Quick Setup Guide

AudioCodes MediaPack™ Family

Connecting AudioCodes MP-1288 High-Density Analog Gateway to BroadCloud Hosted UC

Version 7.2.100

Table of Contents

Notice

This Quick Setup Guide shows how to connect the AudioCodes' MP-1288 High-Density Analog Media Gateway to the BroadCloud Hosted Unified Communications (UC) service.

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1 Introduction

This guide shows how to set up AudioCodes' MP-1288 High-Density Analog Media Gateway to interoperate with the BroadCloud Hosted Unified Communications (UC) service.

1.1 Component Information

1.1.1 AudioCodes Gateway Version

Table 1-1: AudioCodes Gateway Version

SBC Vendor	AudioCodes
Models	▪ MP-1288
Software Version	▪ F7.20A.100.025 and later
Protocol	▪ SIP/UDP (to the BroadCloud Hosted UC service)

1.1.2 BroadCloud Hosted UC Version

Table 1-2: BroadCloud Version

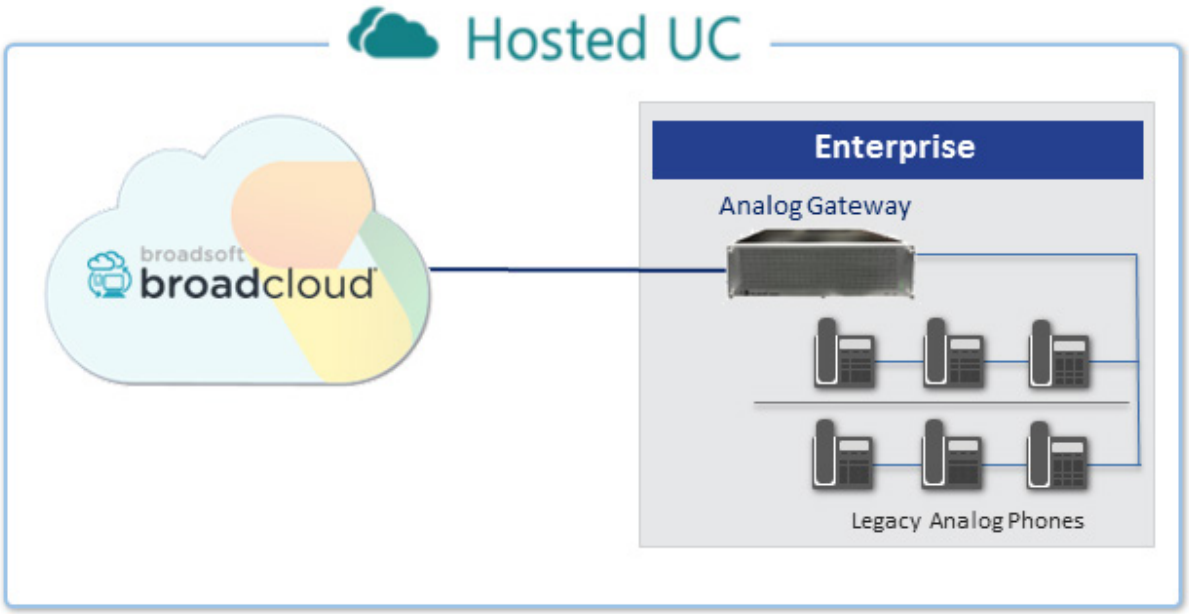
Vendor/Service Provider	BroadSoft
SSW Model/Service	BroadWorks
Software Version	21.SP1
Protocol	SIP

1.1.3 Solution Topology

Interoperability between AudioCodes' MP-1288 High-Density Analog Media Gateway and the BroadCloud Hosted UC was achieved using the following topology setup:

- AudioCodes MP-1288 Gateway device, connecting the enterprise's FXS extensions to the BroadCloud Hosted UC service over IP
- Internet/MPLS network connectivity to the BroadCloud Hosted UC service

Figure 1-1: BroadCloud Hosted UC Solution Topology



2 Installing the Hardware

2.1 Front Panel

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

Figure 2-1: Front Panel

Table 2-1: Front Panel Description

Item #	Label	Description
1	-	Fan Tray cover.
2	**SYS** / **TEL** / **PWR** / **FAN**	Front-panel LEDs.

2.1.1 LED Descriptions

This section describes the LEDs on the front panel of the chassis.

2.1.1.1 SYS LED

The **SYS** LED indicates the device's operating status, as described in the table below.

Table 2-2: SYS LED Description

Color	State	Description
Green	On	LED lit as a result of one of the following: ▪ Device is operating normally ▪ During first stage of boot up when device is powered on
Orange	On	Chassis is approaching high temperature threshold, but it's not yet critical
Red	On	LED lit as a result of one of the following: ▪ Fault detected in CPU module ▪ Incompatible or faulty software version (.cmp file) detected during boot up ▪ Approaching critical high temperature threshold
	Off	No power

2.1.1.2 TEL LED

The **TEL** LED indicates the status of the FXS blades, as described in the table below.

Table 2-3: TEL LED Description

Color	State	Description
Green	On	LED lit as a result of one of the following: ▪ During booting up phase ▪ During normal operation, indicating normal FXS blade operation
Orange		At least one DSP has reached the high temperature threshold
Red	On	LED lit as a result of one of the following: ▪ During initial phase of power-up ▪ Failure detected in at least one FXS blade ▪ No FXS blades detected in the chassis
-	Off	No power.

2.1.1.3 PWR LED

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

Table 2-4: PWR LED Description

Color	State	Description
Green	On	Chassis receiving power and Power Supply modules are functioning normally. If the device is configured to use only one Power Supply module, the LED is lit if at least one of them is operating normally.
Red	On	One of the Power Supply modules is faulty (if device is configured to use two Power Supply modules).
-	Off	No power received by the device.

2.1.1.4 FAN LED

The **FAN** LED indicates the status of the Fan Tray module, as described in the table below.

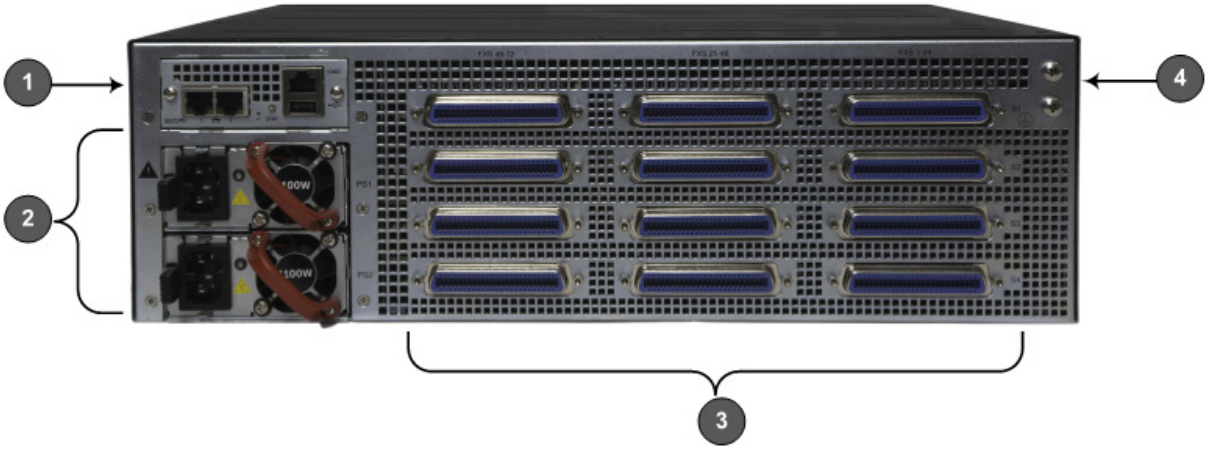
Table 2-5: FAN LED Description

Color	State	Description
Green	On	Fans are functioning normally.
Red	On	At least one fan in the Fan Tray module is faulty.
-	Off	No power.

2.2 Rear Panel

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

Figure 2-2: Rear Panel Description



Note: The figure above is used only as an example. The number of installed FXS blades and Power Supply modules depends on your ordered hardware configuration.

Table 2-6: Rear Panel Description

Item #	Label	Description
1	**CPU**	CPU module providing the central processing unit and various network port interfaces.
2	**PS1** / **PS2**	Power Supply modules.
3	Blades: **S1** / **S2** / **S3** / **S4** FXS Ports: **FXS 1-24** / **FXS 25-48** / **FXS 49-72**	FXS blades providing FXS port interfaces.
4	⏚	Protective grounding for connecting a grounding lug for chassis ground connection for ESD-preventive equipment or a grounding wire.

2.2.1 LED Descriptions

This section describes the LEDs on the rear panel of the chassis.

2.2.1.1 Ethernet LEDs

Each Ethernet port on the CPU module provides a LED (located on its left) which indicates network connectivity status, as described in the table below.

Table 2-7: Ethernet LEDs Description

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

2.2.1.2 STAT LED

The **STAT** LED on the CPU module indicates the operating status of the CPU module, as described in the table below.

Table 2-8: STAT LED Description

Color	State	Description
Green	On	LED lit as a result of one of the following: ▪ Device is operating normally ▪ During first stage of boot up when device is powered on
Orange	On	Chassis is approaching high temperature threshold, but it's not yet critical
Red	On	LED lit as a result of one of the following: ▪ Fault detected in CPU module ▪ Incompatible or faulty software version (.cmp file) detected during boot up ▪ Approaching critical high temperature threshold
-	Off	No power.

2.2.1.3 FXS LEDs

Table 2-9: FXS LEDs Description

Color	State	Description
Green	On	FXS blade initialization completed and is functioning normally.
Orange	On	Some FXS ports (less than a third) are out of service.
Red	On	FXS blade initialization has not completed or a failure is detected in the FXS blade due to any of the following: ▪ Multiple FXS ports (more than a third) are out of service ▪ DSP failure
-	Off	No power.

2.2.1.4 Power Supply LED

The Power Supply module, located on the chassis rear panel, provides a LED which indicates the operating status of the module, as described in the table below.

Table 2-10: Power Supply Module LED Description

Color	State	Description
Green	On	Connected to power source, chassis receiving power, and Power Supply module's fan operating normally.
Amber	Flashing	Connected to power source but chassis not receiving power or fault detected in Power Supply module's fan. If the chassis houses two Power Supply modules but only one of them is connected to the power source, the LED on the Power Supply module that is not connected flashes amber.
-	Off	No power received from power source.

2.3 Cabling

2.3.1 Connecting Ethernet Interfaces

The device provides two 100/1000Base-T Gigabit Ethernet ports (RJ-45) for connecting to the IP network (e.g., LAN). The ports support half- and full-duplex modes, auto-negotiation, and straight or crossover cable detection.

The ports can operate as a pair (*Ethernet Group*) to provide 1+1 port redundancy, where one port serves as the active port while the other as standby. When the active port fails, the device switches to the standby port.

