Installing the Avaya G650 Media Gateway
Release 3.1
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About This Documentation

Overview

This documentation, *Installing the Avaya G650 Media Gateway* provides procedures for installing a G650 Media Gateway, connecting it to the customer’s network, and testing the complete configuration.

The G650 Media Gateway provides card slots for up to 14 TN-type circuit packs, redundant, hot-swappable power supplies, and AC or DC power. The backplane can support 14 circuit packs, 2 power supplies, and provides monitoring of system fans, power supplies, and temperature. Up to five G650 Media Gateways can be mounted in an EIA-310 standard 19-inch (48 cm) rack.

Audience

This documentation is for the following audiences:

- Trained field installation
- Technical support personnel
- Authorized Business Partners

Using this documentation

Use this documentation as a guide to install and administer the G650 Media Gateway. For information about a particular task, use the index or table of contents to locate the page number where the information is described.

For an overview of the installation process, see *High-level overview of the installation process* on page 18.

For initial installation of hardware, see *Quick Start for Hardware Installation: Avaya S8500 Media Server (555-245-701)* or *Quick Start for Hardware Installation: Avaya S8700 Series Media Servers (555-245-703)* a quick reference guide.

Use the remaining sections of the document in the sequence they are presented. If certain components are not to be installed, skip the procedures for those components.
Conventions

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

General

We show commands and screens from the newest Communication Manager and refer to the most current documentation.

Physical dimensions

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

Terminology

We use the following terminology in this documentation:

- **Configuration** is a general term that encompasses all references to an Avaya media server with media gateways running Communication Manager.
- **Cabinet** refers to a stack of media gateways, such as the G650, that are TDM-cabled together. Cabinet is the same as a port network. Cabinet can also refer to the multi-carrier cabinet (MCC1).
- **UUCSS** refers to a circuit pack address in cabinet-carrier-slot order.
- **Telephone** and **voice terminal** have the same meaning.
- **ASAI** is synonymous with the newer CallVisor ASAI.

Typography

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

Commands are in **bold monospaced** type.

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

Command variables are in **bold italic monospaced** type.

**Example**
Type `change machine machine_name`, where `machine_name` is the name of the call delivery machine.

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

**Example**
Type `copybcf [-F34]`.

Keys

The names of keys are in **bold** type.

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

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

**Example**
Press **ALT+D**.

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

**Example**
Press **Escape J**.

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

**Example**
Press **F3** (Save).
About This Documentation

User input

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

**Examples**

- Press **Enter**.
- On the **File** menu, click **Save**.
- On the **Network Gateway** page, click **Configure > Hardware**.

System output and field names

System output on the screen is in **bold** type.

**Example**

- The system displays the following message:

  **The installation is in progress.**

Field names on the screen are in **bold** type.

**Example**

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

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Safety labels and security alert labels

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

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

**WARNING:**
A warning statement calls attention to a situation that can result in harm to hardware or equipment, including ESD damage to electronic components.

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

**SECURITY ALERT:**
A security alert calls attention to a situation that can increase the potential for unauthorized access to a media server or use of a telecommunications system.
Related resources

For providing physical installation and connection information, see:

- Quick Start for Hardware Installation: Avaya S8400 Media Server (03-300-705), a quick reference guide.
- Quick Start for Hardware Installation: Avaya S8500 Media Server (555-245-701), a quick reference guide.

Additional information on installing adjunct and peripheral equipment that an S8400, S8500, or S8700-series Media Server supports is contained in Adding New Hardware for Avaya Media Servers and Gateways (03-300684). For all documents associated with the S8500, S8700, or S8710 Media Server, including those previously described, see the CD titled Documentation for Avaya Communication Manager Release 3.1, Media Gateways and Servers (03-300151).

Technical assistance

Avaya provides the following resources for technical assistance.

Within the US

For help with:

- Feature administration and system applications, call the Avaya Technical Consulting and System Support (TC-SS) at 1-800-225-7585
- Maintenance and repair, call the Avaya National Customer Care Support Line at 1-800-242-2121
- Toll fraud, call Avaya Toll Fraud Intervention at 1-800-643-2353

International

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When commenting, be sure that you mention the name and number of this book, Installing the Avaya G650 Media Gateway (03-300685).
Chapter 1: Introduction

Use the procedures in this document to install a new Avaya G650 Media Gateway. Migrations and upgrades are covered in other documents.

To configure the various pieces of hardware, you can use either of the following administration interfaces:

- The Maintenance Web Interface
- A command line interface that uses either telnet or Native Configuration Manager

You may need the information in the following documents to perform a complete installation of media servers, gateways, and associated hardware and software. These documents are included on the CD-ROM Documentation for Avaya Communication Manager, Media Gateways and Servers, (03-300151). You can download the contents of this CD-ROM from the Avaya Support Web site, (http://support.avaya.com).

- **Electronic Preinstallation Worksheet (EPW)**. An Excel spreadsheet that provides the customer network information that you need to configure the control network components with the Avaya Installation Wizard. Get the EPW from the Avaya project manager, Avaya software technician, or customer network administrator. A blank EPW is available at the AIW Web site, (http://support.avaya.com/avayaiw).
- **Installing and Configuring the Avaya S8700 Series Media Servers** (03-300145). Provides information on how to install the media server and configure the control network components.
- **Installing and Connecting the MDF and Telephones**, (03-300686). Provides information on installing the main distribution frame (MDF), connecting the media gateway to the MDF, connecting the MDF to stations and the public switched telephone network, installing and wiring telephones and trunks, installing and wiring telephone power supplies, and testing the complete configuration.
- **Upgrading, Migrating, and Converting Media Servers and Gateways**, (03-300412). Provides information on how to upgrade Avaya Communication Manager, the firmware on various components, and circuit packs. Also provides information on how to migrate and convert media servers and gateways.
- **Administrator Guide for Avaya Communication Manager**, (03-300509). Provides user information on how to administer trunks and telephones.
Introduction

- **Administration for Network Connectivity for Avaya Communication Manager,** (555-233-504). Provides information on network connectivity.
- **Maintenance Commands for Avaya Communication Manager 3.1, Media Gateways and Servers,** (03-300431). Provides information on how to use command interfaces, command syntax, and output from maintenance-related commands.
- **Maintenance Alarms for Avaya Communication Manager 3.1, Media Gateways and Servers,** (03-300430). Provides information on how to use alarms, error codes, and tests to diagnose and repair problems.
- **Maintenance Procedures for Avaya Communication Manager 3.1, Media Gateways and Servers** (03-300432)—provides information on how to troubleshoot and replace various components.
- The following job aids are also available on the CD-ROM **Documentation for Avaya Communication Manager, Media Gateways and Servers:**
  - **Approved Grounds.** Provides a description of all approved grounds.
  - **Connector and Cable Diagrams (Pinout Charts).** Provides pinout information for various components.
  - **Option Switch Settings.** Provides settings for various components.
  - **Server and CSS Separation—Avaya S8700 Series Media Servers.** Provides connectivity information that you need when the S8700 series media servers are in separate locations.

This installation document contains the following information:

- **Preinstallation setup** on page 17
- **Installing the G650 Media Gateway** on page 26
- **Connecting to the customer’s network** on page 69
- **Testing the complete configuration** on page 73
Preinstallation setup

The preinstallation team performs the following tasks. If these are not complete when you are ready to start the installation, do not start the installation.

Verify that:

- The open, customer-supplied, EIA-310D or equivalent standard 19-inch (48-centimeter) equipment racks are properly installed and solidly secured. Ensure that you also have the screws that come with the racks.

- The rail kits, which are required to support the heavy UPSs, are installed on the rack or available for installation. For how to install the rails, see the documentation that comes with the rail kits.

- The required number of 19-inch (48-centimeter) EIA-310D open equipment racks are grounded. For more information, see Approved Grounds, (555-245-772).

- You have the required, customer-provided network information in the form of a completed Electronic Preinstallation Worksheet (EPW). For a blank form, see the Avaya Installation Wizard Web site, http://support.avaya.com/avayaiw

- All the equipment is on site. For the list of required hardware, see Installing the G650 Media Gateway on page 26 and Comcodes for the G650 on page 26.
High-level overview of the installation process

You complete the installation process in stages. You can complete some stages in parallel. Other stages require certain tasks first. The order in which you complete the stages depends on the suggested order, local practice, and the personnel available. The high-level stages are:

- Installing the G650 media gateways.
- Cabling the media gateways.
- Connecting to the customer network which includes media servers, C-LAN, VAL, and so forth.
- Installing and wiring telephones and trunks.
- Completing the installation administration which includes clear alarms, enable alarm reporting, backup translation, and so forth.
- Testing the complete configuration.

These high-level stages are described below.

Installing the media gateways

You can complete this stage in parallel with installing and configuring the server complex. You must install and turn on the media gateways before you complete many of the other stages.

Cabling the media gateways

In this stage, you attach the cables of the media gateways to the main distribution frame and the patch panels. This stage usually comes after you install the media gateways and before you install traditional telephones.

Connecting the media gateways

In this stage, you connect the media gateways to the server complex through Ethernet cables. You also program the IP Server Interface (IPSI) circuit packs during this stage. Before you can complete this stage, the G650 Media Gateway must be installed and the server complex must be operational.
Connecting to the customer’s network

You can perform this stage anytime. But to allow testing along the way, connect to the customer network after you cable the media gateways and connect the gateways to the media server complex.

Installing and wiring telephones

In this stage, you wire, place, and test the telephones. In most cases, the configuration must be operational and responsive before you can perform this stage. An exception exists for IP telephones that are connected to the network, which you can place before you complete the installation. When you install wiring for traditional telephones and analog or digital consoles, ensure that you install the telephones when you can also test the telephones.

Note:

The information for this stage is provided in the document, Installing and Connecting Main Distribution Frames and Telephones, (03-300686).

Completing the installation

In this stage, you finish the installation. To finish the installation, you clear alarms, enable alarm reporting, back up the servers, connect the modems and register the configuration. This stage comes at the end of the actual installation.

Testing the complete installation

In this stage, you verify the complete configuration operation. Always perform this stage last.
Chapter 2: Installing and cabling the G650 media gateway

Overview

You usually install media gateways in the same equipment room as the media server rack hardware, which is the control network. However, you can also install the media gateways in another location, which can include another state or country.

A port network (PN) consists of up to four G650 media gateways in a rack. The media gateway in the A location, at the bottom of the rack, contains the TN2312AP IP Server Interface (IPSI) circuit pack.

**Note:**
Before you start the media gateway installation, check the location of the AC and DC power receptacles. The receptacles must be on separately fused circuits that are not controlled by wall switches. The receptacles must be located within 10 feet (3 meters) of the media gateway and outside the main distribution frame (MDF) area.

**Note:**
For convenience, install the reference IPSI in a PN that is in the same room as the control network hardware. The reference IPSI is the IPSI that is associated with the license file.

