



Installation Guide

800 Series Gateway Standalone & 800 Series Gateway 1+1

September 12, 2018

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Preface



About this Guide

This guide provides installation, and setup procedures for 800 series standalone and 800 series 1+1 systems.

Conventions

Terminology	Description
800 series gateway	This term is used when a description applies to both the 800 series standalone and 800 series 1+1 system.
800 series standalone	This term is used when a description applies to the 800 series unit operating as a standalone unit.
800 series 1+1 System	This term is used when a description applies to the 800 series unit operating in conjunction with the 800+1 series unit. This term also includes the 1+1 patch panel.
800 series unit	This term is used when a description applies to all variations of the 800 series units, such as: TMG800, TSG800, and TMGIP800.
800 series +1 unit	This term is used when a description applies to all variations of the 800 series +1 units, such as TMG800 +1, TSG800 +1, or TMGIP800 +1.
1+1 Patch Panel	This term is used as a generic reference to a 1+1 patch panel, which enables an 800 series unit to connect to an 800 series +1 unit.

To help guide you in the installation of your product, we use the following icons in this document. Take note of the icon that represents the type of installation you are conducting and follow those procedures throughout this guide to ensure proper equipment installation and set up.

Graphics	Description
	This icon appears in the margins of pages describing the 800 series operating as a standalone unit. If you are installing a standalone unit, read and follow the instructions provided in those sections and pages.
	This icon appears in the margins of pages describing the 800 series unit operating in conjunction with an 800 series +1 and 1+1 patch panel. If you are installing a 1+1 system read and follow the instructions provided in those sections and pages.

Contact Us

If you have comments about this guide or any other TelcoBridges technical documentation, please send an email to marketing@telcobridges.com.

Table of Contents

Section 1	Introduction.....	1
1.1	Recognizing an 800 Series Standalone versus an 800 Series 1+1 System	2
1.1.1	800 Series Standalone	2
1.1.2	800 Series 1+1 System	2
1.2	Installation Prerequisites	3
1.3	Preventing Electrostatic Discharge Damage.....	4
1.4	Recommended Reading.....	4
Section 2	Installing the Equipment	5
2.1	Package Contents	6
2.1.1	800 Series Standalone Package Contents.....	6
2.1.2	800 Series 1+1 System Package Contents.....	7
2.2	Rack Mounting the 800 Series Standalone or the 800 Series 1+1 System	9
2.2.1	Prerequisites	9
2.2.2	Vertical Placement of the Equipment	9
2.2.3	Installing the 800 Series Standalone and the 800 Series 1+1 on an Equipment Rack	10
2.3	Choosing your Connection Procedures.....	12
2.4	800 Series Standalone	13
2.4.1	Connecting to the 800 Series Gateway Management Interface.....	14
2.4.2	Connecting to a VoIP Network	15
2.4.3	Connecting to the PSTN.....	16
2.4.4	Grounding the Equipment Chassis.....	17
2.4.5	Powering Up.....	18
2.4.5.1	Connecting to AC Power	18
2.4.5.2	Connecting to DC Power.....	19
2.4.6	Start Up	20
2.4.6.1	Configuring the Role.....	20
2.5	800 Series 1+1 System	21
2.5.1	Connecting to the 800 Series 1+1 System Management Interfaces	22
2.5.2	Connecting to the 800 Series 1+1 System Control Network	23
2.5.3	Connecting to the 800 Series 1+1 System VoIP Network(s).....	24
2.5.4	Connecting to the PSTN in an 800 Series 1+1 System	25
2.5.5	Grounding the Equipment Chassis.....	27
2.5.6	Powering Up.....	28
2.5.6.1	Connecting to AC Power	28
2.5.6.2	Connecting to DC Power.....	29
2.5.7	Start Up	30
2.6	Adding an 800 +1 Unit to an Existing Standalone; Creating an 800 series 1+1 System...32	
2.6.1	Reconfigure a Standalone Unit as a Primary Unit in an 800 Series 1+1 System.....	32
2.6.2	Install the 800 Series +1 unit on the Equipment Rack	35
2.6.3	Install the 1+1 Patch Panel	35
2.6.4	Connect to the 800 Series 1+1 Management Interface.....	35
2.6.5	Connect to the 800 Series 1+1 Control Network.....	35

2.6.6	Connect to the 800 Series 1+1 VoIP Network(s)	36
2.6.7	Connect to the PSTN Network	36
2.6.8	Power Up the Equipment	36
2.6.9	Start Up	37
2.7	Verifying the LED Status Indications	38
2.8	Powering Down	39
2.8.1	Management Port.....	39
2.8.2	Power Button.....	39
Section 3	Initial System Configuration.....	41
3.1	Series Gateway SSH Connection	42
3.2	800 Series Gateway Serial Connection.....	42
3.2.1	Physical Connection.....	42
3.2.1.1	Connecting to the USB Port of the 800 Series Gateway.....	43
3.2.1.2	Connecting to the Serial Port of the 800 Series Gateway	44
3.2.2	Configuring the Terminal Emulator Application	45
3.3	Changing 800 Series Gateway Management Port Passwords	45
3.4	Retrieving 800 Series Gateway Information.....	46
3.5	Changing the 800 Series Gateway Management Port IP Address	46
3.6	Setting the Time Zone	46
3.7	Configuring the 800 Series Gateway Using the Web Portal.....	47
3.8	Changing VoIP Interface Addresses	47
Section 4	System Backups.....	49
4.1	Creating a Database Backup	50
4.2	Downloading a Database Backup	50
4.3	Uploading a Database Backup.....	50
4.4	Restoring a Database Backup.....	50
Appendix A	Wiring Diagrams.....	51
A.1	RJ48C Wiring Diagram: Crossover and Straight Cables.....	51
A.2	Tmedia Serial Adapter Wiring Diagram.....	52



Section 1 Introduction

This section provides an introduction of the installation and setup for the following system configurations:



800 Series Standalone: Single gateway unit operating in standalone mode.



800 series 1+1 system: 800 series unit operating in conjunction with an 800 series +1 unit and 1+1 patch panel(s).

The following topics are covered:

- Section 1.1 “Recognizing an 800 Series Standalone versus an 800 Series 1+1 System”
- Section 1.2 “Installation Prerequisites”
- Section 1.3 “Preventing Electrostatic Discharge Damage”
- Section 1.4 “Recommended Reading”



1.1 Recognizing an 800 Series Standalone versus an 800 Series 1+1 System



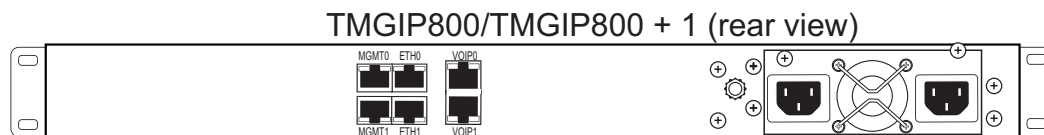
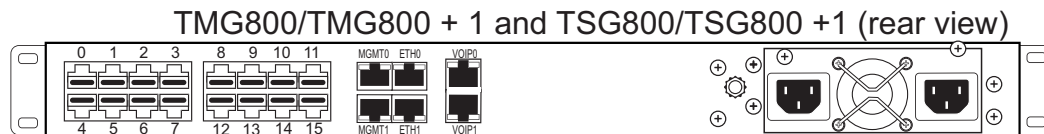
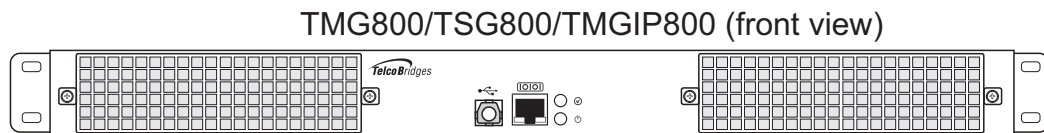
1.1.1 800 Series Standalone

The 800 series standalone consists of one telecom unit. The front and rear views are shown in figure 1.1 on page 2.

1.1.2 800 Series 1+1 System

The 800 series 1+1 system, see figure 1.1 on page 2, consists of:

- One telecom unit
- One +1 telecom unit
- One or two 1+1 patch panels



1+1 Patch Panel (RJ)

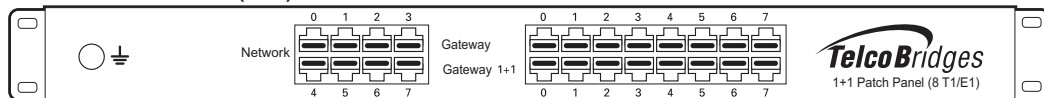




Figure 1.1 Equipment Front and Rear Views

1.2 Installation Prerequisites

For the installation to proceed without interruption, it is important that you have all necessary materials on hand.



 800 Series Standalone	 800 Series 1+1 System								
<p>Adequate space for the installation of the 800 series standalone. You will need to mount the 800 series unit on a 19" equipment rack (customer provided). Your 800 series unit is a 1U unit.</p> <p>Adequate power supply and power connections. The 800 series unit requires two power connections. To guarantee an uninterrupted supply of electricity, each power connection must be fed by a dedicated power source.</p> <p>IP addresses for the management ports. To avoid delays, you should have the IP address, netmask and gateway addresses on hand. Take note that the management port supports DHCP, see Section 2.4.1 "Connecting to the 800 Series Gateway Management Interface" on page 14 for further information.</p>	<p>Adequate space for the installation of the 800 series 1+1 system. You will need to mount the 800 series 1+1 system on a 19" equipment rack (customer provided).</p> <p>The 1+1 System requires space for the following number of units:</p> <table border="0"> <tr> <td>800 Series Unit:</td> <td>1U</td> </tr> <tr> <td>800 Series +1 Unit:</td> <td>1U</td> </tr> <tr> <td>1+1 Patch Panel(s):</td> <td>1U/2U</td> </tr> <tr> <td>Total:</td> <td>3U/4U</td> </tr> </table> <p>Adequate power supply and power connections. The 800 series and 800 series +1 units require two power connections each. To guarantee an uninterrupted supply of electricity, each power connection must be fed by a dedicated power source.</p> <p>IP addresses for the management ports. To avoid delays, you should have the IP address, netmask and gateway addresses on hand. Take note that the management port supports DHCP, see Section 2.4.1 "Connecting to the 800 Series Gateway Management Interface" on page 14 for further information.</p>	800 Series Unit:	1U	800 Series +1 Unit:	1U	1+1 Patch Panel(s):	1U/2U	Total:	3U/4U
800 Series Unit:	1U								
800 Series +1 Unit:	1U								
1+1 Patch Panel(s):	1U/2U								
Total:	3U/4U								



1.3

Preventing Electrostatic Discharge Damage

Electrostatic discharge (ESD) can damage equipment and impair electrical circuitry. This may occur if electronic printed circuit cards are improperly handled and may cause complete or intermittent failure.



Warning

Always follow ESD prevention procedures when removing and replacing modules:

- Ensure that the equipment is grounded.
- Wear an ESD-preventive wrist strap and ensure that it makes good contact with your skin. Connect the wrist strap clip to an unpainted surface of the equipment or the grounded equipment rack in order to channel away all ESD voltage safely to ground. To guard against ESD damage and shocks, the wrist strap and cord must be in proper working condition.
- If no wrist strap is available, and you must work with the equipment, ground yourself by touching a metal part of the chassis.

1.4

Recommended Reading

This document is written with the assumption that you have a clear understanding of the installation of the equipment described in this document and you are trained to work with the equipment. If you have any technical questions, TelcoBridges TB Support (technical support team) can be reached at the following numbers, or an email can be sent to: support@telcobridges.com.