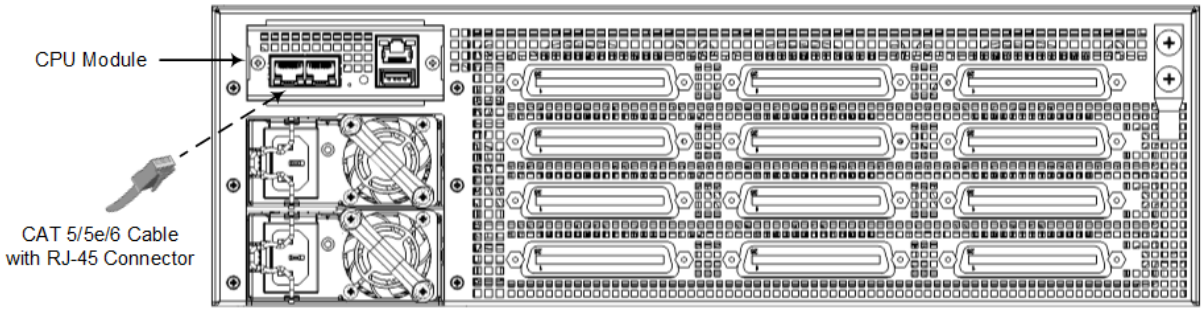
The cabling specifications and procedure for connecting the device to the LAN is as follows:

- **Cable:** Straight-through, Category (Cat) 5, 5e or 6 cable
- **Connector:** Standard RJ-45

➢ **To connect the Ethernet interfaces:**

1. Connect the RJ-45 connector, at one end of a straight-through Cat 5e or Cat 6 cable, to one of the Ethernet ports (labeled) on the CPU module located on the chassis' rear panel, as shown below:

Figure 2-3: Connecting the LAN Ports



2. Connect the other end of the cable to your network.
3. For 1+1 Ethernet port redundancy, repeat steps 1 through 2 for the standby port. Make sure that you connect each port to a different network (but in the same subnet).

2.3.2 Connecting FXS Interfaces

The device interfaces with the FXS analog telephone equipment (e.g., fax machines, modems, or telephones) through the 50-pin Telco connectors provided on the FXS blades.

Safety Notice

- Make sure that the FXS ports are connected to the appropriate, external devices; otherwise, damage to the device may occur.
- FXS ports are considered TNV-2.

FXS Outdoor Cabling and Power Surge Protection

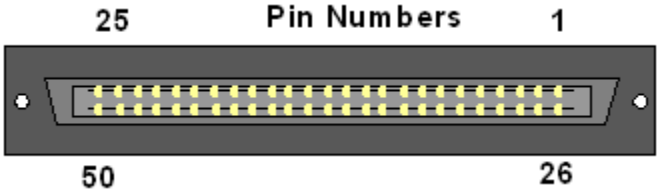
- The device includes an integrated secondary surge protection but excludes primary telecom protection**!** When the **FXS** telephone lines are routed **outside the building**, additional protection - usually a 350V three-electrode Gas Discharge Tube (GDT) as described in ITU-T K.44 - **must** be provided 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 telecommunications 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 FXS ports.

Note: To configure the current (mA) that the device supplies to the FXS ports in off-hook state, use the 'EnhancedFXSLineCurrent' parameter. Configuration is applicable only to the first and last ports (e.g., 1 and 24) on each FXS connector. For more information, refer to the *User's Manual*.

The FXS cabling specifications include the following:

- **Cable:** You can use any of the following cables:
  - AudioCodes orderable FXS Patch Panel
  - AudioCodes orderable Centronics cable connector (10 m) to open leads, which needs to be connected to a distribution panel
  - Third-party, main distribution frame (MDF) connector
- **Connector Type:** 50-pin Telco

Figure 2-4: 50-pin Telco Connector



- **Connector Pinouts:**

Table 2-11: 50-pin Telco Connector Pinouts

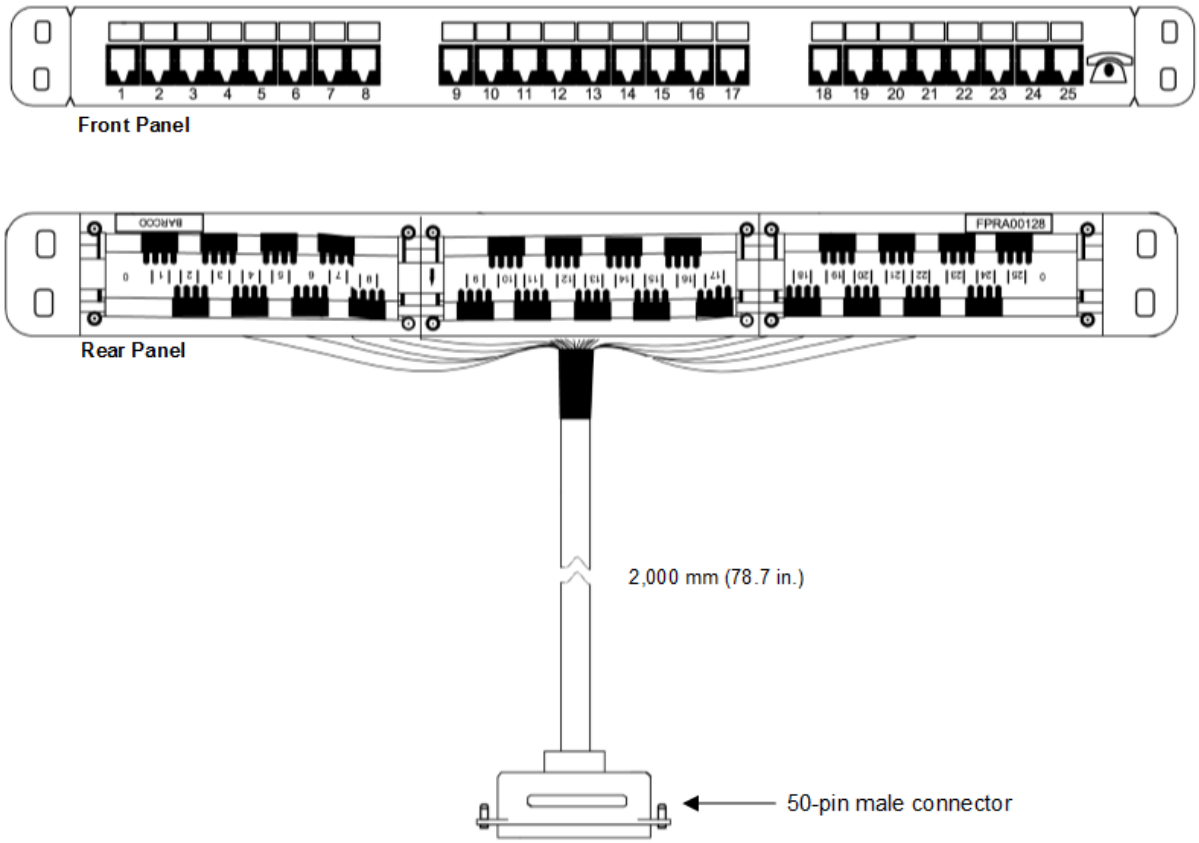
FXS Phone Channel (Ports)	Connector Pins
1	1/26
2	2/27
3	3/28
4	4/29
5	5/30
6	6/31
7	7/32
8	8/33
9	9/34
10	10/35
11	11/36
12	12/37
13	13/38
14	14/39
15	15/40
16	16/41
17	17/42
18	18/43
19	19/44
20	20/45
21	21/46
22	22/47

FXS Phone Channel (Ports)	Connector Pins
23	23/48
24	24/49
25 for Analog Lifeline	25/50

2.3.3 Connecting FXS Interfaces using AudioCodes FXS Patch Panel

You can purchase AudioCodes' FXS Patch Panel, as shown below, to connect the FXS interfaces to FXS equipment. The Patch Panel can be mounted in a 19-inch rack using integrated mounting brackets and provides a 2-meter (78.7 in.) extension cable with a 50-pin male connector for connection to the FXS port on the FXS blade. All incoming wires from the 50-pin Telco connector are terminated to the back of the Patch Panel. The FXS endpoints (e.g., telephones) can be plugged into the corresponding RJ-11 jacks on the front of the Patch Panel.

