



# **Overview for the Avaya G250 and the Avaya G350 Media Gateways**

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# About this document

This document provides an overview of the Avaya Branch Gateways (Avaya G250 and G350 Media Gateways).

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## Purpose

This guide contains information that you need to consider before implementing the Avaya G250 Media Gateway or Avaya G350 Media Gateway. Use this guide to learn what the Branch Gateways can do and to plan how you will deploy a Branch Gateway in your environment.

This guide contains the following chapters:

- [Chapter 1: Introduction](#). Describes the features, applications, and physical appearance of the Branch Gateways.
- [Chapter 2: Optional components](#). Describes the optional media modules that fit into the G250 and G350 chassis. Also describes the limitations and capacities that apply to housing modules in the chassis. Use this chapter to decide on a suitable customized hardware configuration.
- [Chapter 3: Summary of services](#). Provides a summary of the telephone, LAN, and WAN services provided and supported by the Branch Gateways.
- [Chapter 4: Management](#). Describes how you can manage the Branch Gateways.
- [Chapter 5: Documentation](#). Describes the documentation available for the Branch Gateways.
- [Appendix A: G250 and G350 capacities](#). Provides information about the capacities of the Branch Gateways. Consider the information in this chapter when deciding how to deploy the G250 or G350 in conjunction with other media gateways and equipment.
- [Appendix B: Supported Avaya products](#). Lists Avaya products supported by the Branch Gateways as end devices.
- [Appendix C: G250 technical specifications](#). Lists the technical specifications of the G250 and supported optional components and adjuncts.
- [Appendix D: G350 technical specifications](#). Lists the technical specifications of the G350 and supported optional components and adjuncts.

## Audience

The information in this book is intended for use by Avaya technicians, provisioning specialists, Business Partners, and customers.

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## Related resources

For more information on the Avaya G250 and G350 Media Gateways and related features, see the following books:

Title	Number
Quick Start for Hardware Installation for the Avaya G250 Media Gateway	03-300433
Quick Start for Hardware Installation for the Avaya G350 Media Gateway	03-300148
Installing and Upgrading the Avaya G250 Media Gateway	03-300434
Installing and Upgrading the Avaya G350 Media Gateway	03-300394
Administration for the Avaya G250 and Avaya G350 Media Gateways	03-300436
Avaya G250 and Avaya G350 CLI Reference	03-300437
Maintenance for the Avaya G250 and Avaya G350 Media Gateways	03-300438

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- 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

## International

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# Chapter 1: Introduction

The Avaya Branch Gateways (Avaya G250 and G350 Media Gateways) form part of Avaya Enterprise Connect, Avaya's solution for extending communication capabilities from the headquarters of an organization to all collaborative branch locations. Avaya Enterprise Connect helps you provide the same high quality services to all organization members, regardless of their location.

The Branch Gateways are high-performance converged telephony and networking devices that are located in small branch locations, providing all infrastructure needs in one box — telephone exchange and data networking. The Branch Gateways each feature a VoIP engine, WAN router, and Power over Ethernet LAN switch. The G350 provides full support for legacy IP, DCP, and analog telephones. The G250 supports legacy IP and analog telephones. In addition, the G250-DCP model supports DCP telephones.

The G350 is designed for use in an eight to 40 user environment, aimed at branch offices with 16 to 24 stations. The G250 is designed for use in a two to 12 user environment, aimed at small branch offices with two to eight stations.

Telephone services on a Branch Gateway are controlled by a Media Gateway Controller (MGC). You can use a media server running Avaya Communication Manager (CM) call processing software as an MGC. Both the gateways integrate seamlessly with Avaya Media Servers S8700, S8710, S8720, S8500, S8400, and S8300 to provide the same top quality telephony services to the small branch office as to the headquarters of the organization.

The Branch Gateways can subtend to an MGC located at the headquarters or the MGC can be installed locally. The Branch Gateways can optionally house an internal Avaya S8300 media server for Enhanced Local Survivability (ELS), providing full MGC functionality in the event that the connection with the primary MGC is lost, or as the primary MGC for standalone deployment. When the primary MGC is located at a remote location, the G250 features Standard Local Survivability (SLS). SLS provides partial backup MGC functionality in the event that the connection with the primary MGC is lost.

In addition to advanced and comprehensive telephony services, the Branch Gateways provide full data networking services, precluding the need for a WAN router or LAN switch.

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## Avaya G350 Media Gateway Overview

The G350 is a modular device, adaptable to support different combinations of endpoint devices. Pluggable media modules provide interfaces for different types of telephones and trunks. A combination is selected to suit the needs of the branch. A LAN media module with PoE standard compliant Ethernet ports provides support for IP telephones as well as all other types of data devices. A range of telephony modules provides full support for legacy equipment such as analog and digital telephones.

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## Avaya G250 Media Gateway Overview

The G250 supports the connection of PCs, LAN switches, IP telephones, analog telephones, and trunks, via fixed analog and PoE ports on the chassis. A media module slot supports either of two WAN media modules, for connection to a WAN. There are several models of the G250, with various port combinations for support of analog, BRI, or T1/E1 trunks or DCP telephones, as described below.

The G250 is available in the following models:

- Analog model (G250-Analog). The G250-Analog includes four analog trunk ports, two analog line ports, a Fast Ethernet WAN port, and eight PoE LAN ports.
- BRI model (G250-BRI). The G250-BRI includes two ISDN BRI trunk ports, one analog trunk port, two analog line ports, a Fast Ethernet WAN port, and eight PoE LAN ports.
- DCP model (G250-DCP). The G250-DCP provides twelve DCP (Digital Communications Protocol) ports, as well as four analog trunk ports, two analog line ports, a Fast Ethernet WAN port, and two LAN ports.
- DS1 model (G250-DS1). The G250-DS1 provides a T1/E1 and a PRI trunk port, enabling support of fractional T1/E1 and PRI. The G250-DS1 also includes one analog trunk port, two analog line ports, a Fast Ethernet WAN port, and eight PoE LAN ports.

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## Features

G250 and G350 features include:

- Voice
  - Support for traditional telephones and trunks. In particular, the G250 and G350 support:
    - Two built-in line ports to support two analog telephones or incoming analog DID trunks
    - One analog trunk (four in the G250-Analog and the G250-DCP) to support a trunk or trunks of the following types:
      - Loop start
      - Ground start (G350 only)
      - CAMA (G350 only)
      - DIOD (Japan only)
  - Survivability features for continuous voice services
  - VoIP Media Gateway services
  - Call center capabilities

- WAN
  - WAN Quality of Service (QoS)
  - Routing protocols (OSPF, RIP)
  - PPPoE
  - Weighted Fair Queuing (WFQ)
  - Policy-based routing
  - DHCP client, server, and relay functions
  - GRE tunneling
  - Dynamic IP addressing
  - Fax and modem over IP
  - Object tracking
- Server
  - DHCP servers
  - TFTP servers
- LAN
  - Power-over-Ethernet LAN Switching
  - VLANs
  - Spanning Tree Protocols
    - IEEE 802.1D (STP)
    - IEEE 802.1w (RSTP) (G350 only)
  - Port mirroring
  - Port redundancy (G350 only)
- Security
  - RADIUS Authentication support
  - SNMP traps (v1 and v2 only) sent to the primary controller
  - SNMP v3
  - SSH Authentication support
  - VPN support
- Provisioning
  - Avaya Communication Manager (CM) media server management
  - Extensive alarming and troubleshooting features
  - Modem access for remote administration

## Introduction

- Survivability
  - MGC automatic switchover, migration, and survivability features
  - Modem backup connection to the MGC
  - Dynamic Call Admission Control (CAC) for Fast Ethernet, Serial, and GRE tunnel interfaces
- Management applications
  - Avaya G250/G350 Manager
  - Embedded Web Manager (G350 only)

---

## What's new in release 3.1

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### New Avaya G250 Media Gateway models

Release 3.1 introduces two new models of the Avaya G250 Media Gateway, the G250-DCP and the G250-DS1. This is in addition to the existing models, the G250-Analog and the G250-BRI. For a brief description of the various G250 models, refer to [Avaya G250 Media Gateway Overview](#) on page 12. For a physical description of the various G250 models, refer to [G250 physical description](#) on page 18.

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### Avaya G250/G350 Manager for G250

The Avaya G250/G350 Manager now supports the G250 as well as the G350. For more details, refer to [Avaya G250/G350 Manager and Embedded Web Manager](#) on page 54.

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### New Media Modules

Release 3.1 introduces two new media modules available for insertion in the G350: The MM316 LAN media module, and the MM716 analog media module.

The MM316 LAN media module is similar to the MM314, but provides 40 rather than 24 10/100 Base-T Ethernet ports with PoE support, as well as one Gigabit Ethernet port. For more information, refer to [MM316 LAN media module](#) on page 34.

The MM716 provides 24 analog line ports. These ports can be configured as DID trunks with either wink start or immediate start. For more information, refer to [MM716 analog media module](#) on page 29.

The MM316 and MM716 are compatible with Avaya CM version 2.0 and higher, and G350 firmware version 25.0.0 and higher.

Versions of the MM314 LAN media module with Material Code 700384 (C/S:2.0) also require Avaya CM version 2.0 and higher, and G350 firmware version 25.0.0 and higher.

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## Branch Gateway feature enhancements

The Avaya G250 Media Gateway and the Avaya G350 Media Gateway for Avaya CM Release 3.1 include the same functionality that was provided in Release 3.0, and offer the following new or enhanced capabilities. These capabilities are available for both the G250 and the G350, except where otherwise specified.

## SLS survivability enhancements (G250 only)

SLS is a configurable software module that allows a local G250 to provide a limited amount of MGC functionality when no link is available to the server, an LSP, or an Enterprise Survivable Server (ESS). SLS was first introduced in Release 3.0, and has been enhanced as follows:

- Supported for the G250-BRI analog interfaces
- Supported for the G250-DCP analog and DCP interfaces
- Supported for the G250-DS1 analog interfaces
- Addition of the following SLS features:
  - Phone displays
  - Multiple call appearances
  - DID support
  - Call holding support
  - Call transfer support
  - IP Softphone support
  - Inter-digit timers during digit collection
  - TUI access to the contact closure

## VPN enhancements

Several enhancements to the G250/G350's VPN capabilities have been implemented in Release 3.1, including:

- Support for configurations in which the G250/G350 acts as a regional VPN hub for dynamically addressed peers
- Enhanced failover scheme for switching back to the primary peer after timeout

## Introduction

- Support for filtering by protocol and port ranges in crypto list bypass rules
- Increased configuration capacities, as required for PIM support
- Interoperability with SonicWALL, Avaya IP office, and Avaya G150 Media Gateway
- Ability to generate Remote Security Services (RSS) notifications when an Unauthenticated Access Event occurs (refer to [RSS notifications](#) on page 17)

## USB port supported in G250

All models of the G250 now support the USB port for use with the Multitech MultiModemUSB MT5634ZBA-USB-V92 USB modem.

