Installation and Configuration of the G150 Media Gateway

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

Avaya Fraud Intervention

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Providing Telecommunications Security

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

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

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

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

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

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

Responsibility for Your Company's Telecommunications Security

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

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

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

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

TCP/IP Facilities

Customers may experience differences in product performance, reliability and security depending upon network configurations/design and topologies, even when the product performs as warranted.

Standards Compliance

Avaya Inc. is not responsible for any radio or television interference caused by unauthorized modifications of this equipment or the substitution or attachment of connecting cables and equipment other than those specified by Avaya Inc. The correction of interference caused by such unauthorized modifications, substitution or attachment will be the responsibility of the user. Pursuant to Part 15 of the Federal Communications Commission (FCC) Rules, the user is cautioned that changes or modifications not expressly approved by Avaya Inc. could void the user's authority to operate this equipment.

Product Safety Standards

This product complies with and conforms to the following international Product Safety standards as applicable:

Safety of Information Technology Equipment, IEC 60950, 3rd Edition, or IEC 60950-1, 1st Edition, including all relevant national deviations as listed in Compliance with IEC for Electrical Equipment (IECEE) CB-96A.

Safety of Information Technology Equipment, CAN/CSA-C22.2 No. 60950-00 / UL 60950, 3rd Edition, or CAN/CSA-C22.2 No. 60950-1-03 / UL 60950-1.

Safety Requirements for Customer Equipment, ACA Technical Standard (TS) 001 - 1997.

One or more of the following Mexican national standards, as applicable: NOM 001 SCFI 1993, NOM SCFI 016 1993, NOM 019 SCFI 1998.

The equipment described in this document may contain Class 1 LASER Device(s). These devices comply with the following standards:

- EN 60825-1, Edition 1.1, 1998-01
- 21 CFR 1040.10 and CFR 1040.11.

The LASER devices used in Avaya equipment typically operate within the following parameters:

Typical Center Wavelength	Maximum Output Power
830 nm - 860 nm	-1.5 dBm
1270 nm - 1360 nm	-3.0 dBm
1540 nm - 1570 nm	5.0 dBm

Luokan 1 Laserlaite

Klass 1 Laser Apparat

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposures. Contact your Avaya representative for more laser product information.

Electromagnetic Compatibility (EMC) Standards

This product complies with and conforms to the following international EMC standards and all relevant national deviations:

Limits and Methods of Measurement of Radio Interference of Information Technology Equipment, CISPR 22:1997 and EN55022:1998.

Information Technology Equipment - Immunity Characteristics - Limits and Methods of Measurement, CISPR 24:1997 and EN55024:1998, including:

- Electrostatic Discharge (ESD) IEC 61000-4-2
- Radiated Immunity IEC 61000-4-3
- Electrical Fast Transient IEC 61000-4-4
- Lightning Effects IEC 61000-4-5
- Conducted Immunity IEC 61000-4-6
- Mains Frequency Magnetic Field IEC 61000-4-8
- Voltage Dips and Variations IEC 61000-4-11

Power Line Emissions, IEC 61000-3-2: Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions.

Power Line Emissions, IEC 61000-3-3: Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems.

Federal Communications Commission Statement

Part 15:

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

Part 68: Answer-Supervision Signaling

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

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

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

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

Avaya attests that this registered 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.

REN Number

For MCC1, SCC1, CMC1, G600, and G650 Media Gateways:

This equipment complies with Part 68 of the FCC rules. On either the rear or inside the front cover of this equipment is a label that contains, among other information, the FCC registration number, and ringer equivalence number (REN) for this equipment. If requested, this information must be provided to the telephone company.

For G350 and G700 Media Gateways:

This equipment complies with Part 68 of the FCC rules and the requirements adopted by the ACTA. On the rear of this equipment is a label that contains, among other information, a product identifier in the format US:AAAEQ##TXXXX. The digits represented by ## are the ringer equivalence number (REN) without a decimal point (for example, 03 is a REN of 0.3). If requested, this number must be provided to the telephone company.

For all media gateways:

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 devices not ringing in response to an incoming call. In most, but not all areas, the sum of RENs should not exceed 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.

REN is not required for some types of analog or digital facilities.

Means of Connection

Connection of this equipment to the telephone network is shown in the following tables.

For MCC1, SCC1, CMC1, G600, and G650 Media Gateways:

Manufacturer's Port Identifier	FIC Code	SOC/ REN/ A.S. Code	Network Jacks
Off premises station	OL13C	9.0F	RJ2GX, RJ21X, RJ11C
DID trunk	02RV2-T	0.0B	RJ2GX, RJ21X
CO trunk	02GS2	0.3A	RJ21X
	02LS2	0.3A	RJ21X
Tie trunk	TL31M	9.0F	RJ2GX
Basic Rate Interface	02IS5	6.0F, 6.0Y	RJ49C
1.544 digital interface	04DU9-BN	6.0F	RJ48C, RJ48M
	04DU9-IKN	6.0F	RJ48C, RJ48M
	04DU9-ISN	6.0F	RJ48C, RJ48M
120A4 channel service unit	04DU9-DN	6.0Y	RJ48C

For G350 and G700 Media Gateways:

Manufacturer's Port Identifier	FIC Code	SOC/ REN/ A.S. Code	Network Jacks
Ground Start CO trunk	02GS2	1.0A	RJ11C
DID trunk	02RV2-T	AS.0	RJ11C
Loop Start CO trunk	02LS2	0.5A	RJ11C
1.544 digital interface	04DU9-BN	6.0Y	RJ48C
	04DU9-DN	6.0Y	RJ48C
	04DU9-IKN	6.0Y	RJ48C
	04DU9-ISN	6.0Y	RJ48C
Basic Rate Interface	02IS5	6.0F	RJ49C

For all media gateways:

If the terminal equipment (for example, the media server or media gateway) 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 is not 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 in its facilities, equipment, operations or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.

If trouble is experienced with this equipment, for repair or warranty information, please contact the Technical Service Center at 1-800-242- 2121 or contact your local Avaya representative. 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.

A plug and jack used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ACTA. A compliant telephone cord and modular plug is provided with this product. It is designed to be connected to a compatible modular jack that is also compliant. It is recommended that repairs be performed by Avaya certified technicians.

The equipment cannot be used on public coin phone service provided by the telephone company. Connection to party line service is subject to state tariffs. Contact the state public utility commission, public service commission or corporation commission for information.

This equipment, if it uses a telephone receiver, is hearing aid compatible.

Canadian Department of Communications (DOC) Interference Information

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

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

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.

Installation and Repairs

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be coordinated by a representative designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Declarations of Conformity

United States FCC Part 68 Supplier’s Declaration of Conformity (SDoC)

Avaya Inc. in the United States of America hereby certifies that the equipment described in this document and bearing a TIA TSB-168 label identification number complies with the FCC’s Rules and Regulations 47 CFR Part 68, and the Administrative Council on Terminal Attachments (ACTA) adopted technical criteria.

Avaya further asserts that Avaya handset-equipped terminal equipment described in this document complies with Paragraph 68.316 of the FCC Rules and Regulations defining Hearing Aid Compatibility and is deemed compatible with hearing aids.

Copies of SDoCs signed by the Responsible Party in the U. S. can be obtained by contacting your local sales representative and are available on the following Web site: http://www.avaya.com/support.

All Avaya media servers and media gateways are compliant with FCC Part 68, but many have been registered with the FCC before the SDoC process was available. A list of all Avaya registered products may be found at: http://www.part68.org by conducting a search using "Avaya" as manufacturer.

European Union Declarations of Conformity

CE

Avaya Inc. declares that the equipment specified in this document bearing the "CE" (*Conformité Europeénne*) mark conforms to the European Union Radio and Telecommunications Terminal Equipment Directive (1999/5/EC), including the Electromagnetic Compatibility Directive (89/336/EEC) and Low Voltage Directive (73/23/EEC).

Copies of these Declarations of Conformity (DoCs) can be obtained by contacting your local sales representative and are available on the following Web site: http://www.avaya.com/support.

Japan

This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may occur, in which case, the user may be required to take corrective actions.

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About This Book

Overview

This document provides procedures to install and configure an Avaya G150 Media Gateway controlled by an Avaya S8300, S8500, S8700/S8710, G3si or G3csi Media Server. It also includes information on connecting telephones and adjuncts to the G150. This document is intended for use after a Communication Manager 2.2 has been installed and configured with one of the above listed Media Servers.

This chapter provides information about the document including: the intended audience, the organization, conventions used, how to get help, and how to download, order, and comment on the document.

Audience

This book is for the following audiences:

- Trained field installation and maintenance personnel
- Technical support personnel
- Network engineers and technicians
- Authorized Business Partners

Using this book

This book is organized into five installation and/or administration scenarios:

- Chapter 1: Installing Hardware for the G150 Media Gateway
- Chapter 2: Communication Manager Administration for the Avaya G150 Media Gateway
- Chapter 3: Configuring the G150 Media Gateway with Manager
- Chapter 4: Voicemail for G150 Media Gateway
- Chapter 5: G150 Media GatewayTelephone Support

Read Chapter 1: Installing Hardware for the G150 Media Gateway for instructions on installing and cabling the hardware.

Read Chapter 5: G150 Media GatewayTelephone Support if you need to install phones or adjuncts. interruptible Power Supply (UPS), Universal Serial Bus (USB) Modems, and other adjuncts.

See the following appendices for system specifications, forms you must complete for the installation, and comcodes and other information that you need to order equipment:

- Appendix A: Technical Data contains specifications and other technical information that you need to install a G150 Media Gateway.
- Appendix B: Information Checklists contains the pre-installation worksheets that you will need to have filled in before you start an installation or upgrade.
- Appendix C: Safety Statements contains the safety information in relation to the G150.
- Appendix D: Upgrading the G150 Media Gateway contains instructions for upgrading a G150.
- Appendix E: Install the Avaya TFTP Server contains instructions for installing and configuring the Avaya TFTP Server software.
- Appendix F: Monitoring G150 contains information on using the Monitor application to help monitor the status of G150.
- Appendix G: Loss Plan Settings contains information on Communication Manager's loss plan parameters.

Conventions

This section describes the conventions that we use in this book.

Physical dimensions

- All physical dimensions in this book are in English units followed by metric units in parentheses.
- Wire gauge measurements are in AWG followed by the diameter in millimeters in parentheses.

Terminology

Avaya Communication Manager is the application that provides call control and the Avaya telephony feature set. This application was referred to as *MultiVantage Software* or as *Avaya Call Processing (ACP)* in previous releases. The term *Multivantage* is still used in some CLI commands and in the Web interface. In most of these cases, it is synonymous with *Communication Manager*.

Typography

This section describes the typographical conventions for commands, keys, user input, system output, and field names.

Commands

- Commands are in **`constant-width bold`** type.

  Example:

  Type **`change-switch-time-zone`** and press **Enter**.

- Command variables are in ***`bold italic`*** type when they are part of what you must type, and in *plain italic* type when they are not part of what you must type.

  Example:

  Type **`ch ma`** ***`machine_name`***, where *machine_name* is the name of the call delivery machine.

- Command options are in **bold** type inside square brackets.

  Example:

  At the DOS prompt, type **`copybcf`** **[-F34]**.

Keys

- The names of keys are in **bold sans serif** type.

  Example:

  Use the **Down Arrow** key to scroll through the fields.

- When you must press and hold a key and then press a second or third key, we separate the names of the keys are separated with a plus sign (+).

  Example:

  Press **ALT+D**.

- When you must press two or more keys in sequence, we separate the names of the keys are separated with a space.

  Example:

  Press **Escape J**.

- When you must press a function key, we provide the function of the key in parentheses after the name of the key.

  Example:

  Press **F3** (Save).

User input

- User input is in **bold** type, whether you must type the input, select the input from a menu, or click a button or similar element on a screen or a Web page.

  Example:

  - Type **exit,** and then press **Enter**.
  - On the **File** menu, click **Save**.
  - On the Network Gateway page, click **Configure > Hardware**.

System output and field names

- System output and field names on the screen are in **monospaced type**.

  Example:

  - The system displays the following message:

    The installation is in progress.

  - Type **y** in the **Message Transfer?** field.

Downloading this book

You can view or download the latest version of the *Installation and Configuration for Avaya G150 Media Gateway, 03-300395*, from the Avaya Web site at: http://support.avaya.com. You must have access to the Internet, and a copy of Acrobat Reader must be installed on your personal computer.

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Safety labels and security alert labels

Observe all caution, warning, and danger statements to help prevent loss of service, equipment damage, personal injury, and security problems. This book uses the following safety labels and security alert labels:

CAUTION:

A caution statement calls attention to a situation that can result in harm to software, loss of data, or an interruption in service.

WARNING:

A warning statement calls attention to a situation that can result in harm to hardware or equipment.

WARNING:

Use an ESD warning to call attention to situations that can result in ESD damage to electronic components.

DANGER:

A danger statement calls attention to a situation that can result in harm to personnel.

SECURITY ALERT:
A security alert calls attention to a situation that can increase the potential for unauthorized use of a telecommunications system.

Related resources

The CD, *Documentation for Avaya Communication Manager, Media Gateways and Servers*, 03-300151, contains a comprehensive library of documents.

For a summary of what is new in the June 2004 release of Avaya Communication Manager, see *Highlights of Avaya Communication Manager*, 555-245-704.

Technical assistance

Avaya provides the following resources for technical assistance.

Within the United States

For help with:

- Feature administration and system applications, call the Avaya Technical Consulting - System Support at
  1-800-225-7585
- Maintenance and repair, call the Avaya National Customer Care Support Line at 1-800-242-2121
- Toll fraud, call Avaya Toll Fraud Intervention at 1-800-643-2353
- Security issues, call Avaya Corporate Security at 1-877-993-8442

International

For technical assistance, call the International Technical Assistance Center (ITAC) at +905-943-8801.

For all international resources, contact your local Avaya authorized dealer.

Trademarks

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Ordering Documentation

In addition to this book, other description, installation, maintenance, and administration books, and documentation library CDs, are available.

This document (555-234-100) and any other Avaya documentation can be ordered directly from the Avaya Publications Center toll free at 1-800-457-1235 (voice) and 1-800-457-1764 (fax). International customers should use +1.207.866.6701 (voice) and +1.207.626.7269 (fax).

Sending us comments

Avaya welcomes your comments about this book. To reach us by:

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- Fax, send your comments to:

  1-303-538-1741

Ensure that you mention the name and number of this book, *Installation and Configuration for Avaya G150 Media Gateway, 03-300395*.

Chapter 1: Installing Hardware for the G150 Media Gateway

Plan the Installation

In the following sections of this installation guide, you will be guided through the installation of several configurations. Before the G150 Media Gateway components are physically installed on the customer's site, several steps will already have been completed to assure that the actual installation will go smoothly:

- Sales personnel have verified that the product is suited to the customer's application.
- Planning and implementation personnel have conducted preliminary inspections of the site and of the other equipment to assure that the G150 solution will operate at its full potential.
- A data network readiness assessment has been completed to assure that the solution will function optimally within the customer's network.

Each of these processes have been documented before the installation. You should verify that you have all the necessary information before going to the site (see Appendix B: Information Checklists).

Use the Planning Documentation

To guide you in your preparations for the installation, use the Installer's Checklists (see Appendix B: Information Checklists) to verify that you have the tools, software, and information that you need to install the G150.

The planning documentation will provide you with information about:

- What equipment you will be installing
- What kind of system you will be integrating
- Whom to contact on site about delivery, system questions, or network concerns
- Whom to contact at your home office in case of questions
- Whether you need a special pass or an escort
- How to gain entrance to the installation location if it is locked
- Where to install equipment
- Where to find a telephone near the installation location

Site Verification

A pre-installation site inspection allows you to verify that the site requirements have been met for adequate environmental conditions, power and grounding availability, safety, and security conditions. If you find discrepancies between the specifications necessary for proper installation of equipment and the conditions on site, contact your Project Manager before proceeding with the installation.

Unpack and Check the Order

Cross-check your customer's order with the planning documentation you have been given.

Verify that all necessary elements have been received and are in good condition. If there are missing or damaged elements, contact the Project Manager for instructions. The planning documentation will list contact information for the Project Manager and other key personnel.

CAUTION:

Wear an anti-static wrist ground strap whenever handling components of an Avaya™ G150 Media Gateway. Connect the strap to an approved ground, such as an unpainted metal surface.

If you have any questions about the equipment order, or if the equipment has been damaged, contact your Project Manager. When you have verified that the order is complete and that you have all of the necessary components and tools, proceed with the installation.

G150 Gateway Capacity

The G150 Media Gateway is supported with Avaya Communication Manager release 2.2 on the Media Servers listed in the table below. This table also outlines the gateway capacity for each media server.

Table 1: G150 Gateway Capacity for supported Media Servers

Supported Media Servers	**S8700/ S8710**	**S8500**	**S8300 (G700)**	**G3si**	**G3csi**
Maximum Gateways	250	250	50	80	80

Port Capacity

Each analog port counts as one IP station for the Communication Manager server's capacity limits. Each analog trunk port and each DS0 channel on the BRI and T1 digital trunks count as one IP trunk against the Communication Manager feature server's capacity limits.

The table below lists the port capacity for the supported Media Servers.

Table 2: Port Capacity for supported Media Servers

	S8700/ S8710	S8500	S8300 (G700)	G3si	G3csi
Total IP stations (max)	12000	2400	450	1500	390
Total IP trunks (max)	8000	800	450	400	400

Signaling Group Capacity

The Communication Manager switch software supports IP signaling group for each administered G150 gateway as follows:

- All analog trunks in that gateway that are administered and enabled appear as a group of "virtual" managed 64 Kbps trunk group members.
- Each digital trunk in that gateway that is administered and enabled appear as a group of "virtual" managed 64 Kbps trunk group members.

The number of signaling groups supported is defined by the following table.

Table 3: Signaling Group Capacity for supported Media Servers

	S8700/ S8710	S8500	S8300 (G700)	G3si	G3csi
Number of supported signaling groups	650	650	450	110	110

G150 Models

The G150 Media Gateway is supplied in the following models (each model is available in two versions to support either North American or International CO trunks):

- G150 2T + 4A (4 VoIP): Two Analog Trunks + 4 analog telephones + 4 VoIP compressors.
  - North America version - SAP code: 700343569
  - International version - SAP code: 700343577
- G150 4T + 4A (16 VoIP): Four Analog Trunks + 4 analog telephones + 16 VoIP compressors.
  - North America version - SAP code: 700343601
  - International version - SAP code: 700343619

The layer 3 routing provided by G150 includes two Ethernet ports, LAN1 and LAN2. For LAN1, G150 provides an in-built layer 2 Ethernet Switch, giving 4 switched ports (1 - 4), typically used for attaching IP phones and PCs. For LAN2, G150 provides a single Ethernet port, typically used for connection to a WAN service.

In the back of all G150 models, the following are supported:

- An additional WAN slot to support other network connections such as T1, PRI and BRI central office lines and V.35, X.21.
- A twin PCMCIA socket for a Wireless LAN card when using the system as an Access Point for 802.11b support of a wireless data application.
- The second PCMCI slot may be used to house a 64M flash memory card for providing a TFTP server.
- A serial port dongle, plugged directly into the unit, for licensed applications.

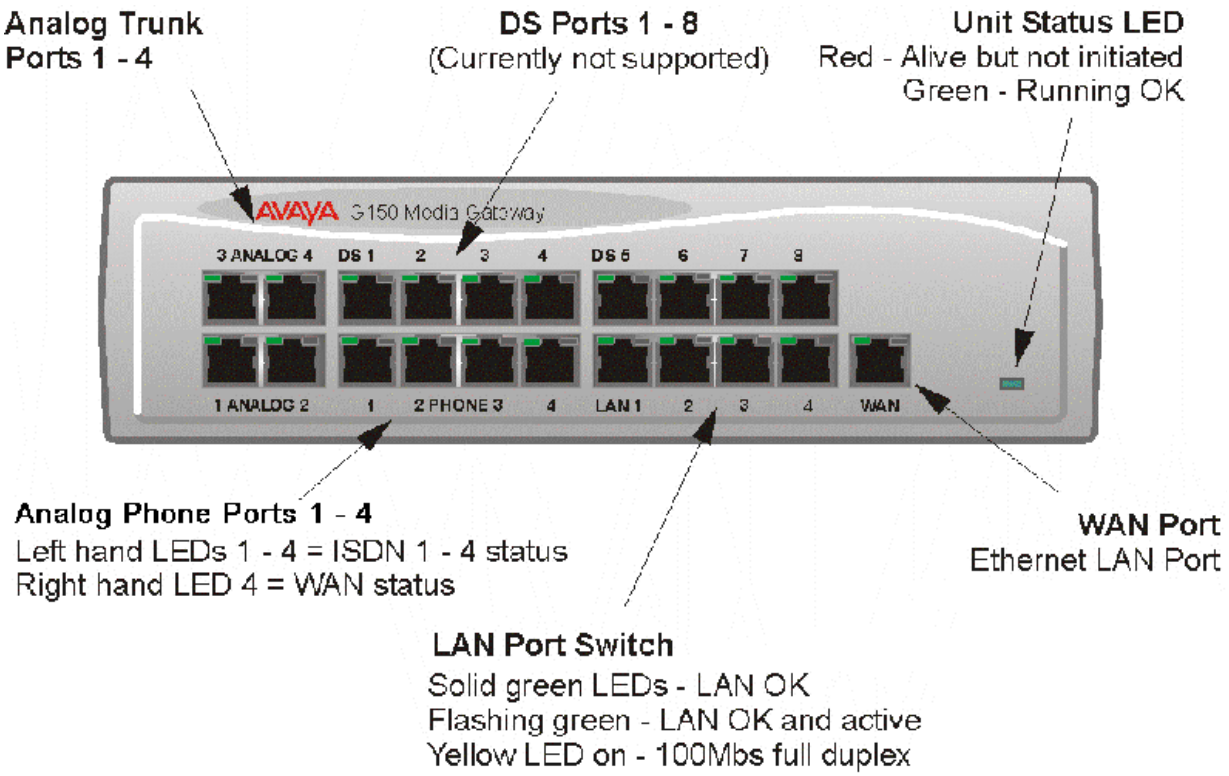
G150 4T + 4A (16 VoIP)

This variant of the G150 includes the following:

- Four Analog Loop Start Trunks (Two-way CO Trunks)
- Four Analog Extension interfaces
- Sixteen VoIP Codecs (G.723.1, G.711a, G.711u and G.729a)
- 4 Switched Ethernet ports (Layer 2)
- Dedicated Switched Ethernet WAN port (Layer 3)
- 2x PCMCIA slots for Wireless and memory card support
- WAN slot for optional voice/data WAN card (V24, V35, X.21, quad-BRI and T1/PRI)

- DTE port
- Audio port (not used)
- External O/P socket (not used)

Figure 1: G150 4T + 4A + DS (16 VoIP) front view



Port connections

- **DS Ports:** Not currently supported on the G150.
- **Analog Trunk Ports:** These ports are used for connection to standard analog trunks (loop start). Using standard structured wiring, these RJ45 ports can be extended to the required trunk sockets. In the event of mains power supply failure, Analog Port 2 is automatically switched to Phone port 1.
- **Analog Telephone Ports:** These ports are used for connection to standard analog telephones, fax machines and modems. Using standard structured wiring, these RJ45 ports can be extended to the required telephone location. When telephones are equipped with line cords that terminate in RJ11 plugs, then pin-to-pin RJ11/RJ45 adapters should be used.
- **LAN Ports:** These are LAN 10/100Mbps Layer 2 Ethernet switches and are used for PC and server connectivity. They have Auto MD1/MD1X capability and hence avoid the need

for LAN crossover cables when connecting to a hub. They can also be used to connect to IP telephones (Avaya 4600 IP series). LAN ports allow information relating to incoming and outgoing telephone calls to be forwarded to PC based applications. They also provide access to the router functionality/configuration of the G150 platform for both data and Voice over IP (VoIP) calls. Within the configuration software application (Manager), these ports are referred to as LAN1.

- **WAN Port:** This is a 10/100Mbs Ethernet LAN port for connection to an IP routed WAN (e.g. DSL). Within the configuration software application (Manager), this port is referred to as LAN2.

Cables

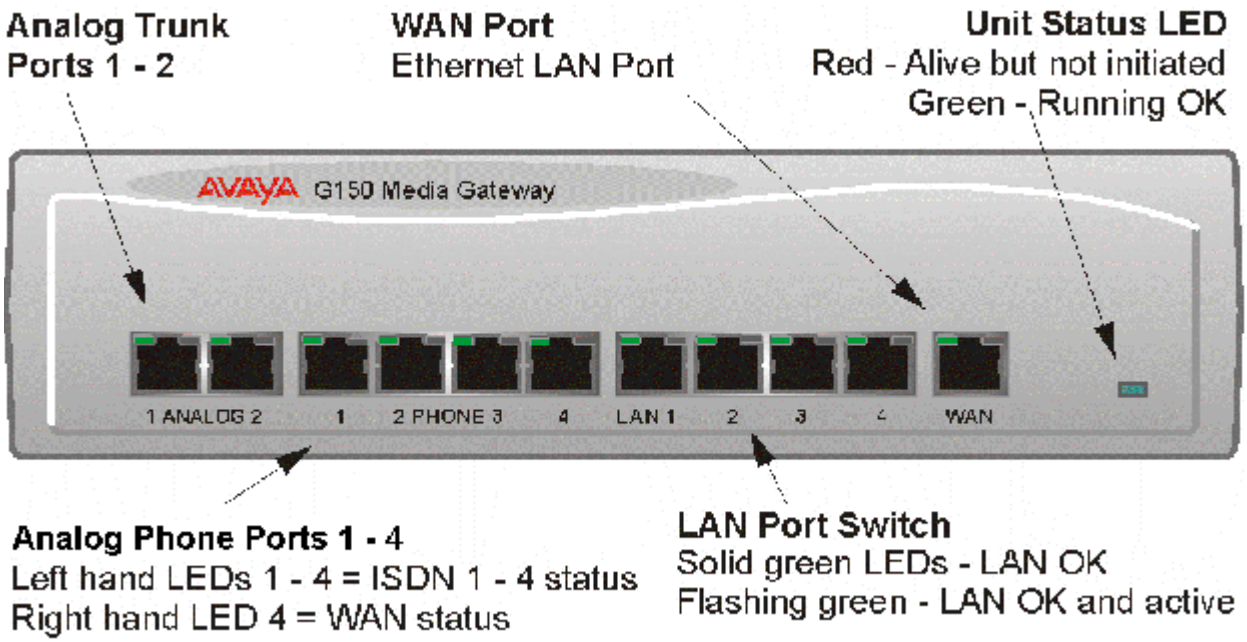
G150 is supplied with one red CAT 5E cable. For Port Pinouts and Cables, refer to Appendix A: Technical Data.

G150 2T + 4A (4 VoIP)

This variant of the G150 includes the following:

- Two Analog Loop Start Trunks (Two-way CO Trunks)
- Four Analog Extension interfaces
- Three VoIP Codecs (G.723.1, G.711a, G.711u and G.729a)
- 4 Switched Ethernet ports (Layer 2)
- Dedicated Switched Ethernet WAN port (Layer 3)
- 2x PCMCIA slots for Wireless and memory card support
- WAN slot for optional voice/data WAN card (V24, V35, X.21, quad-BRI and T1/PRI)
- DTE port
- Audio port (not used)
- External O/P socket (not used)

Figure 2: G150 2T + 4A (4 VoIP) front view



Port connections

- **Analog Trunk Ports:** These ports are used for connection to standard analog trunks (loop start). Using standard structured wiring, these RJ45 ports can be extended to the required trunk sockets. In the event of mains power supply failure, Analog Port 2 is automatically switched to Phone port 1.
- **Analog Telephone Ports:** These ports are used for connection to standard analog telephones, fax machines and modems. Using standard structured wiring, these RJ45 ports can be extended to the required telephone location. When telephones are equipped with line cords that terminate in RJ11 plugs, then pin-to-pin RJ11/RJ45 adapters should be used.

  Note:

  Fax/modem ports are used with local G150 trunks only.

- **LAN Ports:** These are LAN 10/100Mbps Layer 2 Ethernet switches and are used for PC and server connectivity. They have Auto MD1/MD1X capability and hence avoid the need for LAN crossover cables when connecting to a hub. They can also be used to connect to IP telephones (Avaya 4600 IP series). LAN ports allow information relating to incoming and outgoing telephone calls to be forwarded to PC based applications. They also provide access to the router functionality/configuration of the G150 platform for both data and Voice over IP (VoIP) calls. Within the configuration software application (Manager), these ports are referred to as LAN1.

- **WAN Port:** This is a 10/100Mbs Ethernet LAN port for connection to a WAN (e.g. DSL). Within the configuration software application (Manager), this port is referred to as LAN2.

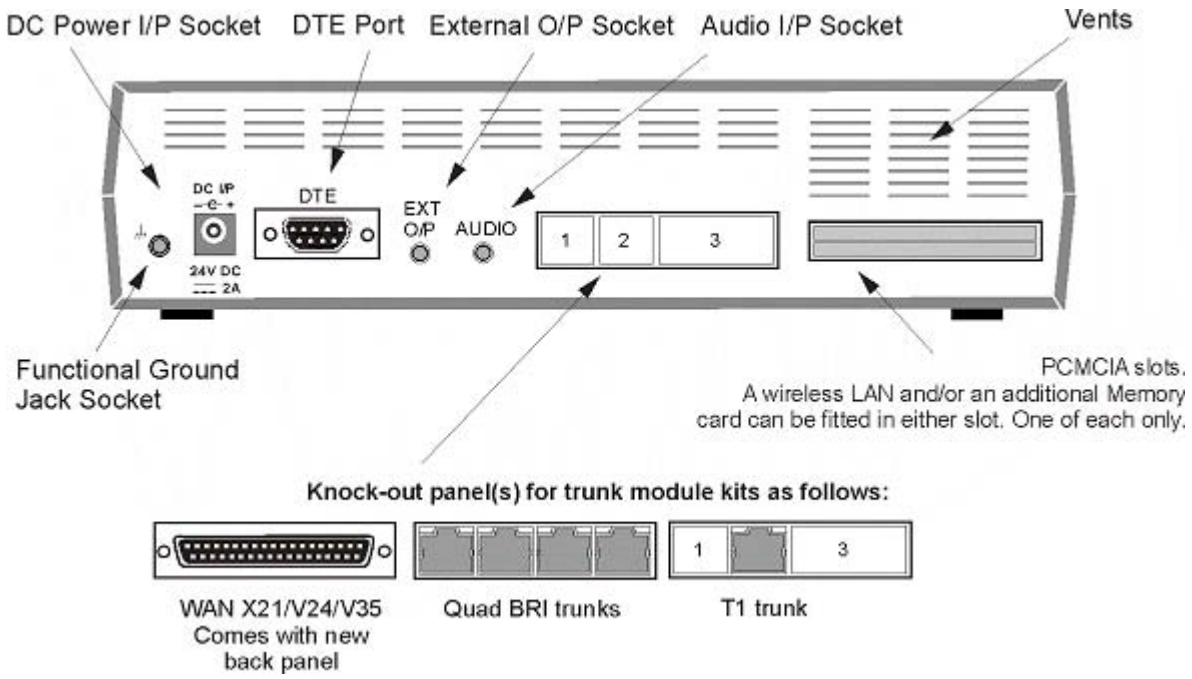
Cables

G150 is supplied with one red CAT 5E cable. For Port Pinouts and Cables, refer to Appendix A: Technical Data.

Back Panel of the G150 (all models)

All models of the G150 have the same configuration when viewing the back of the control unit.

Figure 3: G150 back view



Connections

- **External O/P Socket:** Not used with the G150.
- **DC Power I/P Socket:** Socket for the external 24V DC unregulated power supply.
- **DTE Port:** A 9-way D-type socket. Used for applications Licence Key device (Dongle) and connection to PCs, Servers and EFTPOS terminals.

- **WAN Slot:** This slot supports a single synchronous voice/data PSTN WAN interface of the following types:
  - G150 Quad BRI Card (Euro ISDN)
  - G150 WAN Expansion Card (V35/V24/X21)
  - G150 T1/PRI Card (23B+1D or 24B trunks)
- **PCMCIA slots:** Used for a Wireless LAN card when using the system as an Access Point for 802.11b support of a wireless data application. The second PCMCIA slot may be used to house a 64M flash memory card for providing a TFTP server.
- **Audio I/P Socket:** Not used with the G150.
- **Functional Earth Socket:** A single 3.5mm jack socket with all 3 pins connected to ground. For use in areas with high lightning and/or ESD. Connect a 3.5mm jack plug (not supplied), fitted with a green sleave 14swg wire, to the buildings approved earth point (must conform to local grounding (earthing) regulations).

  CAUTION:

  This is not a protective ground point. The unit is also earthed via the power cable (through the lump in line PSU).

WAN Interface Cards

These WAN interface cards provide for the ability of customers to expand their voice PSTN trunk options to include BRI and T1/ISDN PRI. The local serving PSTN provider may offer one or the other of these interfaces in the given country of destination for this gateway. The WAN slot in the back panel of the G150 supports voice/data PSTN WAN interface of the following types:

- G150 ISDN Basic Rate Expansion Card
  - SAP code: 700352412
- G150 WAN Expansion Card
  - SAP code: 700352347
- G150 T1/ISDN PRI 24 Expansion Card
  - SAP code: 700352354

The following wireless LAN card fits into the PCMCIA slot in the back of the G150:

- G150 Wireless LAN Card
  - SAP code: 700352420

T1 WAN interfaces are capable of supporting robbed bit service, ISDN Primary Rate service both in full T1 and FT1 modes for both voice and data WAN services. In the North American T1 interface, this is capable of supporting up to twenty-three 64 Kbps channels for PRI and twenty-four channels for robbed bit signaling.

Data services are for use with local G150 analog phone sets only.

Note:

QSIG is not supported on G150.

G150 ISDN Basic Rate

This WAN card offers a quad interface consisting of 4 individual 4-wire ISDN ST interfaces. ISDN Basic rate provides 2 x 64K speech channels using Q.931 signaling and CRC error checking. Both point to point and point to multipoint operation is supported. Multipoint lines allow multiple devices to share the same line, however, point-to-point is the preferred mode.

Basic rate supports the following services:

- Dialed Number Identification (DNIS) - Provides a string of digits to the G150 depending on the number dialed by the incoming caller.
- Automatic Number Identification (ANI) - Provides G150 with the incoming caller's phone number.
- Multiple Subscriber Number - Provides up to 10 numbers for routing purposes. This services is usually mutually exclusive with the DDI/DID service.

G150 WAN Expansion Card

The WAN expansion card is fitted to the G150 to provide a single WAN connection (X21, V35 or V24 via a 37-way D-type socket). Line speeds up to and including 2Mbps are supported on the interface. The carrier providing the line dicates the actual operating speed. In some territories, the maximum speed may be 1.544M.

G150 T1 - North American T1 with In-Band Signaling Support

T1 Primary Rate provides up to 24 56K channels over a 1.54M circuit.

Each 64Kbps channel of the T1 trunk can be independently configured to support the following signaling emulations (with handshake types of immediate, delay or wink):

- Loop-Start
- Ground-Start
- E&M Tie Line
- E&M DID
- E&M Switched 56K
- DID - Channels configured for DID/DDI support incoming calls only. The carrier or central office will provide the last X digits that were dialed to be used for call routing.
- Wink-Start

Where available from the central office, G150 T1 trunks support the following services:

- Dialed Number Identification (DNIS) - Provides a string of digits to the G150 depending on the number dialed by the incoming caller.
- Automatic Number Identification (ANI) - Provides G150 with the incoming caller's phone number.

G150 PRI - North American Primary Rate Interface (ISDN)

G150 supports Primary Rate trunks on 5ESS or DMS100 central office switches provided by AT&T, Sprint, WorldCom and other local telcos. Channels can be pre-configured for the supported services or negotiated on a call-by-call basis.

G150 also supports the Calling Name service over Primary Rate trunks, 4ESS and National ISDN 2 (NI2) signalling modes.

Using the PCMCIA slot for Wireless Access (for data applications)

To use the G150 as a wireless access point, the G150 must be fitted with a Wireless LAN card and the Wireless LAN Access Point license key.

The G150 supports the following in relation to wireless access capabities:

- 2.4 GHz to 2.5 GHz band
- Automatic fallback 11Mbits/s, 5.5Mbits/s, 2Mbits/s or 1Mbits/s
- IEEE 802.11 and IEEE 802.11b compliance
- Wireless Fidelity Wi-Fi™ compliance
- Interoperable with other 802.11b compliant devices
- WEP or RC4 security
- Range up to 550M (1750 ft)

All G150 models can be configured to become Wireless LAN access points by inserting an 802.11B PCMCIA card in a dedicated twin slot on the back panel of the G150. An access point acts as a hub in a wireless network providing connectivity between devices in the vicinity. In ideal conditions, a range of up to 550M (1750 ft) is achievable; although this range will be decreased if walls and other obstacles are present. See Table 4. G150 can be used with external access points where local conditions impair coverage and additional access points are needed to cover the black spots.

Note:

G150 does not support QoS on WiFi connections using the 802.11b PCMCIA card.

The G150 wireless network can be secured against intruders using either the Wired Equivalent Privacy (WEP) or RC4. WEP uses 64 bit encryption key and RC4 uses a 128 bit encryption key. Only devices with a matching security key can participate in the network. G150 complies to the IEEE 802.11 and IEEE 802.11b standards meeting the Wireless Ethernet Compatibility Alliance (WECA) Wireless Fidelity Wi-Fi™ requirements for interoperability.

Table 4: G150 WiFi Range Specifications

RANGE (METERS/FT)	11 MBIT/S	5.5 MBIT/S	2 MBIT/S	1 MBIT/S
Open	160m (525 ft)	270m (885 ft)	400m (1300 ft)	550m (1750 ft)
Semi-open	50m (165 ft)	70m (230 ft)	90m (300 ft)	115m (375 ft)
Closed	25m (80 ft)	35m (115 ft)	40m (130 ft)	50m (165 ft)
Receiver Sensitivity dBm	-82	-87	-91	-94
Delay Spread (at FER of <1%)	65ns	225ns	400ns	500ns

Quality of Service (QoS)

The G150 supports two IP routing queues on each of its WAN ports (Ethernet WAN on the front panel and the optional WAN interface on the back panel). One routing queue is dedicated to Voice Traffic, the second to any other data. Voice traffic and signaling can be independently marked using Differentiated Services. This ensures that calls in-progress take priority over call signaling and other traffic on slow bandwidth links. When operating over Frame Relay, G150 will mark non-voice traffic that exceeds the committed information rate as discard to ensure voice receives priority. Traffic that is being sent over a G150 Ethernet interface is DiffServ marked, but treated as a single queue.

Silence suppression allows the best use of available bandwidth. Silence suppression works by sending descriptions of the background noise, rather than the actual noise itself, during gaps in conversation, thereby reducing the packet size needed.

Large packets traveling over low bandwidth links such as Frame Relay or PPP connections are also fragmented to allow voice packet to be interleaved.

Supported QoS related standards

- Silence Suppression
- Frame Relay Discard Eligibility
- Local End Echo Cancellation 25ms
- Out-of-band DTMF

- 5 frames of jitter buffer
- RFC 2507, 2508, 2509 - Header Compression
- RFC 2474 - DiffServ, Type of service field configurable
- RFC 1990 - PPP Fragmentation
- RFC 1490 - Encapsulation for Frame Relay
- RFC 2686 - Multiclass Extension to Multilink PPP
- FRF 12 - Frame Fragmentation

For information on configuring QoS on the G150, see DiffServe Settings for VoIP Calls in Chapter 3.

Typical Configurations

The following sections illustrate two typical scenarios for usage of the ports on the G150. These are configuration examples only and are intended to demonstrate the flexibility of the G150.

Sample Small Branch Office Setup

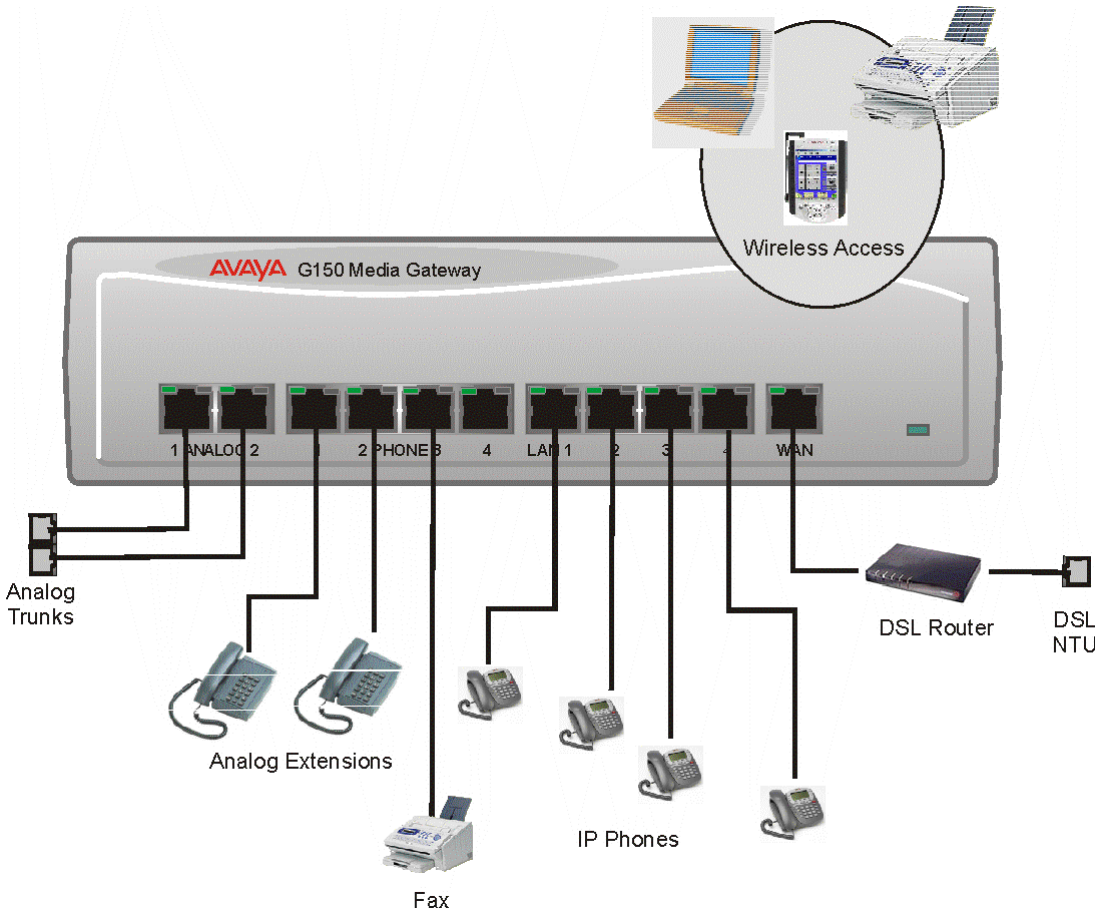
A small branch office that requires the following connectivity:

- Two analog trunks
- One IP WAN connection to the Communication Manager (shown as a DSL connection in Figure 4.
- Two analog telephones & one fax
- Up to four IP telephones
- One printer
- Voicemail at company HQ

Solution (for this sample scenario only)

- G150 2T +4A (4 VoIP)
- Wireless LAN card - 802.11b (Optional)
- Licence Key Device & Access Point RFA
- Up to 4 x IP trunks via 10/100 WAN port
- 2 x Analog trunks for local calls or fall-back
- 4 x IP phones (each with 1151B1 PoE PSU)
- 1 x spare analog extension port

Figure 4: Sample of a Small Branch Office Setup



A Sample Medium Branch Office

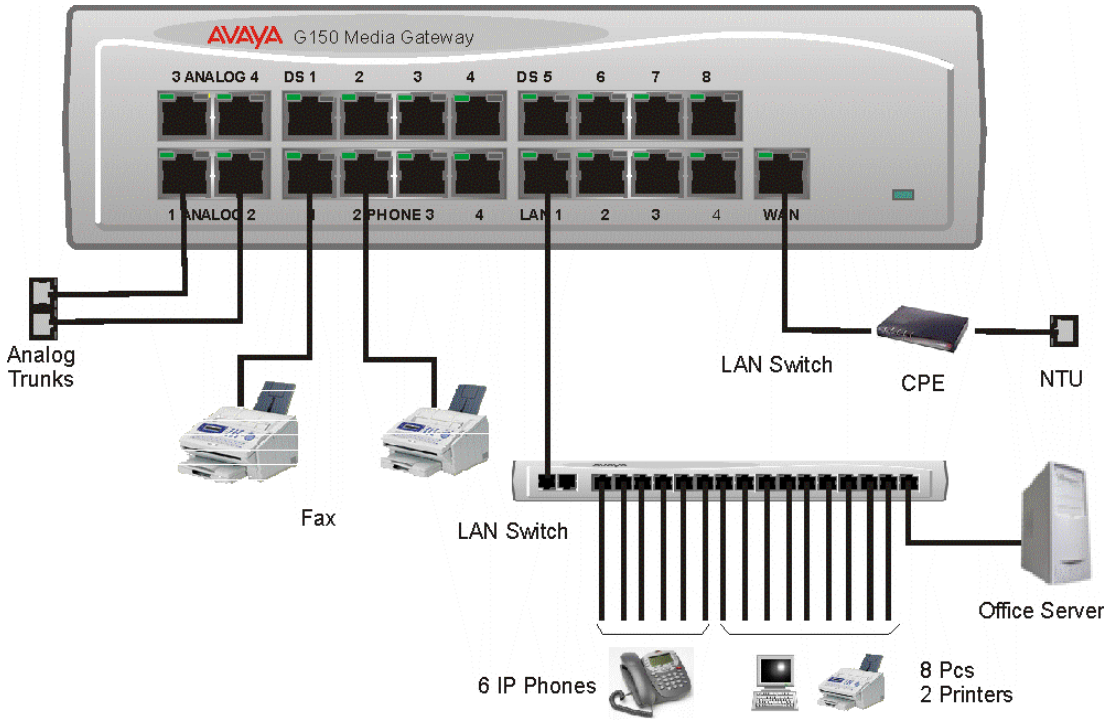
Connectivity example for a medium-sized branch office:

- 2 analog trunks
- 1 IP WAN connection
- 2 fax machines
- 6 IP phones
- Workgroup switch for data & voice devices
- Voicemail at company HQ

Sample Solution

- G150 4T + 4A (16 VoIP)
- IP trunks via 10/100 WAN port
- 2 analog trunks for local calls or fallback
- 3rd party LAN switch with QoS
- 6 IP phones (each with 1151B1 PoE PSU)
- Capacity for 10 additional IP phones
- 8 DS ports for future use. Not currently supported on the G150.