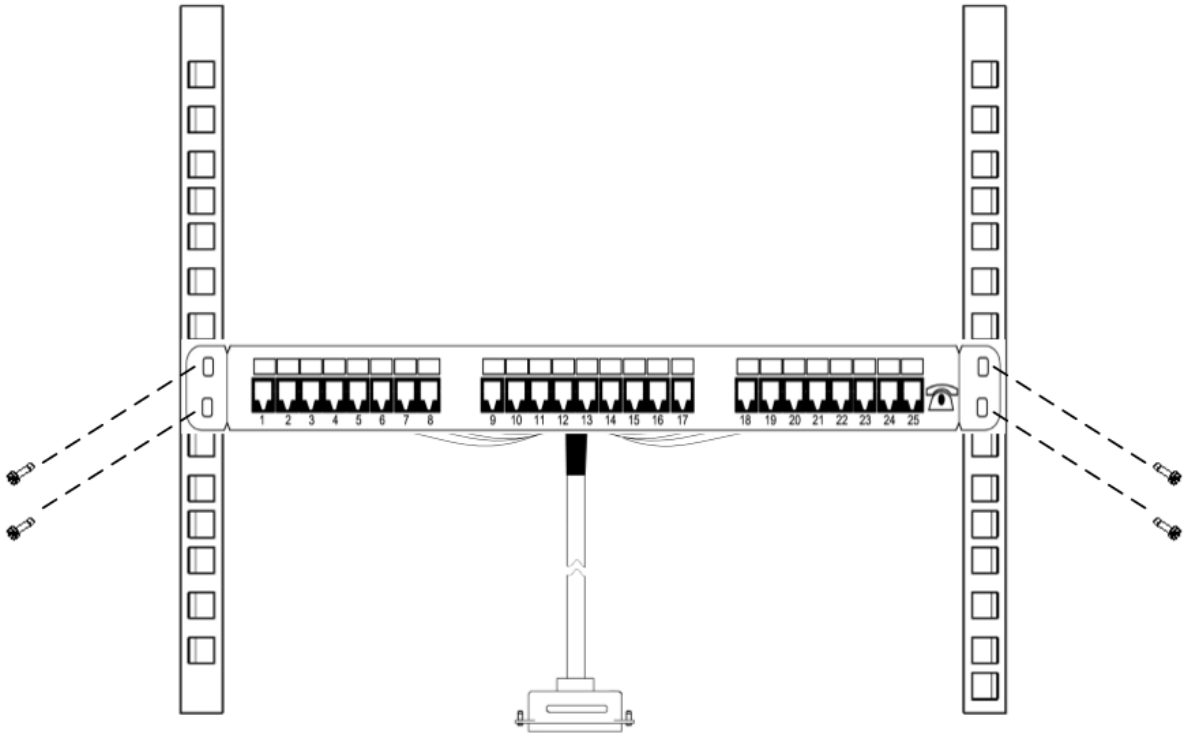
Figure 2-5: Orderable FXS Patch Panel



➢ **To connect the FXS interfaces using the FXS Patch Panel:**

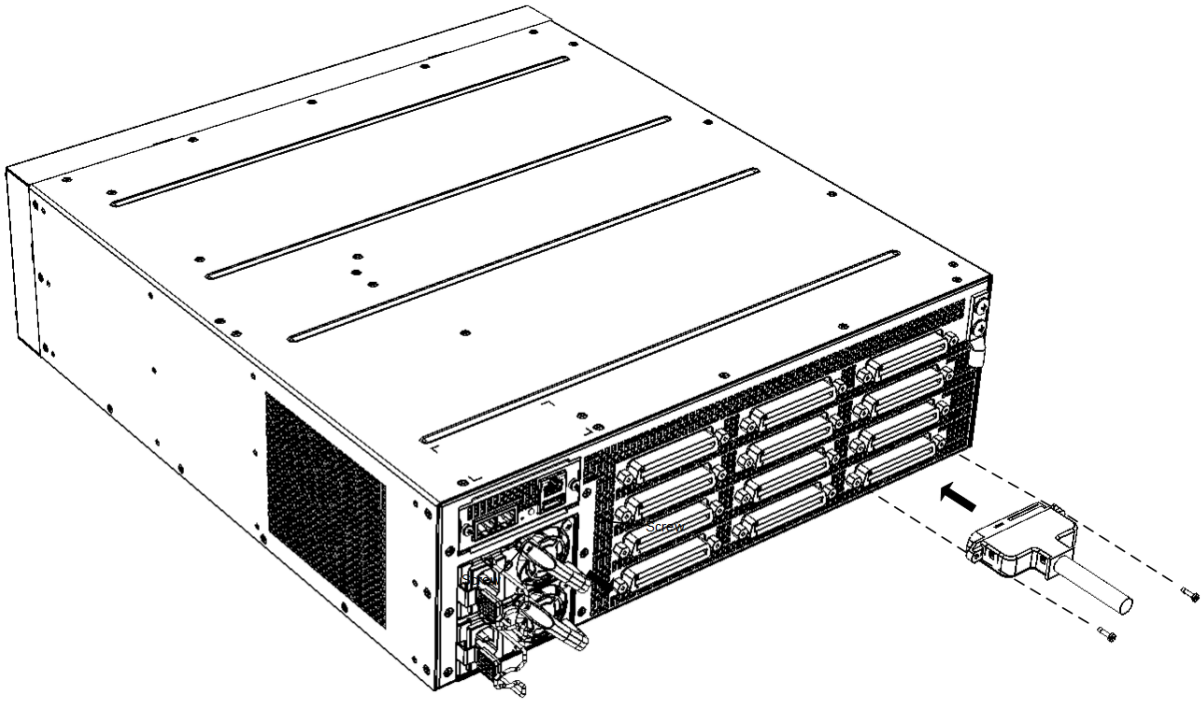
1. Mount the Patch Panel in a 19-inch rack, using the integrated mounting brackets located on either side of the Patch Panel. Use four 19-inch rack bolts (not supplied) to securely attach the brackets to the front-rack posts. Make sure that the left and right mounting brackets are attached to the rack posts at the same level so that the Patch Panel is supported in a horizontal position.

Figure 2-6: Mounting Patch Panel in Rack



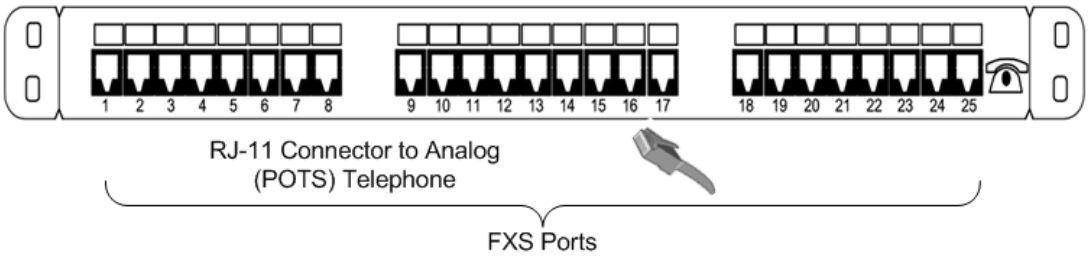
2. Connect the Patch Panel's 50-pin male connector to one of the FXS blade's 50-pin female Telco connectors located on the chassis' rear panel, and secure the connector with the two captive screws located on either side of the connector, using a flat-head screwdriver:

Figure 2-7: Connecting 50-Pin Telco Connector to Port on FXS Blade



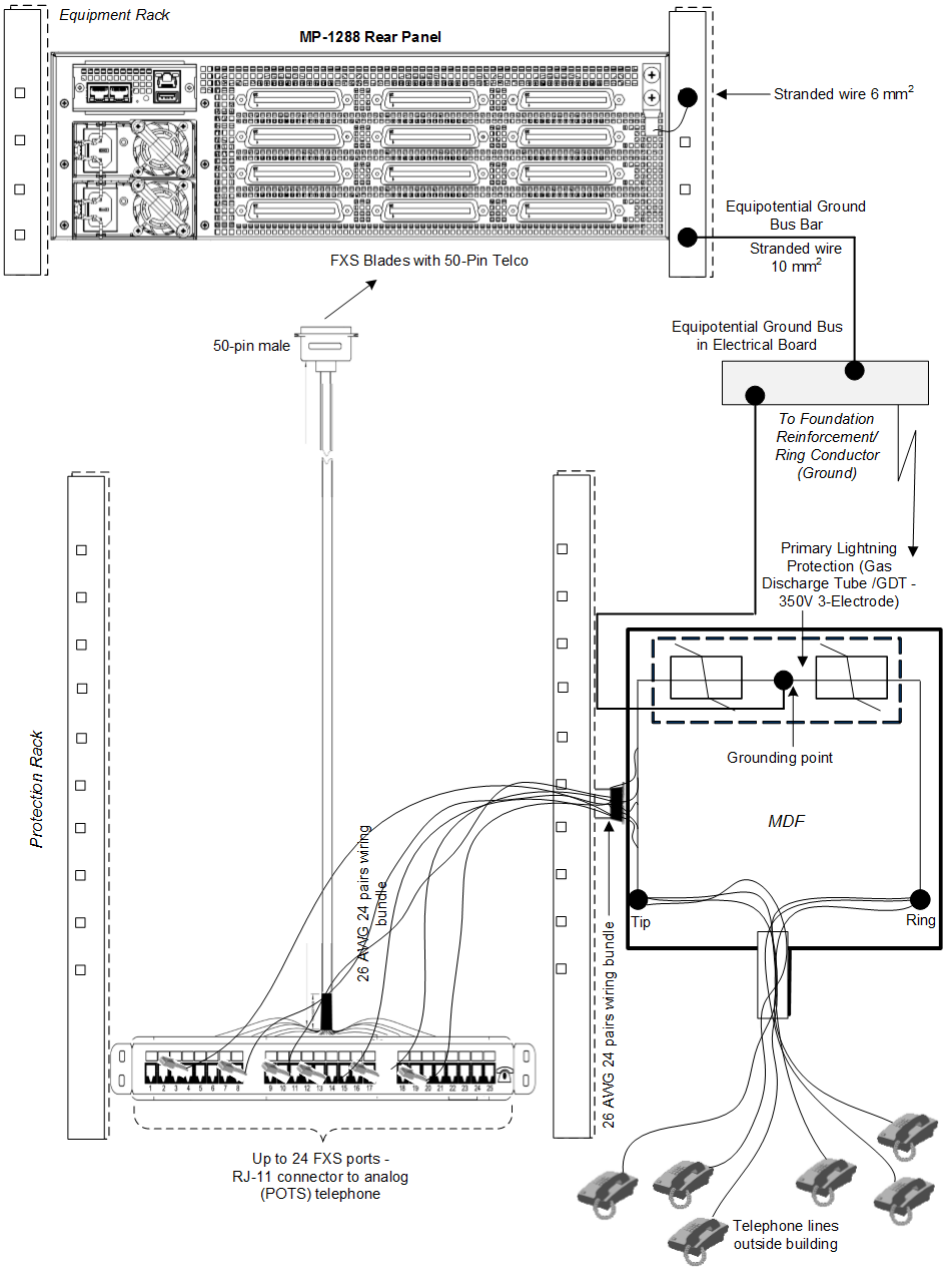
3. Connect your analog equipment to the Patch Panel by plugging the RJ-11 connectors into the RJ-11 sockets on the Patch Panel's front panel:

Figure 2-8: Connecting Analog Equipment to FXS Patch Panel



For **outdoor FXS cabling installations**, you **must** install additional power surge protection as illustrated in the following figure. For indoor FXS cabling installations, there is no need for primary lightning protection usage.

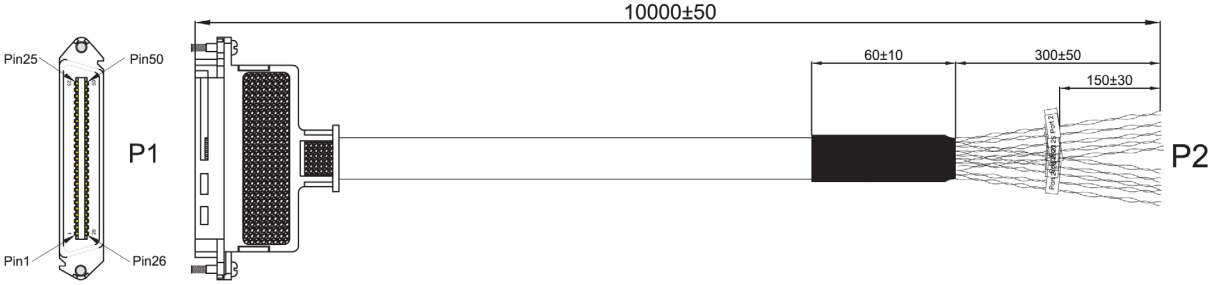
Figure 2-9: Connecting FXS Interfaces using FXS Patch Panel



2.3.4 Connecting FXS Interfaces using Centronics Cable

You can purchase AudioCodes' Centronics-type cable connector, as shown below, to connect the FXS interfaces to FXS equipment. The 10-meter (32.8 ft.) cable provides a 50-pin male Telco connector on one end and open leads on the other end, which need to be connected to your Patch Panel or distribution frame.

