



**TMG800 Standalone & TMG800 1+1
System Installation Guide**

Issue 3.0h

The information in this document as well as product specifications referred to throughout, are subject to change without notice. No part of this document may be reproduced or transmitted in any form or by any means, electronic or mechanical, for any purpose, without the express written permission of TelcoBridges. TelcoBridges may have patents or pending patent applications, trademarks, copyrights, or other intellectual property rights covering subject matter in this document. The furnishing of this document does not give you license to these patents, trademarks, copyrights, or other intellectual property except as expressly provided in any written license agreement from TelcoBridges Inc.

The information provided in this document is intended as a guide only. For the latest detailed engineering specifications, please contact TelcoBridges TB Support or visit the TBWiki: <http://docs.telcobridges.com>. TelcoBridges is committed to continually improving product designs; as a result, product specifications may be subject to change without notification.
© 2003-2012 TelcoBridges. All rights reserved.

TelcoBridges, Tmedia, TMG800, TMG3200-RJ, TMG3200-TE, TMG3200-DS3, TMG3200-STM1, TMG7800-TE, TMG7800-DS3, TMG7800-STM1, TMG7800-CTRL, TMG-CONTROL, TMG7800-TMS, Tmedia 1+1, TMG800+1, TMG3200-TE+1, TMG3200-DS3+1, TMG3200-STM1+1, TMG7800-TE+1, TMG7800-DS3+1, TMG7800-STM1+1, Tdev, TMP800, TMP6400, TMP6400-CTRL, TMP6400-TMS, Tmonitor, TM1000, Toopack, Toolpack API, TB640, TB-8, TB-16, and TB-Video, are trademarks of TelcoBridges Inc. All other trademarks are the property of their owners. This information is subject to change without notice.

HEAD OFFICE
TelcoBridges Inc.
91 rue de la Barre, Suite 01
Boucherville, QC, J4B 2X6
CANADA
www.telcobridges.com

T +1 450 655 8993
F +1 450 655 9511
info@telcobridges.com

TB Support - Technical Support
Tel: +1 438 338 2100
support@telcobridges.com
www.telcobridges.com/en/tbsupport.aspx

Preface



About this Guide

This guide provides installation, and setup procedures for Tmedia TMG800 Standalone and Tmedia 800 1+1 systems.

Conventions

Terminology	Description
Tmedia VoIP Gateway	This term is used when a description applies to both the TMG800 and TMG800 +1.
Tmedia Standalone	This term is used when a description applies to the TMG800 operating as a standalone unit.
Tmedia 1+1 System	This term is used when a description applies to the TMG800 operating in conjunction with the TMG800+1. This term also includes the 1+1 patch panel.
TMG800	This term is used when a description applies to all variations of the TMG800 units.
TMG800 +1	This term is used when a description applies to all variations of the TMG800 +1 units.
1+1 Patch Panel	This term is used as a generic reference to 1+1 patch panel, which enables a TMG800 to connect to a TMG800 +1.

To help guide you through the installation of your Tmedia product, we have produced the following icons. Please take note of the icon which represents the type of installation you are conducting and follow it throughout this guide to ensure proper install and set-up.

Graphics	Description
	This icon appears in the margins of pages describing the TMG800 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 TMG800 operating in conjunction with a TMG800 +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.

Sections and pages that include both icons above, apply for the installation of both the Tmedia Standalone and Tmedia 1+1 System.

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

Chapter 1	Introduction	1
1.1	Recognizing a Tmedia Standalone versus a Tmedia 1+1 System.....	2
1.1.1	Tmedia Standalone	2
1.1.2	Tmedia 1+1 System	2
1.2	Installation Prerequisites	4
1.3	Preventing Electrostatic Discharge Damage.....	5
1.4	Recommended Reading	5
Chapter 2	Installing the Equipment.....	7
2.1	Package Contents.....	8
2.1.1	Tmedia Standalone Package Contents.....	8
2.1.2	Tmedia 1+1 System Package Contents.....	9
2.2	Rack Mounting the Tmedia Standalone or the Tmedia 1+1 System.....	11
2.2.1	Prerequisites	11
2.2.2	Vertical Placement of Tmedia Equipment	11
2.2.3	Installing the Tmedia Standalone and the Tmedia 1+1 on an Equipment Rack	12
2.3	Choosing your Connection Procedures.....	14
2.4	Tmedia Standalone	15
2.4.1	Connecting to the Tmedia Management Interface	16
2.4.2	Connecting to a VoIP Network	17
2.4.3	Connecting to the PSTN	18
2.4.4	Powering Up.....	19
2.4.4.1	Connecting to AC Power	19
2.4.4.2	Connecting to DC Power.....	20
2.4.5	Start Up	22
2.4.5.1	Configuring the Role	22
2.5	Tmedia 1+1 System	23
2.5.1	Connecting to the Tmedia 1+1 System Management Interfaces	24
2.5.2	Connecting to the Tmedia 1+1 System Control Network and VoIP Network(s).....	25
2.5.3	Connecting to the PSTN in a Tmedia 1+1 System.....	26
2.5.4	Powering Up.....	27
2.5.4.1	Connecting to AC Power	27
2.5.4.2	Connecting to DC Power.....	28
2.5.5	Start Up	30
2.6	Adding a Tmedia +1 to an Existing Standalone; Creating a 1+1 System.....	32
2.6.1	Reconfigure a Standalone Unit as a Primary Unit in a 1+1 System.....	32
2.6.2	Install the TMG800 +1 on the Equipment Rack	35
2.6.3	Install the 1+1 Patch Panel	35
2.6.4	Connect to the TMG800 1+1 Management Interface.....	35
2.6.5	Connect to the Tmedia 1+1 Control Network and VoIP Network(s).....	35
2.6.6	Connect to the PSTN Network	36
2.6.7	Power Up the Tmedia VoIP Gateway.....	36
2.6.8	Start Up	37
2.7	Verifying the LED Status Indications	38

2.8	Powering Down	39
Chapter 3	Initial System Configuration	41
3.1	Connecting to the Serial Port of the Tmedia VoIP Gateway	42
3.2	Configuring the Terminal Emulator Application	43
3.3	Connecting to the Tmedia VoIP Gateway	43
3.4	Retrieving Tmedia VoIP Gateway Information	44
3.5	Changing the Tmedia VoIP Gateway Management Port IP Address	45
3.6	Changing Tmedia VoIP Gateway Management Port Passwords	45
3.7	Setting the Time Zone	45
3.8	Configuring the Tmedia VoIP Gateway Using the Web Portal	46
3.9	Changing VoIP Interface Addresses	46
Chapter 4	System Backups	47
4.1	Creating a Database Backup	48
4.2	Downloading a Database Backup	48
4.3	Uploading a Database Backup	48
4.4	Restoring a Database Backup	48
Appendix A	Wiring Diagrams.....	49
A.1	RJ48C Wiring Diagram: Crossover and Straight Cables.....	50
A.2	RJ48 Console Wiring Diagram	50

Chapter 1 Introduction

This chapter provides an introduction to the installation and setup for the following configurations:



Tmedia Standalone: TMG800 operating in standalone mode.



Tmedia 1+1 System: TMG800 operating in conjunction with a TMG800 +1, and a 1+1 patch panel.

The following topics are covered:

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

1.1 Recognizing a Tmedia Standalone versus a Tmedia 1+1 System

1.1.1 Tmedia Standalone

The Tmedia Standalone consists of one telecom unit, TMG800. View the front and rear views of the TMG800 below.

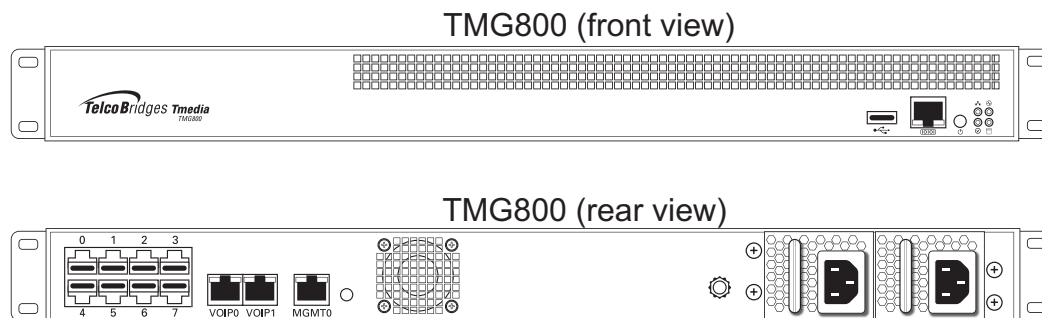


Figure 1.1 Tmedia Standalone

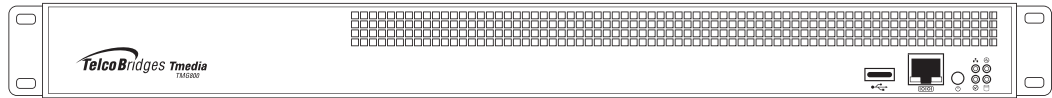
1.1.2 Tmedia 1+1 System

The Tmedia 1+1 system, see figure 1.2 on page 3, consists of:

- One (1) telecom unit, TMG800
- One (1) +1 telecom unit, TMG800 +1
- One (1) 1+1 patch panel

TMG800

(front view)

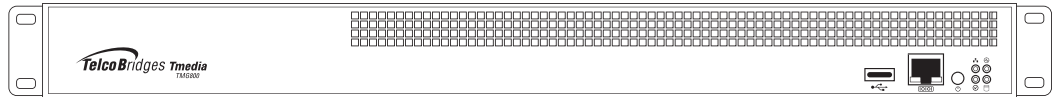


(rear view)



TMG800 +1

(front view)



(rear view)



Tmedia 1+1 Patch Panel (8 T1/E1)

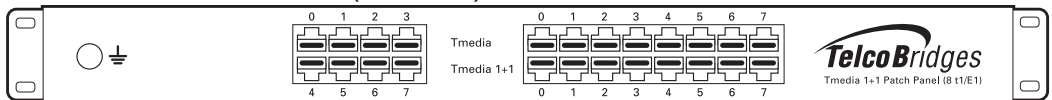




Figure 1.2 Tmedia 1+1 System

1.2 Installation Prerequisites

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

 Tmedia Standalone	 Tmedia 1+1 System								
<p>Adequate space for the installation of the Tmedia Standalone. You will need to mount the TMG800 on a 19" equipment rack (customer provided). Your TMG800 is a 1U unit.</p> <p>Adequate power supply and power connections. The TMG800 requires one or two power connections, depending on whether you have purchased the single or redundant power supply option. If you have a redundant power supply, to guarantee an uninterrupted supply of electricity, each power connection must be fed by a dedicated power source.</p> <p>An IP address for the management port. 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 Tmedia Management Interface" on page 16 for further information.</p>	<p>Adequate space for the installation of your Tmedia 1+1 system. You will need to mount the Tmedia 1+1 system on a 19" equipment rack (customer provided).</p> <p>Your 1+1 System requires space for the following number of units:</p> <table border="0" data-bbox="922 760 1230 894"> <tr> <td>TMG800:</td> <td>1U</td> </tr> <tr> <td>TMG800 +1:</td> <td>1U</td> </tr> <tr> <td>1+1 Patch Panel:</td> <td>1U</td> </tr> <tr> <td>Total:</td> <td>3U</td> </tr> </table> <p>Adequate power supply and power connections. The TMG800 and TMG800 +1 require one to two power connections each, depending on whether you have chosen them with single or redundant power supply. To guarantee an uninterrupted supply for the instance of dual power connections, each power connection must be fed by a dedicated power source.</p> <p>An IP address for the management port. 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 2.5.1 "Connecting to the Tmedia 1+1 System Management Interfaces" on page 29 for further information.</p>	TMG800:	1U	TMG800 +1:	1U	1+1 Patch Panel:	1U	Total:	3U
TMG800:	1U								
TMG800 +1:	1U								
1+1 Patch Panel:	1U								
Total:	3U								

1.3



Preventing Electrostatic Discharge Damage

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



Always follow ESD prevention procedures when removing and replacing modules:

- Ensure that the Tmedia VoIP gateways are 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 Tmedia VoIP Gateway 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 Tmedia VoIP Gateways, ground yourself by touching a metal part of the chassis.

1.4

Recommended Reading

This document assumes that you have a clear understanding of the installation of the TelcoBridges Tmedia VoIP gateways and have been trained to work with the equipment. If you have any technical questions, TelcoBridges TB Support (technical support team) can be reached via telephone (+1 866 438 4703) or email: support@telcobridges.com.

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



Chapter 2 Installing the Equipment

This chapter provides information about the following topics:

- Section 2.1 “Package Contents”
- Section 2.2 “Rack Mounting the Tmedia Standalone or the Tmedia 1+1 System”
- Section 2.4 “Tmedia Standalone”
- Section 2.5 “Tmedia 1+1 System”
- Section 2.6 “Adding a Tmedia +1 to an Existing Standalone; Creating a 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 “Tmedia Standalone Package Contents” on page 8.
- Section 2.1.2 “Tmedia 1+1 System Package Contents” on page 9.

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

2.1.1 Tmedia Standalone Package Contents

TMG800

In the TMG800 box, you will find the following items:

- One (1) TMG800. See figure 1.2 on page 3.
- One (1) set of mounting brackets and screws, used to mount the TMG800 to a 19" rack.
- One (1) DB-9 to RJ-45 adapter to interface the serial port of your computer with the RJ-45 port of the TMG800.
- Three (3) CAT5 Ethernet straight cables (male-male), 3 meters in length.
- One (1) Important Notice (two-sided document containing pertinent product serial numbers, and other important information).
- One (1) Product Warranty.
- One (1) packing slip.
- One (1) Quick Installation Guide (two-sided document that provides a pictorial view of the equipment setup).
- For AC powered units: One (1) or two (2) AC power cables
- For DC powered units: One (1) or two (2) DC power cables

Not included

- A 19" equipment rack. The TMG800 must be installed on a 19" wide equipment rack.



2.1.2 Tmedia 1+1 System Package Contents

TMG800

In the TMG800 box, you will find the following items:

- One (1) TMG800. See figure 1.2 on page 3.
- One (1) set of mounting brackets and screws, used to mount the TMG800+1 to a 19" rack.
- One (1) DB-9 to RJ-45 adapter, to interface the serial port of your computer with the RJ-45 port of the TMG800.
- Three (3) CAT5 Ethernet straight cables (male-male), 3 meters in length.
- One (1) Important Notice (two-sided document containing pertinent product serial numbers, and other important information).
- One (1) Product Warranty.
- One (1) packing slip.
- One (1) Quick Installation Guide (two-sided document that provides pictorial view of the equipment set-up).
- For AC powered units: One (1) or two (2) AC power cables
- For DC powered units: One (1) or two (2) DC power cables

Not included

- A 19" equipment rack. The TMG800 must be installed in a standard 19" wide equipment rack.

TMG800 +1

- One (1) TMG800+1 unit. See figure 1.2 on page 3.
- One (1) set of mounting brackets and screws, used to mount the TMG800+1 to a 19" rack.
- One (1) DB-9 to RJ-45 adapter, to interface the serial port of your computer with the RJ-45 port of the TMG800.
- Three (3) CAT5 Ethernet straight cables (male-male), 3 meters in length.
- One (1) Important Notice (two-sided document containing pertinent product serial numbers, and other important information).
- One (1) Product Warranty.
- One (1) packing slip.
- One (1) Quick Installation Guide (two-sided document that provides pictorial view of the equipment set-up).
- For AC powered units: One (1) or two (2) AC power cables
- For DC powered units: One (1) or two (2) DC power cables
- The associated 1+1 patch panel for your TMG800+1. See Table 2.1, "Tmedia 1+1 Patch Panels", on page 10 for further details.



Not included with the TMG800 +1:

- A 19" equipment rack. The TMG800 +1 must be installed in a standard 19" wide equipment rack.

1+1 Patch Panel

A 1+1 patch panel is required for the proper connection of the Tmedia 1+1 system and is automatically included when a TMG800 +1 is ordered.

Table 2.1 Tmedia 1+1 Patch Panel (8/T1/E1) 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 and TMG800 +1.

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

Table 2.1 Tmedia 1+1 Patch Panels

<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 and TMG800 +1</p> <p>Cables provided:</p> <p>You will be provided with 16 RJ48C cables (yellow), two meters in length, per 1+1 Patch Panel (8 T1/E1) you receive.</p>
----------------------------------	---



2.2 Rack Mounting the Tmedia Standalone or the Tmedia 1+1 System

The Tmedia 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 Tmedia 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 Tmedia Equipment

The TMG800, TMG800 +1, and 1+1 Patch Panel are each housed in a 1U chassis, as tabulated in table 2.2 on page 11. It is important that you provide for enough room on the equipment rack to allow for the installation of either the TMG800 Standalone or TMG800 1+1 System.

Consider the available space on your equipment rack and the height of the TMG800, TMG800 +1 and 1+1 Patch Panel. Thanks 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 TMG800 or TMG800 +1 on the equipment rack.

Table 2.2 Tmedia VoIP Gateway Physical Height

Tmedia Model Number	Vertical Height
TMG800	1U (1.75 inches or 44.45 mm)
TMG800 +1	1U (1.75 inches or 44.45 mm)
Patch Panel	1U (1.75 inches or 44.45 mm)



2.2.3 Installing the Tmedia Standalone and the Tmedia 1+1 on an Equipment Rack

Both the Tmedia Standalone and the Tmedia 1+1 System are mounted on the 19" equipment rack using the angle brackets and screws provided in the box.