- Americas & Europe Technical Support Centre (GMT-05:00, Montreal):
Telephone: +1-450-655-8993 x131 or x102
- Asia Technical Support Centre (GMT +08:00, Hong Kong)
Telephone: +852-3749-9818
- 24/7 International Support
Telephone: +1-866-438-4703

Documents exploring various aspects of the product are available on the TB Wiki:
<http://docs.telcobridges.com>



Section 2 Installing the Equipment

This section provides information about the following topics:

- Section 2.1 “Package Contents”
- Section 2.2 “Rack Mounting the 800 Series Standalone or the 800 Series 1+1 System”
- Section 2.3 “Choosing your Connection Procedures”
- Section 2.4 “800 Series Standalone”
- Section 2.5 “800 Series 1+1 System”
- Section 2.6 “Adding an 800 +1 Unit to an Existing Standalone; Creating an 800 series 1+1 System”
- Section 2.7 “Verifying the LED Status Indications”
- Section 2.8 “Powering Down”



2.1

Package Contents

Depending on your system requirements, you may receive one or more of the following items:

- Section 2.1.1 “800 Series Standalone Package Contents” on page 6.
- Section 2.1.2 “800 Series 1+1 System Package Contents” on page 7.

The contents of these devices are described in the following sections.

2.1.1

800 Series Standalone Package Contents

TMG800, TSG800, TMGIP800

In the box, you will find the following items:

- One 800 series unit:
TMG800, TSG800, or TMGIP800. See figure 1.1 on page 2.
- One set of mounting brackets and screws, used to mount the 800 series unit to a 19" rack.
- One Tmedia serial adapter to interface the serial port of your computer with the RJ-45 port of the 800 series unit.
- Three CAT5 Ethernet straight cables (male-male), 3 meters in length.
- One Important Notice (two-sided document containing pertinent product serial numbers, and other important information).
- One Product Warranty.
- One packing slip.
- For AC powered units: Two AC power cables
- For DC powered units: One or two DC power cables

Not included

- A 19" equipment rack. The 800 series unit must be installed on a 19" wide equipment rack.

2.1.2 800 Series 1+1 System Package Contents

TMG800, TSG800, TMGIP800

In the box, you will find the following items:



- One 800 series unit:
TMG800, TSG800, or TMGIP800. See figure 1.1 on page 2.
- One set of mounting brackets and screws, used to mount the 800 series unit to a 19" rack.
- One Tmedia serial adapter, to interface the serial port of your computer with the RJ-45 port of the 800 series unit.
- Three CAT5 Ethernet straight cables (male-male), 3 meters in length.
- One Important Notice (two-sided document containing pertinent product serial numbers, and other important information).
- One Product Warranty.
- One packing slip.
- For AC powered units: Two AC power cables
- For DC powered units: One or two DC power cables

Not included

- A 19" equipment rack. The 800 series unit must be installed in a standard 19" wide equipment rack.

TMG800 +1, TSG800 +1, TMGIP800 +1

- One 800+1 series unit. See figure 1.1 on page 2.
- One set of mounting brackets and screws, used to mount the 800+1 series unit to a 19" rack.
- One Tmedia serial adapter, to interface the serial port of your computer with the RJ-45 port of the 800 series +1.
- Three CAT5 Ethernet straight cables (male-male), 3 meters in length.
- One Important Notice (two-sided document containing pertinent product serial numbers, and other important information).
- One Product Warranty.
- One packing slip.
- For AC powered units: Two AC power cables
- For DC powered units: One or two DC power cables
- The associated 1+1 patch panel. This is only available for the TSG800 +1 and TMG800 +1. See Table 2.1, "1+1 Patch Panels for TMG800 +1 and TSG800 +1", on page 8 for further details.

Not included:

- A 19" equipment rack. The 800 series +1 unit must be installed in a standard 19" wide equipment rack.



1+1 Patch Panel

One or two 1+1 patch panels are required for the proper connection of each grouping of 8 lines of the 800 series 1+1 system.

Cables provided: You are provided with 16 RJ48C cables (yellow), two meters in length with your 1+1 Patch Panel (8 T1/E1).

Table 2.1 1+1 Patch Panels for TMG800 +1 and TSG800 +1

<p>1+1 Patch Panel (8/T1/E1)</p>	<p>Provides connection for up to 8 T1/E1 lines from the network to the 1+1 Patch Panel (8 T1/E1) and then links to the TMG800/TSG800 and TMG800 +1/TSG800 +1</p> <p>Cables provided:</p> <p>You are provided with 16 RJ48C cables (yellow), two meters in length, per 1+1 Patch Panel (8 T1/E1) you receive.</p>
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2.2 Rack Mounting the 800 Series Standalone or the 800 Series 1+1 System



The 800 series equipment is mounted on a customer provided equipment rack using the mounting hardware packaged in the box.



2.2.1 Prerequisites

To rack mount the equipment, you will need:

- One 19" customer-provided equipment rack. The rack must be solidly anchored to the floor with appropriate support at the top of the racks.
- Climate controlled room: 0 to +50 Celsius, 0 to 95% non-condensing humidity.

2.2.2 Vertical Placement of the Equipment

The 800 series standalone, 800 series +1, and 1+1 Patch Panel are each housed in a 1U chassis, as tabulated in table 2.2 on page 9. It is important that you provide for enough room on the equipment rack to allow for the installation of the equipment.

Consider the available space on your equipment rack and the height of the 800 series gateway equipment. Due to the rear-exhaust heat vents and the efficient heat dissipation design, there is no need to leave any physical vertical space above or below the 800 series gateway equipment on the equipment rack.

Table 2.2 800 Series Gateway Physical Height

Model Number	Vertical Height
800 series standalone	1U (1.75 inches or 44.45 mm)
800 series +1	1U (1.75 inches or 44.45 mm)
Patch Panel (one or two)	1U (1.75 inches or 44.45 mm)

2.2.3

Installing the 800 Series Standalone and the 800 Series 1+1 on an Equipment Rack

Both the 800 series standalone and the 800 series 1+1 system are mounted on the 19" equipment rack using the angle brackets and screws provided in the box.



Mounting the 800 Series Standalone:

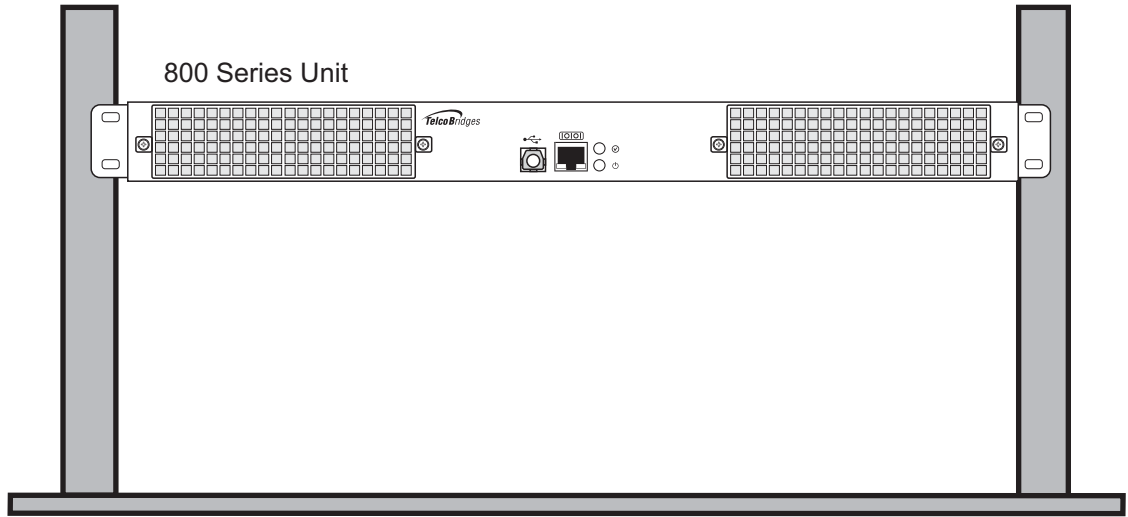
1. Using four metal screws, attach one angle bracket to the front, left-hand side of the 800 series unit, as shown in figure 2.1 on page 11. Do the same for the angle bracket on the right-hand side.
2. Start mounting equipment at the top-most position of the rack, keeping in mind the space required on the equipment rack as described in Section 2.2.2 "Vertical Placement of the Equipment" on page 9.



Mounting the 800 Series 1+1 System:

1. Mount the 800 series unit as mentioned above.
2. Install the 800 series +1 unit below the 800 series unit, as shown in figure 2.1 on page 11.
3. To attach the 800 series +1 unit to the equipment rack, follow the previous procedure.
4. Install one or two patch panels below the 800 series +1 unit, as shown in figure 2.1 on page 11.