Figure 5: Sample of a Medium Branch Office Setup



Preparing for Installation

This section reviews the requirements for installing an G150 system. You must meet these requirements for the system to operate safely and in the intended manner.

This section covers :

- Tools & Parts Required
- Space requirements
- Environmental requirements
- Power Supply Requirements

Tools & Parts Required

General :

- Pozidrive No. 1 screwdriver for removal of unit covers.
- Cutter/knife for cable ties.
- Cable ties
- Pozidrive No. 4 screwdriver for Analog Trunk 16 expansion module grounding post.

Note:

In addition, ensure that you have sufficient cables that are not supplied with the modules, e.g. Line Cords for structured cabling and power supply cables.

Programming :

These are the tools required for programming of a newly installed G150 system.

- PC running Windows 98 (2nd Edition), 2000 Professional (SP2) & Server (SP2), XP Professional Server & XP Home, NT4 Workstation (SP6) & NT4 Server (SP6a) or 2003 Server:

  Intel Pentium ll 333Mhz or faster, 100MB HD space, CD-ROM drive, COM port, terminal emulation (e.g. HyperTerminal) and a super VGA Monitor (set to 1024 by 768). PC should have a LAN card with either a fixed IP address (allocated by your system administrator) or be using DHCP to obtain an IP address.
- IP Cat. 5E patch cable (red - supplied with system).
- G150 Administration CD.
- G150 Feature Key device (Dongle).

Space requirements

Check that the planned location meets the following requirements.

Height : 76mm (3 inches)

Width : 255mm (10 inches)

Depth : 235mm (9.3 inches)

- Where a G150 is free standing, allow a minimum clearance of 62mm (2.5 inches) either side for cable trunking.
- Check there is suitable lighting for installation, system programming and future maintenance.
- Check that there is sufficient working space for installation and future maintenance.
- Ensure that likely activities near the system will not cause any problems, e.g. access to and maintenance of any other equipment in the area.

Environmental requirements

The planned location must meet the following requirements:

- Check that the area is a well ventilated area, having a temperature range of 0*C to +40*C and a humidity range of 10% to 95% non-condensing.
- Check there are no flammable materials in the area.
- Check there is no possibility of flooding.
- Check that no other machinery or equipment needs to be moved first.
- Check that it is not an excessively dusty atmosphere.
- Check that the area is unlikely to suffer rapid changes in temperature and humidity.
- Check for the proximity of strong magnetic fields, sources of radio frequency and other electrical interference.
- Check there are no corrosive chemicals or gasses.
- Check there is no excessive vibration or potential of excessive vibration, especially of the cabinet mounting surface.
- USA only: Telephones may not be installed in a building that is separate from the one housing the G150.

IMPORTANT SAFETY INSTRUCTIONS

When using your telephone equipment, basic safety precautions should always be followed to reduce the risk of fire, electric shock and injury to persons, including the following:

- Do not use this product near water, for example, near a bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement or near a swimming pool.
- Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.
- Do not use the telephone to report a gas leak in the vicinity of the leak.
- Use only the power cord and batteries indicated in this manual. Do not dispose of batteries in a fire. They may explode. Check with local codes for possible special disposal instructions.

Power Supply Requirements

G150 should only be connected to a clean power supply or to a UPS with 3-pin connectors including earth.

CAUTION:

The Lump-in-Line PSUs supplied with each G150 module must only be connected to a 50/60Hz, 100-240V power source.

UPS Equipment :

The use of UPSs to support the G150 system during mains power failure is highly recommended. Such equipment also provides mains conditioning. Contact Avaya for details of preferred and tested suppliers and models.

Functional Ground

This is an optional feature. Functional grounding protects the component in which it is attached to. The functional ground jack socket on the back of the G150 can be connected by following the instructions below.

CAUTION:
This functional ground is not a protective ground.

To connect the functional ground:

1. Use a 3.5mm Jack Plug (not supplied with kit) fitted with a suitable length of #14 AWG (minimum) solid insulated cable. The sleeve must not be green/yellow.
2. Insert this Jack Plug into the Functional Ground Jack Socket (in the back of the G150 Media Gateway).
3. Connect, using a fastening that satisfies local regulations, the other end of the #14 AWG wire to the approved ground, such as building steel or an earthed metal cold water pipe.

Installing a New G150 System

Initial Assembly - Overview

Prior to initial assembly and mounting (shelf/wall mounting or free standing) of your system, check that:

- The required Trunk Interface Modules have been installed and are of the correct country variant type.
- Where structured cabling is to be used it has been installed, conforms to all local regulations and is clearly labeled.

To start assembling the G150 Media Gateway, do the following:

1. Mount the G150 module in its final location.
2. Run the Lump-in-Line PSU cable back to the switchable mains supply but **do not switch-on or connect** the PSU to the G150.
3. Connect the Trunks, using BRI ISDN Cables, to your provider's trunk sockets.
4. Connect the Phone Ports, using Line Cords, to the structured cable sockets or directly to the appropriate telephone. Note that in default, the lowest port number corresponds to the lowest extension number (201 by default).

5. Install all telephones in their appropriate locations. For wall mounting, see G150 Shelf/Wall Mounting below.
6. Connect your PC LAN Port to one of the LAN Ports on the front of an G150 using a LAN Cable.
7. Switch on the ac mains supply.
8. The Manager software (provided on the Administrator CD) can now be installed on the PC. For detailed instructions on installing Manager, see The Manager Application Software in Chapter 3.

G150 Shelf/Wall Mounting

The G150 is not designed for rack mounting. All variants of the G150 can be either shelf or wall mounted. Four retaining slots (item **1** below) enable the G150 control unit to be mounted and secured either:

- Horizontally on a shelf - leaving sufficient space for the cabling at both front and rear of the unit.
- Vertically from a wall - with the front panel facing down only.

Figure 6: Wall Mounting Sample

A Z-bracket (item **2** below, supplied with unit) is used to retain the G150 control unit in position.

CAUTION:

The Z-bracket must not be used as the sole mounting fixture.

CAUTION:

When mounting vertically, the weight of the control unit must be held by the two No. 8 Panhead screws located into the retaining slots.

CAUTION:

When mounted vertically, the air vents (on the rear panel of the G150) **must be** on the top surface. e.g. item **2** below **must be** fitted above the unit.

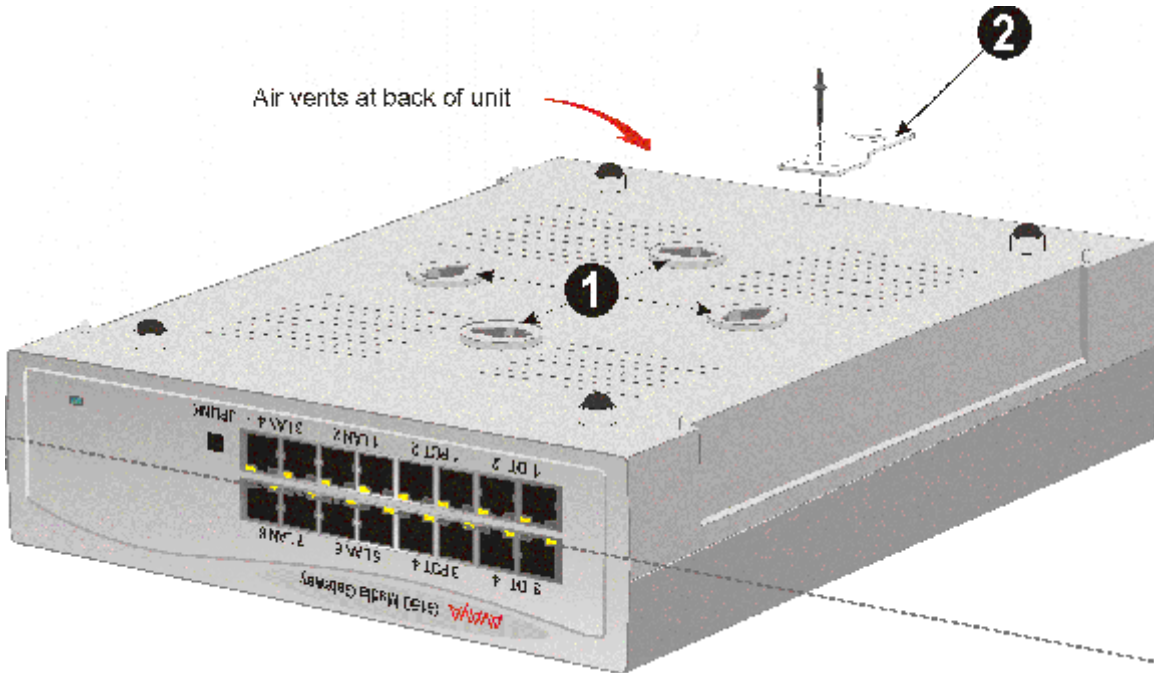
To mount the G150:

1. Drill two holes 16cm apart (horizontally or vertically - see Caution above).

   Using suitable wall fixings (wall plugs), insert two No.8, Panhead screws (25mm long min. - not supplied) into wall leaving approximately 1cm proud of wall.

2. Fit the Z-bracket (item **2** below) onto the base of the unit using the M3 Plastite self tapping screw supplied.
3. Slide the G150 unit onto the two screws, locating them into the two retaining slots (item **1** below).
4. Mark the position of the retaining screw (No. 8 Panhead or similar - not supplied) that is to be used through the slot of the Z-bracket .
5. Remove the unit from the wall and, using suitable wall fixings, drill a hole for the Z-bracket retaining screw.
6. Re-position the G150 and secure with a No. 8 Panhead (or similar) through the slot of the Z-bracket.

Figure 7: G150 for Mounting



Installation of Integral Modules

A G150 can be fitted with a WAN module, a quad BRI module or a PRI/T1 module. In addition, either or both the optional PCMCIA cards (Memory and/or Wireless LAN) can be fitted. All items referenced in the procedural steps below are in relation to Figure 8.

Procedure:

1. To add either a wireless LAN or additional Memory card you do not need to de-assemble a module, simply insert the card (item **1**) into either of the PCMCIA slots in the rear panel . These slots are universal, hence the location does not matter. Only one Memory or wireless LAN card can be fitted.
2. To add a WAN or BRI or PRI/T1 module:

   Remove the top cover (item **2**) by removing the four retaining screws (two either side - items **3**) and proceed as follows.
3. Remove the rear panel (item **4**).

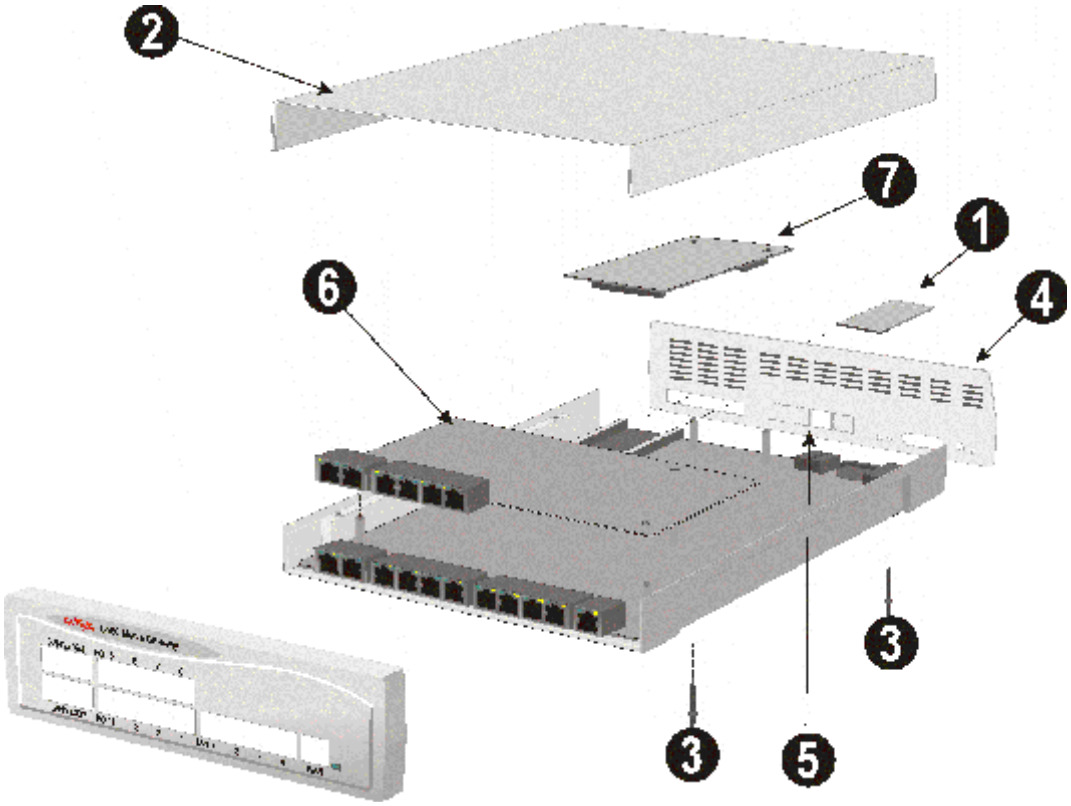
   Only discard if a WAN module is being fitted (see step 4 below).

   On the rear panel, press out all of the knock-out panels (item **5**) for a Quad BRI or just the middle one for a PRI/T1.

   - Plug the trunk board (item **7**) onto it's sockets and stand-off hex. pillars.
   - Ensure that the trunk module sockets slot into the hole in the rear panel (item **5**). Secure the trunk board in position and with the two snap-in spacers.
   - Mount the existing rear panels if a WAN module is not being fitted.

     If a WAN module is being fitted, see the next step.
4. To add a WAN module:
   - Remove and discard the rear panel (item **4**).
   - Fit the new rear panel (supplied with the WAN module and has a slot for WAN port 27-way D-type, item **4**).
   - On the rear panel, press out all of the knock-out panels (item **5**)
   - Mount WAN module (item **7**) in position and secure with the two snap-in spacers.

Figure 8: Installing Integral Modules



You have now completed the initial hardware installation of the G150 Media Gateway.

Chapter 2: Communication Manager Administration for the Avaya G150 Media Gateway

The Communication Manager software on the media server (DEFINITY Server SI or CSI, or an S8300, S8500, S8700, or S8710 Media Server) must be configured, in accordance with the Communication Manager Remote Office Feature group, to recognize, communicate with, and control the Avaya G150 Media Gateway. Use the following instructions to help you configure and administer the G150 Media Gateway within Communication Manager software.

Note:

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

Sample configuration

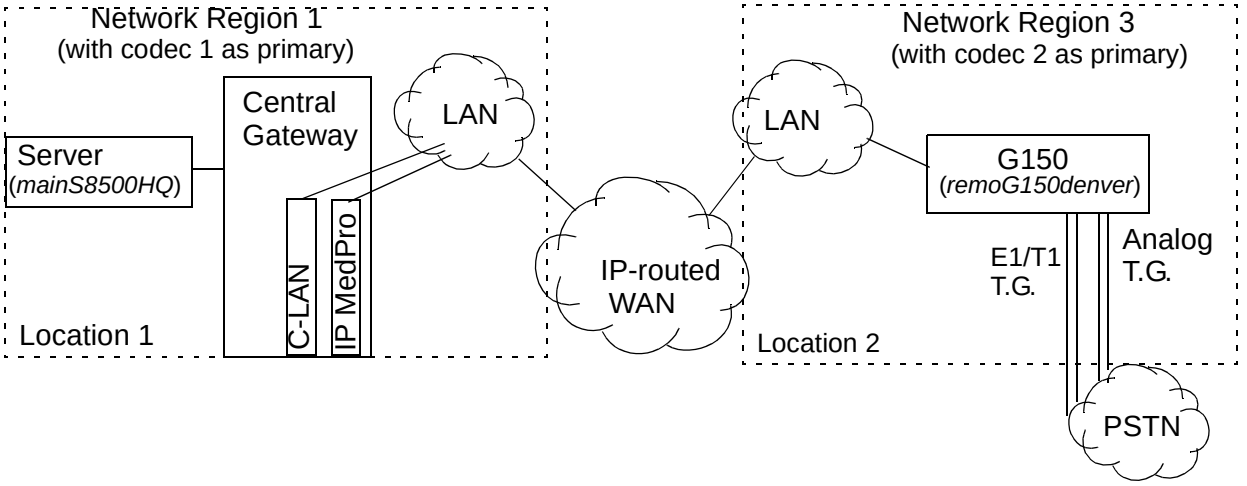
A sample configuration is used for illustration purposes in this chapter. In this configuration, the media server (S8500 or S8700-series) and central gateway (G650, SCC1, MCC1, CMC1, or G600) have the following characteristics:

- Server with name *mainS8500HQ* physically located in Chicago
- Administered in Network Region 1, which uses Codec 1 as primary
- Administered with location of 1
- Gateway with at least one TN799 C-LAN and at least one TN2302 IP Media Processor

The G150 Media Gateway with name *remoG150denver* has the following characteristics:

- Physically located in Denver
- Administered in Network Region 3, which uses Codec 2 as primary
- Administered with location of 2

Figure 9: G150 sample configuration



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 or install a license file that enables the options identified by these fields.

1. Type **display system-parameters customer-options** and press **ENTER** to display the screen. Press **NEXT** to display page 2.

   The system displays Page 2 of the Optional Features screen.

Figure 10: Optional Features screen (page 2)

```
display system-parameters customer-options                    Page 2 of 10
                          Optional Features

IP PORT CAPACITIES
                                        Maximum Administered H.323 Trunks: 50
                                  Maximum Concurrently Registered IP Stations: 100
                                    Maximum Administered Remote Office Trunks: 10
                         Maximum Concurrently Registered Remote Office Stations: 10
                                     Maximum Concurrently Registered IP eCons: 0

                                           Maximum Administered SIP Trunks:0

                       Maximum Number of DS1 1 Boards with Echo Cancellation:0
                                                Maximum TN2501 VAL Boards:0
                                             Maximum G700/G350 VAL Sources:0

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

2. Verify that the following fields are enabled:
   - **Maximum Administered H.323 Trunks**:Total number of H.323 (IP) trunks available to the Communication Manager for communication between all endpoints, port networks, and remote gateways.
   - **Maximum Concurrently Registered IP Stations**: Total number of IP stations for all gateways, including G150 Media Gateways, that may be registered at one time. Must be less than or equal to the **Maximum Ports** field on page one of this screen.
   - **Maximum Administered Remote Office Trunks**: Total number of trunk group members for all G150 media Gateways supported by this media server (a single B-channel of a T1 or BRI is a trunk group member).
   - **Maximum Concurrently Administered Remote Office Stations**: Total number of stations (analog) for all G150 Media Gateways supported by this media server.

   Note:

   If these values are not large enough, you may have to request a new RFA license file to increase them. Please contact your sales representative.

3. Press **NEXT** until you see page 4.

   The system displays Page 4 of the Optional Features screen.

Figure 11: Optional Features screen (page 4)

```
display system-parameters customer-options                    Page   4 of  x
                              OPTIONAL FEATURES

   Emergency Access to Attendant? y                              IP Stations? y
            Enable 'dadmin' Login? y                Internet Protocol (IP) PNC? y
            Enhanced Conferencing? y                          ISDN Feature Plus? y
                   Enhanced EC500? y             ISDN Network Call Redirection? y
       Enterprise Wide Licensing? y                          ISDN-BRI Trunks? y
          Extended Cvg/Fwd Admin? y                                 ISDN-PRI? y
     External Device Alarm Admin? y                Local Survivable Processor? y
          Extended Cvg/Fwd Admin? y                      Malicious Call Trace? y
     External Device Alarm Admin? y     Mode Code for Centralized Voice Mail? y
  Five Port Networks Max per MCC? y
                Flexible Billing? y                   Multifrequency Signaling? y
   Forced Entry of Account Codes? y Multimedia Appl. Server Interface (MASI)? y
      Global Call Classification? y         Multimedia Call Handling (Basic)? y
             Hospitality (Basic)? y      Multimedia Call Handling (Enhanced)? y
 Hospitality (G3V3 Enhancements)? y
                       IP Trunks? y

           IP Attendant Consoles? y

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

4. Verify that the following fields are enabled:
   - **IP Trunks**: **y** (yes)
   - **ISDN-BRI Trunks**: **y** (yes)
   - **ISDN-PRI**: **y** (yes)

   Note:

   If these features are not enabled, you may have to request a new RFA license file to enable them. Please contact your sales representative.

5. Press **NEXT** to display page 5.

   The system displays Page 5 of the Optional Features screen.

Figure 12: Optional Features screen (page 5)

```
display system-parameters customer-options                    page 5 of x

                                OPTIONAL FEATURES

                  Multinational Locations?            Station and Trunk MSP? n
Multiple Level Precedence and Preemption?      Station as Virtual Extension? n
                       Multiple Locations? y     Survivable Remote Processor? n
                                                System Management Data Transfer? n

          Personal Station Access (PSA)? y
                       Posted Messages? n              Tenant Partitioning? n
                       PNC Duplication? n      Terminal Trans. Init. (TTI)? y
                  Port Network Support? y              Time of Day Routing? y
             Processor and System MSP? n            Uniform Dialing Plan? y
                   Private Networking? y    Usage Allocation Enhancements? y
                   Processor Ethernet? y      TN2501 VAL Maximum Capacity? y

                        Remote Office? y               Wideband Switching? y
         Restrict Call Forward Off Net? y                        Wireless? n
                 Secondary Data Module? y
```

6. Verify that the following fields are enabled:
   - **Multiple Locations**: **y** (yes)
   - **Remote Office**: **y** (yes)
7. Press **NEXT** until you see page 9.

   The system displays Page 9 of the Optional Features screen.

Figure 13: Maximum IP Registrations by Product ID screen

```
                                                              Page 9 of x

                  MAXIMUM IP REGISTRATIONS BY PRODUCT ID

Product ID_Rel. Limit     Product ID_Rel. Limit     Product ID_Rel. Limit
IP_Agent__ ___. 50___     __________ ___. _____     __________ ___. _____
IP_Phone__ ___. 20___     __________ ___. _____     __________ ___. _____
IP_ROMax__ ___. 10___     __________ ___. _____     __________ ___. _____
IP_Soft___ ___. 50___     __________ ___. _____     __________ ___. _____
__________ ___. _____     __________ ___. _____     __________ ___. _____
__________ ___. _____     __________ ___. _____     __________ ___. _____
```

8. Verify data for the following fields:
   - **Product ID**: **IP_ROMax**.
   - **Limit**: Total number of remote office stations for **IP_ROMax**.

   Note:

   If these values are not large enough, you may have to request a new RFA license file to increase them. Please contact your sales representative.

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. Press **NEXT** until you can see page 14.

   The system displays Page 14 of the Feature-related System Parameters screen.

Figure 14: Direct IP-IP Audio and IP Hairpinning screen

```
change system-parameters features                                  page 14
                        FEATURE-RELATED SYSTEM PARAMETERS

AUTOMATIC EXCLUSION PARAMETERS

                      Automatic Exclusion by COS? y
                 Automatic Exclusion Coverage/Hold? y
             Automatic Exclusion with Whisper Page? y
                             Recall Rotary Digit: 2
                    Password to Change COR by FAC: *
          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? n
RUSSIAN MULTI-FREQUENCY PACKET SIGNALING
                                              Re-try?
     T2 (Backward Signal) Activation Timer (secs):
```

2. Type **y** in the **Direct IP-IP Audio Connections** field to enable shuffling.
3. Set the **IP Audio Hairpinning** field to **y** (yes) to enable or **n** (no) to disable hairpinning system-wide. However, see the following note.

   Note:

   For the G150 Media Gateway, IP Audio Hairpinning should be turned off for optimal performance. However, if most gateways in the Communication Manager's configuration, such as G700 or G350 Media Gateways, support hairpinning, you may want to set **IP Audio Hairpinning** to **y**.

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 Communication Manager administration:

- The IP Address of the G150 Media Gateway
- Security Codes (passwords) for each G150 Media Gateway station.

Instructions

Administer circuit packs

Note:

For an S8300 Media Server, skip this procedure. This procedure does not apply.

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

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

   The system displays Page 1 of the Circuit Packs screen.

Figure 15: Circuit Packs screen (page 1)

```
display circuit-packs                                          Page 1 of 5
                        Circuit Packs
    Cabinet: 1                          Carrier: A
Cabinet Layout: five-carrier        Carrier Type: port

Slot Code   SF Mode Name                   Slot Code SF Mode Name
                                             11 TN754 C      Digital Line
 01: TN767   B      DS1 Interface            12 TN754 C      Digital Line
 02: TN746   B      Analog Line              13
 03: TN2302 AP      IP Media Processor       14
 04: TN748   D      Tone Detector            15
 05: _______  _                              16
 06: _______  _                              17
 07: _______  _                              18
 08: TN799   D      Control LAN              19
 09: _______  _                              20
 10: _______  _
```

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.
3. Press **NEXT** to page through the Circuit Packs screen, if necessary, to locate the TN799 and TN2302 circuit packs.

   Note:

   If administration was not performed on these circuit packs, refer to the Administration for Network Connectivity for Communication Manager, 555-234-504, document for instructions.

Administer IP Addresses and Interfaces

1. Type **change node-names IP** and press **ENTER** to display the IP Node Names screen.

   The system displays the IP Node Names screen.

Figure 16: IP Node Names screen

```
change node-names ip                                                   Page 1 of 1
                               IP NODE NAMES

  Name                 IP Address              Name
default             0  .0  .0  .0           __________________  ___.___.___.___
remoG150denver      134.23.107.22           __________________  ___.___.___.___
__________________  ___.___.___.___         __________________  ___.___.___.___
__________________  ___.___.___.___         __________________  ___.___.___.___
__________________  ___.___.___.___         __________________  ___.___.___.___
__________________  ___.___.___.___         __________________  ___.___.___.___
__________________  ___.___.___.___         __________________  ___.___.___.___
__________________  ___.___.___.___         __________________  ___.___.___.___
__________________  ___.___.___.___         __________________  ___.___.___.___
__________________  ___.___.___.___         __________________  ___.___.___.___
```

2. Complete the following fields:

   - **Name**: Assign a unique name to the G150 Media Gateway.

   Note:

   This name must match exactly the name of the G150 Media Gateway as entered on the **System | SO Gateway | Gateway Name** configuration in the G150 Manager. See Identifying the G150 to the Communication Manager in Chapter 3 for detailed information on configuring this information on the G150 Manager interface.

   - **IP Address**: Type the IP address associated with the G150 Media Gateway (LAN1 interface). Check with your LAN administrator, if necessary, for the appropriate address.

   Note:

   This IP address must match exactly the IP address of the G150 Media Gateway as entered on the Configuration screen in the G150 Manager. See Connecting G150 to the Network & Communication Manager in Chapter 3.

3. Press **ENTER** to effect the changes.

4. Type **list ip-interfaces** and press **ENTER** to display the IP Interfaces screen.

   The system displays the IP Interfaces screen.

Figure 17: IP Interfaces screen (DEFINITY Servers and S8500, S8700, and S8710 Media Servers)

```
list ip-interface                                                Page 1 of 4

                                IP INTERFACES

                                                                        Net
ON Type  Slot  Code  Sfx Node Name     Subnet Mask   Gateway Address    Rgn  VLAN
y C-LAN  01C07 TN799  C  clan1_______  255.255.255.0  192.11.128.254   1__  n
y MEDPRO 01C08 TN2302 AP medpro1_____  255.255.255.0  192.11.128.258_  1__  n
  _____  ____          _____________  255.255.255.0  ___.___.___.___  ___  n
  _____  ____          _____________  255.255.255.0  ___.___.___.___  ___  n
  _____  ____          _____________  255.255.255.0  ___.___.___.___  ___  n
  _____  ____          _____________  255.255.255.0  ___.___.___.___  ___  n
  _____  ____          _____________  255.255.255.0  ___.___.___.___  ___  n
  _____  ____          _____________  255.255.255.0  ___.___.___.___  ___  n
  _____  ____          _____________  255.255.255.0  ___.___.___.___  ___  n
  _____  ____          _____________  255.255.255.0  ___.___.___.___  ___  n
```

Figure 18: IP Interfaces screen (S8300 Media Server)

```
list ip-interface                                                Page 1 of 4

                                IP INTERFACES

                                                                        Net
ON Type  Slot  Code  Sfx Node Name     Subnet Mask   Gateway Address    Rgn  VLAN
y PROCR  ____  ____  _   procr_______  255.255.255.0  192.11.128.254   1__  n
  _____  ____          _____________  255.255.255.0  ___.___.___.___  ___  n
  _____  ____          _____________  255.255.255.0  ___.___.___.___  ___  n
  _____  ____          _____________  255.255.255.0  ___.___.___.___  ___  n
  _____  ____          _____________  255.255.255.0  ___.___.___.___  ___  n
  _____  ____          _____________  255.255.255.0  ___.___.___.___  ___  n
  _____  ____          _____________  255.255.255.0  ___.___.___.___  ___  n
  _____  ____          _____________  255.255.255.0  ___.___.___.___  ___  n
  _____  ____          _____________  255.255.255.0  ___.___.___.___  ___  n
  _____  ____          _____________  255.255.255.0  ___.___.___.___  ___  n
```

5. Verify that the **ON** field contains **y** (yes) to enable TN799, TN2302, or PROCR interfaces for the media server.

6. For DEFINITY Servers or S8500, S8700, or S8710 Media Servers only, verify that the C-LAN and IP Media Processor resources are allocated and assigned in the **Net Rgn** (Network Regions) field for optimal support of G150 Media Gateway units. Ideally, the resources are in the same network region as the G150 Media Gateway.

   For an S8300 Media Server only, verify that the Processor (PROCR) is assigned in the **Net Rgn** (Network Regions) field for optimal support of G150 Media Gateway units. Ideally, the resources are in the same network region as the G150 Media Gateway.

   Note:

   The IP addresses for a C-LAN (S8500 and S8700-series Media Servers) or PROCR ((S8300 Media Server) must match exactly the IP address of the primary gatekeeper as entered on the Configuration screen in the G150 Manager. See Gatekeeper Registration in Chapter 3.

7. If any changes are necessary, exit the list IP Interfaces screen. Type **change ip-interfaces <slot_number_of_circuit_pack>** (for DEFINITY Servers or S8500, S8700, or S8710 Media Servers) or **change ip-interfaces procr** (for an S8300 Media Server) and press **ENTER** to display the IP Interfaces screen.

Figure 19: Change IP Interface screen

```
change ip-interface 02c08                                                  Page 1 of 1
                                 IP INTERFACES
                 Type: CLAN                                  ETHERNET OPTIONS
                 Slot: 02c08                                          Auto? n
             Code Sfx: TN799 D                                       Speed: 100Mbps
            Node Name: clan1xxxxxxxxxx                              Duplex: Full
           IP Address: 123.456.789.012
          Subnet Mask: 255.255.255.0
      Gateway Address: 192.11.128.254
   Enable Ethernet Pt? y
       Network Region: 1
                 VLAN: n


Number of CLAN Sockets Before Warning: 400
```

8. Make appropriate changes.

Administer Ethernet data module

Note:

For an S8300 Media Server, skip this procedure. This procedure does not apply.

You need to add an Ethernet data module on the Data Module screen for the C-LAN connection if one is not already present. However, to add an Ethernet data module, you must first disable the Ethernet port of the C-LAN connection, then enable the Ethernet port after you have added the Ethernet data module.

1. Type **change ip-interfaces <slot_number_of_circuit_pack>** (for DEFINITY Servers or S8500, S8700, or S8710 Media Servers) or **change ip-interfaces procr** (for an S8300 Media Server) and press **ENTER** to display the IP Interfaces screen.
2. Type **n** in the Enable Ethernet Pt field.
3. Press **Submit** to save your changes.
4. Type **add data-module next** and press **ENTER** to display the Data Module screen.

   The system displays the Data Module screen.

Figure 20: Data Module screen

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

    Data Extension: 2377       Name: ethernet on link 2
               Type: ethernet
               Port: 01c17
               Link: 2

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

5. Complete the following fields:
   - **Type**: Type **Ethernet**.
   - **Port**: Type the slot location of the C-LAN card and **17** as the port number.
   - **Link**: The link must be in the range **1 – 64** for DEFINITY Server SI and the S8500, S8700, and S8710 Media Servers, or **1 – 8** for DEFINITY Server CSI.
6. Press **Submit** to save your changes.
7. Return to the Change IP Interfaces screen for the C-LAN circuit pack, and type **y** in the Enable Ethernet Pt. field.

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 Communication Manager.

CODEC bandwidth usage

The bandwidth usage of the available CODECs help determine which CODEC(s) you administer. The signaling information between the G150 Media Gateway and the C-LAN board (CSI, SI, S8500, S8700, or S8710) or processor interface (S8300) consists of H.323 compatible messages, which are exchanged over TCP/IP control links. The control links for the analog phones are permanently established for the length of time that a phone is registered. There are two to four additional control links, one that is a shared signaling connection for the analog trunks, and one signaling connection for each digital trunk. With rough estimation, an active signaling channel consumes about 3 Kbps bandwidth.

Calculating the amount of bandwidth that voice-encoding-over-IP requires is a little more complex. The G150 Media Gateway offers a choice of CODECs from the G.711, G.723 (not recommended), and G.729 family at the point of call registration. The media server selects 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

You multiply the bandwidth for each CODEC by the various packet sizes (expressed in ms) to obtain the number of bits of payload per packet for various packet sizes.

Table 5: 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.

Each packet also includes a 464-bit header (regardless of CODEC and packet size) in addition to its payload.

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

- BW = (BW, no overhead) x [(464 + bits payload per packet) / 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 6: 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

Instructions

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

   The system displays the IP CODEC Set screen.

Figure 21: IP CODEC Set screen

```
change ip-codec-set 2                                          Page 1 of 1
                           IP CODEC Set

    CODEC Set:

     Audio          Silence          Frames        Packet
     CODEC      Suppression          Per Pkt       Size(ms)
 1:  G.729A           n                 2            20
 2.  G.711MU          n                 3            30
```

2. Administer a list of audio CODECs, in preference order, that are supported by the G150 Media Gateway. Supported codecs are:
   - **G.711MU** (G.711 Mu-law)
   - **G.711A** (G.711 A-law)
   - **G.723** (supported, but not recommended)
   - **G.729a** (the commonly used codec between G150 Media Gateways)
3. For each codec, complete the following fields:
   - **Silence suppression**: Type **y** (yes) or **n** (no) to enable or disable RTP-level silence suppression.
   - **Frames per Pkt**: Type a number of 10ms frames, from **2** to **3** (or blank) per packet. The default for the G.711 codec is two frames. For the G.723 codec, the default is three.

   Packet Size is a display-only field.
4. Press **ENTER** to save the changes.

Administer network regions

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

Multinational locations

If you are deploying G150 Media Gateways in multiple countries, be sure that the media server and its IP Media Processor(s) or VoIP engine reside in the network region most central and appropriate for the G150 Media Gateways. Since the country-specific tones assigned to the VoIP resources are based on where the server's VoIP resource resides and the tones are used for all G150 traffic, the server's VoIP resource should be located in the country requiring the most commonly-needed tones.

If different G150 Media Gateways must use different country-specific tone parameters, the DEFINITY Server CSI/SI or the S8500, S8700, or S8710 media server has the ability to support each set of tone parameters with a specifically-assigned IP Media Processor board. In this case, each processor board is assigned to the specific region that its associated G150 Media Gateway is assigned to. To have multiple IP Media Processors assigned in this way, there must be a unique carrier (MCC1) or cabinet/gateway for each IP Media Processor.

Note:

An S8300 Media Server cannot support multiple country tone parameters for the G150 Media Gateways.

Instructions

To administer the network region for both the server's central gateway and the G150 Media Gateway, do the following:

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

   The system displays the IP Network Region screen.

Figure 22: IP Network Region screen, example for server.

```
change ip-network-region 1                                    Page 1 of 19
                              IP NETWORK REGION
  Region: 1
Location: 1                Home Domain:
    Name: MainS8500HQ
                                 Intra-region IP-IP Direct Audio: y
AUDIO PARAMETERS                 Inter-region IP-IP Direct Audio: y
   Codec Set: 1                            IP Audio Hairpinning? y
UDP Port Min: 2048
UDP Port Max: 65535                        RTCP Reporting Enabled? y
                               RTCP MONITOR SERVER PARAMETERS
DIFFSERV/TOS PARAMETERS        Use Default Server Parameters? y
 Call Control PHB Value: 46                  Server IP Address:   .   .   .
        Audio PHB Value: 46                        Server Port: 5005
802.1P/Q PARAMETERS                  RTCP Report Period(secs): 5
 Call Control 802.1p Priority: 7
        Audio 802.1p Priority: 6     AUDIO RESOURCE RESERVATION PARAMETERS
H.323 IP ENDPOINTS                                    RSVP Enabled? y
  H.323 Link Bounce Recovery? y                 RSVP Refresh Rate(secs): 15
 Idle Traffice Interval (sec): 20    Retry upon RSVP Failure Enabled? y
     Keep-Alive Interval (sec): 6               RSVP Profile: guaranteed-service
             Keep-Alive Count: 5     RSVP unreserved (BBE) PHB Value: 40
```

2. On the IP Network Region screen, complete the following fields:
   - **Name**: Assign a unique name to the network region of the server's central gateway.
   - **CODEC Set**: Assign the CODEC set for the Network Region, usually **1**.
   - **Intra-region IP-IP Direct Audio**: Type **y** (yes) to allow shuffling between endpoints in the server's region.
   - **Inter-region IP-IP Direct Audio**: Type **y** (yes) to allow shuffling between server's endpoints and endpoints in other network regions.

- **IP Audio Hairpinning**: Type **y** (yes) to enable or **n** (no) to disable hairpinning between endpoints in the server's region. Though the G150 Media Gateway performs better without hairpinning, there may be many other gateways or devices in the network region that can benefit from hairpinning.
- **UDP Port Min**: Type **2048**. This is used by the Media Processor for audio RTP/RTCP connections.

Note:

See UDP Port Assignments on page 65 for more information on UDP ports.

- **UDP Port Max**: Type **65535**. This is used by the Media Processor for audio RTP/RTCP connections.
- **Call Control PHB Value**: Assign the per hop behavior for call control messages to agree with the differentiated services setting in the network. The value **46** is the default and is required for regions that contain G150 Media Gateways.
- **Audio PHB Value**: Assign the per hop behavior for audio signals to agree with the differentiated services setting in the network. The value **46** is the default and is recommended for regions that pass VoIP traffic with Diff services between Communication Manager-supported media gateways, including G150 Media Gateways.

3. For DEFINITY Servers or S8500, S8700, or S8710 Media Servers only, if C-LAN and IP Media Processing resources are shared between regions, go to page 3, which is the Inter Network Region Connection Management screen. Otherwise, go to Administer multiple locations on page 67.

Note:

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

Figure 23: IP Network Region screen (page 3), example for server

```
change ip-network-region 1                                          Page   3 of 19

                   Inter Network Region Connection Management

 src dst    codec    direct                                          Dynamic CAC
 rgn rgn     set      WAN     WAN-BW limits  Intervening-regions       Gateway
 1   1        0
 1   2        2        y      256:Kbits       1    ___  ___  ___
 1   3        2        y      256:Kbits       1    ___  ___  ___
 1   4        2        n                      1    ___  ___  ___
 1   5        1        n                      6    ___  ___  ___
 1   6        1        y          :NoLimit
 1   7        1        y          10:Calls
 1   8
 1   9
 1   10       5        n                      1    ___  ___  ___
 1   11
 1   12
 1   13       6        n                      1    ___  ___  ___
 1   14
 1   15
```

4. 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 regions 3 and 4 using CODEC set 2.
   - Network region 10 using CODEC set 5.
   - Network region 13 using CODEC set 6.
5. Press **ENTER** to save the changes.
6. Type **change ip-network-region <number>** and press **ENTER** to display the IP Network Regions screen again.

   The system displays the IP Network Region screen.

Figure 24: IP Network Region screen, example for G150

```
change ip-network-region 1                                    Page 1 of 19
                              IP NETWORK REGION
  Region: 1
Location: 2                Home Domain:
    Name: remoG150denver
                              Intra-region IP-IP Direct Audio: y
AUDIO PARAMETERS              Inter-region IP-IP Direct Audio: y
   Codec Set: 2                         IP Audio Hairpinning? y
UDP Port Min: 2048
UDP Port Max: 65535                   RTCP Reporting Enabled? y
                                RTCP MONITOR SERVER PARAMETERS
DIFFSERV/TOS PARAMETERS         Use Default Server Parameters? y
 Call Control PHB Value: 46                 Server IP Address:   .   .   .
        Audio PHB Value: 46                       Server Port: 5005
802.1P/Q PARAMETERS                    RTCP Report Period(secs): 5
 Call Control 802.1p Priority: 7
        Audio 802.1p Priority: 6     AUDIO RESOURCE RESERVATION PARAMETERS
H.323 IP ENDPOINTS                                    RSVP Enabled? y
  H.323 Link Bounce Recovery? y              RSVP Refresh Rate(secs): 15
 Idle Traffice Interval (sec): 20    Retry upon RSVP Failure Enabled? y
     Keep-Alive Interval (sec): 6              RSVP Profile: guaranteed-service
             Keep-Alive Count: 5     RSVP unreserved (BBE) PHB Value: 40
```

7. On the IP Network Region screen, complete the following fields:
   - **Name**: Assign a unique name to the network region for the G150 Media Gateway.
   - **CODEC Set**: Assign the CODEC set for the G150 Media Gateway associated with this Network Region.
   - **Intra-region IP-IP Direct Audio**: Type **y** (yes) to allow shuffling between endpoints in the G150 Media Gateway's region.
   - **Inter-region IP-IP Direct Audio**: Type **y** (yes) to allow shuffling between G150 Media Gateway endpoints and endpoints in other network regions.
   - **IP Audio Hairpinning**: Type **y** (yes) to allow, or **n** (no) to disallow, hairpinning between G150 Media Gateway endpoints and endpoints in other network regions. Though the G150 Media Gateway performs better without hairpinning, there may be many other gateways or devices in the network region that can benefit from hairpinning.
   - **UDP Port Min**: Type **2048**. This is used by the Media Processor for audio RTP/RTCP connections.

   Note:

   See UDP Port Assignments on page 65 for more information on UDP ports.

- **UDP Port Max**: Type **65535**. This is used by the Media Processor for audio RTP/RTCP connections.
- **Call Control PHB Value**: Assign the per hop behavior for call control messages to agree with the differentiated services setting in the network. The value **46** is the default and is required for regions that contain G150 Media Gateways.
- **Audio PHB Value**: Assign the per hop behavior for audio signals to agree with the differentiated services setting in the network. The value **46** is the default and is required for regions that contain G150 Media Gateways.

8. For DEFINITY Servers or S8500, S8700, or S8710 Media Servers only, if C-LAN and IP Media Processing resources are shared between regions, go to page 3, which is the Inter Network Region Connection Management screen. Otherwise, go to Administer multiple locations on page 67.

Note:

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

Figure 25: IP Network Region screen (page 3), example for G150

```
change ip-network-region 3                                    Page   3 of 19

                  Inter Network Region Connection Management

 src dst    codec    direct                                          Dynamic CAC
 rgn rgn     set      WAN     WAN-BW limits  Intervening-regions       Gateway
 3   1        2        y          256:Kbits
 3   2        1        n                      1    ___  ___  ___
 3   3        2
 3   4        2        n                      1    ___  ___  ___
 3   5        1        n                      6    ___  ___  ___
 3   6        1        y          :NoLimit
 3   7        1        y          10:Calls
 3   8
 3   9
 3   10       5        n                      1    ___  ___  ___
 3   11
 3   12
 3   13       6        n                      1    ___  ___  ___
 3   14
 3   15
```

9. Specify CODEC sets for your shared network regions as done in the example above. In the example, network region 3 will share resources with the following other network regions, using the specified CODEC sets:
   - Network region 1 using CODEC set 2.
   - Network region 4 using CODEC set 2.
   - Network region 10 using CODEC set 5.
   - Network region 13 using CODEC set 6.

UDP Port Assignments

The G150 Media Gateway uses a single block of UDP ports for audio connections. The default block starts at 49152. For a given G150 station or trunk port, one UDP port is used for RTP and the next consecutive UDP port is used for RTCP. For example, with the default block setting, analog trunk 2 uses 49154 for the RTP/UDP connection and 49155 for the RTCP/UDP connection.

Table 7: Port Assignments for Analog Trunks, identifies the port assignments for the analog trunks. This table is used in combination with one of the following three tables, depending on the G150 Media Gateway's use of a WAN card:

- Table 8: Port Assignments for Analog Stations (no BRI or PRI WAN card)
- Table 9: Port Assignments for BRI Trunks and Analog Stations (BRI WAN card)
- Table 10: Port Assignments for PRI Trunks and Analog Stations (T1 WAN card)

The port assignments identified in each of the three additional tables continues the numbering sequence from Table 7: Port Assignments for Analog Trunks.

If the RTP UDP Port information needs to be changed for compatibility with routers which offer RTP header compression only on ports in certain ranges, it can be updated via the G150 Manager application within **System**|**S0 Gateway**|**RTP UDP Port Base** field.

