14-17, 19-22

- These instructions apply when you use country code 1, 6, 7, 9, 14-17, or 19-22 in the Digital Loss Plan field of the System-Parameters Country-Options screen (page 2).
- The loss plan does not apply to shuffled calls.
- Turn on shuffling (IP direct) for all R300 facilities.
- The 1st plan represents the default US loss plan.
- The 2nd plan represents the customized loss plan to be used with the R300. There are 3 modified loss groups (16, 7, and 17). When administering an R300 station use loss group 16 instead of the default (1 or 2). When administering an R300 analog CO trunk group, use loss group 7 instead of the default (13). When administering an R300 digital CO (T1) trunk group, use loss group 17 instead of the default (13).

Here is the legend.

Loss Group	Port Type
1	DEFINITY ECS Analog Line
2	DEFINITY ECS Digital Station
6	DEFINITY ECS Analog CO
11	DEFINITY ECS Digital CO
16	R300 Digital Station and Analog Line
7	R300 Analog CO
17	R300 Digital CO

Glossary and abbreviations

Numerics

3DES

Triple data encryption standard. A method of applying DES three times in succession using 2 or 3 different keys. See [data encryption standard \(DES\)](#).

802.1p

Protocol specification for the Ethernet MAC layer for the prioritization of traffic over the Ethernet. Supports up to eight levels of priority.

A

address resolution protocol

Provides dynamic resolution of mapping an IP address to a MAC layer address.

adjunct

A processor that does one or more tasks for another processor and that is optional in the configuration of the other processor. Intuity AUDIX and CentreVu CMS are considered adjuncts to the DEFINITY ECS.

angel

The processor in each DEFINITY port board that supports the board and the ports is called an angel processor.

ARP

See [address resolution protocol](#).

ASCII

American Standard Code for Information Interchange. The standard code for representing characters in digital form. Each character is represented by an 8-bit code (including parity bit).

asynchronous data transmission

A method of transmitting data in which each character is preceded by a start bit and followed by a stop bit, thus permitting data characters to be transmitted at irregular intervals. This type transmission is advantageous when transmission is not regular (characters typed at a keyboard). Also called asynchronous transmission.

asynchronous transfer mode (ATM)

A connection-oriented, digital service optimized for fiber-optic lines at speeds up to 622.08 mbps. ATM networks set up a virtual circuit (virtual connection) between the transmitter and the receiver before sending any data. Data is then sent in a continuous stream of fixed-length, 58-byte cells, each of which contains a 48-byte payload and a 5-byte header. The header contains the virtual circuit number that identifies the pre-negotiated path through the network.

ATM

See [asynchronous transfer mode \(ATM\)](#).

Audio Information Exchange (AUDIX)

A fully integrated voice-mail system. Can be used with a variety of communications systems to provide call-history data, such as subscriber identification and reason for redirection.

auxiliary trunk

A trunk used to connect auxiliary equipment, such as radio-paging equipment, to a communications system.

B

B8ZS

See [bipolar 8 zero substitution \(B8ZS\)](#).

basic rate interface (BRI)

The basic rate interface has a capacity of 144 kbps, divided into 2 B-channels and one D-channel. The B-channels are 64 kbps and can carry voice or data services. The D-channel is 16 kbps and is a signaling channel that manages the communication sessions.

bandwidth

The amount of data that a given [channel](#) can transmit in a given period of time, measured in bits per second (not bytes per second) on digital networks or in Hertz (cycles per second) on analog networks.

baud

A unit of transmission rate equal to the number of signal events per second. See also [bit rate](#).

bearer channel

A channel over which user information is carried. The voice traffic on a DS0 circuit is said to be bearer traffic.

BER

Bit error rate.

BGP

See [border gateway protocol](#).

bipolar 8 zero substitution (B8ZS)

B8ZS line coding substitutes a mix of 1s and 0s for every group of eight consecutive 0s in a stream of AMI-encoded data (see [line coding](#)). The encoded string contains consecutive ones with the same polarity. These intentional, bipolar violations of the AMI coding scheme let the receiving end identify, decode, and restore the long zero strings in the original message. B8ZS line coding does not corrupt digital data, so it is commonly used with [T-1](#) lines.

bit (binary digit)

One unit of information in binary notation, having two possible values: 0 or 1.

bit rate

The speed at which bits are transmitted, usually expressed in bits per second. Also called data rate.

bit-oriented signaling

A form of control channel carried over a T1 or E1.

BOOTP

An internet protocol that provides network configuration to devices that may not have network configuration data stored locally.

border gateway protocol

An external gateway protocol for communications between routers in different autonomous systems. See IETF RFC 1267.