Figure 2-10: Orderable Centronics Cable and Pinouts



P1		Label
26	WHITE	
1	BLUE	Port 1
27	WHITE	
2	ORANGE	Port 2
28	WHITE	
3	GREEN	Port 3
29	WHITE	
4	BROWN	Port 4
30	WHITE	
5	GRAY	Port 5

P1		Label
31	RED	
6	BLUE	Port 6
32	RED	
7	ORANGE	Port 7
33	RED	
8	GREEN	Port 8
34	RED	
9	BROWN	Port 9
35	RED	
10	GRAY	Port 10

P1		Label
36	BLACK	
11	BLUE	Port 11
37	BLACK	
12	ORANGE	Port 12
38	BLACK	
13	GREEN	Port 13
39	BLACK	
14	BROWN	Port 14
40	BLACK	
15	GRAY	Port 15

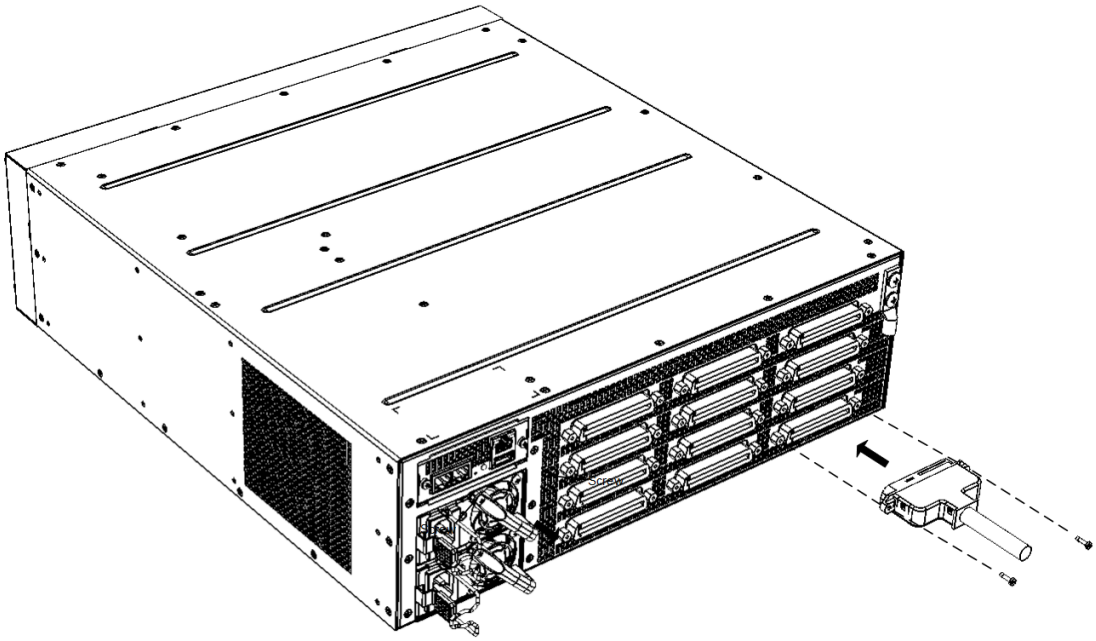
P1		Label
41	YELLOW	
16	BLUE	Port 16
42	YELLOW	
17	ORANGE	Port 17
43	YELLOW	
18	GREEN	Port 18
44	YELLOW	
19	BROWN	Port 19
45	YELLOW	
20	GRAY	Port 20

P1		Label
46	PURPLE	
21	BLUE	Port 21
47	PURPLE	
22	ORANGE	Port 22
48	PURPLE	
23	GREEN	Port 23
49	PURPLE	
24	BROWN	Port 24
50	PURPLE	
25	GRAY	Port 25-LL

➢ **To connect the FXS interfaces using the Centronics cable:**

1. Connect the 50-pin male connector on end of the cable to one of the FXS blade's 50-pin female Telco connectors located on the chassis' rear panel, and secure the connector with the two captive screws located on either side of the connector, using a Phillips screwdriver:

Figure 2-11: Connecting 50-Pin Telco Connector to Port on FXS Blade



2. Terminate the wires on the other end of the cable to your Patch Panel or distribution frame. The wires are grouped in pairs with labels indicating the FXS channels (see Figure 2-10). Make sure that you connect the wires according to the correct port channels as labelled on the wires.
3. Connect your analog equipment to your Patch Panel or distribution frame by plugging their RJ-11 connectors into the RJ-11 sockets on the Patch Panel or distribution frame.

2.3.5 Connecting FXS Interfaces Directly to an MDF

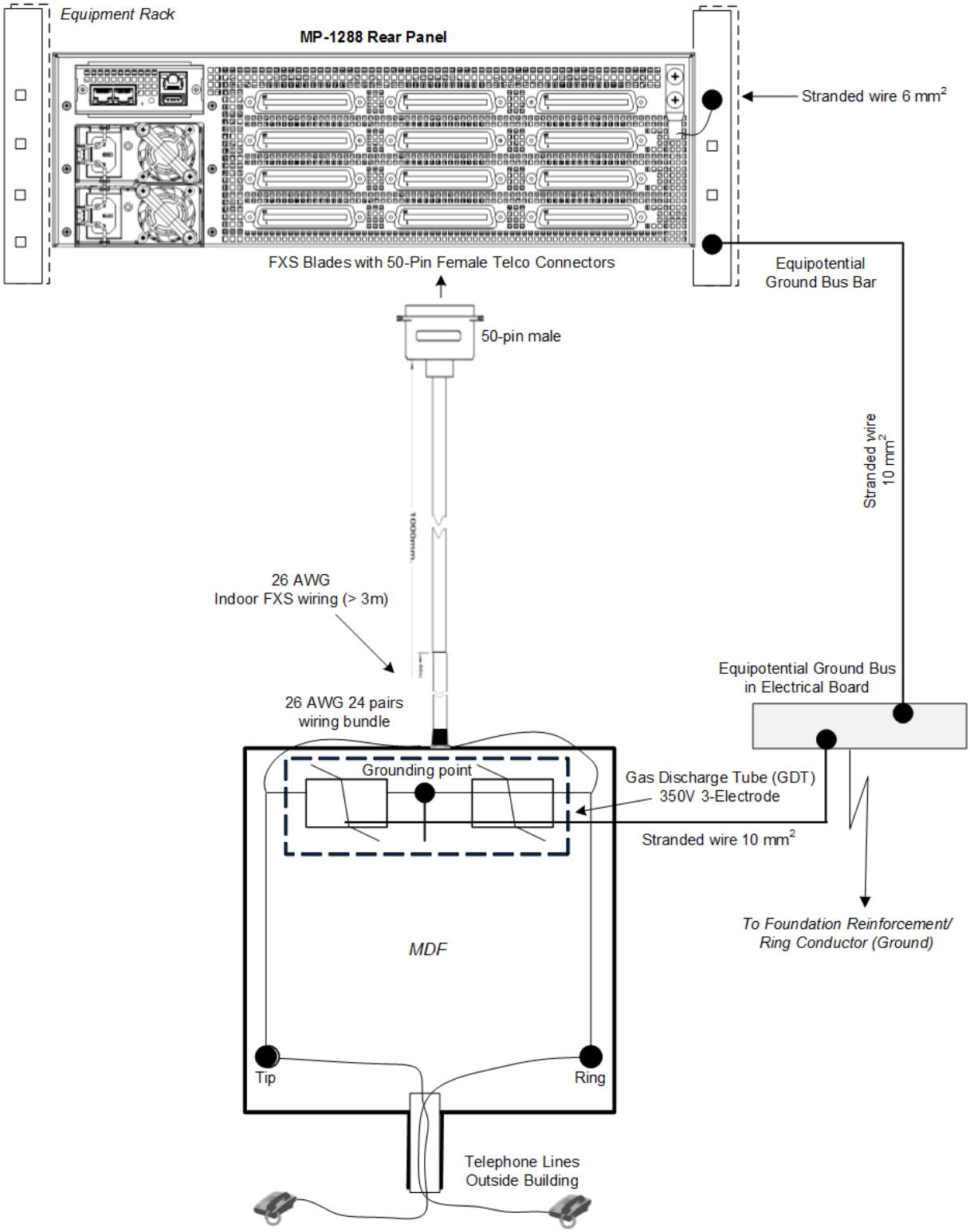
If you are using your own third-party MDF, follow the instructions below.

Warning: To reduce noise interference, use a twisted pair Octopus cable that is terminated on a metal-hooded 50-pin Telco connector.

➢ **To connect FXS interfaces directly to an MDF:**

1. Wire the 50-pin Telco connectors according to the pinouts in Table 2-11.
2. Connect the wire-pairs at the other end of the cable to a 50-pin male Telco connector (not supplied).
3. Attach the male connector to one of the FXS blade's 50-pin female Telco connectors, located on the chassis' rear panel.
4. Attach each pair of wires from a 25-pair Octopus cable (not supplied) to its corresponding socket on the MDF.
5. Connect the telephone lines from the MDF to the analog equipment, by inserting each RJ-11 connector on the 2-wire line cords to the RJ-11 sockets on the front of the MDF:

Figure 2-12: Connecting FXS Interfaces Directly to MDF



2.4 Connecting to Power

The device receives power from a standard alternating current (AC) electrical outlet. The connection is made using the supplied AC power cord. The device can host up to two hot-swappable Power Supply modules for load-sharing and power redundancy in case of failure in one of the modules.

Table 2-12: Power Specifications

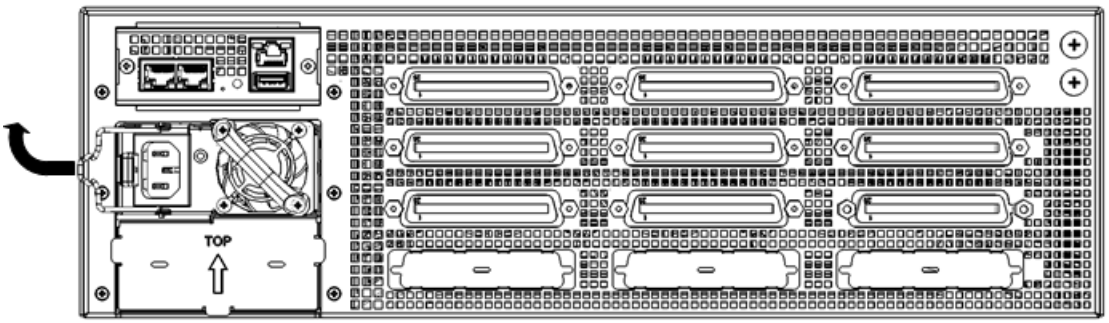
Physical Specification	Value		
Input Voltage	Dual universal AC power supply 100-240V~		
AC Input Frequency	50/60 Hz		
Max. AC Input Current	10 A		
Max. Power Consumption	**FXS Interfaces**	**Short Haul (W)**	**Long Haul (W)**
	288	450	950
	216	400	770
	144	350	600

Note: If you are using two Power Supply modules, connect each one to a different AC power supply source. The two AC power sources must have the same ground potential.

➢ **To connect the device to power:**

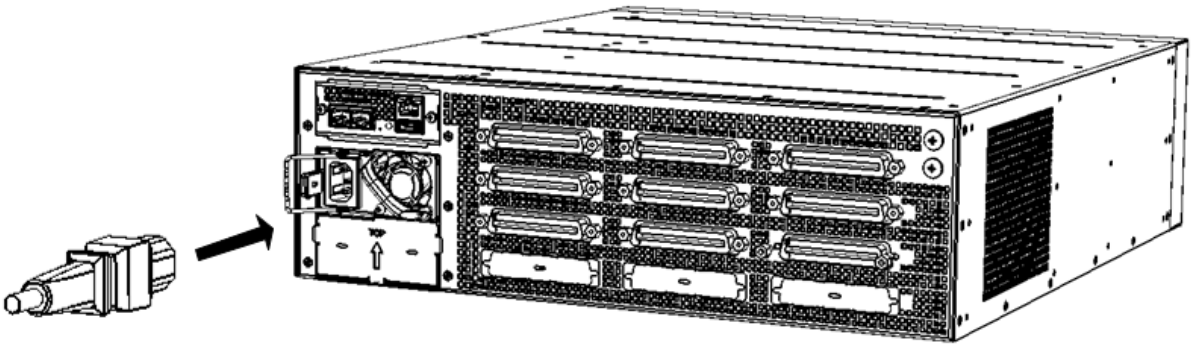
1. Swing the cable anchor clip, located over the power inlet of the Power Supply module, sideways, away from the power inlet to provide space for the power plug.

Figure 2-13: Swinging Cable Anchor Clip away from Power Inlet



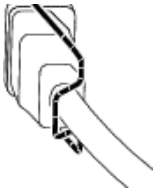
2. Plug the female end of the AC power cord (supplied) into the power inlet.