Table 7: Port Assignments for Analog Trunks

Trunk/Station Type	RAS UDP Port	Q.931 Port	RTP UDP Port	RTCP UDP Port
1st Analog Trunk	6000	7000	49152	49153
2nd Analog Trunk	6000	7000	49154	49155
3rd Analog Trunk	6000	7000	49156	49157
4th Analog Trunk	6000	7000	49158	49159

Table 8: Port Assignments for Analog Stations (no BRI or PRI WAN card)

Trunk/Extn Type	RAS UDP Port	Q.931 Port	RTP UDP Port	RTCP UDP Port
1st Analog Station	6001	7001	49160	49161
2nd Analog Station	6002	7002	49162	49163
3rd Analog Station	6003	7003	49164	49165
4th Analog Station	6004	7004	49166	49167

Table 9: Port Assignments for BRI Trunks and Analog Stations (BRI WAN card)

Trunk/Extn Type	RAS UDP Port	Q.931 Port	RTP UDP Port	RTCP UDP Port
1st BRI Trunk Ch 0	6001	7001	49160	49161
1st BRI Trunk Ch 1	6001	7001	49162	49163
2nd BRI Trunk Ch 0	6002	7002	49164	49165
2nd BRI Trunk Ch 1	6002	7002	49166	49167
3rd BRI Trunk Ch 0	6003	7003	49168	49169
3rd BRI Trunk Ch 1	6003	7003	49170	49171
4th BRI Trunk Ch 0	6004	7004	49172	49173
4th BRI Trunk Ch 1	6004	7004	49174	49175
1st Analog Station	6005	7005	49176	49177
2nd Analog Station	6006	7006	49178	49179
3rd Analog Station	6007	7007	49180	49181
4th Analog Station	6008	7008	49182	49183

Table 10: Port Assignments for PRI Trunks and Analog Stations (T1 WAN card)

Trunk/Extn Type	RAS UDP Port	Q.931 Port	RTP UDP Port	RTCP UDP Port
PRI Trunk Ch 0	6001	7001	49160	49161
PRI Trunk Ch 1	6001	7001	49162	49163
PRI Trunk Ch 2	6001	7001	49164	49165
. . .	. . .	. . .	. . .	. . .
PRI Trunk Ch 23	6001	7001	49204	49205
1st Analog Station	6002	7002	49206	49207
2nd Analog Station	6003	7003	49208	49209
3rd Analog Station	6004	7004	49210	49211
4th Analog Station	6005	7005	49212	49213

Administer multiple locations

The Locations screen allows you to assign time zone and daylight saving rule parameters by location. Since a G150 Media Gateway will most likely be remotely located from the media server, establish location parameters for each G150 region.

Instructions

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

   The system displays the Locations screen.

Figure 26: Locations screen (page 1)

```
change locations                                          Page   1 of   1
                                LOCATIONS

               ARS Prefix 1 Required For 10-Digit NANP Calls? y

 Loc. Name            Timezone  Rule      NPA    ARS Attd Loc.   Pre- Proxy Sel.
 No                    Offset                   FAC FAC  Parms. fix  Rte. Pat.
 1.  MainS8500HQ     + 00:00    1         312
 2.  remoG150denver- 01:00    1         303    ____ ____ __    ____ ________
 3.  Lincroft-01____ + 01:00    1         953    ____ ____ __    ____ ________
 xxx ________________ _ __:__   __        ___    ____ ____ __    ____ ________
 xxx ________________ _ __:__   __        ___    ____ ____ __    ____ ________
```

2. On the Locations screen, complete the following fields:
   - **Name**: Assign a name for this location, for example, Denver-01.
   - **Timezone Offset**: Enter the time difference in hours and minutes from the media server.
   - **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.
   - **NPA**: Type the appropriate area code for the location.
   - **ARS FAC**: Type an ARS FAC for outside dialing access if the number should be different than the system-wide ARS FAC.
   - **Attd FAC**: Type an Attendant FAC for attendant access if the number should be different than the system-wide attendant FAC.
   - **Loc. Parms**: Type the number of a set of location parameters if the G150 requires unique parameters such as loss parameters.
   - **Prefix**: If necessary for the G150 location, type the prefix that Communication Manager should insert to the calling number ID for calls made from the location.
   - **Proxy select route pattern**: Not applicable.
3. Press **ENTER** to effect the changes.

Administer Remote office

Perform Remote Office administration in Communication Manager on the media server before registering the G150 Media Gateway endpoints. This administration includes administering the G150 Media Gateway (Remote Office) and G150 stations.

Instructions

Remote Office

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

   The system displays the Remote Office screen.

Figure 27: Remote Office screen

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

     Node Name:  remoG150denver
Network Region:  22
      Location:  2
     Site Data:  Contact: Joe Smith
                 Phone: xxx-yyy-zzz
                 _____________________________
```

2. Complete the following fields:

   - **Node Name**: Assign a node name to the Avaya G150 Media Gateway. This name must correspond to the node name used on the IP Node Names screen.

   Note:

   This name must also match exactly the name of the G150 Media Gateway as entered on the **System | SO Gateway | Gateway Name** configuration in the G150 Manager. See Identifying the G150 to the Communication Manager in Chapter 3.

   - **Network Region**: Assign the number of a previously administered Network Region for the G150 Media Gateway. 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 G150 Media Gateway 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 G150 Media Gateway.

   The system displays the Remote Office Status screen.

   Note:

   In Figure 28, no stations are actually listed in the Stations Registered field until the stations are administered. Similarly, no signaling group registration appears until the signaling group is administered.

Figure 28: Status Remote Office screen

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

             Node Name:  remoG150denver              IP Address: 134.23 .107.22
       Network Region:  22
             Location:  2

Trunk Signaling Groups: *5

   Stations Registered:  4131  4102  4103  4104  4105  4108

* Signaling group is currently registered
```

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.

The **Stations Registered** field lists those stations that are registered in named mode.

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 G150 Media Gateway and the media server if the trunks to your central office are terminated *at the G150 Media Gateway*. If you are using the G150 Media Gateway solely for analog station connectivity, then you will not need an H.323 trunk or signaling group between the G150 Media Gateway and the media server.

Each G150 Media Gateway has its own listening port and signaling group for the digital trunks (T1 or BRI). 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.

Figure 29: Signaling Group screen (page 1)

```
                                                              Page 1 of 5
                                SIGNALING GROUP

Group Number  6__           Group Type:  h.323
                        Remote Office? y      Max Number of NCA TSC: 0__
                                  SBS? y       Max number of CA TSC: 0___
                                                Trunk Group for NCA TSC:  ___
     Trunk Group for Channel Selection: 6___
        Supplementary Service Protocol: a      Network Call Transfer: n
                       T303 Timer(sec): 10

      Near-end Node Name: clan          Far-end Node Name: remote office
    Near-end Listen Port: 5005       Far-end Listen Port: 7001
                                  Far-end Network Region:
            LRQ Required? n      Calls Share IP Signaling Connection? y
            RRQ Required? n

        Media Encryption? y                  Bypass If IP Threshold Exceeded? y
   Passphrase: ____________________________

DTMF over IP: out-of-band                          Direct IP-IP Audio Connections? y
                                                 IP Audio Hairpining? n
                                               Interworking Message: Progress
```

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 either the C-LAN that supports this G150 Media Gateway (S8700, S8710, or S8500 Media Server) or the S8300 Media Server's node name.
   - **Far-end Node Name**: Type the node name assigned to the remote office.

   Note:

   This name must match exactly the name of the G150 Media Gateway as entered on the **System | SO Gateway | Gateway Name** configuration in the G150 Manager. See Identifying the G150 to the Communication Manager in Chapter 3.
   - **Near-end Listen Port**: Type a port number in the 5000-9999 range.
   - **Far-end Listen Port**: Type **7001**. This is the dedicated TCP port in the G150 Media Gateway. For an explanation of the TCP port usage, please refer to Table 8, Table 9 and Table 10.
   - **Calls share IP Signaling Connection**: Type **y**.

- **Direct IP-IP audio connections**: Type **y** to enable IP call shuffling.
- **IP Audio Hairpinning**: Type **n** to disable. This setting prevents hairpinning for calls using this signaling group, even if the server's system parameters and the network regions have been enabled for hairpinning.

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**.

Figure 30: Trunk Group screen (page 1)

```
add trunk-group 6                                              Page 1 of 22
                                TRUNK GROUP
 Group Number: 6                   Group Type: isdn          CDR Reports: y
   Group Name: ro-link-denver              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: 6    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                          QSIG Value-Added: n
                                                      Digital Loss Group: 17
Incoming Calling Number - Delete:      Insert:                      Format:
              Bit Rate: 1200      Synchronization: async           Duplex: full
Disconnect Supervision - In? y  Out? n
Answer Supervision Timeout: 0
```

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 **6**.

     The default is 6, which supports interoperability with non-Communication Manager 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 media server 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 G150 Media Gateway.

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

Figure 31: Group Member Assignments screen

```
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               ro-link-denver 1                6
2:IP               ro-link-denver 2                6
3:
4:
5:
6:
7:
8:
9:
10:
```

4. On the Group Member Assignments screen, complete the following fields to add trunk group members:

   - **Port**: Type **IP**.

   Note:

   When the screen refreshes, Communication Manager replaces **IP** with a virtual trunk number in the format **Txxxxxx**.

   - **Sig Grp**: Assign the number of the signaling group that provides the signaling channel for this trunk group.

   Note:

   On the G150 Media Gateway, there is a maximum of 23 trunk group members for each T1 interface and 2 trunk group members for each BRI interface. All four BRI interfaces may be deployed.

5. Type **change signaling-group <number of signaling group>** and press **ENTER** to return to the signaling group screen. See Figure 29.

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.

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 G150 Media Gateway and the media server if the trunks to your central office are terminated *at the G150 Media Gateway.* If you are using the G150 Media Gateway solely for analog station connectivity, then you will not need an H.323 trunk or signaling group between the G150 Media Gateway and the media server.

Note:

Communication Manager only supports one analog signaling group to an individual G150 Media Gateway. All trunk group members will be part of this single managed signaling group. For example, if you are deploying any model of the G150 Media Gateway and have two analog WAN ports connected to the PSTN network, both of the circuit switched channels utilized are part of this one signaling group.

Each G150 Media Gateway 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 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.

Figure 32: Signaling Group screen (page 1)

```
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
                                   SBS?  n           Max number of CA TSC: 0
                                                   Trunk Group for NCATSC:
     Trunk Group for Channel Selection: 5
        Supplementary Service Protocol: a          Network Call Transfer? n
                        T303 Timer<sec>: 10

  Near-end Node Name:  clan                    Far-end Node Name: remote office 6
Near-end Listen Port:  5005                 Far-end Listen Port:7000
                                         Far-end Network Region: 6
        LRQ Required? n               Calls Share IP Signaling Connection? y
        RRQ Required? y
    Media Encryption: n                   Bypass If IP Threshold Exceeded?  n

        DTMF Over IP: out-of-band          Direct IP-IP Audio Connections? y
                                                     IP Audio Hairpinning? n
                                          Interworking Message: PROGress
```

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 G150 Media Gateway.
   - **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 **7000**. This is the dedicated TCP port in the G150 Media Gateway.

   Note:

   The far-end port must be 7000. The near-end port must be unique; it must be different from the far-end port.

   - **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. This setting prevents hairpinning for calls using this signaling group, even if the server's system parameters and the network regions have been enabled for hairpinning.
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**.

Figure 33: Trunk Group screen (page 1)

```
add trunk-group 5                                          Page 1 of 22
                                TRUNK GROUP
 Group Number: 5                    Group Type: isdn          CDR Reports: y
   Group Name: ro-anal-den                 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:unr
                           Far End Test Line No:
 TestCall BCC: 4
TRUNK PARAMETERS
        Codeset to Send Display: 6    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                          QSIG Value-Added? n
                                                       Digital Loss Group: 7
Incoming Calling Number - Delete:      Insert:             Number Format:
              Bit Rate: 1200      Synchronization: async          Duplex: full
Disconnect Supervision - In? y  Out? n
Answer Supervision Timeout: 0
```

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 **6**.

     The default is 6, which supports interoperability with non-Communication Manager 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 media server cannot tell that this ultimately terminates in an analog trunk. Loss group 7 is the correct loss group for analog trunks on the G150 Media Gateway.
3. Go to the Group Member Assignments screen to associate the trunk group with the signaling group.

Figure 34: Group Member Assignments screen

```
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                ro-anal-den   1               5
2:IP                ro-anal-den   2               5
3:
4:
5:
6:
7:
8:
9:
10:
```

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. Either two trunks (for the G150 2T + 4A model) or four trunks (for the G150 4T+4A+8DS model) 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 Figure 32.
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 G: 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 a remote office telephone, the extension you add must match your dial plan.

The following telephones may be added to a remote office location:

IP telephones	Analog telephones
4601	6211
4602	6219
4602SW	6221
4606	Interquartz 9330-AV
4610SW	Interquartz 9335-AV
4612	
4620	
4620SW	
4624	

Note:

The extension numbers and security codes you enter in Communication Manager must exactly match the extensions and passwords you enter in the G150 Manager. See Extension Numbering within G150 and Setting up Users in Chapter 3 for details on configuring this information on the G150 Manager interface.

Add an analog telephone

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

   The system displays the Station screen.

Figure 35: Station screen (page 1)

```
add station 4101                                          Page 1 of 4
                                   STATION

Extension: 4101                          Lock Messages? n          BCC: 0
     Type: 6210                        Security Code: 1234567     TN: 1
     Port: x                      Coverage Path 1: ___          COR: 1
     Name: Remote main            Coverage Path 2: ___          COS: 1
                                  Hunt-to-Station:           Tests: y

STATION OPTIONS
              Loss Group: _                  Message Waiting Indicator: none
    Off Premises Station:




                                                 Remote Office Phone? y
```

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 G150 Media Gateway registration using this extension. The maximum length of the security code/password is seven digits.

   Note:

   The security code must match the password administered on the G150 Manager for the extension.

   - **Remote Office Phone**: Type **y** (yes).
3. Press **ENTER** to save your changes and go to page 2 of the Station screen.

Figure 36: Station screen (Page 2)

```
change station 4101                                          Page 2 of X
                                   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: none
            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? n            Per Station CPN - Send Calling Number? _
       Service Link Mode: as-needed         Busy Auto Callback without Flash? y
         Multimedia Mode: basic
    MWI Served User Type: _______                Display Client Redirection? n
         Automatic Moves:
              AUDIX Name:                       Select Last Used Appearance? n
                         _                        Coverage After Forwarding? _
     Recall Rotary Digit? n                         Multimedia Early Answer? n

Remote Softphone Emergency Calls: as-on-local   Direct IP-IP Audio Connections? y
Emergency Location Ext: 4501                              IP Audio Hairpinning? n
```

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 3: Configuring the G150 Media Gateway with Manager in this guide for information on administering the G150 Media Gateway.

5. In the **IP Audio Hairpinning** field, type **n** to disable hairpinning for optimal performance with the G150. This setting prevents hairpinning for calls using this telephone, even if the the server's system parameters and the network regions have been enabled for hairpinning.
6. Press **ENTER** to save your changes.

Add an IP telephone

Note:

Calls over IP telephones are processed using the VoIP resources located with the server, either the IP Media Processor (S8500, S8700, or S8710 Media Server) or the Processor (S8300 Media Server). As a result, the country tones used in call processing are typically those tones associated with the country in which the server resides, not the tones used typically in the location in which the G150 resides.

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

Figure 37: Station screen (page 1)

```
add station 4101                                          Page 1 of 4
                                    STATION

Extension: 4101                          Lock Messages? n          BCC: 0
     Type: 4602                        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

 Survivable GK Node Name:                            Media Complex Ext:
                                                          IP Softphone? n
```

2. On the Station screen, complete the following fields:
   - **Type**: Type in the model of the IP phone you are adding.

   Note:

   The Remote Office Phone field disappears and the Survivable GK Node Name field appears when you enter an IP phone model in the Type field.

   - **Port**: Type **x**.
   - **Name**: Identify the phone for your records.
   - **Security Code**: Match the password set up on the G150 Media Gateway administration.
   - **Survivable GK Node Name**: Type the name of the G150 Media Gateway with which this phone is co-located. Check the IP Node Names screen for names.
3. Go to page 2 of the Station screen.

Figure 38: Station screen (page 2)

```
change station 4101                                              Page 2 of X
                                    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: none
            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? n            Per Station CPN - Send Calling Number? _
       Service Link Mode: as-needed         Busy Auto Callback without Flash? y
         Multimedia Mode: basic
    MWI Served User Type: _______              Display Client Redirection? n
         Automatic Moves:
              AUDIX Name:                     Select Last Used Appearance? n
                                _               Coverage After Forwarding? _
     Recall Rotary Digit? n                     Multimedia Early Answer? n

Remote Softphone Emergency Calls: as-on-local   Direct IP-IP Audio Connections? y
Emergency Location Ext: 4501                              IP Audio Hairpinning? n
```

4. In the **Direct IP-IP Audio Connections** field (second page), type **y** (yes).
5. In the **IP Audio Hairpinning** field, type **n** to disable hairpinning for optimal performance with the G150. This setting prevents hairpinning for calls using this telephone, even if the the server's system parameters and the network regions have been enabled for hairpinning.
6. 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.

Administer features and codes

To administer features, feature access codes, and trunk access codes, see *Administrator's Guide for Avaya Communication Manager*, 555-233-506. The codes you administer should be mirrored, whenever possible, in administration of the G150 for survivable mode.

Chapter 3: Configuring the G150 Media Gateway with Manager

This chapter covers the procedures for configuring a G150 Media Gateway and remote accesss setup. Once the hardware components and Manager have been installed, the G150 can be configured.

Configuring the G150 Media Gateway to interact with the Communication Manager requires configuring the Communication Manager for the G150 and configuring the G150 to recognize and connect to the Communication Manager. This section covers configuring all variants of the G150 via the Manager application software (on the Administration CD supplied with each system). Once loaded, Manager has context sensitive help files that provide information relating to the configuration fields.

G150 Media Gateway Overview

The G150 Media Gateway works with a Communication Manager to form a single distributed system. The system's primary functioning mode is refered to in this documentation as "sub-tending" mode. Sub-tending mode is defined as the following:

- An established connection between the G150 and Communication Manager.
- The G150 operates as an H.323 gateway that is managed by the Communication Manager Feature Server, in accordance with the Communication Manager Remote Office feature group.
- Control of trunks is via the Communication Manager.
- All telephone features and functions are driven by the Communication Manager.

In the event that the connection to Communication Manager becomes unavailable for any reason - WAN, LAN or equipment failure - the G150 attempts to register against an alternative CLAN or Processor CLANs. If no alternative gatekeeper is available, the G150 changes from sub-tending to survivable mode. In survivable mode, G150 acts as a stand-alone sytem where all trunking and telephone functions are provided locally. The G150 becomes a gatekeeper and handles calls using its own local call routing/dial plan configuration. In survivable mode, G150 provides the following features to its registered users and directly connected telephones while attempting to re-register to the gatekeeper:

- Internal and External Calls
- CLI/ANI Display
- Hold
- Supervised Transfer

- Unsupervised Transfer
- Call Waiting Indication
- Last Number Redial
- Drop Call

G150 WAN Considerations

The G150 is connected to a Media Server running Communication Manager using an IP data connection over a WAN. The WAN can be connected directly to the G150 or by a third party router where data infrastructure already exists or the appropriate WAN interface is not available on the G150 itself.

Before connecting the G150 to Communication Manager, ensure that the following has taken place:

- Make all the necessary G150 specific configuration on Communication Manager.
- Make all the necessary G150 configurations via Manager (a PC-based application software for administering the G150.)
- Connect the phones to the G150.
- Test survivable mode. See Testing an Installation on page 144 for more information.
- Ensure there is IP connectivity between the G150 and Communication Manager.

See Connecting G150 to the Network & Communication Manager on page 128 for more information regarding the options for connecting the G150 to the Communication Manager.

Before going to the Customer's Site

The project manager should provide you with forms that contain all the information needed to prepare for this installation. The information primarily consists of IP addresses, subnet mask addresses, logins, passwords, people to contact, the type of system, and equipment you need to install.

Verify that the information provided by the project manager includes all the information requested in your planning forms.

Appendix B: Information Checklists, provides several checklists to help you gather the installation and upgrade information.

Quick Reference Install and Configuration

G150 is a flexible product that can be set up and configured in several ways, depending on network requirements, IP phone usage, etc. However, there are bare minimum installation and configuration steps required to get G150 functional. These steps are:

- Configure Communication Manager to communicate with the G150. See Chapter 3: Configuring the G150 Media Gateway with Manager.
- Install the Manager application. See The Manager Application Software on page 88.
- Manage Administrator and other operator accounts for access to Manager and G150 as necessary. See Update Manager Account Information on page 93.
- Specify an IP address for the G150 (if necessary). See Specify an IP Address to the G150 on page 95.
- Change the G150 system password. See Change System Password on page 97.
- Configure G150 to communicate with Communication Manager. See Configure G150 for the Communication Manager on page 99.
- Configure trunks on the G150. See Trunk Configuration on page 104.
- Administer G150 dial plan to correspond with the dial plan on Communication Manager. See Dial Plan Administration on page 119.
- Connect all telephones to the G150. See Chapter 5: G150 Media GatewayTelephone Support.
- Test the phones in survivable mode. See Testing an Installation on page 144.
- Connect G150 to the network and Communication Manager. See Connecting G150 to the Network & Communication Manager on page 128.
- Test the phones in subtending mode. See Testing an Installation on page 144.

The Manager Application Software

Programming Tools

The G150 supports programming through any one of its 10/100 Base-T switch port connections. The tools required for programming of a newly installed G150 system are:

- PC running Windows 98 (2nd Edition), 2000 Professional (SP2) & Server (SP2), XP Professional & XP Professional Server, NT4 Workstation (SP6) & NT4 Server (SP6) or 2003.
  - If you are installing Voicemail Pro on the same PC, only 2000 Professional (SP2) & Server (SP2), Windows XP Professional & XP Professional Server, or 2003 is supported. Voicemail Pro is only supported on these operating systems. See Chapter 4: Voicemail for G150 Media Gateway for information on Voicemail Pro.
- PC with a LAN (NIC) card with either a fixed IP address (allocated by your system administrator) or by using DHCP to obtain an IP address.
- G150 Cat. 5E patch cable (red - supplied with system).
- G150 Feature Key (optional).

PC to G150 LAN Port Connection

A G150 system, when first powered up, will scan LAN1 and LAN2 for a DHCP server that will allocate it with an IP address. If the G150 system does not find a DHCP server, then it will automatically become a DHCP server itself with an IP address of 192.168.42.1. The G150 system will allocate an IP address to the PC if required. Initially, the G150 system assumes that all addresses are on the local LAN and that the PC software supplied uses broadcast to establish communication with the G150 system.

The G150 can be connected in one of two ways; either directly to a PC or as part of a LAN. Both methods use a G150 Cat. 5E patch cable connected between one of the LAN ports on the front of the G150 and the PC/LAN.

- Direct Connection: This method is used for local system programming directly from a PC.
- LAN Network Connection: This is the option to use for remote programming access. It will require liaison with the LAN network manager to obtain the IP address details and to ensure that the IP traffic routing is allowed. When connected to an IP LAN network, you must consult with the Network Manager to obtain the required IP settings. For IP operation, the G150 requires a static IP address including a subnet mask and default gateway value.

Note:

It is strongly recommended that the LAN ports on the front of the G150 (configured via **LAN1** on Manager's **System** configuration form) are used to connect local IP phones and the G150 operates as the IP phones' DHCP server.

Installing the Manager Software

Before any aspects of the G150 can be configured, a configuration software application called Manager must be installed on the PC that is connected to the G150. The Manager software is available from the Administrator CD.

With the initial assembly completed and your PC connected to the G150, do the following to install the Manager software:

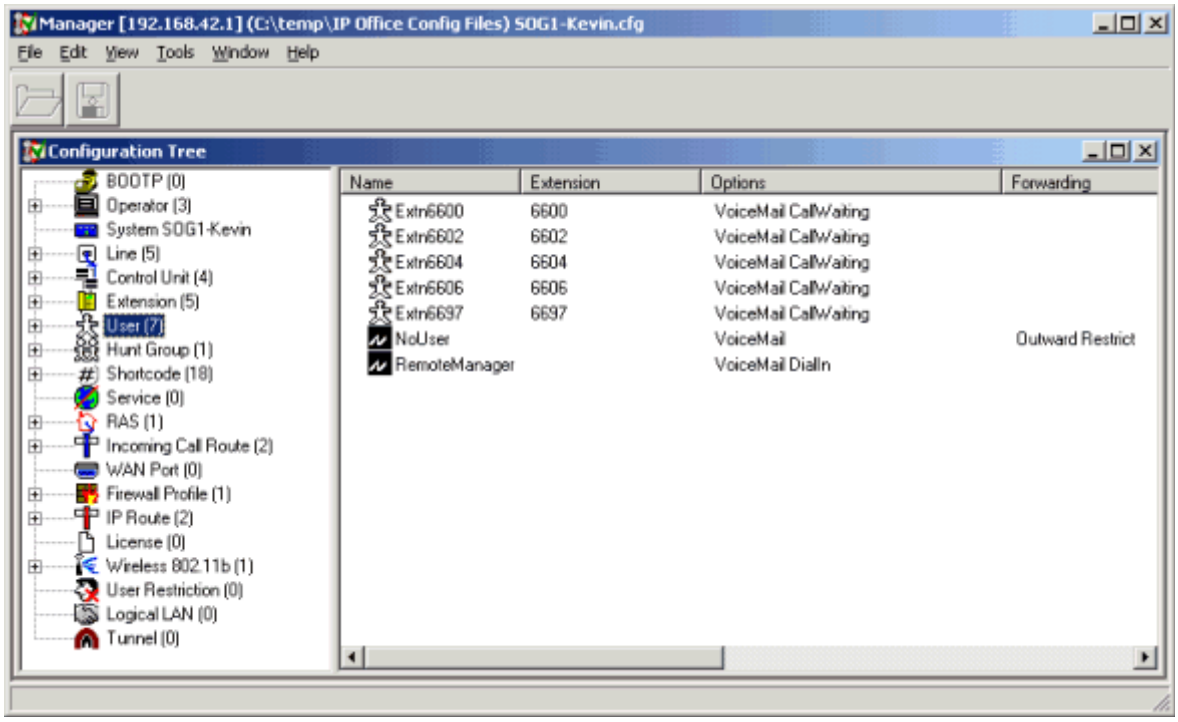
1. Insert the Administrator CD into the PC's CD drive. The CD autoruns. You are initially presented with the option to select which language you wish to use. Select the language from the pull down list and click **OK**.
2. The InstallShield Wizard for the G150 Admin Suite is started. Click **Next**.
3. The Destination folder location option menu is displayed. Either accept the default location of where the Administration Suite is to be installed (click **Next)** or change the location by clicking **Browse** and entering a new location.
4. Select the following components to be installed:
   - **System Monitor:** Application for tracking the G150 Media Gateway system's performance.
   - **Manager:** Application for configuring the G150 Media Gateway.
5. Deselect the other components.
6. Click **Next**.
7. Name the program folder or accept the default (**G150**), click **Next** and wait for the Administration Suite installation to be completed. This can take several minutes.
8. Installation runs and on completion, select **Finish**. No reboot is necessary after the installation of this software application.

The Manager configuration tool is installed on your PC and you are now ready to configure the G150.

Editing a Configuration

Manager displays the G150's configuration as a series of icons in two panels, as displayed in Figure 39.

Figure 39: Manager Configuration Window



The left-hand panel contains a Configuration Tree, with icons used to group different types of configuration entries. Double-click on a top-level icon within the configuration tree to expand or collapse the display of matching entries under each icon. Click on the top-level icon to display the matching entries in the right-hand panel.

Double-click on an entry in either the left or right-hand panel to display the configuration form for that entry. Each form contains a range of settings appropriate to the type of entry. Each form may consist of a number of tabbed pages (referred to as 'tabs').

Once accessed via the Configuration Tree, the configuration entries can be handled in the following ways:

Right Mouse Button

The right mouse button can be used within the right hand side pane of the configuration tree where a menu with options for **View**, **Edit**, **New** and **Delete** is displayed. These options allow you to view, edit or delete an existing entry or create a new entry.

Sorting

Each branch of the Configuration Tree lists its entries under column headings (for example, **Users** are listed by **Name**, **Extension**, **Options** and **Forwarding** etc.) To change the entry order, either ascending or descending, click on the column heading, eg. to view the Users in descending order, click on the **Name** column.

Drag and Drop

Entries can be copied between configuration forms using drag and drop. For example, a short code created for a user can be copied to another User by dragging the short code between the two open forms.

Direct Access

In most cases where a list box is used to select a Hunt Group, Firewall Profile etc., it is possible to double-click on this entry to enable a view or edit of the relevant form.

Saving a Configuration

After making any G150 configuration changes, the new configuration needs to be saved before the changes are reflected. When saving a configuration, the new configuration is sent back to the G150 control unit for updating. Hence, the terms "saving" and "sending" a configuration are used interchangeably within Manager. There are two ways to save a configuration, via a system merge or a full reboot of the G150 control unit. Manager tracks the changes made to the configuration so that if all the changes made can be merged, then the option for merging (**Merge Config**) will automatically be selected and if a reboot is required, **When Free** will be selected. Although a reboot only takes a few seconds, it cuts off any calls in progress. To avoid upsetting users, select the **Reboot When Free** option.

Updates made to the **BOOTP** and **Operator** configuration do not require a merge or reboot because only Manager specific information is effected and nothing needs to be sent to the G150.

The following configuration requires a full reboot:

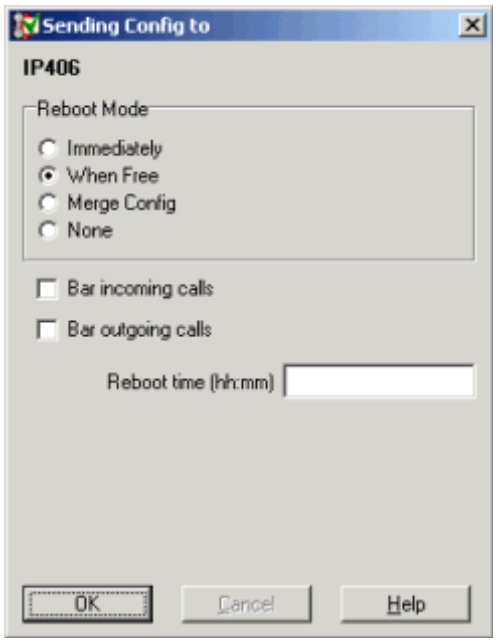
- System
- Line
- Unit
- Extension
- WAN Port
- Wireless
- Logical LAN
- Tunnel

All the other configuration can be merged back to the G150.

To save a G150 configuration:

1. Click the icon or choose **File | Save**.

Figure 40: Manager Save screen



2. The save action required is automatically selected based on changes made to the configuration. If a reboot option is selected by the system, then a reboot MUST be performed for the configuration changes to be reflected. If **Merge Config** is selected by the system, you can override this selection and perform a reboot if you desire. The options available are:

   - **Immediately -** Reboots the Control Unit immediately and will cut off any calls in progress.
   - **When Free -** Reboots the G150 when the system is free (no calls in progress). The following options are only available with **When Free** selection:
     - **Bar Incoming Calls:** When selected, this option is checked with the **When Free** option and the system will bar all new incoming calls until after the reboot
     - **Bar Outgoing Calls:** When selected, this option is checked with the **When Free** option and the system prevents all new outgoing calls until after the reboot
     - **Reboot Time (hh:mm):** The system waits until this time before attempting to reboot. The instruction is stored in the G150 not on the Manager PC.

- **Merge Config -** This option allows new features to be made active without rebooting the G150, but only certain configuration changes can be merged. Merged changes are copied to both the system's RAM and Flash memory.
- **None -** Does not send any configuration to the G150.

3. If you did not enter a system password when you received the configuration, then a password MUST be entered at this point to send the configuration to the G150.
4. Select **OK**.

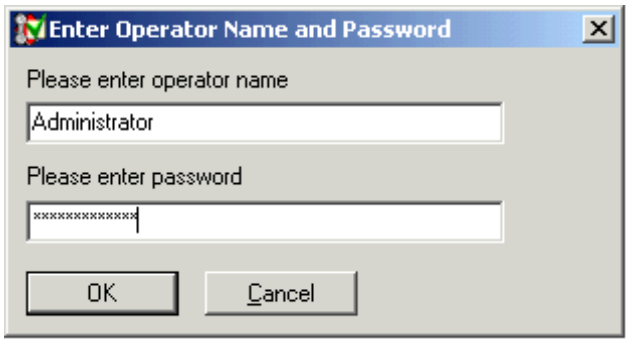
Update Manager Account Information

Upon installation of the Manager application, the default application logon is as an **Administrator** and the default password is **Administrator**. The Administrator has full administrative rights to make all necessary configuration changes. For security purposes, it is recommended that the account information (logon name and password) is changed as soon as possible.

To update the Administrator's account information:

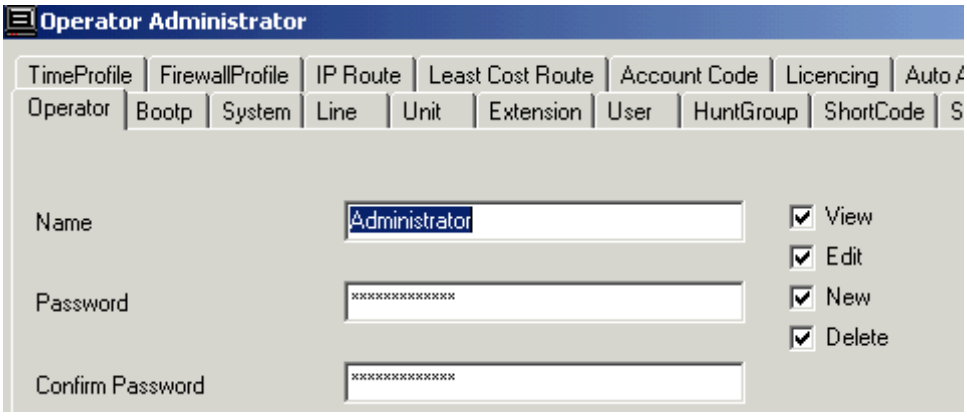
1. Open Manager and log on as an Administrator using the default password - **Administrator**.

Figure 41: Manager Logon screen



2. Click **Operator** from the Configuration Tree.
3. Double-click the **Administrator** account.

Figure 42: Manager Operator screen



4. Two update options are available on the **Operator** tab:
   - Enter a new password in the **Password** and **Confirm Password** fields and keep the **Administrator** user name. This only changes the password of the Administrator account. Leave all other fields as they are (enabled) because the Administrator needs to have full access to the system. Click **OK** and log off and log back onto Manager using the new password.
   - Enter a new user name in the **Name** field and a new password in the **Password** and **Confirm Password** fields. Leave all other fields as they are (enabled) because the Administrator needs to have full access to the system. Once this new account is created, log off and log back onto Manager with the new account and delete the old **Administrator** account by right-clicking on it and selecting **Delete**.

Creating Additional Operator Accounts

Additonal "operator" accounts (aside from the Administrator's account) can also be created to allow varying degrees of access to the configuration file. These accounts can be created via the **Operator** configuration form in Manager.

Do the following to create an operator account:

1. Open Manager and log on as an Administrator.
2. Click **Operator** from the Configuration Tree.
3. Right-click within the operator's window and select **New**.
4. On the **Operator** tab:
   - **Name:** Enter the user name in which this operator will log onto Manager.
   - **Password/Confirm Password:** Enter the password from which this operator will use to log onto Manager.

- Define what capabilities this operator will have for creating additional operator accounts by setting the following:
  - **View:** This allows the operator to view existing Operator entries.
  - **Edit:** This allows the operator to make changes to existing Operator entries.
  - **New:** This allows the operator to create new Operator accounts.
  - **Delete:** This allows the operator to delete existing Operator entries.

5. The other tabs represent access rights to the other configuration forms. Use the check boxes to select what access this operator will have to which parts of each configuration form.
6. The **Operator** settings are not part of the IP Office control unit configuration; thus, it is not necessary to send the changes to the control unit or reboot it. Operator settings are stored on the Manager PC in **.ops** files in the Manager directory.
7. After all the necessary configuration access rights have been defined, click **OK**. The new operator has been created.

Specify an IP Address to the G150

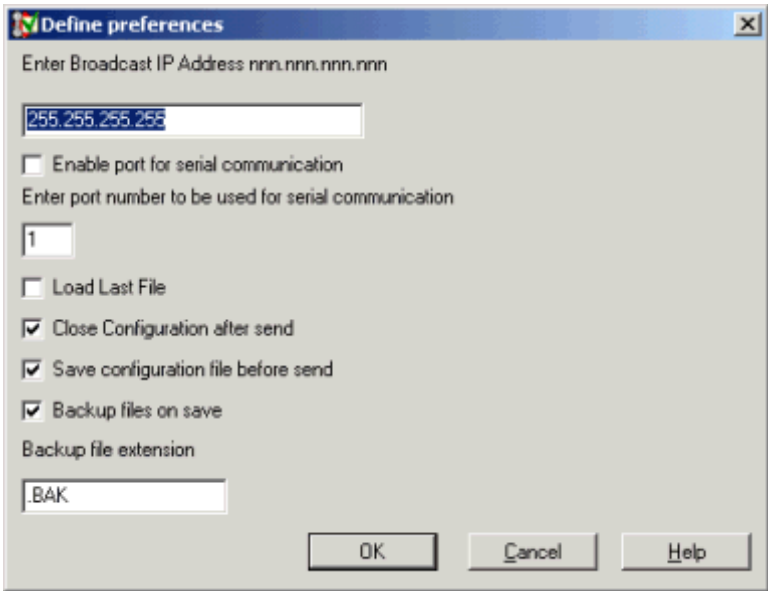
By default, the broadcast address (255.255.255.255) is used and all G150s on the local LAN are then displayed when is clicked to request for a configuration. Specifying individual addresses (maximum 10) allows quicker selection of the G150 required and is mandatory when managing a remote G150. The constraint of 10 IP addresses maximum is because each install of a Manager application can remember the IP addresses of only 10 G150 systems at any one time. If the PC has two LAN connections, then it is necessary to set the IP address to the broadcast address of the LAN, eg. 192.168.42.255.

Before specifying an IP address to the G150, an entry for this IP address must be created.

To create an IP address entry and then specify it for use:

1. Open Manager and log on.
2. From the **Preferences** menu, select **Edit**. This command allows you to specify the IP address of the G150 you wish to manage. It opens an edit window similar to Figure 43.

Figure 43: Preferences Edit



3. Enter the IP address of the G150 or a more general broadcast address into the IP address field. By default, the IP address of 192.168.42.1 is assigned to the G150. If this default static IP address is not acceptable because of the customer's network addressing scheme, obtain an acceptable IP address from the customer's network administrator.
4. The following fields can also be updated in relation to opening a configuration:
   - **Enable port for serial communication:** *Default = Off*

     When off, the Manager application does not check for a serial port when started.
   - **Enter port number to be used for serial communication:** Not used with G150.
   - **Load Last File:** If this option is selected, the last configuration file you were working on will automatically open when launching the Manager application.
   - **Close Configuration after send:** *Default = On*

     Automatically closes the configuration file open in Manager when it has been sent to the control unit. This helps ensure that configuration being edited is a recent copy received from the control unit and thus contains any user changes. The setting does not apply if the configuration is opened offline.
   - **Save configuration file before send:** *Default = On*

     Save a copy of the configuration file on the Manager PC whenever the configuration is sent to the control unit.

- **Backup files on save:** *Default = On*

  If on, whenever a copy of a configuration is saved on the Manager PC, any existing saved copy is renamed with the backup file extension name (see below).

- **Backup file extension:** *Default = .BAK*

  The file extension used for backup configuration files.

5. Click **OK**.
6. The newly entered IP address is now specified for the G150. This can be confirmed by the display of the IP address on the Manager's title bar as show in Figure 44.

Figure 44: Manager Title Bar

7. Once the IP address has been entered, the specific G150 system can be selected for configuration (if the selection has been changed) by simply going to **File | Preferences** and selecting the IP address before opening a configuration.

Change System Password

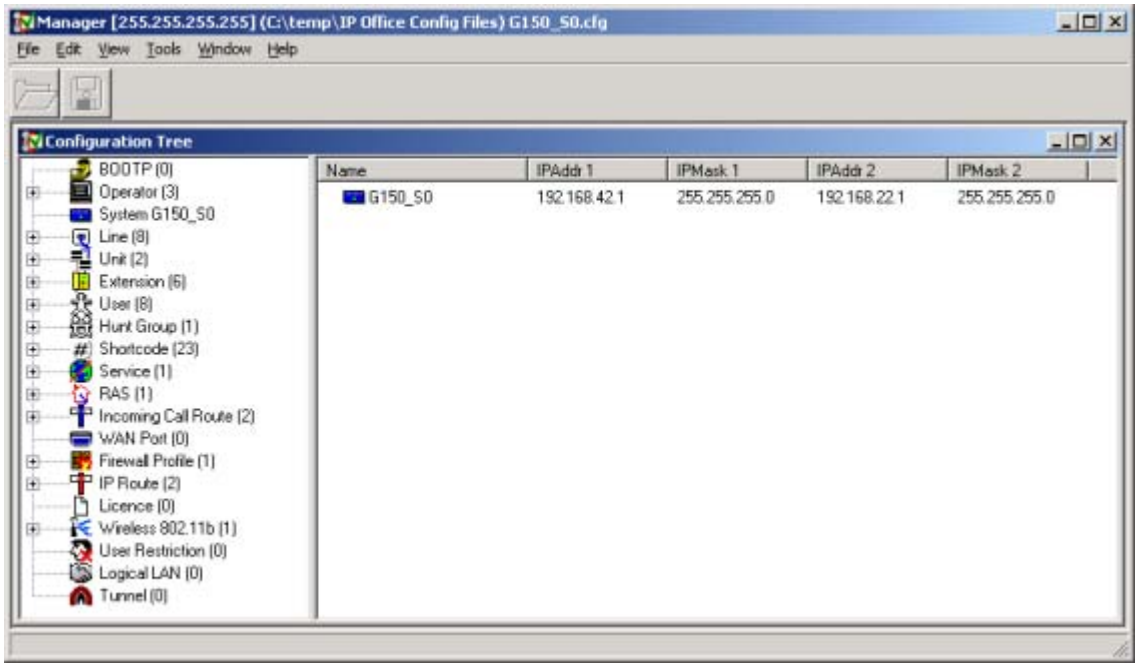
Part of the default configuration that comes with the G150 is the system password. This password controls access to the operation of the G150 and is required to configure and administer the G150. The default system password is **password** and is required when receiving the default configuration from the G150.

For security purposes, we recommend that this password is changed as soon as possible.

To change the system password:

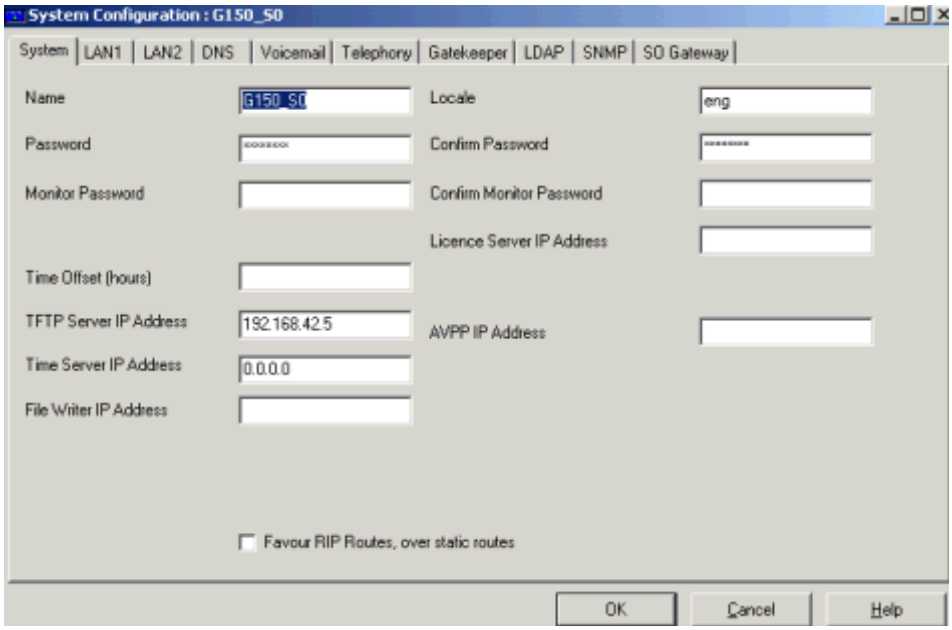
1. Click to receive a configuration form. The **Receiving Config from** dialog box appears displaying the IP address of the G150. Enter the G150's default password of **password** (all in lowercase).
2. Click **System** from the **Configuration Tree**.

Figure 45: Manager Configuration screen



3. From the **System** tab, delete the current password in the **Password** and **Confirm Password** fields. Enter the new password in to both fields. Password must be at least 4 characters long and the system is case sensitive. Make note of this new password in a safe location.

Figure 46: Manager System Configuration screen



4. Click **OK**.
5. If this is the last configuration being performed on Manager, click **Save**. In the **Sending Config To** dialog box, accept the selected save option and click **OK**. Otherwise, continue making additional configuration updates and perform a Save when ready.

Configure G150 for the Communication Manager

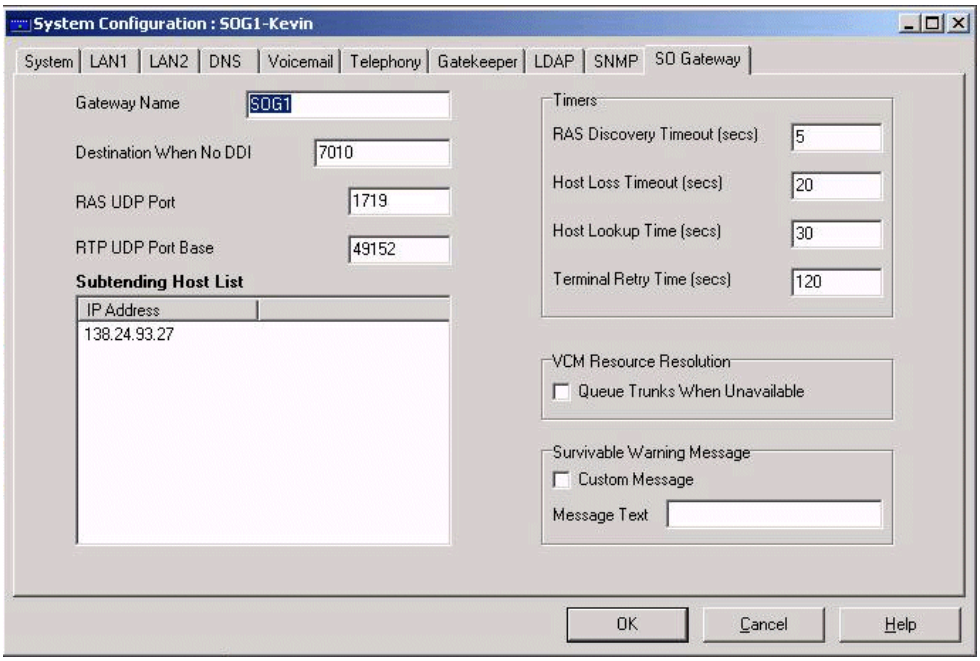
Identifying the G150 to the Communication Manager

Because multiple G150 Media Gateways can be connected to the Communication Manager, each G150 must be individually identified.