BOS

See [bit-oriented signaling](#).

bps

Bits per second.

BRI

See [basic rate interface \(BRI\)](#).

bridge

A device that connects two or more packet-switched networks and directs packets sent from one to the other. See [router](#).

bus bridge

A connection between the TDM bus and the packet bus built into the C-LAN circuit pack for use with DEFINITY ECS R7csi. Bus bridge connectivity is not used with any other DEFINITY switch model.

byte

A sequence of (usually eight) bits processed together.

C

C-LAN

Control LAN interface. This is a static router module that allows the DEFINITY system to keep a map of IP connectivity for IP-based endpoints and adjuncts. C-LAN provides one TCP socket for each endpoint in the R300 to support the transport of signaling information.

CA-TSC

Call-associated temporary signaling connection.

call detail recording (CDR)

A feature that uses software and hardware to record call data. (Same as station message detail recording — SMDR).

call detail recording utility (CDRU)

Software that collects, stores, optionally filters, and outputs call-detail records.

call management system (CMS)

An application, running on an adjunct processor, that collects information from an ACD unit. CMS enables customers to monitor and manage telemarketing centers by generating reports on the status of agents, splits, trunks, trunk groups, vectors, and VDNs, and enables customers to partially administer the ACD feature for a communications system.

call redirection

See [restricted facilities](#).

called party number IE

The ISDN information element containing the digits sent to the called party.

CCITT

Comite Consultatif International Telephonique et Telegraphique. Now called *International Telecommunications Union* (ITU).

CCMS

See [control-channel message set](#).

CDR

See [call detail recording \(CDR\)](#). (Same as SMDR and CMDR).

CDRP

Call detail record poller.

CDRU

Call detail record unit.

central office (CO)

Typically where the local end-office switch is housed. Also, the head-end of the local wire or the fiber loop.

challenge handshake authorization protocol

A protocol that identifies and authorizes clients communicating over [PPP](#).

channel

A communication path linking two points for transmitting voice and data. Also:

1. In wideband, all of the time slots (contiguous or noncontiguous) necessary to support a call.

Example: an H0-channel uses six 64-kbps time slots.

2. A DS0 on a T1 or E1 facility not specifically associated with a logical circuit-switched call; analogous to a single trunk.

CHAP

See [challenge handshake authorization protocol](#).

cherub

A little angel, level 1/level 2 framing device for supporting DSL service to digital telephones.

circuit

1. An arrangement of electrical elements through which electric current flows.

2. A channel or transmission path between two or more points.

circuit pack

A card on which electrical circuits are printed, and IC chips and electrical components are installed. A circuit pack is installed in a switch carrier.

circuit-switched network

A network that sets up and maintains a connection for the exclusive use of two or more communicating parties for the duration of their call. The familiar, voice telephone network is circuit-switched. See [packet switching](#).

class of restriction (COR)

A feature that allows up to 64 classes of call-origination and call-termination restrictions for voice terminals, voice-terminal groups, data modules, and trunk groups.

class of service (COS)

A feature that uses a number to specify if voice-terminal users can activate the Automatic Callback, Call Forwarding All Calls, Data Privacy, or Priority Calling features.

clear-channel facility

A digital circuit that requires no in-channel framing or control bits. The whole bandwidth is thus available for data transmission.

client

An application that runs on one processor while drawing on data or other resources that are on a [server](#) located elsewhere. See [dial-plan table](#).

CMDR

Centralized message detail recording. (Same as [CDR](#) and [SMDR](#)).

CMS

See [call management system \(CMS\)](#).

CO

See [central office \(CO\)](#).

control-channel message set

Communicates control information between the [SPE](#) and the port board angel.

COR

See [class of restriction \(COR\)](#).

COS

See [class of service \(COS\)](#).

CP

Circuit pack.

CSU

Channel service unit.

cyclic redundancy checking (CRC)

A method for detecting read, transmit, and write errors in data. At the transmission end, the system treats a block of data as a single binary number, divides it by some specified binary number, and appends the remainder (called the CRC character) to the data. At the receiving end, the system recalculates the remainder and compares the result to the CRC character. If the two agree, there are no errors.

