

Hardware Installation Manual

AudioCodes Series of Multi-Service Business Routers (MSBR)

Mediant™ 800 MSBR



Table of Contents

1	Introduction	11
2	Unpacking the Device	13
3	Physical Description	15
3.1	Physical Dimensions.....	15
3.2	Front Panel Description	15
3.2.1	Ports and Buttons.....	15
3.2.2	LEDs	18
3.2.2.1	LAN Interface LED.....	18
3.2.2.2	Power-over-Ethernet LAN LED	18
3.2.2.3	Wi-Fi LED	19
3.2.2.4	WAN LEDs.....	19
3.2.2.5	FXS LED	21
3.2.2.6	FXO LED	21
3.2.2.7	BRI LED.....	22
3.2.2.8	PRI (E1/T1) LED.....	22
3.2.2.9	STATUS LED.....	22
3.2.2.10	Power LEDs.....	23
3.3	Rear Panel Description	24
4	Attaching the Wi-Fi Antennas	27
5	Mounting the Device	29
5.1	Desktop Mounting.....	29
5.2	19-Inch Rack Mounting	30
5.2.1	Using a Pre-Installed Rack Shelf	30
5.2.2	Using Mounting Brackets	31
6	Cabling the Device	33
6.1	Grounding and Surge Protection.....	33
6.2	Connecting to WAN	35
6.2.1	Copper Gigabit Ethernet (GE) Cabling	35
6.2.2	Fiber-Optic Gigabit Ethernet Cabling	36
6.2.3	SHDSL WAN Cabling.....	38
6.2.4	ADSL/2+ and VDSL2 WAN Cabling	40
6.2.5	E1/T1 WAN Cabling	42
6.2.6	3G/4G Cellular WAN USB Modem Cabling	44
6.3	Connecting to LAN.....	45
6.4	Connecting PoE-Enabled Clients to LAN Ports.....	46
6.5	Analog Interfaces.....	47
6.5.1	Connecting FXS Interfaces	47
6.5.2	Connecting FXO interfaces.....	48
6.5.3	Connecting the FXS Analog Lifeline	50
6.6	ISDN BRI Interfaces	51
6.6.1	Connecting to BRI Lines	51
6.6.2	Connecting the PSTN Fallback for BRI Lines.....	53
6.7	Connecting to ISDN PRI (E1/T1) Trunks.....	54
6.8	Connecting the Serial Interface to a PC	56
6.9	Connecting a USB Storage Device	58
6.10	Connecting the OSN Server.....	59

6.11	Connecting to Power	61
6.11.1	Connecting to AC Power.....	61
6.11.2	Connecting to DC Power	62
7	Maintenance.....	65
7.1	Replacing the Power Fuse.....	65
A	Approved Laser SFPs	67
B	Notice for Installing CentOS Version 4.7 on OSN Server.....	69

List of Figures

Figure 3-1: Front Panel - Mediant 800B MSBR	15
Figure 3-2: Front Panel - Mediant 800C MSBR	16
Figure 3-3: Rear Panel - Mediant 800B MSBR	24
Figure 3-4: Rear Panel - Mediant 800C MSBR	24
Figure 4-1: Attaching Antennas on Rear Panel	27
Figure 5-1: Location for Applying Rubber Feet	29
Figure 5-2: Mounting Brackets	31
Figure 5-3: Attaching the Mounting Brackets	31
Figure 6-1: Earthing the Device	34
Figure 6-2: Cabling WAN Copper GE Port – Mediant 800B MSBR	36
Figure 6-3: Cabling WAN Copper GE Port – Mediant 800C MSBR	36
Figure 6-4: Removing Protective Dust Plug – Mediant 800B MSBR	37
Figure 6-5: Removing Protective Dust Plug – Mediant 800C MSBR	37
Figure 6-6: Cabling Fiber-Optic WAN GbE Port – Mediant 800B MSBR	38
Figure 6-7: Cabling Fiber-Optic WAN GbE Port – Mediant 800C MSBR	38
Figure 6-8: Cabling the SHDSL WAN Port	39
Figure 6-9: Cabling xDSL WAN Port – Mediant 800B MSBR	41
Figure 6-10: Cabling xDSL WAN Port – Mediant 800C MSBR	42
Figure 6-11: RJ-45 Connector Pinouts for E1/T1 WAN	42
Figure 6-12: Splitter Cable for Single E1/T1 WAN Port	43
Figure 6-13: Connecting E1/T1 WAN Port – Mediant 800B MSBR	43
Figure 6-14: Connecting T1 WAN Port – Mediant 800C MSBR	43
Figure 6-15: Plugging 3G/4G Cellular Modem into USB Port – Mediant 800B MSBR	44
Figure 6-16: Plugging 3G/4G Cellular Modem into USB Port – Mediant 800C MSBR	44
Figure 6-17: Cabling LAN Ports – Mediant 800B MSBR	45
Figure 6-18: Cabling LAN Ports – Mediant 800C MSBR	46
Figure 6-19: RJ-11 Connector Pinouts for FXS Interface	47
Figure 6-20: Connecting FXS Interfaces – Mediant 800B MSBR	48
Figure 6-21: Connecting FXS Interfaces – Mediant 800C MSBR	48
Figure 6-22: RJ-11 Connector Pinouts for FXO Interface	49
Figure 6-23: Connecting FXO Interfaces	49
Figure 6-24: RJ-11 Connector Pinouts for FXS Lifeline	50
Figure 6-25: Cabling FXS Lifeline – Mediant 800B MSBR	50
Figure 6-26: Cabling FXS Lifeline – Mediant 800C MSBR	51
Figure 6-27: RJ-45 Connector Pinouts for BRI Ports	51
Figure 6-28: Cabling BRI Ports – Mediant 800B MSBR	52
Figure 6-29: Cabling BRI Ports – Mediant 800C MSBR	52
Figure 6-30: Cabling BRI PSTN Fallback – Mediant 800B MSBR	53
Figure 6-31: Cabling BRI PSTN Fallback – Mediant 800C MSBR	54
Figure 6-32: RJ-48c Connector Pinouts for E1/T1	54
Figure 6-33: Cabling E1/T1 Ports – Mediant 800B MSBR	55
Figure 6-34: Cabling E1/T1 Ports – Mediant 800C MSBR	55
Figure 6-35: RS-232 Cable Adapter	56
Figure 6-36: Cabling Serial Interface - Mediant 800B MSBR	57
Figure 6-37: Cabling Serial Interface - Mediant 800C MSBR	57
Figure 6-38: Connecting USB Storage Device – Mediant 800B MSBR	58
Figure 6-39: Connecting USB Storage Device – Mediant 800C MSBR	58
Figure 6-40: Cabling OSN Server Ports	60
Figure 6-41: Connecting to the Power Supply	62
Figure 6-42: Connecting DC Power Plug to DC Inlet	63
Figure 6-43: Plugging AC Power Cord into AC/DC Adaptor	64
Figure 7-1: Opening the Fuse Cavity	65
Figure 7-2: Removing the Power Fuse	65

List of Tables

Table 3-1: Physical Dimensions	15
Table 3-2: Front-Panel Description of Ports and Buttons	16
Table 3-3: LAN LED Description.....	18
Table 3-4: PoE LAN LED Description.....	18
Table 3-5: Wi-Fi LED Description	19
Table 3-6: GE WAN LED Description	19
Table 3-7: E1/T1 WAN LED Description.....	19
Table 3-8: SHDSL WAN LED Description	20
Table 3-9: A/VDSL WAN LED Description	20
Table 3-10: WAN SFP LED Description	21
Table 3-11: FXS LED Description.....	21
Table 3-12: FXO LED Description	21
Table 3-13: BRI LED Description.....	22
Table 3-14: E1/T1 LED Description	22
Table 3-15: STATUS LED Description	22
Table 3-16: POWER LED Description	23
Table 3-17: AC PWR LED Description	23
Table 3-18: DC PWR LED Description	23
Table 3-19: Rear Panel Description.....	24
Table 6-1: RJ-45 Connector Pinouts for Copper GE WAN.....	35
Table 6-2: RJ-11 Connector Pinouts for SHDSL	39
Table 6-3: RJ-11 Connector Pinouts for xDSL	40
Table 6-4: RJ-45 Connector Pinouts for xDSL	41
Table 6-5: RJ-45 Connector Pinouts for GbE/FE with PoE	45
Table 6-6: RJ-45 to DB-9 Serial Cable Connector Pinouts	56
Table 6-7: OSN Server Platforms	59
Table 6-8: AC Power Specifications	61
Table 6-9: DC Power Specifications	62
Table 7-1: Allowed Fuses for the Device	65
Table A-1: Approved SFP Modules	67

Notice

Information contained in this document is believed to be accurate and reliable at the time of printing. However, due to ongoing product improvements and revisions, AudioCodes cannot guarantee accuracy of printed material after the Date Published nor can it accept responsibility for errors or omissions. Updates to this document can be downloaded from <https://www.audiocodes.com/library/technical-documents>.

This document is subject to change without notice.

Date Published: September-10-2020

WEEE EU Directive

Pursuant to the WEEE EU Directive, electronic and electrical waste must not be disposed of with unsorted waste. Please contact your local recycling authority for disposal of this product.

Customer Support

Customer technical support and services are provided by AudioCodes or by an authorized AudioCodes Service Partner. For more information on how to buy technical support for AudioCodes products and for contact information, please visit our website at <https://www.audiocodes.com/services-support/maintenance-and-support>.

Stay in the Loop with AudioCodes



Abbreviations and Terminology

Each abbreviation, unless widely used, is spelled out in full when first used.

Throughout this manual, unless otherwise specified, the term *device* refers to Mediant 800 MSBR.

Related Documentation

Document Name
MSBR Series Release Notes
Mediant 800 MSBR SIP User's Manual
CLI Reference Guide

Notes and Warnings



Warning: The device is an **INDOOR** unit and therefore, must be installed **only** indoors.



Note: Open source software may have been added and/or amended for this product. For further information, please visit our website at <https://www.audiocodes.com/services-support/open-source/> or contact your AudioCodes sales representative.



Caution Electrical Shock

Do not open or disassemble this device. The device carries high voltage and contact with internal components may expose you to electrical shock and bodily harm.



Warning: The device must be installed and serviced only by qualified service personnel.



Warning: For deployment in Finland, Sweden and Norway, the device must be installed **ONLY** in restricted access locations that are compliant with ETS 300253 guidelines here equipotential bonding has been implemented.



Warning: Disconnect the device from the mains and Telephone Network Voltage (TNV) before servicing.

Document Revision Record

LTRT	Description
10210	Initial document release for Version 6.8.
10220	SHDSL LEDs added.
10221	A/VDSL and SHDSL LEDs updated.
10222	E1 cabling warning statement regarding STP.
10223	Power surge protection warnings.
10224	DSL connector pinouts updated.
10225	AC power cable warning (Japanese); STATUS LED update.
10225	A/VDSL port (RJ-45) cabling.
10227	BRI/PRI cabling warning.
10228	Typo fixed re 19-inch rack mounting brackets.

LTRT	Description
10229	Logo updated;
10230	Lifeline splitter cable – not supplied.
10231	Mediant 800C added; figures updated with new corporate logo; power fuse updated; AC power rating updated; warnings added for grounding; cable type for LAN updated; SFP for WAN copper added
10232	Cooling guidelines for mounting.
10233	Cellular modem (3.5G replaced by 4G).
12234	Amperage values updated.

Documentation Feedback

AudioCodes continually strives to produce high quality documentation. If you have any comments (suggestions or errors) regarding this document, please fill out the Documentation Feedback form on our website at <https://online.audiocodes.com/documentation-feedback>.

This page is intentionally left blank.

1 Introduction

This document provides a hardware description of the Mediant 800 MSBR (hereafter referred to as *device*) and step-by-step procedures for mounting and cabling the device.

The device provides the following interfaces:

- Optional telephony interfaces:
 - E1/T1:
 - ◆ **Mediant 800B MSBR:** Up to 2 E1/T1 port interfaces (over single copper wire pair).
 - ◆ **Mediant 800C MSBR:** Up to 4 E1/T1 port interfaces
 - Up to 8 BRI ports (supporting up to 16 voice channels)
 - Up to 12 FXS ports
 - FXS Lifeline on FXS Port 1, maintaining PSTN connectivity upon power failure. For the combined FXS/FXO configuration, one Lifeline is available; for the 12-FXS configuration, up to three Lifelines are available.
 - **(Mediant 800B MSBR Only)** Up to 12 FXO ports
- Optional LAN interfaces:
 - Up to 12 Ethernet LAN ports:
 - ◆ Up to 4 RJ-45 10/100/1000Base-T (Gigabit) ports
 - ◆ Up to 8 RJ-45 10/100Base-TX (Fast Ethernet) portsPower over Ethernet (PoE) is supported on all LAN ports, complying with IEEE 802.3af-2003 and IEEE 802.3at-2003. Various power budgets are supported for PoE on the LAN ports.
 - **(Mediant 800B MSBR Only)** Wireless LAN 802.11n (Wi-Fi) access point at 2.4 GHz and 5 GHz Tx / Rx, enabling data rates of up to 300 Mbps. The Wi-Fi interface also supports 802.11b/802.11g backward compatibility, allowing interoperability of multiple devices with different types of Wi-Fi.
- Two USB ports for an optional, 3G/4G cellular WAN modem and/or USB storage services
- Integrated Gigabit Ethernet (GE) Unshielded Twisted Pair (UTP) interface port, with an option of one or two additional WAN interfaces of the following types (factory assembled option):
 - GE UTP
 - **(Mediant 800B MSBR Only)** Up to 4 E1/T1 WAN
 - **(Mediant 800C MSBR Only)** 1 x T1 WAN
 - 1.25 Gbps Optical Fiber SFP form factor
 - ADSL2+ / VDSL2
 - **(Mediant 800B MSBR Only)** SHDSL, supporting up to four wire-pairs
 - 1 x Ethernet copper WAN port (10/100/1000Base-T)
 - 3G/4G Cellular WAN access (primary or backup) using a USB modem
- RJ-45 serial interface port
- Open Solutions Network (OSN) server platform for hosting third-party applications such as an IP PBX.
- Power:
 - **Mediant 800B MSBR:** Single AC power inlet
 - **Mediant 800C MSBR:** Single AC power inlet, and a DC power inlet (optional, customer ordered)

**Notes:**

- Mediant 800 includes two hardware revisions which differ as follows:
 - ✓ **Mediant 800B MSBR:** Max. 2 E1/T1; AC power only
 - ✓ **Mediant 800C MSBR:** Max. 4 E1/T1; AC and DC power (optional)
- The SFP module can be used for WAN fiber-optic interface or WAN copper interface.
- Hardware configurations may change without notice. Currently available hardware configurations are listed in AudioCodes Price Book. For available hardware configurations, contact your AudioCodes sales representative.
- For configuring the different interfaces, refer to the *User's Manual*.

2 Unpacking the Device

Follow the procedure below for unpacking the carton in which the device was shipped.

➤ **To unpack the device:**

1. Open the carton and carefully remove packing materials.
2. Remove the chassis from the carton.
3. Check that there is no equipment damage.
4. Ensure that in addition to the chassis, the package contains the following items:
 - Four anti-slide bumpers for desktop installation
 - Two mounting brackets for 19-inch rack mounting
 - **(Mediant 800C MSBR Only)** Three Wi-Fi antennas (depending on ordered model)
 - One E1/T1 splitter cable adapter (RJ-45 male to two RJ-45 female shielded) for E1/T1 WAN interface (only if device is ordered with a single E1/T1 WAN port)
 - Serial cable adapter
 - One AC power cable
 - **(Mediant 800C MSBR Only)** one AC/DC power adaptor (optional, separate orderable item)
5. Check, retain and process any documents.

If there are any damaged or missing items, notify your AudioCodes sales representative.

This page is intentionally left blank.

3 Physical Description

This section provides a physical description of the device.

3.1 Physical Dimensions

The device's physical dimensions and weight are listed in the table below:

Table 3-1: Physical Dimensions

Physical Specification	Value
Dimensions (W x D x H)	32 x 34.5 cm (12.6 x 13.6 inches) x 1U
Weight	2.5 kg (5.5 lb)
Environmental	<ul style="list-style-type: none"> ▪ Operational: 5 to 40°C (41 to 104°F) ▪ Storage: -25 to 85°C (-13 to 185°F) ▪ Humidity: 10 to 90% non-condensing

3.2 Front Panel Description

The front panel provides the telephony port interfaces, various networking ports, reset pinhole button, and LEDs.

3.2.1 Ports and Buttons

The device's front panel is shown in the figure below and described in the subsequent table.