800 Series Standalone



800 Series 1+1 System

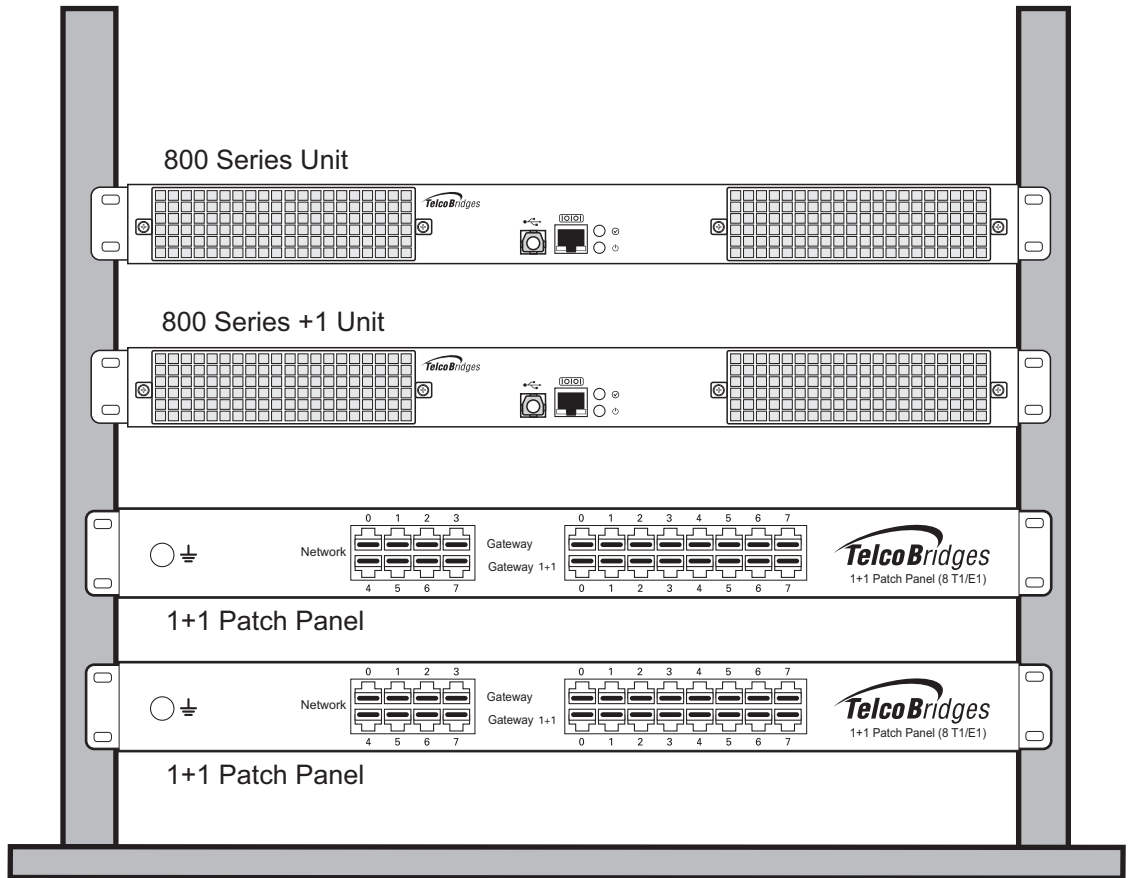


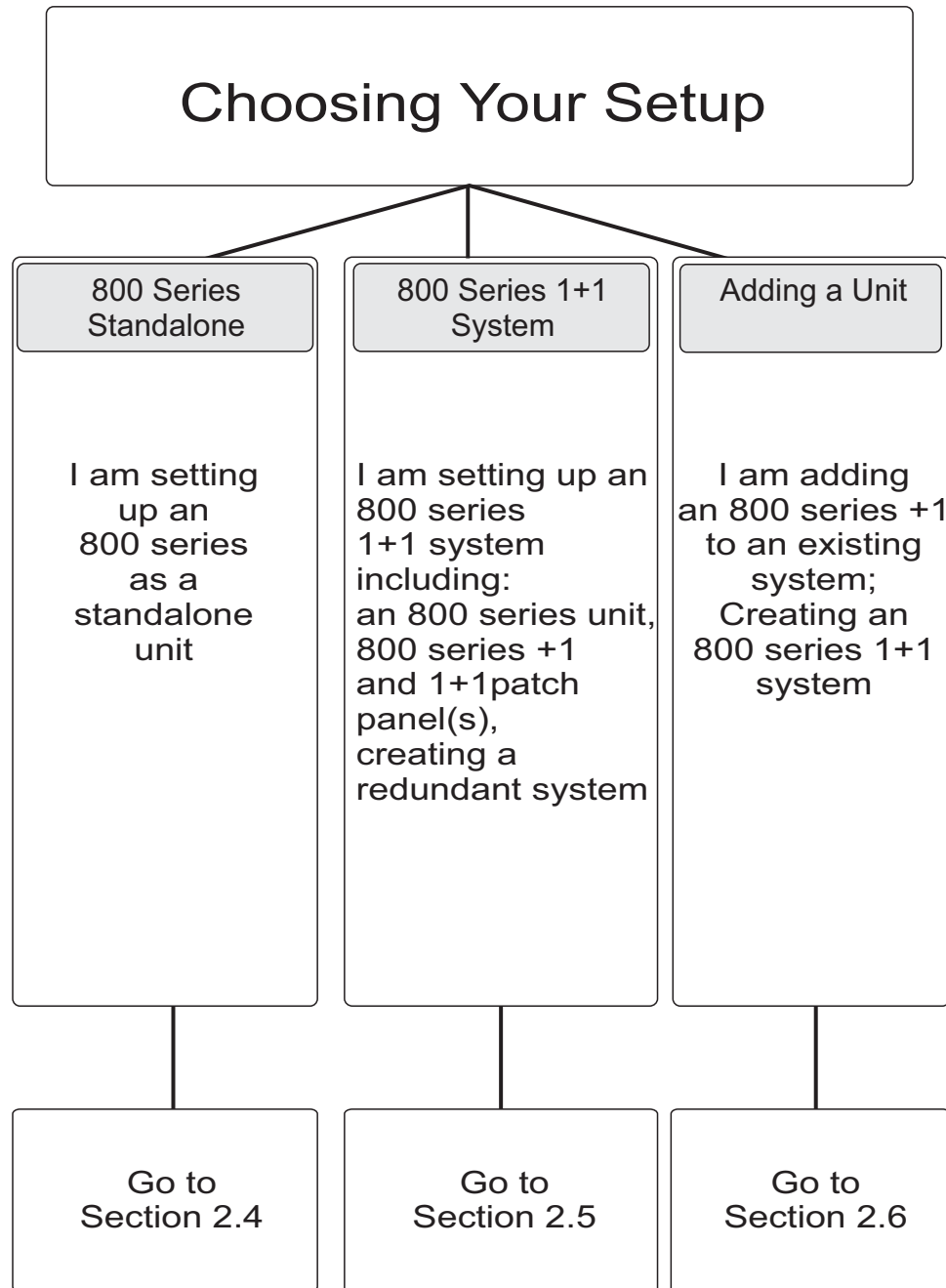
Figure 2.1 Rack Mounting the Equipment



2.3

Choosing your Connection Procedures

Use the following diagram to guide you to the appropriate section.



2.4 800 Series Standalone



If you are here, you have a 800 series unit that you will set up as a standalone system. This section covers the following procedures:

- Section 2.4.1 “Connecting to the 800 Series Gateway Management Interface”.
- Section 2.4.2 “Connecting to a VoIP Network”.
- Section 2.4.3 “Connecting to the PSTN”.
- Section 2.4.4 “Grounding the Equipment Chassis”.
- Section 2.4.5 “Powering Up”.
- Section 2.4.6 “Start Up”.



2.4.1

Connecting to the 800 Series Gateway Management Interface

The 800 series gateway provides redundant management interfaces enabling administrators to perform management tasks on the 800 series unit.

Prerequisites

To communicate with the management interface, the following is needed:

- One or two CAT5 Ethernet cable with RJ45 male-male terminations.

Interconnections

The 800 series gateway provides redundant management interfaces each using one gigabit Ethernet network link, as shown in figure 2.2 on page 14.

To communicate with the management interface:

1. Connect the supplied CAT5 Ethernet cable to the port labeled “MGMT0” at the rear of the 800 series gateway. Connect the other end of the same CAT5 cable to the first gigabit Ethernet switch.
2. If your system employs a second gigabit Ethernet switch for redundancy, connect a second CAT5 Ethernet cable to MGMT1 at the rear of the 800 series gateway. Connect the other end of the same CAT5 cable to the second gigabit Ethernet switch.

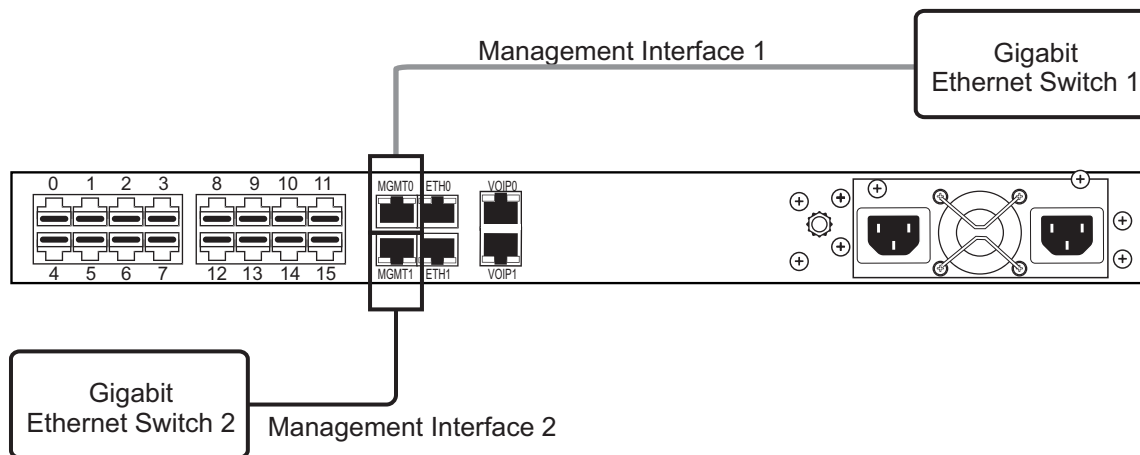


Figure 2.2

Management Interface

Note The default IP addresses for the management ports are located in the “Important Notice” sheet received with the shipment. MGMT ports are configured in bonding.

If you do not know the default IP address, go to Section 3.5 “Changing the 800 Series Gateway Management Port IP Address” on page 46.

2.4.2 Connecting to a VoIP Network



The 800 series gateway features redundant GigE ports for connection to different VoIP networks. This provides an access point to manage VoIP traffic. Should one of the IP physical interface go down, the 800 series gateway will continue to manage VoIP traffic using the alternate physical interface.

The IP address of the VoIP ports can be modified using the web portal.

Note: Certain configurations of the 800 series gateway will exceed 100 Mbps, therefore 1000 Mbps is recommended.

Prerequisites

To connect the 800 series gateway to the VoIP network, you will need:

- Gigabit layer 2 Ethernet switch. A second one is required to support redundancy of the VoIP interface.
- One or two CAT5 Ethernet cables with RJ45 male-male terminations.

Connections

The 800 series gateway is connected to the VoIP network by one or optionally two Ethernet GigE network links, as shown in figure 2.3 on page 15.

To connect the 800 series unit to the VoIP network:

1. Connect a CAT5 Ethernet cable to VoIP0 at the rear of the 800 series gateway. Connect the other end of the same CAT5 cable to the gigabit Ethernet switch.
2. If your system employs a second gigabit Ethernet switch for redundancy, connect a second CAT5 Ethernet cable to VoIP1 at the rear of the 800 series gateway. Connect the other end of the same CAT5 cable to the second gigabit Ethernet switch.

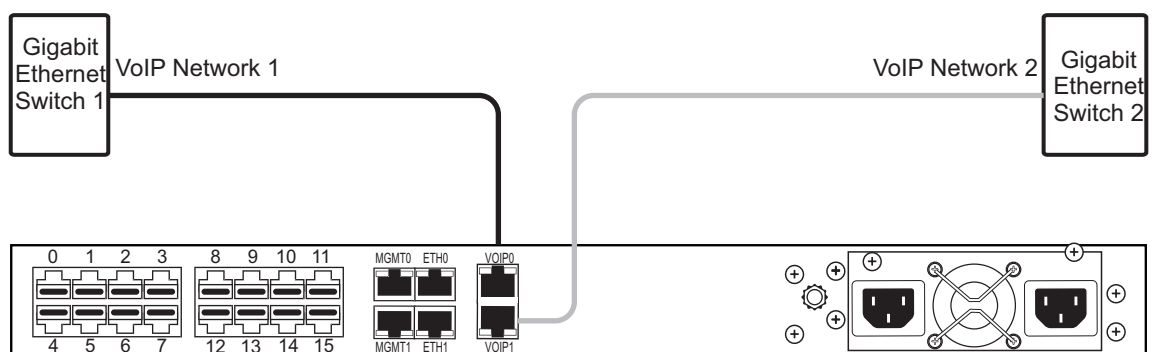


Figure 2.3 Connecting to the VoIP Network



2.4.3

Connecting to the PSTN

Note This section only applies to the TMG800 and TSG800 systems.

A TMG800 or TSG800 with 16 RJ48C type ports enables the connection to T1/E1 lines. The termination impedance is set at 100 ohms for T1 lines and 120 ohms for E1 lines. It is possible to connect an external balun to convert the line impedance to 75 ohms.

If you are making your own cables, refer to Section A.1 “RJ48C Wiring Diagram: Crossover and Straight Cables” on page 51 for crossover or straight cable wiring connections.

Note All of the ports may not be active. T1/E1 ports are activated by software license; the number of active ports depends on the licenses purchased.

To connect to the PSTN:

1. Start with port 0 located at the top and leftmost position. Connect one cable between this port and the T1/E1 line. See figure 2.4 on page 16.
2. Repeat step 1, using the next available port.

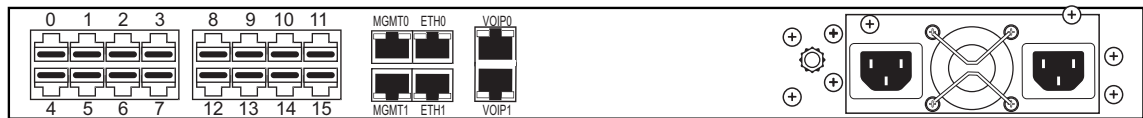


Figure 2.4

16-Port Interface to the PSTN

2.4.4 Grounding the Equipment Chassis



As a standard safety practice, the chassis of the 800 series gateway must be properly grounded to protect against any contact with an electrical fault condition. It is recommended that the chassis be connected to an earth ground. When the 800 series gateway is installed in an equipment rack, connect the ground wire between the ground lug of the gateway and the equipment rack ground bar. If more than one 800 series gateway is installed in an equipment rack, each 800 series gateway must be grounded directly to the equipment rack ground bar.