D

D-channel backup

Type of backup used with Non-Facility Associated Signaling (NFAS). A primary D-channel provides signaling for an NFAS D-channel group (two or more PRI facilities). A second D-channel, on a separate PRI facility of the NFAS D-channel group, is designated as backup for the D-channel. Failure of the primary D-channel causes automatic transfer of call-control signaling to the backup D-channel. The backup becomes the primary D-channel. When the failed channel returns to service, it becomes the backup D-channel.

data channel

A communications path between two points used to transmit digital signals.

data-communications equipment (DCE)

The equipment (usually a modem, data module, or packet assembler/disassembler) on the network side of a communications link that makes the binary serial data from the source or transmitter compatible with the communications channel.

datagram

In packet switching, a packet that carries information sufficient for routing from the originating data terminal equipment (DTE) without the necessity of establishing a connection between the DTEs and the network. Connectionless, unreliable.

data encryption standard (DES)

DES is the U.S. encryption standard for non-classified documents. This standard uses a 64-bit key encryption. Only the sender and the receiver know the key for encrypting the data.

data link

The configuration of physical facilities enabling end terminals to communicate directly with each other.

data path

The end-to-end connection used for a data communications link. A data path is the combination of all elements of an interprocessor communication in a DCS.

data port

A point of access to a computer that uses trunks or lines for transmitting or receiving data.

data service unit (DSU)

A device that transmits digital data on transmission facilities.

data terminal equipment (DTE)

Equipment consisting of the endpoints in a connection over a data circuit. In a connection between a data terminal and host, the terminal, the host, and their associated modems or data modules make up the DTE.

DCE

See [data-communications equipment \(DCE\)](#).

DCP

See [digital communications protocol \(DCP\)](#).

DCS

Distributed communications system.

DES

See [data encryption standard \(DES\)](#).

DHCP

See [dynamic host configuration protocol \(DHCP\)](#).

dial-plan table

A data structure that defines how a switch or server interprets dialed digits and routes calls. The dial-plan table performs two tasks. First, it identifies a dial plan rule that applies to the kind of input it has received. Then it applies the rule and translates the dialed input into a corresponding extension or public-network telephone number.

DID

Direct inward dialing trunk.

Diff Serv

See [differentiated services](#).

differentiated services

A set of protocol procedures for marking frames using the TOS field of the IP header to differentiate services and give priority of some over others.

digital communications protocol (DCP)

A proprietary protocol used to transmit both digitized voice and digitized data over the same communications link. A DCP link is made up of two 64-kbps information (I-) channels and one 8-kbps signaling (S-) channel. The DCP protocol supports 2 information-bearing channels, and thus two telephones/data modules.

digital signal level 0 (DS0)

A single 64-kbps voice channel. A DS0 is a single 64-kbps channel in a T1 or E1 facility and consists of eight bits in a T1 or E1 frame every 125 microseconds.

digital signal level 1 (DS1)

A single 1.544-Mbps (United States) or 2.048-Mbps (outside the United States) digital signal carried on a T1 transmission facility. A DS1 converter complex consists of a pair, one at each end, of DS1 converter circuit packs and the associated T1/E1 facilities.

DIOD

Direct inward and outward dialing trunk.

directory number

This is the PSTN number the service provider assigns to a customer. This number supplies a means of identification for this unique customer as a call is routed through the voice network.

DNS

See [domain name server \(DNS\)](#).

domain

An addressable location on a network, such as a group of computers, single computer, or subdirectory. See [domain name server \(DNS\)](#).

domain name server (DNS)

An Internet computer that maintains a database of [domain](#) names.

Provides a mapping of alphanumeric names to IP addresses; for example, xxx.xxx.xxx.xxx --> www.avaya.com.

DSU

Data service unit.

DTE

Data-terminal equipment.

DTMF

See [dual tone multi-frequency](#).

dual tone multi-frequency

A generic term for Touch Tone.

dynamic host configuration protocol (DHCP)

This is a TCP/IP protocol that enables a client to obtain a temporary IP address from a central server. See [IETF RFC 2131](#).

E

E-1

A digital transmission link with a capacity of 2.048 Mbps (2,048,000 bits per second). The European equivalent of the **T-1**. It can support 30 multiplexed 64-Kbps voice and data channels plus separate 64-Kbps channels for signaling and framing (synchronization). Also spelled **E1**.

EIA

See [Electronics Industries Association \(EIA\)](#).

EIA-232

A physical interface specified by the EIA. EIA-232 transmits and receives asynchronous data at speeds of up to 38.4 kbps over cable distances of up to 50 feet. EIA-232 replaces RS-232 protocol in some DEFINITY applications.

electronic tandem network (ETN)

A tandem tie-trunk network that has automatic call-routing capabilities based on the number dialed and the most preferred route available. Each switch in the network is assigned a unique private network office code (RNX), and each voice terminal is assigned a unique extension.

enbloc

Signaling in which address digits are transmitted in one or more blocks, with each block containing address information sufficient to enable switches to carry out progressive routing. Used in SS7, [ISDN](#), and [H.323](#).

end point

A phone call is between two phones. Each phone is an end point (You may also refer to the end point as a client).