⚠️ **Important:**
Before you install the media gateways, ensure that you have all the required equipment and are aware of warnings when you work around sources of power.

Rack requirements

The customer must:

- Provide sturdy racks that are built to the EIA-310D standard or equivalent.
- Install, secure, and ground the racks per local code and rack specifications before the equipment is mounted in the racks.
- Provide AC power to the rack from a nonswitched outlet.
Installing and cabling the G650 media gateway

You must ensure that:

- The screws that come with the rack are available.
- The rail kits, which are required to support the heavy UPSs, are installed on the rack or available for installation.

The rack must be rated at a minimum of 200 pounds (90 kilograms).

Specifications

The specifications of the G650 media gateway are:

- English dimensions (in.): 14h x 22d x 17.5w
- Metric dimensions (cm): 30h x 56d x 48w
- Us (height in rack): 8
- Weight (lb/kg): 35 to 39/16 to 18

For more detailed information, see Hardware Description and Reference for Avaya Communication Manager, 555-245-207.

Preinstallation tasks

Perform these tasks before you start the installation:

- Checking the customer order on page 22
- Unpacking and inspecting the G650 media gateway on page 23
- Correcting shipping errors on page 24

Checking the customer order

To check the customer order:

1. Check the customer order list and the shipping packing list to confirm that all equipment is included.
2. Check the system adjuncts for damage and report all damage according to local shipping instructions.
3. If any equipment is missing, report the information to your Avaya representative.
Unpacking and inspecting the G650 media gateway

⚠️ **DANGER:**
Use lifting precautions. An empty G650 Media Gateway weighs 35 to 39 pounds (16 to 18 kilograms). Use caution to avoid injury.

To unpack and inspect the G650 Media Gateway:

1. Unpack the media gateway and remove all packing material.

2. Verify the equipment received. See [Figure 1: Equipment that is shipped with a single G650 Media Gateway](#) on page 24. Actual equipment might vary in appearance and might be shipped in separate packages.

**Note:**

The optional G650 Media Gateways for port hardware only are shipped with:

- An AC or DC power cord or international power cord kit
- Mounting screw kits
- A TDM/LAN bus cable
- EMI Gaskets
Correcting shipping errors

To correct shipping errors:

1. Red-tag all defective and excess equipment.
2. Return equipment in accordance with instructions from the nearest Material Stocking Location (MSL).
   To contact the Avaya Order Management group in the United States, call 1-800-772-5409. For international customers, contact your order service agent.
3. Report shipments that do not contain the necessary equipment to the nearest MSL. Contact the appropriate location for specific instructions.
Precautions for AC power and ground

When you install media gateways, be aware of the following warnings and cautions.

⚠️ **WARNING:**
A qualified electrician must set up the ground wiring and the equipment room for alternating current (AC) power. The AC power circuit must be dedicated to the system. The circuit must not be shared with other equipment or controlled by a wall switch. The AC receptacle must not be located under the main distribution frame and must be easily accessible.

⚠️ **CAUTION:**
Media gateway grounding must comply with the general rules for grounding in Article 250 of the National Electrical Code (NEC), National Fire Protection Agency (NFPA) 70, or the applicable electrical code in the country of installation. For more information, see *Approved Grounds*, 555-245-772.

⚠️ **DANGER:**
The latch on the power supply does not turn off the power to the G650 Media Gateway. To turn off the AC power from the G650, pull the AC power cord from the back of the G650 Media Gateway. If redundant power supplies exist, you must pull both AC power cords from the back of the G650 Media Gateway. To remove DC power, first locate and switch the DC circuit breaker to the "off" position. Second, disconnect the DC power feed at the back of the G650 Media Gateway.

⚠️ **WARNING:**
If other equipment is installed in the same rack, ensure that the G650 Media Gateway does not generate an overcurrent or overload condition. Verify that the branch circuit and the power distribution strip of the customer provide sufficient overload and overcurrent protection.

**Approved grounds**

For more information about grounding the G650 Media Gateway, see *Approved Grounds*, 555-245-772.
Installing the G650 Media Gateway

This section includes the following tasks, which you must perform to install the G650 Media Gateway PN:

- Checking the ventilation and the G650 Media Gateway rack on page 33
- Setting the carrier address ID on page 34
- Mounting one G650 Media Gateway on page 35
- Mounting two to five G650 Media Gateways on page 40
- Installing the TN2312BP IPSI adapter on page 41
- Approved ground on page 42
- Connecting the G650 Media Gateway grounds and other grounds on page 43
- AC power on page 44
- DC power on page 48
- Uninterruptible power supply on page 51
- G650 Media Gateway power switch on page 52

Table 1: Comcodes for the G650 shows the list of equipment and their comcodes for the G650.

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<thead>
<tr>
<th>Comcode</th>
<th>Description</th>
<th>Included in basic cabinet</th>
<th>Optional</th>
<th>Field Replaceable Unit (FRU)</th>
</tr>
</thead>
<tbody>
<tr>
<td>700259724</td>
<td>G650 cabinet (includes one 655A power supply)</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>105631527</td>
<td>Bus terminators (AHF110 circuit packs) for an A carrier</td>
<td>Yes</td>
<td>Must have 2 terminators for each A-carrier G650 or G650 stack</td>
<td>Yes</td>
</tr>
<tr>
<td>405289547</td>
<td>Cabinet feet for an A carrier that is mounted on the floor</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>840059885</td>
<td>Cabinet feet screws for an A carrier that is mounted on the floor</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Table 1: Comcodes for the G650
<table>
<thead>
<tr>
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<th>Description</th>
<th>Included in basic cabinet</th>
<th>Optional</th>
<th>Field Replaceable Unit (FRU)</th>
</tr>
</thead>
<tbody>
<tr>
<td>700260359</td>
<td>TN2312BP IP server interface (IPSI) circuit pack</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>700055015</td>
<td>TN799DP CLAN</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>108774696</td>
<td>TN2302AP IP media processor (for voice over IP processing, either the TN2302AP or TN2602AP is required)</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>108566381</td>
<td>TN2602AP IP media resource (for voice over IP processing, either the TN2302AP or TN2602AP is required)</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>848525887</td>
<td>IP media processor adapter (TN2302, TN799DP)</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>102631413</td>
<td>259A adapter for C-LAN (TN799C)</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>700252638</td>
<td>DC feed power cable (Cable from the customer DC plant to the cabinet backplane. Defaults to 30 feet in length.)</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>405362641</td>
<td>AC power cord—Domestic (US, Canada, Mexico, Japan, and much of the Caribbean)</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>407786623</td>
<td>AC power cord—Europe</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>407786599</td>
<td>AC power cord—UK and Ireland</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>407786631</td>
<td>AC power cord—Australia and New Zealand</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>407790591</td>
<td>AC power cord—India</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>408161453</td>
<td>AC power cord—Argentina</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>
| country specific | S8500 server DC power cord  
S8700 server DC power cord                                                   | Yes                       | No       | Yes                         |
| 700170053   | Services laptop cables                                                      | Yes                       | No       | Yes                         |
| 700170012   | Server-to-Ethernet switch cables                                           | Yes                       | No       | Yes                         |
Table 1: Comcodes for the G650 (continued)

<table>
<thead>
<tr>
<th>Comcode</th>
<th>Description</th>
<th>Included in basic cabinet</th>
<th>Optional</th>
<th>Field Replaceable Unit (FRU)</th>
</tr>
</thead>
<tbody>
<tr>
<td>700170012</td>
<td>Ethernet switch to the G650 cables—5 meters (green)</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>700178056</td>
<td>Cable— 25 meters (connects to the IPSI at the G650)</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>700178064</td>
<td>Cable—50 meters (connects to the IPSI at the G650)</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>700290158</td>
<td>Power supply fuse for DC input</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>700258163</td>
<td>G650 fan assembly</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>700261811</td>
<td>G650 door assembly</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>700255979</td>
<td>1 inch (2.5 cm) by 1 inch (2.5 cm) two-sided paddleboard</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>106278062</td>
<td>Apparatus blank (circuit pack blank—158P)</td>
<td>Yes</td>
<td>No²</td>
<td>Yes</td>
</tr>
<tr>
<td>700259724</td>
<td>G650 carriers (B through E)</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>700272305</td>
<td>TDM LAN cable kit for B through E carriers</td>
<td>No</td>
<td>One TDM LAN cable kit is required for each B through E carrier.</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>- Time-division multiplexing/local area network (TDM/LAN) bus cable for connection between the G650 Media Gateways. NOTE: This cable is <strong>not</strong> the same cable that is used on the G600 Media Gateway (Comcode 700252471).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- EMI gasket (Comcode 700918021)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- TDM cable and EMI gasket installation instructions (Comcode 700259773)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3 of 6
Table 1: Comcodes for the G650  (continued)

<table>
<thead>
<tr>
<th>Comcode</th>
<th>Description</th>
<th>Included in basic cabinet</th>
<th>Optional</th>
<th>Field Replaceable Unit (FRU)</th>
</tr>
</thead>
<tbody>
<tr>
<td>700246671</td>
<td>655A power supply. One power supply is included in the basic cabinet and is not optional. A redundant power supply must be ordered separately and is optional.</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>700276389</td>
<td>TN2312BP IPSI adapter cable</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>700284623</td>
<td>Dual network interface card (NIC)</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>104042163</td>
<td>1/4 inch (0.6 centimeters) apparatus blank (158G)</td>
<td>No</td>
<td>Yes³</td>
<td>Yes</td>
</tr>
<tr>
<td>700249113</td>
<td>DC input cable (cable from the carrier back panel to a backplane header)</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>700252646</td>
<td>AC input cable (cable from the cabinet skin to the power supply connector on the backplane)</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>700252638</td>
<td>DC feed cable (Cable from the customer DC plant to the cabinet backplane. Defaults to 30 feet in length.)</td>
<td>—</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>700017932</td>
<td>Mounting kit (screws)</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>700017916</td>
<td>Rack-mounting template</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>700012909</td>
<td>24-port patch panel</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>70012917</td>
<td>8-port patch panel</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>106606536</td>
<td>Integrated channel service unit (ICSU) (120A2)</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>107988867</td>
<td>DS1 loopback jack (T1 only) (700A)</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>107152969</td>
<td>75-ohm DS1 coaxial adapter (888B)</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>403613003</td>
<td>157B connecting block (&quot;sneak current protectors&quot;)</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>406948976</td>
<td>6SCP-110 protector</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Comcode</td>
<td>Description</td>
<td>Included in basic cabinet</td>
<td>Optional</td>
<td>Field Replaceable Unit (FRU)</td>
</tr>
<tr>
<td>-------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>---------------------------</td>
<td>----------</td>
<td>------------------------------</td>
</tr>
<tr>
<td>107435091</td>
<td>507B sneak current fuse panel</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>407216316</td>
<td>220029 sneak current fuse</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>104307327</td>
<td>C6C cable — 50-foot (15-meter) shielded digital signal level 1 (DS1) cable with 50-pin male to 15-pin male connector</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>104307376</td>
<td>C6D cable — 50-foot (15-meter) shielded DS1 cable with 50-pin male on each end</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>104307434</td>
<td>C6E cable — 100-foot (31-meter) shielded DS1 cable with 50-pin male to 50-pin female connector</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>104307475</td>
<td>C6F cable — 50-foot (15-meter) shielded DS1 cable with 50-pin male to 3-inch (8 centimeters) stub</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>102381779</td>
<td>3B1A carbon block</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>104410147</td>
<td>3B1E-W wide-gap gas tube</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>105514756</td>
<td>3C1S analog line protector — solid state</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>102904893</td>
<td>4B1C carbon block with heat coil</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>104401856</td>
<td>4B1E-W wide gap gas tube with heat coil</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>104386545</td>
<td>4C1S analog line protector — solid state with heat coil</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>105581086</td>
<td>4C3S-75d Digital voice circuit protector — solid state</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>406144907</td>
<td>ITW LINX gas tube, avalanche suppress</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>901007120</td>
<td>ITW LINX ground bar (used with ITW LINX gas tube)</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>406304816</td>
<td>ITW LINX replacement fuse</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Table 1: Comcodes for the G650  (continued)