## Traceroute enhancements

Traceroute is a well-known TCP/IP utility that helps system administrators to troubleshoot connectivity problems by enabling them to see the route packets are taking to a particular host. Traceroute does this by displaying the hops along the path.

Release 3.1 improves the G250/G350's traceroute feature by extending traceroute to the GRE and ESP tunneling protocols, and to VMON.

## SAA and object tracking enhancements

Several SAA and object tracking enhancements have been added in Release 3.1, including the ability to monitor the states of the following routes: static routes, the DHCP client default route, and PBR next hops.

## IP header compression enhancements

In Release 3.1, IP header compression support has been added for non-IETF Frame Relay encapsulation.

## Port-based network access control (IEEE 802.1x) enhancements

In order to support 802.1x for Avaya IP phones and PCs connected to each port, 802.1x support has been expanded to include multi-supPLICANT mode per port, with MAC-based authentication. The administrator can configure port mode as multi-supPLICANT or single. For purposes of backward compatibility, single is the default mode. EAP authentication has also been extended to support PEAP, TTLS, and TLS types, in addition to MD5.

## Frame relay encapsulation enhancements

Frame relay encapsulation has been expanded in Release 3.1 to support non-IETF frame relay encapsulation.



## **Caller ID on call waiting support for MM711, MM714, and MM716**

The MM711, MM714, and MM716 analog media modules now support Calling Identity Delivery on Call Waiting (CIDCW). This feature provides visual information on an incoming call while the called party is on an existing call. This combines the functionality of Call Waiting (CW) and Calling Identity Delivery (CID).

## **RSS notifications**

The G250/G350 identifies predefined or custom-defined traffic patterns as suspected DoS attacks and generates SNMP notifications, referred to as Remote Security Services (RSS) notifications. RSS notifications are intercepted and forwarded to the Security Operations Center (SOC), where Avaya service representatives respond as necessary to any DoS attacks or related security issues.

## **Secure file transfer for announcements**

The G250/G350 supports secure transfer of announcement files via SCP to and from the Voice Announcement Manager (VAL Manager).

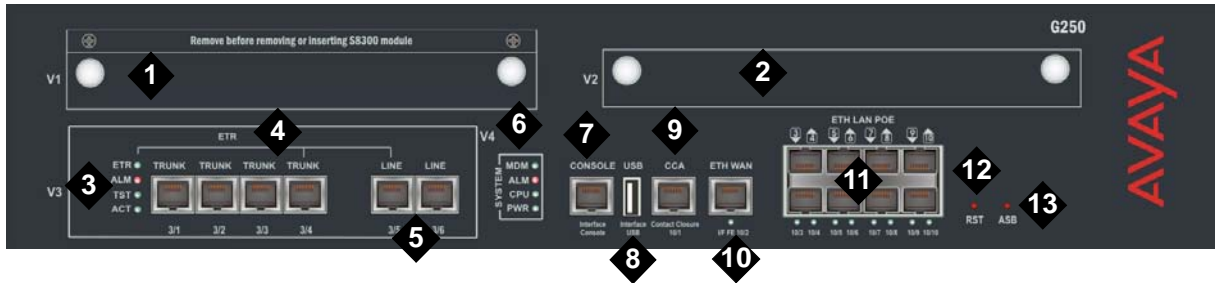
---

## G250 physical description

[Figure 1](#) shows the G250-Analog Media Gateway chassis. [Figure 2](#) shows the G250-BRI Media Gateway chassis. [Figure 3](#) shows the G250-DCP Media Gateway chassis. [Figure 4](#) shows the G250-DS1 Media Gateway chassis.

---

**Figure 1: The Avaya G250-Analog Media Gateway Chassis**



**Figure notes:**

- |                               |  |
|-------------------------------|--|
| 1. V1 — ICC/LSP Slot          | 8. USB port                              |
| 2. V2 — WAN Media Module Slot | 9. Contact Closure (CCA) port            |
| 3. Analog port LEDs           | 10. Ethernet WAN (ETH WAN) port          |
| 4. Analog trunks              | 11. PoE LAN (ETH LAN PoE) ports          |
| 5. Analog line ports          | 12. Reset (RST) button                   |
| 6. System LEDs                | 13. Alternate Software Bank (ASB) button |
| 7. Console port               |  |

Figure 2: The Avaya G250-BRI Media Gateway Chassis

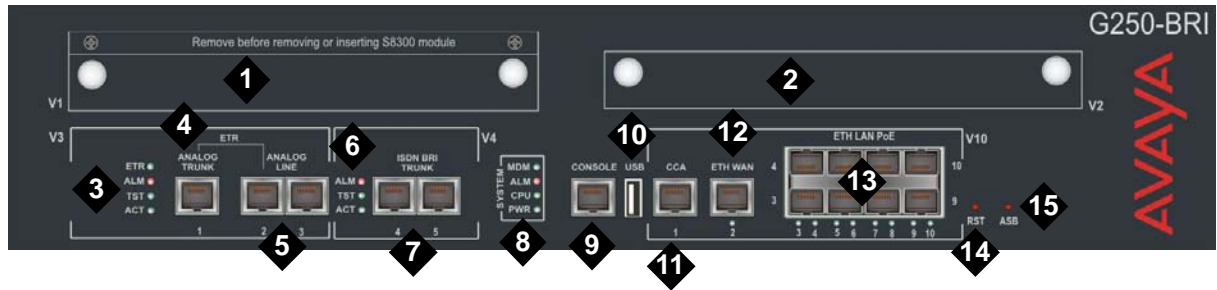


Figure notes:

- |                               |  |
|-------------------------------|--|
| 1. V1 — ICC/LSP Slot          | 9. Console port                          |
| 2. V2 — WAN Media Module Slot | 10. USB port                             |
| 3. Analog port LEDs           | 11. Contact Closure (CCA) port           |
| 4. Analog trunk               | 12. Ethernet WAN (ETH WAN) port          |
| 5. Analog line ports          | 13. PoE LAN (ETH LAN PoE) ports          |
| 6. ISDN BRI LEDs              | 14. Reset (RST) button                   |
| 7. ISDN BRI trunks            | 15. Alternate Software Bank (ASB) button |
| 8. System LEDs                |  |

Figure 3: The Avaya G250-DCP Media Gateway Chassis

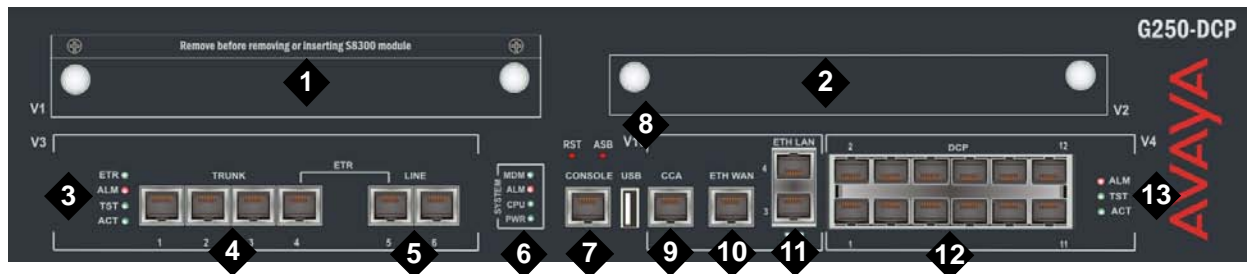
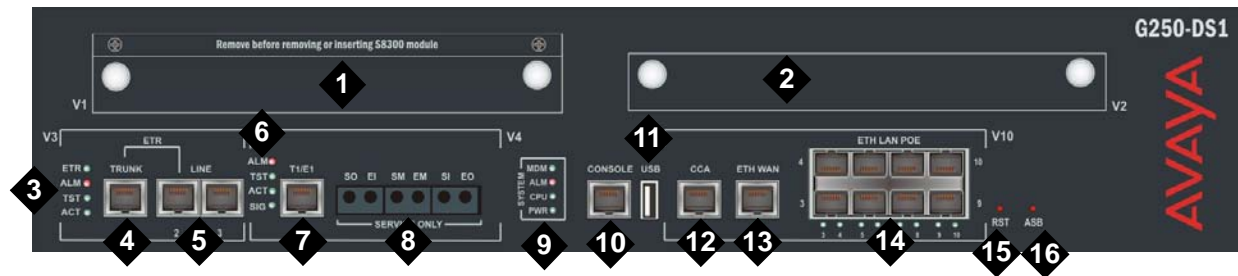


Figure notes:

- |                               |                                 |
|-------------------------------|---------------------------------|
| 1. V1 — ICC/LSP Slot          | 7. Console port                 |
| 2. V2 — WAN Media Module Slot | 8. USB port                     |
| 3. Analog port LEDs           | 9. Contact Closure (CCA) port   |
| 4. Analog trunks              | 10. Ethernet WAN (ETH WAN) port |
| 5. Analog line ports          | 11. ETH LAN ports               |
| 6. System LEDs                | 12. DCP ports                   |
|                               | 13. DCP port LEDs               |

**Figure 4: The Avaya G250-DS1 Media Gateway Chassis**



**Figure notes:**

- |                                   |  |
|-----------------------------------|--|
| 1. V1 — ICC/LSP Slot              | 9. System LEDs                           |
| 2. V2 — WAN Media Module Slot     | 10. Console port                         |
| 3. Analog port LEDs               | 11. USB port                             |
| 4. Analog trunk                   | 12. Contact Closure (CCA) port           |
| 5. Analog line ports              | 13. Ethernet WAN (ETH WAN) port          |
| 6. T1/E1/PRI trunk interface LEDs | 14. PoE LAN (ETH LAN PoE) ports          |
| 7. T1/E1 interface                | 15. Reset (RST) button                   |
| 8. Service                        | 16. Alternate Software Bank (ASB) button |

For information about the different media modules that can be housed in the G250 media module slots, see [Chapter 2: Optional components](#).

[Table 1: Fixed ports and buttons on the G250 front panel](#) describes the functions of the fixed ports and buttons on the G250 front panel.

**Table 1: Fixed ports and buttons on the G250 front panel**

Port	Description
TRUNK	Four analog trunk ports (G250-Analog Media Gateway, G250-DCP Media Gateway) or one analog trunk port (G250-BRI Media Gateway, G250-DS1 Media Gateway). These fixed trunk ports support loop-start, DIOD (for Japan only) trunks, and caller ID detection.
LINE	Two analog telephone ports. An analog relay provides Emergency Transfer Relay (ETR) feature. For the G250-Analog and G250-DCP, the relay is between TRUNK port 304 and LINE port 305. For the G250-BRI and G250-DS1, the relay is between TRUNK port 301 and LINE port 302. Also used for incoming analog DID trunks with either wink start or immediate start.