Guidelines

- Use 10 AWG (minimum) stranded ground wire.
- Terminate equipment side of ground wire with a #10 ring terminal.
- Keep the length of the ground wire as short as possible.
- Do NOT daisy chain the ground between equipment. Use a ground bus bar, as show in figure 2.5 on page 17.
- Do not over tighten ground lug connections.

To connect the 800 series gateway to ground:

1. Connect one end of a ground wire to the ground lug of the 800 series gateway. See figure 2.5 on page 17.
2. Connect the other end of the ground wire to a ground bar of the equipment rack. If the 800 series gateway is not installed in an equipment rack, connect the ground wire to earth ground. In the case of DC powered units, connect an additional ground wire from the chassis ground terminal of each DC supply.
3. Verify that the resistance of the ground path is less than 0.5 ohms.

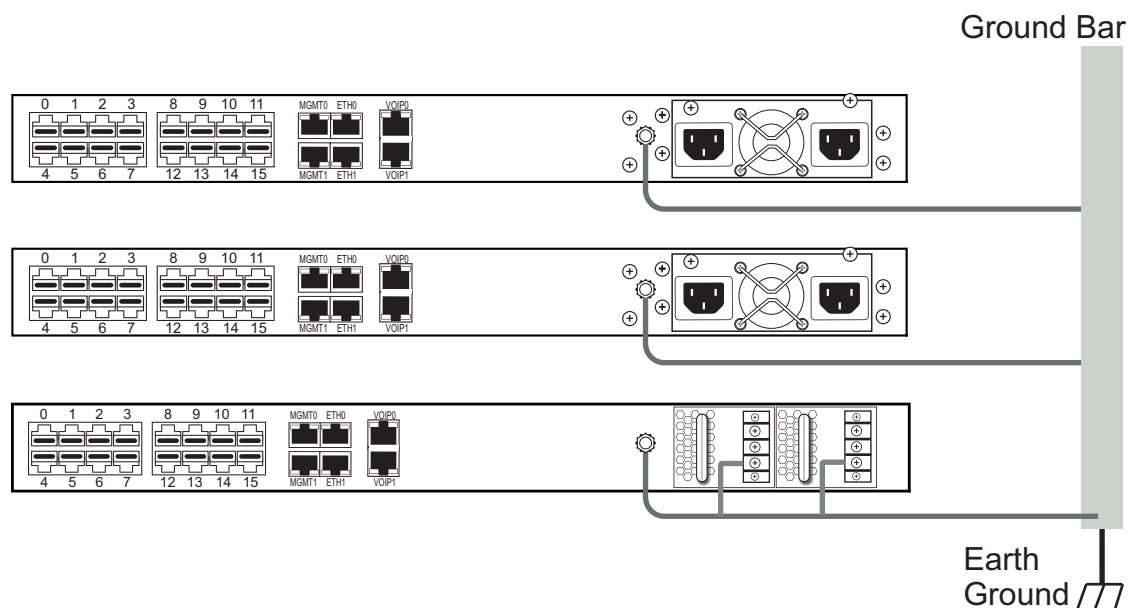


Figure 2.5 Ground Connection



2.4.5 Powering Up

The 800 series gateway is furnished with two AC or DC power connections. Only once all other equipment installation work is completed should the 800 series gateway be turned on.

2.4.5.1 Connecting to AC Power

Prerequisites

To power the 800 series gateway, you will need:

- Two power sources.
- Two power cables for the 800 series gateway.

To connect to AC Power:

1. Connect an AC power cable to each AC connector of the 800 series gateway and an AC supply. See figure 2.6 on page 18.

Note It is important to connect both power supplies in order to avoid setting off the audible alarm.

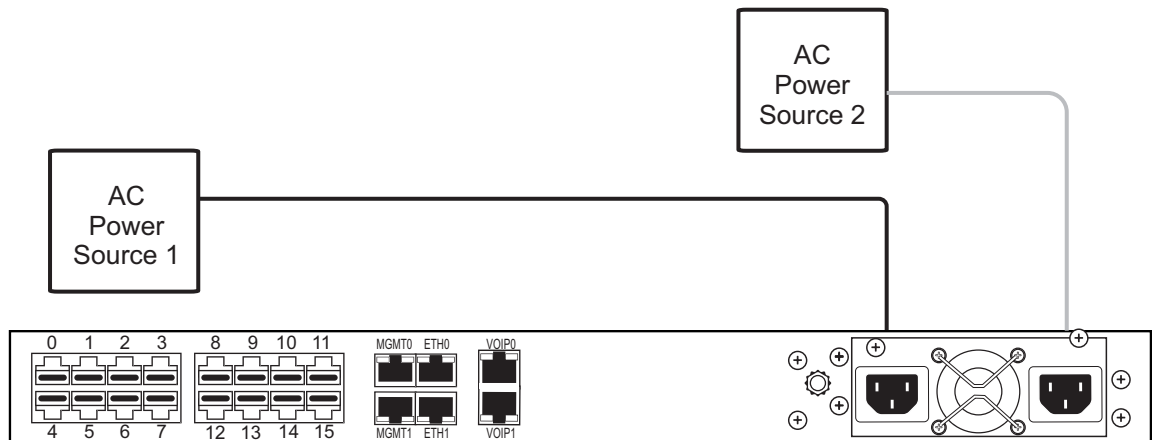


Figure 2.6 AC Power Connection



2.4.5.2 Connecting to DC Power

The 800 series gateway, DC model, is furnished with two DC power supplies. In addition, each DC powered unit is supplied with two DC power cables.

Fuse and Cabling Requirements

16 AWG wiring must be used and the 48V supply must be protected with a customer provided 5A 48V fuse.

To connect to DC power:

1. Connect one wire from the positive terminal of the 800 series gateway to the return side of DC power source one, as shown in figure 2.7 on page 19.
2. Connect another wire from the negative terminal of the 800 series gateway to the -48V side of DC power source one.
3. Connect a ground wire from the ground terminal of the 800 series gateway to earth ground.
4. Repeat steps 1-3 for the second power DC power source.

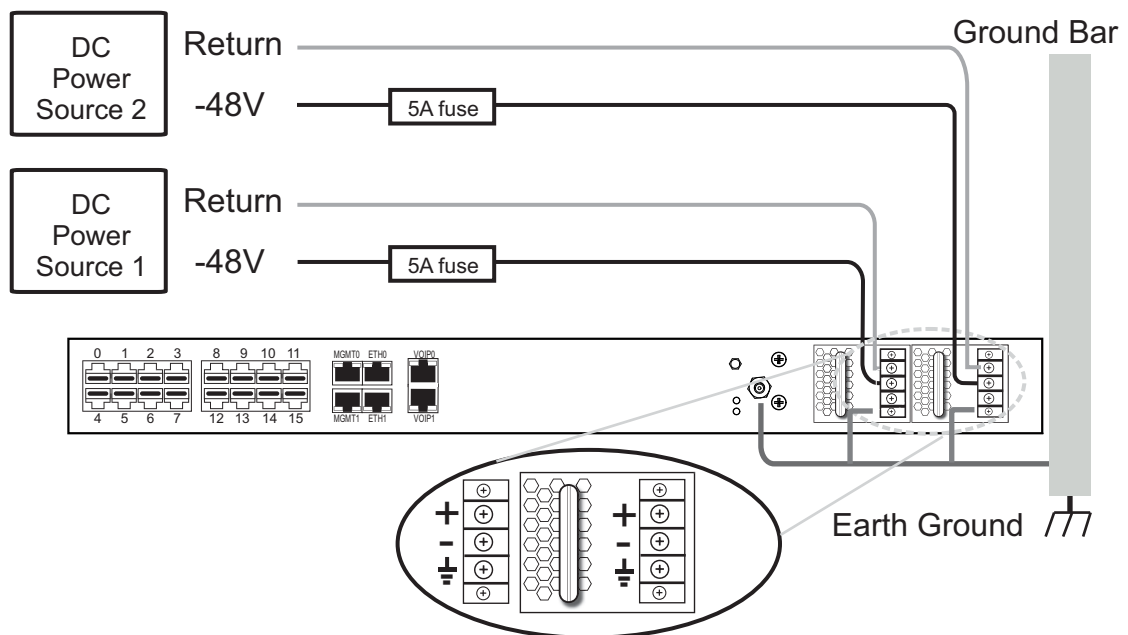


Figure 2.7 800 Series Gateway Redundant DC Supply Wiring Diagram



2.4.6

Start Up

The first time that you connect to an 800 series gateway, the web portal is displayed and you are asked to configure the role of the 800 series gateway. You must set the role as an 800 series standalone.

Once the configuration settings are applied, your 800 series gateway starts up and displays the web portal configuration management tool.

Note To learn about the IP address for your system or how to change it, refer to Section 3.5 “Changing the 800 Series Gateway Management Port IP Address” on page 46.

2.4.6.1

Configuring the Role

To configure the role of your 800 series gateway as a standalone unit, do the following:

1. Connect to the web portal of the standalone unit. The Welcome page appears.



2. Follow the instructions of the web portal to set the role to a standalone gateway.

2.5 800 Series 1+1 System

If you are here, you are installing an 800 series 1+1 system. This section covers the following procedures:



- Section 2.5.1 “Connecting to the 800 Series 1+1 System Management Interfaces”.
- Section 2.5.2 “Connecting to the 800 Series 1+1 System Control Network”.
- Section 2.5.3 “Connecting to the 800 Series 1+1 System VoIP Network(s)”.
- Section 2.5.4 “Connecting to the PSTN in an 800 Series 1+1 System”.
- Section 2.5.5 “Grounding the Equipment Chassis”.
- Section 2.5.6 “Powering Up”.
- Section 2.5.7 “Start Up”.

2.5.1 Connecting to the 800 Series 1+1 System Management Interfaces

The 800 series gateway provides redundant management interfaces enabling administrators to perform management tasks on the 800 series 1+1 system.



Prerequisites

To communicate with the management interface, the following is needed:

- Two or four CAT5 Ethernet cables with RJ45 male-male terminations.

Interconnections

An 800 series 1+1 system provides redundant management interfaces for an 800 series and an 800 +1 gateway, each using a gigabit Ethernet network link. See figure 2.8 on page 22.

To communicate with the management interface:

1. Connect a CAT5 Ethernet cable to the port labeled “MGMT0” at the rear of the 800 series gateway to the first gigabit Ethernet switch.
2. If your system employs a second Gigabit Ethernet switch for redundancy, connect a second CAT5 Ethernet cable to MGMT1 at the rear of the 800 series gateway. Connect the other end of the same CAT5 cable to a second gigabit Ethernet switch.
3. Repeat steps 1 and 2 for the 800 series +1 unit.

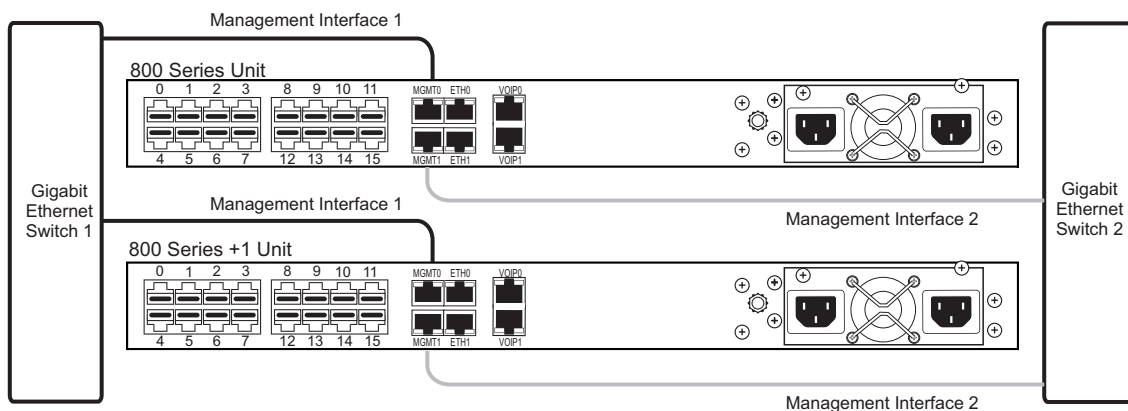


Figure 2.8

Management Interface

Note

The default IP addresses for the management ports are located in the “Important Notice” sheet received with the shipment. MGMT ports are configured in bonding.