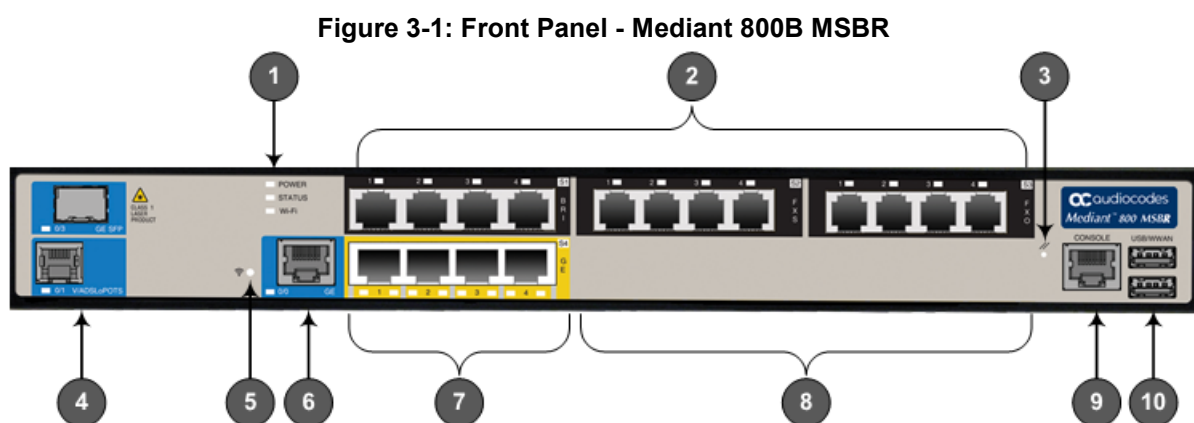
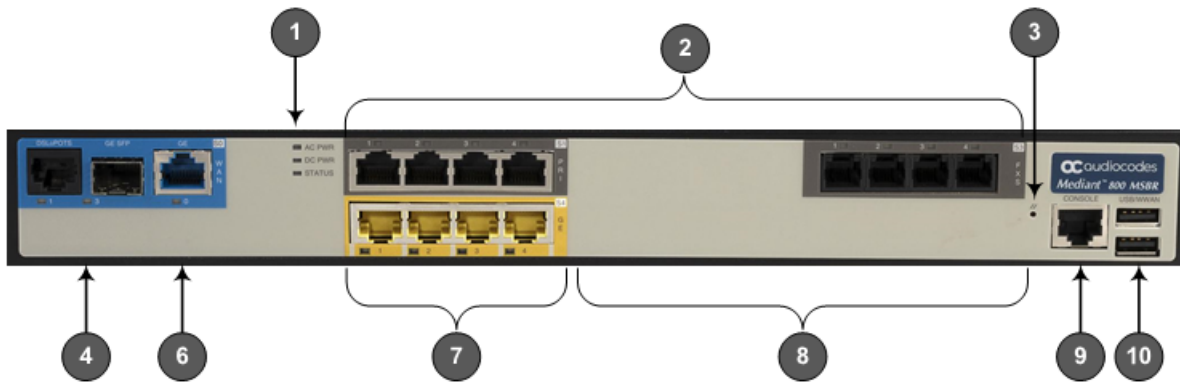


Figure 3-2: Front Panel - Mediant 800C MSBR




Notes:



- The figures above are used only as examples; the number and type of port interfaces depends on the ordered model.
- For available hardware configurations, please contact your AudioCodes sales representative.

Table 3-2: Front-Panel Description of Ports and Buttons

Item #	Label	Description
1	Mediant 800B MSBR: POWER / STATUS / Wi-Fi Mediant 800C MSBR: AC PWR / DC PWR / STATUS	Power, operating and Wi-Fi status LEDs. For more information, see Section 3.2.2 on page 18. Note: The Wi-Fi LED is applicable only to Mediant 800B MSBR (if ordered with Wi-Fi functionality).
2	FXS / FXO / BRI / PRI	(Optional) Telephony port interfaces, which can include one or a combination of the following, depending on ordered model: <ul style="list-style-type: none"> • FXS port interfaces (RJ-11) • FXO port interfaces (RJ-11) • ISDN BRI port interfaces (RJ-45) • ISDN PRI (E1/T1) port interfaces (RJ-48) Note: <ul style="list-style-type: none"> ▪ The FXS/FXO interfaces support loop-start signalling (indoor only). ▪ FXO is applicable only to Mediant 800B MSBR.
3	//	Reset pinhole button for resetting the device and optionally, for restoring the device to factory defaults. To restore the device to factory defaults, do the following: With a paper clip or any other similar pointed object, press and hold down the pinhole button for at least 12 seconds, but no longer than 25 seconds .
4	GE (Copper GbE) / V/ADSLoPOTS / DSLoISDN / DSLoPOTS / SHDSL / GE SFP (Optic Fiber) /	(Optional) One or two additional WAN interfaces (copper GE, SFP, SHDSL, A/VDSL, and E1/T1 WAN). For a list of supported WAN configurations, please contact your AudioCodes sales representative. Note: SHDSL and E1 WAN are applicable only to Mediant 800B MSBR.

Item #	Label	Description
	T1E1 (T1 WAN)	
5		(Optional) Wi-Fi push button to turn on or off the wireless network signals (Wi-Fi). Note: The Wi-Fi push button is applicable only to Mediant 800B MSBR (if ordered with Wi-Fi functionality).
6	Mediant 800B MSBR: GE 0/0 Mediant 800C MSBR: GE 0	Gigabit Ethernet (10/100/1000Base-T) copper WAN interface (RJ-45), provided on all models.
7	GE	Up to four Gigabit Ethernet (10/100/1000Base-T) LAN ports for connecting IP phones, computers, or switches. These ports support half- and full-duplex modes, auto-negotiation, and straight or crossover cable detection. These ports also support Power over Ethernet (PoE), complying with the IEEE 802.3af-2003 and IEEE 802.3at standards. The ports automatically detect the presence of IEEE 802.3 compliant devices. The maximum wattage available per port is 15.4W for IEEE 802.3af-2003 and 30W for IEEE 802.3at. The maximum wattage available for all ports (GE and FE) combined is 50W or 120W (depending on model). Note: PoE support is a customer ordered feature.
8	FE	(Optional) Eight Fast Ethernet (10/100Base-TX) RJ-45 LAN ports for connecting IP phones, computers, or switches. These ports support half- and full-duplex modes, auto-negotiation, and straight or crossover cable detection. These ports also support PoE, complying with the IEEE 802.3af-2003 standard. The ports automatically detect the presence of IEEE 802.3af-compliant devices. The maximum wattage available per port is 15.4W. The maximum wattage available for all ports (GE and FE) combined is 120W.
9	CONSOLE	RS-232 serial communication port (RJ-45).
10	USB/WWAN	Two USB ports that can be used for various functionalities such as 3G/4G cellular WAN modem or storage capabilities.

3.2.2 LEDs

The front panel provides various LEDs depending on the device's hardware configuration (e.g., the available telephony interfaces). These LEDs are described in the subsequent subsections.

3.2.2.1 LAN Interface LED

Each LAN port provides a LED (located on its left) for indicating LAN operating status, as described in the table below.

Table 3-3: LAN LED Description

LED Color	LED State	Description
Green	On	Ethernet link established.
	Flashing	Data is being received or transmitted.
-	Off	No Ethernet link.

3.2.2.2 Power-over-Ethernet LAN LED

Each LAN port provides a LED (located on its right) for indicating PoE status, as described in the table below.

Table 3-4: PoE LAN LED Description

LED Color	LED State	Description
Yellow	On	LAN port is transferring power (i.e., PoE is activated) to the connected equipment (e.g. IP phone).
	Fast Flashing	Overload or short circuit is detected on the port output lines - PoE is not activated.
	Slow Flashing	A valid PoE load is connected to the port, but the device has insufficient power to supply the required power load - PoE is not activated.
-	Off	No power load is present on the port output lines - PoE is not activated.

3.2.2.3 Wi-Fi LED

The **Wi-Fi** LED indicates the Wi-Fi link status, as described in the table below.

Table 3-5: Wi-Fi LED Description

LED Color	LED State	Description
Green	On	Wi-Fi is activated.
	Flashing	Traffic on the wireless LAN.
-	Off	Wi-Fi is not configured.



Note: The **Wi-Fi** LED is applicable only to Mediant 800B MSBR.

3.2.2.4 WAN LEDs

3.2.2.4.1 GE WAN LED

The WAN GE port provides a LED for indicating operating status, as described in the table below.

Table 3-6: GE WAN LED Description

LED Color	LED State	Description
Green	On	WAN link established.
	Flashing	Data is being received or transmitted.
-	Off	No WAN link.
-	Off	No power received by the device.

3.2.2.4.2 E1/T1 WAN LED

The E1/T1 WAN port provides a LED for indicating operating status, as described in the table below.

Table 3-7: E1/T1 WAN LED Description

LED Color	LED State	Description
Green	On	Link up.
	Flashing	Connection in progress.
-	Off	No link.

3.2.2.4.3 SHDSL WAN LED

The SHDSL WAN port provides a LED for indicating operating status, as described in the table below.

Table 3-8: SHDSL WAN LED Description

LED Color	LED State	Description
Green	On	At least one of the links is synchronized.
	Fast Flashing	At least one of the links is initializing.
	Slow Flashing	SHDSL firmware is running.
-	Off	No WAN link or no power received by the device.



Note: SHDSL is applicable only to Mediant 800B MSBR.

3.2.2.4.4 A/VDSL WAN LED

The A/VDSL WAN port provides a LED for indicating operating status, as described in the table below.

Table 3-9: A/VDSL WAN LED Description

LED Color	LED State	Description
Green	On	DSL link connected (trained) successfully with peer ("showtime").
	Fast Flashing	Training up (connection in progress) and negotiating with peer.
	Slow Flashing	DSL port is administratively up, but idle (not connected and no peer detected).
	Two Fast Flashes and then Idle Sequences	DSL port is initializing itself after being enabled or upon mode change.
-	Off	DSL port is administratively shutdown or not configured.

3.2.2.4.5 SFP WAN LED

The **WAN SFP** LED indicates the status of the optical fiber WAN link, as described in the table below.

Table 3-10: WAN SFP LED Description

LED Color	LED State	Description
Green	On	WAN fiber link established.
	Flashing	Data is being received or transmitted.
-	Off	No WAN fiber link or power not received by the device.

3.2.2.5 FXS LED

Each FXS port provides a LED for indicating operating status, as described in the table below.

Table 3-11: FXS LED Description

LED Color	LED State	Description
Green	On	Phone is off-hooked.
	Flashing	Rings the extension line.
Red	On	<ul style="list-style-type: none"> ▪ Error - malfunction in line or out of service due to Serial Peripheral Interface (SPI) failure ▪ Disabled port initiated by user (using the CLI command, <code>analog-port-enable</code>)
	Off	Phone is on hook.
-	Off	No power received by the device.

3.2.2.6 FXO LED

Each FXO port provides a LED for indicating operating status, as described in the table below.

Table 3-12: FXO LED Description

LED Color	LED State	Description
Green	On	FXO line is off-hooked toward the PBX.
	Flashing	Ring signal detected from the PBX.
Red	On	<ul style="list-style-type: none"> ▪ Error - malfunction in line or out of service due to Serial Peripheral Interface (SPI) failure ▪ Disabled port initiated by user (using the CLI command, <code>analog-port-enable</code>)
	Off	Line is on hook.
-	Off	No power received by the device.



Note: The FXO LEDs are applicable only to Mediant 800B MSBR.

3.2.2.7 BRI LED

Each BRI port provides a LED for indicating operating status, as described in the table below:

Table 3-13: BRI LED Description

Color	State	Description
Green	On	Physical layer (Layer 1) is synchronized (normal operation).
Red	On	Physical layer (Layer 1) is not synchronized.
-	Off	Trunk is not active.

3.2.2.8 PRI (E1/T1) LED

Each trunk port provides a LED for indicating operating status, as described in the table below:

Table 3-14: E1/T1 LED Description

Color	State	Description
Green	On	Trunk is synchronized (normal operation).
Red	On	Loss due to any of the following signals: <ul style="list-style-type: none"> ▪ LOS - Loss of Signal ▪ LOF - Loss of Frame ▪ AIS - Alarm Indication Signal (the Blue Alarm) ▪ RAI - Remote Alarm Indication (the Yellow Alarm)
-	Off	Failure / disruption in the AC power supply or the power is currently not being supplied to the device through the AC power supply entry.

3.2.2.9 STATUS LED

The **STATUS** LED indicates the operating status, as described in the table below.

Table 3-15: STATUS LED Description

LED Color	LED State	Description
Green	On	Device is operational.
	Flashing	<ul style="list-style-type: none"> ▪ Initial rebooting stage. ▪ Software upgrade (.cmp file) in process (currently supported only from Software Version 6.8).
Red	On	Boot failure.
-	Off	Advanced rebooting stage.

3.2.2.10 Power LEDs

The power LEDs depend on the Mediant 800 model.

3.2.2.10.1 POWER LED

The **POWER** LED indicates the power supply status, as described in the table below.

Table 3-16: POWER LED Description

LED Color	LED State	Description
Green	On	Power is received by the device.
-	Off	No power received by the device.



Note: The **POWER** LED is applicable only to Mediant 800B MSBR.

3.2.2.10.2 AC PWR LED

The **AC PWR** LED indicates the AC power supply status, as described in the table below.

Table 3-17: AC PWR LED Description

Color	State	Description
Green	On	AC power is received by the device.
-	Off	No power received by the device.



Note: The **AC PWR** LED is applicable only to Mediant 800C MSBR.

3.2.2.10.3 DC PWR LED

The **DC PWR** LED indicates the DC power supply status, as described in the table below.

Table 3-18: DC PWR LED Description

Color	State	Description
Green	On	DC power is received by the device.
-	Off	No power received by the device.



Note: The **DC PWR** LED is applicable only to Mediant 800C MSBR.

3.3 Rear Panel Description

The device's rear panel is shown in the figure below and described in the subsequent table.

Figure 3-3: Rear Panel - Mediant 800B MSBR

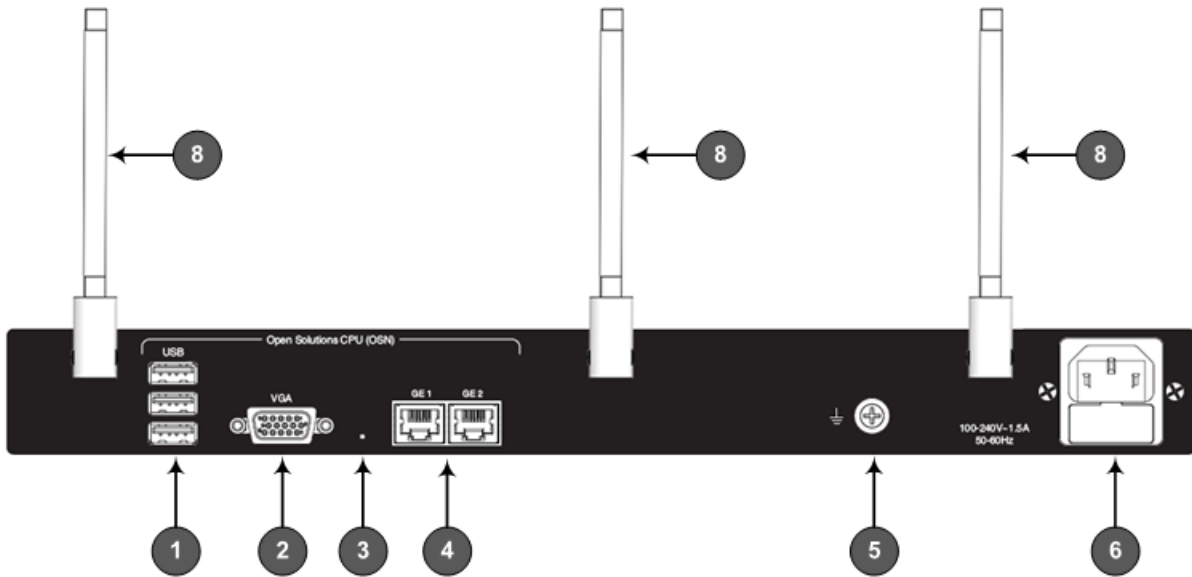



Figure 3-4: Rear Panel - Mediant 800C MSBR



Note: The figure above is used only as an example. The OSN server ports and Wi-Fi antennas (applicable only to Mediant 800B MSBR) are customer ordered items.

Table 3-19: Rear Panel Description

Item #	Label	Description
1	OSN USB	Three USB ports (Standard-A type) for connecting computer peripherals (e.g., mouse and keyboard). These are used when implementing the OSN. Note: These ports are available only if the device is equipped with the OSN server (customer ordered).
2	OSN VGA	15-Pin DB-type female VGA port for connecting to a monitor (screen). This port is used when implementing the OSN. Note: This port is available only if the device is equipped with the OSN server (customer ordered).
3	-	Reset button for resetting the OSN server.