Figure 2-14: Connecting to Power



3. Secure the power cord to the power inlet by providing strain relief, using the cable anchor clip. Slide the cable anchor clip sideways, towards the power inlet and then push the power cord into the cable anchor clip, as shown in the figure below. This protects the plug from accidentally being pulled out.

Figure 2-15: Strain Relief for Power Cord using Cable Anchor Clip



Note: Strain relief for the power cord using the cable anchor clip is not mandatory.

4. Connect the male end of the power cord to a standard AC electrical outlet.
5. If you are using two Power Supply modules, repeat steps 1 through 3 for connecting the second Power Supply module, but using the power socket associated with the second Power Supply module and connecting this to a different supply circuit.
6. Turn on the power at the power source (if required).
7. Check that the LED on each Power Supply module (front panel) is lit green, indicating that the device is receiving power.

3 Connecting to the Management Interface

This section shows how to connect to the device's management interface for the first time.

3.1 Default OAMP IP Address

The device is shipped with a factory default IP address for operations, administration, maintenance, and provisioning (OAMP), through its VoIP LAN interface. Use this address to initially access the device's embedded Web server. Default IP address is:

Table 3-1: Default VoIP LAN IP Address for OAMP

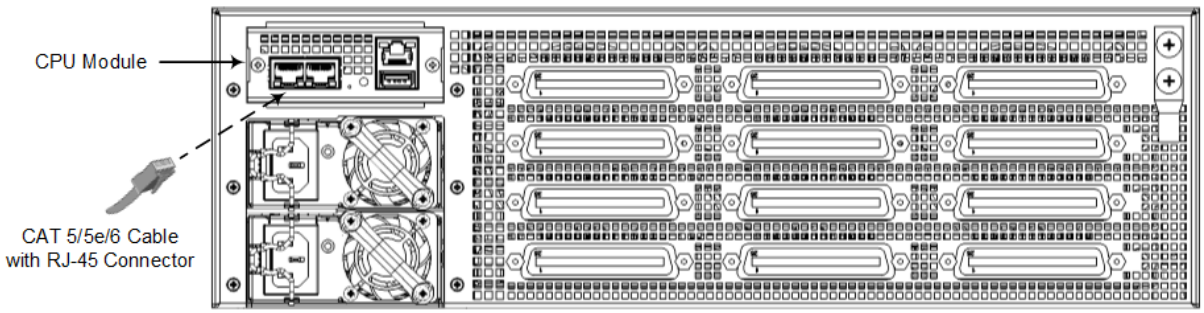
IP Address	Value
IP Address	192.168.0.2
Prefix Length	255.255.255.0 (24)
Default Gateway	192.168.0.1

3.2 Connecting to the Embedded Web Server

➢ **To connect to the embedded Web server:**

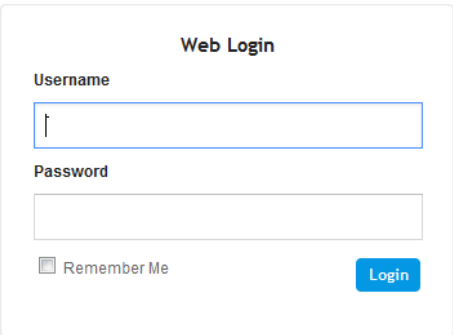
1. Connect one of the Ethernet ports (labeled) on the CPU module located on the chassis' rear panel directly to the network interface of your computer, using a straight-through Ethernet cable.

Figure 3-1: Connecting to the Embedded Web Server



2. Change the IP address and subnet mask of your computer to correspond with the default OAMP IP address and subnet mask of the device.
3. Access the Web interface:
   a. On your computer, start a Web browser and in the URL address field, enter the default IP address of the device; the Web interface's Web Login screen appears:

Figure 3-2: Web Login Screen



b. In the 'Username' and 'Password' fields, enter the case-sensitive, default login username (**Admin**) and password (**Admin**).

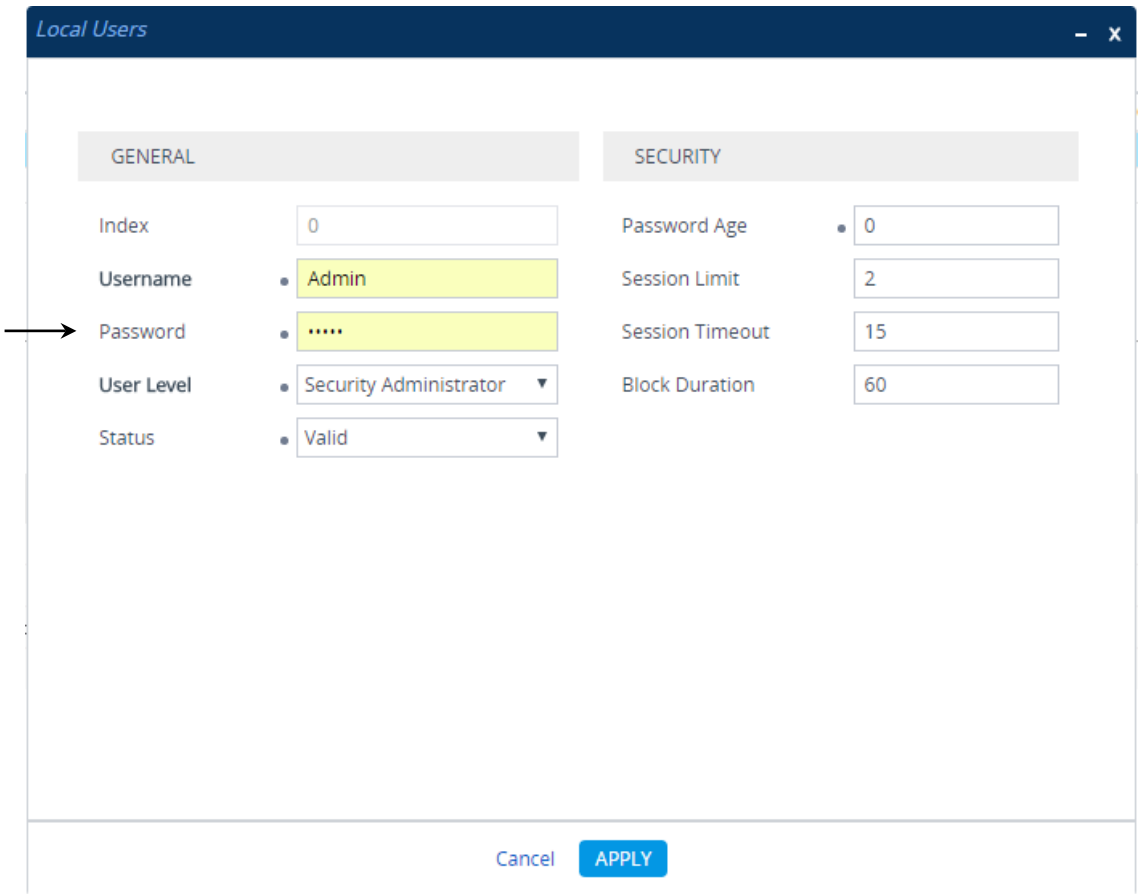
c. Click **Login**.

3.2.1 Change Default Management User Login Passwords

To secure access to the device's Web management interface, follow these recommended guidelines:

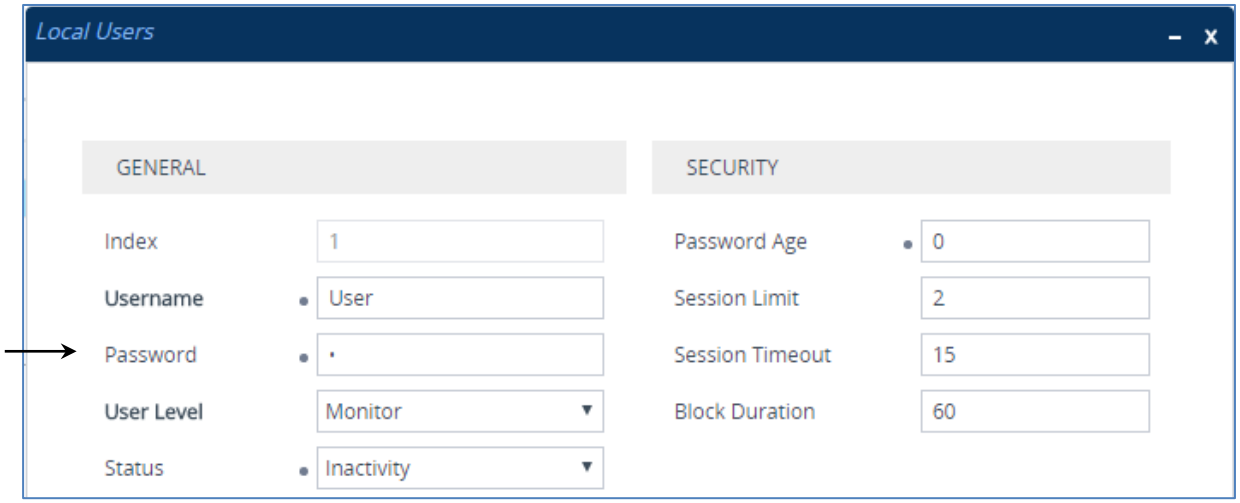
- The device is shipped with a default **Security Administrator** access-level user account – username 'Admin' and password 'Admin'. This user has full read-write access privileges to the device. It is recommended to change the default password to a hard-to-hack string. The login username and password are configured in the Web Local Users table (**Setup** menu > **Administration** tab > **Web & CLI** folder > **Local Users**) using the 'Password' field, as shown below:

Figure 3: Changing Password of Default Security Administrator User



- The device is shipped with a default **Monitor** access-level user account - username 'User' and password 'User'. This user only has read access privileges to the device. The read access privilege is also limited to certain Web pages. However, this user can view certain SIP settings such as proxy server addresses. Therefore, to prevent an attacker from obtaining sensitive SIP settings that could result in possible call theft,etc., change its default login password to a hard-to-hack string.

Figure 4: Changing Password of Default Monitor User



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4 Configuring the Device

This section shows how to configure the device to interwork with the BroadCloud Hosted UC, based on the solution test topology shown in Section 1.1.3 which includes these areas:

- BroadCloud WAN interface - BroadCloud Hosted UC environment
- BroadCloud TDM interface – FXS ports

Configuration is performed using the device's embedded Web server (*Web interface*).

4.1 Step 1: Download, Install BroadCloud Certified Firmware / Configuration

This section shows how to download the certified BroadCloud firmware and configuration.