Mounting the Tmedia Standalone:

1. Using four metal screws, attach one angle bracket to the front, left-hand side of the TMG800, when viewed from the front, as shown in figure 2.1 on page 13. 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 Tmedia Equipment" on page 11.



Mounting the Tmedia 1+1 System:

1. Mount the TMG800 as mentioned above.
2. Install the TMG800 +1 below the TMG800, as shown in figure 2.1 on page 13.
3. To attach the TMG800 +1 to the equipment rack, follow the previous procedure.
4. Install the patch panel below the TMG800 +1, as shown in figure 2.1 on page 13.

Tmedia Standalone



Tmedia 1+1 System

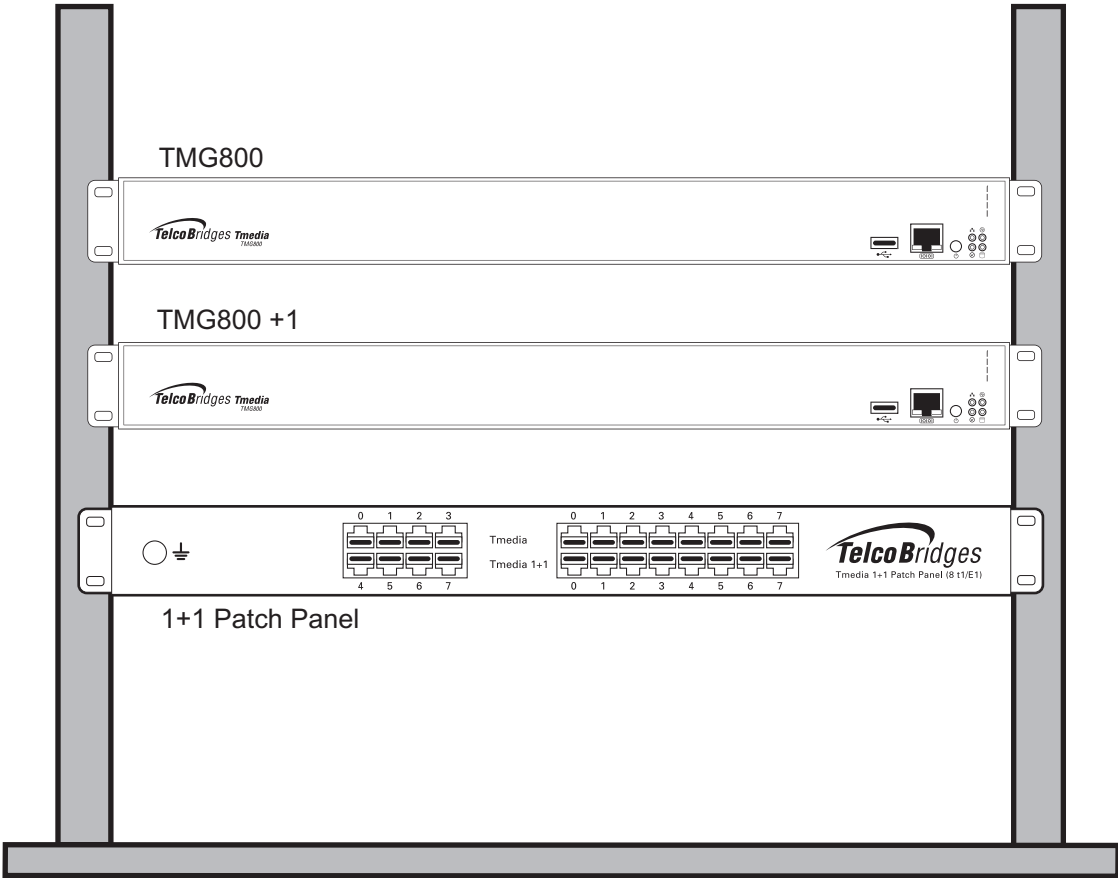
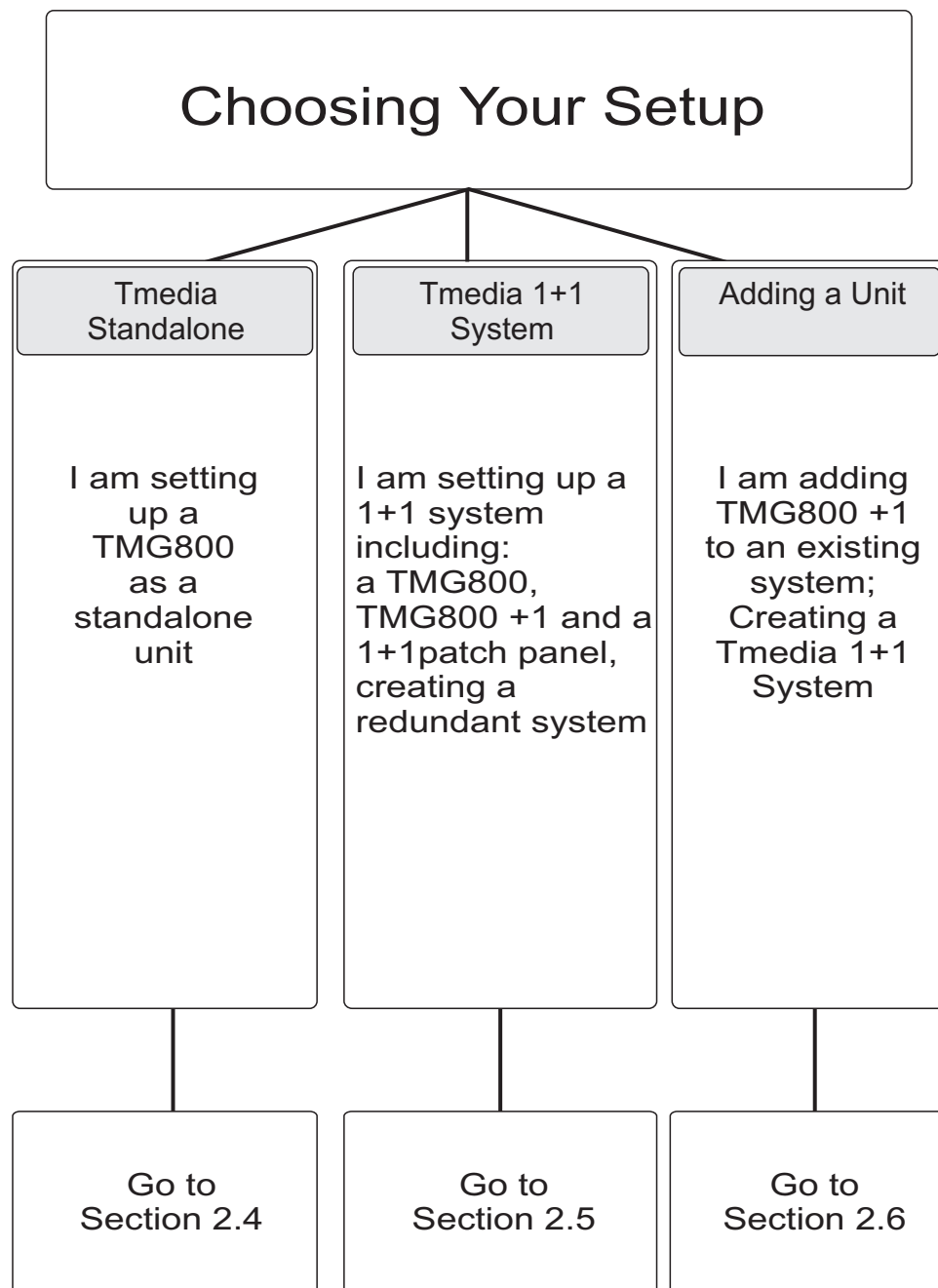


Figure 2.1 Rack Mounting the Equipment

2.3 Choosing your Connection Procedures

Use the following diagram to guide you to the appropriate section, based on your chosen installation.





2.4 Tmedia Standalone

If you are here, you have a TMG800 that you will set up as a Tmedia standalone. This section covers the following procedures:

- Section 2.4.1 “Connecting to the Tmedia Management Interface”.
- Section 2.4.2 “Connecting to a VoIP Network”.
- Section 2.4.3 “Connecting to the PSTN”.
- Section 2.4.4 “Powering Up”.
- Section 2.4.5 “Start Up”.

2.4.1 Connecting to the Tmedia Management Interface

The Tmedia Management Interface enables administrators to perform management tasks on the TMG800.

Prerequisites

To communicate with the Tmedia Management Interface, the following is needed:

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

Interconnections

The TMG800 provides a Tmedia Management Interface, using one Gigabit Ethernet network link, as shown in figure 2.2 on page 16.