<table>
<thead>
<tr>
<th>Comcode</th>
<th>Description</th>
<th>Included in basic cabinet</th>
<th>Optional</th>
<th>Field Replaceable Unit (FRU)</th>
</tr>
</thead>
<tbody>
<tr>
<td>103972758</td>
<td>Data link protector (1 circuit)</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>103972733</td>
<td>Data link protector (8 circuits)</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>407063478</td>
<td>Electrostatic discharge (ESD) wrist strap</td>
<td>No</td>
<td>—</td>
<td>Yes</td>
</tr>
<tr>
<td>105197792</td>
<td>Retainer, 4B</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

1The G650 can use either AC power or DC power. The G650 must have either a DC power cable or one of the country-specific AC power cables that are listed in this table. For installations that do not use one of the country-specific power cables that are listed in this table, procure a local power cord.

2The G650 must always operate with all slots blocked with circuit packs and apparatus blanks to ensure that the G650 meets its thermal and EMI and EMC environmental performance criteria. The G650 must also always operate with the door closed. You must tighten all knurled screws so that you cannot loosen them without a tool.

3This apparatus blank is required for installations that use oversized circuit packs such as the TN755B or the TN2202. This apparatus blank ensures that all slots are blocked.

Figure 2: G650 Media Gateway stack (A through E) that is installed next to the media server rack on page 32 shows a typical Communication Manager installation.
Figure 2: G650 Media Gateway stack (A through E) that is installed next to the media server rack

Figure notes:

1. Media server 1
2. Ethernet switch (if used)
3. UPS 1
4. Carrier A
5. Carrier B
6. Carrier C
7. Carrier D
8. Carrier E
Checking the ventilation and the G650 Media Gateway rack

⚠️ **WARNING:**

Be sure that there is adequate ventilation in the area. The internal room temperature must not exceed 104°F (40°C).

The G650 Media Gateway must be installed in a well-ventilated area. Maximum equipment performance is achieved at an ambient temperature between 40° and 120° F (4° and 49° C) for a short-term operation, not more than 72 consecutive hours or 15 days in a year, and up to 104° F (40° C) for continuous operation. The relative humidity range is 10% to 95% at up to 84 F (29° C).

For adequate ventilation and to conform with EIA-310D data rack standards, you need to provide the following clearance:

- 12 inches (30 centimeters) in the rear
- 18 inches (45 centimeters) in the front
- 3 inches (7.6 centimeters) on the sides

⚠️ **WARNING:**

Be sure the customer-supplied 19-inch (48-centimeter), EIA-310D standard, open rack is properly installed, solidly secured to the floor, and grounded. If the rack is not secured to the floor, do not proceed with the installation. Avaya does not recommend that you use enclosed data cabinets, because they might not allow sufficient ventilation to the G650 Media Gateway.

⚠️ **WARNING:**

You must align the G650 Media Gateway with the correct holes in the frame because the distance between each is not uniform. Use the G650/G600 Mounting Template, shipped with each carrier, to help you align the holes.

Each G650 Media Gateway is 8U high. A typical data rack is 42U high. When you create a five-carrier G650 Media Gateway stack, all but 3.5 inches (8.9 centimeters) of a typical rack is used. Mount the A carrier low in the rack.

In a multiple G650 Media Gateway configuration, put the G650s in the rack with no vertical space between them. If the G650 Media Gateways are not mounted adjacent with their fronts in the same vertical plane, the TDM/LAN cable(s) cannot connect them.
Setting the carrier address ID

Set the carrier address ID either before or after installing each G650 Media Gateway. Set the carrier address by inserting the address paddleboard in one of five connector slots on the upper-right side of the backplane. The slots are clearly marked as A, B, C, D, and E. All carriers ship with the address paddleboard in connector slot A. If you are working on a B, C, D, or E carrier, you need to remove the address paddleboard. Then move the paddleboard to the correct slot for a B, C, D, or E carrier.

To set the carrier address ID:

1. Loosen the thumb screws on the fan assembly and pull it straight out as shown in Figure 3: Removing the fan assembly on page 34. You do not need to unplug the connection. Place the assembly on top of the cabinet or hang it from the rear connector panel using the screws on the back of the assembly. Leave the fan assembly off until the unit is completely installed in the rack.

2. Verify and, if necessary, set the carrier address ID for each G650 Media Gateway as shown in Figure 4: Setting the G650 Media Gateway carrier address ID on page 35. Place the address paddleboard in the connector slot that you want: A, B, C, D, or E.

Figure 3: Removing the fan assembly
Mounting one G650 Media Gateway

Note:
In a multiple G650 Media Gateway configuration, put the G650s in the rack with no vertical space between them. If the G650 Media Gateways are not mounted adjacent with their fronts in the same vertical plane, the TDM/LAN cable(s) cannot connect them.

Note:
Avaya recommends that the first G650 Media Gateway be installed in the lowest position as carrier A. For more information, see Figure 2: G650 Media Gateway stack (A through E) that is installed next to the media server rack on page 32. This facilities mounting carriers B through E directly above carrier A.

To mount one G650 Media Gateway:
1. Remove the G650 Media Gateway door by opening and then lifting it straight up and off the hinge pins.

⚠️ WARNING:
When handling circuit packs or any components of the G650 Media Gateway, always wear an authorized wrist ground strap connected to the ground connector provided on the G650. Always store the circuit packs to protect them from damage by electrostatic discharge.
2. To place the G650 Media Gateway in the medial position:
   a. Remove the screws on the mounting brackets.
   b. Move the brackets to a position midway on the G650 Media Gateway.
   c. Reinstall the screws through the mounting bracket and into the G650 Media Gateway holes. Tighten the knurled screws securely so that you cannot loosen them without a screwdriver.

3. Use the mounting template to locate a set of rack holes that you can use for mounting the G650 Media Gateway. Note the position of the upper key-hole shaped slots on each rail.

   **Note:**
   The mounting screw holes in commercial racks are not evenly spaced. Ensure that the holes you select for mounting the G650 Media Gateway match all the mounting bracket slots on the mounting template. See Figure 5: Rack hole spacing and first mounting screws placement.
4. Insert two mounting screws into the left and right rails of the rack in the holes noted in step 4. Leave enough space between the screw head and the rail surface for the mounting bracket. See Figure 6: Mounting the media gateway.
**DANGER:**
Use lifting precautions! An empty G650 Media Gateway weighs 35 pounds (16 kilograms).

5. Lift the empty G650 Media Gateway and slide the key-hole slots on the mounting brackets onto the two mounting screws.

6. Install and tighten the two top mounting screws.
7. Install and tighten the remaining screws. See Figure 5: Rack hole spacing and first mounting screws placement on page 37.

Note:
Follow the same steps to install the G650 Media Gateway with mounting bracket in the medial position. See Figure 6: Mounting the media gateway on page 38.

8. Set the ringer selection switch on each 655A power supply. See Figure 7: 655A power supply fuse and ringer switch on page 39 for ring selection switch.

The switch can be set for:
- 20 Hz—North American
- 25 Hz—European and international
- Off—No ringing output. Used when an external ring generator, such as the TN2202 French ringing circuit pack, is provided.

Figure 7: 655A power supply fuse and ringer switch

Figure notes:
1. Fuse
2. Ringer switch
Note:
If you plug a power supply into a slot that has not previously contained a power supply, the power supply will self-administer.

9. Reinstall the power supply.

10. If you are installing one G650 Media Gateway, replace the fan assembly and tighten the 7 screws. All knurled screws must be tightened securely so that they cannot be loosened without the use of a tool. Proceed to Installing the TN2312BP IPSI adapter on page 41.

11. If you are installing multiple G650 Media Gateways, proceed to Mounting two to five G650 Media Gateways on page 40.

Power supply fuse

The fuse protects the DC input from reverse voltage on the -48 VDC input. If reverse voltage is applied to the G650 Media Gateway and the 655A power supply, the 655A fuse will blow open to protect the 655A power supply from damage. The fuse is located on each end of the rear surface of the 655A power supply as shown in Figure 7: 655A power supply fuse and ringer switch on page 39. The DC input protection fuse and a spare are located in the two fuse positions.

If the G650 Media Gateway will not operate on DC input (only), the fuse should be inspected. Remove the 655A power supply from the G650 Media Gateway and inspect the protection fuse.

A spare fuse (Comcode 700290158) is shipped with the power supply.

Mounting two to five G650 Media Gateways

Note:
In a multiple G650 Media Gateway configuration, put the G650s in the rack with no vertical space between them. If the G650 Media Gateways are not mounted adjacent with their fronts in the same vertical plane, the TDM/LAN cable(s) cannot connect them.

When mounting more than one G650 Media Gateway in a rack, put:

1. A in the bottom of the rack
2. B directly above A
3. C directly above B
4. D directly above C
5. E directly above D
EMI gaskets provide Electro Magnetic Interference (EMI) to or from the TDM cable with the outside environment. You must install the EMI gaskets before putting cabinets B, C, D, or E in the rack.

To install the EMI gaskets:

1. Peel the paper backing from the gasket
2. Locate the unpainted outlined area on top of the G650 Media Gateway
3. With the gasket opening facing the rear of the rack, place the gasket on the:
   a. Right top for G650 A and C
   b. Left top for G650 B and D

After you put the last G650 in the rack:

4. Cable the rack (see Cabling the G650 Media Gateways on page 53).
5. Install the TN2312BP IPSI adapter (proceed to Installing the TN2312BP IPSI adapter on page 41).