If you do not know the default IP address, go to Section 3.5 “Changing the 800 Series Gateway Management Port IP Address” on page 46.

2.5.2 Connecting to the 800 Series 1+1 System Control Network

Each 800 series gateway features dual GigE Ethernet ports to connect to the 800 series control network. This allows both units to communicate with one another.



Prerequisites

To connect to the control network, you will need:

- Two CAT5 Ethernet cables with RJ45 male-male terminations.

To connect to the VoIP network:

1. Connect one CAT5 Ethernet cable between ports ETH0 of both the 800 series and 800 series +1 units.
2. Connect a second CAT5 Ethernet cable between ports ETH1 of both the 800 series and 800 series +1 units.

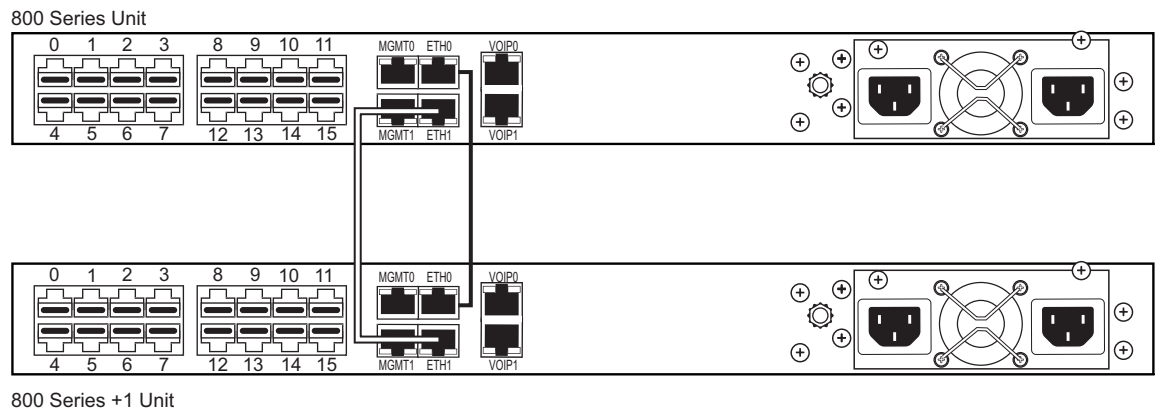


Figure 2.9 Connecting to the 800 Series Control Network

2.5.3 Connecting to the 800 Series 1+1 System VoIP Network(s)



Each 800 series gateway features redundant GigE ports for connection to different VoIP networks. This provides an access point to manage VoIP traffic. Should one of the IP physical interface go down, the 800 series 1+1 gateway will continue to manage VoIP traffic using the alternate physical interface.

The IP address of the VoIP ports can be modified using the web portal.

Note: The 800 series 1+1 system requires two (2) gigabit layer 2 Ethernet switches.

Prerequisites

To connect to the VoIP network, you will need:

- Two gigabit layer 2 Ethernet switches. A second one is required to support redundancy of the VoIP interface.
- Four CAT5 Ethernet cables with RJ45 male-male terminations.

Connections

The 800 series unit and 800 series +1 VoIP ports must to be connected on both Ethernet GigE network links, as shown in figure 2.9 on page 23.

To connect to the VoIP network:

1. Connect the VoIP0 connector from both the 800 series and 800 series +1 units to the first Ethernet switch.
2. Connect the VoIP1 connector from both the 800 series and 800 series +1 units to the second Ethernet switch.

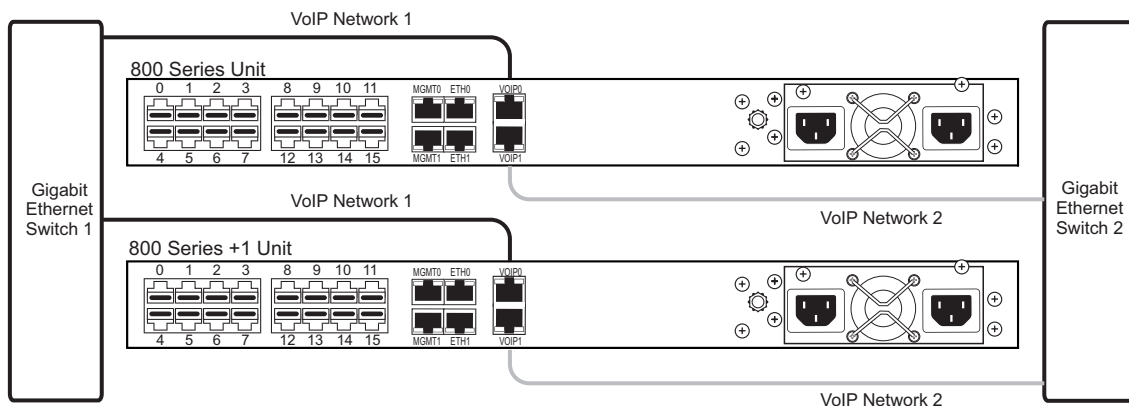


Figure 2.10 Connecting to the 800 Series VoIP Network

2.5.4 Connecting to the PSTN in an 800 Series 1+1 System

Note This section only applies to the TMG800 and TSG800 systems.

An 800 series 1+1 system has a TDM interface featuring 16 RJ48C type ports enabling the connection to T1/E1 lines. The termination impedance is set at 100 ohms for T1 lines and 120 ohms for E1 lines. It is possible to connect an external balun in order to convert to 75 ohms. If you are making your own cables, refer to page 51 in Appendix A for crossover or straight cable wiring connections.

Note All ports may not be active. T1/E1 ports are activated by software license; the number of active ports depends on the licenses purchased.

Patch panels use straight connections. In other words, they do not cross the RX and TX signals. Connections between the patch panels and an 800 series 1+1 system require straight cables. The supplied T1/E1 cables are straight cables. Cables used to connect the network to the 1+1 patch panel must do the cross connection.

To connect to the PSTN:

1. Connect T1/E1 lines 0-7 of the Network section of the patch panel to the remote equipment. See figure 2.11 on page 26.
2. Connect T1/E1 lines 0-7 from the 'Gateway' section of the patch panel to the RJ48C connectors of the 800 series unit.
3. Connect T1/E1 lines 0-7 from the 'Gateway 1+1' section of the patch panel to the RJ48C connectors of the 800 series +1 unit.
4. Repeat step 1 - 3 for lines 8-15, connecting them to a second patch panel.



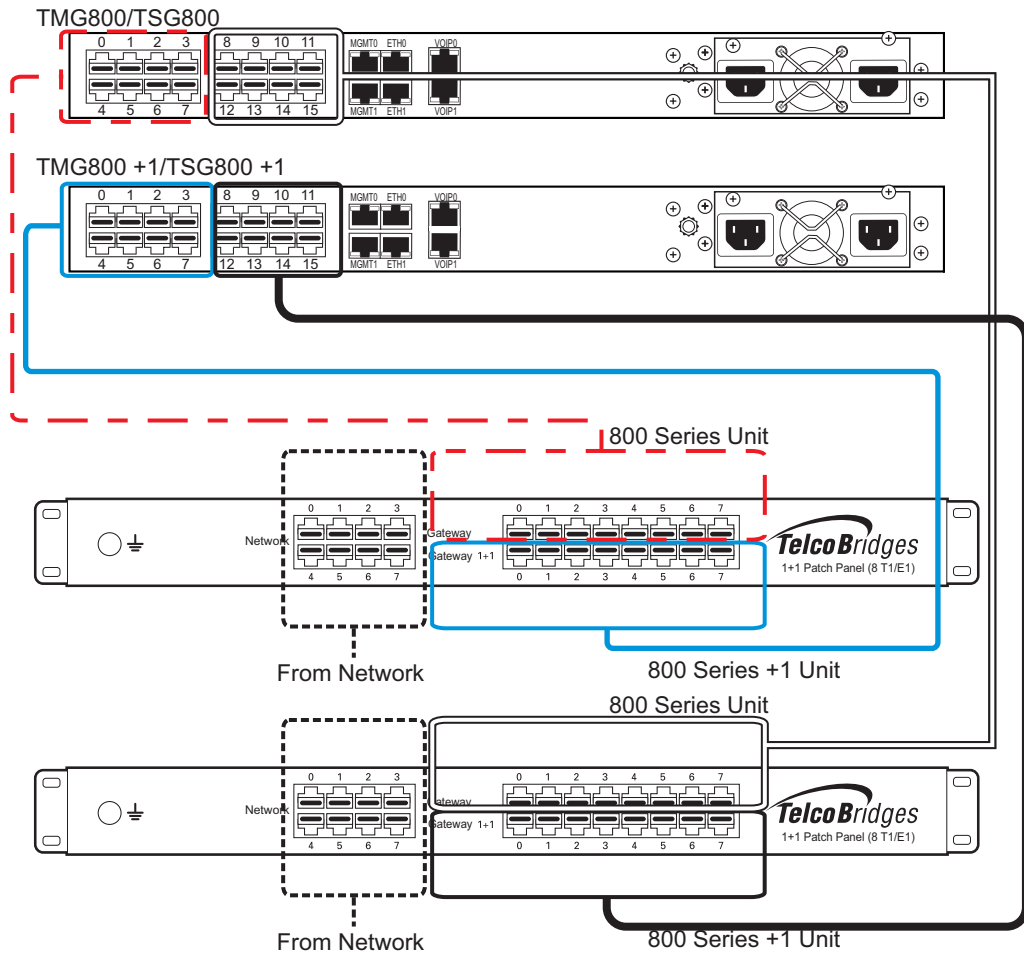


Figure 2.11 TMG800/TSG800 and TMG800 +1/ TSG800 +1 connecting to the 1+1 patch panels (8/T1/E1)

2.5.5 Grounding the Equipment Chassis

As a standard safety practice, the chassis of the 800 series gateway must be properly grounded to protect against any contact with an electrical fault condition. It is recommended that the chassis be connected to an earth ground. When the 800 series gateway is installed in an equipment rack, connect the ground wire between the ground lug of the gateway and the equipment rack ground bar. If more than one 800 series gateway is installed in an equipment rack, each 800 series gateway must be grounded directly to the equipment rack ground bar.



Guidelines

- Use 10 AWG (minimum) stranded ground wire.
- Terminate equipment side of ground wire with a #10 ring terminal.
- Keep the length of the ground wire as short as possible.
- Do NOT daisy chain the ground between equipment. Use a ground bus bar, as show in figure 2.12 on page 27.
- Do not over tighten ground lug connections.

To connect the 800 series gateway to ground:

1. Connect one end of a ground wire to the ground lug of the 800 series gateway. See figure 2.12 on page 27.
2. Connect the other end of the ground wire to a ground bar of the equipment rack. If the 800 series gateway is not installed in an equipment rack, connect the ground wire to earth ground.
3. Verify that the resistance of the ground path is less than 0.5 ohms.