To communicate with the Tmedia Management Interface:

1. Connect the supplied CAT5 Ethernet cable to the port labelled “MGMT0” at the rear of the TMG800.

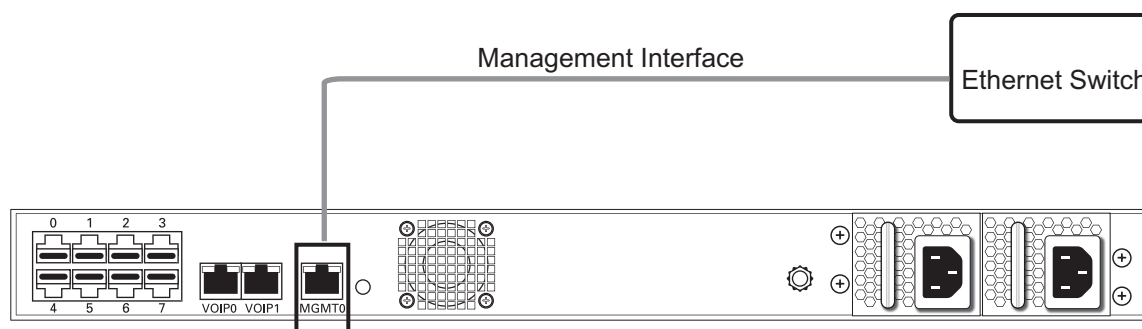


Figure 2.2 Tmedia Management Interface

2.4.2 Connecting to a VoIP Network

The TMG800 features 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 TMG800 will continue to manage VoIP traffic using the alternate network.

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

Note: Certain configurations of the TMG800 will exceed 100 Mbps, therefore 1000 Mbps is recommended.

Prerequisites

To connect the TMG800 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.
- If your system has access to a second VoIP network, you can connect it to a second VoIP interface of the TMG800 with an RJ45 (male-male) CAT5 Ethernet cable.

Connections

The TMG800 is connected to the VoIP network by one or optionally two Ethernet GigE network links, as shown in figure 2.3 on page 17.

To connect the TMG800 to the VoIP network:

1. Connect a CAT5 Ethernet cable to VoIP0 at the rear of the TMG800. 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 TMG800. Connect the other end of the same CAT5 cable to the second Gigabit Ethernet switch.

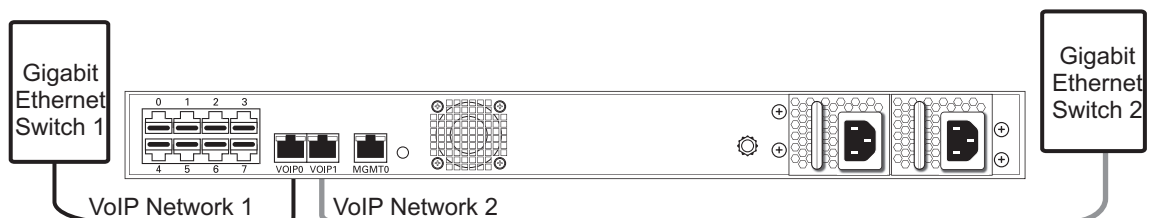


Figure 2.3 Connecting to the VoIP Network

2.4.3 Connecting to the PSTN

A TMG800 with 8 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 in order 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 50 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.

To connect the TMG800 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 18.
2. Repeat step 1, using the next available port.

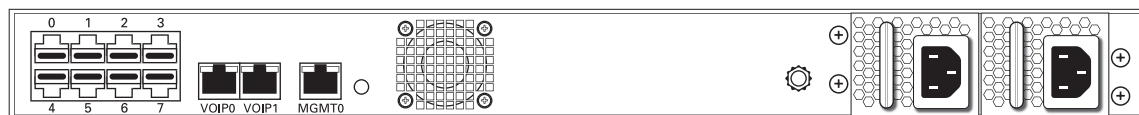


Figure 2.4 8-Port Interface to the PSTN

2.4.4 Powering Up

The TMG800 is furnished with one (1) or two (2) AC or DC power connections. Only once all other equipment installation work has been completed should the TMG800 be powered up.

2.4.4.1 Connecting to AC Power

Prerequisites

To power the TMG800, you will need:

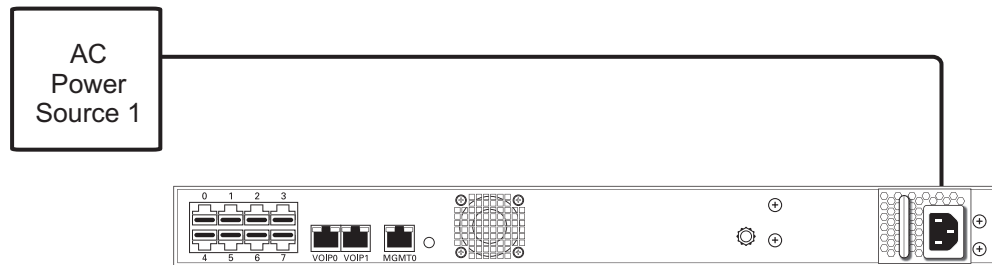
- One to two power sources.
- One or two power cables for the TMG800.

To connect the TMG800 to AC Power:

1. Connect an AC power cable to each AC connector of the TMG800 and an AC supply. See figure 2.5 on page 19.

Note If the TMG800 features redundant power supplies, it is important to connect both power supplies in order to avoid setting off its audible alarm.

TMG800 single power supply



TMG800 dual (redundant) power supply

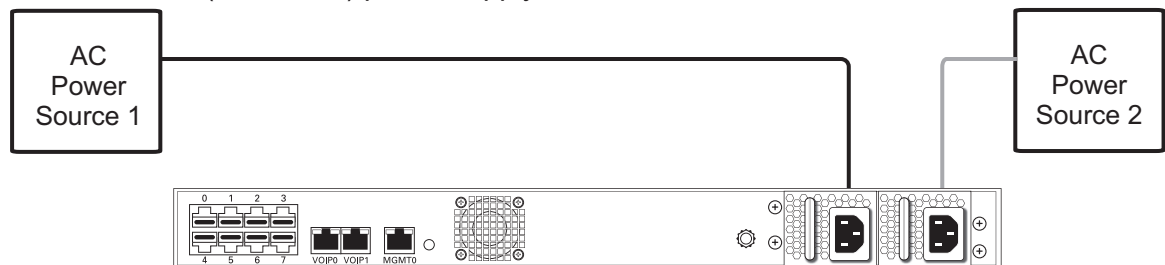


Figure 2.5 AC Power Connection

2.4.4.2 Connecting to DC Power

The TMG800 DC model is furnished with one or two power connection ports. In addition, each DC powered TMG800 is supplied with either one or two DC power cables.

To connect the TMG800 to DC power:

Note Two types of cables, with different coloring, are available. Refer to figure 2.6 on page 20 for the appropriate wiring information.

The connection of DC power is described for:

- Single DC power connection port
- Dual DC power connection port

To connect a TMG800 with a single DC power supply:

1. Connect a ground wire to the ground plug located at the rear of the TMG800, as shown in figure 2.6 on page 20.
2. Connect a 14 AWG wire between the positive terminal of a DC power source and the terminal on the TMG800 labelled as $\overset{+}{-}$.
3. Connect a 14 AWG wire between the negative terminal of a DC power source and the terminal on the TMG800 labelled as 48V.

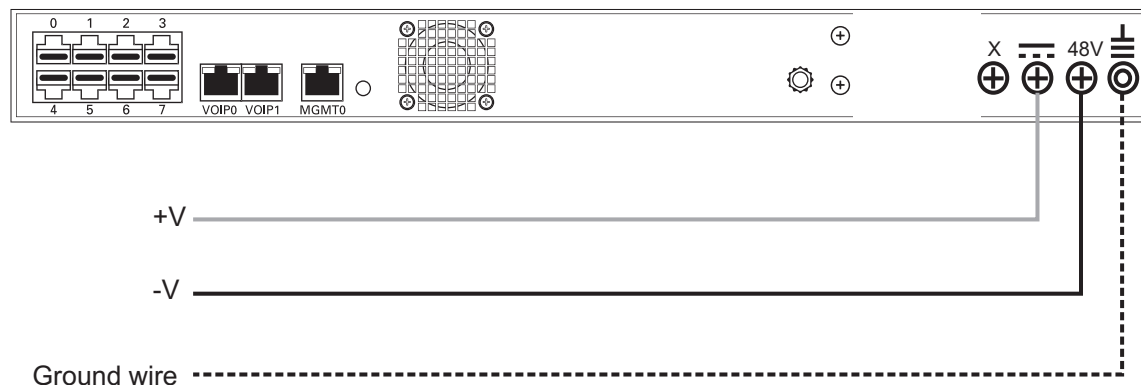


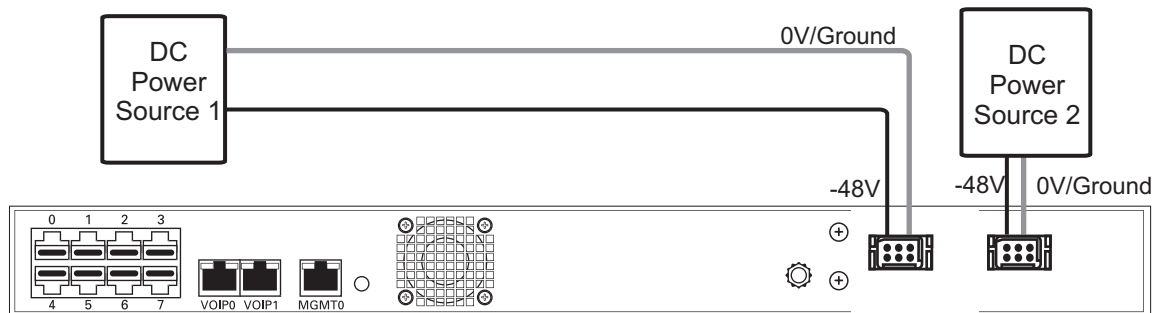
Figure 2.6 TMG800 DC Wiring Diagram

To connect a TMG800 with dual (redundant) DC power:

1. Connect one DC cable supplied with the TMG800, as shown in figure 2.7 on page 21, to the DC outlet at the rear of the TMG800.

Note Two types of cables, with different coloring, are available. Refer to figure 2.7 on page 21 for the appropriate wiring information.

2. Connect one lead of the DC power cable to the positive terminal of the DC power source, as shown in figure 2.7 on page 21.
3. Connect the other lead of the DC power cable to the negative side of the DC power source.
4. Repeat steps 1-3 for the second power DC power source.



Cable Type	Voltage	
	0v/Ground	-48V
Yellow/Black	Black	Yellow
Red/Black	Red	Black

NOTE: DC power cable supplied with TMG800 (Two types: Black/Red and Yellow/Black)

Figure 2.7 TMG800 Redundant DC Supply Wiring Diagram

2.4.5 Start Up

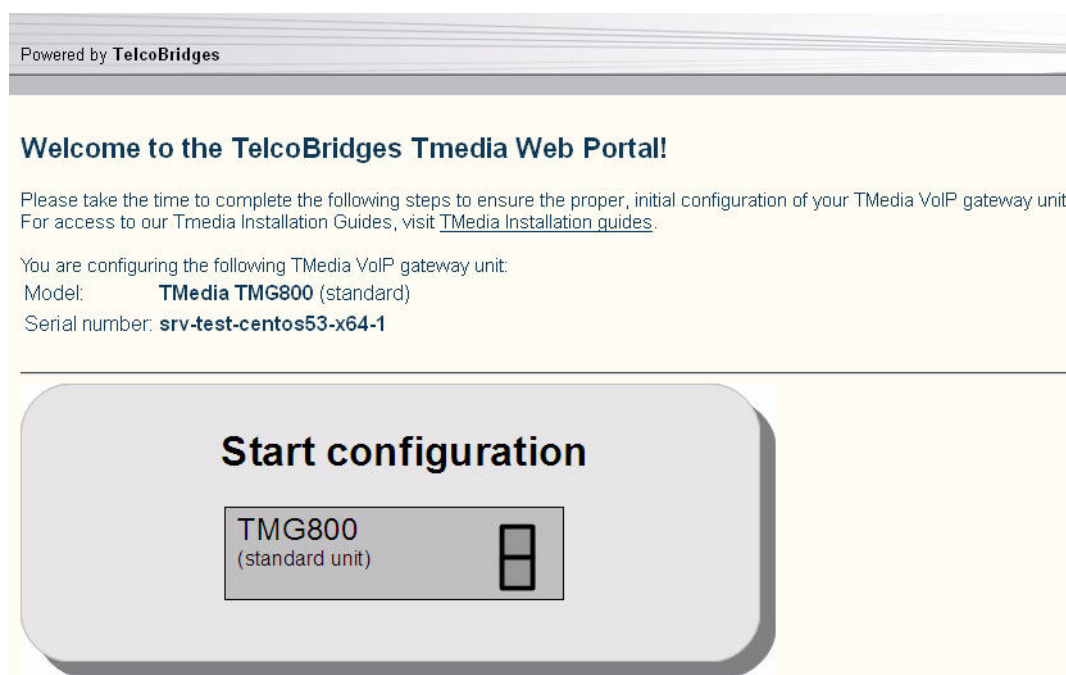
The first time that you connect to a Tmedia VoIP Gateway, the web portal will appear and you will be asked to select how you would like to configure your TMG800. You will want to be sure to set the role as a Tmedia Standalone.

Once the configuration settings have been applied, your TMG800 will start up and display the web portal configuration management tool.

2.4.5.1 Configuring the Role

To configure the role of your TMG800 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 of the TMG800.
3. Before clicking the **“yes, it is connected like that already”** button, verify that the physical connections have been properly done.

2.5 Tmedia 1+1 System

If you are here, you are installing a Tmedia 1+1 system. This section covers the following procedures:

- Section 2.5.1 “Connecting to the Tmedia 1+1 System Management Interfaces”.
- Section 2.5.2 “Connecting to the Tmedia 1+1 System Control Network and VoIP Network(s)”.
- Section 2.5.3 “Connecting to the PSTN in a Tmedia 1+1 System”.
- Section 2.5.4 “Powering Up”.
- Section 2.5.5 “Start Up”.



2.5.1 Connecting to the Tmedia 1+1 System Management Interfaces

The Tmedia Management Interface enables administrators to perform management tasks on a Tmedia 1+1 system.

Prerequisites

To communicate with the Tmedia Management Interface, the following is needed:

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

Interconnections

Within a 1+1 system there is a management interface for a TMG800 and a TMG800 +1, each requiring a Gigabit Ethernet network link. See figure 2.8 on page 24.

To communicate with the Tmedia Management Interface:

1. Connect an RJ45 cable from the TMG800 to an Ethernet switch.
2. Connect an RJ45 cable from the TMG800 +1 to an Ethernet switch.

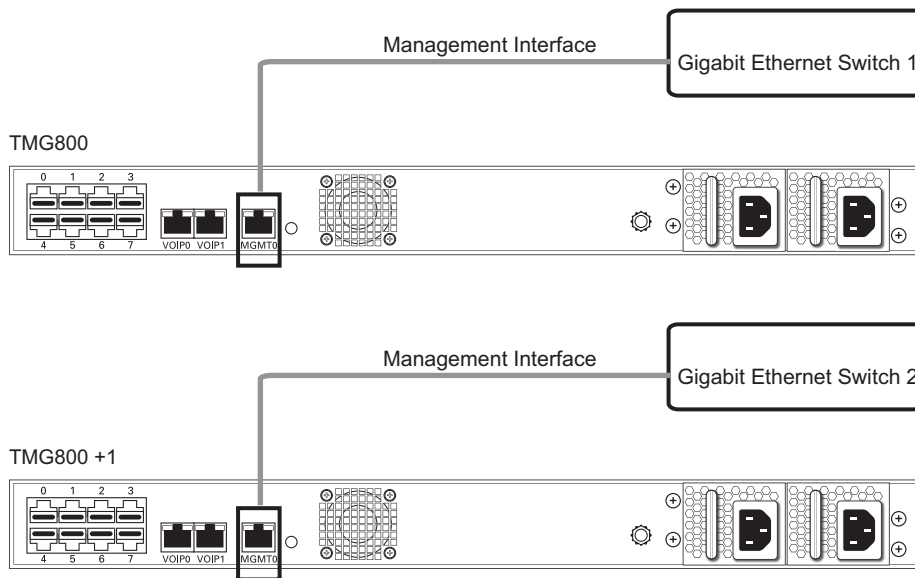


Figure 2.8 Tmedia Management Interface



2.5.2 Connecting to the Tmedia 1+1 System Control Network and VoIP Network(s)

Each TMG800 and TMG800 +1 features 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 Tmedia 1+1 system will continue to manage VoIP traffic using the alternate network. These ports are also used to connect to the Tmedia Control Network, which allows both units to communicate with one another.

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

Note: The TMG800 1+1 system requires two (2) gigabit layer 2 Ethernet switches.

Prerequisites

To connect the TMG800 and TMG800 +1 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.
- Two IP addresses located on different subnets for VoIP.

Connections

The TMG800 and TMG800 +1 VoIP ports must to be connected on both Ethernet GigE network links, as shown in figure 2.9 on page 25.

To connect to the VoIP network:

1. Connect the VoIP0 connector from both the TMG800 and TMG800 +1 to the first Ethernet switch.
2. Connect the VoIP1 connector from both the TMG800 and TMG800 +1 to the second Ethernet switch.