To identify your G150 to the Communication Manager:

1. Click to receive a configuration form. The **Receiving config from** dialog box appears displaying the IP address of the G150. Enter the G150 system password.
2. Click **System** from the Configuration Tree and double click the G150 configuration on the right hand side of the display window.

Figure 47: Manager SO Gateway screen



3. Click the **SO Gateway** tab. In the **Gateway Name** field, enter the name of your G150 Media Gateway. This name MUST match all of the following fields within the Communication Manager configuration:
   - **ip node names | name**
   - **remote-office | node name**
   - **signaling-group | far-end node name**
4. Click **OK**.
5. If this is the last configuration being performed on Manager, click **Save**. In the **Sending Config To** dialog box, accept the selected save option and click **OK**. Otherwise, continue making additional configuration updates and perform a Save when ready.

Gatekeeper Registration

The list of Communication Manager Gatekeeper IP addresses is recognized by the G150 via the Manager application on the **SO Gateway** tab, within the **System** configuration form.

Only those Gatekeepers entered via the Manager application are displayed on the **Subtending Host List**.

A maximum of 10 Gatekeepers may be administered on the G150. This includes G150's own IP address as the last on on the list.

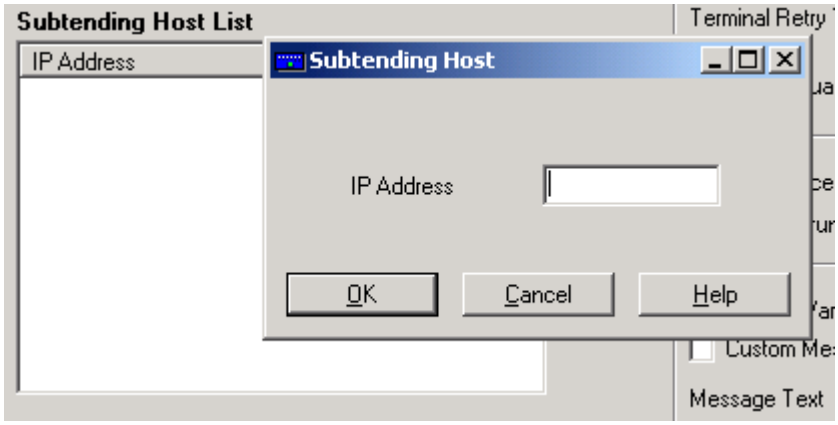
The following rules apply in relation to Gatekeepers and their IP addresses:

- When the G150 is first connected to the Communication Manager, at least one Gatekeeper (entered via Manager) must already reside within the **Subtending Host List**.
- The first entry is the Primary Gatekeeper and MUST match the IP address of the Communication Manager that G150 is connected to.
  - For an S8300 Media Server, this IP address is located within the **node names | procr | ip address** field.
  - For an S8500/S8700 Media Server, this IP address is located within the Communication Manager configuration in the **node names | CLAN**x **| ip address** field.
- G150 enters its own IP address as the last one on the list, thus assigning the G150 as the final fallback gatekeeper.

To enter a Gatekeeper IP address:

1. Click to receive a configuration form. The **Receiving config from** dialog box appears displaying the IP address of the G150. Enter the G150 system password.
2. Click **System** from the Configuration Tree and double click the G150 configuration on the right hand side of the display window.
3. Click the **SO Gateway** tab. In the **Subtending Host List** window, right-click and select **Add** or double-click to display a Subtending Host window. Enter a Gatekeeper IP address.

Figure 48: Adding a Subtending Host screen



- The first entry is the Primary Gatekeeper and MUST match the IP address of the Communication Manager that G150 is connected to.
  - For an S8300 Media Server, this IP address is located within the **node names | procr | ip address** field.
  - For an S8500/S8700 Media Server, this IP address is located within the Communication Manager configuration in the **node names | CLAN**x **| ip address** field.

4. When all Gatekeeper IP addresses are entered, click **OK**.
5. If this is the last configuration being performed on Manager, click **Save**. In the **Sending Config To** dialog box, accept the selected save option and click **OK**. Otherwise, continue making additional configuration updates and perform a Save when ready.

If updates of the manually entered Gatekeepers are required, the Manager application must be used. If the Alternate Gatekeeper List is updated, the G150 must be restarted for the updated list to be captured.

RAS UDP Port Configuration

The **RAS UDP Port** field contains the UDP port used for RAS protocol exchanges with a Communication Manager. Because the port number is consistent for most RAS protocol exchanges with Communication Manager, the default entry of **1719** should be accepted.

To view/update the **RAS UDP Port** setting:

1. Click to receive a configuration form. The **Receiving config from** dialog box appears displaying the IP address of the G150. Enter the G150 system password.
2. Click **System** from the Configuration Tree and double click the G150 configuration on the right hand side of the display window.
3. Click the **SO Gateway** tab.
4. The entry of **1719** should be displayed in the **RAS UDP Port** field, unless otherwise specified.
5. Click **OK**.
6. If this is the last configuration being performed on Manager, click **Save**. In the **Sending Config To** dialog box, accept the selected save option and click **OK**. Otherwise, continue making additional configuration updates and perform a Save when ready.

Time Settings for Interaction Between G150 and Communication Manager

The group of time settings within the **Timer** window of the **SO Gateway** tab configure the timed interaction between the G150 and the Communication Manager.

The timer settings are:

- **RAS Discovery Timeout (secs):** Default = 5 secs; Range = 1-60 secs

  The amount of time (in seconds) that the G150 will wait when looking for each active gatekeeper (either at initial setup or when attempting to recover from survivable mode).

- **Host Loss Timeout (secs):** Default = 20 secs; Range = 1-60 secs

  The amount of time (in seconds) between the G150 receiving a first indication of communication problems with Communication Manager and deciding that the connection to the gatekeeper is down.

- **Host Lookup Time (secs):** Default = 30 secs; Range = 1-60 secs

  The amount of time (in seconds) allowed for the G150 to look for an active gatekeeper before switching to survivable mode.

  During this time, no call activity is allowed on the G150. Because of this lack of call activity, the Host Lookup Time should not be set for an extended amount of time. On the other hand, if it is set to a time shorter than the RAS Discovery Timeout, it is possible that the system will switch to survivable mode before discovery has been attempted on all the entries in the Gatekeeper List (both the Subtending Host List and the Alternate Gatekeeper List).

- **Terminal Retry Time (secs):** Default = 120 secs; Range = 1-600 secs

  This time setting only applies during sub-tending mode. The amount of time (in seconds) between two consecutive registration attempts by a single entity (extension or trunk), which was unable to register at the first attempt.

If the default settings for these timers are unacceptable, they can be configured by doing the following:

1. Click  to receive a configuration form. The Receiving Config from dialog box appears displaying the IP address of the G150. Enter the G150 system password.
2. Click **System** from the Configuration Tree and double click the G150 configuration on the right hand side of the display window.
3. Click the **SO Gateway** tab. In the **Timers** area, make changes to the relevant timer fields.
4. Click **OK**.
5. If this is the last configuration being performed on Manager, click  **Save**. In the **Sending Config To** dialog box, accept the selected save option and click **OK**. Otherwise, continue making additional configuration updates and perform a Save when ready.

Trunk Configuration

Incoming Trunk Call with No DID (DDI) Information

When an incoming trunk call is received by the G150 with no DDI information, a default Communication Manager extension number is dialed. The default extension number is **1001**.

This default extension number for all trunks can be configured by doing the following:

1. Click  to receive a configuration form. The Receiving Config from dialog box appears displaying the IP address of the G150. Enter the G150 system password.
2. Click **System** from the Configuration Tree and double click the G150 configuration on the right hand side of the display window.
3. Click the **SO Gateway** tab. In the **Destination When No DDI** field, enter the Communication Manager extension number you want dialed. The number can contain up to 9 digits, including ***** (asterisk) or # (pound/hash). The field must contain at least one digit.

   Note:

   This **Destination When No DDI** number may be overridden for each analog trunk. See Analog Trunk Configuration on page 106.
4. Click **OK**.
5. If this is the last configuration being performed on Manager, click  **Save**. In the **Sending Config To** dialog box, accept the selected save option and click **OK**. Otherwise, continue making additional configuration updates and perform a Save when ready.

Configure Trunk Queuing

When an incoming PRI or BRI trunk call is received and no VoIP/VCM resources are available, G150 can be configured to respond accordingly. The two configuration options are:

- Calls remain in the queue (and ringing is heard) pending a free VoIP/VCM resource.
- Callers are not held in the queue and a busy tone is heard.

Note:

Calls coming in through an Analog or T1 trunk will always receive ringing tone until a VoIP/VCM resource are free, regardless of the setting on the **Queue Trunk When Unavailable** field.

To configure trunk queuing:

1. Click to receive a configuration form. The Receiving Config from dialog box appears displaying the IP address of the G150. Enter the G150 system password.
2. Click **System** from the Configuration Tree and double click the G150 configuration on the right hand side of the display window.
3. On the **SO Gateway** tab, configure the **Queue Trunk When Unavailable** field accordingly:
   - **Enabled/Ticked:** Calls remain in the queue (and ringing is heard) pending a free VoIP resource.
   - **Un-enabled/Un-ticked:** Callers are not held in the queue and a busy tone is heard.
4. Click **OK**.
5. If this is the last configuration being performed on Manager, click **Save**. In the **Sending Config To** dialog box, accept the selected save option and click **OK**. Otherwise, continue making additional configuration updates and perform a Save when ready.

DiffServe Settings for VoIP Calls

To ensure that priority queuing is set appropriately and voice packets are not droped, the DiffServe settings on G150 must match those set on Communication Manager and any other equipment (such as routers) on the network that effect Quality of Service. These settings effect VoIP calls when the G150 is in both subtending and survivable mode. The following table shows the configurable fields on the G150 and their corresponding configuration on Communication Manager:

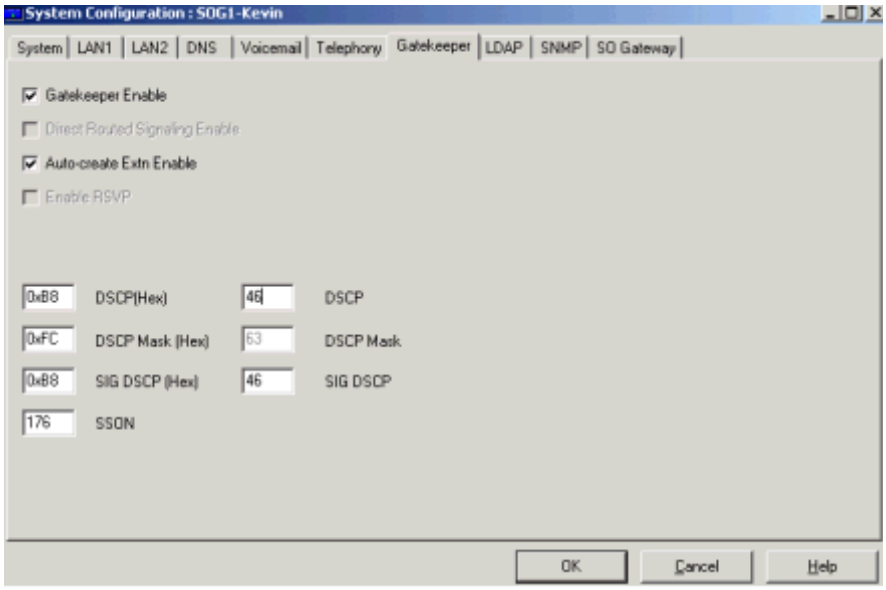
Table 11: DiffServe Settings

G150 Fields	Communication Manager Fields (On the "IP Network Region" window)
DSCP	Audio PHB Value
SIG DSCP	Call Control PHB Value

To configure the DiffServe values on G150:

1. Click to receive a configuration form. The Receiving Config from dialog box appears displaying the IP address of the G150. Enter the G150 system password.
2. Click **System** from the Configuration Tree and double click the G150 configuration on the right hand side of the display window.

Figure 49: G150 DiffServe Configuration



3. On the **Gatekeeper** tab, the following fields can be configured in relation to DiffServer:
   - **DSCP:** *Default = 46; (Decimal value)*

     The Quality of Service (DiffServe) setting applied to VoIP calls. The Hex value equivalent of the **DSCP** field will be updated automatically when this field is configured.
   - **SIG DSCP:** *Default = 0; (Decimal value)*

     The Quality of Service setting applied to VoIP call signaling. The Hex value equivalent of the **SIG DSCP** field will be updated automatically when this field is configured.
4. Click **OK**.
5. If this is the last configuration being performed on Manager, click **Save**. In the **Sending Config To** dialog box, accept the selected save option and click **OK**. Otherwise, continue making additional configuration updates and perform a Save when ready.

Analog Trunk Configuration

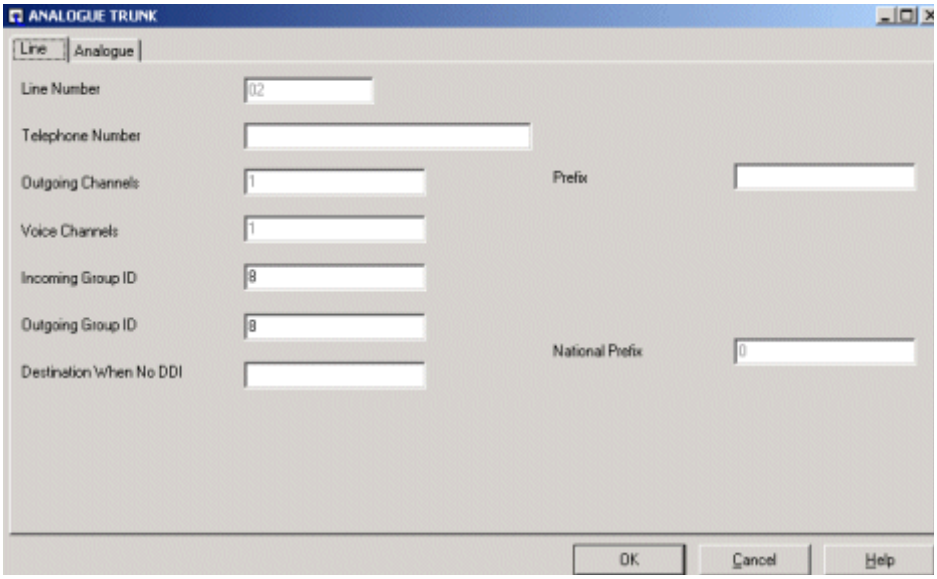
Control of trunks in sub-tending mode is driven by Communication Manager, with the exception of certain low level analog trunk parameters, which are configurable via Manager.

To configure settings on the analog trunk:

1. Click to receive a configuration form. The Receiving Config from dialog box appears displaying the IP address of the G150. Enter the G150 system password.

2. Click **Line** configuration from the Configuration Tree and double-click the analog trunk to be configured.

Figure 50: Manager Analog Trunk|Line Configuration screen



3. On the **Line** tab, the only configuration field applicable in sub-tending mode is:

   - **Destination When No DDI:** This is an optional configuration. If not configured here, the same setting that resides in the **System | SO Gateway** tab is used instead. When an incoming trunk call is received by the G150 with no DDI information, a default Communication Manager extension number is dialed. Enter that extension number here. The number can contain up to 9 digits, including ***** (asterisk) or # (pound/hash).

   Note:

   When individual destinations are configured for individual trunks, this setting overrides the system setting. The system setting for this information is discussed in Incoming Trunk Call with No DID (DDI) Information on page 104.

4. All other fields on the **Line** tab control this analog line's functions during survivable mode only. The configurable fields are:

   - **Telephone Number:** Used to remember the external telephone number of this line to assist with loop-back testing. For information only.
   - **Incoming and Outgoing Group ID:** Default = 0

     One group can contain multiple lines. Short Codes and Incoming Call Routes use this number to indicate which line they use.

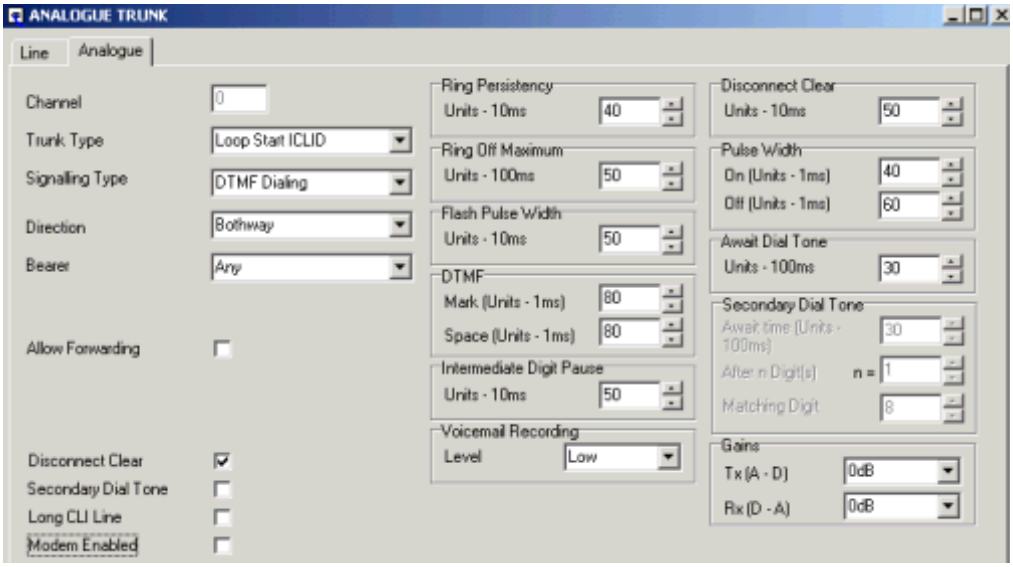
   Note:

   All analog trunks are viewed as a single group by Communication Manager for dialling purposes.

- **Prefix:** Enter the number to prefix to all incoming calls which are not national. The addition of prefixes is useful for Last Number Redial if users must dial a prefix to access an outside line.

5. On the **Analog** tab, the following low level analog trunk parameters are used in both sub-tending and survivable mode (in most cases, the default setting for the particular system local is sufficient):

Figure 51: Manager Analog Trunk | Analog Configuration screen



- **Channel:** Set by the system. Shown for information only, not configurable from here.
- **Trunk Type:** Default = Loop Start

  Sets the analog line type (**Ground Start**, **Loop Start**, **Loop Start ICLID/Caller ID**, **Out of Service**). If the **Out of Service** type is selected, outgoing calls can not be made on that trunk during sub-tending or survivable mode. To find out which type should be selected, either check with your service provider or test the trunk.

- **Signaling Type:** Default = DTMF Dialing

  Sets the signaling method used on the line (DTMF Dialing or Pulse Dialing).

- **Direction:** Default = Bothway

  Sets the allowed direction of operation of the line (Incoming, Outgoing or Bothway). If set to Incoming, outgoing calls can not be made on that trunk during sub-tending or survivable mode. This direction setting MUST match the associated trunk group's **Direction** setting on Communication Manager.

- **Bearer:** Default = Any

  Sets the type of traffic carried by the line (**Voice**, **Data** or **Any**).

- **Allow Forwarding:** Default = Not selected (Off).

  When off, external calls on other trunks cannot be transferred back off-switch via this trunk. This prevents transfers to trunks that do not support disconnect clear. See also **Inhibit Off-Switch Calls** on the **System | Telephony** tab.

- **Disconnect Clear:** We recommend leaving this ticked to make use of the disconnect clear function. When ticked/enabled, the **Units** configuration associated with the Disconnect Clear function is available for editing.
  - Units: Default = 50 (500ms)
- **Secondary Dial Tone:** Configures the use of secondary dial tone on analog lines. When selected, the following options are accessible:
  - **Await time:** Default = 10 (x 100ms = 1 second)
  - Used when secondary dial tone (above) is selected. Sets the delay.
  - **After n Digits:** Default = 1
  - Sets where in the dialing string, the delay for secondary dial tone, should occur.
  - **Matching Digit:** Default =0
  - The digit which, when first matched in the dialing string, will cause secondary dial tone delay.
- **Long CLI Line:** Default = Off

  The CLI signal on some long analog lines can become degraded and is not then correctly detected. If you are sure that CLI is being provided but not detected, selecting this option may resolve the problem.

- **Modem Enabled:** Default = Off (only available on the first Analog trunk)

  The first analog trunk on G150 can be set to modem operation (V.32 with V42 error correction). This allows the receipt of incoming modem calls for system maintenance operation. When checked, the default system shortcode of *4000* can be used from a locally attached phone to enable the G150's internal modem on this trunk. See "Modem Control Shortcode" for more information on the default shortcode.

Note:

The check box is configurable during both sub-tending and survivable mode, but the shortcode to turn the modem on and off is only accepted during survivable mode.

- **Ring Persistency:** Default = Set according to system locale

  The minimum duration of signal required to be recognized.

- **Ring Off Maximum:** Default = Set according to system locale

  The time required before signaling is regarded as ended.

- **Flash Pulse Width:** Default = 50 (500ms)

- **DTMF:**
  - **Mark:** Default = 80 (80ms)
  - **Space:** Default = 80 (80ms)
- **Intermediate Digit Pause:** Default = 50 (500ms)
- **Voicemail Recording Level:** Default = Low

  Used to adjust the volume level of calls recorded by voicemail. Options are **Low, Medium** and **High**.
- **Pulse On Width:** Default = 40 (40ms)
- **Pulse Off Width:** Default = 60 (60ms)
- **Await Dial Tone:** Default = 15 (1.5second)

  Sets how long the system should wait before sending the digits out toward the central office. This may be necessary when older tone receiver equipment is employed in these public network offices.
- **Gains:**
  - **Tx (A-D):** Default = 0dB
  - Set the transmit gain between -4.0 to +3.5dB in 0.5dB steps.
  - **Rx (D-A):** Default = 0dB
  - Set the receive gain between -4.0 to +3.5dB in 0.5dB steps.

6. When all necessary settings are configured, click **OK**.
7. If this is the last configuration being performed on Manager, click  **Save**. In the **Sending Config To** dialog box, accept the selected save option and click **OK**. Otherwise, continue making additional configuration updates and perform a Save when ready.

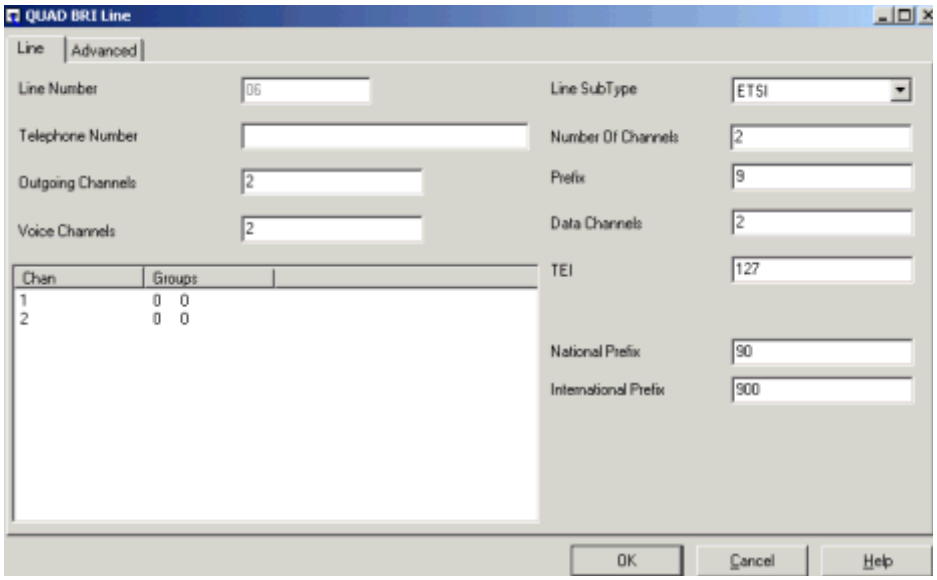
Quad BRI Trunk Configuration

Control of trunks in sub-tending mode is driven by Communication Manager, with the exception of certain low level BRI trunk parameters, which are configurable via Manager. On this same configuration, the **Prefix** and **Group** options apply to the G150 in survivable mode only.

To configure the Quad BRI Trunk:

1. Click  to receive a configuration form. The Receiving Config from dialog box appears displaying the IP address of the G150. Enter the G150 system password.
2. Click **Line** configuration from the Configuration Tree and double-click the BRI Trunk to be configured.

Figure 52: Manager BRI Trunk|Line Configuration screen



3. Within the **Line** tab, the following fields are available for configuration:
   - **Line Number:** This parameter is not configurable, it is allocated by the system.
   - **Telephone Number:** Used to remember the external telephone number of this line to assist with loop-back testing. For information only.
   - **Outgoing Channels:** This defines the number of channels available, on this line, for outgoing calls. This should normally be the same as Number of Channels field, but can be reduced to ensure incoming calls cannot be blocked by outgoing calls.
   - **Voice Channels:** The number of channels available for voice use.
   - **Channels:** BRI = 2

     The settings for each channel can be edited by double-clicking on a channel. The **Edit Channel** dialog box for that particular channel displays the following configuration fields:

     - **Incoming Group & Outgoing Group:** Default = 0

       **These settings apply to G150 in survivable mode only.*

       A group can contain multiple lines and channels. Short codes and Incoming Call Routes can indicate which group they should use.
   - **Line Sub Type:** Select to match the particular line provided by the PSTN.
     - BRI supports ETSI.
   - **Number Of Channels:** Defines the number of operational channels that are available on this line. 2 for BRI and up to 30 for PRI - depending upon the number of channels subscribed.

- **Prefix:** Default = Blank.

  **This setting applies to G150 in survivable mode only.*

  On Incoming Calls, the ISDN messaging tags the incoming call as either National or International (see their respective prefixes). This determines the addition of the relevant 0 or 00 respectively (0 is default for National and 00 is default for International). If the ISDN message flags the call source as unknown, then the number in the **Prefix** field is added to the CLI.

- **Data Channels:** The number of channels available for data use. If left blank, the value is 0.

- **TEI:** Default = 0

  The Terminal Equipment Identifier. Used to identify each Control Unit connected to a particular ISDN line. For Point to Point lines this is typically (always) 0. It can also be 0 on a Point to Multi-Point line, however if multiple devices are sharing a Point to Multi-Point line it should be set to 127 which results in the exchange deciding on the TEI's to be used.

- **National Prefix:** Default = 0

  This indicates the digits to be prefixed to a incoming national call. When a number is presented from ISDN as a "national number" this prefix is added, eg. "1923000000 is converted to 01923000000.

- **International Prefix:** Default = 00

  This indicates the digits to be prefixed to an incoming international call. When a number is presented from ISDN as an "international number" this prefix is added, eg. 441923000000 is converted to 00441923000000.

4. The **Clock Quality** configuration field within the **Advanced** tab applies to the G150 in both sub-tending and survivable mode.

   - **Clock Quality:** Default = Network

     Sets whether the Control Unit takes its clock source from the network, use the network as a fallback source or not as a clock source.

5. When all necessary settings are configured, click **OK**.
6. If this is the last configuration being performed on Manager, click  **Save**. In the **Sending Config To** dialog box, accept the selected save option and click **OK**. Otherwise, continue making additional configuration updates and perform a Save when ready.

PRI Trunk Configuration

G150 only supports T1 PRI trunks, i.e. up to 24 channels. Control of trunks in sub-tending mode is driven by Communication Manager, with the exception of certain low level PRI trunk parameters, which are configurable via Manager. The PRI configuration on Manager is used to configure PRI lines provided by T1 PRI card installed in the G150. On this same configuration, the **Prefix** and **Group** options apply to the G150 in survivable mode only.

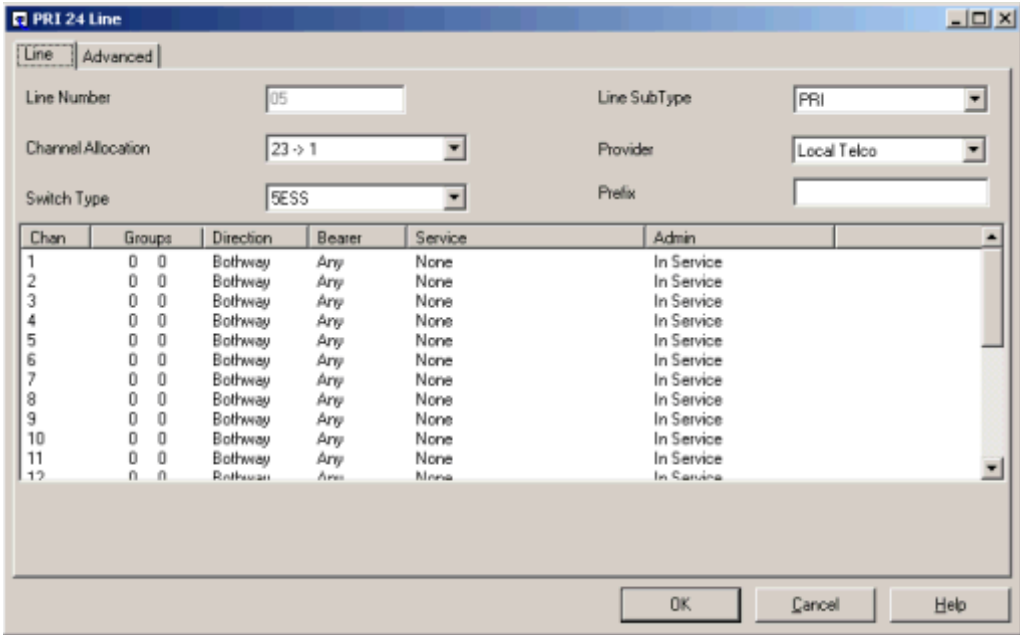
In PRI operation two information elements, TNS (Transit Network Selector) and NSF (Network Specific Facility) are sent in the call setup to the service provider. On IP Office, the values for TNS, NSF and the actual phone number presented to the line are determined by parsing the number dialed through, in sequence, the **TNS, Special** and **Call by Call** tabs.

Note also that B-channels within the same line can be brought from different service provides. Additionally some B-channels can be used 'call by call', that is, use a different service provider for each call.

To configure a PRI trunk:

1. Click  to receive a configuration form. The Receiving Config from dialog box appears displaying the IP address of the G150. Enter the G150 system password.
2. Click **Line** configuration from the Configuration Tree and double-click the PRI Trunk to be configured.

Figure 53: Manager PRI Trunk|Line Configuration screen



3. Within the **Line** tab, the following fields are available for configuration:
   - **Line Number:** Allocated by the system.
   - **Line SubType:** Default = PRI

     Set to PRI. If set to T1, see "T1 Trunk Configuration".
   - **Channel Allocation:** Default = 23 -> 1

     The order, ascendiing or descending, in which channels are used for outgoing calls.
   - **Switch Type:** Default = NI2

     Options 4ESS, 5ESS, DMS100 and NI2.
   - **Provider:** Default = Local Telco

     Select the PSTN service provider (**AT&T, Sprint, WorldCom** or **Local Telco**).
   - **Prefix:** *Applies to Survivable Mode only; Default = Blank

     **This setting applies to G150 in survivable mode only.*

     Enter the number to prefix to all incoming numbers for last number redial. This is useful if all users must dial a prefix to access an outside line. The prefix is automatically placed in front of all incoming numbers so that users can dial the number back.
   - The settings for each channel can be edited via the **Edit Channel** dialog box. Users have the option of editing individual channels by double-clicking on the channel, or editing multiple channels by the following:

     a. Use the standard Window Key to select a continuous group (Shift Key) or Individual Channels (Control Key).

     b. After selecting the last item (via either of the above methods, press the right mouse button while still holding down the Control or Shift Key). Select the Edit option.

     c. A form comes up with the Channel parameters. The first and last channels that you have selected are listed in the Channel box (ie. 1-8).

     d. Make all appropriate changes and then select OK. The changes are applied to all the selected channels.
   - **Edit Channel:** The following channel-related fields are available for configuration:
     - **Channel:** Allocated by the system.
     - **Incoming Group and Outgoing Group:** Default = 0

       *These settings apply to G150 in survivable mode only.

       One group can contain multiple lines. Short Codes and Incoming Call Routes use this number to indicate which line they use.
     - **Direction:** Default = Bothway

       The direction of calls on the channel (Incoming, Outgoing or Bothway). This direction setting MUST match the associated trunk group's **Direction** setting on Communication Manager.

- **Bearer:** Default = Any

  The type of traffic carried by the channel (**Voice**, **Data** or **Any**).

- **Service:** Default = No Service or None.

  If the line provider is set to AT&T, select the type of service provided by the channel from: **Call by Call, SDN (inc GSDN), MegaCom800, MegaComWats, Accunet, NLDS, I800, ETN, Private Line, AT&T Multiquest**. For other, providers the service options are **None** or **No Service**.

- **Admin:** Default = In Service

  Used to indicate the channel status (**In Service**, **Out of Service** or **Maintenance**).

- **Tx Gain:** Default = 0dB

  The transmit gain in dB.

- **Rx Gain:** Default = 0dB

  The receive gain in dB.

- Click **OK** on the Edit Channel window.

4. Click **OK** if any updates have been made.
5. Within the **Advanced** tab, the following configuration fields apply to the G150 in both sub-tending and survivable mode:

- **Test Number:** Used to remember the external telephone number of this line to assist with loop-back testing. For information only.
- **Framing:** Default = ESF

  Selects the type of signal framing used (ESF or D4).

- **Zero Suppression:** Default = B8ZS

  Selects the method of zero suppression used (B8ZS or AMI ZCS).

- **Clock Quality:** Default = Network

  Sets whether the Control Unit takes it clock source from the network, uses the network as a fallback clock source only or not as a clock source (Network, Fallback or Un-suitable).

- **Haul Length:** Default = 0-115 feet

  Sets the line length to a specific distance.

- **Channel Unit:** Default = Foreign Exchange

  The channel signaling equipment provided by the Central Office (**Foreign Exchange, Special Access** or **Normal**).

- **CRC Checking:** Default = On

  Error checking as per your service provider. Turns CRC on or off.

- **Line Signaling:** Not used for PRI, only used for T1.

  Select either CPE or CO. The CO feature is intended to be used primarily as a testing aid. It allows T1 and E1 lines to be tested in a back-to-back configuration, using crossover (Qsig) cables.

- **Incoming Routing Digits:** This field only affects T1 line channels set to E&M Tie, E&M DID,E&M Switched 56K and Direct Inward Dial. Sets the number of routing digits expected on incoming calls. This allows the line to present the call to the system once the expected digits have been received rather than waiting for the digits timeout to expire.

6. Click **OK**.
7. If this is the last configuration being performed on Manager, click **Save**. In the **Sending Config To** dialog box, accept the selected save option and click **OK**. Otherwise, continue making additional configuration updates and perform a Save when ready.

T1 Trunk (In-band Signaling) Configuration

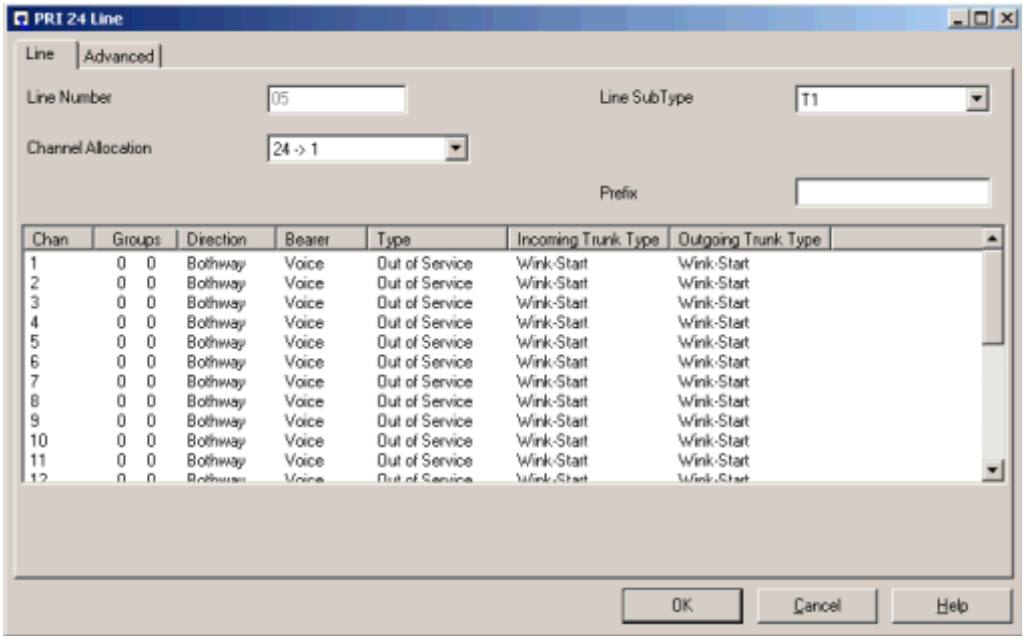
T1 is a standard for digital transmission in the United States and Canada.

Control of trunks in sub-tending mode is driven by Communication Manager, with the exception of certain low level T1 trunk parameters, which are configurable via Manager. The T1 configuration on Manager is used to configure T1 lines provided by a T1 PRI card installed in the G150. On this same configuration, the **Prefix** and **Group** options apply to the G150 in survivable mode only.

To configure a T1 trunk:

1. Click to receive a configuration form. The **Receiving config from** dialog box appears displaying the IP address of the G150. Enter the G150 system password.
2. Click **Line** configuration from the Configuration Tree and double-click the PRI Trunk to be configured.

Figure 54: Manager PRI|Line Configuration screen



3. Within the **Line** tab, the following fields are available for configuration:
   - **Line Number:** Allocated by the system.
   - **Line SubType:** Default = PRI

     Set to **T1** for a T1 line. For PRI, see "PRI Trunk Configuration".
   - **Channel Allocation:** Default = 24 -> 1

     The order, 24 to 1 or 1 to 24, in which channels are allocated for outgoing calls.
   - **Prefix:** Default = Blank

     **This setting applies to G150 in survivable mode only.*

     Enter the number to prefix to all incoming numbers for callback. This is useful if all users must dial a prefix to access an outside line. The prefix is automatically placed in front of all incoming numbers so that users can dial the number back.
   - The settings for each channel can be edited via the **Edit Channel** dialog box. Users have the option of editing individual channels by double-clicking on the channel, or editing multiple channels by the following:
     1. Use the standard Window Key to select a continuous group (Shift Key) or Individual Channels (Control Key).
     2. After selecting the last item (via either of the above methods, press the right mouse button while still holding down the Control or Shift Key). Select the **Edit** option.

3. A form comes up with the Channel parameters. The first and last channels that you have selected are listed in the Channel box (ie. 1-8).
4. Make all appropriate changes and then select **OK**. The changes are applied to all the selected channels.

- **Edit Channel:** The following channel-related fields are available for configuration:
  - **Channel:** Allocated by the system.
  - **Incoming Group and Outgoing Group:** Default = 0

    **These settings apply to G150 in survivable mode only.*

    One group can contain multiple lines. Short Codes and Incoming Call Routes use this number to indicate which line they use.
  - **Direction:** Default = Bothway
  - The direction of calls on the channel (**Incoming, Outgoing** or **Bothway**). This direction setting MUST match the associated trunk group's **Direction** setting on Communication Manager.
  - **Bearer:** Default = Any

    The type of traffic carried by the channel **(Voice, Data** or **Any**).
  - **Service:** Default = No Service or None.

    If the line provider is set to AT&T, select the type of service provided by the channel from: **Call by Call, SDN (inc GSDN), MegaCom800, MegaComWats, Accunet, NLDS, I800, ETN, Private Line, AT&T Multiquest**. For other, providers the service options are **None** or **No Service**.
  - **Admin:** Default = In Service

    Used to indicate the channel status (**In Service, Out of Service** or **Maintenance**).
  - **Tx Gain:** Default = 0dB

    The transmit gain in dB.
  - **Rx Gain:** Default = 0dB

    The receive gain in dB.
  - Click **OK** on the Edit Channel window.

4. Click **OK** if any updates have been made.
5. Within the **Advanced** tab, the following configuration fields apply to the G150 in both sub-tending and survivable mode:
   - **Test Number:** Used to remember the external telephone number of this line to assist with loop-back testing. For information only.
   - **Framing:** Default = ESF

     Selects the type of signal framing used (ESF or D4).

- **Zero Suppression:** Default = B8ZS

  Selects the method of zero suppression used (B8ZS or AMI ZCS).

- **Clock Quality:** Default = Network

  Sets whether the Control Unit takes it clock source from the network, uses the network as a fallback clock source only or not as a clock source (**Network, Fallback or Un-suitable**).

- **Haul Length:** Default = 0-115 feet

  Sets the line length to a specific distance.

- **Channel Unit:** Default = Foreign Exchange

  The channel signaling equipment provided by the Central Office (**Foreign Exchange, Special Access** or **Normal**).

- **CRC Checking:** Default = On

  Error checking as per your service provider. Turns CRC on or off.

- **Line Signaling:** Not used for PRI, only used for T1.

  Select either CPE or CO. The CO feature is intended to be used primarily as a testing aid. It allows T1 and E1 lines to be tested in a back-to-back configuration, using crossover (Qsig) cables.

- **Incoming Routing Digits:** This field only affects T1 line channels set to E&M Tie, E&M DID,E&M Switched 56K and Direct Inward Dial. Sets the number of routing digits expected on incoming calls. This allows the line to present the call to the system once the expected digits have been received rather than waiting for the digits timeout to expire.

6. Click **OK**.
7. If this is the last configuration being performed on Manager, click  **Save**. In the **Sending Config To** dialog box, accept the selected save option and click **OK**. Otherwise, continue making additional configuration updates and perform a Save when ready.

Dial Plan Administration

In subtending mode, call routing/dial plan are driven by the Communication Manager. In survivable mode, the G150 becomes a gatekeeper and handles calls using its own local call routing/dial plan configuration. The local administration of the G150 provides a simple call routing plan that emulates those of the Communication Manager such that all station extensions and trunk access codes remain the same.

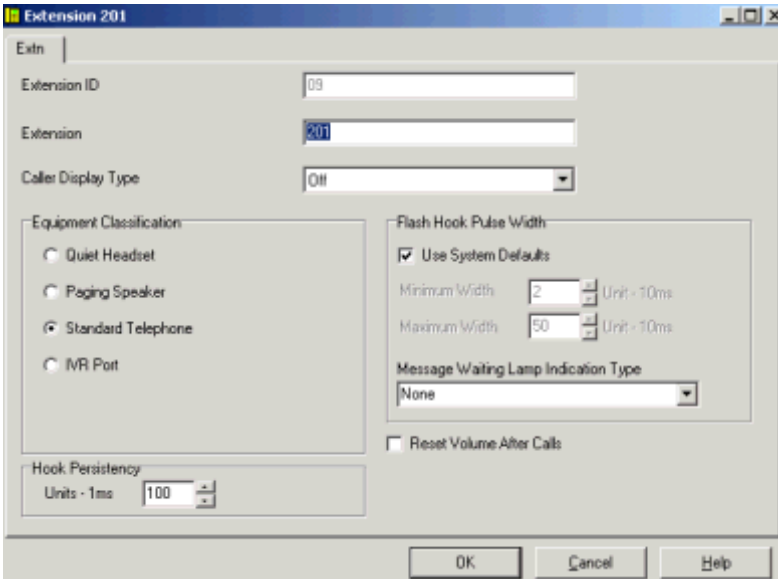
Extension Numbering within G150

By default, G150 creates a hunt group with extension number 200 (survivable mode use only) and then automatically numbers the analog phones from 201 upwards. You must alter the extension numbering of the analog phones to match their numbering on the Communication Manager dial plan. We highly recommend making the changes now, prior to making any other configuration changes, because several configurations (on both Communication Manager and G150) rely on extension numbers. Extension numbers can be viewed by clicking **Extension** from the Configuration Tree.

To assign different extension numbers to the physical phone extensions:

1. Click 🗁 to receive a configuration form. The Receiving Config from dialog box appears displaying the IP address of the G150. Enter the G150 system password.
2. Click **Extension** from the Configuration Tree. Double-click the extension you want to re-number. (If you are configuring a new system, it is recommended that you start with the first extension on the list.) An edit window for that specific extension is displayed.

Figure 55: Manager Extension Configuration screen



3. In the **Extension** field, enter the new number extension. These extension numbers MUST match those administered on the Communication Manager's **Station | Extension** field.
4. The other fields should be left at their default, unless there are special requirements.
5. Click **OK**.

6. Repeat the above steps until all extensions are re-numbered.
7. If this is the last configuration being performed on Manager, click **Save**. In the **Sending Config To** dialog box, accept the selected save option and click **OK**. Otherwise, continue making additional configuration updates and perform a Save when ready.

Setting up Users

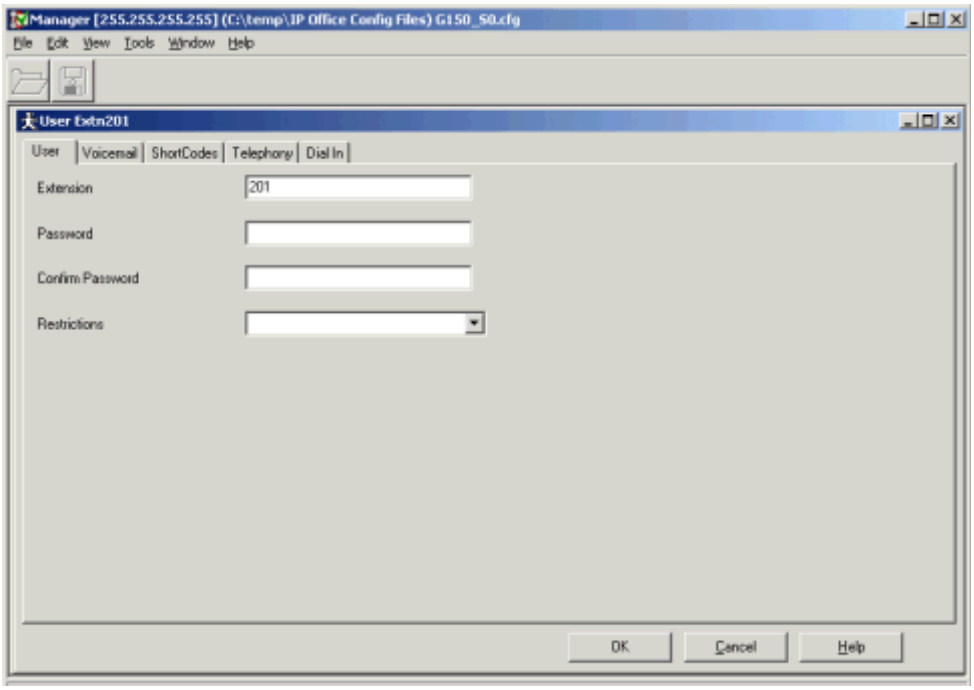
Users on the G150 are recognized by the Communication Manager via H.323 RAS authentication procedures using extension number as an "alias" and using the password as the "encryption key". In sub-tending mode, the extension and password are used to register the user with Communication Manager. The password is used for authentication by locally attached IP phones while in survivable mode.