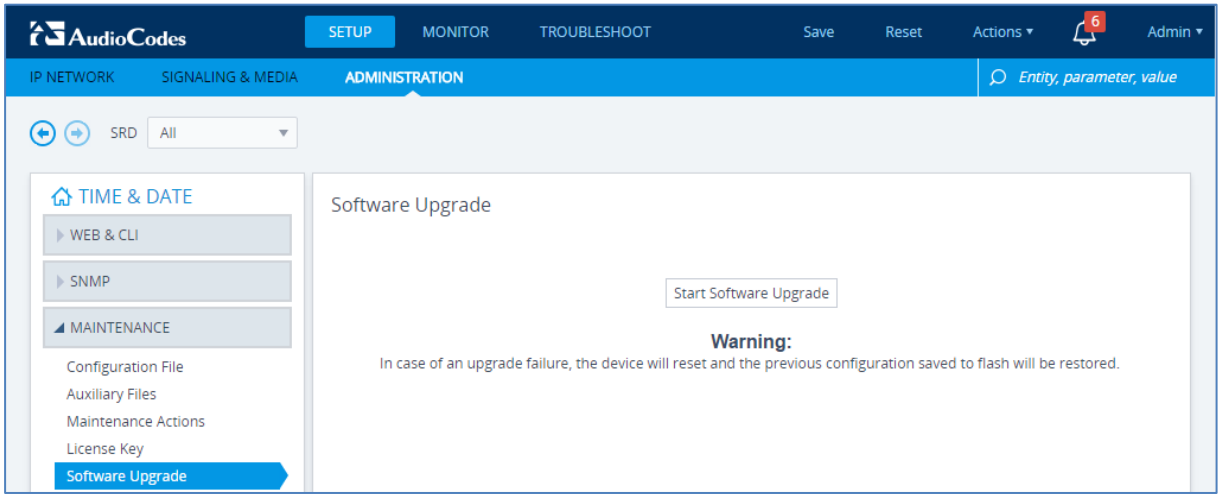
➢ **To download the certified BroadCloud firmware and configuration:**

1. Open a web browser, go to http://www.audiocodes.com/broadcloud-resource-center
2. Download the zip file associated with your device, unzip the package, and save the enclosed configuration_xxxx**.ini** file and firmware_xxx**.cmp** file to your local drive.
3. Download the Call Progress Tones file suitable for your country – call_progress_xxxxx**.dat** ('xxxxx' being the country name).
4. Enter the device's Software Upgrade Wizard.

➢ **To load files using the Software Upgrade Wizard:**

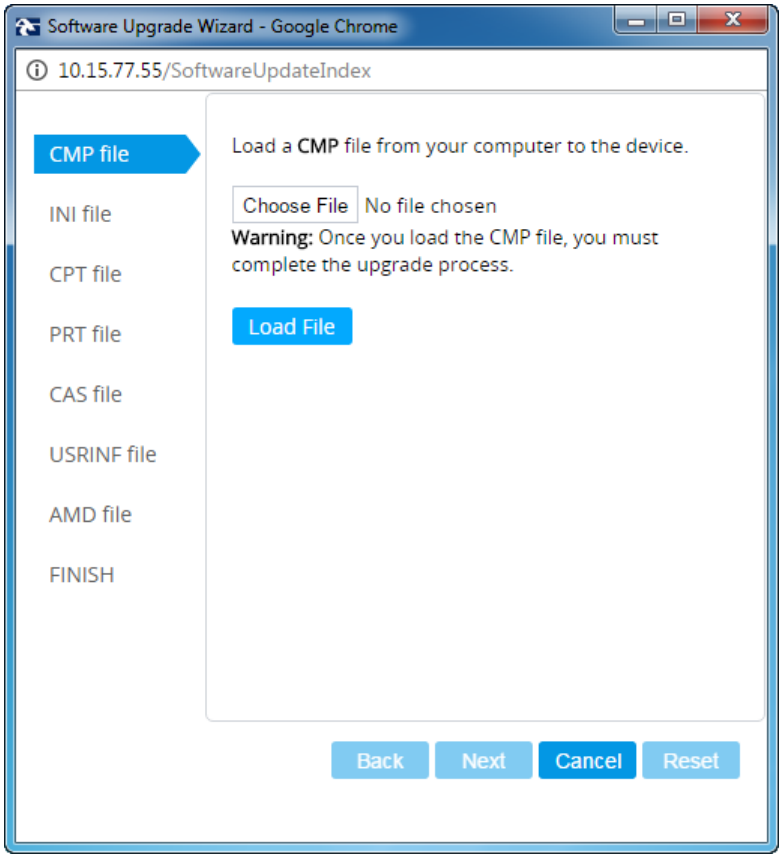
1. Open the Software Upgrade Wizard:
   - Select the **Maintenance** tab, click the **Software Update** menu, and then click **Software Upgrade Wizard** -or-
   - On the toolbar, click **Actions** and then choose **Software Upgrade**.

Figure 4-1: Start Software Upgrade Wizard Screen



2. Click **Start Software Upgrade**; the wizard starts, prompting you to load a .cmp file:

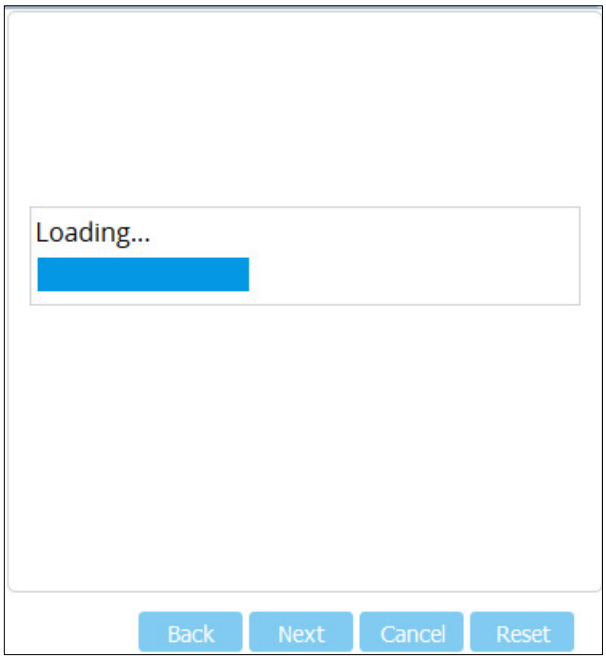
Figure 4-2: Software Upgrade Wizard - Load CMP File



Note: At this stage, you can quit the wizard without needing to reset the device (click **Cancel**). But if you continue with the wizard and load the .cmp file, the upgrade process must be completed with a device reset.

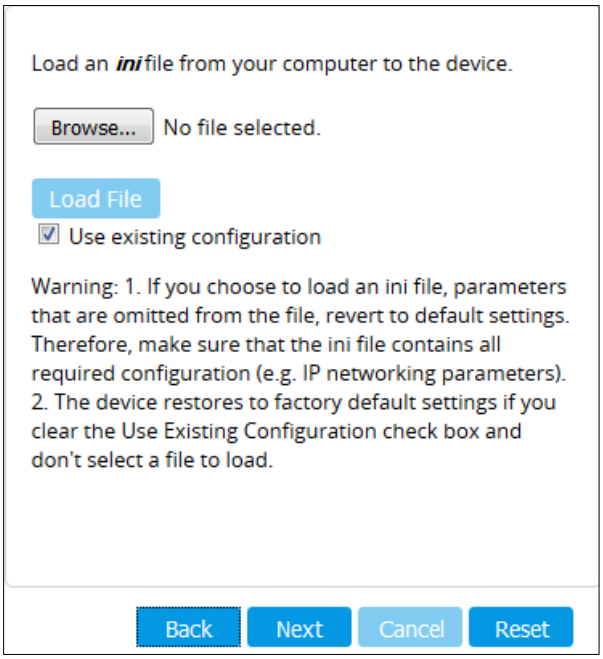
3. Click **Browse**, and then navigate to where the .cmp file is located on your computer. Select the file, and then click **Open**.
4. Click **Load File**; the device installs the .cmp file. A progress bar displays the loading process status and a message informs you when file load successfully completes.

Figure 4-3: Software Upgrade Wizard – CMP File Loading Progress Bar



5. Select the following upgrade option:
   - **System Reset Upgrade**
6. Press the **Next** button to navigate through the wizard.
7. In the wizard page for loading an ini file:
   - **Deselect** the 'Use existing configuration' option
   - **Load File:** In the 'Ini File' field, click **Browse**, and then navigate to where the ini file is located on your computer. Select the file, and then click **Load File**; the device loads the ini file.

Figure 4-4: Software Upgrade Wizard – Load INI File



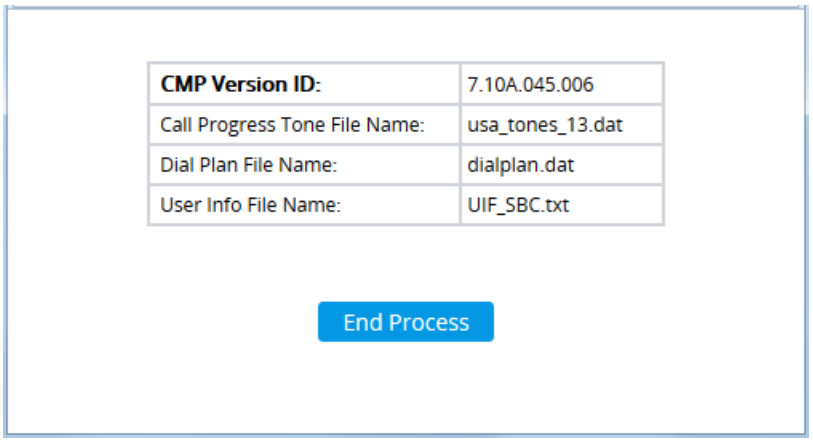
8. Press the **Next** button to navigate to the Call Progress Tones (CPT) wizard page.

9. In the wizard page for loading the Call Progress Tones (CPT) file, click **Browse**, and then navigate to where the call_progress_xxxxx.dat ('xxxxx' being the country name) file is located on your computer. Select it and click **Load File**; the device loads the tones file.
10. Click **Next** until the last wizard page appears (the **FINISH** button is highlighted in the left pane).
11. Click **Reset** to burn the files to the device's flash memory; the 'Burn and reset in progress' message is displayed and the device 'burns' the newly loaded files to flash memory and then resets.

Note: Reset may take a few minutes (even up to 30) depending on the .cmp file version.

When the device finishes the installation process and resets, the following wizard page is displayed, showing the installed software version and other files (ini file and auxiliary files) that you may also have installed:

Figure 4-5: Software Upgrade Process Completed Successfully (Example)



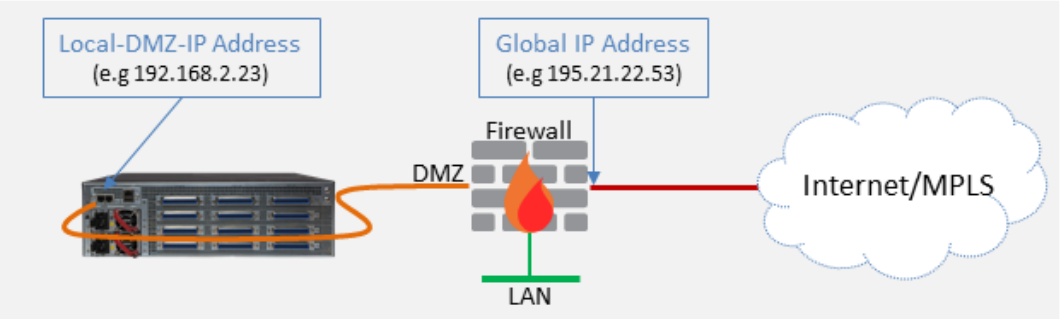
CMP Version ID:	7.10A.045.006
Call Progress Tone File Name:	usa_tones_13.dat
Dial Plan File Name:	dialplan.dat
User Info File Name:	UIF_SBC.txt

End Process

12. Click **End Process** to close the wizard; Web Login is displayed.
13. Enter your login username and password (**Admin**, **Admin** respectively), and then click **Login**; a message box appears informing you of the new .cmp file version.
14. Click **OK**; the Web interface becomes active, reflecting the upgraded device.