Installing the TN2312BP IPSI adapter

Install the TN2312BP IPSI adapter on the connector panel in position 1 for carrier A. If you are using duplicated IPSIs, connect another IPSI adapter in position 1 for carrier B. Connect the CAT 5 ethernet cable to the adapter to connect the G650 to the ethernet. Figure 8: G650 IPSI adapter shows the adapter.

If you want to use the external alarm function, attach an 9-pin external alarm cable to the TN2312BP IPSI adapter. For the unterminated end, see the job aid titled Connector and Cable Diagrams (Pinout Charts) (555-245-773).
Figure 8: G650 IPSI adapter

1. D9 connector
2. RJ45

Approved ground

⚠️ WARNING:
Installation in a Restricted Access Location and secure access are required in Finland and Norway.

The G650 Media Gateway relies on two ground connections. These connections are main plug and an earth contact and a permanent Supplementary Ground Conductor. Because of unreliable earthing concerns in Finland and Norway, the G650 Media Gateway must be installed in a Restricted Access Location (RAL). An RAL is an access that can be gained only by trained service personnel or customers who were instructed about the reasons for the restricted access and any safety precautions that must be taken. In these cases, you can gain access to the G650 Media Gateway by the use of a tool, such as a lock and key, or other means of security.

If you have any questions about the safety conditions, contact your Project Manager. When you have verified that the site is ready for installation, proceed with the installation.

See the job aid titled Approved Grounds (555-245-772).
Connecting the G650 Media Gateway grounds and other grounds

Follow these additional grounding requirements:

- The approved ground wire must be green / yellow, 10 AWG, copper, stranded wire.
- Bond all approved grounds at the single-point ground to form a single grounding electrode system.

Connect the cable as shown in Figure 9: Grounding for one G650 Media Gateway on page 43 for a single G650 Media Gateway, or Figure 10: Grounding for multiple G650 Media Gateways on page 44 for 2 or more G650 Media Gateways.

Figure 9: Grounding for one G650 Media Gateway

Figure notes:

1. 10 AWG (6 mm²) wire to an approved ground
Figure notes:
1. 10 AWG (6 mm²) wire to an approved ground

AC power

Chassis power source information for the G650 Media Gateway

Chassis style and power distribution unit:
- AC or DC power supply (Apparatus Code 655A)
- A 655A power supply is required in slot 0
- A 655A power supply is optional in slot 15
Power source options:
- Single phase 120 VAC with neutral wire
- Single phase 240 VAC with neutral wire
- —48 VDC

Power input receptacles:
- 120 VAC, 60 Hz NEMA 5-15R to IEC 60320 appliance inlet
- 240 VAC, 50 Hz country selectable to IEC 60320 appliance inlet
- When you install G650s in Japan, use country specific receptacles for 100 and 200 VAC, 50/60 Hz
- When you install G650s in Mexico, use country specific receptacles for 127 VAC

Connecting the power cords

⚠️ WARNING:
The AC power cord can connect to a properly rated power distribution unit, individual AC power receptacles, or to an UPS. Avaya recommends a rack-mounted UPS.

To connect the power cords:

6. Ensure that the circuit breakers at the AC load center are OFF.

7. Connect the G650 Media Gateway to a UPS or to a “nonswitched” or “always on” electrical outlet. See Figure 9: Grounding for one G650 Media Gateway on page 43 and Figure 10: Grounding for multiple G650 Media Gateways on page 44.

Checking AC power
Each G650 Media Gateway uses at least one auto-ranging (90 to 265 VAC) power supply:
- 47 to 63 hertz
- 500 watts output
- 7.2 amps (90 VAC) or 3.3 amps (200 VAC)
Required input current

Table 2: G650 Media Gateway worst case current levels on page 46 shows the worst case current levels for a fully-loaded G650 Media Gateway. Each empty slot reduces the required input current by 1/4 A.

Table 2: G650 Media Gateway worst case current levels

<table>
<thead>
<tr>
<th>Input Volts AC</th>
<th>Required Amps AC</th>
<th>Input Volts DC</th>
<th>Required Amps DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>90</td>
<td>7.2</td>
<td>40</td>
<td>16.7</td>
</tr>
<tr>
<td>100</td>
<td>6.4</td>
<td>42</td>
<td>15.9</td>
</tr>
<tr>
<td>120</td>
<td>5.4</td>
<td>48</td>
<td>13.9</td>
</tr>
<tr>
<td>230</td>
<td>2.8</td>
<td>54</td>
<td>12.4</td>
</tr>
<tr>
<td>255</td>
<td>2.5</td>
<td>60</td>
<td>11.1</td>
</tr>
<tr>
<td>265</td>
<td>2.4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The AC power source for each power supply installed in the G650 Media Gateway can be either:

- 1 phase of 120 VAC with neutral (100 VAC for Japan) with 15-amp circuit breaker
- 1 phase of 220 or 240 VAC (200 VAC for Japan) with 10-amp circuit breaker.

Testing the AC outlet

⚠️ WARNING:

The following recommended test equipment, tests, and diagrams are intended only for North American installations at 110 to 125 VAC. For installations in other regions, have a licensed electrician verify the ground and voltages.

⚠️ WARNING:

If the AC outlet tests indicate that the power requirements are not met, your customer must contact a licensed electrician. **DO NOT** install the system until all requirements are met.
Verifying ground using an ideal 61-035 Circuit Tester (or equivalent)

To verify ground using an ideal 61-035 Circuit Tester:

1. Plug the circuit tester into the outlet that you want to test.
   If the circuit is properly grounded, the yellow and white lights on the tester illuminate.
2. Unplug the tester.

⚠️ **WARNING:**
If the tester indicates any type of ground fault, your customer must contact a licensed electrician. **DO NOT** install the system.

Verifying voltages using a Volt-Ohm Multimeter (VOM) in the U.S. and countries using 110 to 125 VAC power

⚠️ **WARNING:**
Hazardous voltages are present during this test. Follow all instructions carefully when working with AC power line voltages.

**Note:**
The following example is for North American voltages (110 to 125 VAC). Use the appropriate voltages for local power.

To verify voltages using a Volt-Ohm-Multimeter:

3. Ensure that the VOM is set to read Volts AC.
4. Set the VOM to the lowest scale on which you can read 130 VAC.
5. Measure the AC voltages in the following order:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Phase to neutral must be 110 to 125 VAC.</td>
<td></td>
</tr>
<tr>
<td>2. Neutral to ground must be less than 1 VAC.</td>
<td></td>
</tr>
<tr>
<td>3. Phase to ground must be 110 to 125 VAC.</td>
<td></td>
</tr>
</tbody>
</table>

If the voltage readings do not measure the values given, the AC outlet is improperly wired. **DO NOT INSTALL THE SYSTEM.** Advise the customer to have a licensed electrician correct the problem.

You are now ready to power the system.
Plugging in AC power

Once you verify that the ground and voltages are correct for the installation, connect to AC power.

Before turning on the system, check the AC power in the equipment room using a KS-20599 digital voltmeter (DVM) (or equivalent). To check AC power:

1. Verify that the voltage meter reads either 90 to 132 VAC or 180 to 264 VAC by measuring the AC voltage between the hot and neutral sides of the receptacle. Request that a qualified electrician correct any problems before proceeding to Step 2.

2. Verify that the voltage meter reads 0 VAC by measuring the voltage between the neutral and ground sides of the receptacle. Request that a qualified electrician correct any problems before proceeding to Step 3.

3. Set the AC main circuit breakers to OFF when you finish checking the AC power.

DC power

Figure 11: Typical DC power for a G650 on page 50 shows a typical DC power layout for a G650 Media Gateway.

Each G650 Media Gateway can be equipped with a maximum of two 655A power supplies. One power supply is always provided in slot 0 and a redundant unit can be supplied in slot 15. DC power is supplied, by a DC feed cable, to one connector on the backplane of the G650 Media Gateway and bussed to each power supply slot. AC and DC current can be supplied to the 655A power supplies at the same time. When both AC and DC current are present, the 655A uses AC first. Then, the 655A switches to DC without any interruption in service if the AC current fails.

Each G650 Media Gateway, with either single or redundant power supplies, draws a maximum of 17 amps of DC current.
**Required Input Current**

*Table 3: G650 Media Gateway worst case current levels* shows the worst case current levels for a fully-loaded G650 Media Gateway. Each empty slot reduces the required input current by 1/4 A.

### Table 3: G650 Media Gateway worst case current levels

<table>
<thead>
<tr>
<th>VA</th>
<th>VDC</th>
<th>ADC</th>
<th>Efficiency</th>
<th>PF</th>
<th>BTU/HR</th>
<th>Watts</th>
</tr>
</thead>
<tbody>
<tr>
<td>667</td>
<td>40</td>
<td>16.7</td>
<td>75.4</td>
<td>0.994</td>
<td>2277</td>
<td>667.1328</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Minimum DC plant voltage</td>
</tr>
<tr>
<td>667</td>
<td>42</td>
<td>15.9</td>
<td>75.4</td>
<td>0.994</td>
<td>2277</td>
<td>667.1328</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Low Voltage Disconnect (LVD) voltage</td>
</tr>
<tr>
<td>667</td>
<td>48</td>
<td>13.9</td>
<td>75.4</td>
<td>0.994</td>
<td>2277</td>
<td>667.1328</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Typical plant voltage</td>
</tr>
<tr>
<td>667</td>
<td>54</td>
<td>12.4</td>
<td>75.4</td>
<td>0.994</td>
<td>2277</td>
<td>667.1328</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Typical plant float voltage</td>
</tr>
<tr>
<td>667</td>
<td>60</td>
<td>11.1</td>
<td>75.4</td>
<td>0.994</td>
<td>2277</td>
<td>667.1328</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Maximum plant voltage</td>
</tr>
</tbody>
</table>

Before you connect the G650 Media Gateway DC feed cable to the DC power source, check the DC power source using a KS-20599 digital voltmeter, or equivalent. To check DC power:

1. Verify that the meter reads between -42.5 VDC and -54.2 VDC across the -48 VDC and -48V Return distribution leads from the DC source.
2. Verify that the meter reads 0V between the -48V Return lead of the DC power source and the approved ground.
3. If either step 1 or step 2 fails the verification, **DO NOT PROCEED with step 4.** Request that a qualified electrician resolves the problem.
4. Connect the DC feed cable for each G650 Media Gateway to the DC power source. For more information, see *Figure 9: Grounding for one G650 Media Gateway* on page 43 and *Figure 10: Grounding for multiple G650 Media Gateways* on page 44.
   a. Connect the red insulated 10 AWG lead to the -48V Return (positive) source.
   b. Connect the black insulated 10 AWG lead to the -48 VDC (negative) source.
Figure 11: Typical DC power for a G650

Figure notes:

1. Approved Ground
2. 1 AWG Ground Wire
3. CBC Ground Terminal Bar at the MDF (if used)
4. System Single-point Ground Discharge Bar
5. DC Power Cabinet J58890R or new DC system
6. Ground Wire for Battery (+)
7. Battery Frame Ground
8. DC Battery Cabinet
9. Main AC Supply (AC Mains)
10. AC to DC power cabinet
11. To Next DC-powered Media Gateway
12. DC load circuit breakers
Uninterruptible power supply

An uninterruptible power supply (UPS) can be used for power protection and holdover time on loss of AC power. Therefore, UPS increases the G650 Media Gateway availability. Select a UPS that meets the power capacity and holdover time that is required for your site. Go to http://www.avayaups.com/avaya/default.asp for sizing and holdover information. The UPS also provides surge protection for the G650 Media Gateway.