Because of the important role that extension numbers play in setting up a dial plan, it is essential that all extension numbering is completed prior to making additional dial plan configurations. See Extension Numbering within G150 on page 120 for details.

To configure user extension and password:

1. Click to receive a configuration form. The Receiving Config from dialog box appears displaying the IP address of the G150. Enter the G150 system password.
2. Click **Users** from the Configuration Tree. Double-click the user you want to configure. An edit window for that specific user is displayed.

Figure 56: Manager User Configuration screen



3. The **Extension** field contains the extension number assigned to this user.

   Information in this field MUST match the **station | extension** field in the Communication Manager configuration.

   This field is not amendable within this configuration. If it needs to be updated, refer to Extension Numbering within G150 on page 120.

4. In the **Password** field, enter the password for this user. Maximum password length is 7 characters.

   This password MUST match the **station | security Code** field in the Communication Manager configuration.

   The password is ONLY used for registering this user with Communication Manager. The actual telephone user will not have to enter this information at any time.

5. All other field on this window should be left at their default unless there are special requirements.
6. Click O**K**.
7. Repeat the above steps until all users and passwords are configured.
8. If this is the last configuration being performed on Manager, click  **Save**. In the **Sending Config To** dialog box, accept the selected save option and click **OK**. Otherwise, continue making additional configuration updates and perform a Save when ready.

To finish registering this user on Communication Manager, configuration on the Communication Manager is required. If this has not already been performed, see Chapter 2: Communication Manager Administration for the Avaya G150 Media Gateway for information on configuring Communication Manager.

Dial Plan Support in Survivable Mode

The G150 supports a survivable call routing/dial plan consisting of the following:

- Extension numbering
- Group membership
- Hunt Group mode
- Call routing

Create an Incoming Call Route

To enable calls to be routed when the G150 goes into survivable mode, Incoming Call Routes must be configured. In survivable mode, DDI/DID is supported for all trunk types (Analog, BRI, PRI and T1). DDI/DID calls matching the numbering plan are routed directly to a numbered extension by the G150 Incoming Call Route configuration on Manager.

The G150 configuration has two Incoming Call Routes configured by default:

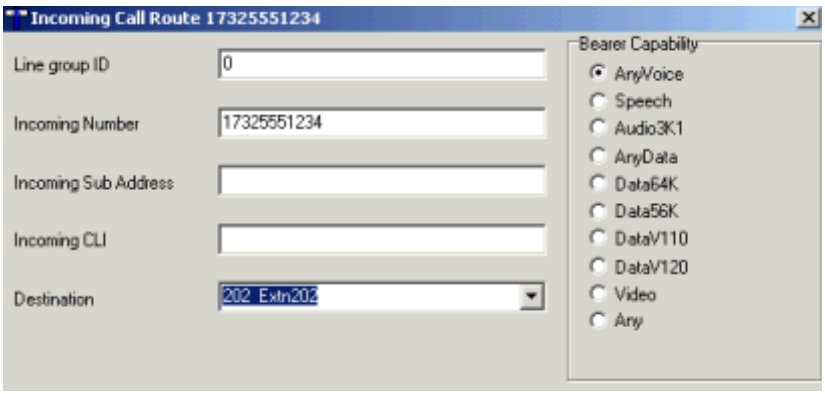
- **Destination = Dial In; Line Group ID = 0:** Routes calls to the modem for remote access.
- **Destination = Main; Line Group ID = 0:** Routes all incoming calls to the Main Hunt Group.

By default all incoming voice calls to extensions that have not been configured in the dial plan are sent to the hunt group Main (extension 200), whose members consist only of locally attached telephones. The G150 comes with the Main hunt group as a default configuration.

Sample Incoming Call Route

Figure 57 demonstrates how an incoming call route can be configured to route a DDI/DID to a specific extension number.

Figure 57: Incoming Call Route Example



To create incoming call route for routing a DDI/DID to a specific extension number:

1. Click to receive a configuration form. The **Receiving Config from** dialog box appears displaying the IP address of the G150. Enter the G150 system password.
2. Click **Incoming Call Route** from the Configuration Tree.
3. Right-click within the window on the right-hand side and select **New**. An **Incoming Call Route** configuration window is displayed.
4. In the **Incoming Number** field, enter one of your ISDN numbers.

5. In the **Destination** field, click the corresponding drop-down box and select the destination that the specified ISDN number will be directed to.
6. Select **OK**.
7. Repeat steps 3-7 to configure additional incoming call routes.
8. If this is the last configuration being performed on Manager, click **Save**. In the **Sending Config To** dialog box, accept the selected save option and click **OK**. Otherwise, continue making additional configuration updates and perform a Save when ready.

Hunt Group

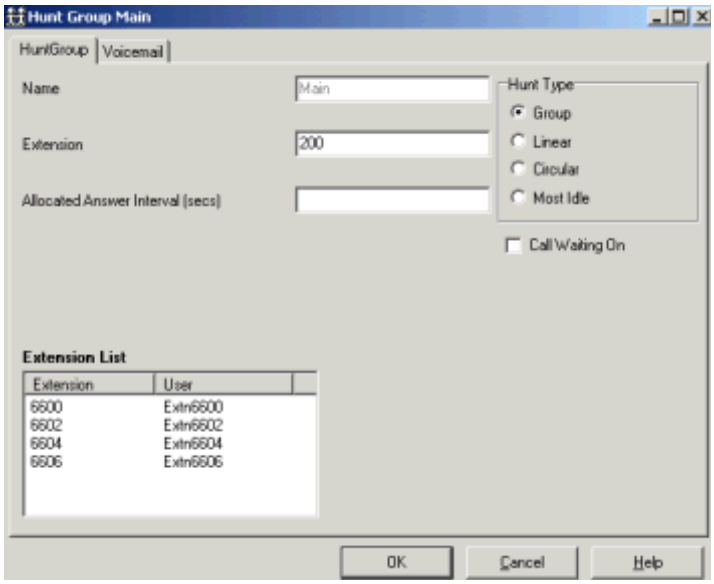
A default Hunt Group called **Main** has been created to route incoming calls from locally attached trunks to extensions that may not have been mapped via the **Incoming Call Route**. These incoming voice calls are sent to the Hunt Group **Main** (extension 200 by default), whose members consist only of locally attached telephones. This Hunt Group is configured in **Group** ring mode (by default); therefore, all incoming calls ring each extension simultaneously.

Only this one hunt group is supported with the G150 in survivable mode. In subtending mode, Communication Manager settings determine hunt group operation.

If the Hunt Group's extension number, ring mode, no answer time or call waiting settings need to be configured, do the following:

1. Click to receive a configuration form. The **Receiving Config from** dialog box appears displaying the IP address of the G150. Enter the G150 system password.
2. Click **HuntGroup** from the Configuration Tree.
3. Double-click the **Main** Hunt Group. The Main Hunt Group configuration window appears.

Figure 58: Manager Hunt Group Configuration screen



The following fields are available for updates:

- **Extension:** The extension number to be used by the Hunt Group. An extension number that does not conflict with an existing user's extension number must be entered.
- **No Answer Time (secs):** Default = Blank

  The number of seconds an extension rings before the call is passed to another extension in the list. This applies to all telephones in this group. If left blank, the **System Default No Answer Time** (15 seconds) will be used.
- **Call Waiting On:** Default = Off

  Only supported by group's set to the Ring Type of Group. When on, user's in the group already on a call, receive call waiting indication when a new call rings the group. The users must also have their own Call Waiting setting set to On.
- **Ring Mode:** Default = Group

  Sets the order in which each extension in a Hunt Group is rung.

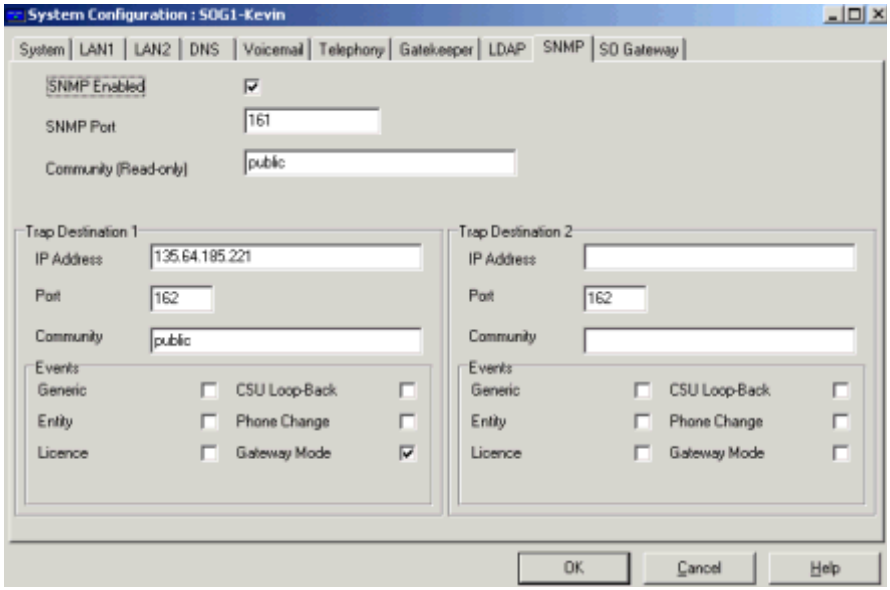
  - **Group:** All telephones in the Extension List ring simultaneously.
  - **Linear/Hunt:** Each extension is rung in order, one after the other, starting from the first extension in the list each time.
  - **Circular/Rotary:** Each extension is rung in order, one after the other. However, the last extension used is remembered. The next call received rings the next extension in the list.
  - **Idle/Most Idle:** The extension that has been unused for the longest period rings first, then the extension that has been idle second longest rings, etc.
  - **Extension List:** By default, the list contains

4. On the **Voicemail** tab, a **Voicemail On** option is available to enable callers to leave voicemail messages to the **Main** hunt group mailbox. If the option is not ticked, then voicemail will not be enabled for the hunt group.
5. When all necessary updates have been made, click **OK**.
6. If this is the last configuration being performed on Manager, click **Save**. In the **Sending Config To** dialog box, accept the selected save option and click **OK**. Otherwise, continue making additional configuration updates and perform a Save when ready.

SNMP Traps

G150 SNMP traps can be configured via the **SNMP** tab within the Manager System configuration form. Traps can be sent to two independent IP addresses, for applications where an end-user and maintainer both need to be notified of a fault. This is cofigurable via the **Trap Destination 1** and **Trap Destination 2** area within the **SNMP** tab. The SNMP configuration window within Manager is displayed below:

Figure 59: Manager SNMP Configuration screen



To enable SNMP and Polling Support:

In order for the IP Office control unit to be discovered and polled by an SNMP manager, its SNMP agent must be enabled and placed in the same read community as the SNMP manager.

Do the following to setup SNMP and polling support:

1. Click to receive a configuration form. The Receiving Config from dialog box appears displaying the IP address of the G150. Enter the G150 system password.
2. Click **System** from the Configuration Tree and double click the G150 configuration on the right hand side of the display window.
3. On the **SNMP** tab, tick the **SNMP Enabled** check box.
4. In the **SNMP Port** field, enter the UDP port number used by the IP Office SNMP agent to listen for and respond to SNMP traffic. The normal default is **161**.
5. In the **Community** field (Read-only), enter the community to which the device belongs for read access. This community name must match that used by the SNMP manager application when sending requests to the device. The community **public** is frequently used to establish communication and then changed (at both the SNMP agent and manager ends) for security.
6. Click **OK**.
7. If this is the last configuration being performed on Manager, click **Save**. In the **Sending Config To** dialog box, accept the selected save option and click **OK**. Otherwise, continue making additional configuration updates and perform a Save when ready.

To enable SNMP Trap Sending:

1. Click to receive a configuration form. The Receiving Config from dialog box appears displaying the IP address of the G150. Enter the G150 system password.
2. Click **System** from the Configuration Tree and double click the G150 configuration on the right hand side of the display window.
3. On the **SNMP** tab, ensure that **SNMP Enabled** is ticked.
4. Using either **Trap Destination 1** or **Trap Destination 2**, enter the following information:
   - Enter the **IP Address** of the PC running the SNMP manager application.
   - Enter the **Port** on which the traps messages should be sent. This is the UDP port on which the IP Office sends SNMP trap messages. The default is **162**.
   - Set the **Community** that will be used by the agent and the SNMP manager. The community **public** is frequently used to establish communication and then changed (at both the SNMP agent and manager ends) for security.
   - Select the **Events** which should be sent:
     - **Generic:** Events such as soft reboot (warm start), hard reboot (cold start), links up/down (transition in the status of a PPP or frame relay interface) or SNMP community mismatch.
     - **Entity:** Failures, errors and changes of state in trunk interfaces.

- **License:** Report failure to connect with the Licence Key Server.
- **CSU Loop-Back:** Only displays when the system locale is set to **enu** (North America). Ticking this field enables the sending of CSU loop-back events, which may then be monitored by an SNMP manager application.
- **Phone Change:** (Supported in survivable mode only.) When enabled, the G150 system sends a trap when a phone is removed or moved.
- **Gateway Mode:** If enabled, G150 will generate an SNMP trap whenever the operating mode changes between survivable and sub-tending.

5. Click **OK**.
6. If this is the last configuration being performed on Manager, click  **Save**. In the **Sending Config To** dialog box, accept the selected save option and click **OK**. Otherwise, continue making additional configuration updates and perform a Save when ready.

Connecting G150 to the Network & Communication Manager

It is recommended that the G150 be connected to the network and hence Communication Manager after all necessary configurations have been made on both the Communication Manager and G150. It is recommended that the G150 is tested in survivable mode before connecting it to Communication Manager. See Testing an Installation on page 144 for information on testing in survivable mode.

Configuration without IP Phones

If there are no IP phones connected locally to the G150 or any intentions of using IP phones in the future, LAN1 can be used to connect to the network. Once the necessary configuration on G150 and Communication Manager has been made, configure G150's connection to the network via the **LAN1** tab within Manager's **System** configuration form.

One of the key configuation decisions is the DHCP status of G150. The role of the G150 Media Gateway within the data network is important to its overall functioning. The G150 has the ability to manage the customer's IP network through its integral DHCP server. The G150 can be configured to hold a pool of IP addresses for users on the Local Area Network. When a user's PC is powered up, the G150 system will allocate an IP address for the duration of the user's logon session. The DHCP server also provides the user's PC with the address of the Domain Name Service (DNS) server and the Windows Name Service (WINS) server. Alternatively, for customers who have a separate DHCP server, G150 can be configured to obtain its IP address from that server or be set with its own dedicated static IP address. This decision needs to have been decided by the customer's network administrator prior to the installation of G150.

Note:

If G150 is getting an IP address from another DHCP server, it MUST receive the same IP address each time because the address is also configured in Communication Manager.

Once the DHCP status of the G150 has been decided, follow the instructions within Configuring LAN1 on page 133 to configure LAN1.

Configuration Options with IP Phones

It is normally recommended that the LAN ports on the front of the G150 (configured via **LAN1** on Manager's **System** configuration form) are used to connect local IP phones and the G150 (via LAN1) operates as the IP phones' DHCP server.

There are three options for connecting the G150 to the Communication Manager if there are IP phones connected locally to the G150.

- **LAN2:** Connection to the Communication Manager can be configured via Manger's **LAN2** tab on the **System** configuration form. The **LAN2** configuration controls the ethernet port labeled "WAN" on the front of the G150.
- **WAN Expansion Card:** The WAN slot in the back of the G150 supports a WAN expansion card (v.35/V.24/X.21). If used, the WAN expansion card can be configured for connection to the Communication Manager via the **Services** configuration form on Manager.
- **LAN1:** Connection to the IP phones and the Communication Manager can be configured via Manager's **LAN1** tab on the **System** configuration form.

Using LAN2 for Connection to Communication Manager

The **LAN2** configuration controls the ethernet port (labelled **WAN** on the front of the G150) and this port can be used to connect the G150 to the Communication Manager.

Once all configuration has been made on the Communication Manager and G150, the **WAN** port on the front of the G150 can be used to provide WAN connectivity via WAN access equipment, which typically would consist of one of the following:

- Router to serve as the IP gateway from the premises out to the IP-based WAN.
- Access Concentrator to multiplex the LAN and TDM-based enterprise traffic streams into an aggregated stream to present to the WAN.

The role of the G150 Media Gateway within the data network is important to its overall functioning. The G150 has the ability to manage the customer's IP network through its integral DHCP server. The G150 can be configured to hold a pool of IP addresses for users on the Local Area Network. When a user's PC is powered up, the G150 system will allocate an IP address for the duration of the user's logon session. The DHCP server also provides the user's PC with the address of the Domain Name Service (DNS) server and the Windows Name Service WINS) server. Alternatively, for customers who have a separate DHCP server, G150 can be configured to obtain its IP address from that server or be set with its own dedicated static IP address. This

decision needs to have been decided by the customer's network administrator prior to the installation of G150. Although the G150 can act as a DHCP server for each of LAN1 and LAN2, it is recommended that **LAN1** is configured as a DHCP server and **LAN2** with a single static address for WAN or access to another subnet.

Note:

LAN2 controls the ethernet port labelled "WAN" on the front of the G150.

All locally attached IP phones that are part of the Communication Manager dial plan should be connected to LAN1 and use G150's inbuilt DHCP server for site specific options. The G150's inbuilt DHCP server will ensure the phones do not lose connectivity when the system goes into survivable mode. Setting up IP phones is discussed in detail in the "G150 Media Gateway Telephone Support" section.

If the customer has an existing DHCP server on the network connected to LAN2, configuring LAN1 to act as a DHCP server will not effect the addressing scheme of data network because the DHCP server on LAN1 ONLY assigns IP addresses to devices on LAN1. With this network configuration, LAN2 MUST be configured with a static address or as a DHCP client for connection to the network and thus to Communication Manager. Because these two LANs are on separate subnets, requests for IP addresses by devices on the LAN2 network will be provided by the network's DHCP server and NOT the G150 DHCP server on LAN1.

Sample G150 Network Configuration

With IP phones plugged into the LAN ports on the front of the G150, the WAN port on the front of the G150 can be used to connect to the Communication Manager and configured via the **LAN2** form on Manager.

There are three methods for routing between Communication Manager and this local site.

- Static route

  Static routing is typically used in situations where it is necessary to add a new fixed routing extension to an otherwise dynamic network.

- G150 supports RIP - RIP can be enabled if the adjacent router also supports RIP.

  RIP is typically used when the background network supports RIP or can redistribute between RIP and its main routing protocol.

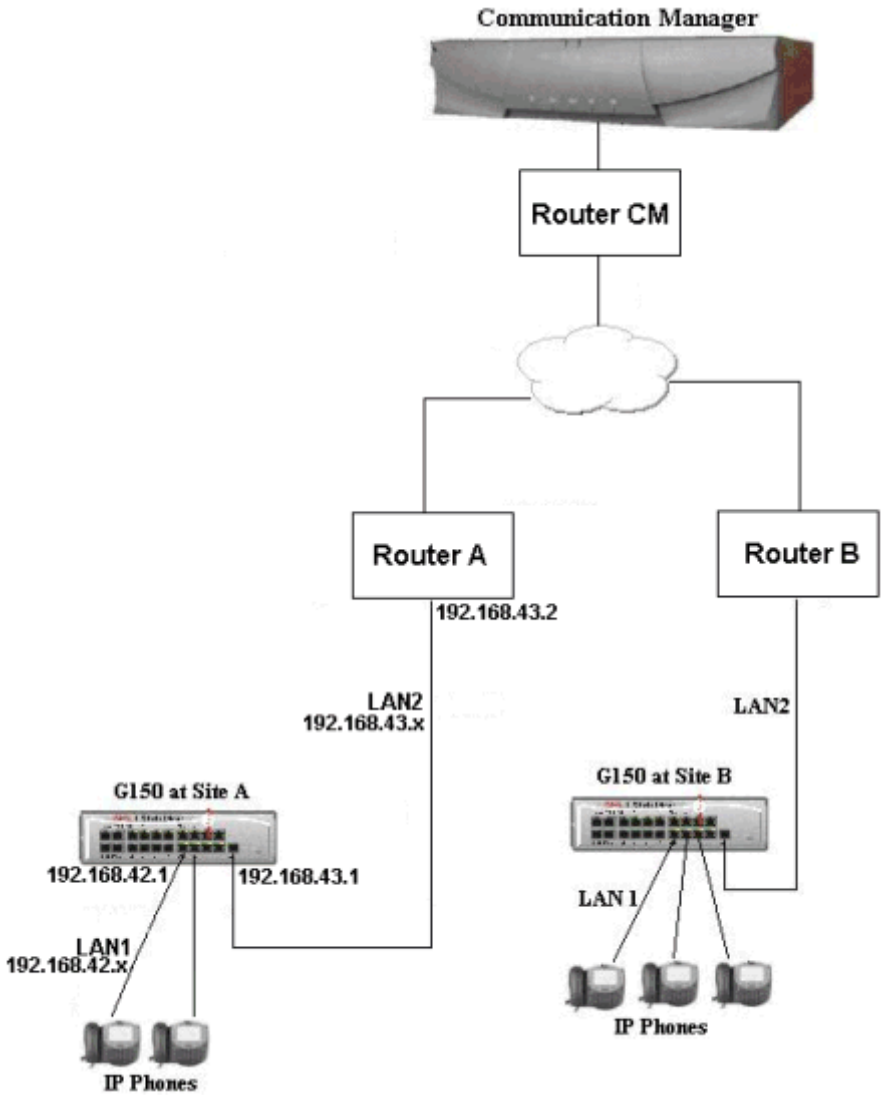
- Proxy ARP through the G150.

  Proxy ARP is typically required when the local routing device can only advertise access to a single subnet.

In each case, correct routing configuration should be verified by a ping from Communication Manager to LAN1.

Consider the sample addressing configuration immediately following the sample diagram Figure 60.

Figure 60: Sample Configuration



For the G150 at Site A

- The LAN segment LAN1 is configured with the IP address range of 192.168.42.x and G150's address is set to 192.168.42.1.
- The LAN segment LAN2 is configured with the IP address range of 192.168.43.x, G150's address is set to 192.168.43.1, and Router A's address is set to 192.168.43.2.
- The G150 has a default route configured via Router A.
- Communication Manager is configured with Router CM as its default gateway and with G150's LAN1 address (192.168.42.1) in its **IP Node Names** list.

For the G150 at Site B

Site B is configured with a configuration similar to Site A's.

Static Routing to LAN1 from Router A

In order for routing from Communication Manager to LAN1 to operate correctly, a static route may be configured in Router A. Based on the above example, the route would be:

- IP address: 192.168.43.x
- Mask: 255.255.255.0
- Next Hop: 192.168.43.1

Note:

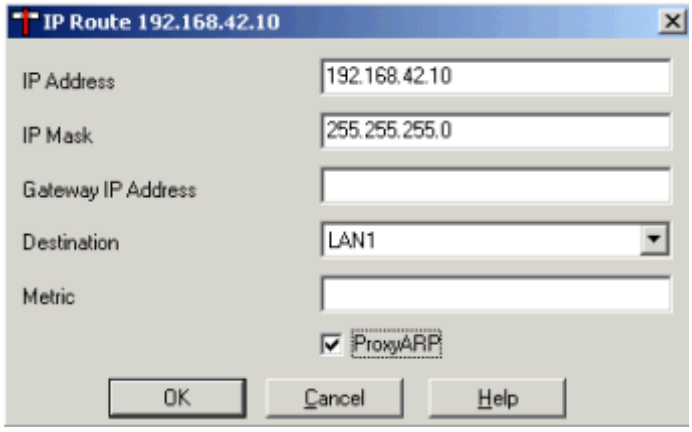
G150's LAN2 address has been configured into Router A, this address will normally be a static address.

Proxy ARP

In some cases, Router A may not be able to be configured to route to both subnets, LAN1 and LAN2. (An instance where this is an issue are VPN gateways that support only one subnet at Site A.) In this case, Router A can be configured to route with a single subnet - 192.168.42.x with subnet mask of 255.255.254.0 in this example. G150 can then split the subnet into two segments using Proxy ARP. An IP route must be configured in G150 for each LAN1 address and must have Proxy ARP enabled.

To enable proxy ARP for each device:

1. Click 🗁 to receive a configuration form. The **Receiving Config from** dialog box appears displaying the IP address of the G150. Enter the G150 system password.
2. Click **IP Route** from the Configuration Tree. A list of any existing IP routes are displayed on the right hand side of the Manager window.
3. Right-click within the right hand side of the Manager window and select **New** to create an IP route for each of the LAN1 address in the routing table.



4. In the **IP Address** field, enter the IP address of a valid LAN1 address.
5. The default **IP Mask** of 255.255.255.0 is automatically entered. Alter this to **255.255.255.255**.
6. Leave the **Gateway IP Address** field blank.
7. Under the destination **Destination** field, select **LAN1**.
8. Tick the **ProxyARP** option.
9. Click **OK**.
10. If this is the last configuration being performed on Manager, click **Save**. In the **Sending Config To** dialog box, accept the selected save option and click **OK**. Otherwise, continue making additional configuration updates and perform a Save when ready.

DHCP on LAN2

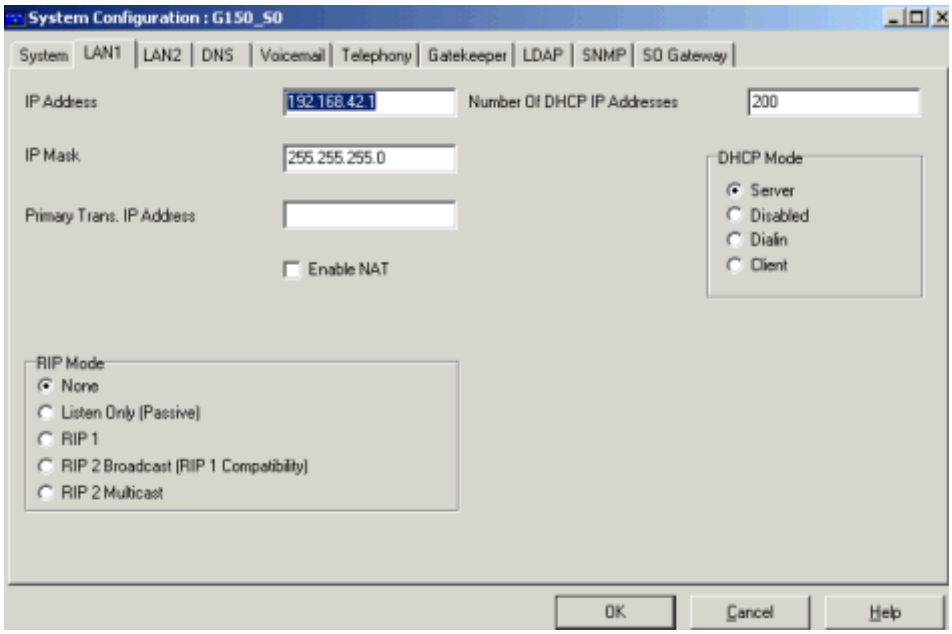
When using Proxy ARP, if there is a network DHCP server on LAN2, this DHCP server must NOT allocate IP addresses outside LAN2. In other words, the DHCP server must be configured to not allocate addresses to devices on LAN1. In this example, the DHCP server should only allocate addresses 192.168.43.x and not 192.168.42.x.

Configuring LAN1

Do the following to configure LAN1:

1. Click to receive a configuration form. The **Receiving Config** from dialog box appears displaying the IP address of the G150. Enter the G150 system password.
2. Click **System** from the Configuration Tree and double click the G150 configuration on the right hand side of the display window.

Figure 61: Manager LAN1 Configuration Screen



3. Click the **LAN1** tab and make the following selections within the **DHCP Mode** area:

   - **Server:** (default selection) When selected, the G150 is acting as the DHCP Server on LAN1, allocating addresses ONLY to devices on LAN1. If this configuration is selected, please provide the following additional information:

     - **IP Address:** Default = 192.168.42.1

       This is the IP address of the G150 on LAN1. In the Communication Manager configuration, this IP address MUST match that entered in the **IP Node Names | IP Address** field for the corresponding G150.

       If the G150 is acting as a DHCP server on LAN1, then this address will be the DHCP starting address. A static IP Address is recommended. If the default static IP address is not acceptable based on the customer's addressing scheme, obtain an acceptable IP address from the customer's network administrator.

     - **IP Mask:** Default = 255.255.255.0

       This is the Subnet mask used on LAN1. If the default IP address is not acceptable based on the customer's addressing scheme, obtain an acceptable IP address from the customer's network administrator.

     - **Primary Trans. IP Address:** Default = Blank

       Network Address Translation (NAT) is not recommended with G150. This field should be left blank.

- **Number of DHCP IP Addresses:** Default = 200

  This defines the number of sequential IP addresses, starting at the G150's IP address, that is allocated via DHCP on LAN1 and/or to dial in users. Addresses are only allocated if the DHCP mode is set to **Server** or **Dialin**.

Note:

If the G150 is acting as the primary DHCP Server on the network (DHCP mode set to **Server** or **Dialin**) on both the LAN1 and LAN2, Dial in users are allocated their address from the LAN1 pool of addresses first.

- **Disabled:** When selected the G150 will not use DHCP, therefore it will not act as a DHCP server or obtain an IP address from a DHCP server on this LAN. With this setting, the G150 must be assigned a static IP address. If this configuration is selected, please provide the following additional information:

  - **IP Address:** Default = 192.168.42.1

    This is the IP address of the G150 on LAN1. On the Communication Manager configuration, this IP address MUST match that entered in the **ip node names | ip address** field for the corresponding G150.

    If the Control Unit is also acting as a DHCP server on LAN1, then this address will be the DHCP Starting address. A static IP Address is recommended.

  - **IP Mask:** Default = 255.255.255.0

    This is the Subnet mask used on LAN1.

- **Dial In:** This option allows the G150 to allocate IP addresses to PPP Dial In users only. It will not allocate IP addresses to local devices on this LAN. If this configuration is selected, please provide the following additional information:

  - **IP Address:** Default = 192.168.42.1

    This is the IP address of the Control Unit on LAN1. In the Communication Manager configuration, this IP address MUST match that entered in the IP Node Names | IP Address field for the corresponding G150.

    If the Control Unit is also acting as a DHCP server on LAN1, then this address will be the DHCP Starting address. A static IP Address is recommended.

  - **IP Mask:** Default = 255.255.255.0

    This is the Subnet mask used on LAN1.

- **Client:** (Not recommended) The G150 obtains its IP Address and IP Mask from a DHCP server on the LAN. If this option is selected, keep the following in mind:

  - The DHCP server MUST be configured always to allocate the same address each time because the address is also configured in Communication Manager via the **ip node names | ip address** field.

  - Do not enter IP Address and IP Mask values if running in this mode. The fields will be filled automatically with the values received from the DHCP server.

4. Once all the necessary information has been provided, click **OK**.
5. If this is the last configuration being performed on Manager, click **Save**. In the **Sending Config To** dialog box, accept the selected save option and click **OK**. Otherwise, continue making additional configuration updates and perform a Save when ready.

Configuring LAN2

With LAN1 configured as the DHCP server for devices connected to the LAN ports on the front of the G150, LAN2 can be configured to be a DHCP client or disabled (in which case it requires a static IP address).

Do the following to configure LAN2:

1. Click to receive a configuration form. The **Receiving Config** from dialog box appears displaying the IP address of the G150. Enter the G150 system password.
2. Click **System** from the Configuration Tree and double click the G150 configuration on the right hand side of the display window.
3. Click the **LAN2** tab and make the following selections within the **DHCP Mode** area:
   - **Server:** (default selection) When selected, the G150 is acting as the DHCP Server on LAN2. If this configuration is selected, please provide the following additional information:
     - **IP Address:** Default = 192.168.43.1

       This is the IP address of the G150 on LAN2.
     - **IP Mask:** Default = 255.255.255.0

       This is the Subnet mask used on LAN2. If the default IP address is not acceptable based on the customer's addressing scheme, obtain an acceptable IP address from the customer's network administrator.
   - **Primary Trans. IP Address:** Default = Blank

     Network Address Translation (NAT) is not recommended with G150. This field should be left blank.
   - **Number of DHCP IP Addresses:** Default = 200

     This defines the number of sequential IP addresses, starting at the G150's IP address, that is allocated via DHCP on LAN2. Addresses are only allocated if the DHCP mode is set to **Server** or **Dialin**.

   Note:

   If the G150 is acting as a DHCP Server (DHCP mode set to **Server** or **Dialin**) on both the LAN1 and LAN2, Dial in users are allocated their address from the LAN1 pool of addresses first.

- **Disabled:** When selected the G150 will not use DHCP, therefore it will not act as a DHCP server or obtain an IP address from a DHCP server on this LAN. If this configuration is selected, a static IP address MUST be provided, so please provide the following information:
  - **IP Address:** Default = 192.168.42.1

    This is the IP address of the G150 on LAN2. A static IP Address is recommended.
  - **IP Mask:** Default = 255.255.255.0

    This is the Subnet mask used on LAN2.
- **Dial In:** This option allows the G150 to allocate IP addresses to PPP Dial In users only. It will NOT allocate IP addresses to local devices on this LAN. If this configuration is selected, please provide the following additional information:
  - **IP Address:** Default = 192.168.42.1

    This is the IP address of the Control Unit on LAN2. A static IP Address is recommended.
  - **IP Mask:** Default = 255.255.255.0

    This is the Subnet mask used on LAN2.
- **Client:** The G150 obtains its IP Address and IP Mask from a DHCP server on the LAN. Do not enter IP Address and IP Mask values if running in this mode. The fields will be filled automatically with the values received from the DHCP server.

4. Once all the necessary information has been provided, click **OK**.
5. If this is the last configuration being performed on Manager, click **Save**. In the **Sending Config To** dialog box, accept the selected save option and click **OK**. Otherwise, continue making additional configuration updates and perform a Save when ready

Configure G150's default route

G150 should be configured with the IP address of the router on LAN2 for routing of requests to the outside world.

To configure the default route via LAN2:

1. Click to receive a configuration form. The **Receiving Config** from dialog box appears displaying the IP address of the G150. Enter the G150 system password.
2. Click **IP Route** from the Configuration Tree. Right-click within the right-hand window and select **New**. An IP Route configuration window appears.
3. In the **Gateway IP Address** field, enter the IP address of the router on LAN2.
4. In the **Destination** field, select **LAN2** from the drop down list.
5. If this is the last configuration being performed on Manager, click **Save**. In the **Sending Config To** dialog box, accept the selected save option and click **OK**. Otherwise, continue making additional configuration updates and perform a Save when ready

Configuring the WAN Expansion Card for Connection to the Communication Manager

The WAN expansion card is fitted to the back of the G150 to provide a single WAN connection (X.21, V.35 or V.24 via a 37-way D-type socket). Line speeds up to and including 2Mbps are supported on the interface. The carrier providing the line dicates the actual operating speed. In some territories, the maximum speed may be 1.544M.

If used, the WAN expansion card can be configured for connection to the Communication Manager by configuring the following on Manager:

- Create a WAN service
- Edit the WAN Port
- Create an IP Route

To create a WAN service:

1. Click  to receive a configuration form. The **Receiving Config from** dialog box appears displaying the IP address of the G150. Enter the G150 system password.
2. Click **Services** from the Configuration Tree.
3. Right-click in the right-hand side of the Manager configuration window and select **New**. A service configuration window displays.
4. Select the **WAN Service** type.
5. Click **OK**.
6. Select the **Service** tab.
7. In the **Name** field enter an appropriate name, such as “WAN Connection”.
   - In the **Incoming Password** field and the associated **Confirm Password** field immediately below, enter a password for this WAN service/account.

   This account name and password will be used at the Communication Manager end to establish a connection.

   This will also automatically create a **RAS** entry with the same name.
8. In the **Account Name** and **Password** fields, enter the associated information as provided by the WAN account created at the Communication Manager end.
9. Click **OK**.

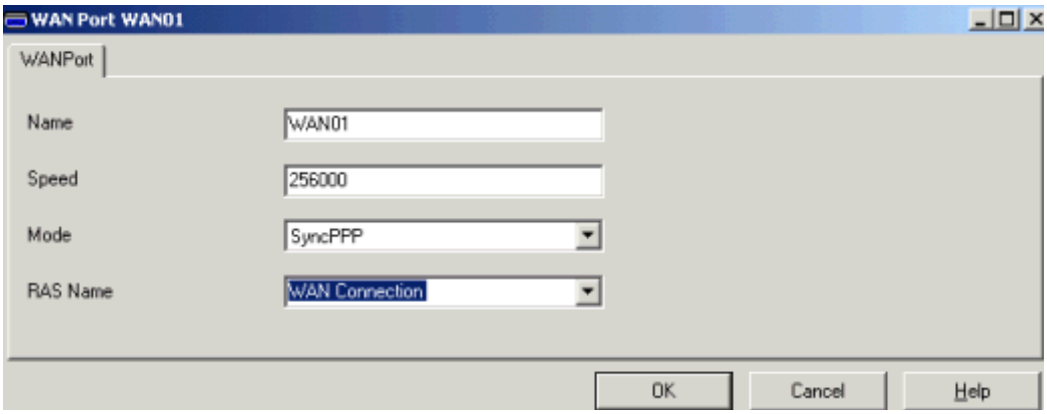
Editting the WAN port

DO NOT create a new WAN Port, this is automatically detected by the G150. If a WAN Port is not displayed, connect the WAN cable, reboot the G150 and receive the configuration. The WAN Port configuration form should now be displayed.

Do the following to edit the WAN port:

1. Click to receive a configuration form. The **Receiving Config from** dialog box appears displaying the IP address of the G150. Enter the G150 system password.
2. Click **WANPort** from the Configuration Tree. Double-click the WAN port to open the configuration window. If a WAN Port is not displayed, connect the WAN cable, reboot the G150 and receive the configuration. The WAN Port configuration form should now be displayed.

Figure 62: WAN Port



3. In the **Speed** field, enter the operational speed of this port. For example, for a 256K connection enter 256000. This should be set to the actual speed of the leased line as this value is used in the calculation of bandwidth utilization. If set incorrectly, additional calls may be made to increase Bandwidth erroneously.
4. In the **RAS Name** field, select the name of the RAS/WAN Service.
5. Leave all other fields as their default.
6. Click **OK**.
7. If this is the last configuration being performed on Manager, click **Save**. In the **Sending Config To** dialog box, accept the selected save option and click **OK**. Otherwise, continue making additional configuration updates and perform a Save when ready.

Create an IP Route

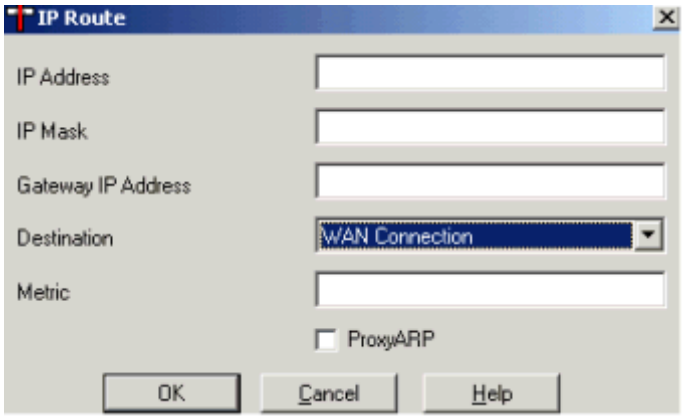
A default IP route needs to be created.

To create a default IP route:

1. Click to receive a configuration form. The **Receiving Config from** dialog box appears displaying the IP address of the G150. Enter the G150 system password.
2. Click **IP Route** from the Configuration Tree. A list of any existing IP routes are displayed on the right hand side of the Manager window.

3. Right-click within the right hand side of the Manager window and select **New**.

Figure 63: IP Route for a WAN Link



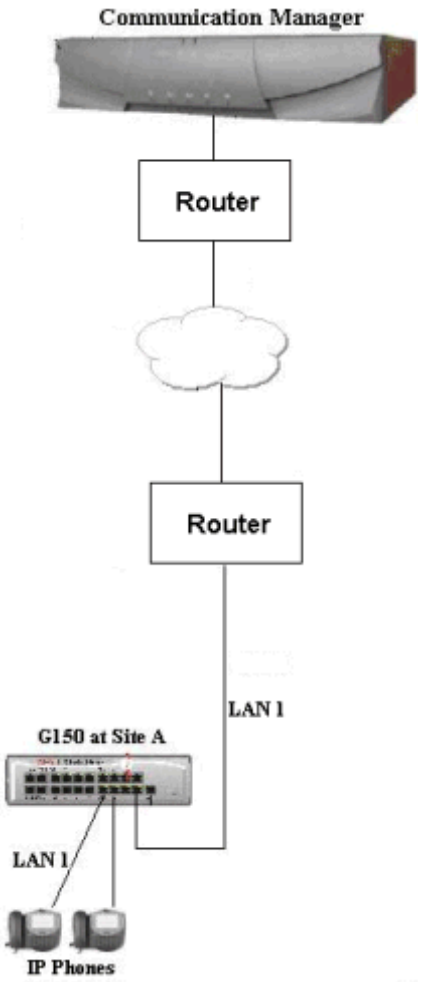
4. Leave the **IP Address** field blank to create a default IP route.
5. Leave the **IP Mask** field blank.
6. Leave the **Gateway IP Address** field blank.
7. Under the destination **Destination** field, select the **Service** created above.
8. Click **OK**.
9. If this is the last configuration being performed on Manager, click **Save**. In the **Sending Config To** dialog box, accept the selected save option and click **OK**. Otherwise, continue making additional configuration updates and perform a Save when ready.

Using LAN1 for IP Phones and Connection to Communication Manager

If IP phones are used, they must be connected via the LAN ports on the front of the G150. One of these ports can also be used to connect to the network/Communication Manager. These ports are configured via the **LAN1** tab on Manager's **System** configuration form.

A diagram of this setup is provided in Figure 64.

Figure 64: Sample Setup with LAN1 only



Depending on whether the G150 is acting as a DHCP server or not, the following additional configuration and checks are necessary.

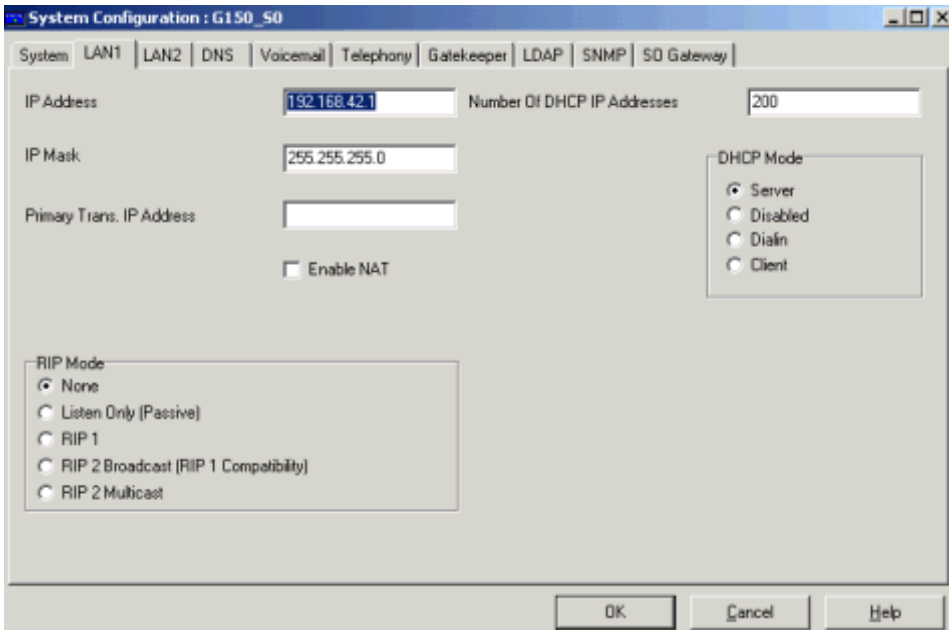
G150 is a DHCP Server

- If G150 is acting as the DHCP server, it will assign its own IP address as the default gateway to all IP stations connected to it. Traffic intended for other subnets will be redirected to the true local router using ICMP redirect.

Do the following to configure LAN1 and the DHCP status of G150:

1. Click to receive a configuration form. The **Receiving Config** from dialog box appears displaying the IP address of the G150. Enter the G150 system password.
2. Click **System** from the Configuration Tree and double click the G150 configuration on the right hand side of the display window.

Figure 65: Manager LAN1 Configuration Screen



3. Click the **LAN1** tab and make the following selections within the **DHCP Mode** area:

   - **Server:** (default selection) When selected, the G150 is acting as the DHCP Server on LAN1, allocating addresses ONLY to devices on LAN1. If this configuration is selected, please provide the following additional information:

     - **IP Address:** Default = 192.168.42.1

       This is the IP address of the G150 on LAN1. In the Communication Manager configuration, this IP address MUST match that entered in the **IP Node Names | IP Address** field for the corresponding G150.

       If the G150 is acting as a DHCP server on LAN1, then this address will be the DHCP starting address. A static IP Address is recommended. If the default static IP address is not acceptable based on the customer's addressing scheme, obtain an acceptable IP address from the customer's network administrator.

     - **IP Mask:** Default = 255.255.255.0

       This is the Subnet mask used on LAN1. If the default IP address is not acceptable based on the customer's addressing scheme, obtain an acceptable IP address from the customer's network administrator.

     - **Primary Trans. IP Address:** Default = Blank

       Network Address Translation (NAT) is not recommended with G150. This field should be left blank.

- **Number of DHCP IP Addresses:** Default = 200

  This defines the number of sequential IP addresses, starting at the G150's IP address, that is allocated via DHCP on LAN1 and/or to dial in users. Addresses are only allocated if the DHCP mode is set to **Server** or **Dialin**.