Electronics Industries Association (EIA)

A trade association of the electronics industry that establishes electrical and functional standards.

ethernet

A [local area network](#) (LAN) that works over short distances on twisted-pairs or coaxial cables at speeds up to 10 mbps or 100 mbps. See also [ATM](#).

ethernet source address

A 48-bit physical address of the NIC; also called the [media access control \(MAC\)](#) address.

ETN

See [electronic tandem network \(ETN\)](#).

ETSI

European telecom standards institute.

F

facility

A telecommunications transmission pathway and associated equipment.

facility-associated signaling (FAS)

Signaling for which a D-channel carries signaling only for those channels on the same physical interface.

FAS

See [facility-associated signaling \(FAS\)](#).

FE1

See [fractional E1 interface](#).

fractional E1 interface

An interface that is $N \times DS0$ in size, where N is less than 30.

fractional T1 interface

An interface that is $N \times DS0$ in size, where N is less than 23.

framing

The data-formatting conventions that allow a receiver to synchronize with the transmitting end of a circuit. For example, T-1 frames contain an 8-bit sample from each of the 24 channels on the interface (192 bits total) plus a framing bit (for a total of 193 bits). Each framing bit marks the end of a timed sample the input at the transmission end.

FRL

Facilities restriction level.

FT1

See [fractional T1 interface](#).

FX

Foreign exchange.

G

gateway

(1) protocol converter (2) a node between network segments.

H

H.320

The most common standard for videoconferencing over ISDN BRI circuits. H.320-compatible systems can communicate with each other even when they rely on dissimilar hardware and software.

H.323

A specification that sets standards for multimedia communications between LANs and telephony networks, such as ISDN.

HDB3

See [high density bipolar 3-bit substitution \(HDB3\)](#).

high density bipolar 3-bit substitution (HDB3)

HDB3 line coding is similar to [bipolar 8 zero substitution \(B8ZS\)](#) in some ways. It replaces every 4 consecutive zero in a stream of AMI-encoded data (see [line coding](#)) with either of two sequences. If there has been an even number of 1s since the last substitution, it substitutes the pattern **1 0 0 *BipolarViolation***, where *BipolarViolation* is a 3-volt pulse (a 1) of the same polarity as the preceding 3-volt pulse. If there has been an odd number of 1s since the last substitution, HDB3 coding substitutes the pattern **0 0 0 *BipolarViolation*** for the 4-zero string. This system does not corrupt binary data, and is commonly used with [E-1](#) lines.

host

A [server](#).

host access equipment

Customer IP data equipment that serves on premises access to wide area networks (WANs). This equipment usually includes a router.

host name

See [server](#).

I

IANA

Internet Assigned Number Authority.

ICMP

See [internet control message protocol \(ICMP\)](#).

IETF

Internet Engineering Task Force.

IGMP

Internet group management protocol.

INADS

Initialization and administration system

inband signaling

A type of signaling in which a line uses 8 Kbps of each 64 Kbps channel for WAN synchronization. The remaining 56 Kbps of each channel handles the transmission of user data. Another term for inband signaling is [robbed bit signaling](#).

information element (IE)

The data fields in [ISDN](#) messages.

International Standards Organization (ISO)

A body that defines and/or adopts protocols widely used in the computer and telecommunications industries.

International Telecommunications Union (ITU)

Formerly known as International Telegraph and Telephone Consultative Committee ([CCITT](#)), ITU is an international organization that sets universal standards for data communications, including [ISDN](#). ITU members are from telecommunications companies and organizations around the world.

internet

The decentralized network of networks that grew from ARPAnet and supported by [TCP/IP](#).

internet control message protocol (ICMP)

This protocol communicates error messages and conditions between two IP entities. See [IETF RFC 792](#).

IP

Internet protocol. See [IETF RFC 791](#).

IP (internet protocol) address

A 32-bit number that uniquely identifies endpoints on the Internet, commonly specified in the form *n1.n2.n3.n4* where each n_n is a decimal number between **0** and **255**. Part of the IP address represents the address of a local network's gateway to the Internet and part represents the host-machine address within that local network. The available bits are apportioned to the network address or local address using a system of classes. The Class A addresses used by the largest organizations on the Internet reserve the first 8 bits for the network portion of the address and remaining 24 for the host machine. Class B addresses, the most common class, assign 16 bits to the network and 16 to the host machine. The Class C addresses used by small networks reserve the first 24 bits for the network and the remaining 8 bits for the host.