Item #	Label	Description
4	GE 1 GE 2	10/100/1000Base-T Ethernet ports (RJ-45) for connecting directly to the OSN server. For example, one port can be connected to the LAN (to IP Phones) and the second port to the WAN interface (to an IP PBX). Note: The number of ports depends on ordered OSN server platform (see Section 6.10 on page 59).
5		Protective earthing screw.
6	Mediant 800B MSBR: 100-240V~4A 50-60Hz Mediant 800C MSBR: 100-240V~1.5A 50-60Hz	3-Prong AC power supply entry.
7	DC IN 12V-10A	DC power inlet for accepting a DC terminal block plug. Note: <ul style="list-style-type: none"> ▪ DC power is applicable only to Mediant 800C MSBR. ▪ Use only the AC/DC power adaptor that is supplied by AudioCodes to connect the DC inlet.
8	-	Wi-Fi antennas, providing wireless LAN 802.11n (Wi-Fi) access point at 2.4 GHz and 5 GHz Tx / Rx, enabling data rates of up to 300 Mbps. The Wi-Fi interface also supports 802.11b/802.11g backward compatibility, allowing interoperability of multiple devices with different types of Wi-Fi. Note: The Wi-Fi antennas are applicable only to Mediant 800B MSBR (only if Wi-Fi functionality is ordered). They are shipped un-attached.

This page is intentionally left blank.

4 Attaching the Wi-Fi Antennas

For models ordered with wireless LAN interface, the device is shipped with three unattached Wi-Fi antennas. You can attach any number of these antennas, according to your network requirements. Once attached, you can position each antenna in the vertical and/or horizontal plane for optimal transmission and reception.

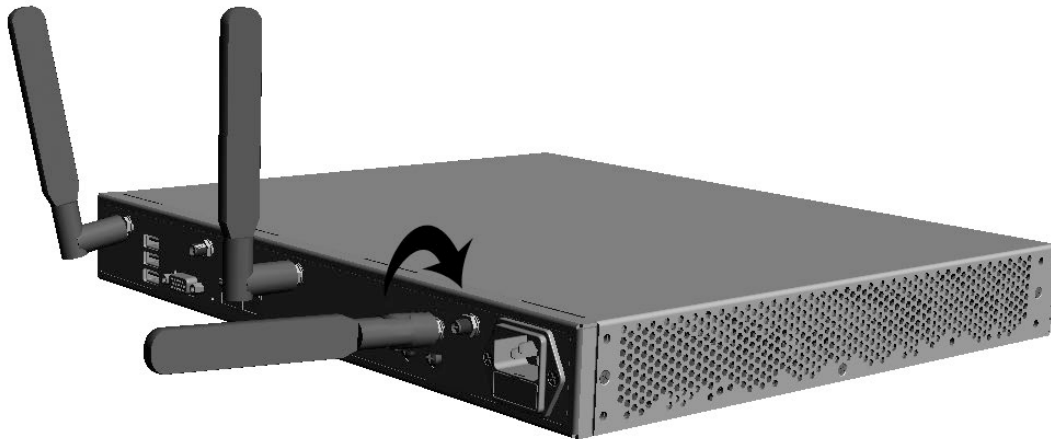
**Notes:**

- Wi-Fi interface is applicable only to Mediant 800B MSBR and is a customer ordered item.
- Attach antennas before mounting the device. It may be difficult to attach the antennas once the device is mounted.

➤ **To attach the Wi-Fi antennas to the device:**

1. Manually screw the antennas on to the SMA coaxial RF connector located on the rear panel, as shown in the figure below:

Figure 4-1: Attaching Antennas on Rear Panel



2. Orient the antennas as desired for optimal wireless performance. The antenna can be orientated in the vertical and horizontal planes. For best performance, it is recommended that the antennas be perpendicular (90 degrees) to the floor. In other words, orient the antennas straight up.

This page is intentionally left blank.

5 Mounting the Device

The device can be mounted in one of the following ways:

- Placed on a desktop – see Section 5.1 on page 29
- Installed in a standard 19-inch rack – see Section 5.2 on page 30

5.1 Desktop Mounting

The device can be placed on a desktop when its four anti-slide bumpers (supplied) are attached to the underside of the device.



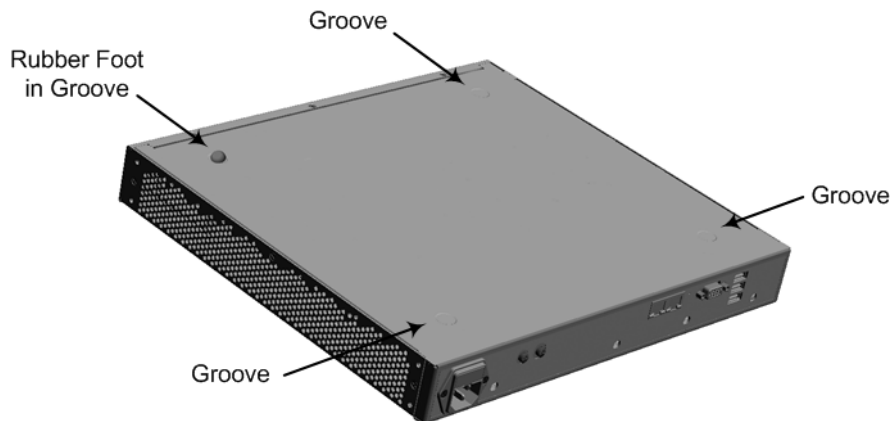
Warning: To ensure proper cooling and prevent over-heating of internal components:

- Do not place any equipment directly on top of the device.
- The side panels of the chassis, where the air vents are located, must remain unobstructed to ensure adequate airflow through the chassis. Make sure that clearance from the ventilation openings is at least 13 cm.

➤ **To attach the anti-slide rubber bumpers to the device:**

1. Flip the device over so that its underside faces up.
2. Locate the four anti-slide grooves on the underside - one in each corner.
3. Peel off the adhesive, anti-slide rubber feet and stick one in each anti-slide groove.

Figure 5-1: Location for Applying Rubber Feet



4. Flip the device over again so that it rests on the rubber feet and place it in the required position on a desktop.

5.2 19-Inch Rack Mounting

The device can be installed in a standard 19-inch rack by implementing one of the following mounting methods:

- Placing it on a pre-installed shelf in a 19-inch rack – see Section 5.2.1 on page 30
- Attaching it directly to the rack's frame using the device's mounting brackets (supplied) that need to be attached to the chassis – see Section 5.2.2 on page 31



Warning: To ensure proper cooling and prevent over-heating of internal components:

- Do not place any equipment directly on top of the device.
- The side panels of the chassis, where the air vents are located, must remain unobstructed to ensure adequate airflow through the chassis. Make sure that clearance from the ventilation openings is at least 13 cm.
- Ensure that at least a 1U separation is maintained between the device and other mounted devices or equipment in the rack.



Rack Mount Safety Instructions

When installing the chassis in a rack, implement the following safety instructions:

- **Elevated Operating Ambient Temperature:** If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient temperature. Therefore, consideration should be given to installing the equipment in an environment with maximum ambient temperature (T_{ma}) of 40°C (104°F).
- **Reduced Air Flow:** Installation of the equipment in a rack should be such that the amount of air flow required for safe operation on the equipment is not compromised.
- **Mechanical Loading:** Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- **Circuit Overloading:** Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on over-current protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- **Reliable Earthing:** Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g., use of power strips). For earthing the device, see Section 6.1 on page 33.

5.2.1 Using a Pre-Installed Rack Shelf

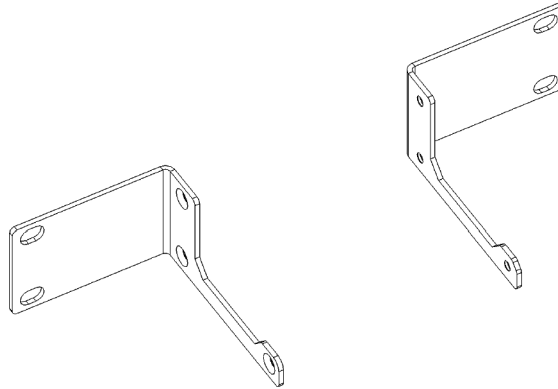
The procedure below describes how to place the device on a pre-installed shelf in a 19-inch rack.

- **To mount the device on a pre-installed shelf in the rack:**
 1. Before installing it in the rack, ensure that you have a pre-installed rack shelf on which the device can be placed.
 2. Place the device on the pre-installed shelf in the rack.

5.2.2 Using Mounting Brackets

The procedure below describes how to mount the device in a 19-inch rack. Rack mounting involves placing the device on a pre-installed rack shelf (not supplied) and then securing the device to the rack frame using the mounting brackets (supplied).

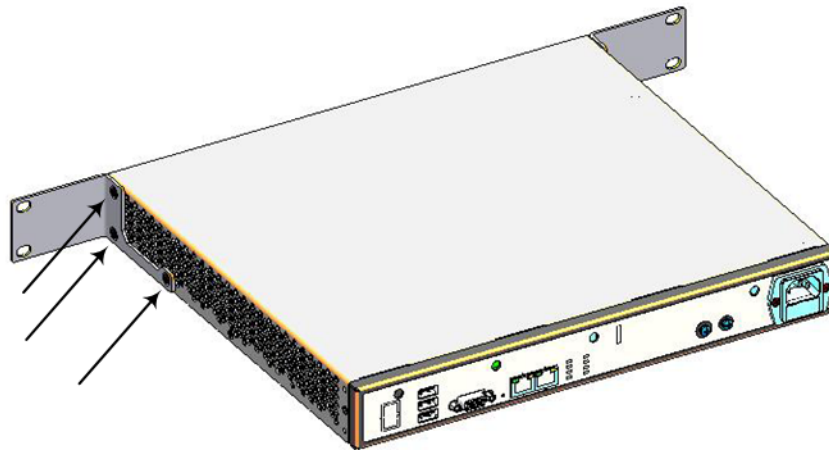
Figure 5-2: Mounting Brackets



➤ **To mount the device in a 19-inch rack using mounting brackets:**

1. Attach the two mounting brackets (supplied) to each side of the device's chassis, using the supplied screws, as shown in the figure below:

Figure 5-3: Attaching the Mounting Brackets



2. Place the device on a pre-installed shelf in the rack.
3. Attach the ends of the mounting brackets (that you installed in Step 1) to the vertical track of the rack's frame, using standard 19-inch rack bolts (not supplied).

This page is intentionally left blank.

6 Cabling the Device

This section describes the cabling of the device.

6.1 Grounding and Surge Protection

The device must be connected to earth (grounded) using an equipment-earthing conductor.



Protective Earthing

The equipment is classified as Class I EN60950 and UL60950 and must be earthed at all times.

For Finland: "Laite on liitettava suojamaadoituskoskettimilla varustettuun pistorasiaan."

For Norway: "Apparatet rna tilkoples jordet stikkontakt."

For Sweden: "Apparaten skall anslutas till jordat uttag."



Grounding and Power Surge Protection

- The device must be installed only in telecommunication sites / centers in compliance with ETS 300-253 requirements "Earthing and Bonding of Telecommunication Equipment in Telecommunication Centers".
- Prior to installation, earth loop impedance test must be performed by a certified electrician to ensure grounding suitability at the power outlet intended to feed the unit. It is essential that the impedance will be kept below 0.5 ohms!
- Proper grounding is crucial to ensure the effectiveness of the lightning protection, connect the device permanently to ground (as described in the procedure below). The device's grounding screw must be connected to the equipotential grounding bus bar located in the Telecommunication rack or installation site, using a wire of 6 mm² surface wire. If the device is installed in a rack with other equipment, the rack must be connected to the equipotential grounding bus bar of the Telecommunication room, using a stranded cable with surface area of 25 mm². The length of this cable must be as short as possible (no longer than 3 meters).
- The device does **not** include primary telecom protection! When the **FXO / DSL** telephone lines are routed **outside the building**, additional protection - usually a 350V three-electrode Gas Discharge Tube (GDT) as described in ITU-T K.44 - **must** be provided at the entry point of the telecom wires into the building (usually on the main distribution frame / MDF), in conjunction with proper grounding. The center pin of the GDT (MDF grounding bar) must be connected to the equipotential grounding bus bar of the Telecommunication room.
- Failing to install primary surge protectors and failing to comply with the grounding instructions or any other installation instructions, may cause permanent damage to the device!
- As most of the installation is the responsibility of the customer, AudioCodes can assume responsibility for damage only if the customer can establish that the device does not comply with the standards specified above (and the device is within the hardware warranty period).
- The device complies with protection levels as required by EN 55024/EN 300386. Higher levels of surges may cause damage to the device.
- To protect against electrical shock and fire, use a minimum of 26-AWG wire size to connect the **FXO / DSL** ports.



Warning:

- To avoid electric shock and/or damage to ports due to over-voltage phenomena, you must connect the device to a reliable ground using the grounding termination located on the device's rear panel.
- When the device is powered only from the 12V DC supply (utilizing the external power adaptor), the device is not grounded!
- Ground the device prior to connecting the telephony port interfaces (FXO, FXS, E1/T1 and BRI).
- When powering off the device, remove all interface cables prior to disconnecting (if required) the ground cable at the rear panel.

➤ **To earth the device:**

1. Connect an electrically earthed strap of 16 AWG wire (minimum) to the chassis' earthing screw (located on the rear panel), using the supplied washer.
2. Connect the other end of the strap to a protective earthing. This should be in accordance with the regulations enforced in the country of installation.

Figure 6-1: Earthing the Device



6.2 Connecting to WAN

This section provides a description on how to cable the WAN port. The cabling procedure depends on the ordered WAN interface.



Note: The device supports multiple WAN redundancies, where multiple WAN interfaces can serve as backups for the primary or a backup WAN interface. For example, if the main WAN interface is GE and it fails, the device switches over to the SHDSL WAN interface. If this WAN interface also fails, the device switches over to the 3G/4G WAN interface, and so on. For configuring WAN redundancy, refer to the *CLI Reference Guide*.

6.2.1 Copper Gigabit Ethernet (GE) Cabling

The procedure below describes how to connect the copper Gigabit Ethernet RJ-45 port to the WAN.

Cable specification:

- **Cable:** Category 5e or Category 6 shielded twisted pair (STP) straight-through
- **Connector:** RJ-45
- **Connector Pinouts:**

Table 6-1: RJ-45 Connector Pinouts for Copper GE WAN

Pin	Signal Name
1	Ethernet signal pair
2	
3	Ethernet signal pair
6	
4	Ethernet signal pair
5	
7	Ethernet signal pair
8	
Shield	Chassis ground

➤ **To connect the WAN copper GE port:**

1. Connect one end of a straight-through RJ-45 Ethernet cable to the RJ-45 port labeled **GE**, located on the front panel.