4.2 Step 2: Configure a Network Interface for the Device

This section describes typical physical Ethernet port connections of the deployed device. The device is connected to the BroadCloud Hosted UC network with a 'local-DMZ-IP Address' behind a NAT. The firewall is configured with the following rules (for example):



a. Firewall allow rule:

	Original			Translated		
	Source	**Destination**	**Ports/Service**	**Source**	**Destination**	**Ports/Service**
1	<any> (e.g. ITSP)	Global IP Address (public address)	SIP service: 5060 / UDP RTP service: 6000-7000 / UDP	<any> (e.g. ITSP)	Local-DMZ-IP-Address	<as original>

b. NAT rules (port forwarding):

	Source	Destination	Ports/Service	Source	Destination	Ports/Service
1	<any> (e.g. ITSP)	Global IP Address (public address)	SIP service: 5060 / UDP RTP service: 6000-7000 / UDP	<any> (e.g. ITSP)	Local-DMZ-IP-Address	<as original>
1	Local-DMZ-IP-Address	<any> (e.g. ITSP)	SIP service: 5060 / UDP RTP service: 6000-7000 / UDP	Global IP Address (public address)	<any> (e.g. ITSP)	<as original>

4.2.1 Step 2a: Configure the Local DMZ IP Address of the Gateway

➢ **To configure the IP network interface:**

1. Open the IP Interfaces table (**Setup** menu > **IP Network** tab > **Core Entities** folder > **IP Interfaces**).
2. Modify the existing network interface:
   a. Select the 'Index' radio button of the **OAMP + Media + Control** table row, and then click **Edit**.
   b. Configure the interface as follows:

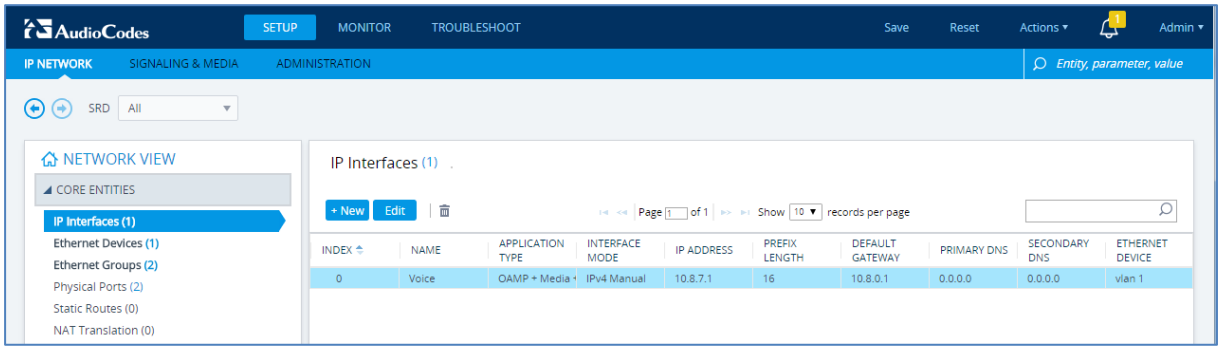
Parameter	Value
Name	**"Voice"** (arbitrary descriptive name)
Ethernet Device	**vlan 1**
IP Address	Local-DMZ-IP-Address
Prefix Length	**Subnet mask in bits**
Default Gateway	**Default Gateway**
Primary DNS Server IP Address	**IP address of the DNS Server**

3. Click **Apply**.

Note: The change only takes effect after you save your settings by resetting the device with a flash burn. This only occurs at the end of the configuration process.

The figure below shows an example of a configured IP network interface.

Figure 4-6: Example of a Configured Network Interface in IP Interfaces Table



4.2.2 Step 2b: Configure NAT

Note: *Do not* configure this setting if you are not behind a firewall NAT.

Note: The 'NAT IP Address' is the Global-IP-address used in front of the firewall facing the BroadCloud service. If the DMZ holds the global-IP-address (no NAT is performed by the firewall) and the gateway is already assigned with the global-IP-address as its 'local DMZ IP address', skip NAT configuration.

➢ **Define NAT address on the gateway device:**

1. Open the Gateway General Settings page (**Setup** menu > **Signaling & Media** tab > **Gateway** folder > **Gateway General Settings**).

Figure 4-7: Configuring Static NAT IP Address

2. In the 'NAT IP Address' field, enter the NAT IP address in dotted-decimal notation.
3. Click **Apply**.

4.3 Step 3: Configure Registration to the BroadCloud Service

4.3.1 Configure Credentials

This step shows how to configure the SIP Proxy and Registration parameters, including configuring a Proxy Name, Registrar Name, DNS query for the BroadCloud Proxy Set, Registration and Subscription modes.

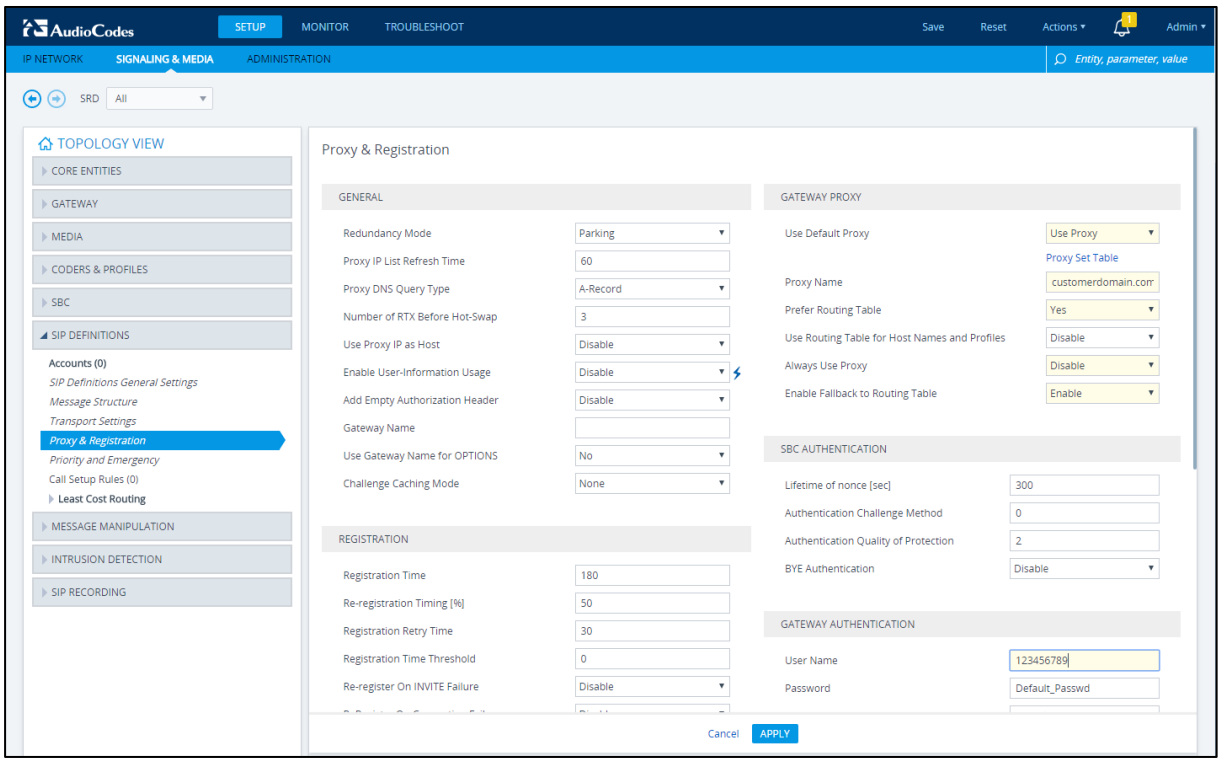
➢ **To configure the SIP Proxy & Registration parameters:**

1. Open the Proxy & Registration page (**Setup** menu **> Signaling & Media** tab **> SIP Definitions** folder **> Proxy & Registration**). Configure parameters according to following table:

Parameter	Value
Proxy Name	**BroadCloud Register Domain**. The BroadCloud Register Domain is found on the BroadCloud MySite Device Management Page under the 'Configuration Settings' section.
Registrar Name	**BroadCloud Register Domain**. The BroadCloud Register Domain is found on the BroadCloud MySite Device Management Page under the 'Configuration Settings' section.
Serving IP Group	**BroadCloud**
Username	**BroadCloud SIP User.** The BroadCloud SIP User value is found on the BroadCloud MySite Device Management Page under the 'Configuration Settings' section.
Password	**BroadCloud SIP Password**. The BroadCloud SIP Password value is found on the BroadCloud MySite Device Management Page under the 'Configuration Settings' section.

2. Click **Apply**.

Figure 4-8: Configuring Proxy & Registration Parameters



4.3.2 Configure the SIP Register Domain Name

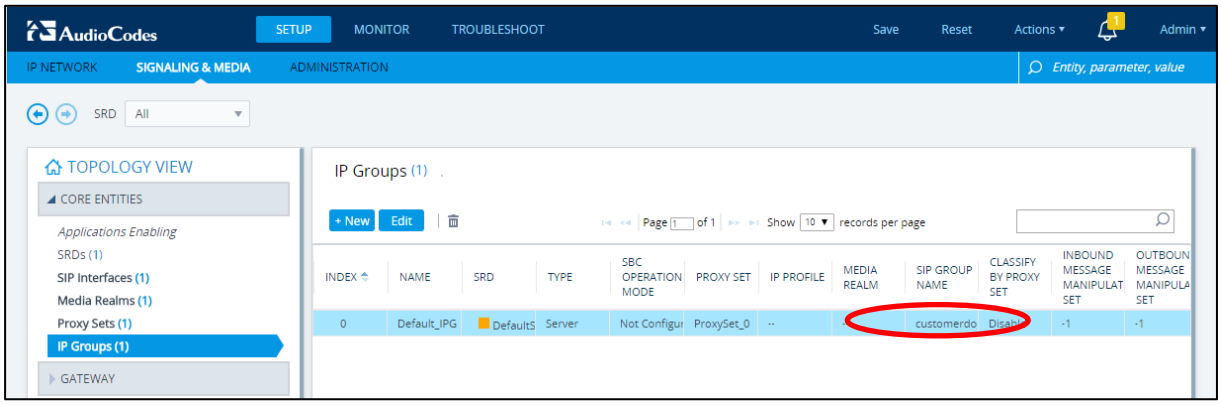
This section shows how to configure the SIP Register Domain Name.

➢ **To configure the SIP Register Domain Name:**

1. Open the IP Groups table (**Setup** menu > **Signaling & Media** tab > **Core Entities** folder > **IP Groups**).
2. Edit the host name in the 'SIP Group Name' field, with the value provided by BroadCloud.

Parameter	Value
Index	**0**
SIP Group Name	**BroadCloud Register Domain**. The BroadCloud Register Domain is found on the BroadCloud MySite Device Management Page under the 'Configuration Settings' section.