IPsec

IP security. See [IETF RFC 2401](#)

ISDN

Integrated Services Digital Network, a digital, voice and data service. ISDN comes in two forms, primary rate interface (PRI) and basic rate interface (BRI). PRI service has a capacity of 1.544 mbps, divided into 23 or 30 B-channels (23 on a North American T-1 connection, 30 on a European E-1) and 1 D-channel, each with a capacity of 64 kbps. BRI service has a capacity of 144 kbps, divided into 2 B-channels at 64 kbps each and 1 D-channel at 16 kbps.

ISDN trunk

A trunk administered for use with ISDN-PRI. Also called ISDN facility.

L

LAN

See [local area network](#).

LAP-D

See [link-access procedure on the D-channel \(LAPD\)](#).

line coding

Line coding is the data format that lets either end of a communications channel correctly interpret messages from the other. Line coding systems specify the voltage levels and patterns that represent binary digits (1s and 0s), based on the requirements of the transmission network. The AT&T network has two: it demands that the net voltage on the line equal 0 volts DC and it demands a minimum [open system interconnect \(OSI\) model](#). The T-carrier system meets the first requirement by using a bipolar line-coding scheme called Alternate Mark Inversion (AMI). It meets the second with one of several supplementary coding schemes, including [ZCS](#), [bipolar 8 zero substitution \(B8ZS\)](#), and [high density bipolar 3-bit substitution \(HDB3\)](#).

link

A transmitter-receiver channel that connects two systems.

link-access procedure on the D-channel (LAPD)

A link-layer protocol on the ISDN-BRI and ISDN-PRI data-link layer (level 2). LAPD provides data transfer between two devices, and error and flow control on multiple logical links. LAPD is used for signaling and low-speed packet data (X.25 and mode 3) on the signaling (D-) channel and for mode-3 data communications on a bearer (B-) channel.

local area network

A short-range data communication network providing high-speed carrier service with low error rates. Generally, a LAN is limited in range to a maximum of 6.2 miles. Ethernet and Token-Ring are common LAN architectures. See [wide area network](#), [ethernet](#).

looparound testing

Checking an interface by sending a signal through the output, across a medium (the loop), and back through the input. Internal looparound tests run against the internal circuitry of the card. External looparound tests check the connectors at the edge of the card using a fiber or wire loop. PRI, Ethernet, and ATM cards are tested this way.

M

MAC

See [media access control \(MAC\)](#).

main

The DEFINITY switch is called the main portion of the system. See also [remote](#).

main-satellite-tributary

A private network configuration that can either stand alone or access an ETN. A main switch provides interconnection, via tie trunks, with one or more subtending switches, called satellites; all attendant positions for the main/satellite configuration; and access to and from the public network. To a user outside the complex, a main/satellite configuration appears as one switch, with one listed directory number (LDN). A tributary switch is connected to the main switch via tie trunks, but has its own attendant positions and LDN.

management information base (MIB)

A virtual database used by the [simple network management protocol \(SNMP\)](#). It is a group of managed elements that contain a description of the fault and performance management event counters and threshold counters for a subsystem module.

MAX

Multiband access exchange.

MAX 3000

An pre-existing remote access concentrator product created by Luscent-Ascend. Voice capabilities were added through software redesign and the addition of the Combo Blade to create the DEFINITY R300 Remote Office product.

MDR

Message detail record.

mean opinion score (MOS)

A measure of voice transmission quality. MOS is a rating in scale from 1 to 5, where 5 is the best score. Toll quality is an MOS = 4. An MOS greater than 4 is considered an enhancement to toll quality.

media access control (MAC)

A sublayer of the [OSI](#) Data Link layer, provides an interface with the network layer.

media access control (MAC) address

An address programmed into the network interface card (NIC) that uniquely identifies it.

MIB

See [management information base \(MIB\)](#).

MOS

See [mean opinion score \(MOS\)](#).

multicasting

A transmission method that promotes efficient bandwidth utilization on a multimedia data network when several parties are transmitting and receiving simultaneously. Normally, each party sends a separate video stream to each of the other parties and receives a separate video stream from each in return (this is called unicasting). Multicasting substitutes a single broadcast transmission (addressed to all parties) for the separate transmissions addressed to each. Each party then continues to receive multiple data streams while sending only one. For best results, multicast messages should be restricted to one or more [subnet](#).

N

national number

The full dialed number minus the country code. The national number is composed of office code plus subscriber code. In North America, this means area code plus seven digits. For example, 303-538-1234 is a national number.