**1 of 2**

Table 1: Fixed ports and buttons on the G250 front panel (continued)

Port	Description
ISDN BRI TRUNK (G250-BRI Media Gateway)	Two 4 wire S/T ISDN BRI (Basic Rate Interface) 2B+D access ports with RJ-45 jacks. Each port interfaces to the central office at the ISDN T reference point. The ISDN BRI trunk ports do not support: <ul style="list-style-type: none"> <li>• BRI stations</li> <li>• Combining both B channels together to form a 128-kbps channel</li> </ul>
CONSOLE	Console RS-232 interface port for direct connection of CLI console. RJ-45 connector.
USB	USB port. Supports the connection of the Multitech MultiModemUSB MT5634ZBA-USB-V92 USB modem.
CCA	RJ-45 port for ACS (308) contact closure adjunct box.
ETH WAN	RJ-45 10/100 Base TX Ethernet port for connection to a cable or DSL broadband modem/router.
ETH LAN POE (G250-Analog, G250-BRI, and G250-DS1)	Eight Power over Ethernet (PoE) LAN ports with 80 watts (aggregated for all ports) for connecting IP phones or any Ethernet devices, such as PCs.
RST	Reset button. Resets chassis configuration.
ASB	Alternate Software Bank button. Reboots the G250 with the software image in the alternate bank.
DCP (G250-DCP)	Twelve DCP ports. These DCP ports are intended for in-building use only.
T1/E1 port (G250-DS1)	For T1, this port is capable of supporting inband signalling across all 24 channels (supports a maximum bandwidth of 1.536 Mbps). For E1, this port is capable of supporting R2MFC signalling across all 30 channels (supports a maximum bandwidth of 1.92 Mbps).
PRI port (G250-DS1)	The PRI port is capable of supporting PRI signalling for 23 or 30 bearer channels. NFAS signalling is not supported.

2 of 2

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## G350 physical description

[Figure 5](#) shows the G350 Media Gateway chassis.

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**Figure 5: The Avaya G350 Media Gateway Chassis,**

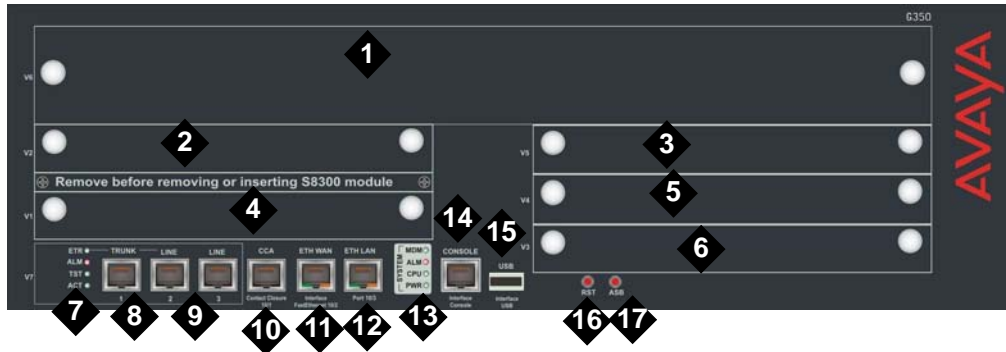


Figure notes:

- |  |                                |
|--|--------------------------------|
| 1. V6 — high-density media module slot                       | 9. Analog line ports           |
| 2. V2 — standard media module slot                           | 10. CCA (Contact Closure) port |
| 3. V5 — standard media module slot                           | 11. ETH WAN port               |
| 4. V1 — slot for standard media module or S8300 media server | 12. ETH LAN port               |
| 5. V4 — standard media module slot                           | 13. System LEDs                |
| 6. V3 — standard media module slot                           | 14. Console port               |
| 7. Analog port LEDs  | 15. USB port                   |
| 8. Analog trunk  | 16. RST button                 |
|  | 17. ASB button                 |

---

For information about the different media modules that can be housed in the G350 media module slots, see [Chapter 2: Optional components](#).

[Table 2: Fixed ports and buttons on the G350 front panel](#) describes the functions of the fixed ports and buttons on the G350 front panel.

**Table 2: Fixed ports and buttons on the G350 front panel**

Port/Button	Description
TRUNK	An analog trunk port. Part of an integrated analog media module. The fixed trunk port supports loop-start, ground-start, CAMA, and DIOD (for Japan only) trunks.
LINE	Two analog telephone ports of the integrated analog media module. An analog relay between TRUNK port 7/1 and the furthest left LINE port 7/2 provides Emergency Transfer Relay (ETR) feature. Also used for incoming analog DID trunks.
CCA	RJ-45 port for ACS (308) contact closure adjunct box.
ETH WAN	RJ-45 10/100 Base TX Ethernet WAN port.
ETH LAN	RJ-45 10/100 Base TX Ethernet LAN port.
CONSOLE	Console port for direct connection of CLI console. RJ-45 connector.
USB	USB port. Supports the connection of the Multitech MultiModemUSB MT5634ZBA-USB-V92 USB modem.
RST	Reset button. Resets chassis configuration.
ASB	Alternate Software Bank button. Reboots the G350 with the software image in the alternate bank.





## Chapter 2: Optional components

The Avaya G350 Media Gateway is a versatile device with powerful capabilities. To implement the various services that are supported, a variety of swappable internal components called media modules are available.

Unlike the G350, the Avaya G250 Media Gateway LAN switching and voice ports are built into the G250's chassis. However, the G250's WAN and call controller options are modular, and accommodate the G350's data WAN media modules, as well as the S8300 media server.

This chapter describes:

- [Supported media modules in the G350](#). Describes all media modules available for the G350.
- [Media module slot configurations in the G350](#). Describes how the media modules can be combined in the G350 chassis.
- [Supported media modules in the G250](#). Describes which media modules are available for the G250, and in which slots.

---

### Supported media modules in the G350

The G350 supports the following Avaya media modules:

**Table 3: Supported media modules**

Media module	Description
S8300	Media server
<b>Telephony media modules</b>	
MM711	8 universal analog ports
MM714	4 analog telephone ports and 4 analog trunk ports
MM716	24 analog line ports
MM312	24 DCP telephone ports
MM712	8 DCP telephone ports
MM717	24 DCP telephone ports

*1 of 2*

**Table 3: Supported media modules (continued)**

Media module	Description
MM710	1 T1/E1 ISDN PRI trunk port
MM720	8 ISDN BRI trunk or endpoint (telephone or data) ports
MM722	2 ISDN BRI trunk ports
<b>WAN media modules</b>	
MM340	1 E1/T1 WAN port
MM342	1 USP WAN port
<b>LAN media modules</b>	
MM314	24 10/100 Ethernet ports with Power over Ethernet (PoE) and one Gigabit Ethernet copper uplink/access port.
MM316	40 10/100 Ethernet ports with Power over Ethernet (PoE) and one 10/100/1000 Ethernet copper uplink/access port.

**2 of 2**



**CAUTION:**

The MM316, MM340, and MM342 are not supported by the Avaya G700 Media Gateway. Do not insert an MM316, MM340, or MM342 media module into an Avaya G700 Media Gateway.

Each media module is described in a section below.

---

## S8300 media server

The S8300 media server is a Pentium-based processor that runs a Linux operating system. The S8300 runs Avaya Communication Manager (CM) to provide call control services to the G350. The G350 is compatible with Avaya CM from version 2.1 onwards and backwards compatible with Avaya CM 2.0.

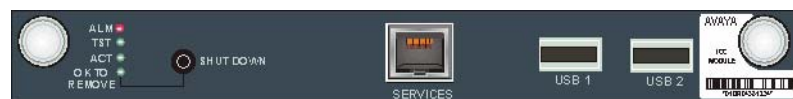
The S8300 media server features:

- Avaya Native Configuration Manager. An administration tool that provides terminal emulation capabilities and a variety of connectivity options you can save and reuse.
- A 30GB hard disk.
- 512 MB RAM.

- A WEB server used for the following:
  - Backups and restores for customer data
  - Easy access to view current alarms
  - The ability to perform server maintenance, shutdown, and status of the S8300 Media Server
  - Security commands that can enable and disable the modem, start and stop the FTP server, and view the software license
  - SNMP access to configure trap destinations and stop and start the master agent
  - S8300 Media Server configuration information and upgrade access
  - The ability to download the Avaya Native Configuration Manager from the S8300 Media Server to a PC on the LAN
- Linux operating system (Red Hat v8.x).
- Interface for IA770 INTUITY AUDIX Messaging, a software-only version of INTUITY AUDIX messaging that resides on the hard drive of the S8300 Media Server. See the description of the S8300 Media Server in the Hardware Guide for Avaya Communication Manager, 55-245-207, for more information.
- Trivial File Transfer Protocol (TFTP) server.
- H.248 Media Gateway Signaling Protocol.
- Control messages tunneled over H.323 Signaling Protocol.
- One 10/100Base-T Ethernet switch port used as a Services port.
- Two USB ports for modem connections.
- SNMP alarming.
- Support for remote call out alarming.

---

**Figure 6: The S8300 media server**



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## Telephony media modules

### MM711 analog media module

The MM711 provides analog trunk and telephone features and functionality.

The administrator can configure any of the eight ports of the MM711 as follows:

- Central office trunk, either loop start or ground start
- Analog Direct Inward Dialing (DID) trunks, either wink start or immediate start
- 2-wire analog Outgoing CAMA E911 trunks for connectivity to the PSTN
- MF signaling is supported for CAMA ports
- Analog, tip/ring devices, such as single-line telephones with or without LED message waiting indication

The MM711 also supports:

- Three ringer loads (ringer equivalency number) for up to 2000 feet for all eight ports
- Up to eight simultaneously-ringing ports

**Note:**

The media gateway achieves this number of ports by staggering the ringing and pauses between two sets of up to four ports.

- Type 1 Caller ID
- Ring voltage generation for a variety of international frequencies and cadences

---

**Figure 7: The MM711 media module**



### MM714 analog media module

The MM714 analog media module provides four analog telephone ports and four analog trunk ports.

**Note:**

The four analog trunk ports can *not* be used for analog DID trunks. Instead, the four analog line ports must be used.

**Figure 8: The MM714 media module**

The MM714 provides you with the capability to configure any of the four trunk ports as:

- A loop start or a ground start central office trunk with a loop current of 18 to 120 mA
- A two-wire analog Outgoing CAMA E911 trunk, for connectivity to the PSTN. MF signaling is supported for CAMA ports.

The MM714 provides you with the capability to configure any of the four line ports as:

- A wink start or an immediate start DID trunk
- Analog tip/ring devices such as single-line telephones with or without LED message waiting indication

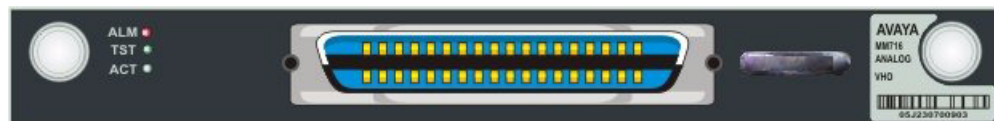
The MM714 also supports:

- Three ringer loads, which is the ringer equivalency number for up to 2,000 feet (610 meters) for all eight ports
- Up to four simultaneously-ringing ports
- Type 1 caller ID and Type 2 caller ID
- Ring voltage generation for a variety of international frequencies and cadences

## MM716 analog media module

The MM716 provides 24 analog line ports supporting telephones, trunks, modem, and fax. The 24 ports are provided via a 25 pair RJ21X amphenol connector, which can be connected by an amphenol cable to a breakout box or punch down block. These ports can be configured as DID trunks with either wink start or immediate start.