**CAUTION:**

The major alarm contacts connect ONLY to a UPS that can indicate that the UPS is on backup power. For most non-Avaya UPSs, you should not use the major external device leads.

To install a UPS:

1. Connect the UPS to an electrical outlet capable of handling the power requirements of the G650 Media Gateway:
   a. 100 VAC, 7.2 amps
   b. 120 VAC, 6.4 amps
   c. 200 VAC, 3.3 amps
   d. 220 to 240 VAC, 2.8 amps

   For more information, see Table 2: G650 Media Gateway worst case current levels on page 46.

2. Ensure that the G650 Media Gateway is connected to a “nonswitched” or “always on” electrical outlet on the UPS.

3. Connect and administer the Avaya UPS. Note that customers are responsible for connecting and administering a non-Avaya UPS.

   The holdover time for each power outage is part of the configuration of the UPS to support the G650 Media Gateway string of carriers. The UPS issues a major alarm for the following conditions:
   a. Loss of AC - then the advertised holdover time is available.
   b. UPS on Bypass - indicates the UPS has failed and must be serviced.
   c. Low battery warning is issued at approximately 5 minutes before shutdown.

**Note:**

The Avaya UPS will issue a shutdown warning 5 minutes prior to battery end of life as long as the UPS is wired as recommended. A UPS can handle any subsequent power outage based on its total battery capacity.
G650 Media Gateway power switch

⚠️ **DANGER:**

The latch on the power supply does not remove power from the G650 Media Gateway. For more information, see Figure 12: Power supply for the G650 Media Gateway. To remove the AC power from the 655A, pull the AC power cord from the back of the G650 Media Gateway. If there are redundant power supplies, you need to pull both AC power cords from the back of the G650 Media Gateway. To remove DC power, first locate and switch the external DC circuit breaker to the “off” position. Then disconnect the DC power feed at the back of the G650 Media Gateway.

---

**Figure 12: Power supply for the G650 Media Gateway**

Figure notes:

1. Power supply
Cabling the G650 Media Gateways

After mounting the G650 Media Gateways in the rack, you must connect the TDM/LAN cables between them. You must also connect CAT5 cables to the appropriate slots on the back of the media gateways.

You can mount and cable up to five media gateways in a rack. The media gateway on the bottom is referred to as media gateway A. The others are referred to as media gateways by letters:

- B,
- C,
- D, and
- E from bottom to top.

When cabling the media gateways together, see the G650 TDM/LAN Cable Installation diagram included with the shipment.

Perform these tasks to cable the G650 Media Gateway:

- Cabling two media gateways on page 54
- Cabling the third media gateway on page 55
- Cabling the fourth media gateway on page 55
- Cabling the fifth media gateway on page 56
- Installing circuit packs in the G650 Media Gateway on page 62

Refer to the diagrams at the end of these procedures for a visual representation of G650 TDM/LAN cable installation:

- Figure 13: G650 TDM/LAN cable installation (part 1) on page 57
- Figure 14: G650 TDM/LAN cable installation (part 2) on page 58
- Figure 15: G650 TDM/LAN cable installation (part 3) on page 59
- Figure 16: G650 TDM/LAN cable installation (part 4) on page 60
- Figure 17: G650 TDM/LAN cable installation (part 5) on page 61
Cabling two media gateways

To cable two media gateways:

1. If not already removed, remove the fan assemblies from media gateways A and B.
2. Remove the right TDM/LAN bus terminator from media gateway A, and install the bus terminator at the left end of the TDM/LAN bus on media gateway B.

⚠️ WARNING:
Make sure to install the TDM/LAN bus terminators with the arrow on the back pointing upward.

3. Loosen the nuts on the posts of the plate covering the bottom right TDM/LAN cable routing slot of media gateway B and remove the plate.
4. Remove the right slot cover on top of media gateway A and the lower-right slot cover of media gateway B to open the slots.
5. Pull open the EMI Gasket, and pass the TDM/LAN bus cable through the routing slots in both media gateways. Push the free end of the EMI Gasket back in place. Make sure the open corner of the gasket faces the rear of the media gateway. Once installed, the top media gateway rests on and compresses the gasket.
6. Install the lower connector of the TDM/LAN bus cable on right end of TDM/LAN bus in media gateway A.

⚠️ WARNING:
Make sure the arrows on the back of the cable terminators point upward.

7. Install the upper connector of the TDM/LAN bus cable on the right end of the TDM/LAN bus in media gateway B.

⚠️ WARNING:
Make sure the TDM/LAN bus cable is installed on the right hand side, connecting gateway A to B. It should be on the right hand side of both gateways. This is critical to ensure proper operation of the duplicated IPSI boards.
8. Flip over the routing slot plates and reinstall both. Once the plates are reinstalled, the ends of the routing slots are covered.
9. If finished, reinstall the fan assemblies and tighten the 7 screws. All knurled screws must be tightened securely so that they cannot be loosened without the use of a tool. Otherwise continue to Cabling the third media gateway on page 55.
Cabling the third media gateway

To cable the third media gateway:

1. If not already removed, remove the fan assemblies from media gateways B and C.
2. Remove the left TDM/LAN bus terminator from media gateway B, and install the bus terminator at the right end of the TDM/LAN bus in media gateway C.
3. Remove the nuts on the posts of the plates covering:
   - the bottom left TDM/LAN cable routing slot of media gateway C and
   - the top left TDM/LAN cable routing slot of media gateway B.
4. Remove the left slot cover on top of media gateway B and the lower-left slot cover of media gateway C to open the slots.
5. Pull open the EMI Gasket, and pass the TDM/LAN bus cable through the routing slots in both media gateways. Push the free end of the EMI Gasket back in place.
6. Install the lower connector of the TDM/LAN bus cable on the left end of TDM/LAN bus in media gateway B. Make sure the arrows on the back of the cable terminators point upward.
7. Install the upper connector of the TDM/LAN bus cable on the left end of the TDM/LAN bus in media gateway C.
8. Flip over the routing slot plates and reinstall both. Once the plates are reinstalled, the ends of the routing slots are covered.
9. If finished, reinstall the fan assemblies and tighten the 7 screws. All knurled screws must be tightened securely so that they cannot be loosened without the use of a tool. Otherwise continue to Cabling the fourth media gateway on page 55.

Cabling the fourth media gateway

To cable the fourth media gateway:

1. If not already removed, remove the fan assemblies from media gateways C and D.
2. Remove the right TDM/LAN bus terminator from media gateway C, and install the bus terminator at the left end of the TDM/LAN bus in media gateway D.
3. Remove the nuts on the posts of the plates covering the bottom right TDM/LAN cable routing slot of media gateway D and the top right TDM/LAN cable routing slot of media gateway C.
4. Remove the left slot cover on top of media gateway C and the lower-left slot cover of media gateway D to open the slots.
5. Pull open the EMI Gasket, and pass the TDM/LAN bus cable through the routing slots in both media gateways. Push the free end of the EMI Gasket back in place.
6. Install the lower connector of the TDM/LAN bus cable on right end of TDM/LAN bus in media gateway C. Make sure the arrows on the back of the cable terminators point upward.

7. Install the upper connector of the TDM/LAN bus cable on the right end of the TDM/LAN bus in media gateway D.

8. Flip over the routing slot plates and reinstall both. Once the plates are reinstalled, the ends of the routing slots are covered.

9. If finished, reinstall the fan assemblies and tighten the 7 screws on each media gateway. All knurled screws must be tightened securely so that they cannot be loosened without the use of a tool. Otherwise continue to **Cabling the fifth media gateway** on page 56.

---

**Cabling the fifth media gateway**

To cable the fifth media gateway:

1. If not already removed, remove the fan assemblies from media gateways D and E.

2. Remove the right TDM/LAN bus terminator from media gateway D, and install the bus terminator at the left end of the TDM/LAN bus in media gateway E.

3. Remove the nuts on the posts of the plates covering the bottom right TDM/LAN cable routing slot of media gateway E and the top right TDM/LAN cable routing slot of media gateway D.

4. Remove the left slot cover on top of media gateway D and the lower-left slot cover of media gateway E to open the slots.

5. Pull open the EMI Gasket, and pass the TDM/LAN bus cable through the routing slots in both media gateways. Push the free end of the EMI Gasket back in place.

6. Install the lower connector of the TDM/LAN bus cable on right end of TDM/LAN bus in media gateway D. Make sure the arrows on the back of the cable terminators point upward.

7. Install the upper connector of the TDM/LAN bus cable on the right end of the TDM/LAN bus in media gateway E.

8. Flip over the routing slot plates and reinstall both. Once the plates are reinstalled, the ends of the routing slots are covered.

9. Reinstall the fan assemblies and tighten the 7 screws on each media gateway. All knurled screws must be tightened securely so that they cannot be loosened without the use of a tool.
Figure 13: G650 TDM/LAN cable installation (part 1)
Figure 14: G650 TDM/LAN cable installation (part 2)
Figure 15: G650 TDM/LAN cable installation (part 3)
Figure 16: G650 TDM/LAN cable installation (part 4)
Figure 17: G650 TDM/LAN cable installation (part 5)
Installing circuit packs in the G650 Media Gateway

⚠️ CAUTION:
When handling circuit packs or any components of an G650 Media Gateway, always wear an authorized wrist ground strap. Connect the strap to the ground connector provided on the media gateway.

Circuit pack slot loading

To load circuit packs:

10. Load all port circuit packs. See Table 4: G650 Media Gateway circuit pack placement for the recommended circuit pack layouts. Slots in the G650 Media Gateway are numbered from left to right beginning with slot 0. See Figure 18: Front view of an G650 Media Gateway on page 64.