Figure 6-2: Cabling WAN Copper GE Port – Mediant 800B MSBR

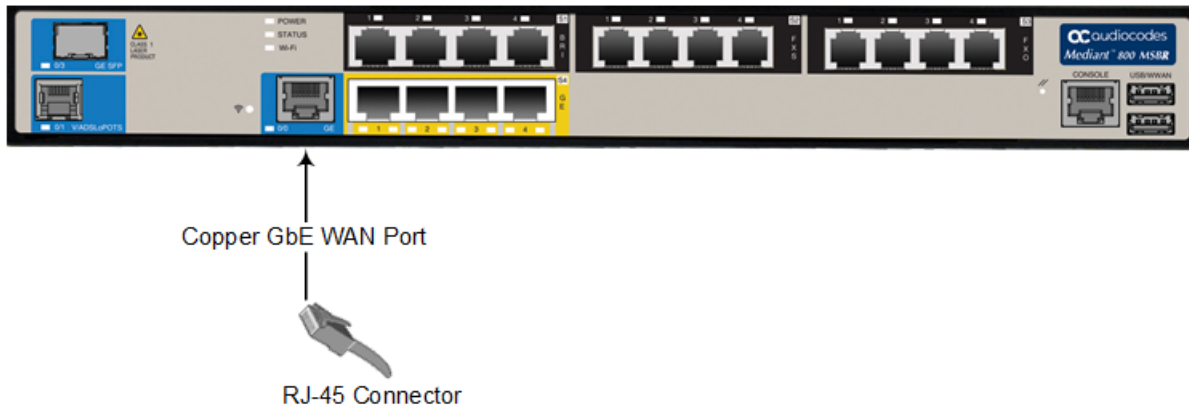
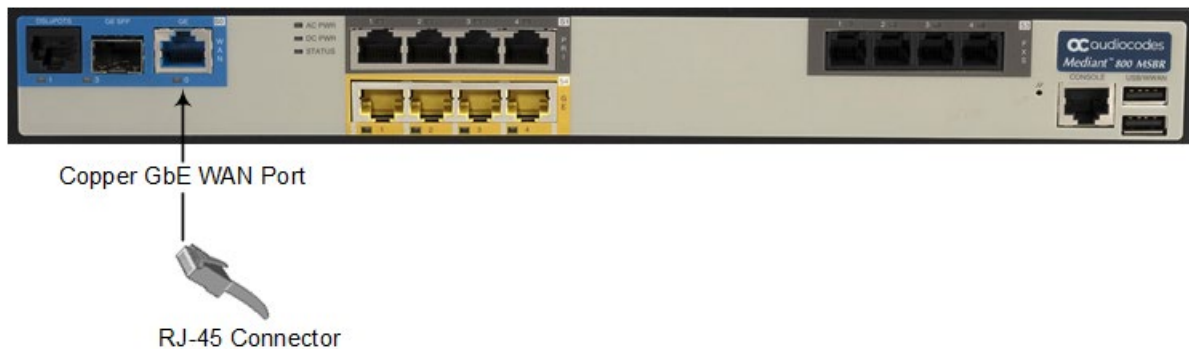


Figure 6-3: Cabling WAN Copper GE Port – Mediant 800C MSBR



2. Connect the other end of the cable to the Ethernet WAN (e.g., ADSL or Cable modem).

6.2.2 Fiber-Optic Gigabit Ethernet Cabling

The device supports up to two pairs of 1.25 Gbps optical small form-factor pluggable (SFP) transceiver modules. The SFP module can be used for fiber-optic or copper WAN interface.



Caution Laser

This device contains a Class 1 LED/Laser emitting device, as defined by 21CFR 1040 and IEC825. Do not stare directly into the beam or into fiber optic terminations as this can damage your eyesight.

Care in Handling Fiber Optic Cabling:



1. Excessive bending of the Fiber Optic Cable can cause distortion and signal losses.
2. Ensure the minimum bending radius recommended by the Fiber Optic Cable supplier.
3. Incoming optic cabling from the network infrastructure can originate from the top of the rack or from another shelf within the rack. Preserve the minimum-bending ratio indicated by the cable manufacturer.
4. To ensure full high-availability capabilities, the configuration of the interface to the IP backbone must include certain redundant features from which two separate fiber optic cables are entering the device.



Note:

- The SFP modules and fiber-optic cables are not supplied. It is recommended that you purchase the SFP modules from AudioCodes. For a list of orderable SFP modules, see Appendix A on page 67, or contact your AudioCodes sales representative.
- This AudioCodes device has been evaluated with the laser transceiver modules (SFP) listed in Appendix A on page 67. If other SFP modules are used, the person installing the device is solely responsible for the usage of correct SFP modules to comply with local, applicable laser safety requirements and certification. AudioCodes will not be held responsible for any damage to human body or equipment caused as a result from the usage of SFP modules that are not listed in Appendix A on page 67.

Cable specifications:

- WAN fiber-optic interface:
 - LC-type plug
- WAN copper interface: see Section 6.2.1 on page 35

➤ To connect the fiber-optic WAN GbE port:

1. Remove the protective dust plug from the SFP transceiver module.

Figure 6-4: Removing Protective Dust Plug – Mediant 800B MSBR



Removing Plug

Figure 6-5: Removing Protective Dust Plug – Mediant 800C MSBR



Removing Plug

2. Connect a cable with LC-type plugs to the SFP transceivers (labeled **GE SFP**).

Figure 6-6: Cabling Fiber-Optic WAN GbE Port – Mediant 800B MSBR

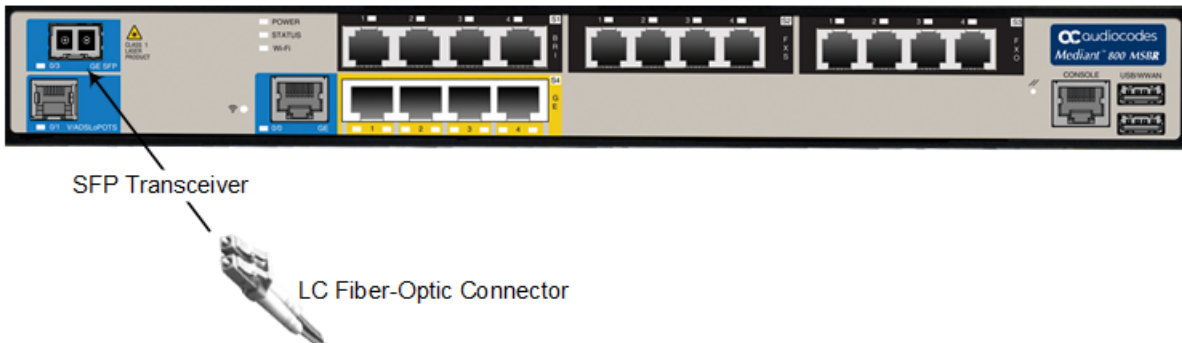
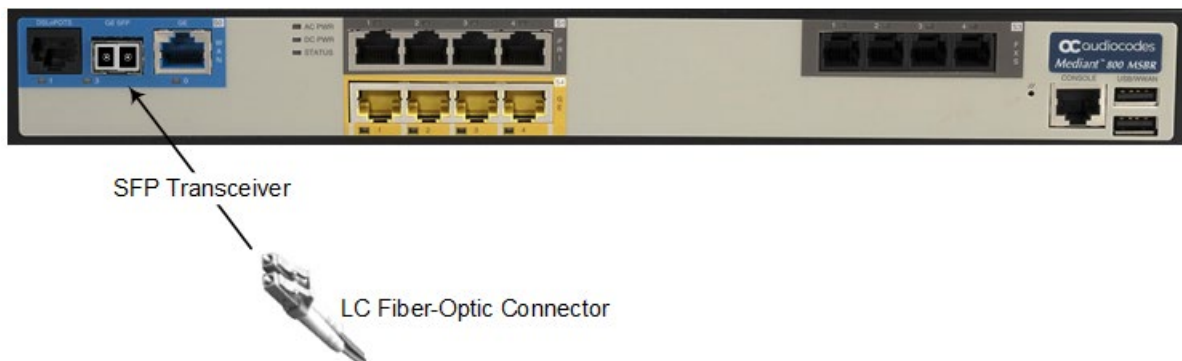


Figure 6-7: Cabling Fiber-Optic WAN GbE Port – Mediant 800C MSBR



6.2.3 SHDSL WAN Cabling

Each SHDSL port provides up to four wire-pairs, which can support up to two RJ-11 physical connectors.



Warnings:

- The device does **not** include primary telecom protection! When the **DSL** telephone lines are routed **outside the building**, additional protection - usually a 350V three-electrode Gas Discharge Tube (GDT) as described in ITU-T K.44 - **must** be provided at the entry point of the telecom wires into the building (usually on the main distribution frame / MDF), in conjunction with proper grounding. The center pin of the GDT (MDF grounding bar) must be connected to the equipotential grounding bus bar of the Telecommunication room.
- To protect against electrical shock and fire, use a minimum 26-AWG wire to connect the DSL ports.



Note: SHDSL is applicable only to Mediant 800B MSBR.

SHDSL port specifications:

- Conforms to ITU G.991.2 Annexes A, B, E, F and G SHDSL
- Up to 5,696 Kbps over a single wire pair
- Up to 22,784 Kbps over four wire pairs bonding, according to SHDSL.bis (ITU G.991.2)

Annexes F, G)

- EFM and ATM support
- Wetting current support on the CPE side, according to G991.2
- Supports both Central Office (CO) and CPE (wetting current on CO - excluded)
- TC-PAM 16/32 line code

Cable specification:

- **Cable:** 26-AWG min. wire
- **Connector:** RJ-11
- **Connector Pinouts:**

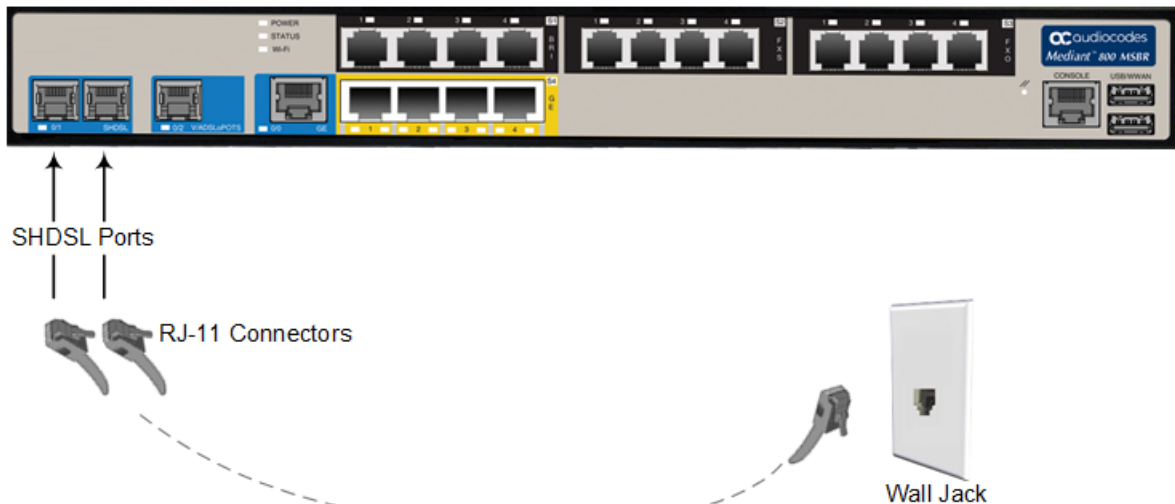
Table 6-2: RJ-11 Connector Pinouts for SHDSL

Pin	Function	
	Left RJ-11 Connector	Right RJ-11 Connector
2	Pair 1 - Ring	Pair 3 - Ring
3	Pair 0 - Ring	Pair 2 - Ring
4	Pair 0 - Tip	Pair 2 - Tip
5	Pair 1 - Tip	Pair 3 - Tip

➤ **To connect the WAN SHDSL port:**

1. Connect an RJ-11 SHDSL cable(s) to the device's SHDSL WAN port(s), labeled **SHDSL**.

Figure 6-8: Cabling the SHDSL WAN Port



2. Connect the other end of the cable(s) to an RJ-11 wall jack.

6.2.4 ADSL/2+ and VDSL2 WAN Cabling

The ADSL/2+ and VDSL2 (xDSL) WAN port provides a single xDSL interface through its RJ-45 port. The specifications of the xDSL interface include the following:

- ADSL/2+:
 - RFC 2684 in Routed (IPoA) and Bridged (ETHoA) modes, supporting LLC-SNAP and VC-Multiplexed encapsulations over AAL5
 - ATM UNI 4.1 compliant
 - UBR, CBR, VBR classes of service
 - RFC 2364 PPPoA
 - RFC 2516 PPPoE over ATM
 - Up to 8 PVCs
- VDSL2:
 - ITU G.991.2 Annex E for Ethernet, also known as EFM or 2Base-TL, as defined in IEEE 802.3ah
 - 802.1q VLANs over EFM
 - PPPoE



Warnings:

- The device does **not** include primary telecom protection! When the **DSL** telephone lines are routed **outside the building**, additional protection - usually a 350V three-electrode Gas Discharge Tube (GDT) as described in ITU-T K.44 - **must** be provided at the entry point of the telecom wires into the building (usually on the main distribution frame / MDF), in conjunction with proper grounding. The center pin of the GDT (MDF grounding bar) must be connected to the equipotential grounding bus bar of the Telecommunication room.
- To protect against electrical shock and fire, use a minimum 26-AWG wire to connect the DSL ports.

Cable specifications:

- **Cable:** 26-AWG min. wire
- **Connector:** RJ-11 or RJ-45
- **Connector Pinouts:**

Table 6-3: RJ-11 Connector Pinouts for xDSL

Pin	Function
1	Not used
2	Not used
3	CH0-P/Tip
4	CH0-N/Ring
5	Not used
6	Not used

Table 6-4: RJ-45 Connector Pinouts for xDSL

Pin	Function
1	Not used
2	Not used
3	Not used
4	CH0-P/Tip
5	CH0-N/Ring
6	Not used
7	Not used
8	Not used

➤ **To connect the WAN xDSL WAN port:**

1. Connect an RJ-11 or RJ-45 cable connector to the device's xDSL WAN port. The port label depends on model:
 - Mediant 800B MSBR: **V/ADSLoISDN** or **ADSLoPOTS**
 - Mediant 800C MSBR: **DSL0ISDN** or **DSL0POTS**
2. Connect the other end of the cable to the DSL wall jack through an xDSL filter with splitter.

Figure 6-9: Cabling xDSL WAN Port – Mediant 800B MSBR

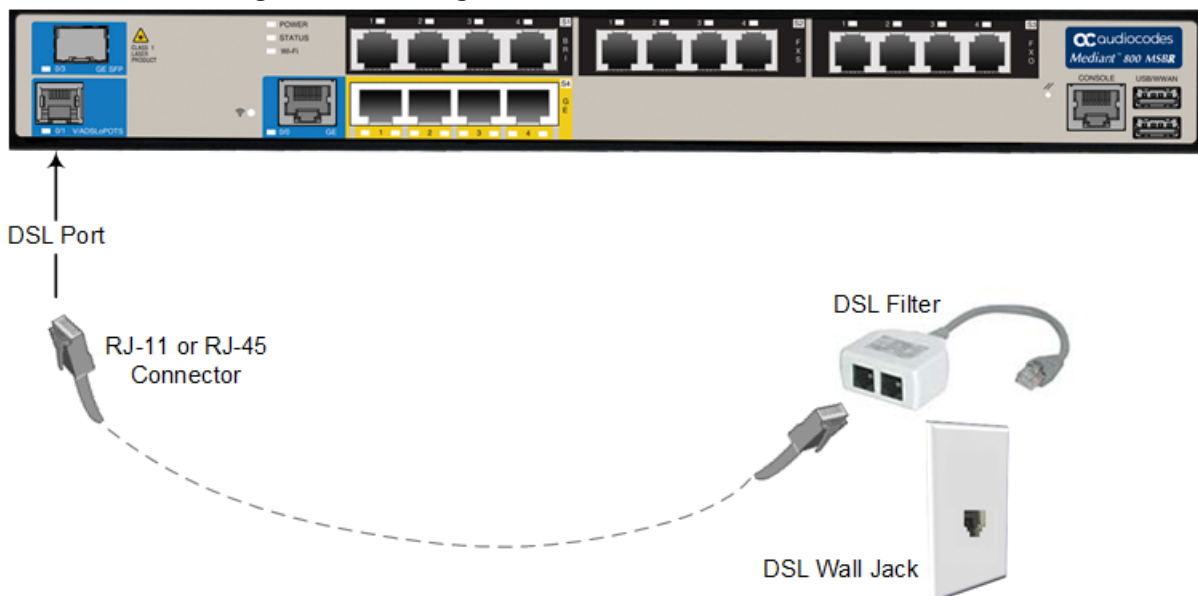
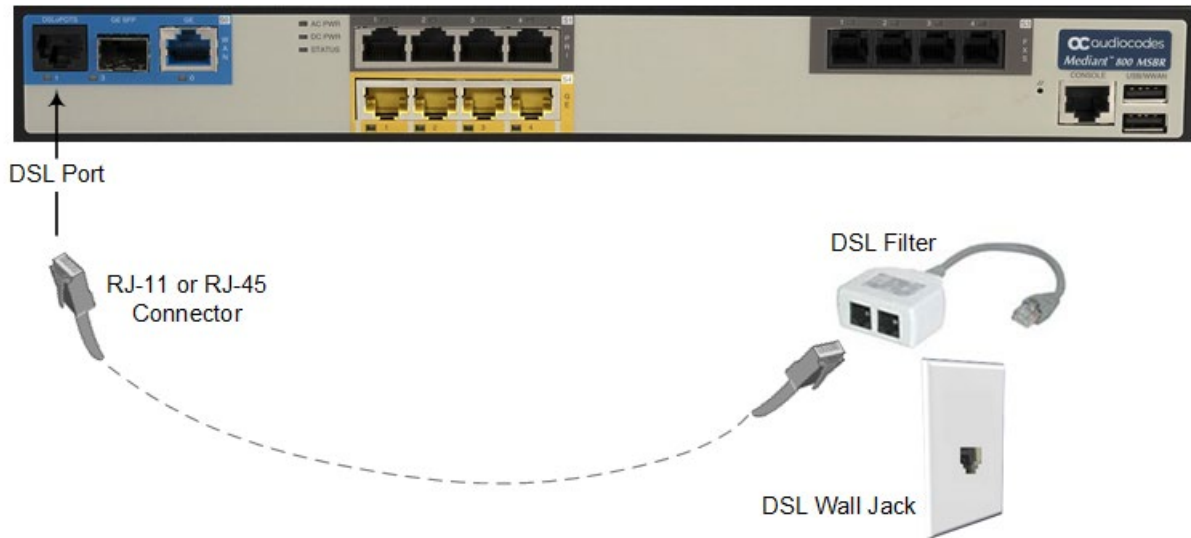


Figure 6-10: Cabling xDSL WAN Port – Mediant 800C MSBR



Note: The xDSL filter/splitter should be provided by your service provider.