The following figure shows the MM716 front panel.

**Figure 9: The MM716 media module front panel**

The MM716 provides you with the capability to configure any of the 24 ports as:

- A wink start or an immediate start DID trunk
- Analog tip/ring devices such as single-line telephones with or without LED message waiting indication

## Optional components

The MM716 also supports:

- Three ringer loads, which is the ringer equivalency number for up to 2,000 feet (610 meters) for all 24 ports
- Up to 24 simultaneously-ringing ports
- Type 1 caller ID and Type 2 caller ID
- Ring voltage generation for a variety of international frequencies and cadences

The MM716 is compatible with Avaya CM version 2.0 and higher, and G350 firmware version 25.0.0 and higher.

## MM312 DCP media module

The MM312 DCP media module provides 24 Digital Communications Protocol (DCP) ports with RJ-45 jacks. The MM312 supports simultaneous operation of all 24 ports. Each port can be connected to a two-wire DCP telephone. See [Appendix B: Supported Avaya products](#) for a list of compatible DCP telephones.

The MM312 does not support four-wire DCP telephones.

---

**Figure 10: The MM312 media module**



## MM712 DCP media module

The MM712 DCP media module provides eight DCP telephone ports. The ports support two-wire Digital Communications Protocol (DCP) telephones. See [Appendix B: Supported Avaya products](#) for a list of compatible DCP telephones.

---

**Figure 11: The MM712 media module**



## MM717 DCP media module

The MM717 DCP media module provides 24 DCP ports of two-wire DCP functionality exposed as a single 25-pair amphenol connector. The DCP ports are exposed by connecting the module via a standard amphenol cable to a punch-down block with RJ-11 jacks. The MM717 allows you to use one of the smaller media module slots for a large number of DCP telephones.

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**Figure 12: The MM717 media module**



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## MM710 E1/T1 media module

The MM710 T1/E1 media module terminates a T1 or E1 trunk. The MM710 has a built-in Channel Service Unit (CSU) so an external CSU is not necessary. The CSU is only used for the T1 circuit.

The MM710 features:

- ISDN PRI capability (23B + D or 30B + D)
- Trunk signaling to support US and International CO or tie trunks
- Echo cancellation in either direction

---

**Figure 13: The MM710 media module**



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## MM720 BRI media module

The MM720 BRI media module provides eight ports with RJ-45 jacks that can be administered either as BRI trunk connections or BRI endpoint (telephone and data module) connections.

**Note:**

The MM720 BRI media module cannot be administered to support both BRI trunks and BRI endpoints at the same time. Also, the MM720 BRI media module does not support combining both B-channels together to form a 128-kbps channel. Finally, if the MM720 BRI Media Module is administered to support BRI endpoints, it can not be used as a clock synchronization source.

For BRI trunking, the MM720 BRI media module supports up to eight BRI interfaces to the central office at the ISDN TE reference point. Information is communicated in two ways:

- Over two 64-kbps channels, called B1 and B2, that can be circuit-switched simultaneously
- Over a 16-kbps channel, called the D-channel, that is used for signaling. The MM720 occupies one time slot for all eight D channels

The circuit-switched connections have an A- or Mu-law option for voice operation. The circuit-switched connections operate as 64-kbps clear channels when in the data mode.

## Optional components

For BRI endpoints, the MM720 BRI media module supports up to 16 BRI stations and data modules that conform to AT&T BRI, World Class BRI, and National ISDN NI1/NI2 BRI standards. The MM720 BRI media module provides -40 volt phantom power to the BRI endpoints.

**Figure 14: The MM720 media module**



## MM722 BRI media module

The MM722 BRI media module provides two 4 wire S/T ISDN BRI (Basic Rate Interface) 2B+D access ports with RJ-45 jacks. Each port interfaces to the central office at the ISDN T reference point. Information is communicated in the same manner as for the MM720. See [MM720 BRI media module](#) on page 31.

**Figure 15: The MM722 media module**



### Note:

The MM722 media module does not support:

- BRI stations
- Combining both B channels together to form a 128-kbps channel

## WAN media modules

### MM340 E1/T1 WAN media module

The MM340 E1/T1 WAN media module provides a WAN access port for the connection of an E1 or T1 WAN.

**Figure 16: The MM340 media module**





## MM342 USP WAN media module

The MM342 media module provides one USP WAN access port. MM342 supports the following WAN protocols:

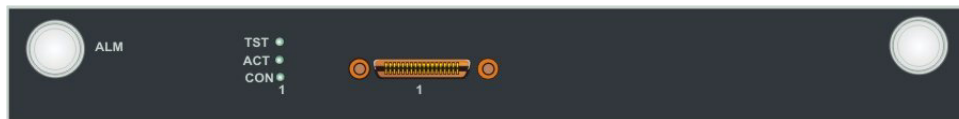
- V.35/ RS449
- X.21

For these connections, one of the following cables is necessary:

- Avaya Serial Cable DTE V.35 (USP to V.35)
- Avaya Serial Cable DTE X.21 (USP to X.21)

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**Figure 17: The MM342 media module**




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## LAN media modules

### MM314 LAN media module

The MM314 LAN media module provides:

- 24 Ethernet 10/100 Base-T Ethernet access ports with inline Power over Ethernet (PoE).
- One Gigabit Ethernet copper port for server connection or uplink to another switch or router.

The MM314 supports 48V DC inline power provided over standard category 5 UTP cables (up to 100m range) on each PoE port.

Power consumption for the MM314 media module is 335W.

The MM314 features:

- Priority power budgeting with configurable priorities
- Automatic load detection on ports
- Automatic device discovery
- Enable/disable port powering option
- Port monitoring
- Automatic recovery from overload shutdown
- Automatic recovery from no-load shutdown

**Figure 18: The MM314 media module**



Versions of the MM314 LAN media module with Material Code 700384 (C/S:2.0) require Avaya CM version 2.0 and higher, and G350 firmware version 25.0.0 and higher.

For more information about PoE, see [Power over Ethernet \(PoE\)](#) on page 46.

## MM316 LAN media module

The MM316 LAN media module provides:

- 40 Ethernet 10/100 Base-T Ethernet access ports with inline Power over Ethernet (PoE).
- One Gigabit Ethernet copper port for server connection or uplink to another switch or router.

The MM316 supports 48V DC inline power provided over standard category 5 UTP cables (up to 100m range) on each PoE port.

Power consumption for the MM316 media module is 435W.

The MM316 features:

- Priority power budgeting with configurable priorities
- Automatic load detection on ports
- Automatic device discovery
- Enable/disable port powering option
- Port monitoring
- Automatic recovery from overload shutdown
- Automatic recovery from no-load shutdown

**Figure 19: The MM316 media module**



The MM316 is compatible with Avaya CM version 2.0 and higher, and G350 firmware version 25.0.0 and higher.

For more information about PoE, see [Power over Ethernet \(PoE\)](#) on page 46.

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## Media module slot configurations in the G350

When choosing a combination of media modules to install in the G350 chassis, consider the slots in which each module type can be housed, and the limitations and recommendations regarding combinations of media modules.

---

### Permitted slots

The G350 chassis has six media module slots, marked V1, V2, V3, V4, V5, V6 (see [G350 physical description](#) on page 22). Each media module is restricted to certain slots.

The following table shows in which slots each media module can be installed.

**Table 4: Permitted slots for media modules**

Media module	Permitted slots
MM312	V6
MM314	V6
MM316	V6
MM340	V2, V3, V4, V5
MM342	V2, V3, V4, V5
MM710	V1, V2, V3, V4, V5
MM711	V1, V2, V3, V4, V5
MM712	V1, V2, V3, V4, V5
MM714	V1, V2, V3, V4, V5
MM716	V1, V2, V3, V4, V5
MM717	V1, V2, V3, V4, V5
MM720	V1, V2, V3, V4, V5
MM722	V1, V2, V3, V4, V5
S8300	V1

---

## Combination limitations in the G350

The following limitations apply to combining media modules in the G350:

- Maximum of one MM710 media module
- Maximum of three of the following voice media modules in any combination: MM710, MM711, MM712, MM720, MM714, MM716, MM717, or MM722, subject to the following limitations:
  - Maximum of one MM710
  - Maximum of one of the following modules: MM712 and MM717 (you can combine this module with an MM312)
  - Maximum of three MM711 and/or MM714
  - Maximum of two MM716 and/or MM720 and/or MM722

---

## Supported media modules in the G250

The G250 supports the following Avaya media modules:

**Table 5: Supported media modules**

Media module	Description
S8300	Media server
<b>WAN media modules</b>	
MM340	1 E1/T1 WAN port
MM342	1 USP WAN port

 **CAUTION:**

The MM340 and MM342 media modules are not supported by the Avaya G700 Media Gateway. Do not insert an MM340 or MM342 media module into an Avaya G700 Media Gateway.

For information about the WAN media modules, see [WAN media modules](#) on page 32. For information about the S8300 media server, see [S8300 media server](#) on page 26.

The S8300 media server can be inserted in slot V1. A WAN media module can be inserted in slot V2.

# Chapter 3: Summary of services

This chapter provides a summary of the services offered by the Branch Gateway (G250 or G350). It contains the following sections:

- [Media gateway services](#). Describes the services the Branch Gateway provides as a media gateway.
- [LAN services](#). Describes the LAN services provided by the Branch Gateway.
- [WAN services](#). Describes the WAN services provided by the Branch Gateway.

---

## Media gateway services

The Branch Gateway provides a telephone exchange service, supporting the connection of various types of telephones and outside telephone lines. Telephones and lines are connected to the Branch Gateway via ports and media modules on the chassis. Different media modules provide access ports for different types of telephones and lines.

Telephony services are controlled by a media gateway controller (MGC) running Avaya Communication Manager (CM) call processing software. You can use the Avaya CM to configure many advanced telephone exchange functions. For more information, see the *Administrator's Guide for Avaya Communication Manager*, 555-233-506.

This section describes the services the Branch Gateway provides as a media gateway. All services are supported by both the G250 and the G350 except where otherwise specified.

This section contains the following sub-sections:

- [Voice over IP \(VoIP\)](#). Describes Branch Gateway VoIP services.
- [Physical media — G350](#). Describes telephones and trunks supported by the G350, and the fixed ports or media modules required to connect them.
- [Physical media — G250](#). Describes telephones and trunks supported by the G250, and the fixed ports or media modules required to connect them.
- [Media Gateway Controllers](#). Describes supported Media Gateway Controllers, how you can configure and manage them, and survivability features provided by the Branch Gateway.
- [Additional features](#). Describes call center features, the emergency transfer relay function, and the contact closure function.