Table 4: G650 Media Gateway circuit pack placement

<table>
<thead>
<tr>
<th>Circuit pack information</th>
<th>Placement information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circuit pack name</td>
<td>Required or optional</td>
</tr>
<tr>
<td>655A power supply</td>
<td>Required</td>
</tr>
<tr>
<td>Redundant 655A power supply</td>
<td>Optional</td>
</tr>
<tr>
<td>TN2312BP IPSI</td>
<td>Required</td>
</tr>
<tr>
<td>Second TN2312BP IPSI</td>
<td>Optional</td>
</tr>
<tr>
<td>TN570B V7 or greater</td>
<td>Optional</td>
</tr>
<tr>
<td>TN570C</td>
<td>Optional</td>
</tr>
<tr>
<td>TN570D Expansion Interface for center stage switch</td>
<td>Optional</td>
</tr>
<tr>
<td>TN750, TN750B, TN750C</td>
<td>Optional, G3SI only</td>
</tr>
<tr>
<td>TN797</td>
<td>Optional</td>
</tr>
</tbody>
</table>
### Table 4: G650 Media Gateway circuit pack placement (continued)

<table>
<thead>
<tr>
<th>Circuit pack information</th>
<th>Placement information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Circuit pack name</strong></td>
<td><strong>Required or optional</strong></td>
</tr>
<tr>
<td>TN799DP (or greater suffix) CLAN</td>
<td>Optional</td>
</tr>
<tr>
<td>TN2302 media processor</td>
<td>Optional</td>
</tr>
<tr>
<td>TN2305/6 ATM</td>
<td>Optional</td>
</tr>
<tr>
<td>TN2602AP IP media resource 320</td>
<td>Required</td>
</tr>
<tr>
<td>TN750 Voice Announcement</td>
<td>Optional</td>
</tr>
<tr>
<td>TN750B Voice Announcement</td>
<td>Optional</td>
</tr>
<tr>
<td>TN750C Voice Announcement</td>
<td>Optional</td>
</tr>
<tr>
<td>TN771 maintenance/test board</td>
<td>One per customer location</td>
</tr>
<tr>
<td>TN791 Analog line 16 port</td>
<td>Optional</td>
</tr>
<tr>
<td>Port circuit packs</td>
<td>—</td>
</tr>
<tr>
<td>Trunk circuit packs</td>
<td>—</td>
</tr>
</tbody>
</table>
11. Install the TN2312BP IPSI adapter on the connector panel in slot 1 for carrier A. If you are using duplicated IPSIs, connect another IPSI adapter in position 1 for carrier B. Connect the CAT 5 ethernet cable to the adapter to connect the G650 Media Gateway to the ethernet. If you want to use the external alarm function, attach an external alarm cable to the IPSI adapter. Figure 19: G650 Media Gateway IPSI adapter shows the IPSI adapter.
12. If a circuit pack was installed in the G650 Media Gateway, install a circuit pack amphenol connector onto the backplane that corresponds to the location of the circuit pack.

   a. At the corresponding location on the backplane, slide the cable connector into the retainer.

   b. Attach the cable connector to the circuit pack amphenol connector and snap the retainer to secure the circuit pack amphenol connector in place.
Installing patch panels

Patch panels are arrays of RJ45 jacks and associated B25A cables to accommodate 2-wire, 24-port DCP/analog port boards and 8-port analog trunk boards. The panels are mounted either below or above the media gateway stack. They cannot be mounted in between media gateways.

**Note:**
The patch panels do not have to be mounted in the same rack as the media gateways. The panels can be mounted in telephone closets as appropriate.

See Figure 20: Typical RMC patch panel installation on page 67 while performing this procedure.

To install patch panels:

1. Using the supplied mounting screws, mount the patch panels on the rack below media gateway A or above the topmost media gateway.

2. Attach B25A cables to the patch panels and the circuit pack amphenol connectors.

**Note:**
Connect 24-port DCP/analog circuit packs to the 24 port patch panels.

**Note:**
Connect 8 port analog trunk, “combo,” or DID trunk circuit packs to either of the first two banks on the 8 port patch panel. If an TN2185B ISDN-BRI S/T-TE Interface (4-wire, 8 ports) circuit pack is present, connect it to the third bank on the 8 port patch panel.

Cross-connecting the media gateway to the patch panels

Cross-connect the port circuit packs to the G650 Media Gateway patch panels (or other standard 110A cross-connect equipment). See Figure 21: Example cross-connect field patch panel connections on page 68.
Figure 20: Typical RMC patch panel installation

Figure notes:

1. Circuit pack amphenol connectors and B25A cables
2. IP Server Interface adapter and green CAT5 cable
3. 24 port patch panels
4. 8 port patch panel
5. To network
### Figure 21: Example cross-connect field patch panel connections

<table>
<thead>
<tr>
<th>Port Type</th>
<th>Port Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 Port MET Line</td>
<td></td>
</tr>
<tr>
<td>4 Port Tie Trunk</td>
<td></td>
</tr>
<tr>
<td>4 Port Tie Trunk w/ E&amp;M Signaling</td>
<td></td>
</tr>
<tr>
<td>8 Port Analog</td>
<td></td>
</tr>
<tr>
<td>8 Port CO</td>
<td></td>
</tr>
<tr>
<td>8 Port Data Line</td>
<td></td>
</tr>
<tr>
<td>8 Port DID</td>
<td></td>
</tr>
<tr>
<td>8 Port Digital</td>
<td></td>
</tr>
<tr>
<td>8 Port Hybrid</td>
<td></td>
</tr>
<tr>
<td>12 Port BRI</td>
<td></td>
</tr>
<tr>
<td>16 Port Analog</td>
<td></td>
</tr>
<tr>
<td>16 Port Digital</td>
<td></td>
</tr>
<tr>
<td>24 Port Analog</td>
<td></td>
</tr>
<tr>
<td>24 Port Digital</td>
<td></td>
</tr>
<tr>
<td>DS1</td>
<td></td>
</tr>
</tbody>
</table>
Chapter 3: Connecting to the customer’s network

Media servers and many other components connect directly to the customer’s network. The following sections provide information for various IP components.

- **TN799DP Control LAN** on page 69
- **TN2302AP IP Media Processor** on page 69
- **TN801B MAP-D LAN Gateway** on page 71
- **TN2501AP Voice Announcement over LAN (VAL)** on page 71

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### TN799DP Control LAN

The TN799DP Control-LAN (C-LAN) circuit pack serves multiple purposes:

- A connection for the signaling (telephone) network to the customer’s data network for IP telephones.
- A source board for downloading firmware to circuit packs having the "P" designation.
- An IP interface for adjuncts such as Intuity Audix.
- An IP interface for DCS connection with another Avaya configuration.

For general information, see the *Hardware Description and Reference for Avaya Communication Manager* (555-245-207).

For information on installing a TN799DP C-LAN circuit pack, see "TN799DP Control C-LAN" in *Adding New Hardware for Avaya Media Servers and Gateways* (03-300684).

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### TN2302AP IP Media Processor

The TN2302AP IP Media Processor circuit pack provides an interface between a customer’s IP network and Avaya media gateways. This interface transports voice and FAX between the media gateways and IP devices, such as H.323 V2 compliant endpoints, and other Avaya telephone systems. Each TN2302AP can support between 32 and 64 voice channels, depending on the codecs used.
TN2602AP IP Media Resource 320

The TN2602AP IP Media Resource 320 provides high-capacity voice over Internet protocol (VoIP) audio access to the switch for local stations and outside trunks. The IP Media Resource 320 provides audio processing for the following types of calls:

- TDM-to-IP and IP-to-TDM
- IP-to-IP

The TN2602AP IP Media Resource 320 circuit pack has two capacity options. The license file installed on Communication Manager determines both of these options:

- 320 voice channels, considered the standard IP Media Resource 320
- 80 voice channels, considered the low-density IP Media Resource 320

You can install up to two TN2602AP circuit packs in a single port network for load balancing. The TN2602AP circuit pack is also compatible with and can share load balancing with the TN2302 IP Media Processor circuit pack. Actual capacity can be affected by a variety of factors, including the codec used for a call and fax support.

Two TN2602AP circuit packs may be installed in a single port network (PN) for bearer duplication. In this configuration, one TN2602AP is an active IP media processor and one is a standby IP media processor. If the active media processor fails, active connections failover to the standby media processor and remain active. This duplication prevents active calls in progress from being dropped in case of failure. The interchange between duplicated circuit packs affects only the PN in which the circuit packs reside.

Note:

The TN2602AP IP Media Resource 320 is not supported in CMC1 and G600 Media Gateways.

For information on installing a TN2602 IP Media Resource circuit pack, see "TN2602 IP Media Resource 320" in Adding New Hardware for Avaya Media Servers and Gateways (03-300684).
TN801B MAP-D LAN Gateway

The TN801 LAN gateway circuit pack is part of the Multi-Application Platform DEFINITY (MAPD). It allows direct integration of a PC-based application into the configuration. The TN801 LAN gateway circuit pack works as the interface for solutions such as CTI, CallVisor and PC/LAN.

For installation and administration information, see the DEFINITY ECS CallVisor ASAI DEFINITY LAN Gateway over MAPD: Installation, Administration, and Maintenance (555-230-114).

TN2501AP Voice Announcement over LAN (VAL)

The TN2501AP Voice Announcement Over LAN (VAL) circuit pack is an integrated announcement circuit pack that:

- offers up to 1 hour of announcement storage capacity.
- requires shorter backup and restore times.
- is firmware downloadable.
- plays announcements over the TDM bus.
- has 33 ports, including:
  - one dedicated telephone port for recording and playing back announcements (port number 1).
  - one ethernet port (port number 33).
  - 31 playback ports (ports 2–32).
- 10/100 Mb Ethernet interface, allowing announcement and firmware file portability over your LAN (FTP server functions).
- supports *.wav announcement files.
Important file specifications

Voice Announcement over LAN (VAL) requires that announcement files are in the following *.wav formats:

- CCITT A-Law or CCITT μ-Law (mu-Law) companding format (do not use PCM)
- 8-kHz sample rate
- 8-bit resolution (bits per sample)
- Mono (channels = 1)

You must convert other wave (*.wav) file formats to those listed. Telephone access creates the correct file formats.

Caveats

Remember the following points when using the TN2501AP integrated announcement circuit pack for the first time:

- Despite the feature name, announcements are not played over the LAN but can be transferred to and from the TN2501AP Voice Over LAN (VAL) circuit pack.
- You cannot save or restore announcements to a TN2501AP circuit pack to or from:
  - a TN750C circuit pack
  - flashcards
  - tape
  - magneto optical disks.

Note:

The P board suffix designation means the circuit pack is firmware-downloadable. For the download procedures, see "Upgrade Selected Port Circuit Pack Firmware" in Upgrading Software and Firmware - Avaya S8500, S8700, and S8710 Media Servers (555-245-111).

For more information, see the Hardware Description and Reference for Avaya Communication Manager (555-245-207).

For information on installing a TN2501AP VAL circuit pack, see "TN2501AP Voice announcement over LAN (VAL)" in Adding New Hardware for Avaya Media Servers and Gateways (03-300684).
Chapter 4: Testing the complete configuration

This section provides tests for the complete configuration, including the control and signaling networks and the telephones and consoles.