NCA/TSC

Noncall-associated/temporary-signaling connection.

network

A collection of computer-like devices (“nodes”) that are connected by, and can communicate across, a common transmission medium.

network adapter

The interface between a node and the network; has a unique physical address.

network interface card (NIC)

A circuit board that can be fitted to a personal computer (PC) to allow the PC to communicate with other machines on a network. Also called a network adapter.

NFAS

See [nonfacility-associated signaling \(NFAS\)](#).

NIC

See [network interface card \(NIC\)](#).

node

1. A point on a network that provides an interface to a communications device.
2. A switch or adjunct in an Avaya DCS network.

nonfacility-associated signaling (NFAS)

A method that allows multiple T1 and/or E1 facilities to share a single D-channel to form an ISDN-PRI. If D-channel backup is not used, one facility is configured with a D-channel, and the other facilities that share the D-channel are configured without D-channels. If D-channel backup is used, two facilities are configured to have D-channels (one D-channel on each facility), and the other facilities that share the D-channels are configured without D-channels.

O

off-hook

When the handset is picked up, the phone is said to be off-hook.

on-hook

When the handset is in its cradle and the line is in a state of disconnect, the phone is considered on-hook.

open system interconnect (OSI) model

An International Standards Organization (ISO) interoperability specification. OSI defines standard services that compliant communications networks and equipment must provide, rather than specific implementations. It divides network operations into 7 steps, called layers, and arranges them hierarchically, in a protocol stack. The rules (protocols) in each layer of the stack specify a service that other parts of a communications system can always get, as long as they make their requests in a standard way. This approach leaves designers free to implement the internal details of the service in whatever way seems best to them. The OSI layers are **1 Physical** (transmission medium), **2 Datalink** (link-level signaling and error control), **3 Network** (computer-to-computer signaling, routing, etc.), **4 Transport** (delivery, end-to-end error control, and flow control), **5 Session** (dialog management), **6 Presentation** (data-format compatibility), and **7 Application** (file-transfer services, virtual terminals, etc.).

OSI

See [open system interconnect \(OSI\) model](#).

OSPF

Open shortest path first protocol. See [IETF RFC 1247](#).

overlap dialing

When SS7, [ISDN](#), or [H.323](#) setup messages are sent and received with partial or absent called party number information. The complete called party information is sent in later signaling messages.

P

packet

A group of bits (including a message element, which is the data, and a control information element (IE), which is the header) used in packet switching and transmitted as a discrete unit. In each packet, the message element and control IE are arranged in a specified format.

packet bus

A wide-bandwidth bus that transmits packets.

packet switching

A data-transmission technique whereby user information is segmented and routed in discrete data envelopes called packets, each with its own appended control information, for routing, sequencing, and error checking. The packets can travel to their destinations by varying routes. For data transmissions, a packet switched network can make more efficient use of available bandwidth than a [circuit-switched network](#), because it does not dedicate a channel for the duration of a call. Instead, packets are queued and sent on a standby basis, as channel capacity becomes available. The Internet is a good example of a packet-switching network.

PBX

Private Branch Exchange: a customer-owned telephone switch that connects a company's internal telephone network with the local telephone service provider's central office. Avaya's DEFINITY ECS system is a good example.

point-to-point protocol

A [TCP/IP](#) implementation tailored for use over telephone lines. It supports router-to-router and host-to-network connections over both synchronous and asynchronous circuits. PPP replaces SLIP, the older Serial Line Interface Protocol.

Port

(1) Interface between an application and the TCP/IP network. A port is a predefined internal address (port number) that serves as a pathway from the application to the Transport layer (or from T to A). (2) circuit-pack port.

PPP

See [point-to-point protocol](#).

PRI

Primary rate interface. See [ISDN](#).

primary rate interface (PRI)

See [ISDN](#).

private network

A network used exclusively for the telecommunications needs of a particular customer.

private network office code (RNX)

The first three digits of a 7-digit private network number.

protocol

A set of conventions or rules governing the format and timing of message exchanges to control data movement and correction of errors.

prowler

The conventional name of the (TN2302) IP media processor board. This is the media gateway module that provides conversion between IP-based information streams and TDM-based streams.

PSA

Personal station access.

PSDN

Packet-switch public data network.

PSTN

See [public switched telephone network \(PSTN\)](#).

PSN

Packet-switched network.

public switched telephone network (PSTN)

The worldwide voice telephone system. This is the ordinary telephone network the Qwest, Ameritech, and other operating companies provide.

Q

QoS

See [quality of service \(QoS\)](#).

QPPCN

Quality Protection Plan Change Notice.

QSIG

A set of open standards for Enterprise Networking. QSIG is a protocol defining message exchanges (signaling) at the “Q” reference point between two switches.

quality of service (QoS)

These are various methods of controlling the flow of data in a network to improve data delivery time from end-to-end.