6.2.5 E1/T1 WAN Cabling

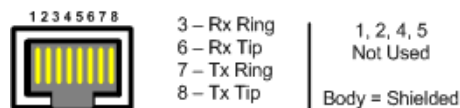
Mediant 800B MSBR provides a WAN connection through up to four E1/T1 WAN Data Service Unit/Channel Service Unit (DSU/CSU) port interfaces. Mediant 800C MSBR provides a WAN connection through a single T1 WAN DSU/CSU port interface.

The E1/T1 WAN lines transmit and receive data using IP over Point-to-Point Protocol (PPP) framing (up to two separate links), IP over High-Level Data Link Control (HDLC) framing (up to two separate links), or bundling both physical links into a single logical link using IP over Multilink Point-to-Point Protocol (ML-PPP) framing (RFC 1717).

Cable specification:

- **Connector:** RJ-45
- **Connector Pinouts:**

Figure 6-11: RJ-45 Connector Pinouts for E1/T1 WAN



If the device is ordered with a single E1/T1 WAN port, a splitter cable adapter (RJ-45 male to two RJ-45 female shielded) is supplied to provide connection to one or two E1/T1 lines. The Customer Product Number (CPN) for this cable is RCBA50002. If the device is ordered with multiple E1/T1 WAN ports (e.g., two or four ports), a splitter cable is not required as these ports already reflect the E1/T1 WAN line connections.

Figure 6-12: Splitter Cable for Single E1/T1 WAN Port



Warning: To protect against electrical shock and fire, use a 26 AWG min wire to connect the T1 WAN port.

➤ **To connect the E1/T1 WAN port to E1/T1 lines:**

1. Connect the RJ-45 connector on one end of the cable to the E1/T1 WAN port, labeled **T1E1**.

Figure 6-13: Connecting E1/T1 WAN Port – Mediant 800B MSBR



E1/T1 WAN DSU/CSU
WAN Ports



RJ-45 Cable Connector

Figure 6-14: Connecting T1 WAN Port – Mediant 800C MSBR



T1 WAN DSU/CSU WAN Port



RJ-45 Cable Connector

2. Connect the other end of the cable to the E1 or T1 line.

6.2.6 3G/4G Cellular WAN USB Modem Cabling

The device supports a 3G/4G cellular WAN interface using a USB-based 3G/4G cellular modem. This cellular WAN interface can be used as the primary WAN interface or as an optional WAN backup when the primary WAN (e.g., WAN Ethernet) fails. The WAN connection type is a point-to-point protocol (PPP) over cellular.



Note: To check if your third-party cellular modem is supported by the device, please provide the modem's model details to your AudioCodes sales representative.

➤ **To connect 3G/4G cellular WAN modem:**

- Plug a 3G/4G cellular USB modem into any one of the USB ports located on the front panel, labeled **USB/WWAN**.

Figure 6-15: Plugging 3G/4G Cellular Modem into USB Port – Mediant 800B MSBR



Figure 6-16: Plugging 3G/4G Cellular Modem into USB Port – Mediant 800C MSBR



6.3 Connecting to LAN

The device provides up to four Gigabit Ethernet (10/100/1000Base-T) LAN RJ-45, ports and eight RJ-45 10/100Base-TX (Fast Ethernet) LAN ports for connection to the LAN (e.g., computers, switches, and IP phones). These ports support half- and full-duplex modes, auto-negotiation, and straight or crossover cable detection. The LAN ports can also support PoE. For connecting PoE-enabled equipment to the LAN ports, see Section 6.4 on page 46.

Cable specification:

- **Cable:** Category 5e or Category 6 shielded twisted pair (STP) straight-through
- **Connector:** RJ-45
- **Connector Pinouts:**

Table 6-5: RJ-45 Connector Pinouts for GbE/FE with PoE

Pin	Signal Name
1	Ethernet signal pair (10/100/1000Base-T) and PoE NEG
2	
3	Ethernet signal pair (10/100/1000Base-T) and PoE POS
6	
4	Ethernet signal pair (1000Base-T)
5	
7	Ethernet signal pair (1000Base-T)
8	
Shield	Chassis ground

➤ **To connect the device to the LAN:**

1. Connect one end of the Ethernet cable to the RJ-45 port labeled **GE** (for Gigabit Ethernet ports) and/or **FE** (for Fast Ethernet ports).

Figure 6-17: Cabling LAN Ports – Mediant 800B MSBR

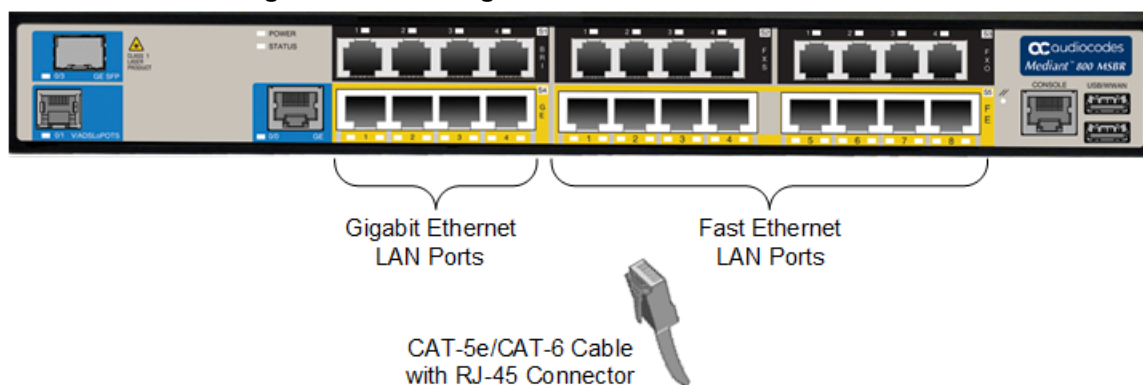
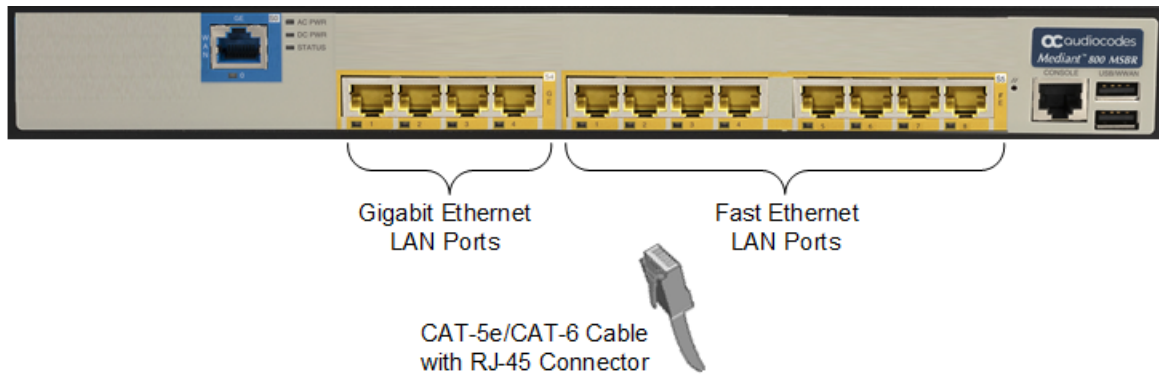


Figure 6-18: Cabling LAN Ports – Mediant 800C MSBR



2. Connect the other end of the cable to the Gigabit Ethernet network (for the **GE** ports) and/or Fast Ethernet network (for the **FE** ports).

6.4 Connecting PoE-Enabled Clients to LAN Ports

The LAN ports support PoE according to the IEEE 802.3af-2003 and IEEE 802.3at standards. The ports can transfer electrical power, along with the usual data, over the Ethernet cable to connected equipment (e.g., IP phone) capable of receiving PoE.

The LAN ports automatically detect the presence of IEEE 802.3 compliant equipment. Upon plugging in a PoE client to one of the ports, the device also automatically detects the class to which the client belongs and consequently, the maximum power allowed:

- **IEEE 802.3af-2003:** The device can supply up to 15.4W per port, and a total budget of 50W or 120W (depending on device model) for all ports:
 - Class 0: configurable, up to 15.4W – refer to the *User's Manual* for more information
 - Class 1: up to 4W
 - Class 2: up to 7W
 - Class 3: up to 15.4W
- **IEEE 802.3at – Class 4:** The device can supply up to 30W per port to the connected equipment and a total budget of 50W, 120W, or 200W (depending on device model) for all ports.

If the plugged-in client is detected as Class 0, the device saves the user-defined wattage from the total wattage budget (default is 15.4W). If the plugged-in client is detected as Class 1, Class 2, or Class 3, the device saves 4W, 7W, or 15.4W respectively from the total wattage budget.

If the power budget has been exhausted and a new client is plugged in, no power is available to this client. Note that the power is always taken off the total budget according to the class detected, regardless of what is actually consumed per port.

PoE is supplied on Pins 4,5: (+), and pins 7,8: (-).

**Note:**

- PoE support is a customer ordered feature.
- Upon device startup, PoE is enabled on all ports. You can enable or disable PoE per port. For more information, refer to the *User's Manual*.
- For PoE support, the maximum cable length between the device's Ethernet port and the connected equipment (e.g., IP phone) is **100 meters**.
- You can configure the maximum port power consumption (up to 15.4W) used when the plugged-in client is detected as Class 0. You can also enable Class 4 PoE per port. For more information, refer to the *User's Manual*.

➤ **To connect PoE-enabled equipment to the PoE-enabled LAN ports:**

1. Connect one end of a straight-through RJ-45 Cat 5e or Cat 6 cable to a LAN port enabled with PoE.
2. Connect the other end of the cable to PoE-enabled equipment (e.g., an IP Phone).

6.5 Analog Interfaces

This section describes how to connect the device to analog equipment.

6.5.1 Connecting FXS Interfaces

The procedure below describes how to cable the device's FXS interfaces.

**Warnings:**

- The device is an **INDOOR** unit and therefore, must be installed only indoors.
- Ensure that the FXS ports are connected to the appropriate, external devices; otherwise, damage to the device may occur.
- FXS ports are considered TNV-2.

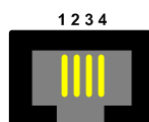
**Notes:**

- FXS interface is a separate orderable item.
- FXS is the interface replacing the Exchange (i.e., the CO or the PBX) and connects to analog telephones, dial-up modems, and fax machines. The FXS is designed to supply line voltage and ringing current to these telephone devices. An FXS VoIP device interfaces between the analog telephone devices and the Internet.

Cable specification:

- **Cable:** Standard straight-through RJ-11 telephone cable
- **Connector:** RJ-11
- **Connector Pinouts:**

Figure 6-19: RJ-11 Connector Pinouts for FXS Interface



- 1 - Not connected
- 2 - Tip
- 3 - Ring
- 4 - Not connected

➤ **To connect the FXS interfaces:**

1. Connect one end of an RJ-11 cable to the FXS port (labeled **FXS**).

Figure 6-20: Connecting FXS Interfaces – Mediant 800B MSBR

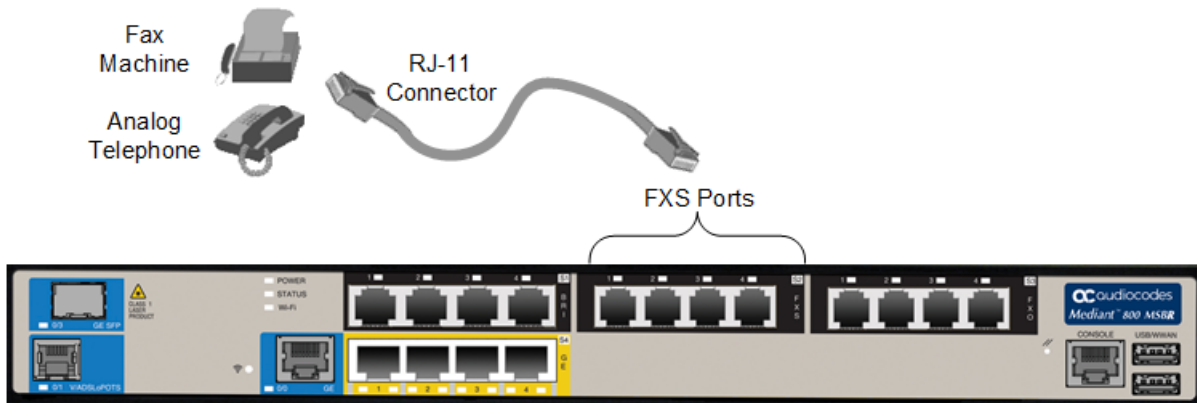
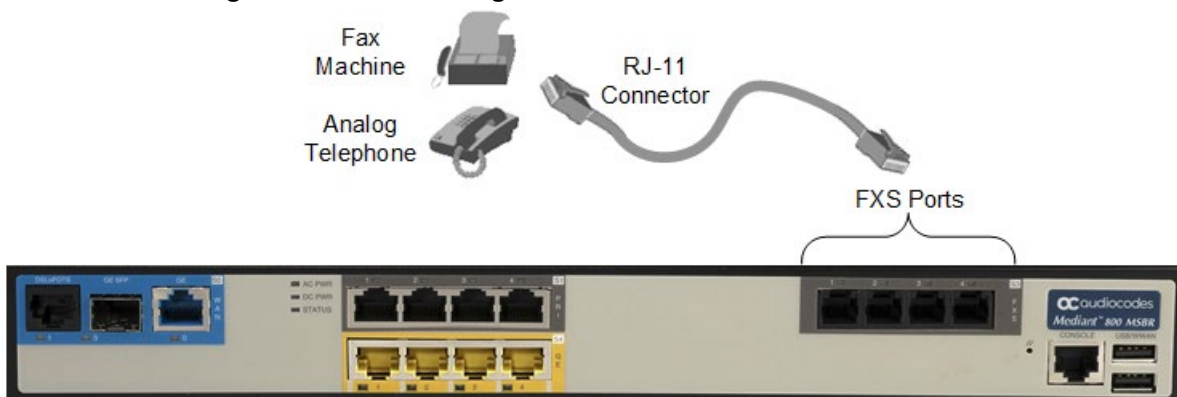


Figure 6-21: Connecting FXS Interfaces – Mediant 800C MSBR



2. Connect the other end of the cable to the required telephone interface (e.g., fax machine, dial-up modem, and analog POTS telephone).

6.5.2 Connecting FXO interfaces

The procedure below describes how to cable the device's FXO interfaces.



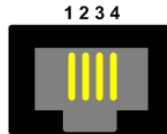
Notes:

- FXO is applicable only to Mediant 800B MSBR.
- FXO interface is a separate orderable item.
- FXO is the interface replacing the analog telephone and connects to a Public Switched Telephone Network (PSTN) line from the Central Office (CO) or to a Private Branch Exchange (PBX). The FXO is designed to receive line voltage and ringing current, supplied from the CO or the PBX (similar to an analog telephone). An FXO VoIP device interfaces between the CO/PBX line and the Internet.