Note:

If the G150 is acting as the primary DHCP Server on the network (DHCP mode set to **Server** or **Dialin**) on both the LAN1 and LAN2, Dial in users are allocated their address from the LAN1 pool of addresses first.

4. If this is the last configuration being performed on Manager, click  **Save**. In the **Sending Config To** dialog box, accept the selected save option and click **OK**. Otherwise, continue making additional configuration updates and perform a Save when ready.

Using an External DHCP Server

If another device (other then the G150) is acting as the DHCP server for LAN1, the 176 option needs to be added to that server. Avaya IP phones need the IP address of two H.323 Gatekeepers (Communication Manager and G150) and a TFTP server (for example a PC running Manager). They do this by requesting the **Option 176** setting from the DHCP server.

To configure Option 176 on the DHCP server, define the following in the string value field (this sample string value is based on Windows 2000; the string format can vary depending on the Operating System):

MCIPADD=xxx.xxx.xxx.xxx, www.www.www.www, **MCPORT=1719**, **TFTPSRVR=yyy.yyy.yyy.yyy**, **TFTPDIR=z**

where:

- **xxx.xxx.xxx.xxx** is the IP address of the Communication Manager.
- **www.www.www.www** is the IP address of the G150's LAN1 address.
- **yyy.yyy.yyy.yyy** is the TFTP server IP address.
- **z** is the directory on the TFTP server where the Avaya IP phones software files are located. This information is not required if those files are in the TFTP server's default directory.
- The maximum string length is 127 characters.

Refer to your DHCP server documentation for details of how to

- Configure Option 176.
- Ensure this option information is correctly supplied to the IP phones.

Testing an Installation

It is highly recommended that a verification process takes place to ensure that all installation and configuation has been performed correctly. This verification process should be performed in 2 stages:

- G150 not connected to the Communication Manager (survivable mode).
- G150 connected to the Communication Manager (sub-tending mode).

Verificaton in Survivable Mode

Prior to connecting the G150 to Communication Manager, plug the IP phones into the LAN ports on the front of the G150 and verify the following:

- Ensure all IP phones register with G150.
- Ensure two-way speech between two IP phones.
- Ensure two-way speech between an analog phone and an IP phone.

Verification in Sub-tending Mode

Once all configuration has been made, plug the IP phones into the LAN ports on the front of the G150 and connect the G150 to the Communication Manager. Verify that the connection is established and the IP phones are configured correctly by ensuring there is two-way speech between the following:

- A local IP phone and a phone at the Communication Manager site.
- A local analog phone and a phone at the Communication Manager site.
- A local IP phone and a local analog phone.
- If there is a PC on the newly created LAN, ensure that this PC can ping the Internet.
- If other remote gateways are connected to the Communication Manager, ensure two-way speech between a local IP phone and a phone at the remote gateway.

Using Shortcodes

Shortcodes, which are only supported in survivable mode, may be used to administer a dial plan, configure TAC and FAC support and provide call barring options.

For functioning in survivable mode, the G150 dial plan can be further administered on the gateway via the Manager application using the shortcode table. The short code tables can be configured system-wide, against individual users or against groups of users. For example, a Last Number Redial short code that is created directly from the Short code configuration form applies to all users on the phone system, but the same short code created within the **User** configuration form applies only to that user.The shortcodes are used to interpret a dialed sequence of digits (0-9, *, #) into an action.

Shortcode tables are searched in the following order:

- User assigned - User shortcodes take priority over short codes set for the system as a whole and lines. The individual user short codes are matched against dialing by a particular user.
- User Restriction Short Codes - Takes priority over short codes set for the system.The user restriction short codes are matched against dialing by all users linked to the User Restrictions set. They are overridden by individual user short codes.
- System assigned - System defined short codes are matched against any dialing by any user. They are overridden by individual user short codes.

The first shortcode found that matches a dialed sequence is the one used.

A set of default shortcodes are provided with the G150 configuration. These default shortcodes will vary depending on the system locale setting. Most default shortcodes are created to enable Feature Access Codes (FAC) that are available from the Communication Manager to also be available in survivable mode.

Short Code Parameters

Each short code setup is comprised of a combination of the following parameters. Depending on what short code you are creating, not all short codes require the use of all the parameters. The parameters include:

- **Short Code:** Default = blank

  The dialing digits used to trigger the short code. Maximum length is 33 characters. See Short Code Characters on page 146 for a list of valid characters.

- **Telephone Number:** Default = blank

  The number output by the short code. The number dialed by the short code or parameters for the short code feature. This field can contain numbers and characters. For example, it can contain user names, hunt group names and telephone numbers (including those with special characters). Maximum length 33 characters. See Telephone Number Characters on page 147 for a list of valid characters.

- **Line Group ID:** Default = 0

  For external calls, this is the set of lines that are used when making the call. Which group a line belongs to is set through the Line form for each line.

- **Feature:** Default = Dial

  This is what the short code does. See Short Code Features .

- **Locale:** Default = blank

  Some features can support country specific variations if needed.

Short Code Characters

When creating a short code, the Short Code field can contain dialed numbers plus ***** and **#** and the following non-dialed characters:

- **?** – Signifies that this is the default entry and is used in the absence of any other match or partial match.
- **?D** – This character combination will initiate a call to a defined phone number as soon as the extension goes off-hook. This feature is also known as "hotline" and typically used with a phone in unattended reception areas or for door entry. See the "Dial on Pick up" short code example for a sample of its use.
- **N** - Signifies a sequence of one or more digits dialed and then followed by a * or #. The * or # are entered separately in Short Code field (ie. N* or N#).
- **X** – Match a single digit. When a group of "X"s is used, the short code matches against the total length of "X"s (for example if there are 10 "X"s, the user would have to dial 10 digits for it to match the short code).
- **[n]** – Expect secondary dial tone, where "n" represents the short code configured to trigger secondary dial tone.
- **;** – Receive sending complete. This must be the last character in the short code string. It indicates to the system wait for the number to be fully dialed (based on the Dial Delay Time) before acting on the short code.

  Important:
  In the United States, this short code character MUST be used when the line group for the short code contains PRI lines or T1 lines emulating analog lines.

Telephone Number Characters

In relation to short codes, the Telephone Number field can reflect the number dialed by the short code or parameters for the short code feature. For example, this field can contain user names and telephone numbers (including those with special characters).

The Telephone Number field can contain numbers and the following characters:

- **C** – Place digits following the "C" in the outgoing call's Called Number field rather than Keypad field (this is the default).
- **E** – Replace with the Extension Number dialing the Short Code.
- **K** - Place the digits following the "K" in the outgoing call's Keypad field rather than Called Number field. Only supported on ISDN/QSIG.
- **L** - Use the last number dialed.
- **N** - Substitute with digits dialed for N or the string of "X"s in the Short Code field.
- **S** - Place the digits following the "S" into the outgoing call's Calling Number field.
- **U** - Replace with the User Name of the User dialing the Short Code.
- @ – Enter following digits into sub-address.
- **.** – Replace with current dialed digits, ie. those that have been dialed so far and triggered the short code match.
- **,** – One second pause in between DTMF digit dialing.
- **" "** – Any text must be surrounded by quotation marks, eg. User Names.

System default shortcodes for a G150 set to a US locale:

G150 is predefined with default feature access codes and trunk access codes.

The system short codes in this table come as default with the G150 configuration when the system locale is set to **enu** (North America) in Manager's **System** configuration form.

Table 12: G150 North American Default Short Codes

Short Code	Number	Line Group ID	Feature	Comment
*6	Blank	0	Call Pickup Any	Picks ups any ringing call.
*9	Blank	0	Last Number Redial	Redials the last number dialed.
[9]0N;	0N	0	Dial	Dialing prefix for an outside line and phone numbers starting with 0.

1 of 2

Table 12: G150 North American Default Short Codes (continued)

Short Code	Number	Line Group ID	Feature	Comment
[9]1N;	1N	0	Dial	Dialing prefix for an outside line and phone numbers starting with 1 (long distance numbers).
[9]N;	N	0	Dial	Dialing prefix for an outside line and a phone number in any format.
[9]xxxxx xxxxxx;	N	0	Dial	Dialing prefix for an outside line and phone numbers with 11 digits.
9	.	0	Secondary Dial Tone	Dialing prefix for an outside line.
*70*N#	N	0	Dial Physical Extn By Number	Emergency access
*71*N#	N	0	Dial Physical Extn By ID	Dials a specific extension using its system ID.
4000	"MAINTENANCE"	0	RelayOn	Connect/disconnect modem to/from first analogue trunk
				2 of 2

System default shortcodes for a G150 set to a UK locale:

The system short codes in this table come as default with the G150 configuration when the system locale is set to **eng** (United Kingdom) in Manager's **System** configuration form.

Table 13: G150 United Kingdom Default Short Codes

Short Code	Number	Line Group ID	Feature	Comment
*20	Blank	0	Call Pickup Any	Picks up any ringing call.
*77	Blank	0	Last Number Redial	Redials the last number dialed.
				1 of 2

Table 13: G150 United Kingdom Default Short Codes (continued)

Short Code	Number	Line Group ID	Feature	Comment
9N;	N	0	Dial	Dialing prefix for an outside line and a phone number in any format.
4000	"MAINTENANCE"	0	RelayOn	Connect/disconnect modem to/from first analogue trunk
				2 of 2

Shortcode Features

The following shortcode features are supported on the G150 in survivable mode:

- Busy
- Call Pickup Any
- Clear Call
- Dial
- Dial3K1
- Dial56K
- Dial64K
- Dial Direct
- Dial Emergency
- Dial Extn
- Dial Physical Number By Extension
- Dial Physical Number By ID
- Dial Speech
- Dial V110
- Dial V120
- Dial Video
- Flash Hook
- Hold Call
- Hold Call Waiting

- Last number redial
- Relay On
- Retrieve Call
- Secondary Dial Tone

Sample Shortcode Setups

The following are examples of shortcode configurations via Manager. Remember that the same shortcode can be configured system-wide or against individual users.

Creating a Speed Dial

In this example, user(s) entering **401** on their telephone key pad will dial the New

Jersey Office on 212 555 0000.

- **Short Code:** 401
- **Telephone Number:** 1 212 555 0000
- **Line Group ID:** 0
- **Feature:** Dial

Charging a Call at the 3K1 Rate

Below is a sample short code for charging an outgoing call at the 3K1 rate (if it is supported on the customer's ISDN).

- **Short Code:** *97*N#
- **Telephone Number:** N
- **Line Group:** Whichever line is configured for 3K1 rate
- **Feature:** Dial3K1

N represents the phone number to be dialed and charged at the 3K1 rate. For example, a call that is dialed by entering ***97*14085551234#** will be charged at the 3k1 rate.

Dial on Pick up

The following user short code dials the extension specified (extn. 201 in this example) the moment the user's handset it is picked up.

- **Short Code:** ?D
- **Telephone Number:** 201
- **Line Group ID:** 0
- **Feature:** DialExtn

Forcing a Call to be Answered

Below is a sample short code that forces a call to be automatically answered.

Short Code: *83*N#

Telephone Number: N

Feature: DialDirect

N represents the extension that will be forced to automatically answer. For example, when a user dials ***83*201#**, extension 201 will be forced to automatically answer the call.

Pick up a Ringing Phone

The sample short code below is a default within the Manager configuration. This shortcode enables the user to pickup any ringing phone. Below is the setup for the shortcode.

- **Short Code:** *6
- **Telephone Number:** leave blank
- **Line Group ID:** 0
- **Feature:** CallPickupAny

Create a PSTN Backup Route

The sample short code below creates a PSTN backup route to extensions at the other Communication Manager sites. For example, if the extensions (64xxx) at the Communication Manager sites have DDI/DID of 1408 555 2xxx, then the following short code should be set up:

- **Short Code:** 64xxx
- **Telephone Number:** 14085552xxx
- **Line Group ID:** 0
- **Feature:** Dial

Modem Control Shortcode

The default shortcode, ***4000***, controls the on/off functionality of the internal modem attached to the first analog trunk (if the modem is enabled via Manager). To set up remote access, see Remote Access.

Note:

If the system switches from suvivable to sub-tending mode while the modem is switched On, it will remain On until G150 goes into survivable mode again or it is restarted, because short codes are only processed during survivable mode.

Mapping Communication Manager Features to G150

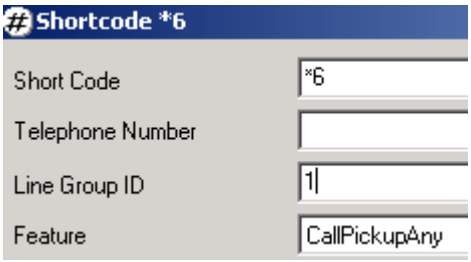
When configuring the G150, keep in mind that dial plan features configured on the Communication Manager also require provisioning on the G150 if they are to remain available to G150 users when the connection to Communication Manager is lost. The following key configurations need to be considered:

- **Feature Access Codes (FAC)** - If certain feature access codes have been set up on Communication Manager and the customer wants them available when G150 goes into survivable mode, then they also need to be configured via Manager in the form of Short Codes.

  Example

  If the Feature Access Code displayed in Table 14 has been configured on Communication Manager, then a system short code needs to be created on Manager to make this same feature available in survivable mode.

  Table 14: FAC and Short Code

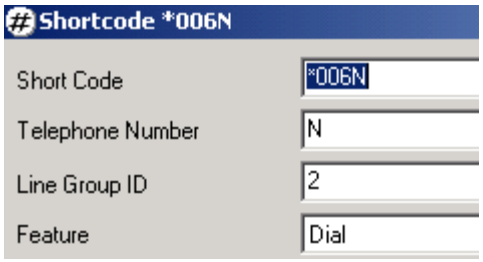
Communication Manager FAC	Sample G150 Configuration (System Shortcode)
***6** to up any ringing call.	

- **Trunk Access Code (TAC)** - If specific outgoing line access codes have been configured on Communication Manager and the customer wants them available when the G150 goes into survivable mode, then they need to be configured via Manager in the form of Short Codes.

  Example

  If the Trunk Access Code displayed in Table 15 has been configured on Communication Manager to enable calls to be directed out through a PRI trunk on line 2, then a system short code needs to be created on Manager to make this same access code available in survivable mode.

Table 15: TAC and Short Code

Communication Manager TAC	Sample G150 Configuration (System Shortcode)
***006** to dial out through PRI trunk (line number 2).	

Note:

The 4 analog trunks are viewed as one group by Communication Manager for TAC purposes and should all be assigned the same incoming/outgoing line group ID.

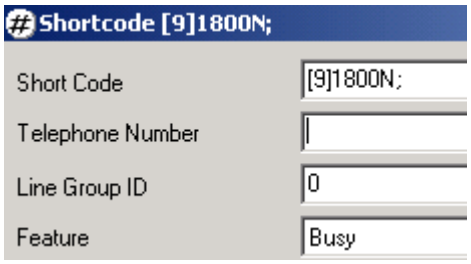
- **Automatic Routing Schedule (ARS)** - If an ARS has been configured on Communication Manager where certain numbers are barred for all users or for specific users only, these same numbers need to barred when the system is in survivable mode. Call barring in survivable mode can be configured via system or user short codes on Manager.

  Example

  If a barring of **1800** numbers is configured on Communication Manager, then a short code needs to be configured on Manager to bar this same number in survivable mode.

  The barring short code should look similar to the following (the line group may vary depending on line setups):

Table 16: ARS and Short Code

Communication Manager ARS	Sample G150 Configuration (Short Code)
1800 numbers are barred for calls going out on line 0 in subtending mode.	

The 4 analog trunks are viewed as one group by Communication Manager for ARS purposes and should all be assigned the same incoming/outgoing line group ID.

- **Incoming Call Routing -** Incoming call routes that are configured for G150 users should also be configured on Manager. This is critical for routing incoming calls when the connection between the G150 and Communication Manager is lost. Creating an incoming call route via Manager is discussed later on in this section; see Create an Incoming Call Route.

Remote Access

Before leaving the customer's site, it is a good idea to set up remote access to the G150 system for maintenance purposes. G150 provides Remote Access Server (RAS) functionality, allowing external users to dial into the local area network from modems, terminal adaptors and routers. Whether the remote connection is using an analog or digital line, the setup and use of the remote access differs slightly.

To setup remote access, the following must be configured on Manager:

- Change the password for the **RemoteManager** user account (default user for dial-in access).
- Use the **RAS Dialin** account.
- Create an **Incoming Call Route**.
- Create an IP route (optional).

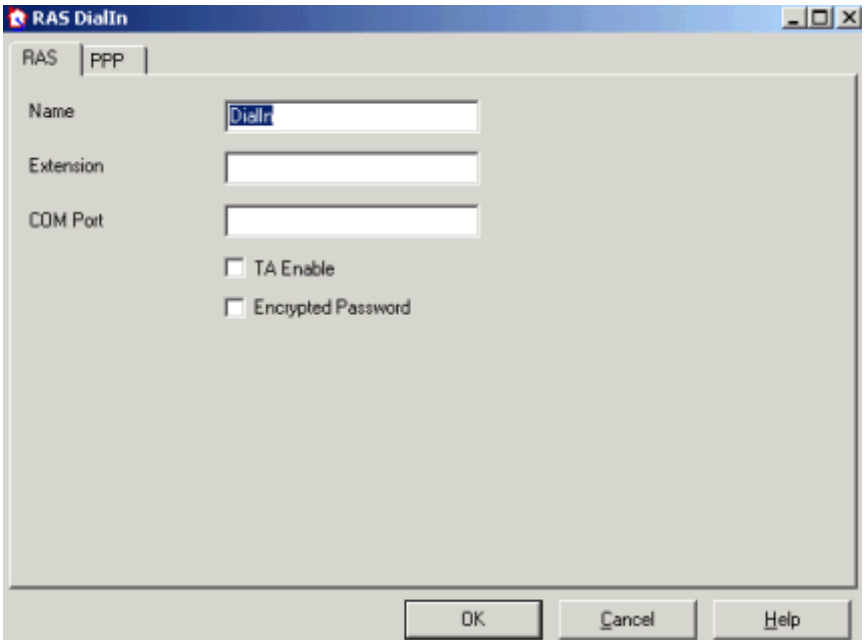
To change the remote user password:

1. Click  to receive a configuration form. The **Receiving Config from** dialog box appears displaying the IP address of the G150. Enter the G150 system password.
2. Click **User** from the Configuration Tree. A list of users are displayed.
3. Double-click the **RemoteManager** user (default user for dial-in access).
4. On the **User** tab:
   - **Extension:** Leave blank
   - **Password/Confirm Password:** A default password is displayed, for security purposes, enter a new password. Make note of this password in a secure location.
5. On the **Dial In** tab, ensure that the **Dial In On** option is enabled/ticked.
6. Click **OK**.
7. If this is the last configuration being performed on Manager, click  **Save**. In the **Sending Config To** dialog box, accept the selected save option and click **OK**. Otherwise, continue making additional configuration updates and perform a Save when ready.

RAS Dialin entry:

A default RAS entry called **Dialin** is available for use with remote access setup. *There is no need to create a new RAS entry*. The existence of this RAS entry can be verified by clicking the **RAS** form on the Manager Configuration Tree. Figure 36 shows the **RAS DialIn** window.

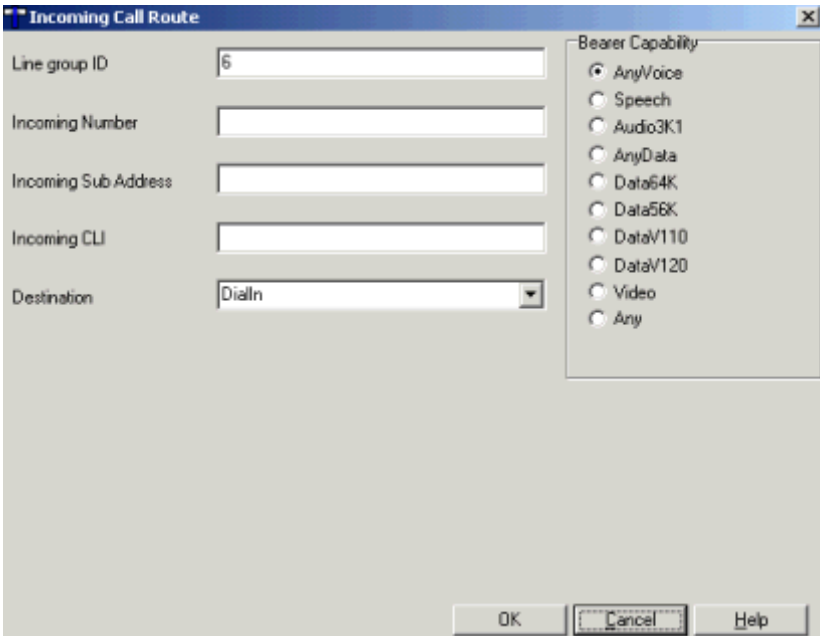
Figure 66: Manager RAS Configuration screen



Incoming Call Route: A incoming call route for dial-in access (labeled **DialIn**) is available by default. Additional configuration (Bearer Capability) is available if necessary.

1. Click 🗁 to receive a configuration form. The **Receiving Config from** dialog box appears displaying the IP address of the G150. Enter the G150 system password.
2. Click **Incoming Call Route** from the Configuration Tree.

Figure 67: Manager Incoming Call Route Configuration screen



3. If using an analog modem, set the **Bearer Capability** to **AnyVoice**. If using Digital TA for any digital dial up (BRI, PRI or T1), set to **AnyData**.
4. In the **Destination** drop-down box, leave as the default, **Dialin**.
5. The values entered for any of the other fields depend on whether the remote user will be calling in on a particular line, phone number or from a set CLID.
6. Click **OK**.
7. If this is the last configuration being performed on Manager, click **Save**. In the **Sending Config To** dialog box, accept the selected save option and click **OK**. Otherwise, continue making additional configuration updates and perform a Save when ready.

To enable the first analog line for a modem connection:

1. Click to receive a configuration form. The **Receiving Config from** dialog box appears displaying the IP address of the G150. Enter the G150 system password.
2. Click **Line** from the Configuration Tree.
3. Double-click the first analog line from the list of lines. The **Analog Trunk** configuration window is displayed.
4. On the **Analog** tab, click the **Modem Enabled** check box.
5. Click **OK**.

6. If this is the last configuration being performed on Manager, click **Save**. In the **Sending Config To** dialog box, accept the selected save option and click **OK**. Otherwise, continue making additional configuration updates and perform a Save when ready.

IP Route: Is an IP route needed?

The steps above are sufficient for an incoming digital data connection. However, if the remote user has an IP address that is not in the same domain as the G150, then an IP Route is needed for outgoing return data.

- This is not necessary if the remote user has an IP address on same domain as the G150.
- This is not necessary if the remote user's dial-up connection method is set to **Obtain an IP Address Automatically** and the G150's DHCP mode is set to **Server** or **DialIn**.

To create an IP Route:

1. Click to receive a configuration form. The **Receiving Config from** dialog box appears displaying the IP address of the G150. Enter the G150 system password.
2. Click **IP Route** from the Configuration Tree.
3. Right-click on the list area and select **New** to enter the routing information.
   - In the **IP Address** and **IP Mask** fields, enter the information of the remote system.
   - In the **Destination** drop-down list, select the **RAS** entry created above.
4. Click **OK**.
5. If this is the last configuration being performed on Manager, click **Save**. In the **Sending Config To** dialog box, accept the selected save option and click **OK**. Otherwise, continue making additional configuration updates and perform a Save when ready.

Remote Dial-up PC Setup

Once remote access has been properly configured at the cusomer site and remote access is necessary, the PC being used by the remote user must also be configured. The instructions in this section are specific to a PC with a Microsoft Windows operating system. Howerver, the general principles are applicable to any PC capable of dial-up networking.

To configure the dial-up PC:

1. If the G150 Media Gateway is configured (via the System's **LAN1** tab on Manager) to act as the DHCP server on LAN1 or configured to allocate IP addresses to PPP Dial In users only, then set the PC's Network Properties for TCP-IP via the Dial-Up Adapter to **Obtain an IP Address Automatically**. This does not affect the PC's network card settings, which can be running a serparate set of IP address settings.

   Note:

   The TCP/IP settings of individual dial-up connections can also be altered to either Server Assigned Address (DHCP) or to a fixed IP address (i.e. one matching the G150's domain).

2. Create a new dial-up networking session.

3. When a user name and password is requested, ensure that the information entered matches that of the remote user set up on the G150 system.
   - If the default **RemoteManager** user is used, enter the user name of **RemoteManager** and the corresponding password.
4. If an incoming number was specified for the **DialIn** incoming call route, then the telephone number dialed must match the incoming call route created for remote access.

Remote Access on an Analog Line

Once remote access is set up properly and if the remote connection is using an analog line, the default ***4000*** short code can be used to connect and disconnect the modem to/from the first analog line. The *4000* short code only works when the G150 is in survivable mode and from within the customer's site. Thus, when the remote user needs to have the modem connected or disconnected, a call must be made to the customer's site requesting that the *4000* short code get activated. While the modem is enabled, the first analog line will not be available for call handling.

The LED on the front of the G150 (bottom right-hand corner) flashes orange when the modem enabled. The LED stays flashing until the modem is turned off.

Note:

Because the shortcode only works when the G150 is in survivable mode, if the G150 connects to a gatekeeper and switches to sub-tending mode while the modem is enabled, it will remain enabled until the G150 is rebooted or the system goes into survivable mode again.

Complete the Configuration Process

Consult the planning documentation to obtain the necessary information to complete the configurations.

Chapter 4: Voicemail for G150 Media Gateway

In sub-tending mode, all voicemail functionality is driven by the Communication Manager. In survivable mode, G150 can operate with Voicemail Pro to take messages on behalf of users and groups. When connection to an active Gatekeeper is established, Voicemail Pro forwards all messages to Communication Manager's messaging solution - Modular Messaging 2.0, Message Networking 2.0 or Interchange 5.4. While in survivable mode, calls are routed to voicemail as directed by incoming call routing or user/group voicemail settings.

Note:

If the messaging solution is Interchange/Message Networking, additional configuration is required after setting up Voicemail Pro. Refer to G150 Voicemail with Interchange/Network Messaging on page 171.

In survivable mode, G150 users have the following restrictions with regards to their voicemail:

- NO notification of awaiting voicemail messages.
- NO ability to retrieve messages until connection to an active Gatekeeper is restored.

Requirements for Installing Voicemail Pro

SMTP Requirements

Before installing Voicemail Pro, an SMTP server MUST be installed on the Voicemail Pro PC and tested for sending and receiving messages.

Voicemail Pro uses SMTP to send messages to the Modular Messaging or Message Networking messaging platform when connection to a gatekeeper is re-established. Voicemail Pro first attempts an SMTP session with the Mail Server; if this is unsuccessful, it will attempt an SMTP session with the local SMTP Mail Server. If this is unsuccessful, the voicemail message will be discarded. To prevent this from happening and to ensure that SMTP messages are stored until access to the Message Networking/Modular Messaging host is re-established, the SMTP Mail Server MUST coexists on the same PC as Voicemail Pro.

PC Requirements

For maximum reliability, Voicemail Pro is installed as a service on the following Windows platforms with a minimum recommended specification of Pentium 4, 2.8GHz or equivalent with 256MB RAM and Internet Explorer 5.5 or newer:

- Windows 2000 Server with Service Pack 3 or later and
- Windows XP Professional.
- Windows 2003 Server.

Network Requirements

The PC should be configured and tested for TCP/IP networking.

- We strongly recommend that the voicemail server PC is connected to the G150 via a LAN switch. If this is not possible, then the server should be directly connected to the G150.
  - If directly connected and the PC card does not operate correctly; its settings may need to be manually set to operate with G150. This should be done according to the PC or network card manufacturer's instructions. The G150 LAN port is full duplex with 10Mbps/100Mbps auto sensing.
  - If not directly connected, using any of the above settings must be supported and matched by the intervening network equipment.
- The PC should have a fixed IP address. While PC's in a DHCP network may retain the same IP address between reboots this is **not** guaranteed.
- If the G150 is acting as a DHCP server, it defaults to using 192.168.42.2 to 192.168.42.201 for DHCP clients. This leaves 192.168.42.202 to 192.168.42.254 for devices that require fixed IP addresses.

Disk Space

A G150 Media Gateway installation of Voicemail Pro requires 500MB.

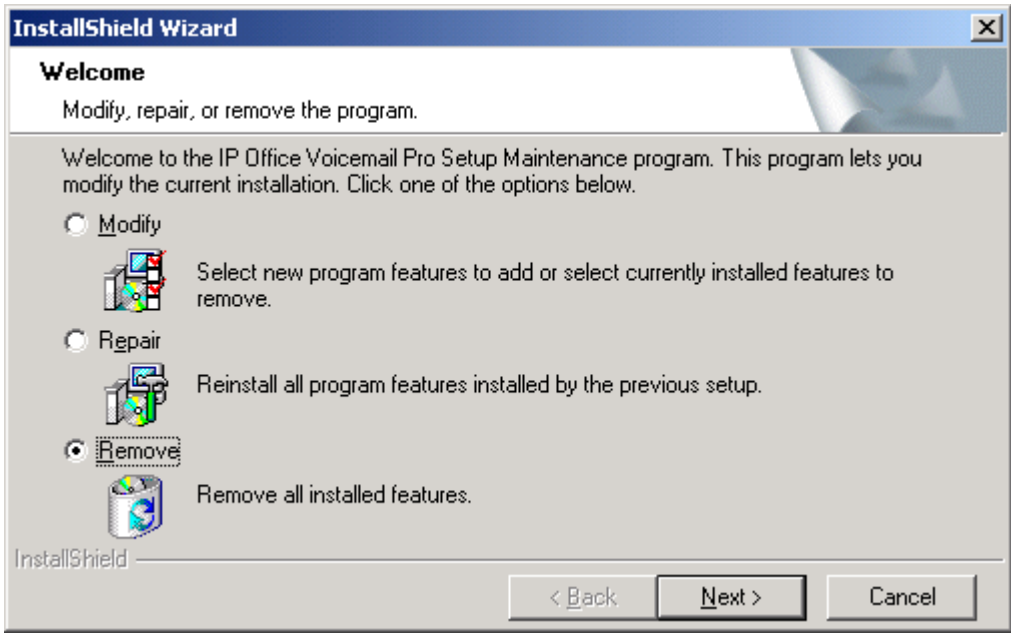
Installing Voicemail Pro

For voicemail support in survivable mode, an ACM Gateway version of Voicemail Pro needs to be installed.

To install ACM Gateway Voicemail:

1. Insert the **Voicemail Pro CD**. The installation wizard should auto-start. If it does not auto-start, browse to and run **Setup.exe** on the CD.
2. Select the installation language from the drop down list. This language will be used for both the installation wizard menus and for the default language prompts installed.
3. Click **OK**. The installation software begins its preparation for installation.
4. If the following screen appears, then a Voicemail Pro is already installed and will need to be removed.

Figure 68: Windows InstallShield for Removing Voicemail Pro screen

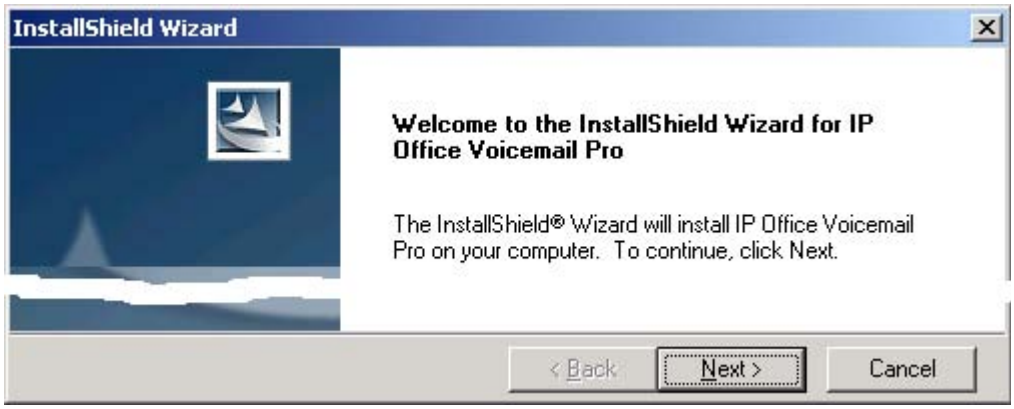


Remove Voicemail Pro by:

1. Open the Windows Control Panel.
2. Select **Add/Remove Programs**.
3. Select **IP Office Voicemail Pro** and click **Add/Remove**.
4. From the options offered select **Remove** and click Next.
5. Follow any prompts given during the removal process.
6. When the process has been completed select the option **Yes, I want to restart my computer now** and click **Finish**.

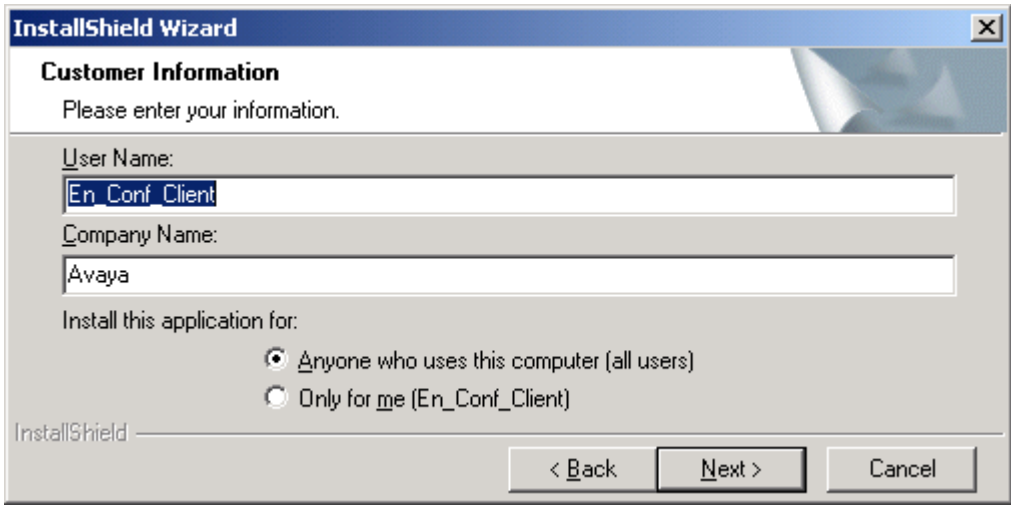
5. Otherwise the InstallShield Wizard for Voicemail Pro will be started.

Figure 69: Windows InstallShield Welcome screen



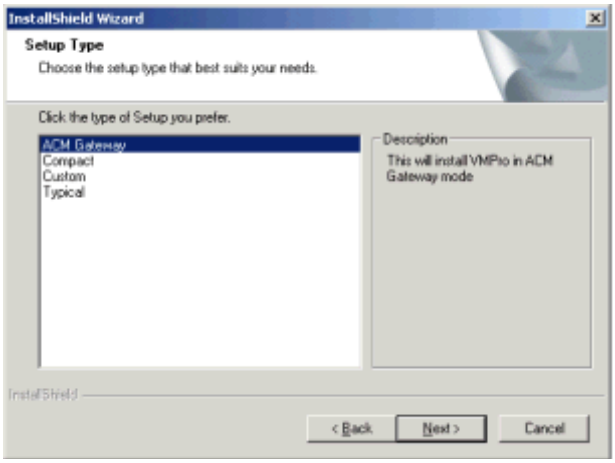
6. Click **Next**. The following screen is displayed.

Figure 70: Windows InstallShield Customer Information screen



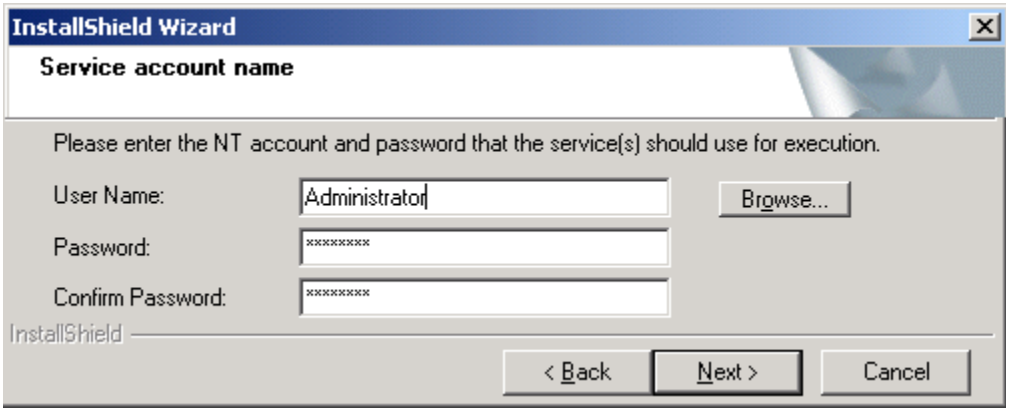
7. Enter a user name and the company name. These settings do not affect the installed application.
8. Select who should be allowed to use the Voicemail client after installation on the server PC. Selecting **Anyone who uses this computer (all users)** is recommended.
9. Click **Next** to continue. The following screen is displayed.

Figure 71: Windows InstallShield Setup screen



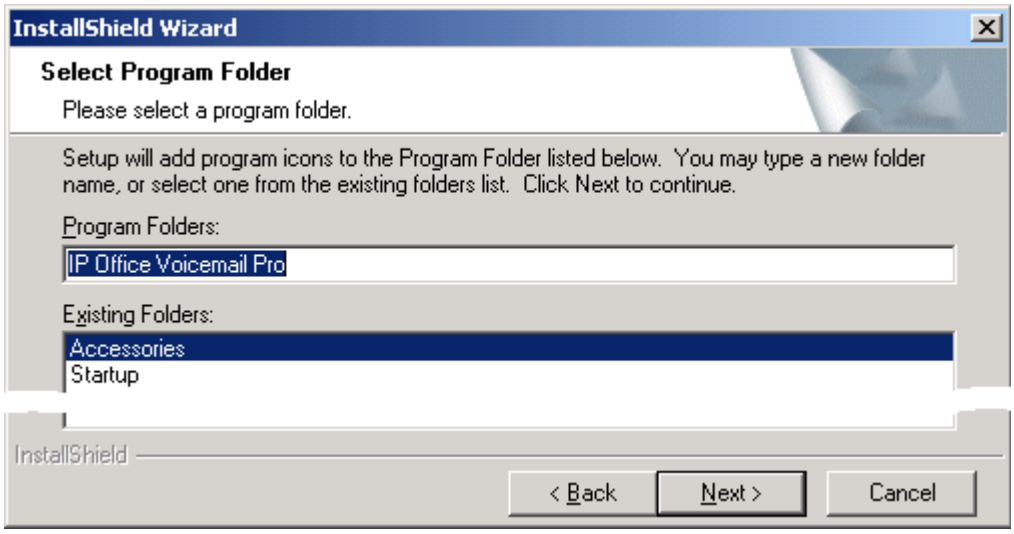
10. Select **ACM Gateway**.
11. Click on **Next**.

Figure 72: Windows InstallShield Account Name screen



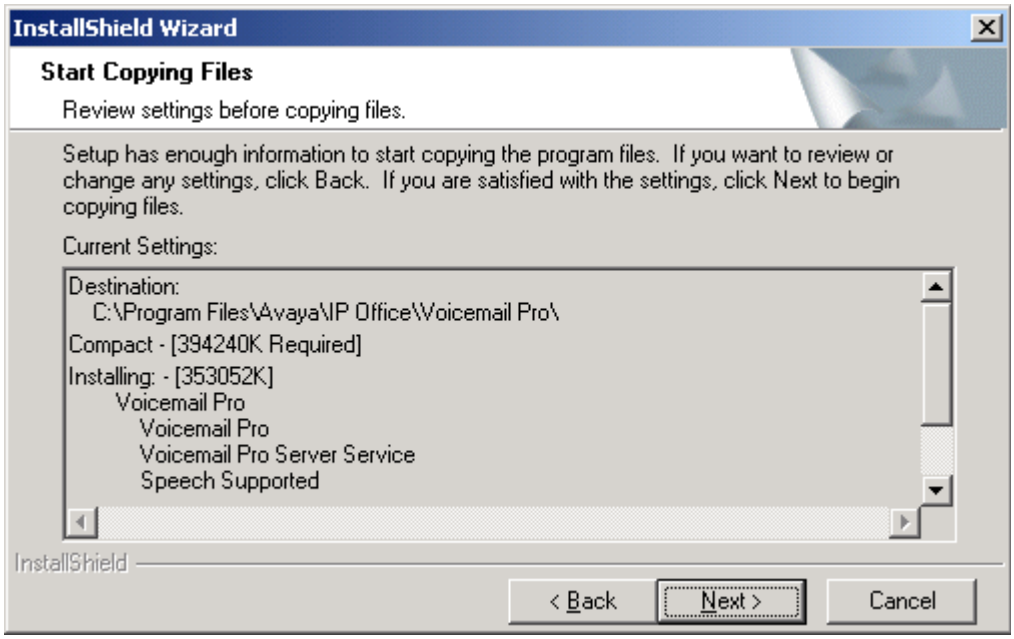
12. Enter the User name and Password for the user account under which the Voicemail service should log on and run. The **Browse** button can be used to browse the available PC or network accounts.
13. Click **Next**. The account details entered above are verified. Entering a new user name will result in prompts to create a new PC user account with that name.

Figure 73: Windows InstallShield Program Folder screen



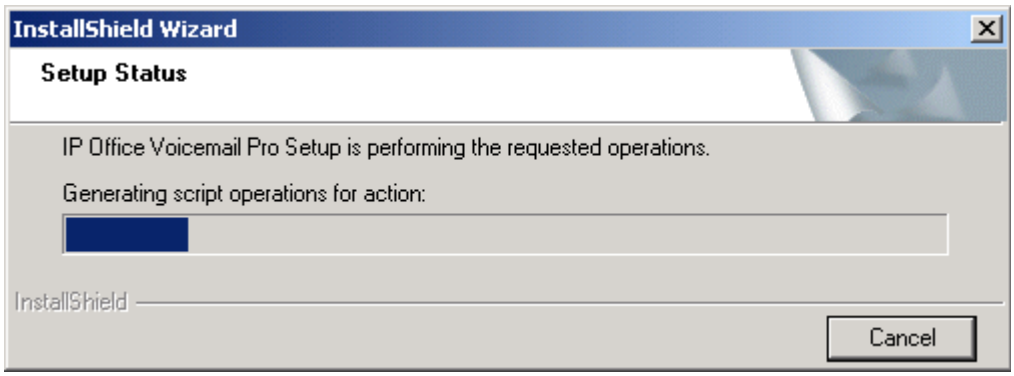
14. Select the program folder into which icons for the Voicemail Pro components should be added.
15. Click **Next**.

Figure 74: Windows InstallShiled File Copying screen



16. A summary of the components that will be installed is shown. Check that this list is as expected. Under Speech Supported check that the languages required are shown. English is always listed in addition to the installation language selected.
17. Click **Next** to begin installation of the software.

Figure 75: Windows InstallShield Setup Status screen



18. The progress of the software installation is shown until complete. This procedure can take several minutes.

Figure 76: Windows InstallShield Finish screen

19. Following installation, a request to restart the server PC appears. Select **Yes, I want to restart my computer now** and click **Finish**.
20. Following the server PC's restart, you will be requested to provide the SMTP related information.
21. Click **Next**.

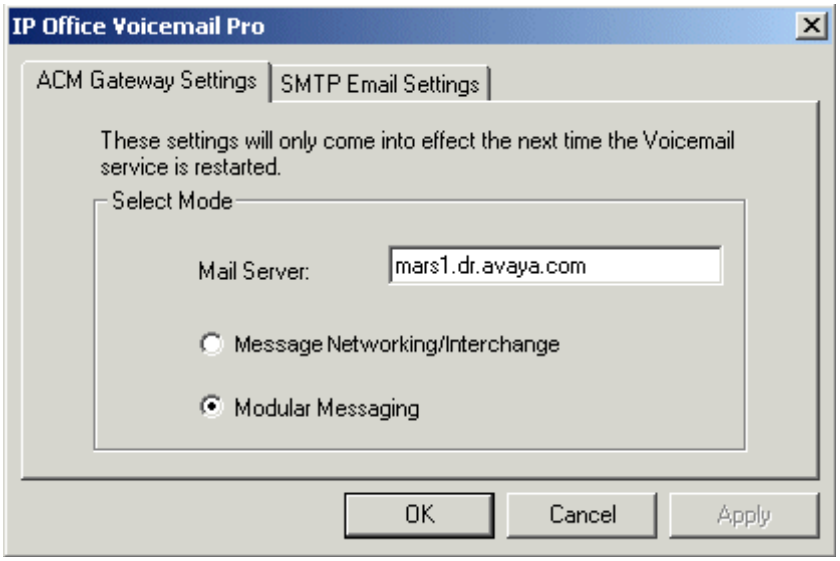
22. A screen displays requesting you to select to where the Voicemail Pro should forward messages when the G150 Media Gateway exits survivable mode and the messaging format to use.

    - **Message Networking/Interchange:** Select this option if the interface to central messaging is via Message Networking or Interchange, ie. indirect. A native Audix interface is not supported. If this option is selected, for the **Mail Server** address enter the Message Networking or Interchange server host hame. This must be a fully qualifed domain name and NOT be an IP address.
    - **Modular Messaging:** Select this option if the interface to central messaging is direct to Modular Messaging. If this option is selected, for the **Mail Server** address enter the Modular Messaging message storage server front-end host name (for example: msscoe.emea.avaya.com). This must be a fully qualifed domain name and NOT be an IP address.

    Note:

    This configuration window is also available on the Voicemail Pro PC on the **Control Panel | IP Office Voicemail Pro** applet.

Figure 77: Voicemail Platform Selection



23. The next screen request details of the SMTP server which the Voicemail Pro server should use to send messages. This is an SMTP server setup on the same server PC as the Voicemail Pro.