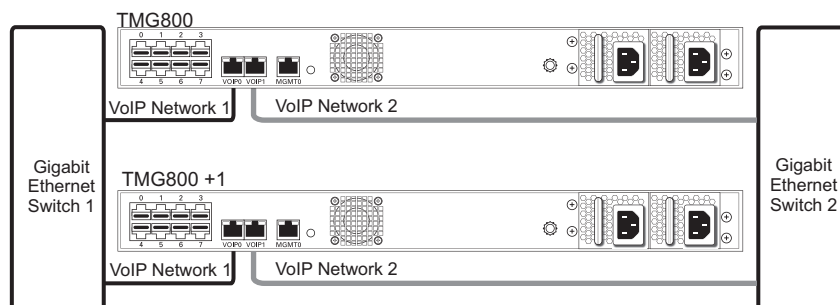


Figure 2.9 Connecting to the Tmedia Control Network and VoIP Network



2.5.3 Connecting to the PSTN in a Tmedia 1+1 System

A Tmedia 1+1 system has a TDM interface featuring 8 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 50 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 a Tmedia 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 the TMG800 and TMG800 +1 to the PSTN:

1. Connect T1/E1 lines 0-7 of the network section of the patch panel to the remote equipment. See figure 2.10 on page 26.
2. Connect T1/E1 lines 0-7 from the 'Tmedia' section of the patch panel to the RJ48C connectors of the TMG800.
3. Connect T1/E1 lines 0-7 from the 'Tmedia 1+1' section of the patch panel to the RJ48C connectors of the TMG800.

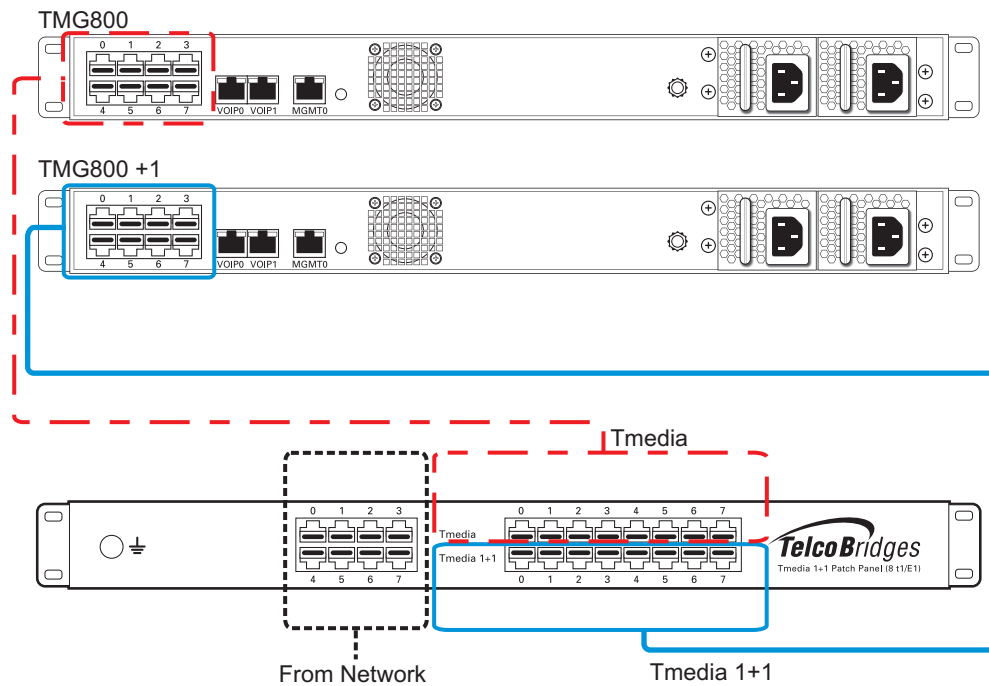


Figure 2.10 TMG800 and TMG800 +1 connecting to the 1+1 patch panel (8/T1/E1)



2.5.4 Powering Up

The TMG800 and TMG800 +1 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 Tmedia 1+1 system be powered up.

Prerequisites

To power the TMG800 and TMG800 +1, you will need:

- One to two power sources.
- One or two power cables for each TMG800 and TMG800 +1.

2.5.4.1 Connecting to AC Power

To connect the TMG800 and TMG800 +1 to AC Power:

1. Connect an AC power cord between AC connector of the TMG800 and TMG800 +1 and AC supplies. See Figure 2.11.
2. Connect the second power connector of each unit to the second power source.

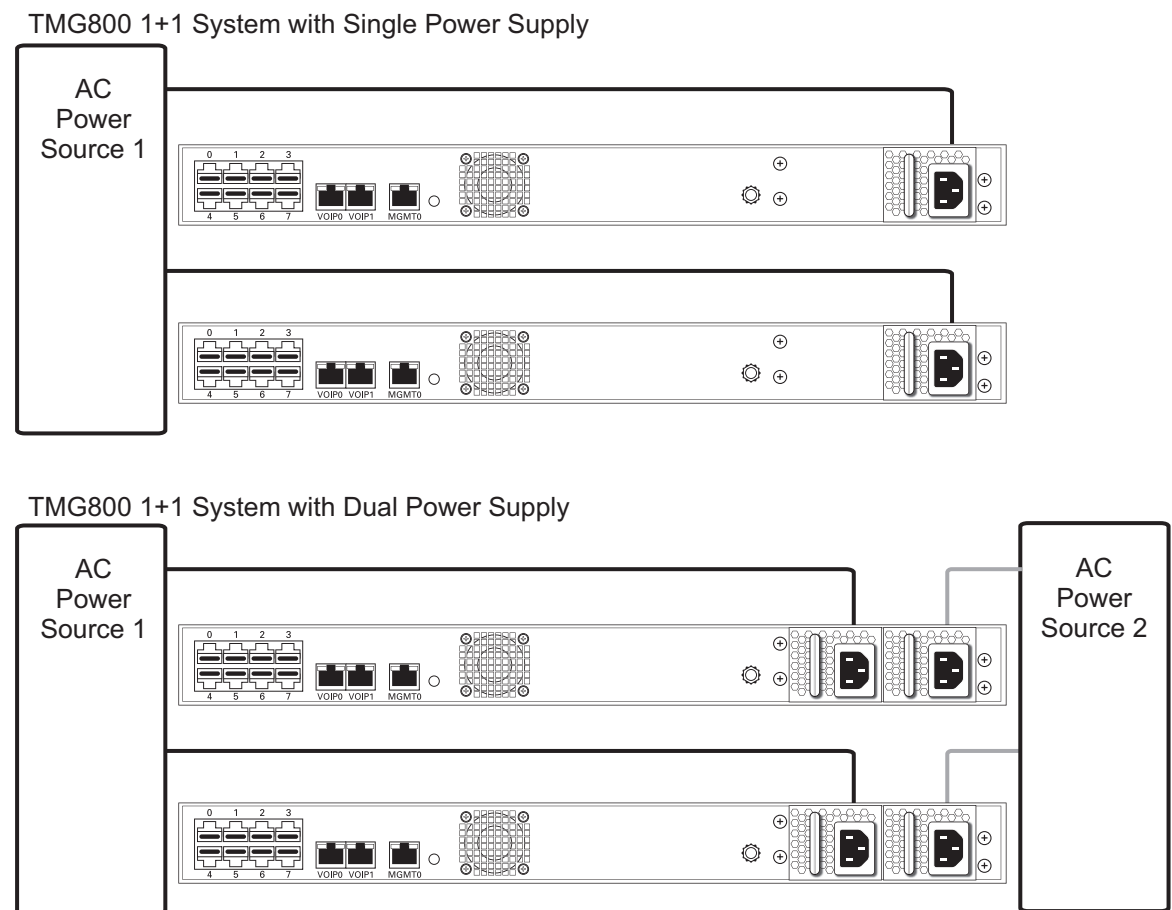


Figure 2.11 TMG800 and TMG800 +1 AC Power Connections



2.5.4.2 Connecting to DC Power

The TMG800 and TMG800 +1 DC models are furnished with either single or redundant DC power. In addition, each DC powered TMG800 is supplied with one or two DC power cables.

To connect a TMG800 with a single DC power supply:

1. Connect a ground wire to the ground plug located at the rear of the TMG800, as shown in figure 2.6 on page 20.
2. Connect a 14 AWG wire between the positive terminal of a DC power source and the terminal on the TMG800 labelled as **+**.
3. Connect a 14 AWG wire between the negative terminal of a DC power source and the terminal on the TMG800 labelled as **48V**.