Cable specification:

- **Connector:** RJ-11
- **Connector Pinouts:**

Figure 6-22: RJ-11 Connector Pinouts for FXO Interface



- 1 - Not connected
- 2 - Tip
- 3 - Ring
- 4 - Not connected



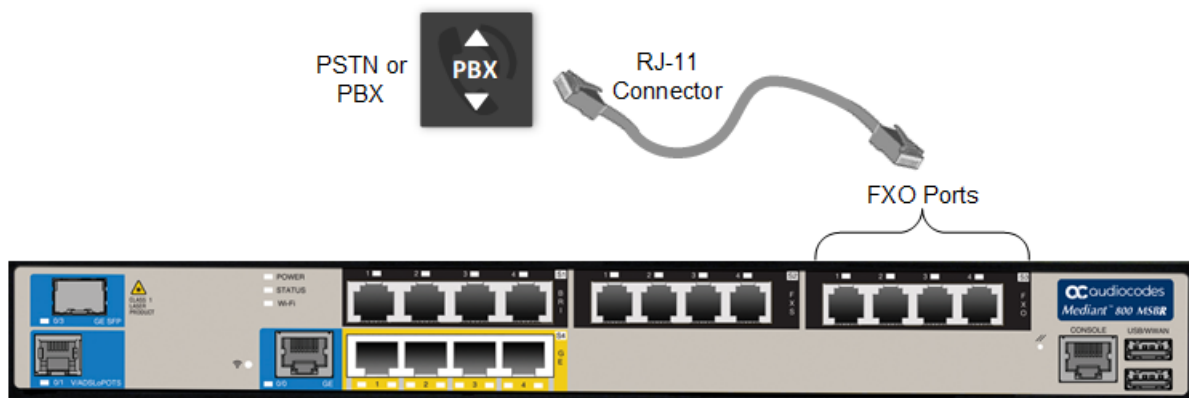
Warnings:

- The device does **not** include primary telecom protection! When the **FXO** telephone lines are routed **outside the building**, additional protection - usually a 350V three-electrode Gas Discharge Tube (GDT) as described in ITU-T K.44 - **must** be provided at the entry point of the telecom wires into the building (usually on the main distribution frame / MDF), in conjunction with proper grounding. The center pin of the GDT (MDF grounding bar) must be connected to the equipotential grounding bus bar of the Telecommunication room.
- To protect against electrical shock and fire, use a minimum 26-AWG wire to connect FXO ports to the PSTN.
- Ensure that the FXO ports are connected to the appropriate, external devices; otherwise, damage to the device may occur.
- FXO ports are considered TNV-3.

➤ **To connect the FXO interfaces:**

1. Connect one end of an RJ-11 cable to the FXO port (labeled **FXO**).

Figure 6-23: Connecting FXO Interfaces



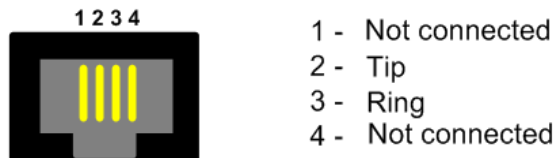
2. Connect the other end of the cable to the required telephone interface: (e.g., telephone exchange analog lines or PBX extensions).

6.5.3 Connecting the FXS Analog Lifeline

The device supports Analog Lifeline. If the device loses power, for example, due to a power outage or the unplugging of its power cable, it automatically routes calls from a POTS telephone ("lifeline" phone), connected to an FXS port, to the PSTN (instead of the IP network).

The Lifeline is provided by FXS Port # 1. This port connects to the analog POTS phone and the PSTN / PBX using an RJ-11 splitter cable (not supplied). The Lifeline splitter connects pins 1 and 4 to another source of an FXS port, and pins 2 and 3 to the POTS phone. The RJ-11 connector pinouts are shown in the figure below.

Figure 6-24: RJ-11 Connector Pinouts for FXS Lifeline



➤ **To cable the FXS Lifeline:**

1. Connect the lifeline splitter cable to FXS Port 1.
2. On the lifeline splitter cable, do the following:
 - a. Connect the analog telephone to Port A.
 - b. Connect an analog PSTN line to Port B.

Figure 6-25: Cabling FXS Lifeline – Mediant 800B MSBR

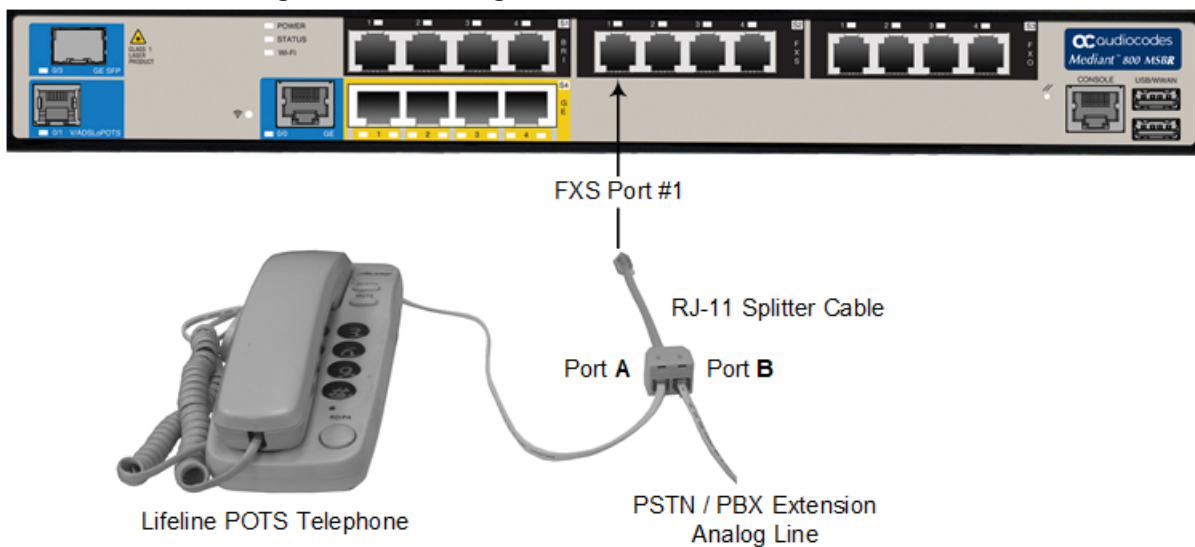
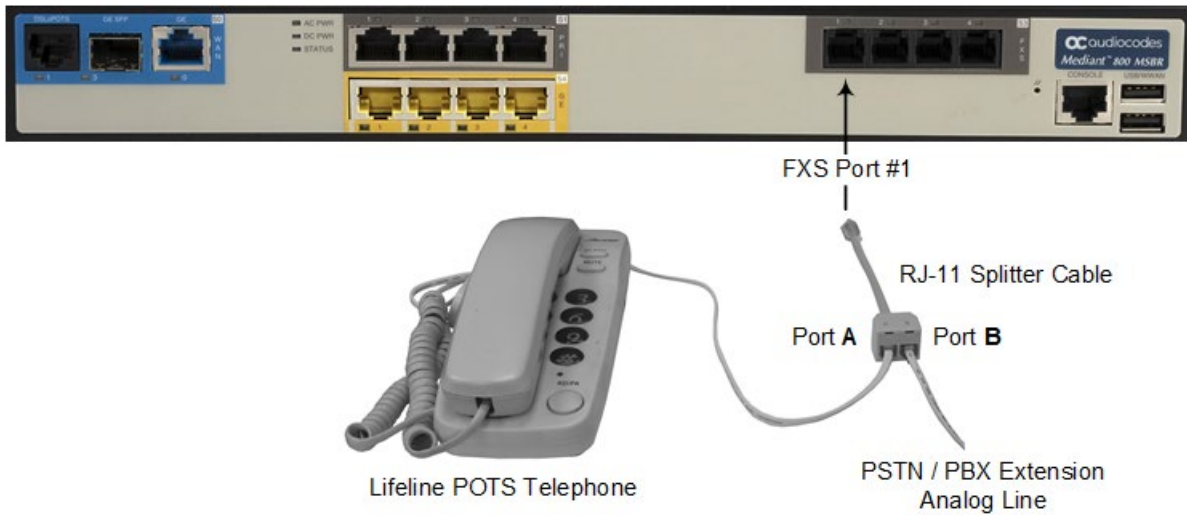


Figure 6-26: Cabling FXS Lifeline – Mediant 800 MSBR



Notes:



- The lifeline splitter cable is a separate orderable item.
- Analog Lifeline cabling is applicable only if the device is ordered with FXS interfaces.
- The number of supported Lifelines depends on the device’s hardware configuration. For the combined FXS/FXO configuration, one Lifeline is available; for the 12-FXS configuration, up to three Lifelines are available.

6.6 ISDN BRI Interfaces

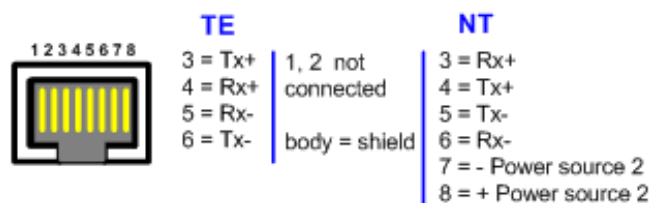
6.6.1 Connecting to BRI Lines

The device provides up to eight BRI S/T ports. These ports connect to ISDN terminal equipment such as ISDN telephones. Each BRI port can be configured either as termination equipment/user side (TE) or network termination/network side (NT). Up to eight terminal equipment (TE) devices can be connected per BRI S/T port, using an ISDN S-bus that provides eight ISDN ports. When configured as NT, the BRI port drives a nominal voltage of 38 V with limited current supply of up to 100 mA.

Cable specification:

- **Cable:** 26 AWG min. wire
- **Connector:** RJ-45
- **Connector Pinouts:**

Figure 6-27: RJ-45 Connector Pinouts for BRI Ports





Warning:

- BRI port cabling must be routed **only indoors** and must not exit the building.
- To protect against electrical shock and fire, use a 26 AWG min wire to connect the BRI ports to the PSTN.



Note: BRI interface is a separate orderable item.

➤ **To connect the BRI ports:**

1. Connect the BRI cable to the device's BRI RJ-45 port.
2. Connect the other end of the cable to your ISDN telephone or PBX/PSTN switch.

Figure 6-28: Cabling BRI Ports – Mediant 800B MSBR

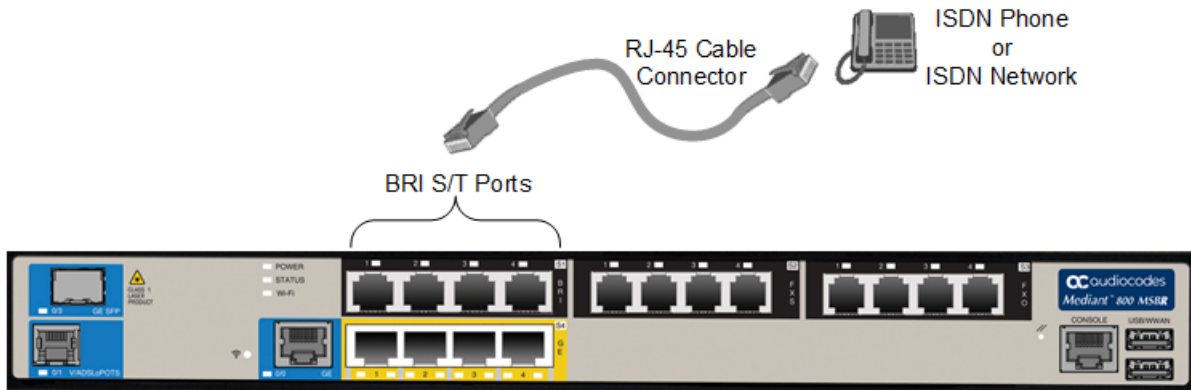
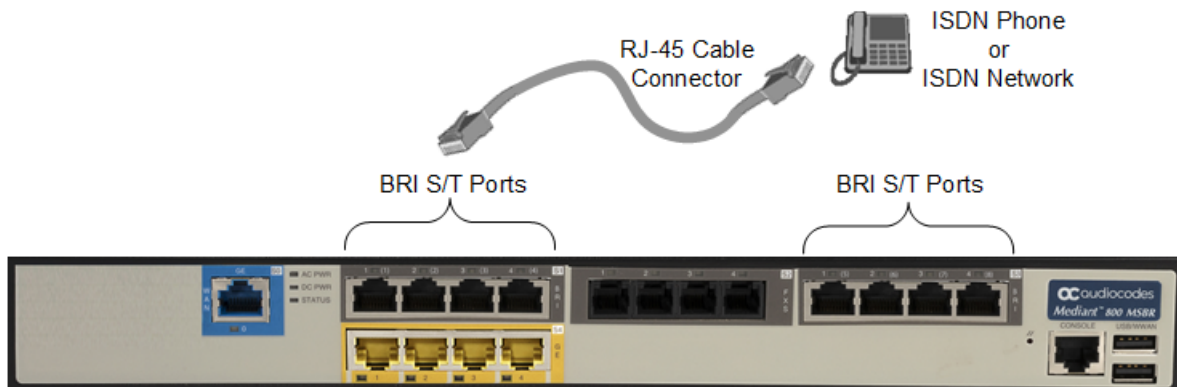


Figure 6-29: Cabling BRI Ports – Mediant 800C MSBR



6.6.2 Connecting the PSTN Fallback for BRI Lines

The device supports PSTN Fallback for BRI lines. If the device loses power, for example, due to a power outage or the unplugging of its power cable, it automatically routes calls from the Tel side to the PSTN (instead of to the IP network).

PSTN Fallback is supported if the device houses one or more BRI modules, where each BRI module provides two or four spans.

In the event of a PSTN fallback, the BRI module's metallic relay switch automatically connects line Port 1 to Port 2 of the BRI module.

For example, if a PBX trunk is connected to Port 1 and the PSTN network is connected to Port 2, when PSTN Fallback is activated, calls from the PBX are routed directly to the PSTN through Port 2.

➤ **To connect the BRI line interfaces for 1+1 PSTN Fallback:**

1. Connect Port 1 to a PBX.
2. On the same BRI module, connect Port 2 to the PSTN.

Figure 6-30: Cabling BRI PSTN Fallback – Mediant 800B MSBR

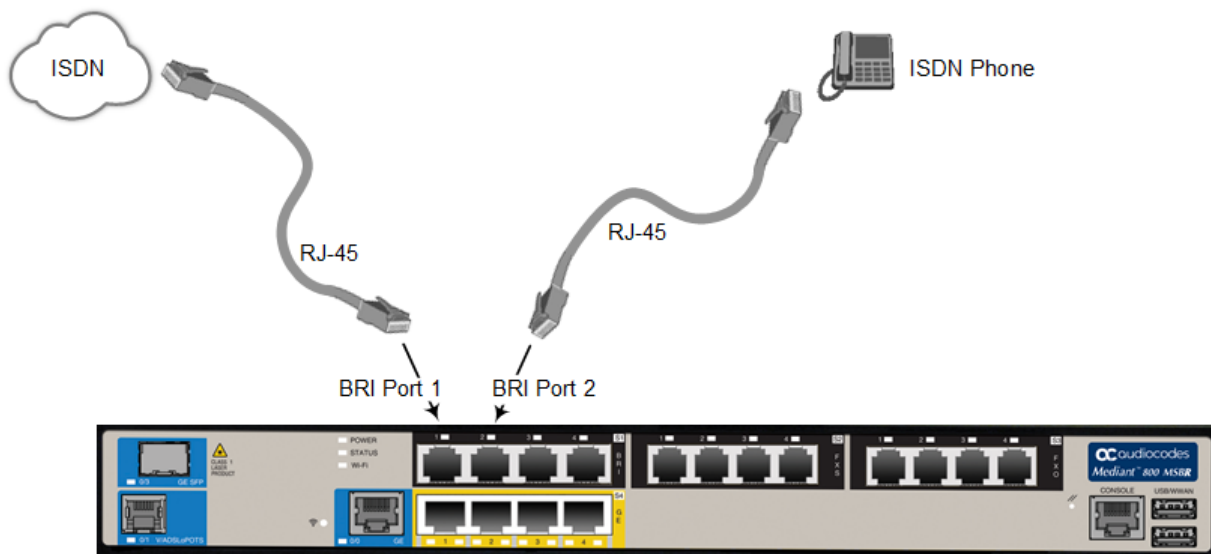
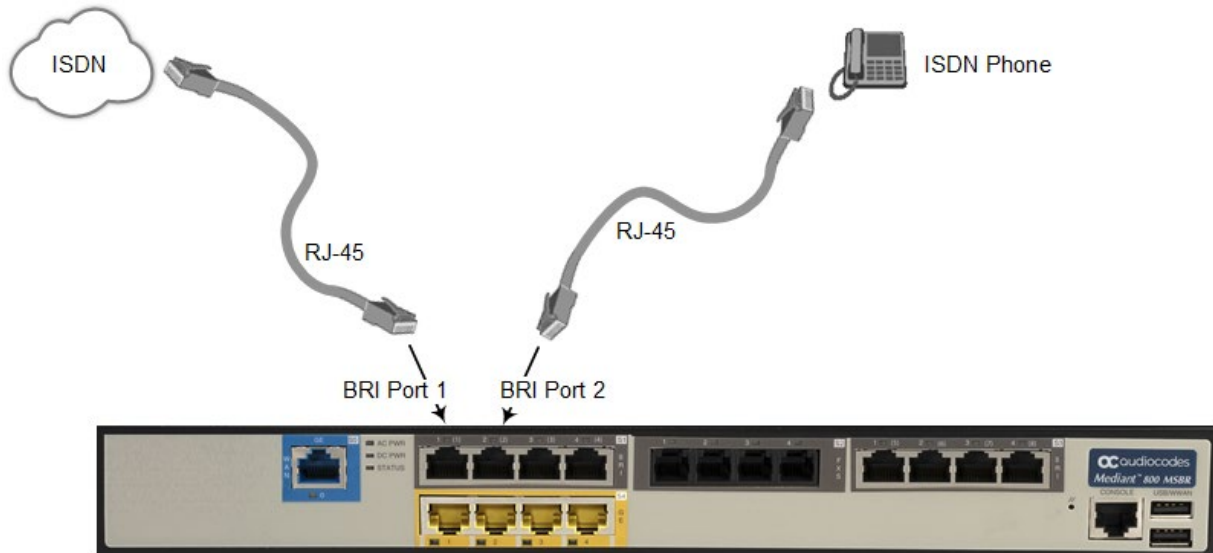


Figure 6-31: Cabling BRI PSTN Fallback – Mediant 800C MSBR



Notes:



- BRI port cabling must be routed **only indoors** and must not exit the building.
- PSTN Fallback is supported only on the BRI module.
- PSTN Fallback is supported only between ports on the same BRI module.
- This PSTN Fallback feature has no relation to the PSTN Fallback Software Upgrade Key.