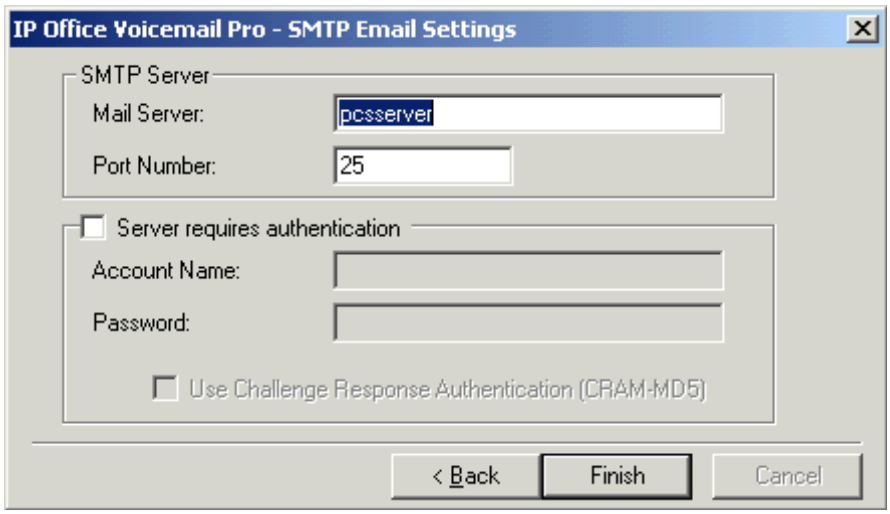
    - **Mail Server:** Enter the fully qualified host name of a local SMTP server for use when the Modular Messaging or the Message Networking server is not available. A sample qualified name is: EN3000AVEXU1.global.avaya.com. This cannot be an unqualified name.

- **Port Number:** Enter the port number for the mail server (usually port 25 for SMTP).
- **Server Requires Authentication:** Enter any authentication option for the SMTP email account. If the SMTP mail server has authentication defined, then tick this option and provide the relevant information.

Note:

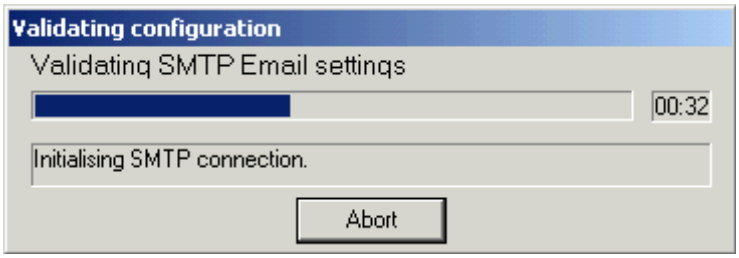
This configuration window is also available on the Voicemail Pro PC on the **Control Panel | IP Office Voicemail Pro** applet.

Figure 78: Voicemail Pro SMTP Settings screen



24. Click **Finish**. The installation wizard will attempt to validate the email settings.

Figure 79: Voicemail Pro Validation screen



25. The software installation stage is now complete. Continue to Starting the Voicemail Pro Server on page 168.

Starting the Voicemail Pro Server

The Voicemail Pro service on the server PC needs to be running for Voicemail Pro to communicate with G150. The Voicemail Pro service restarts automatically every time the server PC is restarted.

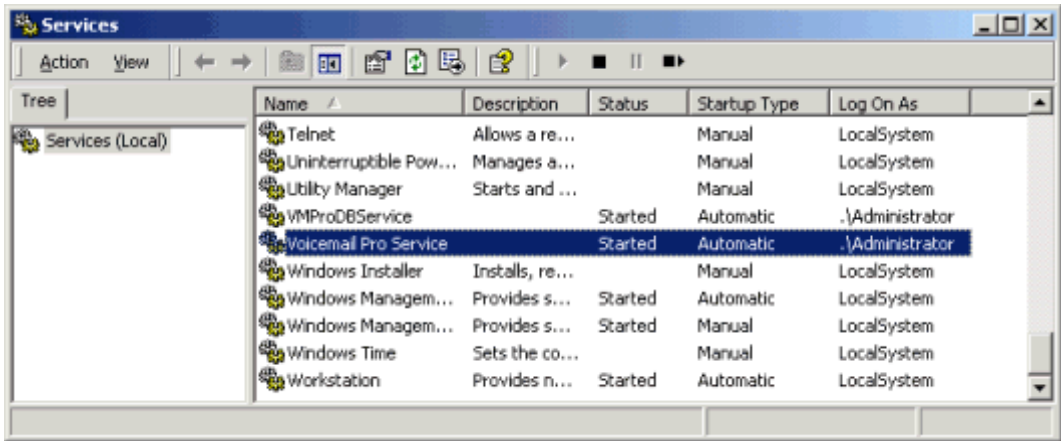
Auto Starting Voicemail Pro Server

The Voicemail Pro Service needs to be configured to start automatically whenever the server PC is restarted. The Voicemail Pro server installs a service, using the user name and password of the account specified during installation. The service is set to automatically restart each time the PC restarts.

To check that the service is started:

1. Select **Start | Settings | Control Panel**.
2. Select **Administrative Tools**.
3. The following services need to be running
   - Voicemail Pro Service.
   - VPIM Database Service
   - VPIM Server Service

Figure 80: Windows 2000, XP Professional and 2003 Services screen



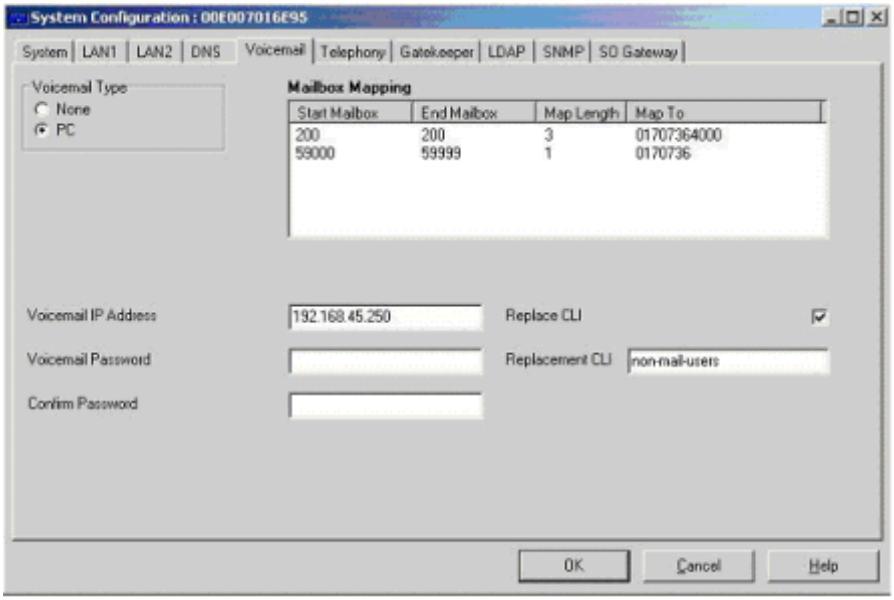
4. For each service, its **Status** should be **Started** and the **Startup Type** should be set to **Automatic**. If a service is not started, manually start it by right-clicking it and selecting **Start**.
5. Close the **Services** window.

Setting up Voicemail for the G150 - Survivable Mode

To configure G150 to take messages when the system is in survivable mode:

1. Click 🗁 to receive a configuration form. The **Receiving Config from** dialog box appears displaying the IP address of the G150. Enter the G150 system password.
2. Click **System** from the Configuration Tree and double click the G150 configuration on the right hand side of the display window.
3. Click the **Voicemail** tab.

Figure 81: Manager Voicemail Configuration screen



4. In the **Voicemail Type** field, select the **PC** option. Definitions of the options are as follows:
   - **None:** No voicemail operation
   - **PC:** The Voicemail server is being run on a networked PC.
5. In the **Voicemail IP Address** field, enter the IP address of the PC that is running the Voicemail Server. The default is **255.255.255.255**.
   - If set as **255.255.255.255**, G150 broadcasts on the LAN to see if it can discover the Voicemail Server. If set to a specific IP address, the system connects to the Voicemail Server running on that specific IP address only.

6. Leave the **Voicemail Password** and **Confirm Password** fields blank.
7. If this is the last configuration being performed on Manager, click **Save**. In the **Sending Config To** dialog box, accept the selected save option and click **OK**. Otherwise, continue making additional configuration updates and perform a Save when ready.

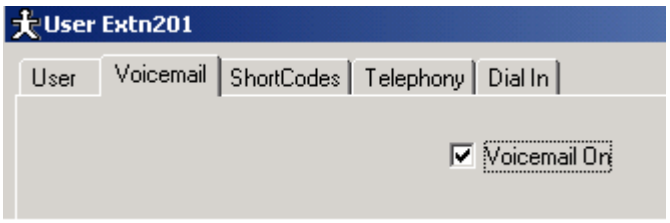
User Specific Voicemail

Each user's voicemail configuration in survivable mode can be individually configured within the **User** configuration. The default configuration setting is On.

To configure voicemail for each user:

1. Click to receive a configuration form. The **Receiving Config from** dialog box appears displaying the IP address of the G150. Enter the G150 system password.
2. Click **User** from the Configuration Tree. Double-click the user you want to configure. An edit window for that specific user is displayed.
3. Click the **Voicemail** tab.

Figure 82: Manager's User Specific Voicemail Configuration screen



4. The **Voicemail On** tick box is available for configuration. Tick the option.
   - If ticked, G150 (in survivable mode) will take voicemail messages for this user.
   - If unticked, G150 (in survivable mode) will not take voicemail messages for this use.
5. Click **OK**.
6. If this is the last configuration being performed on Manager, click **Save**. In the **Sending Config To** dialog box, accept the selected save option and click **OK**. Otherwise, continue making additional configuration updates and perform a Save when ready.

   Note:

   Saving this configuration can take up to 2 minutes because Voicemail Pro needs time to detect the G150.

G150 Voicemail with Interchange/Network Messaging

In survivable mode, Voicemail Pro only acts as a simple voicemail cache, acting on behalf of the central messaging system. Then when the G150 reconnects with a gatekeeper, Voicemail Pro forwards its stored messages to the messaging system, either directly into Modular Messaging or via Interchange/Network Messaging. When the messages are forwarded via Interchange/Network Messaging, additional mailbox mapping is required.

Addressing Messages Sent From Voicemail Pro

To enable Voicemail Pro to successfully interact via Interchange/Network Messaging, mailbox mapping between the local G150 mailbox ID and the Interchange/Network Messaging MUST be made. When a voice message is sent to Interchange, it requires the fully qualified domain name of the Voicemail Pro system along with the mailbox ID; a mailbox ID alone will NOT be accepted. However, Modular Messaging only contains the Voicemail Pro mailbox ID.

Therefore, when Interchange/Network Messaging receives a voice message from Voicemail Pro, it does the following:

- Identifies the target system by the dialed network address.
- Coverts the message to the appropriate messaging format of the destination messaging system.
- Strips off the prefix digits according to the entries on the dial plan mapping for the Modular Messaging sytem.
- Sends the message to the destination messaging system with the appropriate mailbox ID.

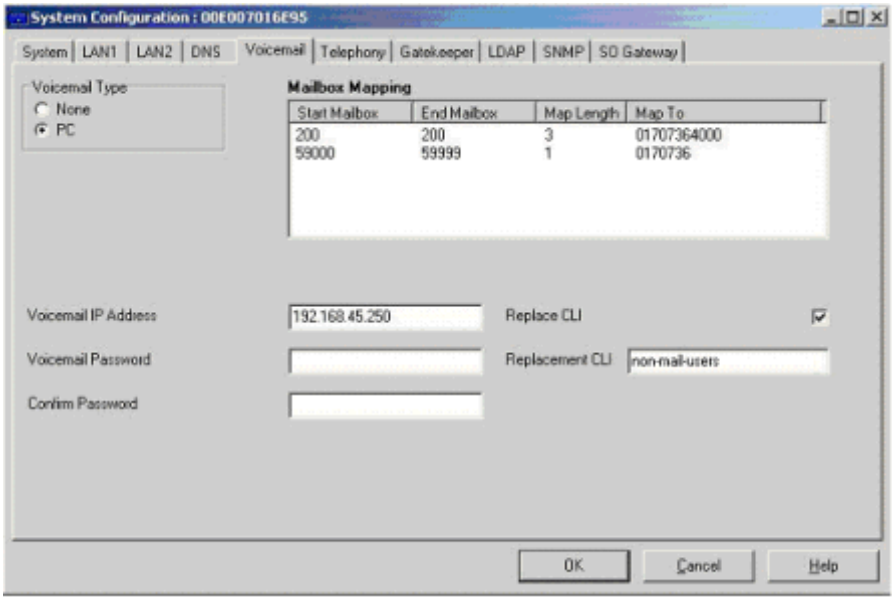
Mailbox Mapping via G150 Manager

Configuration via Manager is required to set up mailbox mapping between Voicemail Pro and Interchange/Network Messaging. Additionally, mailbox mapping is also required on the Interchange/Network Messaging system for it to pass the correct mailbox ID to the destination messaging system. Mailbox mapping on the Interchange is beyond the scope of this manual.

To create the mailbox mapping on Manager:

1. Click  to receive a configuration form. The **Receiving Config from** dialog box appears displaying the IP address of the G150. Enter the G150 system password.
2. Double-click **System** from the Configuration Tree.

Figure 83: Manager Voicemail Configuration Screen



3. On the **Voicemail** tab, provide the Mailbox Mapping information listed below. Information in the **Mailbox Mapping** table identifies up to eight mailbox mappings that can be used to translate the G150 mailbox IDs into a format suitable for use within Interchange and Network Messaging systems.

   - **Start Mailbox** & **End Mailbox:** *Default = blank*

     Indicates the start and end G150 extensions, inclusive, to be used for this mapping entry. If the number entered does not match with G150 extensions, the entry will be ignored. The **Start Mailbox** must be the same or less than the **End Mailbox**.

   Note:

   Only Mailbox IDs from G150 that are valid for voicemail are considered for mapping; i.e. if an extension does not have voicemail active, but is present in the Mailbox ID range, it will be ignored.

   - **Map Length:** *Default = blank*

     Indicates the number of leading Mailbox ID digits to be replaced by the **Map To** string. If this field is set to 0, no digits are replaced. If this field is set to equal or greater than the Mailbox ID length, all digits are replaced. This field CANNOT be left blank if the **Start Mailbox ID** and **End Mailbox ID** fields contain data.

   - **Map To:** *Default = blank*

     Indicates the digits to be used as the replacement mapping. This field can contain up to 31 digits and/or can be left blank only if the **Map Length** is less than the minimum (of the **Start Mailbox** and **End Mailbox**) Mailbox ID digits. If the result of processing the Map To and the Mailbox IDs results in more than 31 characters, it will be truncated.

4. Two further fields affect the processing of calls to voicemail from external callers:

   - **Replace CLI:** *Default = Unchecked*

     Indicates whether the Calling Line Identity (CLI) from the line is passed on unaltered as the source mailbox user (calling party) or is replaced. This field is typically checked/enabled for Interchange and Network Messaging operation. Mapping all external CLIs to one mailbox allows simpler dial plan mapping administration because all mailbox users must be identified within Interchange/Network Messaging. When Modular Messaging is accessed directly (without going through Interchange/Network Messaging), this box should be left unchecked.

     - When unchecked/unenabled, the true CLI will be supplied. If there are no CLI present, the string non-mail-users is used.
     - When checked/enabled, the G150 will supply the CLI if it is local, i.e. from a locally attached telephone, or else the CLI is supplied from the Replacement CLI field.

   - **Replacement CLI:** *Default = non-mail-users*

     This field contains the replacement text, without spaces, that will indicate the source mailbox user (caller party) when the **Replace CLI** box is checked.

Examples of Mailbox Mapping Usage

The following are examples of mailbox mapping set up on Manager. Each example assumes a start and end mailbox ID as well as an area code and local exchange set of numbers.

Single Unbroken Range Example with Map From = 0

In this example, Voicemail Pro has a single unbroken mailbox ID range (4200 to 4999) corresponding to external numbers (303 555 4200--303 555 4999). In the **Map Length** field, enter **0**. In the **Map To** field, enter the digits for the area code and local exchange prefix that identifies the mailbox IDs on the Voicemail Pro system; when these digits are added to the 4 digit mailbox IDs, Interchange/Network Messaging has the necessary digits for identifying the mailbox IDs. The **Map To** field can contain up to 31 digits to be used as the replacement mapping.

Table 17: Sample Mailbox Mapping

Start Mailbox ID	End Mailbox ID	Map Length	Map To
4200	4999	0	303555

Unbroken range of extensions 4200 - 4999 are mapped to 303 555 **4200**--303 555 **4999**.

Single Unbroken Range Example with Map From = 1

in this example, Voicemail Pro has a single unbroken mailbox ID range (200 to 299) corresponding to external numbers (303 555 4000--303 555 4099). The **Map Length** field indicates how many of the first N digits of the mailbox ID are replaced by the **Map To** string. For this example, the **Map Length** is 1. In the **Map To** field, enter the digits for the area code the local exchange prefix that identifies the mailbox IDs on the Voicemail Pro system AND the digits that identify the extension number after the first digit of the extension range is detached to be used as the replacement mapping. In this example and with the map ID range below, the **Map To** should be 30355540 because the first digit of the 3 digit extension is detached, leaving the last 2 digits as the identifier for the individual mailboxes.

Table 18: Sample Mailbox Mappings

Start Mailbox ID	End Mailbox ID	Map Length	Map To
200	299	1	30355540

Unbroken range of extensions 200 - 299 are mapped to 303 555 40**00**--303 555 40**99**.

Broken Range of Mailbox IDs Example

in this example, Voicemail Pro has the following broken mailbox ID range:

- 200 - 299 corresponding to external numbers 303 555 4000--303 555 4099
- 3100 - 3999 corresponding to external numbers 303 555 4100--303 555 4999
- 5000 - 5999 corresponding to external numbers 303 555 5000--303 555 5999

The **Map Length** field indicates how many of the first N digits of the mailbox ID are replaced by the **Map To** string. For this example, both 0 and 1 are used as sample **Map Length** characteres. In the **Map To** field, enter the digits for the area code, the local exchange prefix that identifies the mailbox IDs on the Voicemail Pro system AND the digits that identify the extension number after the first digit of the extension range is detached to be used as the replacement mapping.

Table 19: Sample Mailbox Mapping

Start Mailbox ID	End Mailbox ID	Map Length	Map To
200	299	1	30355540
			1 of 2

Table 19: Sample Mailbox Mapping (continued)

Start Mailbox ID	End Mailbox ID	Map Length	Map To
3100	3999	1	3035554
5000	5999	0	303555
			2 of 2

Broken range of extensions and their corresponding messaging format:

- 200-299 are mapped to 303 555 40**00**--303 555 40**99**
- 3100-3999 are mapped to 303 555 4**100**--303 555 4**999**
- 5000-5999 are mapped to 303 555 **5000**--303 555 **5999**

Different Prefixes Example

in this example, Voicemail Pro has the following mailbox ID range:

- 2000 - 3999 corresponding to external numbers 303 555 2000--303 555 3999
- 5000 - 5499 corresponding to external numbers 303 555 5000--303 555 5499
- 5500 - 5999 corresponding to external numbers 720 551 5000--720 551 5999

The **Map Length** field indicates how many of the first N digits of the mailbox ID are replaced by the **Map To** string. For this example, 0 is used as a sample **Map Length**. Because no digits are replaced (based on the 0 Map Length), the **Map To** characters include digits for the area code and local exchange prefix that identifies the mailbox IDs on the Voicemail Pro system.

Broken range of extensions and their corresponding messaging format:

- 2000-3999 corresponds to 303 555 **2000**--303 555 **3999**
- 5000-5499 corresponds to 303 555 **5000**--303 555 **5499**
- 5500-5999 corresonds to 720 551 **5000**--720 551 **5999**

Table 20: Sample Mailbox Mappings

Start Mailbox ID	End Mailbox ID	Map Length	Map To
2000	3999	0	303555
5000	5499	0	303555
5500	5999	0	720551

Broken Range on a Single Mailbox Example

In this example, Voicemail Pro has the following mailbox ID range in which all the extensions are to be mapped into a single mailbox (303 555 4000):

- 200 - 299
- 3100 - 3999
- 5000 - 5499

The **Map Length** field indicates how many of the first N digits of the mailbox ID are replaced by the **Map To** string. If the Map Lenght is equal to or greater than the mailbox ID length, all digits are replaced. For this example, the **Map Length** is equal to the mailbox ID length. Hence, all digits are replaced. The **Map To** characters include digits for the area code, the local exchange prefix and extension number that identifies the single mailbox ID.

Table 21: Sample Mailbox Mapping

Start Mailbox ID	End Mailbox ID	Map Length	Map To
200	299	3	3035554000
3100	3999	4	3035554000
5000	5499	4	3035554000

Upgrading Voicemail Pro

To upgrade an existing Voicemail Pro system, an uninstall of the old system must first be performed.

To uninstall Voicemail Pro:

1. Open the Windows **Control Panel**.
2. Select **Add/Remove Programs**.
3. Select **IP Office Voicemail Pro** or the folder name entered when Voicemail Pro was installed and click **Change/Remove**.
4. From the options offered, select **Remove** and click **Next**.
5. Follow any prompts given during the removal process.
6. When the process has been completed, select the option **Yes, I want to restart my computer now** and click **Finish**.

Chapter 5: G150 Media GatewayTelephone Support

Telephone Support

In sub-tending mode, the G150 registers its trunks and analog handsets on the Communication Manager, representing them as directly connected IP end-points on Communication Manager. IP phones at the G150 site are directly registered to the Communication Manager, by-passing the G150.

Telephone Support in Survivable Mode

In survivable mode, G150 acts as a stand-alone sytem where all trunking and telephone functions are provided locally. The G150 becomes a gatekeeper and handles calls using its own local call routing/dial plan configuration. In survivable mode, G150 provides the following features to its registered users and directly connected telephones while attempting to re-register to the Communication Manager:

- CLI/ANI Display (IP phones only)
- Hold
- Supervised Transfer
- Unsupervised Transfer
- Call Waiting Indication
- Last Number Redial
- Drop Call
- Dial Tone
- Busy Tone
- Ringback Tone

In survivable mode, G150 supports the following telephones:

Table 22: Supported Telephones

IP Phones	Analog Phones
Avaya 4601	Avaya 6211
Avaya 4602	Avaya 6219
Avaya 4602SW	Avaya 6221
Avaya 4606	Interquart z9330-AV
Avaya 4610SW	Interquart z9335-AV
Avaya 4612	
Avaya 4620	
Avaya 4620SW	
Avaya 4624	
Spectra Link Wireless	

Note:

The Interquart wireless phones are available in three versions: analog, CCMS (DCP) and ETR. G150 supports the analog and CCMS version in survivable mode. The CCMS version of the Interquart phones emulate an Avaya 4606 phone. The Avaya manufactured analog phone models have been tested to be operable with this gateway. Many other vendors' analog phones will operate successfully, but they have not been openly certified.

IP Telephone Firmware Version

Avaya IP phones on a G150 MUST use the IP phone firmware supplied on the G150 Administration CD. Versions of IP phone firmware from other sources may not be intended for use or tested with G150.

Firmware for the IP phones is installed into the Manager program folder when Manager is installed. When the IP phones are plugged into the ethernet port (labeled **LAN 1, 2, 3, 4** etc.) on the front of the G150, G150 compares the IP phone's firmware with what it is available from the TFTP server (the Manager PC or the G150 if it is fitted with a local memory storage card); see TFTP Server Application for IP Phones on page 180 for details on setting the TFTP server. If the IP phone does not have the correct firmware, then the firmware version in the Manager program folder will be loaded (via TFTP) onto the phone automatically. If the IP phone has the correct firmware, then the phone will use its existing firmware and registration will continue.

IP Telephone Registration

The IP phone's extension number and password must be configured in Communication Manager and the individual phones. When the IP phone attempts to register with the G150, it is added to G150's extension plan and configuration file.

To enable the support of IP phones at the G150 site, the following procedures are strongly recommended:

1. Configure G150 Media Gateway to act as a DHCP server. See Connecting G150 to the Network & Communication Manager in Chapter 3 for additional information.
2. Plug the IP telephones into the ethernet ports (labeled **LAN 1, 2, 3, 4** etc.) on the front of the G150. Each phone gets assigned an IP Address supplied via DHCP. It is recommended that if IP phones are used, the G150 should also be configured to act as a DHCP server to ensure the phones do not lose connectivity when the system goes into survivable mode.
3. Once the phone receives its DHCP information from the G150 and has confirmed that it has the latest firmware, it will prompt for an extension number and password. This information should match that entered on the Communication Manager. Enter the information for that IP phone via the phone dial pad.

   The same password is administered in three places during the configuration of G150.

   - Administered on the PBX station form
   - Administered on the Manager application via the **User** form
   - Administered on the the IP telephone parameter list

   It is important that the customer not change this password without ensuring that the supporting communication system has also been updated. Failure to do so may prevent the the IP telephone from registering correctly either in subtending or survivable mode.

If connection to the Primary Gatekeeper is unavailable, G150 provides IP phones at its site with gatekeeper addresses it has on Manager's **Subtending Host List**. G150 enters its own IP address as the last one on the list, thus assigning the G150 as the final fallback gatekeeper.

Note:

Immediately after a power up or reset, the IP phone does not display the date or time because it does not yet have the information. Once the IP phone is registered and has the necessary data, the display will be updated.

TFTP Server Application for IP Phones

The G150 can optionally provide a general TFTP server application from which IP phones can retrieve their firmware if an external TFTP server is not available. This requires the G150 to be fitted with a 64M Compact Flash Memory card. This card should already be inserted into one of the twin PCMCIA slots on the G150 back panel. The Compact Flash Memory card can be written to directly to store files. This can be used with the G150's inbuilt DHCP server to provide PC-less operation.

Note:

G150 supports up to 32 concurrent TFTP access.

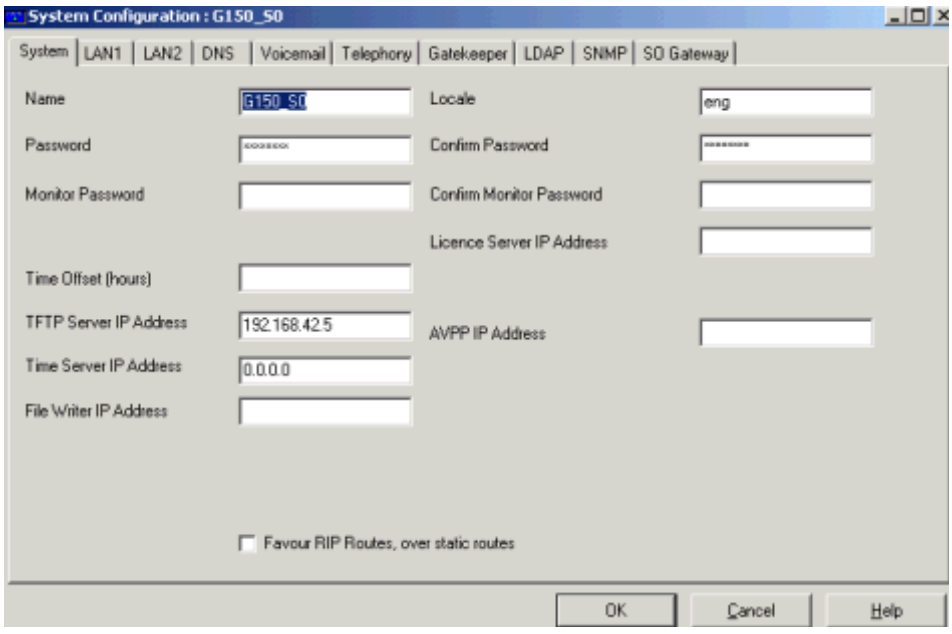
The process for configuring the TFTP server application has two main procedures:

- Configuring a PC to send files to the memory card.
- Configuring the G150 to use the memory card.

To configure a specified PC to send files to the memory card:

1. Click  to receive a configuration form. The **Receiving Config from** dialog box appears displaying the IP address of the G150. Enter the G150 system password.
2. Click **System** from the Configuration Tree and double click the G150 configuration on the right hand side of the display window.

Figure 84: Manager System tab



3. On the **System** tab, enter the IP address of the PC from which sending files to the memory card will be allowed into the **File Writer IP Address** field.
4. Click **OK**.
5. Click **Save**. In the **Sending Config To** dialog box, accept the selected save option and click **OK**.

To configure the G150 to use the memory card:

1. Within Windows, select **Start | Run**.
2. Enter **cmd** and click **OK**.
3. Within the command window, use TFTP to upload files to the memory card.

   Sample command: **c:\tftp -I 192.168.42.1 put c:\file name**

   The above command will send the file to the G150's LAN1 IP address, 192.168.42.1 in this example.

   For additional information about the TFTP command, enter **tftp** on the command window.
4. Log onto Manager and click to receive a configuration form. The **Receiving Config from** dialog box appears displaying the IP address of the G150. Enter the G150 system password.
5. Click **System** from the Configuration Tree and double click the G150 configuration on the right hand side of the display window.
6. On the **System** tab, enter the G150's LAN1 IP address into the **TFTP Server IP Address** field.
7. Click **OK**.
8. Click **Save**. In the **Sending Config To** dialog box, accept the selected save option and click **OK**. The G150 will now look on the memory card for any files it needs to download.

Configuring Survivable Warning Message for IP Phones

When the G150 enters survivable mode and there are IP telephones connected to it, a default message stating "Local PBX Mode" appears on the IP telephone display. This message can be configured via the Manager application.

To configure the display message for IP telephones:

1. Click to receive a configuration form. The Receiving Config from dialog box appears displaying the IP address of the G150. Enter the G150 system password.
2. Click **System** from the Configuration Tree and double click the G150 configuration on the right hand side of the display window.

3. Click the **Subtending Host** tab and do the following:
   - Tick the **Custom Message** check box.
   - Enter the message you want displayed into the **Message Text** field. The maximum number of acceptable characters vary depending on the IP telephone model.

Table 23: Maximum Characters for IP Phones

IP Phone Model	Suggested Max. Characters
4620SW	24
4612	16
4624	16
4602	8

4. When all relevant fields have been configured, click  **Save**. In the **Sending Config To** dialog box, accept the selected save option and click **OK**. The G150 will now look on the memory card for any files it needs to download.

Telephone Installation

It is preferable to leave connection of telephones until after installation of other G150 equipment and full system programming has been completed (including the set-up of directory numbers and names). Note that by G150 telephones, we mean devices manufactured and supplied by Avaya and not third party telephone devices.

The following instructions are the minimum required for testing of G150 telephones. Detailed instructions for wall mounting and using G150 telephones are shipped with the telephones.

Connecting and Testing G150 Telephones

Use the following process to connect and check G150 telephones.

To check a G150 telephone:

1. Unpack the telephone and check that all parts are present including labels and user guides.
2. Insert the handset cord into the base. Route the cord thorough the cable channels to come out at the side of the telephone.
3. Insert the line cord into the wall socket.

4. Insert the line cord into the telephone's base and route the cord thorough the cable channels to come out at the side/rear of the telephone.
5. Lift the handset, check that you hear dial tone and make a test call to another extension.
6. On a display telephone, ensure that the display shows the number called and that the display is in the correct language.

Connecting & Checking Two-Wire Telephones

All two-wire devices (POTS) should be tested according to the manufacturer's instructions before connecting to the G150 system. Connect the two-wire device and make a test call.

Power Fail Telephones and Sockets

The power fail sockets must be tested.

To test a power fail socket:

1. Locate the socket and check that it is clearly labeled as a power fail socket.
2. Connect a telephone to the socket.
3. With power to the G150 system switched on, make a test call.
4. Switch the power to the G150 system off and again make a test call.
5. Switch the power to the G150 system back on again.
6. Repeat the test for any other power fail sockets.

Note:

Where E911 statuary requirements for discrete location identification of a power fail phone are required on the transmitted CLI, ensure that the relevant installation programming is completed.

Appendix A: Technical Data

This appendix provides the technical specifications for the G150 Media Gateway ports and cables.

Port Pinouts and Cables

All port diagrams are viewed from the front.

Note:

Throughout this section, TX = from G150; RX = to G150

All cables discussed in this section are for internal use only. All structured cabling/site wiring MUST conform to all local regulations.

CAUTION:

All ISDN and WAN cables should not be longer than 5 meters in length. For Analog Trunk cables, to reduce the risk of fire, use only No. 26 AWG or larger telecommunications line cord.

Analog Trunk Ports (RJ45)

Figure 85: Pin

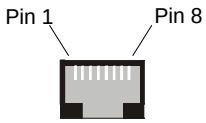


Table 24: Pin Description

Pin No.	Description
1-3	Do not use
4	Ring
5	Tip
6-8	Do not use

Power Fail and Phone Ports (RJ45)

Figure 86: Pin

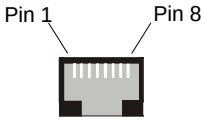


Table 25: Pin Description

Pin No.	Description
1 & 3	Do no tuse
2	Connected to pin 6*
4	Ring
5	Tip
6	Connected to pin 2*
7-8	Do not use

* Pins 2 and 6 are shorted together and , via a ’ringer’ capacitor, connected to in 5.

DS Ports

Currently not supported for G150.

ISDN Port and Cable - PRI

Figure 87: Pin

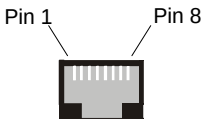


Table 26: Pin Description

Pin No.	Description	Signal Direction
1	Receive Data (Rx-A)	To G150
2	Receive Data (Rx-B)	To G150
4	Transmit Data (Tx-A)	From G150
5	Transmit Data (Tx-B)	From G150

PRI ISDN Cable

Supplied as standard with the G150 Media Gateway. The cable can be used for either PC to G150 LAN connection or as an ISDN trunk connection.

- **Plug** (both ends): RJ45
- **Cable Core:** Cat 5 UTP twisted pair cable (RED)
- **Cable Length:** 3 meters/9.84ft

Pins 7 and 8 are through connected for ease of construction. They are not actually used.

Pin Connections

Table 27: Pin connections

Both Ends	PRI	Color
4	Tx-A	Blue/White
5	Tx-B	White/Blue
3	---	White/Green
6	---	Green/White
1	Rx-A	White/Orange
2	Rx-B	Orange/White
7	---	White/Brown
8	---	Brown/White

WAN/LAN Port - 10/100 BaseT

Figure 88: Pin

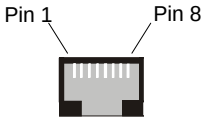


Table 28: Pin Connections

Pin No.	Description	Signal Direction
1	Receive Data (Rx-A)	To G150
2	Receive Data (Rx-B)	To G150
3	Transmit Data (Tx-A)	From G150
6	Transmit Data (Tx-B)	From G150

Note:

Pins 7 and 8 are through connected for ease of construction. They are not actually used.

WAN Port Cable

Cable description:

- **Plug** (both ends): RJ45
- **Cable Core:** Cat 5 UTP twisted pair cable - RED exterior
- **Cable Length:** 3 meters/9.84ft.

Pin Connections

Table 29: Pin Connections

Both Ends	Color
4	Blue/White
5	White/Blue
	1 of 2

Table 29: Pin Connections (continued)

Both Ends	Color
3	White/Green
6	Green/White
1	White/Orange
2	Orange/White
7	White/Brown
8	Brown/White
	2 of 2

LAN Cable

This cable is used in the following situations:

- When connecting G150 hub ports 1-7 directly to a PC.
- When connecting a WAN3 port to an IP 403/406 hub port which is not located in the same cabinet as the G150.

Cable description:

- **Plug** (both ends): RJ45
- **Cable Core:** Cat 5 UTP twisted pair cable - GREY exterior
- **Cable Length:** 3 meters/9.84ft.

Pin Connections

Table 30: Pin Connections

Both Ends	Color
1	White/Orange
2	Orange/White
3	White/Green
6	Green/White
4	Blue/White
5	White/Blue
	1 of 2

Table 30: Pin Connections (continued)

Both Ends	Color
7	White/Brown
8	Brown/White
	2 of 2

DTE Port and Cable

Figure 89: Pin

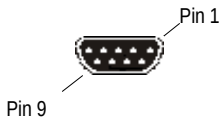


Table 31: Pin Connections

Pin No. (9 Way)	Description	Signal Direction
3	Receive Data (Rx)	To G150
2	Transmit Data (Tx)	From G150
7	Request to Send (RTS)	To G150
8	Clear to Send (CTS)	From G150
6	Data Set Ready (DSR)	From G150
5	Signal Ground	
1	Data Carrier Detect (DCD)	From G150
4	Data Terminal Ready (DTR)	To G150
9	Ring Indicator (RI)	From G150

DTE Cable

- **Plug:** 9 Way D-Type with UNC 4-40 locking screws.
- **Socket:** 9 Way D-Type with UNC 4-40 locking screws.
- **Cable Core**: 12 core screened cable - each core is 7/0.203mm (24 AWG) tinned copper stranded wire, nominal capacitance of 95pF/m, resistance of 92 W/km, screened with tinned copper braid, maximum working voltage of 440V rms and a Maximum current per core of 1A rms.
- **Cable Length:** 2 meters/6.57ft.

Audio Port (3.5mm Stereo Jack Socket)

Not supported with the G150

Functional Ground (3.5mm Jack Socket)

Figure 90: Pin

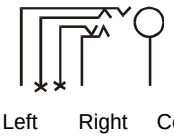


Table 32: Pin Description

Pin No.	Description
Common	Common - 0 volts
Left	0 volts
Right	0 volts

External Control Port (3.5mm Stereo Jack Socket) & Cable

Figure 91: Pin

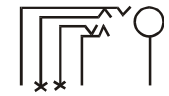


Table 33: Pin Connection

Pin No.	Description
1	Circuit 1
2	Circuit 2
3	0 Volts (Ground/Chassis)
4	Not Connected
5	Not Connected

Table 34: Control Circuit

Control Circuit	Information
Control Circuit 1	Pin 2 and Pin 3, ensure that Pin 2 is at a positive voltage with respect to Pin 3.
Control Circuit 2	Pin 1 and Pin 3, ensure that Pin 1 is at a positive voltage with respect to Pin 3.

Each circuit can be swtiched independently.

Table 35: Switch Settings

Switch Setting	Information
ON	Low resistance between Pins.
OFF	High resistance between Pins.

WAN Port (37 Way D-Type Socket)

This represents the optional WAN Port on the back of the G150 Media Gateway.

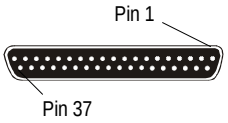


Table 36: Pin Connections

Pin No.	Description	Signal Dir.	Pin No.	Description	Signal Dir.
1	V11 Rx-B	To G150	20	V11 Rx-A	To G150
2	V11 Ind-A	To G150	21	V11 Ind-B	To G150
3	V11 Clk-A	To G150	22	V11 Clk-B	To G150
4	V11 Tx-A	From G150	23	V11 Tx-B	From G150
5	V11 Ctl-B	From G150	24	V11 Ctl-A	From G150
6	V11 Gnd		25	WAN ID 0	To G150
7	WAN ID 1	To G150	26	V24 Tx	From G150
8	V24 DTR	From G150	27	V24 RTS	From G150
9	V24 Rx	To G150	28	V24 RxClk	To G150
10	V24 TxClk	To G150	29	V24 RI	To G150
11	V24 DCD	To G150	30	V24 DSR	To G150
12	V24 CTS	To G150	31	N/C	
13	N/C		32	V35 Tx-A	From G150
14	V35 Tx-B	From G150	33	V35 SCTE-A	From G150
15	V35 SCTE-B	From G150	34	V35 Gnd	
16	V35 Rx-B	From G150	35	V25 Rx-A	From G150
17	V35 TxClk-B	To G150	36	V35 TxClk-A	To G150
18	V35 RxClk-B	To G150	37	V35 RxClk-A	To G150
19	CHASSIS				

Note:

For the USA, only FCC Part 68 registered data circuit terminal equipment should be connected to the WAN Ports.

For X21, V24/28 and V35 variants, pins 7 and 25 are connected as follows:

X21: Pin 7 is connected to pin 6

V24/28: Pin 25 is connected to pin 6

V35: Pins 7 and 25 are connected to pin 6

X.21 WAN Cable

Sap Code:

This cable is used to connect a WAN port to a digital leased line.

The cable consists of the following properties:

- **G150 Plug:** 37 Way D-Type plug with UNC 4-40 locking screws.
- **Other Equipment Plug:** 15 Way D-Type plug with M3 locking screws.
- **Cable Core:** 6 twisted pair screened cable - each core is 7/0.203mm (24 AWG) tinned copper stranded wire, nominal capacitance of 98pF/m, impedance of 77 Ω at 1MHz, screened with aluminized tape and a tinned copper wire drain.
- **Cable Length:** 3 meters/9.84ft.

Pin Connections

Pin 19 at the G150 end is connected to the Screened Cable Drain Wire.

Table 37: Pin Connections

G150 Plug	Name	Cable Notes	Other Plug
1	Receive (Rx-B)	Twisted Pair	11
20	Receive (Rx-A)	Twisted Pair	4
4	Transmit (Tx-A)	Twisted Pair	2
23	Transmit (Tx-B)	Twisted Pair	9
24	Control (Ctl-A)	Twisted Pair	3
5	Control (Ctl-B)	Twisted Pair	10
2	Indicate (Ind-A)	Twisted Pair	5
21	Indicate (Ind-B)	Twisted Pair	12
			1 of 2

Table 37: Pin Connections (continued)

G150 Plug	Name	Cable Notes	Other Plug
3	SE-Timing (S-A)	Twisted Pair	6
22	SE-Timing (S-A)	Twisted Pair	13
6	Ground	------	8
			2 of 2

V.35 WAN Cable

This cable is used to connect a WAN port to a Digital Leased Line.

The cable consists of the following properties:

- **G150 Plug:** 37 Way D-Type plug with UNC 4-40 locking screws.
- **Other Equipment Plug:** 34 Way MRAC plug.
- **Cable Core:** 10 twisted pair screened cable - each core is 7/0.203mm (24 AWG) tinned copper stranded wire, nominal capacitance of 98pF/m, impedance of 80 Ω plus or minus 10% at 1MHz, screened with aluminized tape and a tinned copper wire drain.

Cable Length: 3 meters/9.84ft.

Pin Connections

Connect pins 7 and 25 to pin 6 at the G150 end ONLY.

The maximum core to core capacitance MUST NOT exceed 800pF.

Table 38: Pin Connections

G150 Plug	Name	Cable Notes	Other Plug
8	DTR (Data Terminal Ready)	-----	H
11	DCD (Data Carrier Detect)	-----	F
12	CTS (Clear To Send)	-----	D
27	RTS (Request To Send)	-----	C
29	RI (Ring Indicator)	-----	J
30	DSR (Data Set Ready)	-----	E
32	Transmit Data - A	Twisted Pair	P
			1 of 2

Table 38: Pin Connections (continued)

G150 Plug	Name	Cable Notes	Other Plug
14	Transmit Data - B	Twisted Pair	S
35	Receive Data - A	Twisted Pair	R
16	Receive Data - B	Twisted Pair	T
36	Transmit Clock - A	Twisted Pair	Y
17	Transmit Clock - B	Twiste Pair	A
37	Receive Clock - A	Twisted Pair	V
18	Receive Clock - B	Twisted Pair	X
33	External Clock - A	Twisted Pair	U
15	External Clock - B	Twisted Pair	W
34	Ground	-----	B
			2 of 2

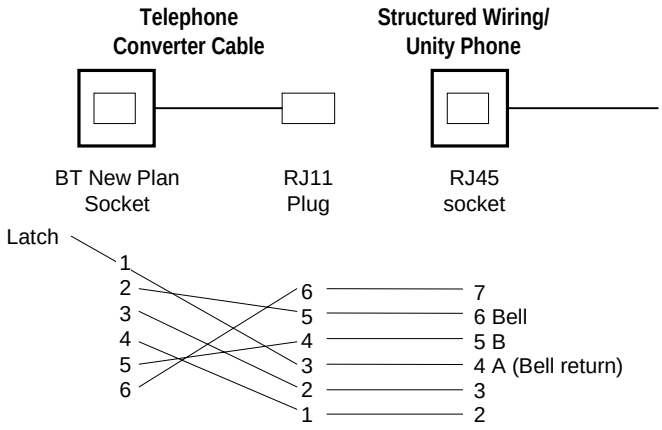
Telephone Converter Cables

The following diagrams show the pin-outs of various Structured Cabling Telephone Converters. The first two telephone converters shown provide the required conversion allowing correct operation of the attached telephone.

Each telephone port on the Phone modules acts as a Master socket, thus only Slave Telephone Converters are required.

RJ45 - Compatible Converter

Figure 92: RJ45 - Compatible Converter



RJ11/45 Adapter

Figure 93: RJ11/45 Adapter

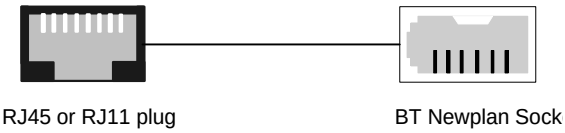


Table 39: Pin Connections

RJ11 Pin Number	RJ45 Pin Number	BT Newplan Socket in Number
3	4	2
4	5	5

Other connections are not relevant.

BT Newplan socket connections may be reversed as polarity is not important.

Port Safety Classification

The G150 systems have the following ports:

- Analog extension ports (with one Power Fail port)
- 10/100 BaseT LAN ports
- 10/100 WAN port
- Digital telephone ports: Not currently supported
- ISDN ports (optional)
- Analog trunk ports (with one Power Fail port)
- WAN port (optional V.24\V.35\X.21)
- DTE port
- Audio I/P port (not used with the G150)
- DC Power Input port
- External O/P socket (not used with the G150)

These Ports are classified as follows:

Table 40: Port Classifications

Port Name	Port Description	Port Classification
PRI Port	PRI ISDN connection (NET)	TNV (Operating within the limits of SELV)
Analog ports	Two wire analog trunk	TNV3
Power fail ports	Two wire analog trunks	TNV3
DTE port	Async Data coonnection	SELV
Analog Telephone ports	Telephone Extension ports	TNV2
Digital Telephone ports (not currently supported)	Telephone Extension ports	SELV
WAN port	WAN connection (NET)	SELV
LAN ports	10/100 BaseT attachment to LAN	SELV
Audio port (not used)	Connector for Music on Hold	SELV
		1 of 2

Table 40: Port Classifications (continued)

Port Name	Port Description	Port Classification
External O/P socket (not used)	Connector for controlling ancillary circuits	SELV
DC Input port	Connector for DC input power	SELV
		2 of 2

Interconnection circuits shall be selected to provide continued conformance with the requirements of EN 609050:1992/A3:1995 clause 2.3 for SELV circuits and with the requirements of clause 6 for TNV circuits, after connections between equipment.