---

## Voice over IP (VoIP)

The Branch Gateway features a VoIP engine that provides voice services over IP data networks. The Branch Gateway allows you to use many types of telephones and trunks that do not directly support VoIP. The Branch Gateway translates voice and signalling data between VoIP and the system used by the telephones and trunks, as follows: Avaya media modules convert the voice path of traditional circuits such as analog trunk, T1/E1, and DCP to a TDM bus inside the Branch Gateway. The VoIP engine then converts the voice path from the TDM bus to a compressed or uncompressed and packetized VoIP on an Ethernet connection.

Both the G250 and the G350 provide VoIP services over the LAN and WAN. The G350 supports the G.711 codec for up to 32 concurrent calls and the G.729 codec for up to 16 concurrent calls. The G250-Analog and G250-BRI support both the G.711 and the G.729 codec, for a total of 10 concurrent calls. The G250-DCP and G250-DS1 support both the G.711 and the G.729 codec, for a total of 16 concurrent calls.

---

## Physical media — G350

This section describes the various types of telephones and lines supported by the G350 and the access ports provided for their connection.

### Telephones

The G350 supports IP telephones, Avaya DCP telephones, analog telephones, and BRI telephones. For information about which Avaya telephones are supported, see [Appendix B: Supported Avaya products](#).

Telephones must be connected to the correct type of port for the telephone type. Different types of telephone ports are provided by different media modules and by fixed ports on the G350 front panel. The table below lists which ports you can use to connect each type of telephone. See [Chapter 2: Optional components](#) for more information about each type of port and media module.

**Table 6: Telephones supported and ports provided**

Telephone type	Ports
IP telephones	Switched Ethernet ports on the MM314 and MM316 LAN media modules.
Avaya DCP digital telephones	DCP ports on the MM312, MM712, and MM717 media modules.
Analog telephones	<ul style="list-style-type: none"><li>• Analog line ports on the MM711, MM714, and MM716 analog media modules.</li><li>• Fixed analog telephone line port, LINE (see <a href="#">G350 physical description</a> on page 22).</li></ul>

## Voice software

The G350 supports telephone calls between a computer on the network running Avaya Softphone software and analog telephones connected to the G350.

## Outside telephone lines

The table below lists which modules you can use to connect each type of outside line. See [Chapter 2: Optional components](#) for more information about each type of port and media module.

**Table 7: Outside telephone lines supported and ports provided**

Line Type	Ports
ISDN line	ISDN ports on the MM720 and MM722 BRI media modules.
Analog trunks	Analog trunk ports on the MM714 analog media module. Fixed analog trunk port, TRUNK (see <a href="#">G350 physical description</a> on page 22). Universal analog ports on MM711. DID trunk ports with wink and immediate start only on MM716.
T1/E1 voice lines	The T1/E1 port on the MM710 T1/E1 media module.

---

## Physical media — G250

This section describes the various types of telephones and lines supported by the G250 and the access ports provided for their connection.

### Telephones

The G250 supports IP telephones and analog telephones. The G250-DCP also supports Avaya DCP telephones. For information about which Avaya telephones are supported, see [Appendix B: Supported Avaya products](#).

Telephones must be connected to the correct type of port for the telephone type. Different types of telephone ports are provided by fixed ports on the G250 front panel. The table below lists which ports you can use to connect each type of telephone. See [G250 physical description](#) on page 18 for more information about each type of port.

**Table 8: Telephones supported and ports provided**

Telephone type	Ports
IP telephones	LAN ports on the G250 front panel. For PoE functionality, use an ETH LAN PoE port.
Analog telephones	Line or Analog Line ports on the G250 front panel.
DCP telephones	DCP ports on the G250-DCP front panel.

## Voice software

The G250 supports telephone calls between a computer on the network running Avaya Softphone software and analog/DCP telephones connected to the G250.

## Outside telephone lines

The table below lists which ports you can use to connect each type of outside line. See [G250 physical description](#) on page 18 for more information about each type of port.

**Table 9: Outside telephone lines supported and ports provided**

Line Type	Ports
ISDN lines	G250-BRI only — ISDN BRI TRUNK ports on the G250-BRI front panel.
Analog trunks	Analog TRUNK ports on the G250 front panel.
T1/E1 voice lines	T1/E1 port on the G250-DS1 front panel.

---

## Media Gateway Controllers

A Media Gateway Controller (MGC) controls telephone services on a media gateway. An MGC may be internal to the media gateway or external to the media gateway. An Internal Call Controller (ICC) is an internal MGC. An External Call Controller (ECC) is an external MGC that communicates with the Branch Gateway over the network.

An Avaya media server managed with Avaya Communication Manager (CM) software acts as an MGC for the Branch Gateway.



## Supported media servers

The MGCs supported by the Branch Gateway include both ECCs and ICCs. Both the G250 and the G350 support the following MGCs:

**Table 10: MGCs supported by the Avaya G250 and G350 Media Gateways**

MGCs	Type	Usage
Avaya S8300 Media Server	Media module	ICC or ECC
Avaya S8400 Media Server	External	ECC
Avaya S8500 Media Server	External	ECC
Avaya S8700 Media Server	External	ECC
Avaya S8710 Media Server	External	ECC
Avaya S8720 Media Server	External	ECC

See [Chapter 2: Optional components](#) for information about the S8300 Media Server module.

The Branch Gateway provides the following configuration options to help you ensure continuous telephone services:

- You can configure the Branch Gateway to use up to four media servers. If the MGC is an S8700, S8710, or S8720, the first server on the list will normally be the primary C-LAN board connected to the media server. If the MGC is an S8400 or S8500, the first server on the list will be either the primary C-LAN board connected to the media server or an Ethernet port on the server that has been enabled for processor Ethernet connections. If the MGC is an S8300, the first server on the list will be the IP address of the S8300. The remaining servers will be alternate C-LAN boards connected to the media server (S8400, S8500, or S8700-series media servers), an S8300 configured as an LSP, or the port enabled as the Ethernet processor port on an S8500 configured as an LSP.
- Using the connection preserving migration feature, you can configure the Branch Gateway to preserve the bearer paths of stable calls in the event that the Branch Gateway migrates to another MGC (including an LSP), including migration back from an LSP to the primary MGC. A call for which the talk path between parties in the call has been established is considered stable. A call consisting of a user listening to announcements or music is not considered stable and is not preserved. Any change of state in the call prevents the call from being preserved. For example, putting a call on hold during MGC migration will cause the call to be dropped. Special features, such as conference and transfer, are not available on preserved calls. Connection preserving migration preserves all types of bearer connects except BRI. PRI trunk connections are preserved.

## Summary of services

- You can configure Standard Local Survivability (SLS) to enable a local Branch Gateway to provide a degree of MGC functionality when no link is available to an external MGC. SLS is configured on a system-wide basis using the Provisioning and Installation Manager (PIM). Alternatively, SLS can be configured from the individual Branch Gateway itself using the CLI. SLS is supported as follows in the various models of the G250:
  - G250-Analog. Supported for all analog interfaces.
  - G250-BRI. Supported for all analog interfaces.
  - G250-DCP. Supported for all analog and DCP interfaces.
  - G250-DS1. Supported for all analog interfaces.
- You can configure Enhanced Local Survivability (ELS) by installing an S8300 in the Branch Gateway as a Local Survivable Processor (LSP). In this configuration, the S8300 takes over to provide continuous telephone service if all external media servers become unavailable. Calls in progress continue without interruption when the S8300 takes over.
- You can configure the dialer interface to connect to the Branch Gateway's primary MGC via a serial modem in the event that the connection between the Branch Gateway and the MGC is lost.
- You can configure the Avaya CM to support the auto fallback feature, which enables a Branch Gateway being serviced by an LSP to return to its primary MGC automatically when the connection is restored between the Branch Gateway and the MGC. When the Branch Gateway is being served by its LSP, it automatically attempts to register with its MGC at periodic intervals. The MGC can deny registration in cases in which it is overwhelmed with call processing, or in other configurable circumstances. By migrating the Branch Gateway to the MGC automatically, a fragmented network can be unified more quickly, without the need for human intervention.

### Note:

Auto fallback does not include survivability. Therefore, there is a short period during registration with the MGC during which calls are dropped and service is not available. This problem can be minimized using the connection preserving migration feature.

- The Branch Gateway features a dynamic trap manager, which enables you to ensure that the Branch Gateway sends traps directly to the currently active MGC. If the MGC fails, the dynamic trap manager ensures that traps are sent to the backup MGC.

## MGC management

The MGC is managed by the Avaya Communication Manager (CM). The Branch Gateway supports Avaya Communication Manager (CM) release 3.1 and is backwards compatible with release 2.0.

Avaya (CM) is an open, scalable, highly reliable, and secure telephony application. Avaya CM provides user and system management functionality, intelligent call routing, application integration and extensibility, and enterprise communications networking. Avaya CM offers over 500 features, in the following categories:

- Telephony features
- Localization
- Collaboration
- Mobility
- Messaging
- Telecommuting
- System management
- Reliability
- Security, privacy, and safety
- Hospitality
- Attendant features
- Networking
- Intelligent call routing
- Application programming interfaces

Use Avaya CM software to:

- Determine where to connect your telephone call based on the number you dial
- Assign numbers to local telephones
- Play dial tones, busy signals, and prerecorded voice announcements
- Allow or prohibit access to outside lines for specific telephones
- Assign telephone numbers and buttons to special features
- Exchange call switching information with older telephone switches that do not support VoIP

For more information about Avaya CM software, see *Administrator's Guide for Avaya Communication Manager*, 555-233-506.

## Additional features

The Branch Gateways also provide the following voice-related features:

### Call center capabilities

The G350 supports call center features according to the mode of deployment (see [G350 physical description](#) on page 22):

- Distributed Avaya Enterprise Connect mode. The G350 supports up to ten concurrent call center agents. This configuration is supported by CM 2.0 applications and above.
- Standalone mode. The G350 supports a call center application with up to ten concurrent agents. This application is supported by CM 2.1 and above.

**Note:**

The G250 does not support call center features.

### Emergency Transfer Relay (ETR)

The Emergency Transfer Relay (ETR) feature provides basic telephone services in the event of a power outage or a failed connection to Avaya Communication Manager. Using ETR, you can connect:

- In the G350, the fixed analog trunk port (TRUNK - V701) to the first analog line port (LINE - V702)
- In the G250-Analog, the fourth fixed analog trunk port (TRUNK - V304) to the first line port (LINE - V305)
- In the G250-BRI, the fixed analog trunk port (TRUNK - V301) to the first analog line port (LINE - V302)
- In the G250-DCP, the fourth fixed analog trunk port (TRUNK - V304) to the first line port (LINE - V305)
- In the G250-DS1, the fixed analog trunk port (TRUNK - V301) to the first line port (LINE - V302)

 **WARNING:**

Do not enable ETR on ports used for DID.

An outside telephone exchange can be connected to the trunk port, and an analog telephone can be connected to the line port. All calls are then directed by the analog relay between the outside line and the analog telephone. A current-loop detection circuit prevents ongoing calls from being disconnected when normal functioning resumes. It is recommended that ETR not be enabled for line ports that are administered for use with analog DID trunks.