6.7 Connecting to ISDN PRI (E1/T1) Trunks

The procedure below describes how to cable the device's E1/T1 trunk.



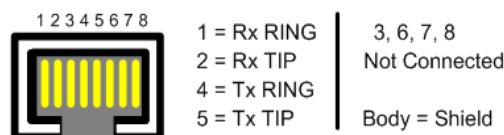
Warning:

- PRI port cabling must be routed **only indoors** and must not exit the building.
- To protect against electrical shock and fire, use a 26 AWG min wire to connect T1 or E1 ports to the PSTN.
- To comply with EMC rules and regulations, use shielded twisted pair (STP) cables for E1 interfaces on the Mediant 800B MSBR model.

Cable specification:

- **Cable:** 26 AWG min. wire
- **Connector:** RJ-48c
- **Connector Pinouts:**

Figure 6-32: RJ-48c Connector Pinouts for E1/T1



➤ **To connect the E1/T1 trunk interface:**

1. Connect the E1/T1 trunk cable to the device's E1/T1 port located on the PRI module.

Figure 6-33: Cabling E1/T1 Ports – Mediant 800B MSBR

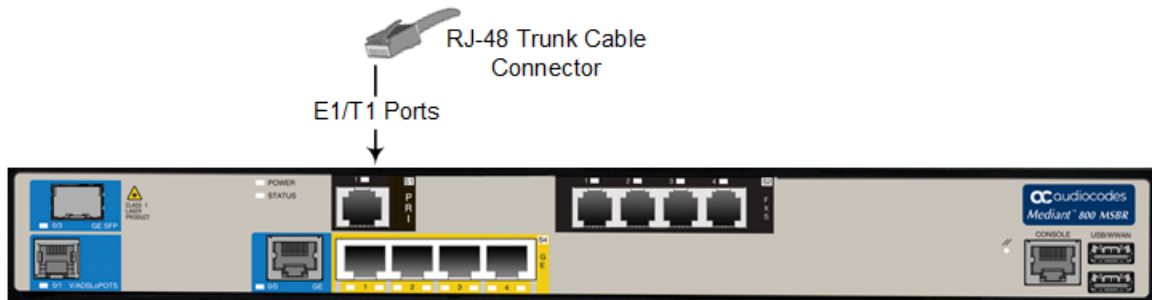
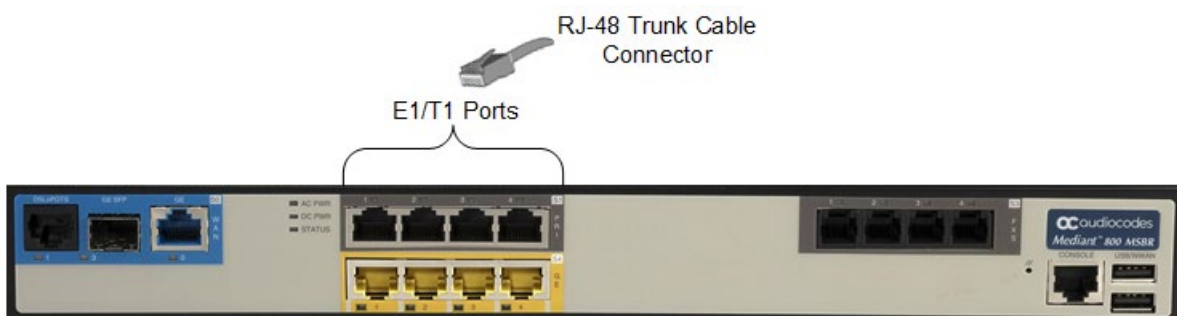


Figure 6-34: Cabling E1/T1 Ports – Mediant 800C MSBR



2. Connect the other end of the trunk cable to your PBX/PSTN switch.

6.8 Connecting the Serial Interface to a PC

The device provides an RS-232 serial interface port on its front panel for serial communication with a PC.

Cable specifications:

- Port Type: RJ-45
- Cable: RJ-45 to DB-9

The serial cable adapter (not supplied) for connecting the RS-232 interface is shown below:

Figure 6-35: RS-232 Cable Adapter

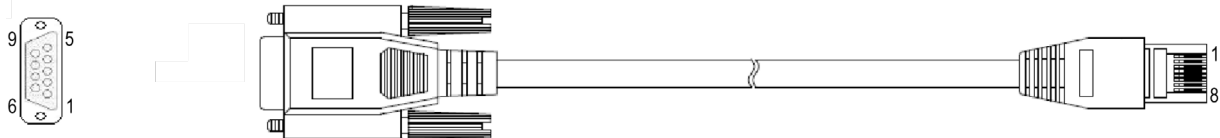


Table 6-6: RJ-45 to DB-9 Serial Cable Connector Pinouts

RJ-45	DB-9 Female
1	8
2	6
3	2
4	5
5	5
6	3
7	4
8	7

- **To connect the device's serial interface to a PC:**
1. Connect the RJ-45 cable connector to the device's serial port, labeled **CONSOLE**.
 2. Connect the other end of the cable to the COM1 or COM2 RS-232 communication port on your PC.

Figure 6-36: Cabling Serial Interface - Mediant 800B MSBR

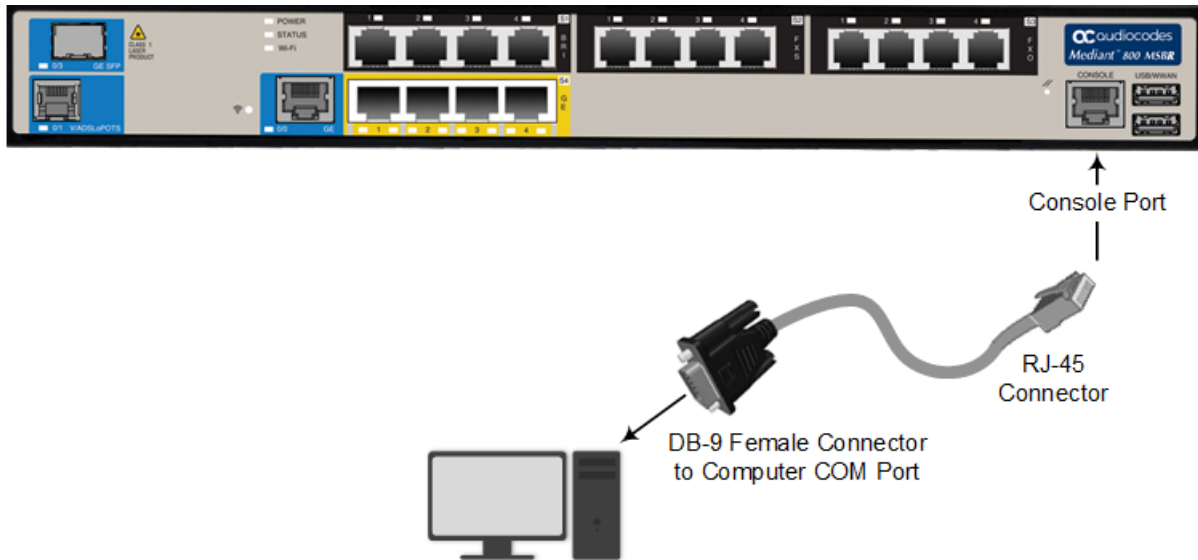
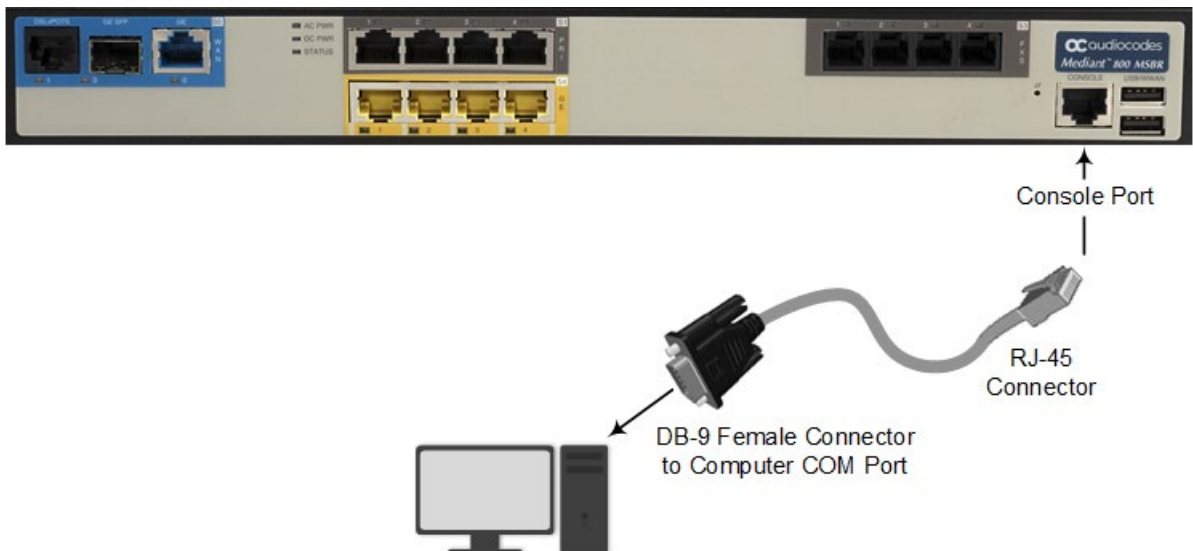


Figure 6-37: Cabling Serial Interface - Mediant 800C MSBR



6.9 Connecting a USB Storage Device

The device supports USB storage capabilities, using an external USB hard drive or flash disk (disk on key) connected to the device's USB port. The storage capabilities include the following:

- Saving network captures to the USB.
- Upgrading the device's firmware from the USB.
- Updating the device's configuration from the USB.
- Saving the current configuration to the USB.

➤ **To connect the USB storage device:**

- Connect the USB storage device to one of the USB ports located on the front panel (labeled **USB/WWAN**).

Figure 6-38: Connecting USB Storage Device – Mediant 800B MSBR

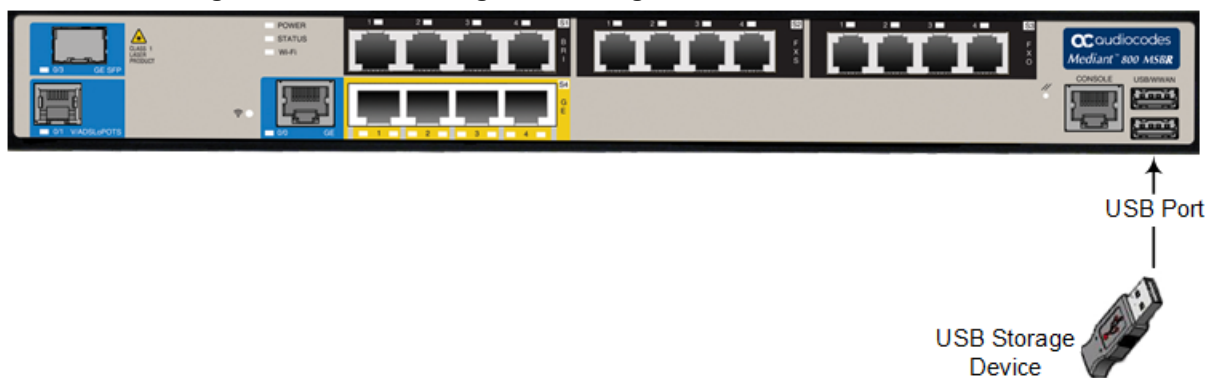


Figure 6-39: Connecting USB Storage Device – Mediant 800C MSBR



Note: Only a single USB storage (formatted to FAT/FAT32) operation is supported at any given time.

6.10 Connecting the OSN Server

The device may be ordered with an embedded, Open Network Solution (OSN) platform for hosting third-party services such as an IP PBX. The OSN modules are located on the device's rear panel.

The available, orderable OSN server platforms are listed in the table below.

Table 6-7: OSN Server Platforms

OSN Platform	CPU	Memory	Storage	Interfaces
OSN2	2 nd Generation Intel Core Celeron 1.6 GHz	2 or 4 GB	HDD 500 GB	<ul style="list-style-type: none"> ▪ Two external Gigabit Ethernet ▪ Internal Gigabit Ethernet ▪ Three USB 2.0 via Connection Module ▪ VGA
OSN4	3 rd Generation Intel Core i7 Quad Core	16 GB ECC DDR3	HDD (500 GB) or SSD (240 GB)	<ul style="list-style-type: none"> ▪ Two external Gigabit Ethernet ▪ Internal Gigabit Ethernet ▪ Three USB 2.0 via Connection Module ▪ VGA
OSN5	Intel Atom N2800 1.86 GHz Dual Core	2G	HDD 500 GB	<ul style="list-style-type: none"> ▪ External Gigabit Ethernet ▪ Internal Gigabit Ethernet ▪ Three USB 2.0 via Connection Module ▪ VGA

Notes:

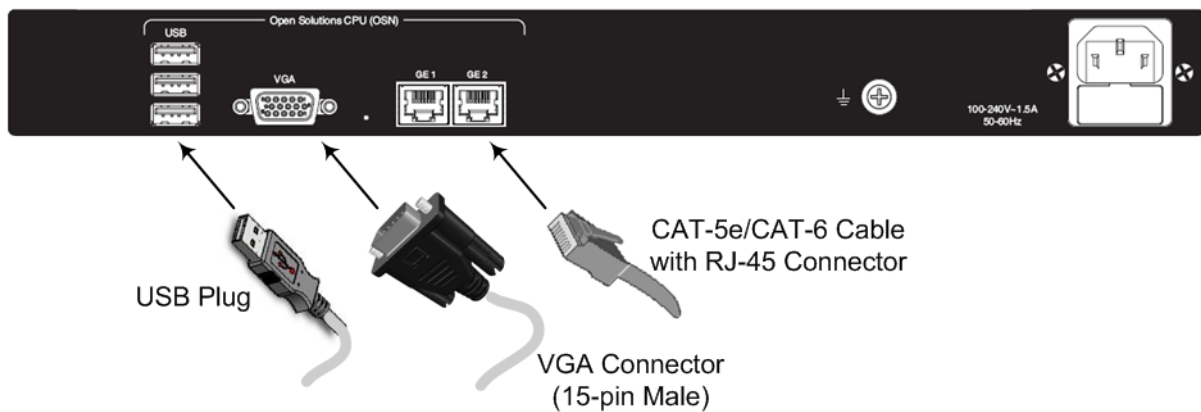


- The OSN server platform is a customer ordered feature and thus, the OSN interface ports, located on the rear panel are available only when the device is purchased with the OSN server.
- The OSN server also provides an internal interface connection to the device's LAN switch. In other words, instead of using the Gigabit Ethernet port on the rear panel, you can use the LAN port #1 located on the front panel for connecting to the OSN server.
- The table above lists the currently available OSN platforms. This list may change without notice. To check for any updated information on available OSN platforms, contact your AudioCodes sales representative.

➤ **To connect the OSN server:**

1. Perform the following cabling procedures on the OSN server, located on the rear panel:
 - a. Connect computer peripherals (e.g., mouse and keyboard) to the USB ports (Standard-A type) labeled **USB**.
 - b. Connect the USB storage device containing the operating system installation files (Linux or Microsoft Windows) to one of the USB ports, labeled **USB**.
 - c. Connect a monitor using a 15-Pin D-type male connector to the VGA female port, labeled **VGA**.
 - d. Connect to the network using an RJ-45 Ethernet cable connector to the Gigabit Ethernet port/s (labeled **GE 1** and **GE 2**).