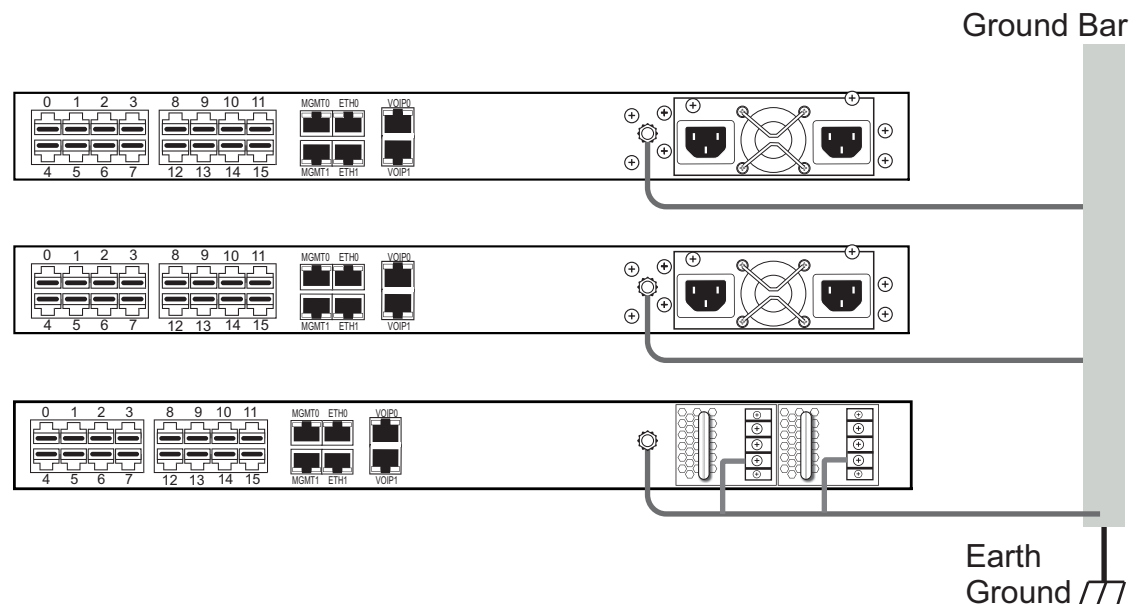


Figure 2.12 Ground Connection

2.5.6 Powering Up



The 800 series and 800 series +1 units are furnished with two AC or DC power connections. Only once all other equipment installation work has been completed should the 800 Series 1+1 system be powered up.

Prerequisites

To connect power you will need:

- Two power sources.
- Two power cables for every 800 series and 800 series +1 unit.

2.5.6.1 Connecting to AC Power

To connect to AC Power:

1. Connect the first power connector of each unit to the first power source. See Figure 2.13.
2. Connect the second power connector of each unit to the second power source.

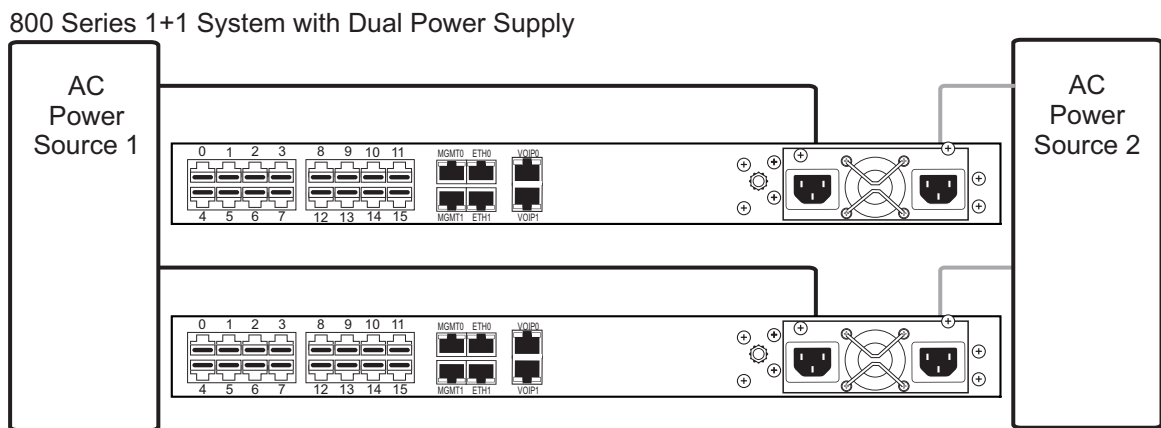


Figure 2.13 800 Series and 800 Series +1 AC Power Connections

2.5.6.2 Connecting to DC Power

The 800 series gateway, DC model, is furnished with two DC power supplies.

To connect an 800 Series and 800 Series +1 Unit to DC Power



1. Connect one wire from the positive terminal of the 800 series gateway to the return side of DC power source one, as shown in figure 2.7 on page 19.
2. Connect another wire from the negative terminal of the 800 series gateway to the -48V side of DC power source one.
3. Connect a ground wire from the ground terminal of the 800 series gateway to earth ground.
4. Repeat steps 1-3 for the second power DC power source.

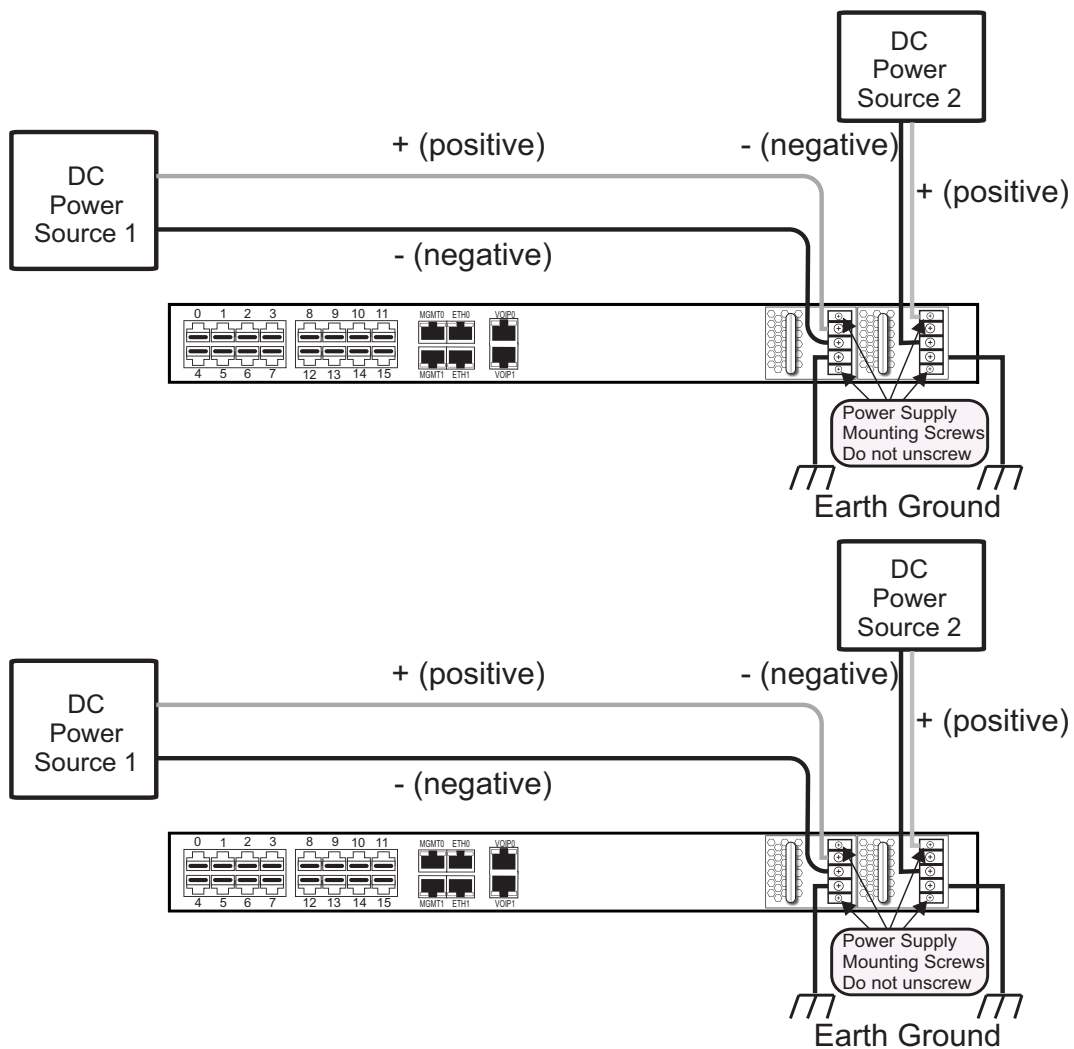


Figure 2.14 800 Series Gateway Redundant DC Supply Wiring Diagram

2.5.7 Start Up

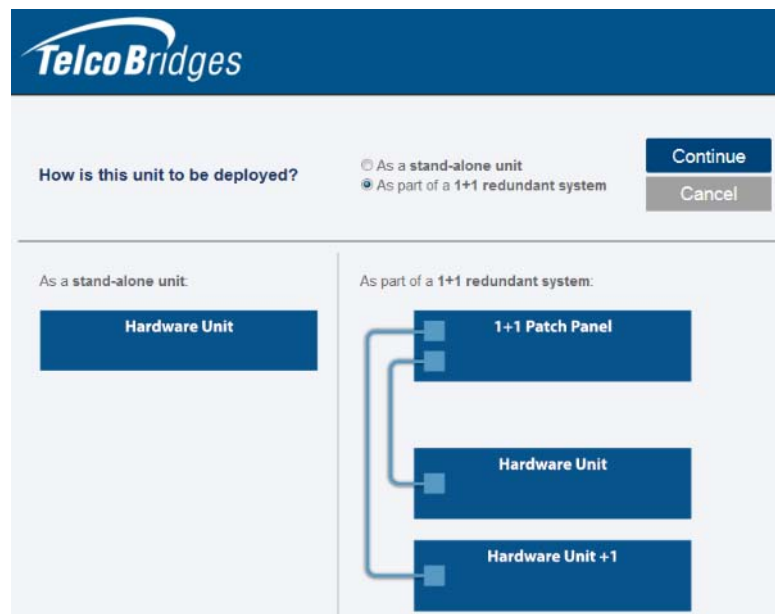


After powering up the 800 series 1+1 system, you must configure both units, one as primary and the other as secondary.

Once these configuration settings have been applied, your 800 series 1+1 system will start up and display the web portal configuration management tool.

Note To learn about the IP address for your system or how to change it, refer to Section 3.5 “Changing the 800 Series Gateway Management Port IP Address” on page 46.

1. Connect to the web portal. The Welcome page appears.



Note: The Welcome page indicates whether the 800 series unit is a primary or secondary.

2. Follow the instructions of the web portal to configure the units of your 800 series 1+1 system. Indicate the following:
 - Primary or secondary
 - VLAN IDs

- 3. Once you confirm the changes, a progress page is displayed.



2.6 Adding an 800 +1 Unit to an Existing Standalone; Creating an 800 series 1+1 System



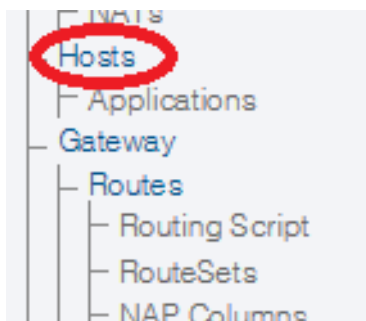
Warning: This procedure will require some system downtime.

In order to add an 800 series +1 unit to an 800 series standalone unit, you must perform the following procedures:

- Section 2.6.1 “Reconfigure a Standalone Unit as a Primary Unit in an 800 Series 1+1 System”
- Section 2.6.2 “Install the 800 Series +1 unit on the Equipment Rack”
- Section 2.6.3 “Install the 1+1 Patch Panel”
- Section 2.6.4 “Connect to the 800 Series 1+1 Management Interface”
- Section 2.6.5 “Connect to the 800 Series 1+1 Control Network”
- Section 2.6.6 “Connect to the 800 Series 1+1 VoIP Network(s)”
- Section 2.6.7 “Connect to the PSTN Network”
- Section 2.6.8 “Power Up the Equipment”
- Section 2.6.9 “Start Up”

2.6.1 Reconfigure a Standalone Unit as a Primary Unit in an 800 Series 1+1 System

1. Connect to the web portal of the standalone 800 series unit.
2. Select **Hosts** from the navigation panel.



- 3. Select a host from the **Host Configuration List**.