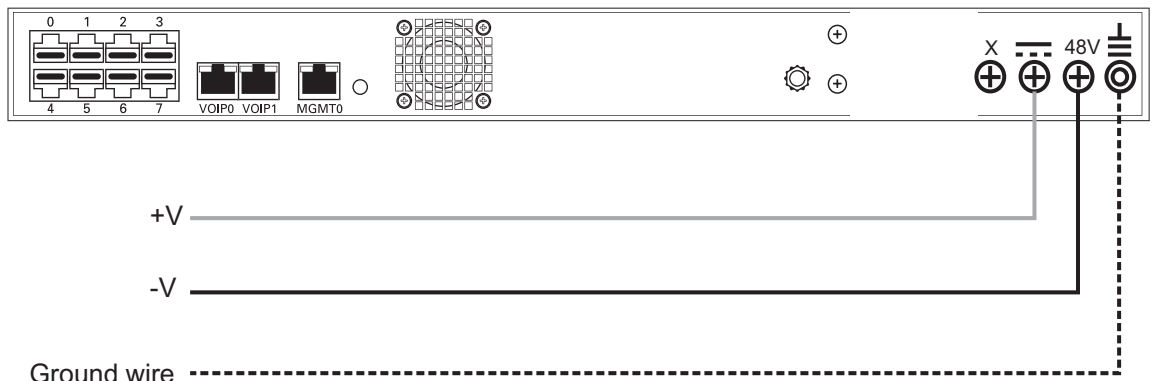


Figure 2.12 TMG800 DC Wiring Diagram

To connect the TMG800 and TMG800 +1 to DC Power

1. Connect the first DC power connector of the TMG800 and TMG800 +1 to DC power source one. See figure 2.13 on page 29.
 - 1a. Connect one lead of each DC power cable to the positive terminal of the DC power source.
 - 1b. Connect the other lead of each DC power cable to the negative side of the DC power source.
2. Repeat the previous steps for the second DC power source.

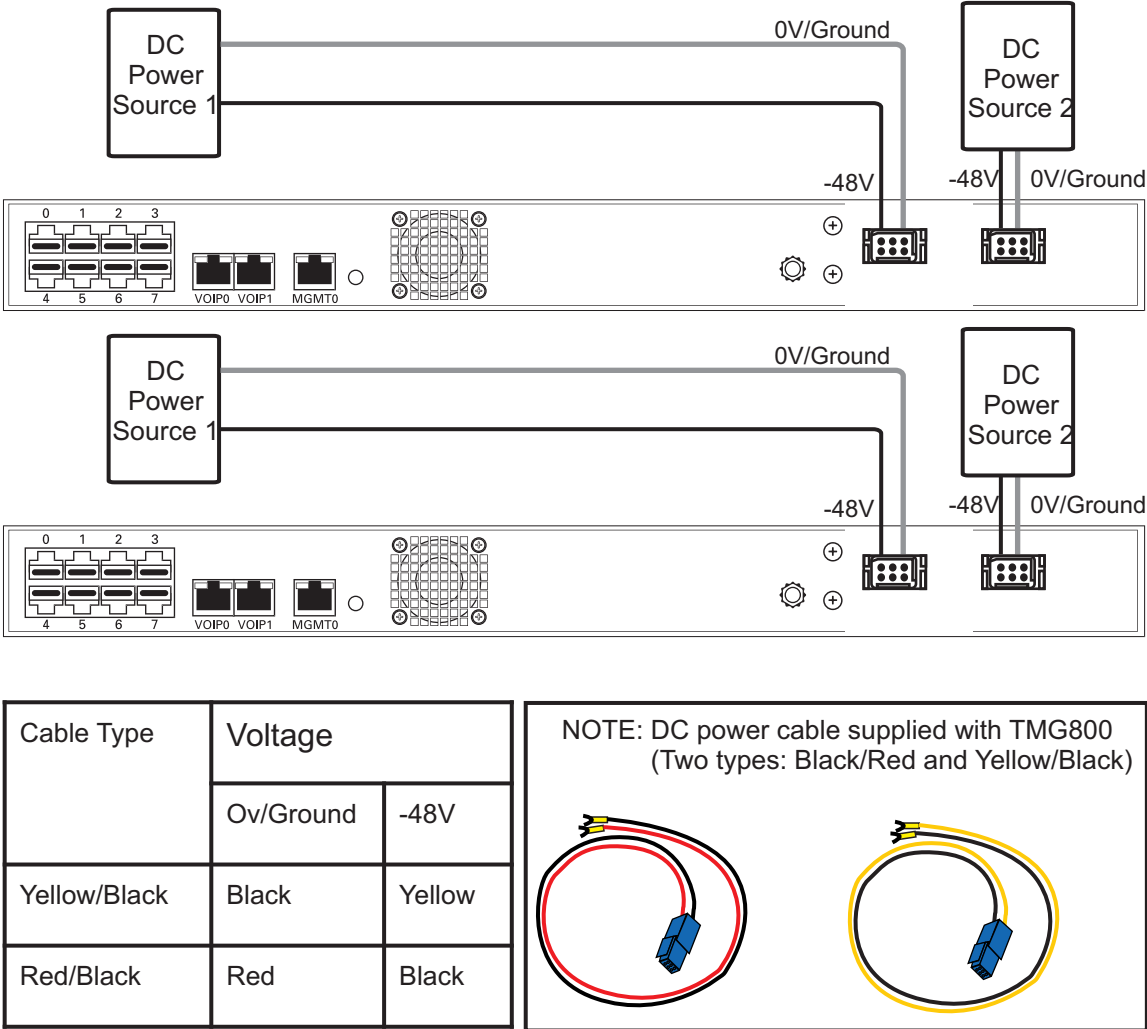


Figure 2.13 TMG800 and TMG800 +1 DC Power Connections

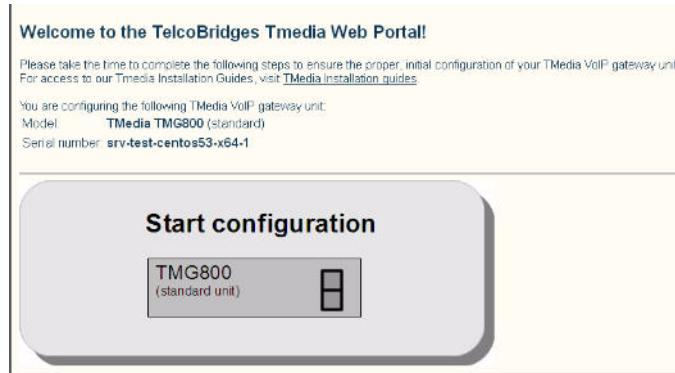


2.5.5 Start Up

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

Once these configuration settings have been applied, your Tmedia VoIP Gateway will start up and display the web portal configuration management tool.

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



Note: The Welcome page indicates whether the TMG800 is a primary or secondary unit.

2. Follow the instruction of the web portal to configure your units as a new Tmedia 1+1 system.
3. For VLAN configuration and connection, the TMG800 1+1 system requires 2 VLANs for the Tmedia Control Network. Both gigabyte layer 2 Ethernet switches **MUST** have their VLANs configured and the Tmedia must be properly connected **BEFORE** proceeding. The default VLAN IDs are:
 - ETH0: 710
 - ETH1: 711

Once you are ready, click **Save** to configure the VLANs.



Designating your VLAN Ids for your Tmedia 1+1 System

Each Tmedia TMG800 1+1 System requires two (2) VLAN to ensure redundant control networks. The VLANs (control networks) are used to allow the two units in your 1+1 system to communicate with each other during operation.

Proper connection

For the configuration of your system, it is extremely important to ensure the proper physical connection of your telecom units to redundant Ethernet switches as detailed below:

1. Connect voip0 of your TMG800 & TMG800+1 to Ethernet switch A
2. Connect voip1 of your TMG800 & TMG800+1 to Ethernet switch B
3. Create a VLAN, on switch A, only between the two ports connected to the Tmedia units
4. Create a VLAN, on switch B, only between the two ports connected to the Tmedia units



eth0 Vlan id:

eth1 Vlan id:

The progress page is displayed.

Configuration is now in progress...



Configuration may take several minutes (up to ~3 minutes)
It may be impossible to refresh this web page at some point during that period.

If after the elapsed time you do not see any progress, please cancel the configuration to start again.



2.6 Adding a Tmedia +1 to an Existing Standalone; Creating a 1+1 System

Warning: This procedure will require some system downtime.

In order to add a TMG800 +1 to a Standalone TMG800, you must perform the following procedures:

- Section 2.6.1 “Reconfigure a Standalone Unit as a Primary Unit in a 1+1 System”
- Section 2.6.2 “Install the TMG800 +1 on the Equipment Rack”
- Section 2.6.4 “Connect to the TMG800 1+1 Management Interface”
- Section 2.6.6 “Connect to the PSTN Network”
- Section 2.6.7 “Power Up the Tmedia VoIP Gateway”
- Section 2.6.8 “Start Up”

2.6.1 Reconfigure a Standalone Unit as a Primary Unit in a 1+1 System

1. Connect to the web portal of the Standalone TMG800.
2. Select **Status** from the navigation panel.
3. Select the **Hosts** status tab.

name	value
Ready cnt	1
Not ready cnt	0
Disk full cnt	0
Fdisk recommended cnt	0
Fdisk required cnt	0
Ready host list	TB005577
Not ready host list	
Disk full host list	
Fdisk required host list	
Fdisk recommended host list	



- Select **ResetHostRole** for the action, and click **Apply Action**.