R

RARP

Reverse address resolution protocol. See [IETF RFC 903](#).

RAS

Registration/admission/status is an H.323v2 procedure for a station to identify itself and register with a gatekeeper.

remote

The DEFINITY Remote MAX is called the remote portion of the system. See also [main](#).

remote trunks

Any trunk connected to the DEFINITY remote MAX is considered a remote trunk.

restricted facilities

PRI spans that use ZCS [line coding](#), the opposite of [unrestricted facilities](#).

RFC

Request for comment.

RIP

See [routing information protocol \(RIP\)](#).

RIP-V2

Routing information protocol version 2. See [IETF RFC 2453](#).

robbed bit signaling

A type of signaling in which 8 kbps of each 64 kbps channel is used for WAN synchronization and signaling. The signaling information may be communicated as a bit reversal pattern or in-band tones (R2-MFC). This technique is also known as [inband signaling](#).

router

An interface between different networks. A router supports network management, including load balancing, route optimization, prioritization of calls, and troubleshooting. Therefore, it is more capable than a [bridge](#).

routing information protocol (RIP)

A simple interior gateway routing protocol.

routing plan

Routing plans direct outgoing voice-interworking and interserver calls to the first available PRI trunk group in a list. This arrangement lets you allow for trunk groups that are busy, out of service, or out of bandwidth. Each routing plan is identified by a routing-plan number in the range **1-32**.

RPN

Routing-plan number.

RRQ

Registration request. This is an H.225 RAS message.

RTP

Real-time protocol.

S

socket

A TCP/IP interface that facilitates a two-way link between two systems on a connectionless network. A socket is defined by two addresses: the IP address of the host computer, and the TCP port of the application running on the host.

server

Any system that maintains and administers files that are used by independent, [client](#) applications.

shuffling

Redirecting a voice stream between IP endpoints from one address to another without re-establishing the call through a main DEFINITY cabinet hardware module. For example, an IP-based call that comes to an IP-phone connected to a DEFINITY system must first connect to the [prowler](#) because it needs translation from IP-based to TDM-based information stream. Once the call is established, however, the prowler may no longer be needed. It will therefore shuffle the call to the IP network, taking itself out of the loop.

signaling

The control information that a network uses to set up and maintain connections. On-hook and off-hook are, for instance, the familiar voice-telephone signals that tell the central office that you have picked up the telephone handset or hung up at the end of a call.

In-channel signaling reserves part of the available data -communication bandwidth for control information (see [restricted facilities](#)). Out-of-channel signaling schemes use a separate channel for signals, so that data transmissions can use all of the bandwidth available to them (see [clear-channel facility](#)).

simple network management protocol (SNMP)

An International Standards Organization (ISO) protocol that sets standards for communications between network components and network management stations. SNMP handles network resources using the information contained in a management information base (MIB), a virtual database resident on the various parts of the network. SNMP supports security, configuration, performance, fault management, and accounting management. SNMP is part of the ISO [open system interconnect \(OSI\) model](#) specification.

SMDR

Station message detail recording. (Same as call detail recording — CDR).

SNMP

See [simple network management protocol \(SNMP\)](#).

SPE

Switch processing element.

SPID

A service profile identifier. A SPID is a number that the telephone service provider uses at the central office switch to identify services on the ISDN subscriber line. The encoding of the SPID is derived from the directory number.

subnet

A network within a larger network. Subdividing a network into subnets improves the efficiency of routing and makes the best use of the limited number of addresses available with any given addressing scheme. Subnetworks are defined by using part of the host-machine portion of the [IP \(internet protocol\) address](#) as an additional layer of network information. Routers can then distinguish between a networking part that is significant for internet/intranet routing and a host-machine part, which is significant only within the local subnet.

subnet mask

A bit pattern that lets a network administrator define subnets using the host-machine portion of the [IP \(internet protocol\) address](#). The subnet mask has binary ones in positions corresponding to the network and subnet parts of the address and zeros in the remaining, host-address positions. During IP-address resolution, zero fields in the mask hide corresponding host-address fields in the address, causing the router to ignore them. The router resolves only the networking part of the address, leaving the host part for the local subnet to resolve. This increases speed and makes [multicasting](#) more efficient. Subnet masks are usually written in the decimal notation used for IP addresses.

T

T-1

A 4-wire (2 twisted pair), digital communications link with a capacity of 1.544 Mbps (1,544,000 bits per second). A T-1 provides 24 separate 64-Kbps channels. These can support up to 23 concurrent voice and data channels (B-channels) plus a separate channel (D-channel) for signaling and framing (synchronization) in a primary rate facility. T-1 is the standard for data communications in North America and Japan. Also spelled **T1**. See [E-1](#).