Configuration | Status

[Create New Host](#)

Host Configuration List

Name	Applications	Actions
TB005424	gateway, logtrace, stream_server, tboamapp, tbsnmpagent, tbuctwriter, toolpack_engine, toolpack_sys_mgr	Delete
TB005577	gateway, logtrace, stream_server, tboamapp, tbsnmpagent, tbuctwriter, toolpack_engine, toolpack_sys_mgr	Delete



- 4. Select the **Status** tab.

Configuration | **Status**

List

Editing Host Configuration:

Name:

Applications

Current		Available
Applications	Action	
stream_server	Remove	
toolpack_engine		
toolpack_sys_mgr		
tbuctwriter	Remove	
gateway	Remove	
logtrace		
tboamapp		
tbsnmpagent	Remove	

Editing Folder Cleanup:

[Create all default folder cleanup configurations](#)

[Create New Folder Cleanup](#)

Name	Folder Path	Mask	Max files	Max size	Max age	Actions
------	-------------	------	-----------	----------	---------	---------

5. Select Reset Host Role.



Configuration | Status

List

Host Status - TB005424

Status Refresh

Refresh every: Don't refresh [v] Now

Status Level: Level 2 [v]

Host | Processor Usage | Memory Usage | Filesystem Usage | Folder Cleanup | Network Interfaces

Name	Value
Host	TB005424
Host role	Secondary
Qam mode	Slave
Qam state	Ready
Trng host	Yes
Host platform	TMG3200 Centos
Host package	x86_64-linux64_centos5
Host control last upload action	None

Host Control

Action: None [v]

- None
- Shutdown
- Validate Requirements
- Upload New Packages
- Reset Host Role**

Action Log

6. Follow the instructions of the web portal to configure your unit as a primary unit in a new 800 series 1+1 system.

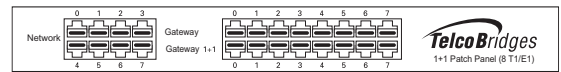
2.6.2 Install the 800 Series +1 unit on the Equipment Rack

The 800 series +1 unit is mounted on a customer provided equipment rack using the mounting hardware packaged in the box. Refer to Section 2.2 “Rack Mounting the 800 Series Standalone or the 800 Series 1+1 System” on page 9.



2.6.3 Install the 1+1 Patch Panel

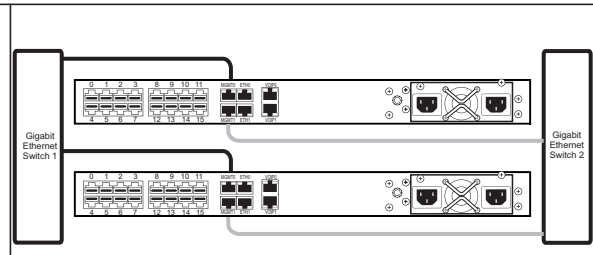
If you are installing an 800 series +1 unit, the associated one or two 1+1 patch panels will look like the image to the right. Refer to Section 2.4.3 “Connecting to the PSTN” on page 16.



2.6.4 Connect to the 800 Series 1+1 Management Interface

The 800 series redundant management interfaces enables administrators to perform management tasks on the 800 series equipment. Connect each management interface to different Ethernet switches.

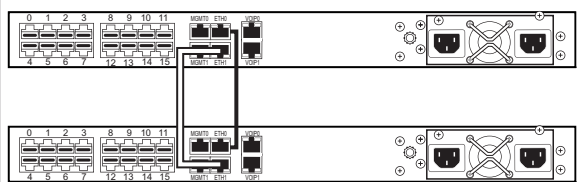
Follow the procedure described in Section 2.5.1 “Connecting to the 800 Series 1+1 System Management Interfaces” on page 22.



2.6.5 Connect to the 800 Series 1+1 Control Network

The 800 series and 800 series +1 units feature dual GigE ports to connect to the 800 series control network, which allows both units to communicate with each other.

Follow the procedure described in Section 2.5.2 “Connecting to the 800 Series 1+1 System Control Network” on page 23.

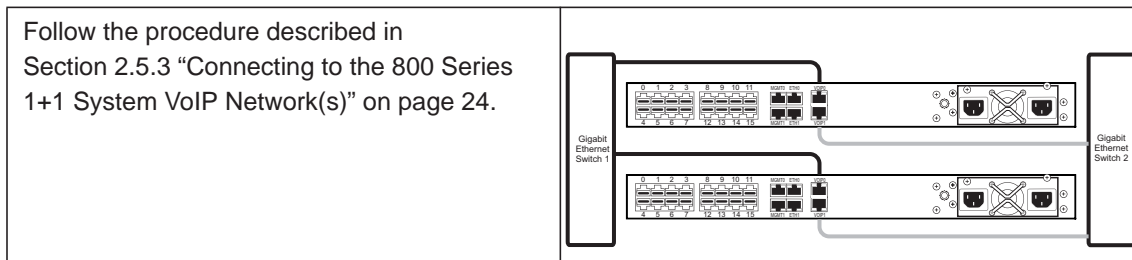




2.6.6

Connect to the 800 Series 1+1 VoIP Network(s)

The 800 series and 800 series +1 units feature dual GigE ports for connection to different VoIP networks. This provides an access point to manage VoIP traffic. Should one of the IP networks fail, the 800 series 1+1 system will continue to manage VoIP traffic using the alternate network.

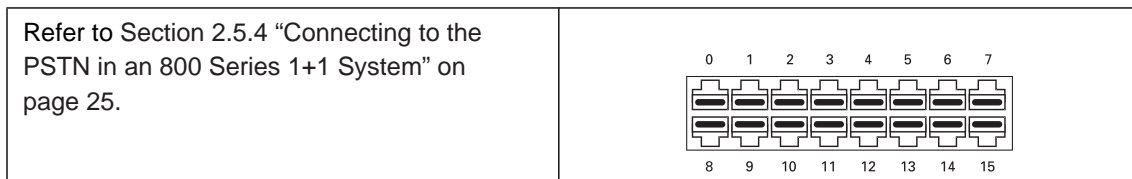


2.6.7

Connect to the PSTN Network

Note This section only applies to the TMG800 and TSG800

The 800 series gateways feature 8 T1/E1 interfaces for connection to the PSTN network.



2.6.8

Power Up the Equipment

The 800 series and 800 series +1 units are furnished with one (1) or two (2) AC or DC power connections. Only once all other equipment installation work has been completed should the 800 series 1+1 system be powered up. Refer to Section 2.5.6 “Powering Up” on page 28.

2.6.9 Start Up

Note To learn about the IP address for your system or how to change it, refer to Section 3.5 “Changing the 800 Series Gateway Management Port IP Address” on page 46.



1. Connect to the web portal of the 800 series 1+1 system. The Welcome page appears.



2. Follow the instructions of the web portal to configure the Vlans.



2.7

Verifying the LED Status Indications



Front of Unit

When the equipment is powered, verify the front panel to determine that the LED indication is normal. See Table 2.3 on page 38.

Table 2.3 800 Series Unit Displays

LED	Description
Green - Steady	<ul style="list-style-type: none"> Ready
Green - Blinking	<ul style="list-style-type: none"> Starting up Shutting down
Orange - Steady	<ul style="list-style-type: none"> Shut down (stopped)
Red - Blinking	<ul style="list-style-type: none"> Fault condition

Note An alarm will sound if one of the power supplies is faulty. There is no alarm button to disable the alarm. To stop the alarm, you must remove the faulty power supply.

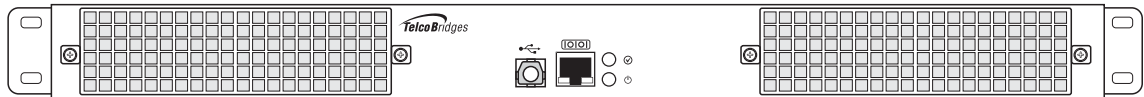


Figure 2.15 Front View LED

2.8 Powering Down

The 800 series 1+1 can be turned off using either the management port or the power button.



2.8.1 Management Port

To shut down the unit using the management port, connect to the management interface using SSH, and enter:

```
shutdown -hP now
```

Attention DO NOT TURN OFF the power to the 800 series gateway unless you have already performed the previously mentioned shut down procedure. Allow enough time for the VoIP gateway to shut down before turning the power off (ex. minimum 1 minute). Be aware that the shutdown procedure of the unit is logged and traceable for support and warranty purposes.

2.8.2 Power Button

To shut down the unit, press and hold the front power button for one second.

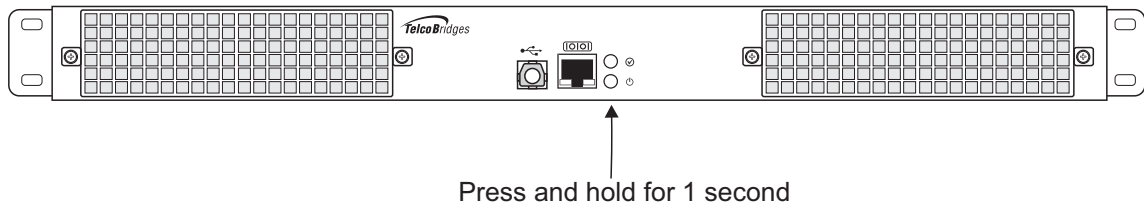


Figure 2.16 Front View LED



Section 3 Initial System Configuration

This section provides information about the following topics:

- Section 3.1 “Series Gateway SSH Connection”
- Section 3.2 “800 Series Gateway Serial Connection”
- Section 3.3 “Changing 800 Series Gateway Management Port Passwords”
- Section 3.4 “Retrieving 800 Series Gateway Information”
- Section 3.5 “Changing the 800 Series Gateway Management Port IP Address”
- Section 3.6 “Setting the Time Zone”
- Section 3.7 “Configuring the 800 Series Gateway Using the Web Portal”
- Section 3.8 “Changing VoIP Interface Addresses”



3.1

Series Gateway SSH Connection

The 800 Series Gateway is shipped with the TMG-CTRL software preinstalled. In order to make changes to the system configuration, you must connect the port labeled MGMT0 at the rear of the 800 Series Gateway to a terminal.

To access the 800 series gateway, you must use an SSH connection. The password is set at the factory and is indicated on the shipment sheet.

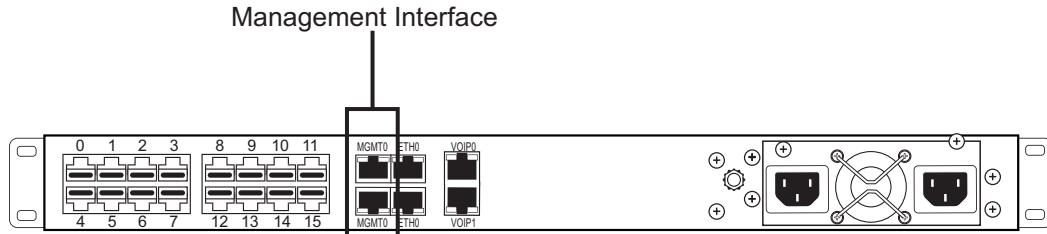


Figure 3.1 800 Series Gateway Management Interface

3.2 800 Series Gateway Serial Connection

3.2.1 Physical Connection

Two types of serial connection are possible:

- Section 3.2.1.1 “Connecting to the USB Port of the 800 Series Gateway” on page 43
- Section 3.2.1.2 “Connecting to the Serial Port of the 800 Series Gateway” on page 44

3.2.1.1 Connecting to the USB Port of the 800 Series Gateway

The Type B USB serial port interface enables administrators to perform management tasks on the 800 series gateway.



To connect to the Type B USB serial port of an 800 series gateway:

1. Connect the Type A USB connector of the USB cable to a computer.
2. Connect the Type B USB connector of the USB cable to the USB port of the 800 Series gateway.