Compliance with FCC Rules

Transmit and Receive Gain Settings for PRI/T1 and Analog Ports

The Gain settings are password controlled for use by qualified installation personnel only and must not be made available to the end user. The default gain settings of 0dB ensures compliance with FCC part 68 section 68.308(b)(5) and TIA/EIA-IS-968 Section 4.5.2.5. "Through transmission amplification from ports for the connection of separately registered equipment or from other network connection ports". Gain setting adjustment by unqualified personnel may result in violation of the FCC rules. Qualified personnel may adjust gain settings above these levels only where:

- Measurement is made to ensure that the power levels sent to line at each network interface connected does not exceed the maximum levels specified in FCC part 68 section 68.308(b) and TIA/EIA-IS-968 Section 4.5 for that specific interface type.
- Where gain adjustment away from the default values are made, precautions should be taken to ensure that the connection of terminal equipment is controlled by qualified installation personnel.

Technical Specifications

General

Table 41: G150 Specifications

Dimensions (unboxed)	Width: 255mm. (10 inches); Height: 76mm (3 inches); Depth: 235mm (9.3 inches)
Dimensions (boxed)	Width: 340mm. (13.4 inches); Height: 105mm (4.2 inches); Depth: 305mm (12 inches)
Weight (unboxed)	1.2Kgs (2.64 lbs)
Weight (boxed)	2.17Kgs (4.77 lbs)
Power Supply Consumption (nominal Watts)	2.5mm DC inlet socket. 24Vdc Power input. Rating 24Vdc, 1.8A max - 45 W
Lump-in-Line PSU	Power Requirements: I/P 100-240Vac, 50/60Hz, 81-115VA, Input current 1.5A max

Interfaces

Table 42: G150 Interfaces

Interface	Information
DTE	9-way D-type female connector, V.24/V.28
Analog ports	RJ45 sockets: Loop start
Power Fail ports	RJ45 sockets: telephone ports act as master sockets (analog port 2 switches to Phone port 2)
Telephone	RJ45 sockets: EU - Telephone ports act as master sockets. CLI Schemes: DTMFA, DTMFC, DTMFD, FSK and UK20 REN = 2 Off Hook current = 25mA Ring voltage = 40V (nominal) RMS External Bell (via analog port; REN = 1
LAN 1-4	RJ45 sockets. Four port switch. Auto-negotiating 10/100BaseT enthernet ports.
	1 of 2

Table 42: G150 Interfaces (continued)

Interface	Information
ISDN	**USA Interfaces:** PRI T1 Service: Ground Start (GS) - Default, E&M, 56k data for 5ESS, 56/64/64 restricted for 4ESS PRI ISDN Switch support: 4ESS, 5ESS, DMS-100, DMS-250 (includes conformance to ANSI T1.607 & Bellcore Special Reports SR4287, 1992 PRI ISDN Services: AT&T Megacom 800, AT&T WATS (4ESS), AT&T SDS Accunet 56kB/s & 64kB/s (4ESS), AT&T Multiquest (4ESS **ROW Interfaces:** PRI T1: RJ45 socket: FCC Part 68
Data Rates	PRI: B-channel 64kbps or 56kbps, D-channel 64kbps (23B+D)
WAN (standard)	RJ45 Socket. Ethernet LAN port
WAN (optional)	37 way D-Type female sockets. X.21 interface to 2048k bps, V.35 interface to 2048k bps and V.24 interface to 19.2k bps
Audio	3.5mm Stereo Jack socket. Input impedance - 10Ωk / channel. Maximum AC signal - 200mV rms.
External Control	3.5mm Stereo Jack socket. Switching Capacity - 0.7A. Maximum Voltage - 55V DC On state resistance - 0.7Ω Short circuit current - 1A. Reverse circuit current capacity - 1.4A
Wireless module (optional)	16 bit type II PCMCIA format PC Card IEEE 802.11b WiFi
Voice Memory (optional)	16 bit type II PCMCIA format PC Card 64M flash memory
	2 of 2

Appendix B: Information Checklists

This appendix is can be used as an aid for collecting the necessary information for the installation of a G150 Media Gateway. The following lists are provided

Installer's Checklist:	Tools, software, laptop settings, customer network information.
Serial Number and Login Information:	Serial numbers of the G150s and login/ passwords for various access methods.
G150 Configuration Information	Dial plan and server information.
Installation Site Information:	Customer and site contact information

Installer's Checklist

	tools
	laptop with 32 MB RAM
	40 MB available disk space
	RS-232 port connector
	cross-over Ethernet cables
	direct Ethernet cable
	serial cable and adapter
	Ethernet network connection (NIC card)
	screwdriver
	software
	Windows XP/NT/2000/2003 operating system
	FTP Program
	TFTP Program
	Telnet Program
	Terminal emulation program: HyperTerminal or other
	TCP/IP networking software: bundled with Windows OS
	Web browser: Netscape 4.7x or Internet Explorer 5.0

	Ethernet connections
	laptop default address and mask: 192.11.13.5, 255.255.255.252
	Browser: no proxies
	laptop default address and mask: 192.11.13.5, 255.255.255.252
	Communications Properties: 9600 baud rate; no parity; 8 data bits, 1 stop bit; no
	SSO login
	Obtaining this login will require that you complete the authentication process. You will not be able to obtain the license file or to perform remote feature activation without the SSO login authentication process. You will not be able to obtain the license file or to perform remote feature activation without the SSO login.
	dial plan
	IP addressing plan
	List of customer-provided IP services

Serial Number and Login Information

G150 Serial Numbers

Logins (continued)

	Name & Password
G150 Media Gateway	
ftp	anonymous
	email address
Communication Manager	

G150 Configuration Information

The IP address of the Communication Manager in which G150 is connected to and the IP address of other active gatekeepers must be known prior to starting the configuration of G150.

Communication Manager IP Address	
Alternative Gatekeeper IP Address	
Alternative Gatekeeper IP Address	

Alternative Gatekeeper IP Address	
Alternative Gatekeeper IP Address	

G150 Server Status

The following information relating to the role of the G150 within the customer's data network needs to be gathered prior to the installation:

1. Will the G150 system be part of a data network or will it be a stand alone phone system?
2. If it will be part of a data network, place a check mark next to the statement that specifies the server status of the G150 within the customer's network configuration.

   ☐ **The G150 is the DHCP Server on the network.**

   If yes, how many IP addresses will the G150 assign? This defines the number of sequential IP addresses, including the Control Unit IP address, that is allocated via DHCP.

   ☐ **The G150 can assign IP addresses to Dial In users only.**

   If yes, how many IP addresses will the G150 assign? This defines the number of sequential IP addresses, including the Control Unit IP address, that is allocated via DHCP.

   ☐ **The G150 has a static IP address.** This is the recommended option if the control unit is part of a data network.

   If yes, please provide the following information:

   - Control Unit IP address:
   - Subnet mask:

   ☐ **The IP Office Control Unit is a DHCP Client.** (Not recommended)

Survivable Mode Related Questions

For those users who require a direct dial (DID/DDI) numbers, these need to be setup for when the system is in survivable mode. This information needs to math those entered on the Communication Manager. Please provide the following information for each user requiring DID/DDI:

User's Name	Extn. Number	DDI

List the telephone numbers or types of numbers (i.e. 800 numbers) you want users to be barred from dialing when the system goes into survivabble mode.

Barred Telephone Numbers

Installation Site Information

Site Name	Main Phone
Installation Address	
Shipping Address	
Customer Contact	Name Title Phone: FAX: Mobile: Pager: email: Off-hours contact:
Salesperson/ Account Exec	Sales/AE phone: Other Contact Info:

Notes to installer: access procedures, safety/security procedures

Access Contact	Name Title Phone: FAX: Mobile: Pager: email: Off-hours contact:
Installer Name Date of Installation	

Appendix C: Safety Statements

CE Mark

The "CE" mark affixed to this equipment means that the unit complies with the 1999/5/EC (R&TTE), 89/336/EEC (EMC), and 72/23EEC (LVD) Directives.

Declaration of Conformity

The Declaration of Conformity (DoC) for the G150 products is contained with in the CD accompanying the products.

WARNING:

The G150 units are intended to be installed by 'Service Personnel' and it is the responsibility of the Service Personnel to ensure that all subsidiary interconnected equipment is wired correctly and also meet the safety requirements of IEC60950 or UL60950 where applicable.

Lithium Batteries

A lithium battery is fitted to the real time clock on the G150 mother boards

WARNING:

The Lithium battery must only be replaced by Avaya personnel or authorized representatives. There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Lightning Protection/Hazard Symbols

The building's lightning protectors must be verified as follow:

- Check the lightning protectors at the trunk cable entry point to the building housing the G150, paying special attention to the lightning protection grounding. Report any problems, in writing, to the telephone company.
- Equipment that is designed to be connected using internal wiring is typically not lightning protected. Hence, G150 extension cabling must not leave the building.

The shock hazard symbol is intended to alert personnel to electrical hazard or equipment damage. The following precautions must also be observed when installing telephone equipment:

- Never install telephone wiring during a lightning storm.
- Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- Never Touch uninsulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.
- Always use caution when working with telephone lines.

Electromagnetic Interference Information

Federal Communications Commission (FCC)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Canadian Department of Communications (DOC)

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.

Appendix D: Upgrading the G150 Media Gateway

Because Manager is an application used for managing the G150, upgrading the Manager application does not update the G150 core software. It is highly recommended that when the G150 software is upgraded, the Manager application is upgraded as well. To upgrade both Manager and the G150 core software requires performing 2 separate upgrade procedures. It is highly recommended that Manager is upgraded first, followed by an upgrade of the core software.

Before attempting an upgrade, ensure that you have performed all the necessary Pre-Upgrade Checks.

Pre-Upgrade Checks

To ensure that the upgrade occurs smoothly, these pre-upgrade checks need to be performed before an upgrade is attempted.

Static IP address for Manager PC

Ensure that the Manager PC has a fixed (static) IP address. This address should be on the same subnet as the G150 with the subnet mask set correctly.

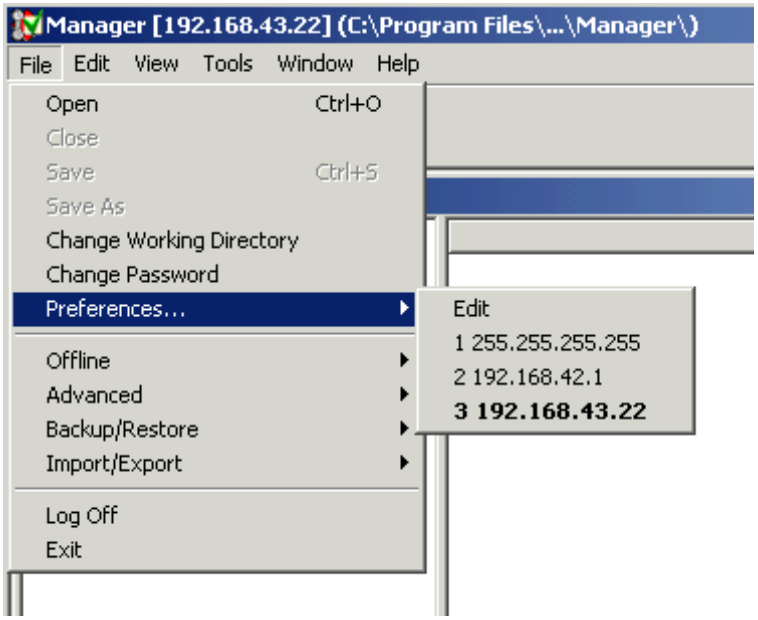
Preferences Setting

Test the broadcast routing between the Manager PC and G150 by setting the **Preferences** to **255.255.255.255** and check that Manager can receive the configuration from the G150 being upgraded.

To check the **Preferences** setting:

1. Log onto Manager.
2. Click **File | Preferences** and select **255.255.255.255**.

Figure 94: Preferences Setting



3. Open the configuration of the G150 being upgraded. If Manager is successful at receiving the configuration, it means the broadcast routing is working correctly.

Check Manager Program's Binary Directory

Check that the Manager program's binary directory is pointing to the folder containing the bin files. Bin files are stored in the root of the Manager directory, so the binary files' directory needs to point to the Manager directory.

The directory is shown in the Manager's title bar and can be set by doing the following:

1. Log onto Manager.
2. Click **File|Change Working Directory**. A **Select Directory** window appears.
3. In the **Binary Directory (.bin files)** field, make sure that it contains the file path of where the Manager application was installed. If it does not, click the **Browse** icon to the right of the text box to browse to the correct location.
4. Click **OK**.

Obtain the .bin files

If the Manager application has already been upgraded, then the appropriate .bin files are already copied to Manager's binary directory (default= c:\program files\avaya\ip office\ manager). A set of .bin files can also be found in the **\bin** folder on the G150 Administration CD.

It is highly recommended that the Manager application is upgraded first and then upgrade the G150 core software.

If you have obtained .bin files from another source, check that you have a copy of any instructions provided with those bin files and check that the system complies with those instructions. Backup the existing .bin files and then copy the new files into the Manager's Working Directory.

Make Copy of Configuration File

Make a copy of the current configuration file by saving it offline before performing the upgrade. If the upgrade fails, the current configuration may be erased so a backup copy is an essential precaution.

To save an existing configuration file offline:

1. With the configuration file opened on Manager, click **File | Save As**.
2. On the **Save As** window, browse to the folder directory in which you want to save the configuration file.
3. Click **Save**.

Upgrading Manager

When upgrading a G150 from one core software level to another, the recommended process is to upgrade Manager as well. This is done by uninstalling and then reinstalling the application software.

The uninstall process below only removes those files installed during the original application installation. Any other files added since (user files, system configurations files, etc.) are not removed.

To remove Manager:

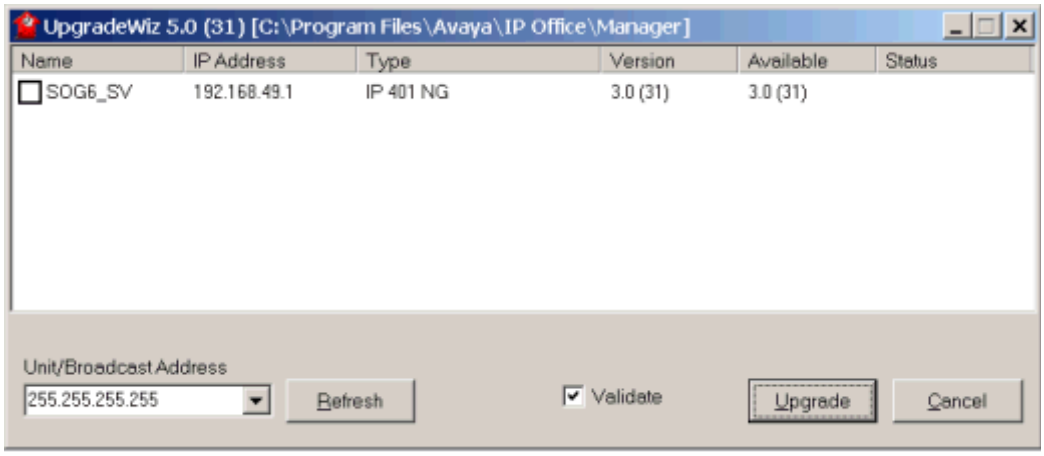
1. Open the Windows Control Panel (**Start | Settings | Control Panel**).
2. Select **Add/Remove** Programs.
3. Select the application suite to be removed. The Manager application is stored within the **IP Office Admin Suite**.
4. Click **Add/Remove**.
5. From the options offered select **Remove**. This process only removes those files installed during the application suites original installation. Any other files added since (user files, system configurations files, etc.) are not removed.
6. Follow any prompts given during the removal process.
7. Click **OK** to finish and close the Control Panel.
8. The new version of Manager can now be installed.

Upgrading G150 Core Software

To upgrade the G150 core software:

1. Ensure that you have followed the Pre-Upgrade Checks on page 211.
2. Ensure that you have received and made a copy of the G150 configuration. If the upgrade fails, the current configuration may be erased so a backup copy is an essential precaution.
3. In Manager, select **File | Advanced | Upgrade**. This starts the UpgradeWiz application.

Figure 95: Manager Upgrade Wizard



4. The wizard lists the G150s it has found on the LAN. Tick the G150 system being upgraded. Based on Figure 95, tick the **SOG6_SV**.

   - **No Units Listed**

     If this message is displayed with the G150 using the Broadcast Address of 255.255.255.255, it implies that the Manager PC is not connected to any local G150. At this point, you should enter the specific IP address of the G150 you wish to upgrade (by clicking the drop down box associated with the **Unit/Broadcast Address** field or entering the IP address into this field and click **Refresh**) or check the network settings.

   The list also shows the current software level of the units (under the **Version** column) and the level of the appropriate/new bin file that Manager has available (under the **Available** column) for each unit.
5. With a new bin file available for upgrading (displayed under the **Available** column), the tick the box for those G150s that you want to upgrade should be ticked by default.
6. Leave the **Validate** box ticked. With the **Validate** box ticked, the system will check that it has received the new .bin files before erasing the old version and give the option to upgrade. If the **Validate** box is not ticked, a validated upgrade will not be performed. The validated upgrade function can be performed on both a remote and local upgrade.

7. Click **Upgrade**.
8. Enter the System Password.
9. Click **OK**.
10. After the system has received and validated the new .bin files, you will be given the option to continue with the upgrade, where the process of erasing, downloading and installing will begin. The prompt states: "Files downloaded, proceed with upgrade?" Reply accordingly.
    - If you want the to continue, click **OK**.
    - Clicking **Cancel** will erase all the new .bin files from the RAM of the G150. The unit will continue operating as if an upgrade was never attempted.
11. Under the **Status** column on the UpgradeWiz window, the status of the upgrade can be tracked.
12. When the upgrade is complete, a prompt stating: "All units have graded" is displayed.
13. Click **OK**.
14. The upgrade is complete. The software version number under the **Version** and **Available** column should be the same.
15. Close the UpgradeWiz window.

Appendix E: Install the Avaya TFTP Server

This appendix describes the procedure to install and configure the Avaya TFTP server on a technician's laptop or other computer. You can use the capabilities of the TFTP server as the "source" to install software on the Media Server and the G150 Media Gateways.

Create a tftpboot directory

1. Skip this step if you intend to use your CD-ROM drive as the source location for the system software files. Otherwise, on the hard drive of your laptop or the customer's PC, create a directory into which you will load the system software. It is recommended that you create a directory called C:\tftpboot.

Download the TFTP software

The TFTP server software may be available on the Unity CD in \pc-software\TFTP. If so, skip to Step 8.

2. Connect to the LAN using a browser on your laptop or the customer's PC and access the Avaya Support website on the Internet:
   http://www.avaya.com/support
3. At the Avaya support site, select the following sequence of menu options:

   > Software & Firmware Downloads

   scroll down to the **Telephones and End User Devices**
   category and select

   > 4600 Series IP Telephones

   > Software Downloads

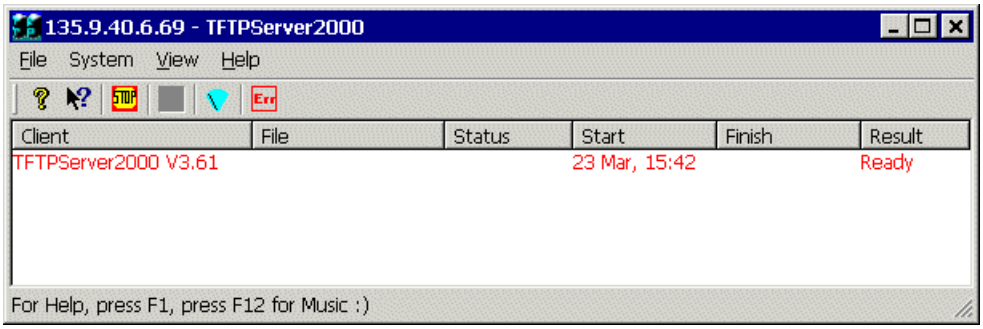
4. >Double-click on one of the links listed with "TFTP Server"; for example, **4630/4630SW IP Telephone R 2.0.1 and TFTP Server**.
5. Scroll to bottom of page to find the TFTP Server Application file, **iptel_avaya_tftp.exe**.

6. Double-click on the filename and download the file to your laptop or the customer PC that will serve as the TFTP server. The directory that you download this file to can be a temporary directory — it is not the directory that the TFTP server will be installed in. Remember this directory.
7. You may also wish to download and view or print the file **iptel.pdf**, which provides instructions on installing the **iptel_avaya_tftp.exe** for Windows servers.

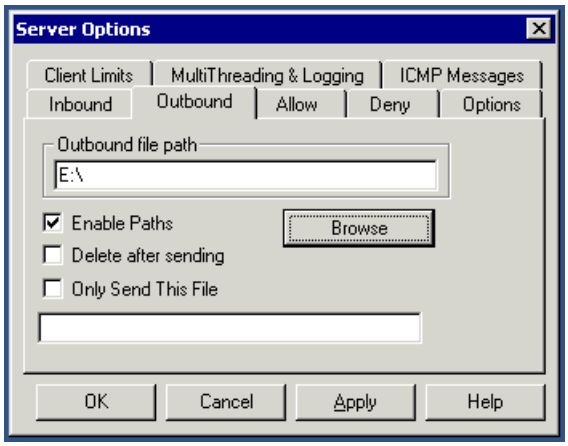
Install the TFTP software

8. After downloading the **iptel_avaya_tftp.exe** file, double-click it and follow the installation instructions. The installation program creates the default installation directory C:\Program Files\Walusoft\TFTPSuite.
9. When the file has been installed, go to the directory where the software was installed and double-click the file **tftpserver32.exe** to open the program.

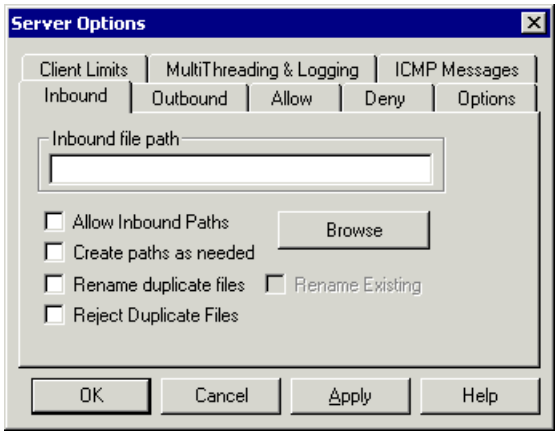
   The TFTP Server window appears.The IP address of the PC plus port 69 shows in the top border.



10. Configure the TFTP server as follows:
    - Click on **System** from the menu bar and select **setup**.
    - In the **Server Options** window, select the **Outbound** tab, and browse to your CD-ROM drive location and double-click to enter in the outbound file path.

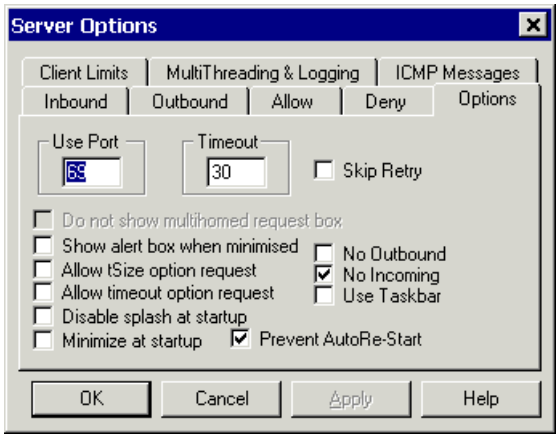


    - Select the **Inbound** tab and ensure that the Inbound file path is blank



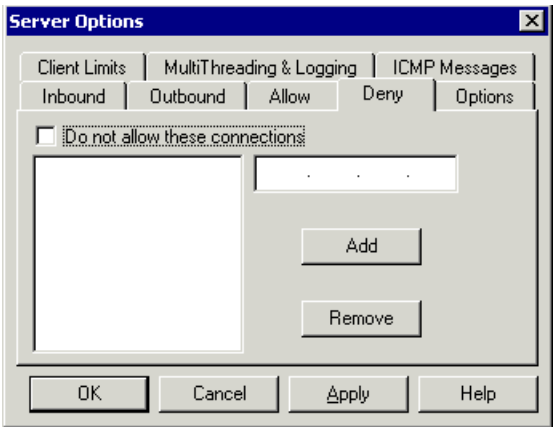
    - Select the **Options** tab. Enter **69** in the **Use Port** field and **30** in the **Timeout** field.
    - Select **No Incoming**. However, if you wish to copy files as a backup prior to performing an upgrade of software, leave this field unchecked.

- Select **Prevent AutoRe-Start**.



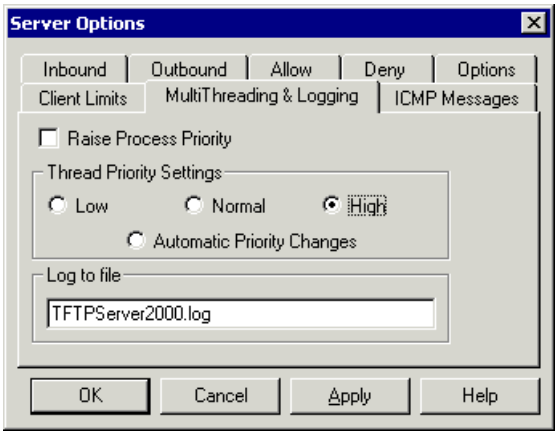
- In the **Allow** tab, leave the **Only allow these connections** checkbox unchecked.

- Select the **Deny** tab and ensure that all fields are blank.

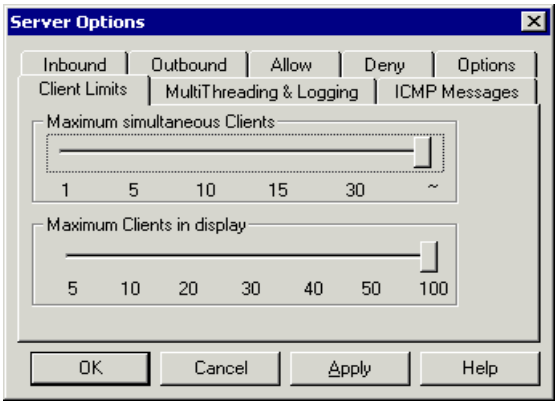


- Select the **MultiThreading & Logging** tab and select **High** for **Thread Priority Settings**.

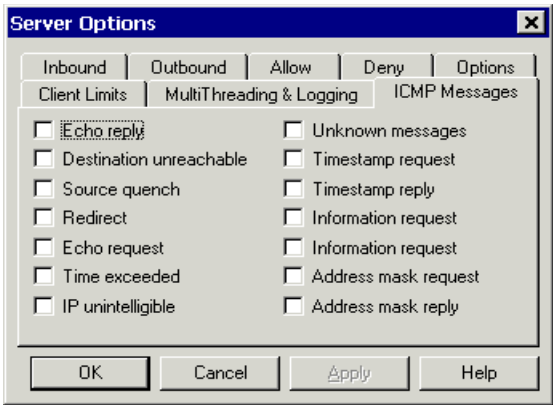
- Leave the default filename in the **Log to file** field.



- Select the **Client Limits** tab and move the slide button all the way to the right for **Maximum simultaneous Clients** (~) and **Maximum Clients in display** (100).



- Select the **ICMP Messages** tab and ensure that all fields are blank.



- Click **OK** to save these settings.

This completes the installation and configuration of the TFTP server.

Appendix F: Monitoring G150

G150 provides an application called Monitor (a.k.a Sys. Mon. or System Monitor) to help monitor the status of a single G150. If Monitor indicates a fault within the system, other applications or tools must be used to update or troubleshoot the G150. The Monitor application is NOT a configuration tool.

Note:

The Monitor application is used by other Avaya product lines for the same purpose. Therefor, many fields and menus on the application will not be applicable to G150.

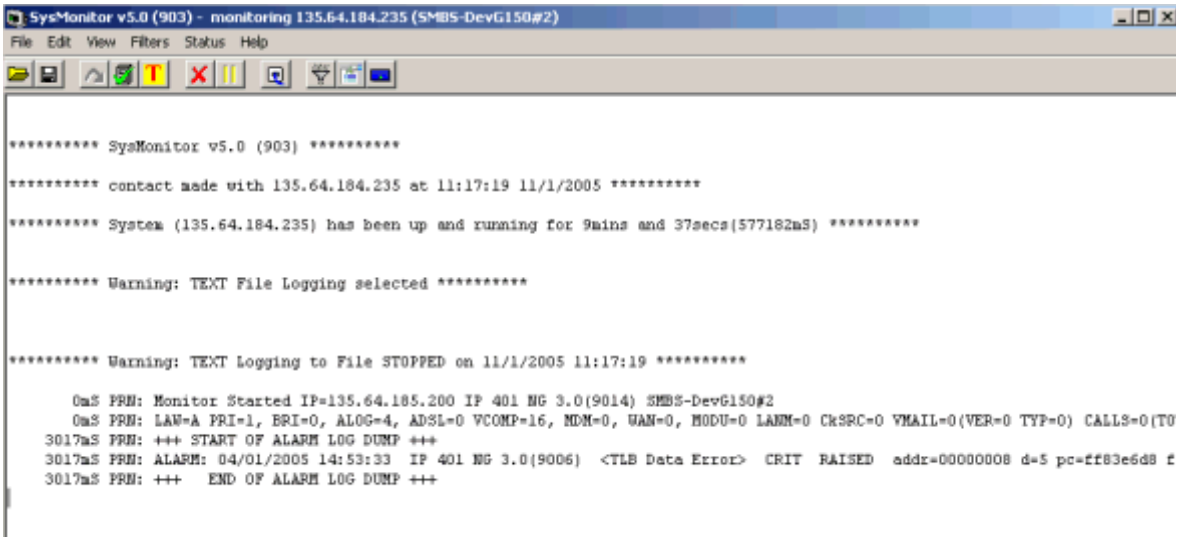
Monitor is an install option on the G150 Admin. CD and should have been installed in the same directory as Manager.

To make use of the Monitor application in conjunction with G150, the PC with Monitor installed (which typically also has Manager installed) must be connected to the G150.

Do the following to access Monitor:

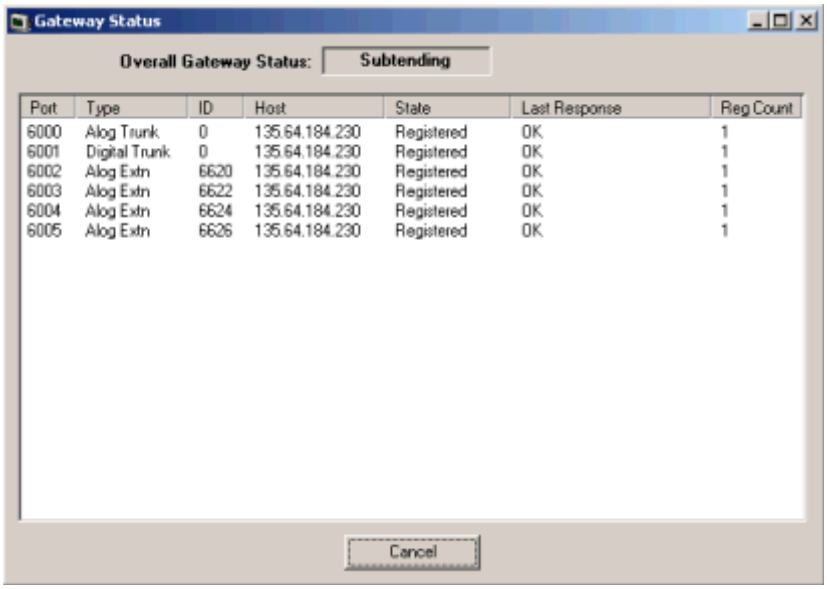
1. Open the Monitor application.

Figure 96: Monitor Application



2. Click **Status | G150 Status**. A G150 status window appears.

Figure 97: G150 Status



3. The current status of the G150 (updated every 2 seconds) is displayed in the **Overall Gateway Status** field. Varying status indicators and associated information (such as **Type**, **State**, **Last Response**, etc.) can be displayed. The following sections and tables list the indicators and their corresponding meaning/definition in relation to the G150.

Overall Gateway Status

Table 43: Overall Gateway Status - Displays the current status of the G150

Gateway Status	Possible Reason
Survivable	The G150 is in Survivable mode - no attached trunks or telephones are registered with an active gatekeeper.
Subtending	At least one attached trunk or telephone is registered with a gatekeeper.
Looking For Host	An initial state, entered immediately after startup
Losing Host	A transient state between Survivable and Subtending - connection to the present gatekeeper is lost and the G150 is looking for another from the Subtending Host List within Manager.
	1 of 2

Table 43: Overall Gateway Status - Displays the current status of the G150 (continued)

Gateway Status	Possible Reason
No Host Configured	There is no gatekeeper configured in Manager's Subtending Host List. G150 is in survivable mode.
Not a Gateway	The unit being monitored is not recognized as a G150.
Unknown	No gateway status is received from the G150. The G150 may contain unsupported firmware (such as firmware prior to version 3.0).
	2 of 2

Port

Port - Indicates the RAS port of the entity. Please refer to the "UDP Port Assignments" section of Chapter 4 for examples of port allocation.

Type

Table 44: Type - Lists all the Trunk and Extension types on the G150

Type	Possible Reason
Unknown	No status is received from the G150.
Alog Trunk	Shows that an analog trunk exists on the G150.
Digital Trunk	Shows that a digital trunk exists on the G150.
Alog Extn	Shows that an analog extension exists on the G150.

ID

ID - Trunk or extension identifiers. This field identifies the trunk (starting at zero) or the extension numbers.

Host

Host - The Communication Manager gatekeeper address to which this trunk/extension is or was last registered.

State

Table 45: State - Displays the state/status of each of the Trunk and Extn

State	Possible Reason
Unknown	No H.323 entity status received from the G150.
Registered	The entity (trunk or extension) is registered with a gatekeeper. The IP address of the gatekeeper is displayed in the **Host** column.
Not Registered	The entity (trunk or extension) is not registered with any gatekeeper. The IP address of the last registered gatekeeper is displayed in the **Host** column.

Last Response

Table 46: Last Response - The latest discovery or registration response the G150 received

Last Response	H.323 Protocol Element	Possible Reason
OK		Successful discovery or registration - no errors.
Unknown		No response has ever been received from a gatekeeper.
		1 of 4

Table 46: Last Response - The latest discovery or registration response the G150 received (continued)

Last Response	H.323 Protocol Element	Possible Reason
ResourceUnavailable	GRJ/RRJ	Gatekeeper is busy or provisioned limit of IP Terminals has been reached. There is no valid RAS address specified. The station or trunk may not be configured on CM.
TerminalExcluded	GRJ	There is no valid address specified. This extension number may not be administered on Communication Manager.
InvalidRevision	GRJ/RRJ	The version of the Terminal is not compatible with the version of the Gatekeeper.
UndefinedReason *or* InternalFailure	GRJ/RRJ/URJ Proprietary	Gatekeeper internal error. Login denied for proprietary reason. Another station of the same IP address is already registered with Communication Manager. No IP address supplied in an unregistered request.
SecurityDenial	GRJ/RRJ/URJ	There is no compatibility authentication capability or algorithm. Usually due to password mismatch between the **G150 User | Password** field on Manager and the **station | security code** field in the Communication Manager configuration. Another potential meaning of this information display is that another station of the same number is already registered with the gatekeeper.
		2 of 4

Table 46: Last Response - The latest discovery or registration response the G150 received (continued)

Last Response	H.323 Protocol Element	Possible Reason
DiscoveryRequired	RRJ	Registration permission has aged; the IP endpoint is instructed to restart RAS procedures with the Gatekeeper.
InvalidCallSigAddr	RRJ	There was not at least one valid IP TransportAddress provided.
InvalidRASAddress	RRJ	There was not at least one valid IP TransportAddress provided.
DuplicateAlias	RRJ	Indicates that the terminalAlias sent in the registration request is already in use.
InvalidTerminalType *or* InvalidSetType	RRJ RRJ (Proprietary - Login Denial)	Indicates an unsupported TerminalType. The telphone type configured on Communication Manager for all analog telephones attached to the G150 must be "6210". If not, this message will be displayed.
TransportNotSupported	RRJ	Requested transport type is not supported.
TransportQOSNotSupptd	RRJ	QOS specified by endpoint is not supported.
InvalidAlias	RRJ	Alias not consistent with Gatekeeper rules. None of the alias addresses is a valid extension in the Gatekeeper.
UserLoggedIn	RRJ (Proprietary - Login Denial)	There is already a Terminal registered at the specified extension number and the user is not active on a call.
IpProductLimitReached	RRJ (Proprietary - Login Denial)	Indicates possible Communication Manager licensing issues.
IpEndptLimitReached	RRJ (Proprietary - Login Denial)	Indicates possible Communication Manager licensing issues.
NotValidProductId	RRJ (Proprietary - Login Denial)	The ProductID is not valid.
		3 of 4

Table 46: Last Response - The latest discovery or registration response the G150 received (continued)

Last Response	H.323 Protocol Element	Possible Reason
IncompatibleEmergencyOpt	RRJ (Proprietary - Login Denial)	The administered switch extension number differs from the one sent by the endpoint.
NotCurrentlyRegistered	URJ	Indicates that a device requesting unregistration is not currently registered.
CallInProgress	URJ	Indicates that a request to unregister a terminal was received while a call is active.
UserOnCall	RRJ (Proprietary - Login Denial)	There is already a terminal registered at the specified extension number, and the user is active on a call.
PermissionDenied	URJ	Requesting user not allowed to unregister specified user. Usually indicates that no endpointIdentifier was supplied in the URQ.
Unregistered by Host	URQ (Proprietary Reason)	The gatekeeper has unregistered the entity, possibly due to maintenance actions.
		4 of 4

Registration Count

Registration Count: Indicates the number of times an entity has been successfully registered with a gatekeeper since the last G150 power on.

Appendix G: 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 Communication Manager 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 Communication Manager 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 Communication Manager 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 G150, change the Customize field to **y**.

4. Proceed to change the FROM rows and the TO columns to affect the directional loss or gain.

Figure 98: Sample digital loss plan setting

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	-3	-2	-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

In this example, if a call is to traverse from an analog station that is connected to the host Communication Manager, 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 BRI) on the G150, you would locate row 17 of the TO column. This is highlighted in Figure 98.

The legend for this transaction is shown as follows:

Loss Group	Port Type
1	Communication Manager ECS Analog Station
6	Communication Manager ECS Analog Central Office Trunk
11	Communication Manager ECS Digital Central Office Trunk
16	G150 Analog Station
7	G150 Analog Central Office Trunk
17	G150 Digital Central Office Trunk

Looking at the legend, an analog station on the host Communication Manager 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 G150, you would find column 17 in the TO side of this loss plan table. Highlighted at this is 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 Communication Manager.

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 this Appendix 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

Figure 99: Default loss plan settings for country code 2

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

Figure 100: Customized 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

- 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 G150 facilities.
- The 1st plan represents the default Australian loss plan.
- The 2nd plan represents the customized Australian loss plan for the G150 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 a G150 station, use loss group 5 instead of the default (1 or 2). When administering a G150 digital CO (T1) trunk group, use loss group 14 instead of the default (13).

Here is the legend.

Loss Group	Port Type
1	Communication Manager ECS Analog Station
6	Communication Manager ECS Analog CO
11	Communication Manager ECS Digital CO
5	G150 Analog Station
14	G150 Digital CO

Belgium settings

Figure 101: Default loss plan settings for country codes 8, 11, and 18

2 PARTY LOSS PLAN

Digital Loss Plan: 8 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:	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

Figure 102: Customized loss plan settings for country codes 8, 11, and 18

2 PARTY LOSS PLAN

Digital Loss Plan: 8 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	-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

- 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 G150 facilities.
- The 1st plan represents the default Belgian loss plan.
- The 2nd plan represents the customized Belgian loss plan for the G150 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 a G150 station, use loss group 5 instead of the default (1 or 2). When administering a G150 digital CO (T1) trunk group, use loss group 14 instead of the default (13).

Here is the legend.

Loss Group	Port Type
1	Communication Manager ECS Analog Line
6	Communication Manager ECS Analog CO
11	Communication Manager ECS Digital CO
5	G150 Analog Station
14	G150 Digital CO

France settings

Figure 103: Default loss plan settings for country code 12

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

Figure 104: Customized loss plan settings for country code 12

```
                                    2 PARTY LOSS PLAN
           Digital Loss Plan: 12                              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   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
```

- 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 G150 facilities.
- The 1st plan represents the default French loss plan.
- The 2nd plan represents the customized French loss plan for the G150 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 a G150 station, use loss group 5 instead of the default (1 or 2). When administering a G150 digital CO (T1) trunk group, use loss group 14 instead of the default (13).

Here is the legend.

Loss Group	Port Type
1	Communication Manager ECS Analog Line
6	Communication Manager ECS Analog CO
11	Communication Manager ECS Digital CO
5	G150 Analog Station
14	G150 Digital CO

Germany settings

Figure 105: Default loss plan settings for country codes 13 and 25

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

Figure 106: Customized 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

- 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 G150 facilities.
- The 1st plan represents the default German loss plan.
- The 2nd plan represents the customized German loss plan for the G150 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 a G150 station, use loss group 5 instead of the default (1 or 2). When administering a G150 digital CO (T1) trunk group, use loss group 14 instead of the default (13).

Here is the legend.

Loss Group	Port Type
1	Communication Manager ECS Analog Line
6	Communication Manager ECS Analog CO
11	Communication Manager ECS Digital CO
5	G150 Analog Station
14	G150 Digital CO

Italy settings

Figure 107: Default loss plan settings for country codes 4 and 23

2 PARTY LOSS PLAN

Digital Loss Plan: 4 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:	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

Figure 108: Customized loss plan settings for country codes 4 and 23

2 PARTY LOSS PLAN

Digital Loss Plan: 4 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	-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

- 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 G150 facilities.
- The 1st plan represents the default Italian loss plan.
- The 2nd plan represents the customized Italian loss plan for the G150 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 a G150 station, use loss group 5 instead of the default (1 or 2). When administering a G150 digital CO (T1) trunk group, use loss group 14 instead of the default (13).

Here is the legend.

Loss Group	Port Type
1	Communication Manager ECS Analog Station
6	Communication Manager ECS Analog CO
11	Communication Manager ECS Digital CO
5	G150 Analog Station
14	G150 Digital CO

Japan settings

Figure 109: Default loss plan settings for country code 3

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

Figure 110: Customized 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

- 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 G150 facilities.
- The 1st plan represents the default Japan loss plan.
- The 2nd plan represents the customized loss plan to be used with the G150. There are 2 modified loss groups (5 and 14). When administering a G150 station, use loss group 5 instead of the default (1 or 2). When administering a G150 digital CO (T1) trunk group, use loss group 14 instead of the default (13).

Here is the legend.

Loss Group	Port Type
1	Communication Manager ECS Analog Station
6	Communication Manager ECS Analog CO
11	Communication Manager ECS Digital CO
5	G150 Analog Station
14	G150 Digital CO

Netherlands settings

Figure 111: Default loss plan settings for country code 5

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	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	8	8	8	0	0	8	8	8	8	8	3	3
F	7:	0	0	0	0	0	8	8	8	0	0	8	8	8	8	8	3	3
R	8:	0	0	0	0	0	8	8	8	0	0	8	8	8	8	8	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	1	1	1	0	0	0	0	0	0	0	3	3
	12:	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	3	3
	13:	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	3	3
	14:	0	0	0	0	0	1	1	1	0	0	0	0	0	0	0	3	3
	15:	0	0	0	0	0	1	1	1	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

Figure 112: Customized 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	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	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	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	1	1	1	0	0	0	0	0	5	0	3	3
	12:	0	0	0	0	5	1	1	1	0	0	0	0	0	5	0	3	3
	13:	0	0	0	0	5	1	1	1	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	1	1	1	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

- 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 G150 facilities.
- The 1st plan represents the default Netherlands loss plan.
- The 2nd plan represents the customized Netherlands loss plan for the G150 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 G150 station use loss group 5 instead of the default (1 or 2). When administering an G150 digital CO (T1) trunk group, use loss group 14 instead of the default (13).

Here is the legend.

Loss Group	Port Type
1	Communication Manager ECS Analog Station
6	Communication Manager ECS Analog CO
11	Communication Manager ECS Digital CO
5	G150 Analog Station
14	G150 Digital CO

Nordic settings

Figure 113: Default loss plan settings for country code 24

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

Figure 114: Customized 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
```

- 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 G150 facilities.
- The 1st plan represents the default Nordic loss plan.
- The 2nd plan represents the customized Nordic loss plan for the G150 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 a G150 station use loss group 16 instead of the default (1 or 2). When administering a G150 digital CO (T1) trunk group use loss group 17 instead of the default (13).

Here is the legend.

Loss Group	Port Type
1	Communication Manager ECS Analog Line
6	Communication Manager ECS Analog CO
11	Communication Manager ECS Digital CO
16	G150 Analog Station
17	G150 Digital CO

United Kingdom (UK) settings

Figure 115: Default loss plan settings for country code 10

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

Figure 116: Customized 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	-3	0	-3	-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

- 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 G150 facilities.
- The 1st plan represents the default UK loss plan.
- The 2nd plan represents the customized UK loss plan for the G150 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 a G150 station use loss group 5 instead of the default (1 or 2). When administering a G150 digital CO (T1) trunk group use loss group 14 instead of the default (13).

Here is the legend.

Loss Group	**Port Type**
1	Communication Manager ECS Analog Station
6	Communication Manager ECS Analog CO
11	Communication Manager ECS Digital CO
5	G150 Analog Station
14	G150 Digital CO

United States (US) settings

Figure 117: Default loss plan settings for country codes 1, 6, 7, 9, 14-17, 19-22

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

Figure 118: Customized 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	-3	-2	-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

- 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 G150 facilities.
- The 1st plan represents the default US loss plan.
- The 2nd plan represents the customized loss plan to be used with the G150. There are 3 modified loss groups (16, 7, and 17). When administering a G150 station use loss group 16 instead of the default (1 or 2). When administering a G150 analog CO trunk group, use loss group 7 instead of the default (13). When administering an G150 digital CO (T1) trunk group, use loss group 17 instead of the default (13).

Here is the legend.

Loss Group	Port Type
1	Communication Manager ECS Analog Station
6	Communication Manager ECS Analog CO
11	Communication Manager ECS Digital CO
16	G150 Analog Station
7	G150 Analog CO
17	G150 Digital CO

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