Figure 6-40: Cabling OSN Server Ports



2. Connect the device to power.
3. Follow the operating system's installation instructions to install the operating system.

➤ **To reset the OSN server:**

- Insert a sharp-pointed object (such as a drawing pin) into the Reset pinhole and then extract it after a second; the OSN server performs a reset.

6.11 Connecting to Power

The supported power type depends on the Mediant 800 hardware revision:

- **Mediant 800B MSBR:** Only AC power
- **Mediant 800C MSBR:** AC and DC redundant power. When both power supplies are used (AC and DC), the device is powered from the AC power source only. The DC source starts feeding the device only upon an AC power outage.



Notes: For Mediant 800C MSBR, the device is always shipped with AC power support. DC power is also available if the device is ordered with DC support (AC/DC power adaptor is provided).

6.11.1 Connecting to AC Power

The device receives power from a standard alternating current (AC) electrical outlet. The connection is made using the supplied AC power cord.

Table 6-8: AC Power Specifications

Physical Specification	Value
Input Voltage	Single universal AC power supply 100 to 240V
AC Input Frequency	50 to 60 Hz
AC Input Current	<ul style="list-style-type: none"> ▪ Mediant 800B MSBR: 4 A max. (with PoE) ▪ Mediant 800C MSBR: 1.5 A (max.)
Max. Power Consumption	<ul style="list-style-type: none"> ▪ SBC Only (no PSTN): 27W ▪ Gateway (without OSN): 60W* ▪ With PoE option: 300W <p>* Power consumption varies according to the assembled hardware configuration.</p>



Warnings:

- The device must be connected to a socket-outlet providing a protective earthing connection.
- To avoid electric shock or fire, use only the AC power cord that is supplied by AudioCodes with the device.
- For replacing the power fuse, see Section 7 on page 65.



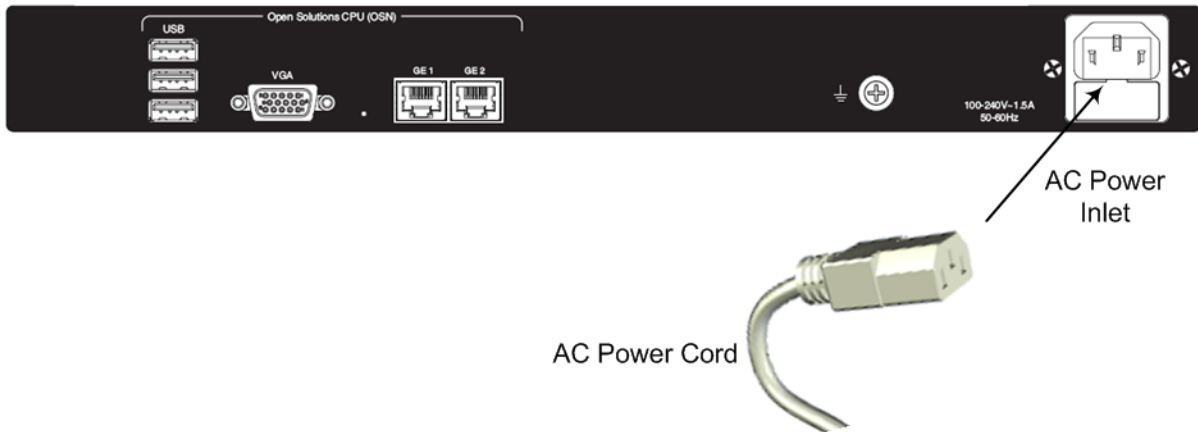
ご注意

本製品に添付の電源ケーブルは、Mediant 800 MSBRに専用設計されているため、汎用性はありません。本電源ケーブルを他の機器に使用されないよう、ご注意ください。

➤ **To connect the device to the power supply:**

1. Connect the line socket of the AC power cord (supplied) to the device's AC power socket, located on the rear panel.

Figure 6-41: Connecting to the Power Supply



2. Connect the plug at the other end of the AC power cord to a standard electrical outlet.

Once you have cabled and powered-up the device, the **POWER** LED on the front panel lights up green. For a description of this LED, see Section 3.2.2.10 on page 23.

6.11.2 Connecting to DC Power

DC power is cabled using the AC/DC power adaptor (supplied) which is connected to a standard AC electrical wall outlet. Typically, the DC power source is used for power redundancy with the AC power source (see note below).



Notes:

- DC power is applicable only to Mediant 800C MSBR.
- DC power support is a separate orderable item.
- When both power supplies are used (AC and DC), the device is powered from the AC power source only. The DC source starts feeding the device only upon an AC power outage.

Table 6-9: DC Power Specifications

Physical Specification	Value
Input Voltage	12VDC / 10A

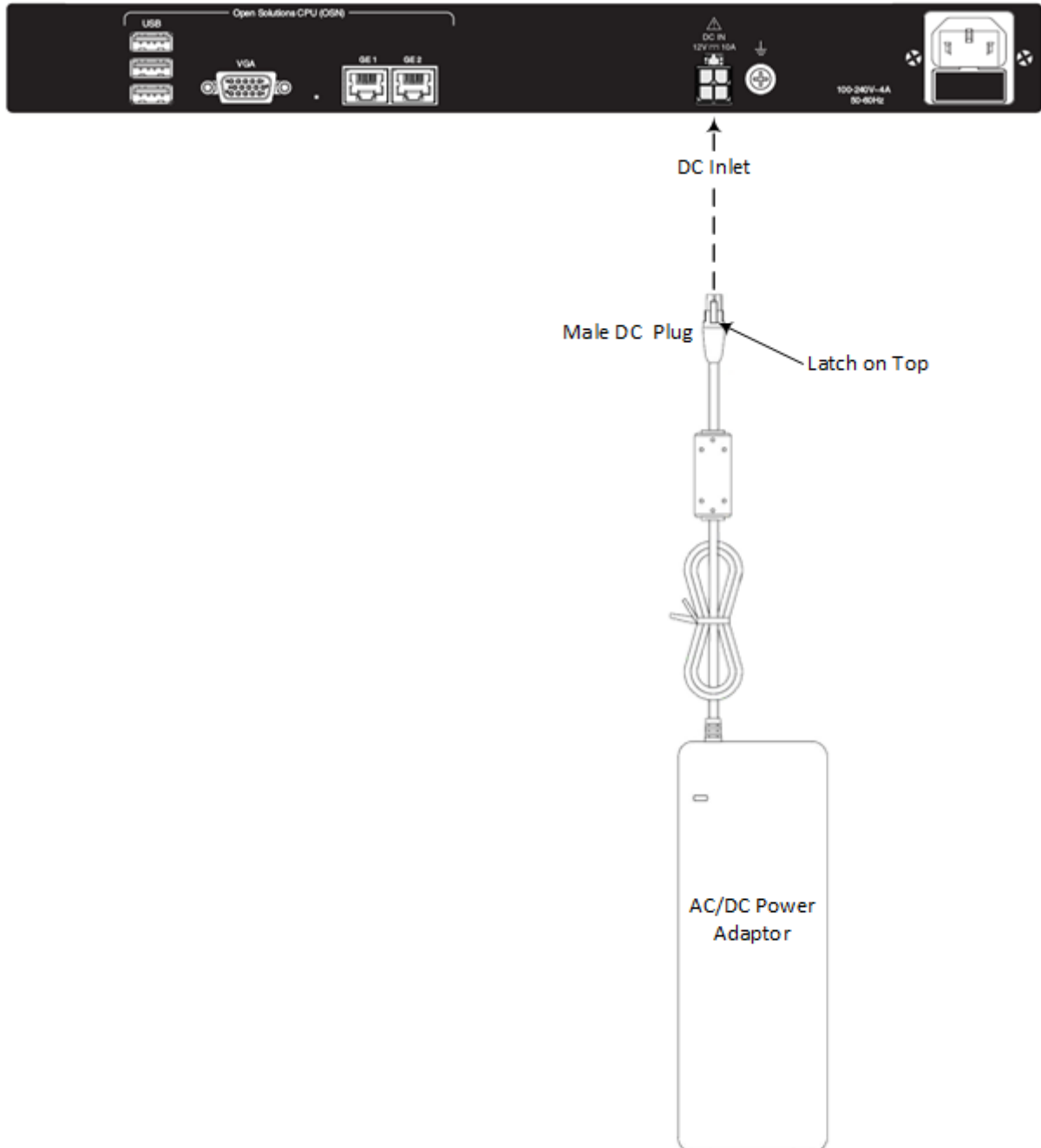


Warning: Use only the AC/DC power adaptor that is provided by AudioCodes when ordering DC power.

➤ **To connect the device for DC power:**

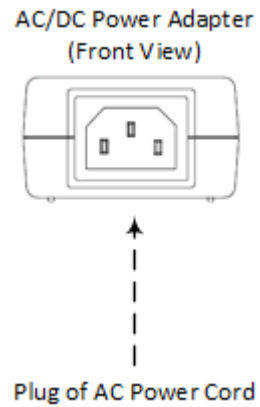
1. Insert the male DC plug into the DC inlet connector located on the device's rear panel. When inserting the DC plug, make sure that the latch faces up (see figure below). Make sure that the latch snaps into the inlet, indicating that the terminal block has been firmly plugged in.

Figure 6-42: Connecting DC Power Plug to DC Inlet



2. Plug the female connector that is located on one end of the AC power cord (supplied), into the AC/DC power adaptor.

Figure 6-43: Plugging AC Power Cord into AC/DC Adaptor



3. Plug the other end of the AC power cord (supplied) into a standard electrical wall outlet. The device's **DC PWR** LED, located on the front panel, lights up green.

7 Maintenance

This section describes maintenance procedures.

7.1 Replacing the Power Fuse

The device contains a fuse that protects the device from excessive current. The fuse is located on the rear panel, below the power socket. To replace the fuse, use only one of the following fuses described in the table below:

Table 7-1: Allowed Fuses for the Device

Manufacturer	Manufacturer Part Number
LITTEFUSE	215 06.3 (6.3A/250V)



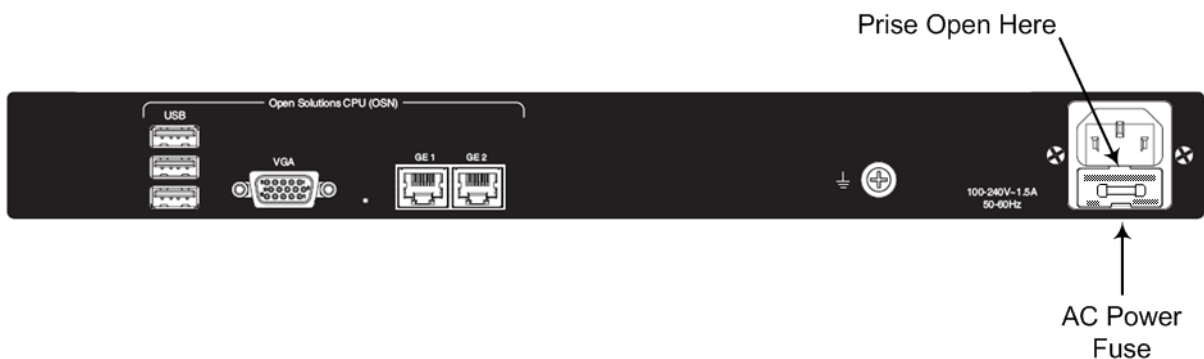
Caution

For continuous protection, replace only with the same fuse type and rating fuse.

➤ To replace the power fuse:

1. Unplug the power cord from the electrical outlet.
2. Using a small flathead screwdriver, gently pries open the fuse cavity as illustrated in the figure below:

Figure 7-1: Opening the Fuse Cavity



3. Carefully remove the fuse from the fuse cavity.

Figure 7-2: Removing the Power Fuse



4. Insert the new fuse securely into the fuse cavity until you hear a click sound.
5. Reconnect the power cord and verify that the **Power** LED is lit green.

This page is intentionally left blank.

A Approved Laser SFPs

The table below lists the recommended SFPs, which can be ordered from AudioCodes. For installing the SFPs and for fiber-optic WAN cabling, see Section 6.2.2 on page 36.

Table A-1: Approved SFP Modules

Object / Part No.	Manufacturer / Trademark	Optional Types / Models	Technical Data	Standard (Edition / Year)	Mark(s) of Conformity
Laser SFP Insert	Source Photonics	<ul style="list-style-type: none"> ▪ SPL-35-03-EBX-CDFM ▪ SPL-53-03-EBX-CDFM ▪ SPL-35-03-EBX-CDFM ▪ SPL-34-GB-BX-CDFM ▪ SPL-43-GB-BX-CDFN ▪ SP-GB-LX-CDFN ▪ SP-GB-SX-CDFB 	Class 1 <ul style="list-style-type: none"> ▪ 1310 nm ▪ 1550 nm ▪ 1850 nm ▪ 1490 nm 	<ul style="list-style-type: none"> ▪ EN60950-1:2006+A11 ▪ EN60825-1:2007, EN60825-2:2004+A1 ▪ UL60950-1 	<ul style="list-style-type: none"> ▪ UR ▪ TUV
Alternate Laser SFP Insert	Neo Photonics	<ul style="list-style-type: none"> ▪ PT7320-51-1W+ ▪ PTB3350-3331W-LC/PC+ ▪ PTB3530-3331W-LC/PC+ ▪ PTB3370-553CW-LC/PC+ ▪ PTB3830-553CW-LC/PC+ ▪ PT7320-51-1W+ 	Class 1 <ul style="list-style-type: none"> ▪ 1310 nm ▪ 1550 nm ▪ 1850 nm ▪ 1490 nm 	<ul style="list-style-type: none"> ▪ EN60950-1:2006+A11 ▪ EN60825-1:2007 ▪ EN60825-2:2004+A1 ▪ UL60950-1 	<ul style="list-style-type: none"> ▪ UR ▪ TUV

This page is intentionally left blank.

B Notice for Installing CentOS Version 4.7 on OSN Server

This appendix provides important information when installing CentOS Ver. 4.7 Linux Distribution on the OSN server:

- When installing CentOS, ensure that you type `linux irqpoll` at the `boot:` prompt.
- For CentOS to identify the OSN server's Gigabit Ethernet (GE) interfaces, do the following:

1. Obtain the following files from AudioCodes:
 - ◆ Binary compiled CentOS 4.7 driver for Intel e1000e Ethernet controller on Mediant 800 MSBR (**e1000e.ko**)
 - ◆ Manual pages (**e1000e.7.gz**)
2. Copy the files to the `/root` directory.
3. Remove any old e1000e modules (if any) and install the new module and manual pages:

```
#> find /lib/modules/2.6.9-78.ELsmp -name e1000e.ko -exec
rm -rf {} \;
#> find /lib/modules/2.6.9-78.ELsmp -name e1000e.ko.gz -
exec rm -rf {} \;
#> install -D -m 644 /root/e1000e.ko /lib/modules/2.6.9-
78.ELsmp/kernel/drivers/net/e1000e/e1000e.ko
#> /sbin/depmod -a
#> echo "alias eth1 e1000e" >> /etc/modprobe.conf
#> echo "alias eth2 e1000e" >> /etc/modprobe.conf
#> install -D -m 644 /root/e1000e.7.gz
/usr/share/man/man7/e1000e.7.gz
#> man -c -P`cat > /dev/null` e1000e
#> modprobe e1000e
```

Note: The character `#>` depicts the CLI prompt and is not part of the command.

4. Restart networking, by running the following command:

```
#> service network restart
```

Note: The character `#>` depicts the CLI prompt (i.e., this is not part of the command).

The final result should be as follows:

```
Eth0 = r8169 (INTERNAL and not in use)
Eth1 = e1000e (GE LAN)
Eth2 = e1000e (GE LAN)
```

International Headquarters

1 Hayarden Street,
Airport City
Lod 7019900, Israel
Tel: +972-3-976-4000
Fax: +972-3-976-4040

AudioCodes Inc.

200 Cottontail Lane,
Suite A101E,
Somerset NJ 08873
Tel: +1-732-469-0880
Fax: +1-732-469-2298

Contact us: <https://www.audiocodes.com/corporate/offices-worldwide>

Website: <https://www.audiocodes.com/>

©2020 AudioCodes Ltd. All rights reserved. AudioCodes, AC, HD VoIP, HD VoIP Sounds Better, IPmedia, Mediant, MediaPack, What's Inside Matters, OSN, SmartTAP, User Management Pack, VMAS, VoIPerfect, VoIPerfectHD, Your Gateway To VoIP, 3GX, VocaNom, AudioCodes One Voice, AudioCodes Meeting Insights, AudioCodes Room Experience and CloudBond are trademarks or registered trademarks of AudioCodes Limited. All other products or trademarks are property of their respective owners. Product specifications are subject to change without notice.

Document #: LTRT-10234