This section provides tests to:

● review the status of the configuration.
● test the duplication link to the media servers (S8700 only)
● test the IP server interfaces, expansion interfaces, and TDM buses in the port networks.
● test the telephones and other equipment.

For information regarding the LED status indicators for the Avaya Ethernet switch(es), uninterruptible power supplies (UPSs), and different circuit packs, see LED indicators on page 86.

Note:
Cabinet and slot usually indicate circuit pack positions. The position can also be given by port. The term “cabinet” refers to five G650 Media Gateways TDM-cabled together in a rack, making up one port network. A port network is defined as a group of media gateways connected together with one TDM bus.

Perform these tasks to test the configuration:

⚠️ CAUTION:
To prevent unnecessary trouble tickets, do not enable the alarms, Alarm Origination feature, until all installation and administration procedures are completed.

1. Testing port network equipment on page 74
2. Checking port network status for each media gateway on page 74
3. Checking circuit pack configuration on page 75
4. Testing the TN2312BP Internet Protocol Server Interface circuit pack on page 76
5. Testing Expansion Interface circuit packs, if used on page 77
6. Testing time division multiplexing bus for each port network on page 78
7. Testing expansion interface exchange, if used, for each port network on page 79
8. Testing telephones and other equipment on page 80
Testing the complete configuration

Testing port network equipment

These tests verify that the time division multiplexing (TDM) cables and terminators work. If a **FAIL** Result code is seen, check these cables. If problems persist, see the maintenance book for your configuration.

Checking port network status for each media gateway

The port network status can suggest problem areas. Tests described later provide more specific diagnostic information.

To check the port network status for each media gateway:

1. Type `status port-network number <1-64>` and press **Enter**.
2. Verify the screen displays a **Port Network Status** screen similar to Figure 22: Sample port network status screen for Cabinet 1—Avaya S8500 on page 75.

   Verify these service states:

<table>
<thead>
<tr>
<th>Field</th>
<th>Service State</th>
</tr>
</thead>
<tbody>
<tr>
<td>TDM Bus A</td>
<td>in</td>
</tr>
<tr>
<td>TDM Bus B</td>
<td>in</td>
</tr>
<tr>
<td>Tone/Clock</td>
<td>in</td>
</tr>
<tr>
<td>PKT</td>
<td>in</td>
</tr>
</tbody>
</table>
Checking circuit pack configuration

The list configuration report provides a list of circuit packs connected to the configuration and recognized by the software. To check circuit pack configuration:

1. Type `list configuration all` and press Enter.

2. Verify the screen displays list configuration similar to Figure 23: Sample system configuration screen — Page 4, Avaya S8700 Multi-Connect on page 76. Ensure that the software is communicating with each circuit pack (except power supply circuit packs). Do not attempt to correct any problems until after the diagnostic tests that you run later in the configuration tests.

3. Note any boards with a **VINTAGE** column entry of **NO BOARD** or **CONFLICT**.

   A **u** indicates unassigned ports, and a number indicates the port was translated.
Testing the complete configuration

Figure 23: Sample system configuration screen — Page 4, Avaya S8700 Multi-Connect

<table>
<thead>
<tr>
<th>Board Number</th>
<th>Board Type</th>
<th>Code</th>
<th>Vintage</th>
<th>Assigned Ports</th>
</tr>
</thead>
<tbody>
<tr>
<td>01B01</td>
<td>IP SERVER INTFC</td>
<td>TN2312BP</td>
<td>FW045</td>
<td>01 02 03 04 05 06 07 08</td>
</tr>
<tr>
<td>01B02</td>
<td>EXPANSION INTRFC</td>
<td>TN570C</td>
<td>000002</td>
<td>01 02 03 04 05 06 07 08</td>
</tr>
<tr>
<td>01B03</td>
<td>DS1 INTERFACE</td>
<td>TN464HP</td>
<td>000020</td>
<td>01 02 03 04 05 06 07 08</td>
</tr>
<tr>
<td>01B05</td>
<td>DS1 INTERFACE</td>
<td>TN464HP</td>
<td>000020</td>
<td>01 02 03 04 05 06 07 08</td>
</tr>
<tr>
<td>01B06</td>
<td>DS1 INTERFACE</td>
<td>TN464HP</td>
<td>000006</td>
<td>01 02 03 04 05 06 07 08</td>
</tr>
</tbody>
</table>

Testing the TN2312BP Internet Protocol Server Interface circuit pack

To test the TN2312BP Internet Protocol Server Interface circuit pack with Avaya Site Administration:

1. Type `test ipserver-interface UUC` and press `Enter` to test all clock and packet interface components within the IPSI circuit pack.

2. Verify the screen displays **Test Results** screen similar to Figure 24: Sample IPSI 01A test results screen — Page 1, Avaya S8700 Multi-Connect on page 77.
Testing Expansion Interface circuit packs, if used

To check each Expansion Interface (EI) circuit pack in the media gateway.

1. Type `test board τυςς` where `τυςς` is the cabinet, and slot for an EI circuit pack in the media gateway, and press `Enter`.

   **Note:**
   
   Labels on the port network and on the strip under the circuit pack contain this information.

2. Verify the screen displays test results similar to Figure 25: Sample test results for Expansion Interface Board 2A01 on page 78. This example is for board 2a01.

3. If any result is **FAIL**, check the connections for the fiber optic link.

4. Repeat Steps 1 and 2 for each Expansion Interface circuit pack.
Testing the complete configuration

Figure 25: Sample test results for Expansion Interface Board 2A01

<table>
<thead>
<tr>
<th>Port</th>
<th>Maintenance Name</th>
<th>Alt. Name</th>
<th>Test No.</th>
<th>Result</th>
<th>Error Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>02A01</td>
<td>EXP-INTF</td>
<td></td>
<td>237</td>
<td>PASS</td>
<td></td>
</tr>
<tr>
<td>02A01</td>
<td>EXP-INTF</td>
<td></td>
<td>238</td>
<td>PASS</td>
<td></td>
</tr>
<tr>
<td>02A01</td>
<td>EXP-INTF</td>
<td></td>
<td>240</td>
<td>PASS</td>
<td></td>
</tr>
<tr>
<td>02A01</td>
<td>EXP-INTF</td>
<td></td>
<td>241</td>
<td>PASS</td>
<td></td>
</tr>
<tr>
<td>02A01</td>
<td>EXP-INTF</td>
<td></td>
<td>244</td>
<td>PASS</td>
<td></td>
</tr>
<tr>
<td>02A01</td>
<td>EXP-INTF</td>
<td></td>
<td>316</td>
<td>PASS</td>
<td></td>
</tr>
</tbody>
</table>

Testing time division multiplexing bus for each port network

To check each TDM bus for each port network (PN) in the configuration.

1. Type `test tdm port-network 1` and press Enter.

2. Verify that the system displays a Test Results screen similar to Figure 26: Sample test results for TDM bus port network 1 on page 78.

3. If result is FAIL for any test, check the connectors of the TDM bus cables in PN 2.

4. Repeat these steps for each PN to check the TDM bus cables.

Figure 26: Sample test results for TDM bus port network 1

```
test tdm port-network 1

TEST RESULTS

<table>
<thead>
<tr>
<th>Port</th>
<th>Maintenance Name</th>
<th>Alt. Name</th>
<th>Test No.</th>
<th>Result</th>
<th>Error Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>PN 01A</td>
<td>TDM-BUS</td>
<td></td>
<td>294</td>
<td>PASS</td>
<td></td>
</tr>
<tr>
<td>PN 01A</td>
<td>TDM-BUS</td>
<td></td>
<td>296</td>
<td>PASS</td>
<td></td>
</tr>
<tr>
<td>PN 01A</td>
<td>TDM-BUS</td>
<td></td>
<td>297</td>
<td>ABORT</td>
<td>1005</td>
</tr>
<tr>
<td>PN 01B</td>
<td>TDM-BUS</td>
<td></td>
<td>294</td>
<td>PASS</td>
<td></td>
</tr>
<tr>
<td>PN 01B</td>
<td>TDM-BUS</td>
<td></td>
<td>296</td>
<td>ABORT</td>
<td>1005</td>
</tr>
<tr>
<td>PN 01B</td>
<td>TDM-BUS</td>
<td></td>
<td>297</td>
<td>PASS</td>
<td></td>
</tr>
</tbody>
</table>
```
If the configuration is critical reliability, test the expansion interface exchange for each PN.

1. Type `status port-network number <1-64>` and press Enter.
   
The system displays the standby expansion link. See Figure 27: Sample of port network status before expansion link is set on page 79.

2. Type `set expansion-link UUCSS`, where `UUCSS` is one of the cabinet, and port locations of the standby expansion link, and press Enter.

3. Verify that system displays the following message at the bottom of the screen:
   
   Command successfully completed

4. Type `status port-network number <1-64>` and press Enter.
   
The system displays a screen similar to Figure 28: Sample of port network status after expansion link is set on page 80.

5. Verify that the MODEs of the expansion links have changed.

6. If any problems are indicated, check the TDM cables and the inter-cabinet cables (ICC) in the associated port network.

Figure 27: Sample of port network status before expansion link is set

```
status port-network

<table>
<thead>
<tr>
<th>Major</th>
<th>Minor</th>
<th>Warning</th>
<th>Carrier</th>
<th>PNC Status</th>
<th>ATM</th>
<th>PNC</th>
</tr>
</thead>
<tbody>
<tr>
<td>PN</td>
<td>Alarms</td>
<td>Alarms</td>
<td>Locs</td>
<td>Active</td>
<td>Standby</td>
<td>Conn</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>1</td>
<td>19</td>
<td>up</td>
<td>2</td>
<td>A-PNC</td>
</tr>
<tr>
<td>01A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>01C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>01D</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TDM Service Control

<table>
<thead>
<tr>
<th>Service</th>
<th>Major</th>
<th>Minor</th>
<th>Bus</th>
<th>Open Bus</th>
</tr>
</thead>
<tbody>
<tr>
<td>PKT State</td>
<td>Alarms</td>
<td>Alarms</td>
<td>Faults</td>
<td>Leads</td>
</tr>
<tr>
<td>1 in</td>
<td>n</td>
<td>n</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
```

Figure 28: Sample of port network status after expansion link is set
Testing the complete configuration

Figure 28: Sample of port network status after expansion link is set

<table>
<thead>
<tr>
<th>status port-network</th>
<th>PORT NETWORK STATUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major Alarms</td>
<td>Minor Alarms</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>01B</td>
<td></td>
</tr>
</tbody>
</table>

| TDM Service Control Dedicated | TONE/ Service System System |
| Bus State Channel Tones | CLOCK State Clock Tones |
| A in y n | 01B in standby standby |
| B in n y | 01A in active active |

Command:

7. If required, type `save translations` and press Enter to save the translations to the hard drive.

Testing telephones and other equipment

This section describes how to test the telephones and other equipment. Perform these tests after the equipment has been wired to the media gateway and after administration of the customer data for that equipment. The tests are acceptance tests and provide some assurance that the system will perform properly after installation and administration.