## Contact closure

The contact closure feature is a controllable relay providing dry contacts for various applications. To implement the contact closure feature, connect an Avaya Partner Contact Closure Adjunct box to the CCA port on the Branch Gateway chassis. The adjunct box provides two contact closures that can be operated in either a “normally closed” or “normally open” state. The contact closures can control devices such as devices that automatically lock or unlock doors or voice recording units. The CCA port can be configured so that the connected devices can be controlled by an end device, such as a telephone. For example, a user can unlock a door by keying a sequence into a telephone keypad.

## Fax, modem, TTY over IP

The Branch Gateway supports fax, modem, and TTY over IP.

---

## LAN services

You can use both the Avaya G250 Media Gateway and the Avaya G350 Media Gateway as a LAN switch. You can also integrate the Branch Gateway into an existing LAN. This section provides a summary of the LAN switching services provided by the Branch Gateways, including:

- [Physical media](#). Describes the LAN access ports available for providing LAN services to data devices.
- [Power over Ethernet \(PoE\)](#). Describes the Power over Ethernet feature supported by the Branch Gateways.
- [VLANs](#). Describes VLAN features supported by the Branch Gateways.
- [Spanning Tree Protocol \(STP\)](#). Lists the STPs supported by the G350 (the G250 does not support STP).
- [Port mirroring](#). Describes the port mirroring function supported by the Branch Gateways.
- [Port redundancy](#). Describes the port redundancy feature supported by the G350 (the G250 does not support port redundancy).

## Physical media

The G350 provides LAN services through the following Ethernet ports for the connection of local data devices:

- Switched LAN ports. Configurable switched Ethernet ports on the MM314 media module (see [MM314 LAN media module](#) on page 33) and the MM316 media module (see [MM316 LAN media module](#) on page 34). The switched Ethernet ports support HP auto-MDIX, which automatically detects and corrects the polarity of crossed cables. This results in simplified LAN installation and maintenance.
- Fixed LAN port. The fixed LAN port on the chassis, connected to the internal LAN switch. The fixed LAN port supports HP auto-MDIX, which automatically detects and corrects the polarity of crossed cables. This results in simplified LAN installation and maintenance.

The G250 provides LAN services through eight fixed ETH LAN PoE ports on the chassis.

**Note:**

The G250-DCP only has two fixed ETH LAN ports. These ports do not support PoE.

---

## Power over Ethernet (PoE)

In the G350, the MM314 and MM316 media modules' ports provide power to data devices over the Ethernet connection (PoE). The ports support the connection of IP phones and wireless access points, which you may want to power through the G350.

In the G250, PoE service is provided by eight fixed ETH LAN PoE ports on the chassis.

**Note:**

The G250-DCP does not provide PoE service.

The inline PoE feature enables you to power data devices through the Branch Gateway. Power is distributed between the PoE ports, according to configured priorities. You configure the power priority on each port. Distribution is calculated from the actual power consumption.

An automatic discovery system detects when powered devices are connected to and removed from the PoE ports. Automatic load detection:

- Tests whether the device connected to the port requires remote powering
- Controls the power injection to the wires

---

## VLANs

You can configure VLANs on:

- In the G350, the fixed LAN port and the MM314 and MM316 ports
- In the G250, all Ethernet ports except the WAN ETH port

Both the G250 and the G350 support up to eight VLANs. The following VLAN features are supported:

- VLAN port grouping. Port VLANs can be used to group LAN ports into logical groups.
- Ingress VLAN Security. You configure a list of ingress VLANs on each port. Any packets tagged with an unlisted VLAN are dropped when received on the port.
- Class of Service (CoS) tagging. Packets are tagged with VLANs per CoS.
- Inter-VLAN routing. You can configure specific VLANs to permit access to the WAN while others can be configured to deny access to the WAN.

---

## Spanning Tree Protocol (STP)

The IEEE 802.1D (STP) and IEEE 802.1w (RSTP) Spanning Tree Protocols are supported on the MM314 and MM316 switched LAN ports.

**Note:**

STP is not supported in the G250.

---

## Port mirroring

Both the G250 and the G350 support network traffic monitoring by port mirroring. You can configure port mirroring on any LAN port. You implement port mirroring by connecting an external traffic probe device to one of the LAN ports. The probe device monitors traffic that is sent and received through other ports by copying the packets and sending them to the monitor port.

**Note:**

You cannot configure port mirroring on the G350 fixed LAN port or the G250/G350 WAN Fast Ethernet ports.

### Port redundancy

You can configure port redundancy on the G350. Port redundancy allows you to provide both a primary link and a backup link to an important resource. Port redundancy is supported between any two PoE ports on the MM314 or the MM316 media modules.

**Note:**

The G250 does not support port redundancy.

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### WAN services

The Branch Gateway has an internal router and provides direct access to outside WAN lines. You can use the Branch Gateway as the endpoint device for a WAN line. You can also use the Branch Gateway as the router for a WAN line with an external endpoint device.

This section describes the WAN services provided by the Branch Gateway. It contains the following sections:

- [Physical media](#)
  - [WAN features](#)
  - [Routing features](#)
- 

### Physical media

To use the Branch Gateway as the endpoint device for a WAN, install a WAN media module and connect the WAN line to a port on the media module. When you connect a WAN line to a media module, the Branch Gateway serves as the router for the WAN line.

You can also use the fixed ETH WAN Fast Ethernet port as a WAN endpoint by configuring the port's interface for PPPoE encapsulation.

To use the Branch Gateway as a router, connect the external endpoint device to the fixed WAN port on the Branch Gateway front panel using a standard network cable. See [G250 physical description](#) on page 18 and [G350 physical description](#) on page 22 for the location of the WAN port on the G250 and G350 front panels.

You can also use the fixed WAN port to connect a computer or other endpoint data device to the Branch Gateway.



The Branch Gateway supports the following types of WAN line:

- E1/T1
- USP
- PPPoE

The table below lists which media modules to install to connect each type of outside WAN line. For more information about each type of media module, see [Chapter 2: Optional components](#).

**Table 11: Outside WAN lines supported and matching media modules**

WAN line	Media modules
USP	MM342
E1/T1 data lines	MM340
PPPoE	Chassis

---

## WAN features

The G350 supports the following WAN features. The G250 also supports these features, except where otherwise noted.

- Traffic shaping. The traffic shaping function estimates the parameters of the incoming traffic and takes action if it measures traffic exceeding agreed parameters. The action could be to drop the packets or mark them as being high drop priority.
- PPP over channelized and fractional E1/T1. The Branch Gateway has the ability to map several PPP sessions to a single E1/T1 interface.

**Note:**

The G250 only supports fractional E1/T1.

- PPP over USP.
- PPPoE.
- Unframed E1 for enabling full 2.048 Mbps bandwidth usage.
- Point-to-Point Frame Relay encapsulation over channelized/fractional/unframed E1/T1 ports or over a USP interface.
- Frame Relay LMI types supported: ANSI (Annex D), ITU-T:Q-933 (Annex A0), LMI-Rev1, and No LMI.
- Backup functionality supported between any type of Serial Layer 2 interface.

## Summary of services

- Dynamic Call Admission Control (CAC) for Fast Ethernet, Serial, and GRE tunnel interfaces. Dynamic CAC provides enhanced control over WAN bandwidth. When Dynamic CAC is enabled on an interface, the Branch Gateway informs the MGC of the actual bandwidth of the interface and tells the MGC to block calls when the bandwidth is exhausted.
- Quality of Service (QoS). The Branch Gateway uses Weighted Fair VoIP Queuing (WFVQ) as the default queuing mode for WAN interfaces. WFVQ combines weighted fair queuing (WFQ) for data streams and priority VoIP queuing to provide the real-time response time that is required for VoIP. The Branch Gateway also supports the VoIP Queue and Priority Queue legacy queuing methods.
- Weighted Random Early Detection (WRED). The Branch Gateway uses WRED on its ingress and egress queues to improve the performance of the network when overloaded. The purpose of WRED is to indicate to transmitting hosts to reduce their transmission speed when the ingress G350 queues are congested.
- Policy. Each interface on the Branch Gateway can have four active policy lists:
  - Ingress Access Control List.
  - Ingress QoS List.
  - Egress Access Control List.
  - Egress QoS List.

Access control lists define which packets should be forwarded or denied access to the network. QoS lists change the DSCP and 802.1p priority of routed packets according to the packet characteristics.

- Policy-based routing. The Branch Gateway features policy-based routing, which uses a policy list structure to implement a routing scheme based on traffic source, destination, type, and other characteristics. You can use policy-based routing lists (PBR lists) to determine the routing of packets that match the rules defined in the list. Common applications include separate routing for voice and data traffic, routing traffic originating from different sets of users through different Internet connections (Internet Service Providers), and defining backup routes for defined classes of traffic.
- RTP Header Compression. The Branch Gateway saves up to 60% of the bandwidth necessary using RTP compression. It also enhances the efficiency of voice transmission over the network by compressing the headers of Real Time Protocol (RTP) packets, thereby minimizing the overhead and the delays involved in RTP implementation.
- TCP Header Compression. The Branch Gateway uses Transmission Control Protocol (TCP) header compression to reduce the amount of bandwidth needed for non-voice data. TCP header compression can be applied either as part of RTP Header Compression via IPCH, or using the Van Jacobson method defined in RFC 1144.
- Inter-Gateway Alternate Routing (IGAR). The Branch Gateway uses IGAR as a means to use the PSTN as an alternative to the WAN interface under certain definable conditions. In providing an alternate routing mechanism, IGAR preserves the internal makeup of the call so that the call can be successfully terminated to its original internal destination.

---

## Routing features

Both the G250 and the G350 have an internal router. You can configure the following routing features on the router:

- Interfaces
- Routing table
- VPN
- GRE tunneling
- DHCP and BOOTP relay
- DHCP server
- DHCP client
- Broadcast relay
- ARP table
- ICMP errors
- RIP
- OSPF
- Route redistribution
- VRRP
- Fragmentation
- Static routes
- Policy based routing
- Distribution lists
- Dynamic IP addresses
- DNS resolver
- Unnumbered IP interfaces
- SYN cookies
- Keepalive packets
- Object tracking
- Backup interfaces

## Summary of services

# Chapter 4: Management

This chapter describes how you can manage the Branch Gateway (G250 or G350). It contains the following sections:

- [Management applications](#)
- [Management access permissions](#)
- [Alarms and troubleshooting](#)

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## Management applications

The Avaya G250 and G350 Media Gateways can be managed using any of the following applications:

- Avaya G250 and Avaya G350 Command Line Interfaces
- Avaya G250/G350 Manager and Embedded Web Manager
- Avaya Integrated Management
- Avaya QoS Manager

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## Avaya G250 and Avaya G350 Command Line Interfaces

You can use the Avaya G250 or Avaya G350 CLI to configure the Branch Gateway and its media modules. The CLI is a textual command prompt interface. It is similar to the CLI of many other network devices.