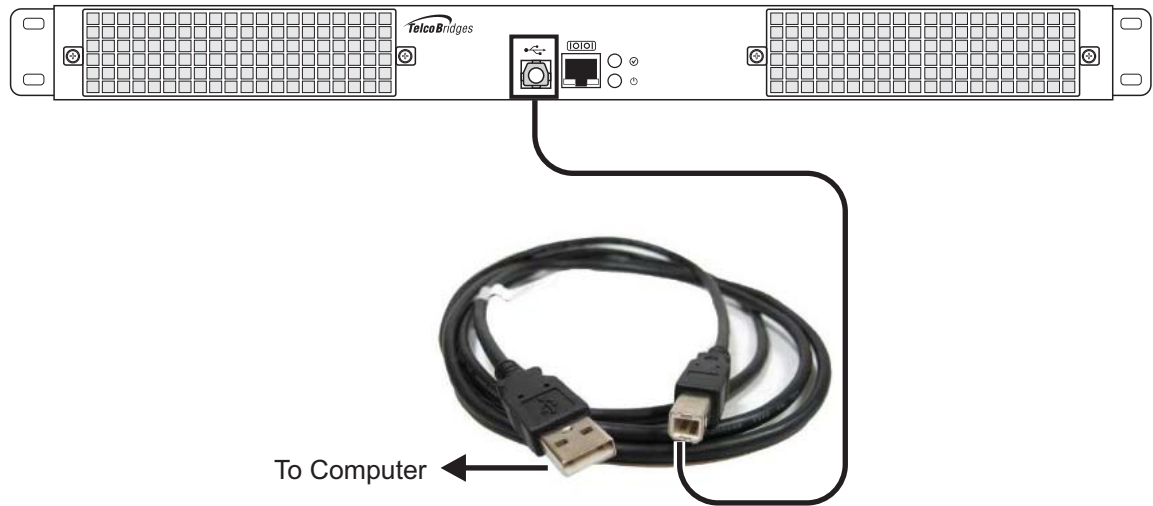


Figure 3.2 USB cable connection



3.2.1.2

Connecting to the Serial Port of the 800 Series Gateway

Note The default IP addresses for the management ports are located in the “Important Notice” sheet received with the shipment. MGMT ports are configured in bonding.

If you do not know the default IP address, go to Section 3.5 “Changing the 800 Series Gateway Management Port IP Address” on page 46.

The serial port interface enables administrators to perform management tasks on the 800 series gateway.

To connect to the serial port of an 800 series gateway:

1. Connect one end of a CAT5 RJ-45 (male-male) cable to the Tmedia serial adapter (both supplied with unit). Connect the DB9 to RJ-45 to the serial port of the computer and the other end of the CAT5 RJ-45 (male-male) cable to the serial port (labeled 10101) of the 800 series gateway as shown in figure 3.3 on page 44. See Section A.2 “Tmedia Serial Adapter Wiring Diagram” on page 52 for a RJ-45 pin out description.
2. If your computer’s serial port features a DB9 connector, use the Tmedia serial adapter supplied with your 800 series gateway. If your computer’s serial port features a USB connector, you will need to provide a USB to DB9 adapter. Refer to figure 3.4 on page 44.

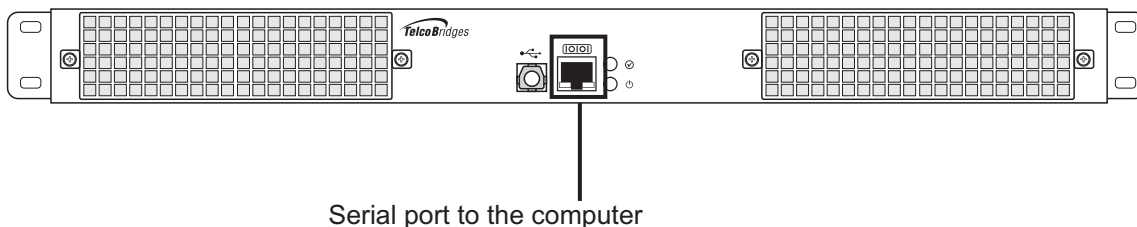


Figure 3.3 Computer to 800 Series Gateway Serial Port Connection

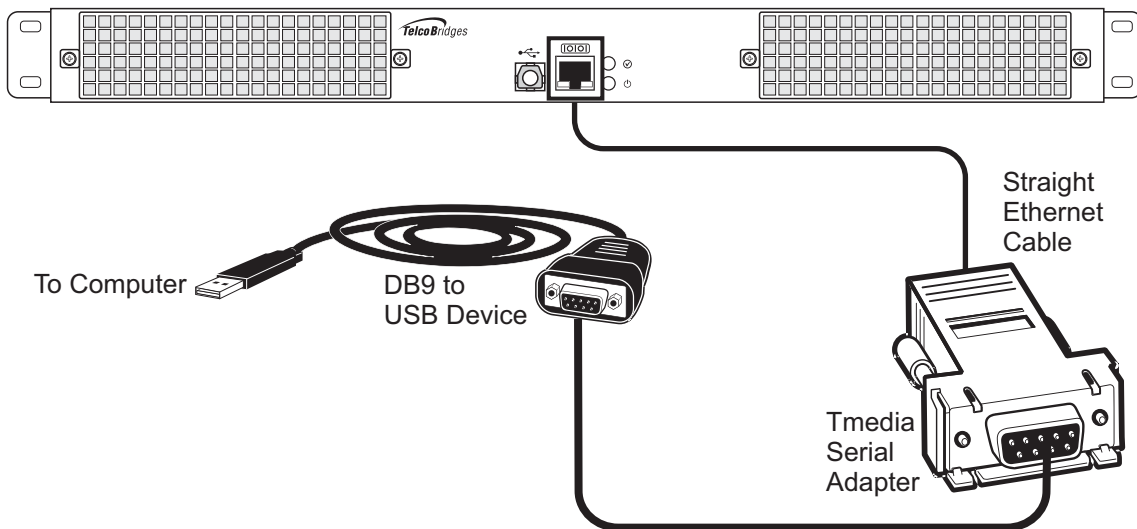


Figure 3.4 Conceptual View of a Serial Connection from the 800 Series Gateway to a Computer

3.2.2 Configuring the Terminal Emulator Application

Before communicating with the management interface, you must first configure a terminal emulator or console application to communicate with the 800 series system in order to configure initial settings. Available terminal emulation software includes:

- SecureCRT
- Putty
- Minicom

To configure the terminal emulator application:

1. Set the baud rate (bits per second) to **9600**
2. Set the data rate to **8 bits**
3. Set the parity to **None**
4. Set the stop bits to **1**
5. Set the flow control to **None**

Note See Section 3.5 on page 46 to learn how to change the IP address of the MGMT0 port.

3.3 Changing 800 Series Gateway Management Port Passwords

Note The following procedure must be performed on the 800 series standalone unit and the 800 series 1+1 system.

Once logged onto the 800 series gateway, type “passwd”, to change the password. The following information will be displayed:

```
[root@TB003540 ~]# passwd
Changing password for user root.
New UNIX password:
Retype new UNIX password:
passwd: all authentication tokens updated successfully.
```





3.4

Retrieving 800 Series Gateway Information

The 800 series gateway enables you to retrieve system information with the following shell commands:

- `tbinfo` (retrieve the 800 series gateway product type). See http://docs.telcobridges.com/mediawiki/index.php/TMG:Get_Product_Type, for further information.
- `tbserial` (retrieve the 800 series gateway serial number). See http://docs.telcobridges.com/mediawiki/index.php/TMG:Get_Serial_Number, for further information.



3.5

Changing the 800 Series Gateway Management Port IP Address

Note The following procedure must be performed on the 800 series standalone and the 800 series 1+1 system.

Each 800 series gateway has two management ports (`mgmt0` and `mgmt1`). They are configured in bonding by default and the values are located on the “Important Notice” sheet.

It can be modified using the following shell script:

`tbchangeip`

Note If you do not have the “Important Notice” sheet, the default IP address and netmask are set as follows:

- IP address: 172.24.0.2
 - Netmask: 255.255.255.0
-

3.6

Setting the Time Zone

Note The following procedure must be performed on the 800 series standalone unit and the 800 series 1+1 system.

You can change the time zone of the 800 series gateway using the following shell command:

`tbtimezone`

3.7 Configuring the 800 Series Gateway Using the Web Portal



Note: The first time that you connect to the web portal, you will need to configure the role of the 800 series unit.

If your system features an 800 series standalone unit, refer to Section 2.4.6 “Start Up” on page 20.

If your system features an 800 series unit working in conjunction with an 800 series +1, refer to Section 2.5.7 “Start Up” on page 30.

To change the default configuration of an 800 series gateway using the Web Portal, follow the steps described in the Web Portal System Configuration Tutorial Guide, found on the TBWiki:

<http://docs.telcobridges.com>

The Web Portal can be accessed with a Web browser. The default url is: `http://[Tmedia MGMT0 IP address]:12358`

Note The 800 series and 800 series +1 units can access the Web Portal from either one of their IP addresses.

The default login information to access the Web Portal application is:

- Username: root
- Password: root

3.8 Changing VoIP Interface Addresses

The default address of the VoIP interfaces of the 800 series gateway can be modified. To learn how this is done, refer to the Web Portal tutorial guide on the Telcobridges TB Wiki at docs.telcobridges.com.

Note With regard to sections 3.5 to 3.10, please visit the TBWiki at: <http://docs.telcobridges.com>



Section 4 System Backups

This section provides information about the following topics:

- Section 4.1 “Creating a Database Backup”
- Section 4.2 “Downloading a Database Backup”
- Section 4.3 “Uploading a Database Backup”
- Section 4.4 “Restoring a Database Backup”



For more detailed information with regard to any of the points described in this section, please refer to the TBWiki: <http://docs.telcobridges.com>



4.1 Creating a Database Backup

It is important that backups be made of system configuration settings in the event of a system failure. It is recommended that a backup be made once the system has been configured. Backups are performed using the web portal.

4.2 Downloading a Database Backup

A backup of system data is stored on the hard drive of the 800 series gateway. It is important that system backups be downloaded to an external storage device.

4.3 Uploading a Database Backup

An external backup of your database can be uploaded to your 800 series gateway.

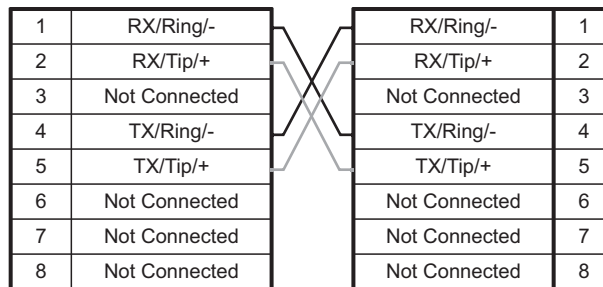
4.4 Restoring a Database Backup

In the event of a system failure requiring the replacement of an 800 series gateway, a previously saved backup of system settings can be restored to the new unit.

Appendix A Wiring Diagrams

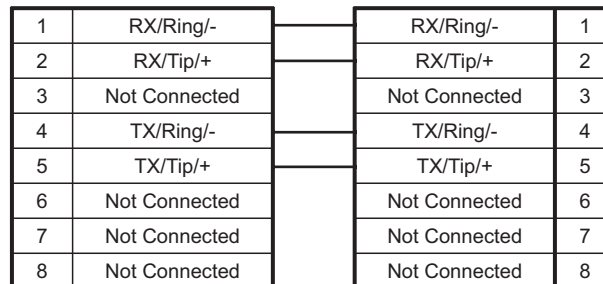
A.1 RJ48C Wiring Diagram: Crossover and Straight Cables

RJ48C (T1/E1) Wiring Schematic: Crossover Cable



1 8

RJ48C (T1/E1) Wiring Schematic: Straight Cable





A.2

Tmedia Serial Adapter Wiring Diagram