Figure 4-9: Configured IP Group in IP Group Table



4.4 Step 4: Configure Trunk Group Parameters

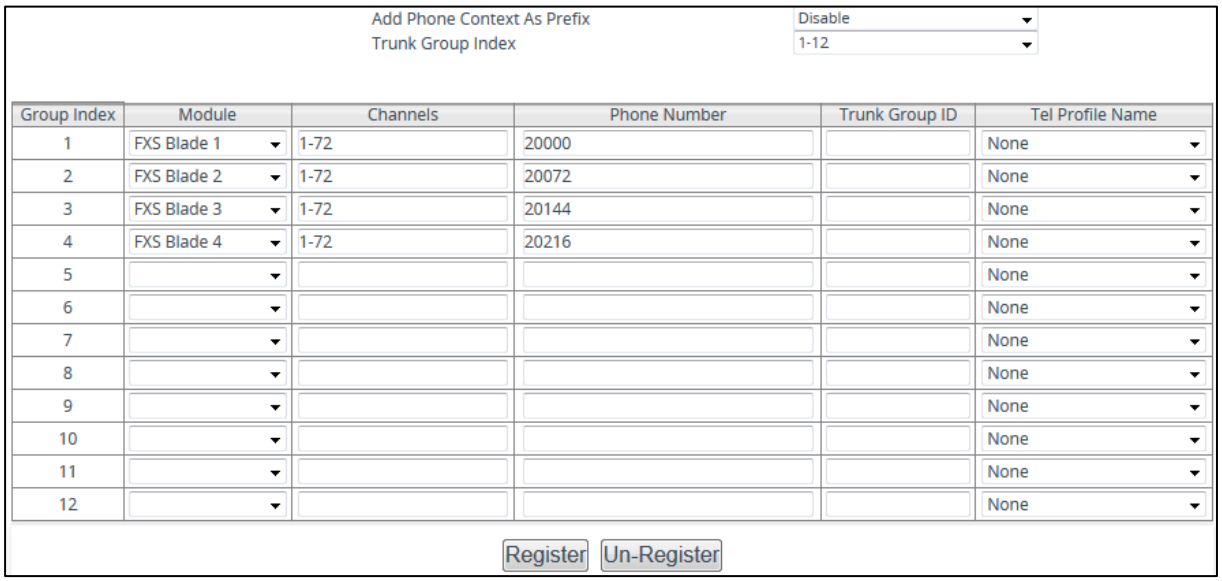
Note: This configuration should be adopted according to each customer requirement.

This step shows how to configure the device's channels, which includes assigning them to Trunk Groups. A Trunk Group is a logical group of physical trunks and channels. A Trunk Group can include multiple trunks and ranges of channels. To enable and activate the device's channels, Trunk Groups must be configured. Channels not configured in this table are disabled. After configuring Trunk Groups, use them to route incoming IP calls to the Tel side, represented by a specific Trunk Group (ID). You can also use Trunk Groups for routing Tel calls to the IP side.

➢ **To configure a Trunk Group:**

1. Open the Trunk Group table (**Setup** menu > **Signaling & Media** tab > **Gateway** folder > **Trunks & Groups** > **Trunk Groups**).

Figure 4-10: Configuring FXS Trunk Group Table



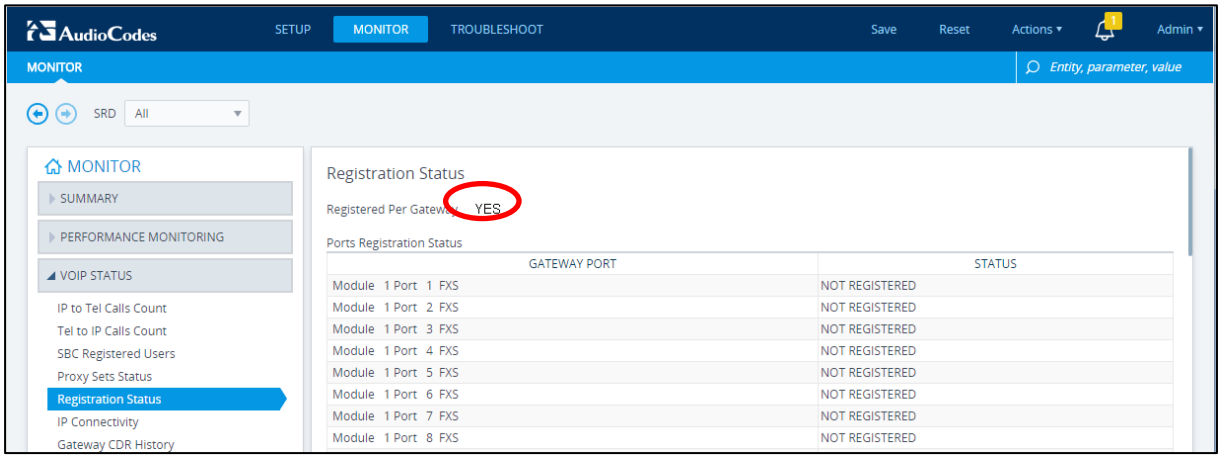
2. Configure each Trunk Group as required by customer.
3. Click **Apply**.

4.5 Step 5: Check the SIP Registration Status

➢ **To check if the device successfully registered with BroadCloud service:**

1. Open the Registration Status table (**Monitor** menu > **Monitor** tab > **VoIP Status** folder > **Registration Status**).
2. Check the registration status of the first row on top: Registered Per Gateway. A successful registration will show as YES (see the figure below).

Figure 4-11: Successful SIP Registration



Note: If the status of 'Registered Per Gateway' shows NO, check your connectivity:

- Check Ethernet cable wiring.
- DMZ configuration may not be correct on the firewall.
- Check IP address configuration (**Setup** menu > **IP Network** tab > **Core Entities** folder > **IP Interfaces**).
- Check proxy (BroadCloud) configuration (**Setup** menu > **Signaling & Media** tab > **SIP Definitions** folder > **Proxy & Registration**).

4.6 Step 6: Secure Device Access

4.6.1 Secure Management Access

It's recommended that when leaving the device at the end customer's premises, its management interface will be accessible by remote only when required.

Ask the end customer's IT administrator to disable the following ports:

- Port 80 - HTTP Web interface access
- Port 443 - HTTPS Web interface access
- Port 22 - SSH access
- Port 23 - Telnet access
- Ports 161 - SNMP access

If future remote management is required, first ask the end customer's IT administrator to open the appropriate port (e.g., HTTP or HTTPS port) in order to manage the device.

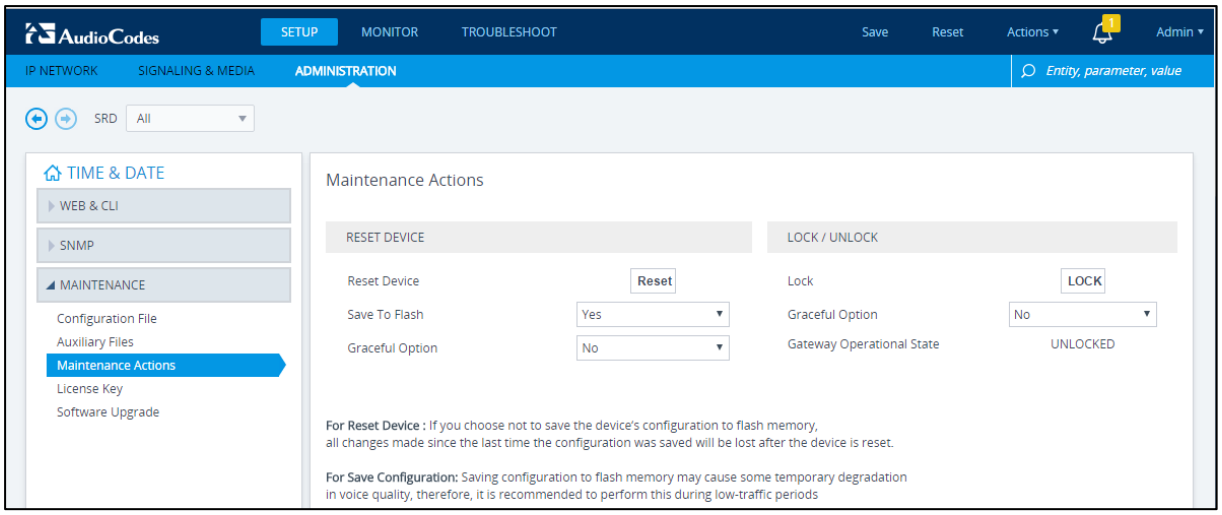
4.7 Step 7: Save the Configuration, Connect to DMZ

Note: Firewall settings for the DMZ must be in place before resetting the device. After the device is reset, its IP configuration is applied and it is no longer available for management via the default IP address.

➢ **To save the configuration and reset the device:**

1. On the toolbar, click **Reset**.
2. Under the 'Save To Flash', choose **Yes**.
3. Click the **Reset**.

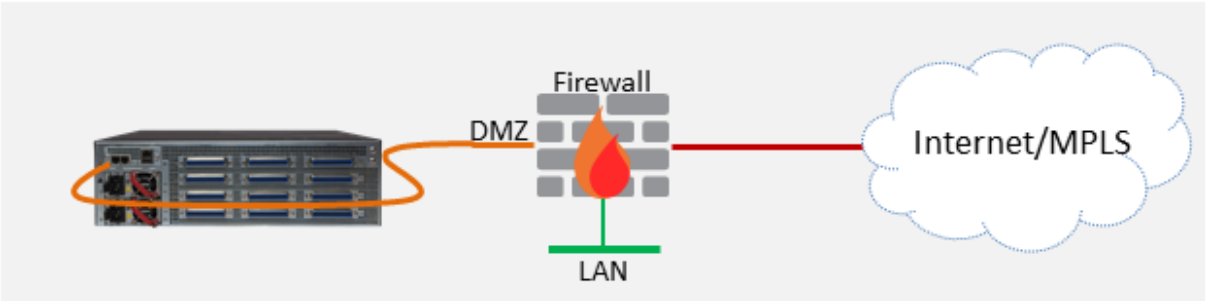
Figure 4-12: Maintenance Actions Page



➢ **To connect the device to DMZ:**

- After the device is reset, the IP address of the device changes to the address configured in Section 4.2, Step 2. At this point, disconnect your PC from the device and connect the Ethernet cable from the device's port 1 (see Section 2) to the DMZ port provided by the local firewall:

Figure 4-13: Connecting the Device to DMZ



A Troubleshooting

A.1 Connecting to CLI

Connect to the device's serial port labeled CONSOLE connecting a standard RJ-45 to DB-9 female serial cable to a PC (sold separately). Connect to the console CLI and then:

1. Establish a serial communication (e.g., Telnet) with the device using a terminal emulator program such as HyperTerminal, with the following communication port settings:
   - Baud Rate: 115,200 bps
   - Data Bits: 8
   - Parity: None
   - Stop Bits: 1
   - Flow Control: None
2. At the CLI prompt, type the username (default is **Admin** - case sensitive):

   ```
   Username: Admin
   ```
3. At the prompt, type the password (default is **Admin** - case sensitive):

   ```
   Password: Admin
   ```
4. At the prompt, type the following:

   ```
   enable
   ```
5. At the prompt, type the password again:

   ```
   Password: Admin
   ```

A.2 Enabling Logging on CLI

1. To enable the device to send the error messages (e.g. Syslog messages) to the CLI console. Use the following commands:
2. Start the syslog on the screen by typing:

   ```
   debug log
   ```
3. Enable SIP call debugging

   ```
   debug sip 5
   ```
4. Stop Syslog on the screen by typing:

   ```
   no debug log
   ```

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