You can access the CLI with any of the following:

- Telnet through the network
- Telnet through dialup, using a dialup PPP network connection
- A console device connected to the Console port on the Branch Gateway front panel
- SSH (Secure Shell), which enables you to establish a remote session over a secured tunnel

For information about each command in the CLI, see the *Avaya G250 and G350 Media Gateway CLI Reference*, 03-300437.

For information about how to use the CLI to perform specific configuration tasks, see *Administration for the Avaya G250 and Avaya G350 Media Gateway*, 03-300436.

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### Avaya G250/G350 Manager and Embedded Web Manager

The Avaya G250/G350 Manager is a web-enabled graphical administration tool for configuring a single G250 or G350 device. You can use Avaya G250/G350 Manager to configure the G250 or G350 chassis and media modules. You can also use it for status monitoring and troubleshooting. You can open Avaya G250/G350 Manager in one of the following ways:

- From Avaya Integrated Management software
- From a web browser on a computer on the same network as the device (supported by the Avaya G350 only)

For information about the Avaya G250/G350 Manager, see the *G250/G350 Manager User Guide*, 14-300166.

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### Avaya Integrated Management

Avaya Integrated Management offers a comprehensive set of web-based network and system management solutions that support Avaya converged voice solutions. You can use Avaya Integrated Management to monitor SNMP traps on the Branch Gateway. You can also use Avaya Integrated Management to access Avaya G250/G350 Manager.

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### Avaya QoS Manager

You can use Avaya QoS Manager to configure Branch Gateway QoS policy capabilities. You can access Avaya QoS Manager through Avaya Integrated Management software.

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### Management access permissions

To use any management functions, the user must have a user name and password. Each user name is associated with one of three privilege levels: read-only, read-write, and administrator.

---

## Security features

The Avaya G250/G350 Media Gateway provides the following security features:

- Traffic security features:
  - Private secure connections can be configured between the G250/G350 and a remote peer, using VPN (Virtual Private Network). VPN at the IP level is deployed using a standards-based set of protocols defined by the IETF called IPSec. IPSec provides privacy, integrity, and authenticity to information transferred across IP networks.
  - Access to the G250/G350's LAN ports is authenticated using the 802.1x protocol. On the G350, you can enable 802.1x on the MM314 and MM316 media modules' 10/100 Ethernet ports. On the G250, you can enable 802.1x on the eight Ethernet LAN PoE ports located on the G250's front panel. The 802.1x protocol standard is extended to support an optional mode for authenticating multiple supplicants.
- Management security features:
  - A basic authentication mechanism in which users are assigned privilege levels
  - Support for user authentication provided by external RADIUS server
  - SNMPv3 user authentication
  - Secure data transfer via SSH and SCP with user authentication
- Protection against DoS (Denial of Service) attacks via:
  - RSS notifications. The G250/G350 identifies predefined or custom-defined traffic patterns as suspected DoS attacks and generates SNMP notifications, referred to as Remote Security Services (RSS) notifications. RSS notifications are intercepted and, if certain conditions are met, may be forwarded to the Avaya Security Operations Center (SOC) as INADS alarms. The SOC is an Avaya service group that handles DoS alerts, responding as necessary to any DoS attack or related security issue.
  - SYN cookies, which protect against a well-known TCP/IP attack in which a malicious attacker targets a vulnerable device and effectively prevents it from establishing new TCP connections.

## Alarms and troubleshooting

The Branch Gateways have extensive features for error detection, alarms, and troubleshooting. Detailed diagnostic information and troubleshooting are provided by software-based solutions accessible by laptops in the field or remotely from an administrator's computer. *Administration for the Avaya G250 and Avaya G350 Media Gateway*, 03-300436, provides a comprehensive guide to configuring and using these solutions. For more detailed technical troubleshooting information, see *Maintenance for the Avaya G250 and Avaya G350 Media Gateways*, 03-300438.

Alarming and troubleshooting features include:

- [Front panel LEDs](#)
- [Automatic error detection](#)
- [SNMP](#)
- [Packet sniffing](#)
- [VoIP debugging using RTP-MIB](#)
- [Object tracking](#)
- [Converged Network Analyzer \(CNA\) test plug](#)
- [Link Layer Discovery Protocol \(LLDP\)](#)

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## Front panel LEDs

LEDs on the front panel of the G250 and G350 and their media modules give a quick overall understanding of the health of the system and subsystems. When alarms or problems occur, LEDs indicate that a technician's attention is needed.

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## Automatic error detection

During normal operations, software or firmware automatically detects and attempts to fix or circumvent error conditions. The system automatically attempts either to fix or circumvent these problems. Errors are detected in two ways:

- Firmware on a system component during ongoing operations
- A "periodic test" or a "scheduled test" started by software

A technician can run more comprehensive tests on demand.



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## SNMP

The Branch Gateways report alarms using SNMP traps. The G350 fully supports SNMP versions SNMPv1, SNMPv2c, and SNMPv3. The G250 supports SNMPv3 for sending SNMPv1, SNMPv2c, and SNMPv3 traps, but does not support the SNMPv1 trap mechanism.

---

## Packet sniffing

The Branch Gateways feature packet sniffing. All packets, including non-Ethernet packets, that pass through the Branch Gateway, are recorded. The recorded packets are stored in a file that can be uploaded either to the Media Server or to a PC and read by Ethereal for troubleshooting purposes.

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## VoIP debugging using RTP-MIB

The Branch Gateways include the RTP-MIB feature for debugging QoS-related problems across the VoIP network without any dedicated hardware. During each RTP stream, counters representing various QoS metrics increment whenever configured thresholds for the metrics are exceeded. A limited history of the QoS metric statistics is stored on the Branch Gateway for active and terminated RTP streams. Statistics can be displayed via the G250/G350 CLI. In addition, the Branch Gateway can be configured to send SNMP traps to the SNMP trap manager on the media server at the termination of each RTP stream that has QoS problems. The traps are converted to syslog messages and stored for viewing in the messages file on the media server hard disk.

---

## Object tracking

The Branch Gateways include object tracking. The purpose of Object tracking is to track the state (up/down) of remote devices using keepalive probes, and notify registered applications when the state changes. Object tracking is utilized by applications such as VPN to track remote devices and take certain steps when the state of a remote device changes.

---

## Converged Network Analyzer (CNA) test plug

CNA test plugs are a component of CNA, a distributed system tool for real-time network monitoring that detects and diagnoses converged network-related issues. CNA is deployed in the Branch Gateway to identify any network conditions or impairments that can degrade the user experience for IP telephony and to monitor overall network performance. Test plugs in media gateways provide the ability to measure end-to-end service to the edge of the PSTN, or at points where codec changes are required for interworking between high (LAN) and low (WAN) speed links.

---

## Link Layer Discovery Protocol (LLDP)

LLDP simplifies network troubleshooting and enhances the ability of network management tools to discover and maintain accurate network topologies in multi-vendor environments. LLDP defines a set of advertisement messages (TLVs), a protocol for transmitting the TLVs, and a method for storing the information contained in the received TLVs. This allows stations attached to a LAN to advertise information about the system and about the station's point of attachment to the LAN to other stations attached to the same LAN. These can be reported to the management station via SNMP MIBs.

On the G250, LLDP is supported on all the Ethernet LAN ports on the chassis.

On the G350, LLDP is supported on the Ethernet LAN ports located on the MM314 and MM316 media modules.

# Chapter 5: Documentation

The following documentation is available to help you implement the Branch Gateway (G250 or G350) in your environment:

- *Installing and Upgrading the Avaya G250 Media Gateway*, 03-300434. Describes how to install and upgrade the G250, prepare the G250 for software configuration, and perform some basic configurations. This guide describes how to insert media modules and connect external devices to the G250 and media module ports.
- *Installing and Upgrading the Avaya G350 Media Gateway*, 03-300394. Describes how to install and upgrade the G350, prepare the G350 for software configuration, and perform some basic configurations. This guide describes how to insert media modules and connect external devices to the G350 and media module ports.
- *Quick Start for Hardware Installation for the Avaya G250 Media Gateway*, 03-300433. A concise installation guide covering assembly and basic configuration of the G250.
- *Quick Start for Hardware Installation for the Avaya G350 Media Gateway*, 03-300148. A concise installation guide covering assembly and basic configuration of the G350.
- *Administration for the Avaya G250 and Avaya G350 Media Gateway*, 03-300436. Describes how to configure and manage the Branch Gateways after it is already installed. This guide contains detailed information about all the features of the Branch Gateways and how to implement them.
- *The Avaya G250/G350 Manager User Guide*, 14-300166. Describes how to use the Avaya G250/G350 Manager software to manage the Branch Gateways.
- *Avaya G250 and G350 Media Gateway CLI Reference*, 03-300437. Describes the commands in the G250/G350 CLI.
- *Maintenance for the Avaya G250 and Avaya G350 Media Gateways*, 03-300438. Describes the tasks and procedures you perform to maintain and troubleshoot the Branch Gateways.



# Appendix A: G250 and G350 capacities

The following table shows you the maximum media gateway capacities supported by the G250.



**CAUTION:**

Some capacities may change. For the most up-to-date list, see *System Capacities Table* for Avaya Communication Manager on Avaya Media Servers, 555-245-601.

**Table 12: G250 Gateway capacities**

Description	Capacity	Comments
Maximum number of G250 Media Gateways controlled by an external S8500 or S8700 Media Server	250	This number also applies if a combination of Avaya G700 Media Gateways, Avaya G250 Media Gateways, and G350 Media Gateways are controlled by the same external media server.
Maximum number of G250 Media Gateways controlled by an external S8300 Media Server housed in a G700 Media Gateway	50	
Media servers registered as Media Gateway Controllers. If an MGC becomes unavailable, the G250 uses the next MGC on the list.	4	The built-in SLS module can be considered a fifth MGC, although its functionality is more limited than that of a full scale media server.
Media module slots	2	One S8300 media server slot (V1) for insertion of S8300 only. One WAN media module slot (V2) for insertion of a WAN media module only.
Maximum number of WAN media modules	1	Always in slot v2.
Maximum number of voice media modules	0	
Maximum total number of telephones supported by the G250	14	

Table 12: G250 Gateway capacities (continued)

Description	Capacity	Comments
Maximum number of IP phones	12	Limited by the number of VoIP resources used and the calling patterns (VoIP to VoIP conferencing, VoIP to non-VoIP, etc.)
Maximum number of analog phones	2	
Maximum number of DCP phones	12	G250-DCP only. None in the other G250 models.
Maximum number of BRI endpoints	0	
DS1 facilities	1 T1/E1	G250-DS1 only. None in the other G250 models.
Maximum number of all trunks of any type	4 (5 on G250-BRI, 10 on G250-DS1)	
Maximum number of analog trunks	4 (G250-Analog, G250-DCP) 1 (G250-BRI, G250-DS1)	All ports are fixed.
Maximum number of BRI trunks	2 (G250-BRI only)	Four voice channels, two D-channels.
Maximum number of E1/T1 voice trunks	1	G250-DS1 only. None in the other G250 models.
Simultaneous two-way conversations from IP phone to legacy telephone or trunk	10 (G250-Analog, G250-BRI) 16 (G250-DCP, G250-DS1)	True for all codecs, and all encryption combinations.
<b>Miscellaneous</b>		
Fax capacity	4	Simultaneous fax transmissions using VoIP resources.
Touch-tone recognition (TTR)	8	Receivers
Tone Generation	As much as necessary for all TDM calls.	
		<b>2 of 3</b>

**Table 12: G250 Gateway capacities (continued)**

Description	Capacity	Comments
Announcements (VAL)	6 playback channels for playing announcements.	
		10 minutes for G711-quality stored announcements and up to five minutes for music-on-hold.
<b>3 of 3</b>		

The following table shows you the maximum media gateway capacities supported by the G350.