T-carrier

A hierarchy of digital voice- and data-transmission systems used in North America and based on multiples of the capacity of the T-1 line.

tandem switch

A switch within an electronic tandem network (ETN) that provides the logic to determine the best route for a network call, possibly modifies the digits outpulsed, and allows or denies certain calls to certain users.

tandem-through

The switched connection of an incoming trunk to an outgoing trunk without human intervention.

tandem tie-trunk network (TTTN)

A private network that interconnects several customer switching systems.

TCP

Transmission control protocol — transport layer; connection oriented, reliable. See [IETF RFC 793](#).

TCP/IP

Transmission control protocol/internet protocol. A standard that lets different computer hardware and different operating systems (such as PCs, Apple computers, UNIX workstations, and mainframes) communicate with each other over a network. TCP/IP is the most complete, most widely accepted network protocol currently available.

TDM

See [time-division multiplexing](#).

terminal translation initialization (TTI)

The administration of a station on the DEFINITY switch at the station itself, utilizing feature access codes. With this feature a station can be moved from one location to another without the need for re-entering the station translations.

tie trunk

A telecommunications channel that directly connects two private switching systems.

time-division multiplexing

A way of interleaving digitized voice, video, and/or data so that several calls can be sent concurrently over the same spread of frequencies. TDM systems distribute the available bandwidth across a series of time slots and divide each input stream into a set of samples. They then assign successive time slots to the first sample in each input stream. They repeat the process until all time slots have been assigned or all inputs sent. At the far end, the receiver de-multiplexes the transmission and reconstructs the original sequence of samples. Time-division multiplexing is typically used on [circuit-switched networks](#).

time slot

64 kbps of digital information structured as eight bits every 125 microseconds. In the switch, a time slot refers to either a DS0 on a T1 or E1 facility or a 64-kbps unit on the TDM bus or fiber connection between port networks.

TOS

See [type of service \(TOS\)](#).

trunk

A communication line linking two switches (public-network or PBX).

trunk group

A collection of trunks that all terminate at the same public switch or PBX.

TSS

Time space switch.

TTI

See [terminal translation initialization \(TTI\)](#).

type of service (TOS)

A field in the header of the IP protocol frame.

U

UDP

1. User datagram protocol — transport layer; connectionless, unreliable, fast. See [IETF RFC 768](#).
2. Uniform Dial Plan.

UNP

Uniform numbering plan

unrestricted data

Data that has to travel over an [unrestricted facilities](#), because it can be corrupted by [zero code suppression \(ZCS\) line coding](#). Digital data is unrestricted data.

unrestricted facilities

PRI spans that use non-ZCS [line coding](#), such as [B8ZS](#) or [HDB3](#), end-to-end. See [zero code suppression \(ZCS\)](#).

V

virtual private network (VPN)

A VPN is virtual because it appears as a private network to the organization subscribing to it. VPNs require sophisticated encryption and decryption in order to remain secure while using the public internet.

voice over IP (VoIP)

A set of protocol procedures for managing the transmission of voice information with IP protocol as its native transport layer. In the DEFINITY system this entails encoding of the voice information into a G.xxx -series codec, wrapping it in the real time protocol (RTP) and sending it over a [UDP](#) socket per H.323 defined procedures.

VoIP

See [voice over IP \(VoIP\)](#).

VPN

See [virtual private network \(VPN\)](#).

W

WAN

See [wide area network](#).

well-known address

The default network address for a given type of network component, as specified by a communications protocol or standards body. For example, the ATM Forum defines well-known addresses for LAN-emulation servers and LAN-emulation configuration servers.

well-known port

port numbers that are assigned to specific applications by IANA. For example, 21 for FTP, 23 for Telnet, 110 for pop3.

wide area network

A data network that connects [local area networks](#) (LANs) using common-carrier telephone lines, [bridges](#), and [routers](#).

wideband

A circuit-switched call at a data rate greater than 64 kbps. A circuit-switched call on a single T1 or E1 facility with a bandwidth between 128 and 1536 (T1) or 1984 (E1) kbps in multiples of 64 kbps. H0, H11, H12, and N x DS0 calls are wideband.

Z

ZCS

See [zero code suppression \(ZCS\)](#).

zero code suppression (ZCS)

ZCS line coding substitutes a 1 for the second least-significant bit of every all-zero byte in AMI-encoded data (see [line coding](#)). ZCS encoding has no effect on voice communications, but it corrupts digital data (see [restricted facilities](#)).

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