If problems occur or more extensive tests are required, see the maintenance book for your configuration.

Perform these tasks to complete acceptance tests:

- Making test calls on page 81
- Testing 302C attendant console on page 81
- Testing selector console on page 82
- Testing external ringing on page 82
Making test calls

Make two calls from one telephone to another telephone. Make the first call by dialing a telephone and make the second call by dialing a trunk access code and a listed directory number (LDN).

Testing 302C attendant console

To verify that all lamps are operational and call another telephone in the configuration:

1. Simultaneously press and hold Ringer Volume up and POS BUSY.
   This action puts the console in the self-test mode.

   **Note:**
   Releasing the buttons returns the console to normal mode.

2. Verify all lamps on display light and remain lighted.
   Each row of lamps on the console lights and goes dark in sequence from top to bottom.

3. Press Start and listen for dial tone.
   The green lamp associated with Idle Call Appearance lights up.
   The Position Available lamp goes dark.

4. Dial a number associated with a working telephone.
   Audible ringing tone is heard in ear piece.

5. Press Release.
   Audible ringing tone is silenced. The green lamp associated with idle call appearance button goes dark. The Position Available lamp lights.
Testing selector console

To verify that all selector console lamps are operational and make a call to a telephone in the configuration:

1. Simultaneously press and hold Ringer Volume up and POS BUSY on the attendant console.
   This action puts the console in the self-test mode.
   Each row of lamps on the selector console lights and goes dark in sequence from top to bottom.
2. Press hundreds group select button.
   The hundreds group select lamp lights and any lamps associated with busy telephone light.
3. Press Direct Extension Selection (DXS) for the desired extension.
   Audible ringing tone is heard in the ear piece on attendant console.
   Audible ringing tone is silenced.

Testing external ringing

Make a test call to the attendant console to verify ringing device sounds when the Night lamp on console is lighted. If the ringing device was not installed by customer, connect a spare telephone to the information outlet reserved for ringing device. Then, make a test call.

Testing queue warning indicator

Make a test call to an extension associated with a uniform call distribution (UCD) or direct department calling (DDC) group. Verify the queue warning indicator lamp lights up. If the queue warning indicator was not installed by customer, connect a spare telephone to the information outlet reserved for queue warning indicator and make a test call.
Testing integrated announcement

The TN2501AP Announcement circuit packs can store messages. The messages can be recorded from telephones on- or off-premises and have flexible message lengths. The telephone selected as the test telephone must have a class of service (COS) with console permission enabled.

Record an announcement

To record an announcement:

1. Select a test telephone with console permissions enabled.
2. Dial the access code followed by the integrated announcement extension number.
3. When you hear a dial tone, press 1. When you hear a beep or stutter tone, speak the announcement into the telephone.
4. When done, press # if a digital telephone or hang up if an analog phone to stop the recording.

You then hear a dial tone.

Playback announcement

To play back an announcement:

1. If using a digital telephone, press 2 to hear the announcement. When the announcement is over, you hear a dial tone. If satisfied, hang up.
2. If using an analog telephone, dial the integrated announcement extension number to hear the announcement.

When the announcement is over, you hear a dial tone. If satisfied, hang up.

Delete announcement

To delete an announcement:

1. Dial the access code followed by the integrated announcement extension number.
2. When you hear a dial tone, press 3 to delete the announcement and end the recording session.

A confirmation tone is heard when the announcement is deleted.
Testing music-on-hold

Verify music is provided to a held party during any hold interval.

Testing emergency transfer (S8700-series Multi-Connect only)

Put the configuration in emergency transfer mode and make a call with an emergency transfer telephone. There can be up to four Emergency Transfer panels on a wall in the telephone closet, depending on the configuration.

Testing terminating trunk transmission

The terminating trunk transmission test provides extension number access to 3 tone sequences. These tone sequences can be used for trunk transmission testing from the distant end of the trunks. To test terminating trunk transmission:

1. Type `change system-parameters maintenance` and press Enter and go to screen 2.

2. Under TERMINATING TRUNK TRANSMISSION TEST (Extension), type in 3 extension numbers in the 3 fields provided:
   
   Test Type 100:_______ Test Type 102:_______ Test Type 105:_______

<table>
<thead>
<tr>
<th>Test type</th>
<th>Test features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test type 100</td>
<td>5.5 seconds of 1004 Hz tone at 0 dB</td>
</tr>
<tr>
<td></td>
<td>Quiet until disconnect. Disconnect is forced after 1 minute</td>
</tr>
</tbody>
</table>
To test the external IP connections for the C-LAN, IP Media Processor, and VAL circuit packs, you must ping both the circuit pack and a known computer connected to your network. If everything is configured correctly, the Result column on the Ping Results screen reads PASS. If it reads ABORT, verify the IP-address information and check the connectivity, including the cabling.

To test connectivity to the LAN:

1. Type `ping ip-address IPaddress board UUCSS` where the variable `IPaddress` is the IP address of the circuit pack and `UUCSS` is the cabinet, and slot of the circuit pack.

2. Press Enter,

3. Type `ping ip-address IPaddress board UUCSS` and press Enter, where the variable `IPaddress` is the IP address of another computer beyond the gateway and `UUCSS` is the cabinet, and slot of the circuit pack.

<table>
<thead>
<tr>
<th>Test type</th>
<th>Test features</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test Type 102</td>
<td>9 seconds of 1004 Hz tone at 0 dB</td>
</tr>
<tr>
<td></td>
<td>1 second of silence</td>
</tr>
<tr>
<td></td>
<td>Cycle is repeated until disconnect, which is forced after 24 hours</td>
</tr>
<tr>
<td>Test Type 105</td>
<td>9 seconds of 1004 Hz tone at -16 dB</td>
</tr>
<tr>
<td></td>
<td>1 second of silence</td>
</tr>
<tr>
<td></td>
<td>9 seconds of 404 Hz tone at -16 dB</td>
</tr>
<tr>
<td></td>
<td>1 second of silence</td>
</tr>
<tr>
<td></td>
<td>9 seconds of 2804 Hz tone at -16 dB</td>
</tr>
<tr>
<td></td>
<td>30 seconds of silence</td>
</tr>
<tr>
<td></td>
<td>0.5 seconds of test progress tone (2225 Hz)</td>
</tr>
<tr>
<td></td>
<td>About 5 seconds of silence</td>
</tr>
<tr>
<td></td>
<td>Forced disconnect</td>
</tr>
</tbody>
</table>
LED indicators

To access detailed alarm and LED descriptions, see the maintenance book for your system. If a maintenance object starts to fail some periodic tests, the media server generates an alarm. The media server identifies three levels of alarms:

- **Major Alarms** — Failures that cause critical degradation of service and require immediate attention.
- **Minor Alarms** — Failures that cause some degradation of service, but do not cause a critical portion of the configuration to be inoperable. This condition requires action, but its consequences are not immediate. Problems might be impaired service to a few trunks or stations or interfering with one feature across the entire configuration.
- **Warning Alarms** — Failures that cause no significant degradation of service or failures in equipment external to the configuration. Warning alarms are not reported to the attendant console or **INADS**.

Alarms are communicated to users and technicians by entries in the alarm and sys logs and the lighting of **LEDs**. The **LEDs** are located on the attendant console, on all circuit packs, and, optionally, on customer-designated telephones.

More detailed information is available here for:

- **Telephone console LEDs** on page 86
- **DS1 Converter circuit pack LEDs** on page 87
- **SPAN LEDs** on page 88

Telephone console LEDs

Telephones and attendant consoles have some alarm LEDs that must be checked out.

Attendant console LEDs

The console has two red **LEDs**, labeled “ALM” and “ACK”. The ALM LED lights steadily when there is a major or minor alarm at the media server. The ACK LED lights steadily if the alarm was successfully reported to **INADS**. If the media server cannot report the alarm to **INADS**, the **LED** flashes. This flashing **LED** signals the attendant to call **INADS** and report the alarm.
Terminal alarm notification

Terminal Alarm Notification is an optional feature that displays several types of alarms on telephones with administered feature buttons or the attendant console. A maximum of 10 digital and/or hybrid telephones can be used.

When an alarm occurs, the green status LED associated with the assigned button is in a steady state. Turn off the LED by pressing the button associated with the LED. If the LED is off and the alarm was not resolved by the time maintenance reschedules testing, the green status LED resumes its steady state.

DS1 Converter circuit pack LEDs

Eleven LEDs provide an indication of the state of the DS1 Converter circuit pack (Figure 29: TN1654 DS1 Converter circuit pack LEDs) and the T1/E1 facilities. The top group has the standard red, green and yellow LEDs. The red LED indicates an alarm condition and the green LED indicates testing in progress. The four SPAN LEDs indicate the status of the T1/E1 facilities. The four STATUS LEDs currently are unused and remain off.

Figure 29: TN1654 DS1 Converter circuit pack LEDs

Figure notes:

1. Alarm LED (Red)  
2. Test LED (Green)  
3. Busy LED (Yellow)  
4. STATUS LEDs  
5. SPAN LEDs
The yellow **LED** indicates the state of the:

- fiber interface,
- fiber channel,

- **control** channel, and

- communications link to the SPE. For the order of priority of the **LEDs**, see Table 5: DS1 Converter yellow LED flashing states.

**Table 5: DS1 Converter yellow LED flashing states**

<table>
<thead>
<tr>
<th>LED on</th>
<th>LED off</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1 second</td>
<td>0.1 second</td>
<td>Fiber out-of-frame or fiber loss of signal.</td>
</tr>
<tr>
<td>0.5 second</td>
<td>0.5 second</td>
<td>In frame, fiber channel. The fiber channel communicating between the DS1 Converter and the other fiber endpoint (EI or SNI) is not operating.</td>
</tr>
<tr>
<td>1 second</td>
<td>1 second</td>
<td>In frame, <strong>control</strong> channel. The control channel between the two DS1 Converters in the DS1 Converter complex is not operating.</td>
</tr>
<tr>
<td>2 seconds</td>
<td>0.2 second</td>
<td>No response from the media server. The media server is not acknowledging messages from the DS1 Converter or the communications link to the media server is not operating.</td>
</tr>
<tr>
<td>solid on</td>
<td>solid off</td>
<td>DS1 Converter active. This indication is the normal state for an active DS1 Converter.</td>
</tr>
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**SPAN LEDs**

The four SPAN LEDs indicate the status of the four T1/E1 facilities. A SPAN LED is in one of the following states:

- Solid on yellow: Facility is operational and alarm free.

- Blinking yellow for 2 seconds, off 0.1 seconds: Facility is operational and alarm free AND is carrying the control channel (facility A or B only).

- Solid on red: Facility is alarmed.

- Solid off: Facility is not administered or was busied out.
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