**Table 13: G350 gateway capacities**

Description	Capacity	Comments
Maximum number of G350 Media Gateways controlled by an external S8500 or S8700 Media Server	250	This number also applies if a combination of Avaya G700 Media Gateways, Avaya G250 Media Gateways, and G350 Media Gateways are controlled by the same external media server.
Maximum number of G350 Media Gateways controlled by an external S8300 Media Server housed in a G700 Media Gateway	50	
Media servers registered as Media Gateway Controllers. If an MGC becomes unavailable, the G350 uses the next MGC on the list.	4	
Standard module slots	5	An S8300 can be placed in slot V1 only.
High density media module slots	1	
Maximum number of WAN media modules	2	The MM340 and MM342 media modules in any combination.
Maximum number of voice media modules	3	
Maximum total number of telephones supported by the G350	40	
<b>1 of 3</b>		

**Table 13: G350 gateway capacities (continued)**

Description	Capacity	Comments
Maximum number of IP telephones	40	Limited by the number of VoIP resources used and the calling patterns (VoIP to VoIP conferencing, VoIP to non-VoIP, etc.)
Maximum number of analog phones	40	Up to two MM711 or MM716 media modules can be inserted in any of the G350 slots and used to connect stations (lines). The base unit has two analog station (line) ports. Although this provides up to 50 physical ports, the maximum number of analog phones supported is 40.
Maximum number of DCP phones	40	Requires one high density media module (MM312) and one G700 media module (MM717). If more than 24 but less than 40 DCP stations are required, an MM312 media module can be used with an MM712 media module.
Maximum number of BRI endpoints	16	Up to two MM720 media modules can be inserted in any G350 media module slots.
DS1 facilities	1 T1/E1	One MM710 media module can be inserted in any G350 media module slot.
Maximum number of all trunks of any type	40	
Maximum number of analog trunks	40	Up to two MM711 media modules can be inserted in any standard media module slots and used as trunks. The base unit has one analog trunk port.
Maximum number of BRI trunks	16	Up to two MM720 media modules can be inserted in any standard media module slots.
Maximum number of E1/T1 voice trunks	30	
Maximum number of concurrent calls over WAN terminating in legacy stations/PSTN trunks directly connected to a gateway	15	

**2 of 3**



**Table 13: G350 gateway capacities (continued)**

Description	Capacity	Comments
Simultaneous two-way conversations from IP phone to legacy telephone or trunk.	32 – G.711 16 – G.729a/ G723	Simultaneous two-way conversations limited by the VoIP engine, including call progress tones.
Transcoding from G.711 to G.729 for IP phones	10	Simultaneous 2-way conversations.
Transcoding from G.711 TDM phones to G.729 IP phones	10 - 16	Simultaneous 2-way conversations. The quantity of 16 applies to conversations where one end of each conversation is on a G350 and transcoding occurs for that endpoint on the G350. If transcoding must occur on both ends of the conversation, the quantity of conversations is 10.
<b>Miscellaneous</b>		
Fax capacity	8	Simultaneous fax transmissions using VoIP resources.
Touch-tone recognition (TTR)	15	Receivers
Tone Generation	15	
Announcements (VAL)	6 playback channels for playing announcements.	
	10 minutes for G711-quality stored announcements and up to five minutes for music-on-hold	
<b>3 of 3</b>		

The S8300 media server module offers the following maximum capacities.

**Table 14: S8300 capacities**

Item	Quantity Supported
Number of Users per S8300	450
Number of Trunks per S8300	450
Total Endpoints (Trunks and Users) per S8300	900
<b>1 of 2</b>	

**Table 14: S8300 capacities (continued)**

<b>Item</b>	<b>Quantity Supported</b>
MGs per S8300	50
LSPs per S8300	50
MGs per LSP	50
Announcement Sources per S8300	50
Busy Hour Calls (Maximum, non-call center)	10,000
Locations	50
<b>2 of 2</b>	

For a complete list of capacities, see *System Capacities Table for the Avaya Communication Manager on Avaya Media Servers*, 555-233-605.

# Appendix B: Supported Avaya products

This appendix lists the Avaya telephones supported by the Branch Gateways (G250 and G350).

## Avaya IP telephones

The Branch Gateways support the following Avaya IP telephones:

- Avaya 4602 IP Telephone
- Avaya 4602SW IP Telephone
- Avaya 4601 IP Telephone
- Avaya 4606 IP Telephone
- Avaya 4610 IP Telephone
- Avaya 4612 IP Telephone
- Avaya 4620 IP Telephone
- Avaya 4624 IP Telephone
- Avaya 4630 IP Screenphone
- Avaya 4630SW IP Screenphone
- Avaya 4690 IP Telephone

**Note:**

The Avaya 4630 IP and 4630SW IP Screenphones cannot be powered via PoE ports.

## Avaya DCP digital telephones

The G250-DCP and the DCP media modules supported by the G350 support the following DCP telephones:

**Note:**

The G250 does not support DCP media modules, although the G250-DCP includes DCP ports on its chassis.

- Avaya 2402 Digital Telephone
- Avaya 2420 Digital Telephone
- Avaya 6402 and Avaya 6402D Digital Telephones
- Avaya 6408 and Avaya 6408D+ Digital Telephones
- Avaya 6416 and 6416D+M Digital Telephone

## Supported Avaya products

- Avaya 6424 and 6424D+M Digital Telephone
- Avaya 8410D Digital Telephone
- Avaya 8434DX Digital Telephone
- Definity Extender – Analog single endpoint
- Definity Extender – ISDN single endpoint302 series Attendant Console (302D)
- Avaya 603E Call Master III
- Avaya 603F Call Master IV
- Avaya 607A Call Master V
- Avaya 606B1 Call Master VI
- Avaya eConsole R1 (PC Console R3 with 8411 digital telephone)
- Avaya IP eConsole

## Avaya analog telephones

The Branch Gateways support the following Avaya analog telephones:

- Avaya 6211 Analog Telephone
- Avaya 6219 Analog Telephone
- Avaya 2500 and the Avaya 2554 Analog Terminals
- 2520 Explosive Atmosphere Telephone

# Appendix C: G250 technical specifications

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## G250 specifications

The table of technical specifications provides detailed information on the physical dimensions and tolerances of the Avaya G250 Media Gateway:

**Table 15: Avaya G250 Media Gateway specifications**

Description	Value
Height	2U (3.5 in., 88 mm)
Width	17.3 in. (440 mm)
Depth	13.4 in. (340 mm)
Weight of empty chassis	16.5 lb. (6.5 kg)
Ambient working temperature	32° to 104°F (0° to 40°C)
Operation altitude	up to 6,560 ft. (2,000 m)
Front Clearance	12 in. (30 cm)
Rear Clearance	18 in. (45 cm)
Humidity	20-60% relative humidity
Power rating	100-240 V~, 50-60 Hz, 2.2 A Max

## Power cord specifications

Following are specifications for power cords suitable for use with the G250:

**For North America:** The cord set must be UL Listed/CSA Certified, 16 AWG, 3-conductor (3rd wire ground), type SJT. One end is to be terminated to an IEC 60320, sheet C13 type connector rated 10A, 250V. The other end is to be terminated to either a NEMA 5-15P attachment plug for nominal 125V applications or a NEMA 6-15P attachment plug for nominal 250V applications.

**For Outside North America:** The cord must be VDE Certified or Harmonized (HAR), rated 250V, 3-conductor (3rd wire ground), 1.0 mm<sup>2</sup> minimum conductor size. The cord is to be terminated at one end to a VDE Certified/CE Marked IEC 60320, sheet C13 type connector rated 10A, 250V and the other end to a 3-conductor grounding type attachment plug rated at a minimum of 10A, 250V and a configuration specific for the region/country in which it will be used. The attachment plug must bear the safety agency certifications mark(s) for the region/country of installation.

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## Media module specifications

The following table shows the specifications of the media modules supported by the G250:

**Table 16: Media modules**

Description	Value
Height	2 cm
Width	17 cm
Depth	31 cm
Weight	300-400 grams

# Appendix D: G350 technical specifications

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## G350 specifications

The table of technical specifications provides detailed information on the physical dimensions and tolerances of the Avaya G350 Media Gateway:

**Table 17: Avaya G350 Media Gateway specifications**

Description	Value
Height	5.25 in. (133.3 mm)
Width	19 in. (482.6 mm)
Depth	15.75 in. (400 mm)
Weight of empty chassis	19.8 to 22.1 lb. (9 to 10 kg)
Ambient working temperature	32° to 104°F (0° to 40°C)
Operation altitude	up to 6,560 ft. (2000 m)
Front Clearance	12 in. (30 cm)
Rear Clearance	18 in. (45 cm)
Humidity	20-60% relative humidity
Power rating	100-240 V~, 50-60 Hz, 7 A Max

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## Power Cord Specifications

Following are specifications for power cords suitable for use with the G350:

**For North America:** The cord set must be UL Listed/CSA Certified, 16 AWG, 3-conductor (3rd wire ground), type SJT. One end is to be terminated to an IEC 60320, sheet C13 type connector rated 10A, 250V. The other end is to be terminated to either a NEMA 5-15P attachment plug for nominal 125V applications or a NEMA 6-15P attachment plug for nominal 250V applications.

For Outside North America: The cord must be VDE Certified or Harmonized (HAR), rated 250V, 3-conductor (3rd wire ground), 1.0 mm<sup>2</sup> minimum conductor size. The cord is to be terminated at one end to a VDE Certified/CE Marked IEC 60320, sheet C13 type connector rated 10A, 250V and the other end to a 3-conductor grounding type attachment plug rated at a minimum of 10A, 250V and a configuration specific for the region/country in which it will be used. The attachment plug must bear the safety agency certifications mark(s) for the region/country of installation.

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## Media module specifications

The following table shows the specifications of the media modules supported by the G350:

**Table 18: Media modules**

Description	Value
<b>MM312, MM314, and MM316 media modules</b>	
Height	4.4 cm
Width	39 cm
Depth	31 cm
Weight	3-4 kg
<b>Other media modules</b>	
Height	2 cm
Width	17 cm
Depth	31 cm
Weight	300-400 grams



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