Host Status - TB005577

Status Options

Refresh every:

Extended status

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

Name	Value
Host	TB005577
Host role	Stand-alone
Can move	Master
Can start	Ready
Engaged	Yes
Host platform	TMG800 CentOS
Host package	srV_644xv64_centos5
Last lock	Tue Oct 18 18:07:53 2011
Pack status	No filesystem check required yet

Host Control

Action:

Current Action Log

Last Action Log

```

VlanManagementReq: Starting
VlanManagementReq: Script completed successfully
VlanManagementReq: Done
  
```

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

Welcome to the TelcoBridges Tmedia Web Portal!

Please take the time to complete the following steps to ensure the proper, initial configuration of your TMedia VoIP gateway unit. For access to our Tmedia Installation Guides, visit [TMedia installation guides](#).

You are configuring the following TMedia VoIP gateway unit:

Model: **TMG800** (standard)

Serial number: **srV-test-centos53-x64-1**

Start configuration

TMG800
(standard unit)

Note: The Welcome page indicates whether the TMG800 is a primary or secondary unit.

- Follow the instruction of the web portal to configure your unit as a primary unit in a new Tmedia 1+1 system.



- For Vlan configuration and connection, the TMG800 1+1 system requires 2 VLANs for the Tmedia Control Network. Both gigabyte layer 2 Ethernet switches MUST have their VLANs configured and the Tmedia must be properly connected BEFORE proceeding. The default VLAN IDs are:

- ETH0: 710
- ETH1: 711

Once you are ready, click **Save** to configure the VLANs.

Designating your VLAN Ids for your Tmedia 1+1 System

Each Tmedia TMG800 1+1 System requires two (2) VLAN to ensure redundant control networks. The VLANs (control networks) are used to allow the two units in your 1+1 system to communicate with each other during operation.

Proper connection

For the configuration of your system, it is extremely important to ensure the proper physical connection of your telecom units to redundant Ethernet switches as detailed below:

1. Connect voip0 of your TMG800 & TMG800+1 to Ethernet switch A
2. Connect voip1 of your TMG800 & TMG800+1 to Ethernet switch B
3. Create a VLAN, on switch A, only between the two ports connected to the Tmedia units
4. Create a VLAN, on switch B, only between the two ports connected to the Tmedia units

eth0 Vlan id:

eth1 Vlan id:

The progress page is displayed.

Configuration is now in progress...

Configuration may take several minutes (up to ~3 minutes)
It may be impossible to refresh this web page at some point during that period.

If after the elapsed time you do not see any progress, please cancel the configuration to start again.

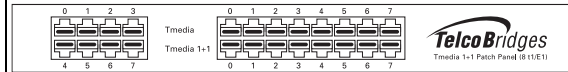


2.6.2 Install the TMG800 +1 on the Equipment Rack

The TMG800 +1 is mounted on a customer provided equipment rack using the mounting hardware packaged in the box. Refer to Section 2.2 “Rack Mounting the Tmedia Standalone or the Tmedia 1+1 System” on page 11.

2.6.3 Install the 1+1 Patch Panel

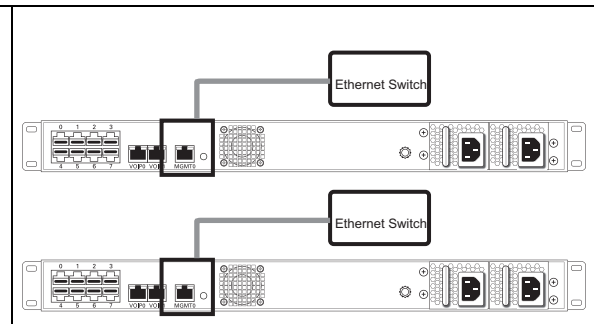
If you are installing a TMG800 +1, the associated 1+1 Patch Panel will look like the image to the right. Refer to Section 2.4.3 “Connecting to the PSTN” on page 18.



2.6.4 Connect to the TMG800 1+1 Management Interface

The Tmedia Management interface enables administrators to perform management tasks on the Tmedia VoIP Gateway.

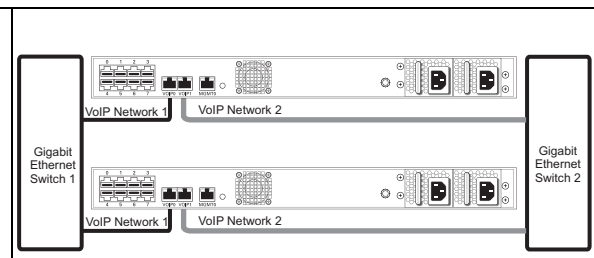
Follow the procedure described in Section “To connect the TMG800 and TMG800 +1 to the PSTN:” on page 26.



2.6.5 Connect to the Tmedia 1+1 Control Network and VoIP Network(s)

Each TMG800 and TMG800 +1 features 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 Tmedia 1+1 system will continue to manage VoIP traffic using the alternate network. These ports are also used to connect to the Tmedia Control Network, which allows both units to communicate with each another.

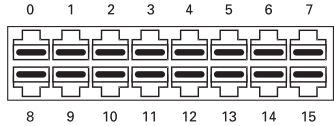
Follow the procedure described in Section 2.5.2 “Connecting to the Tmedia 1+1 System Control Network and VoIP Network(s)” on page 25.





2.6.6 Connect to the PSTN Network

The TMG800+1 features 8 T1/E1 interfaces to the PSTN network.

<p>Refer to Section 2.5.3 “Connecting to the PSTN in a Tmedia 1+1 System” on page 26.</p>	 <p>The diagram shows a row of eight T1/E1 interfaces. Each interface is represented by a rectangular box with two horizontal slots. The interfaces are numbered 0 through 7 from left to right. Below the row, the numbers 8 through 15 are listed, indicating that there are 16 total ports in the row, with the first 8 being T1/E1 interfaces.</p>
---	---

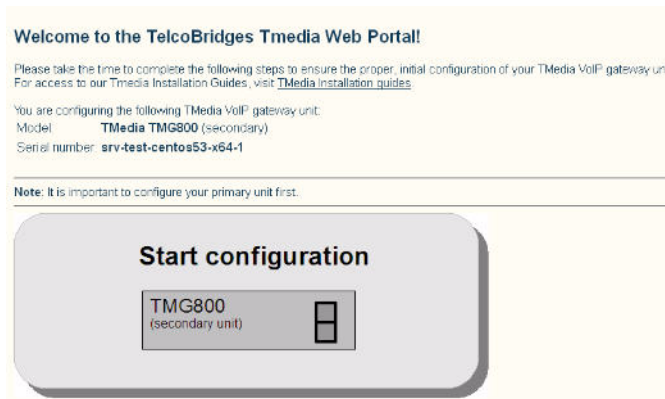
2.6.7 Power Up the Tmedia VoIP Gateway

The TMG800 and TMG800 +1 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 Tmedia 1+1 system be powered up. Refer to Section 2.5.4 “Powering Up” on page 27.



2.6.8 Start Up

1. Connect to the web portal of the Tmedia 1+1. The Welcome page appears.

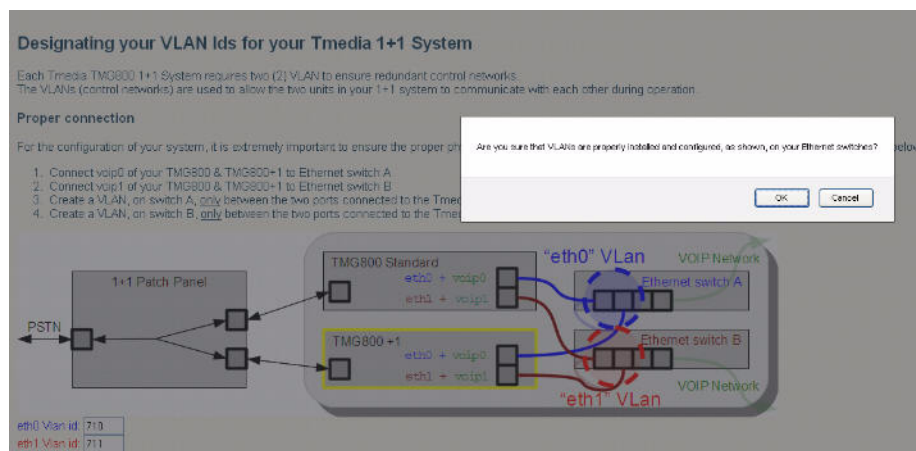


2. For Vlan configuration and connection, the TMG800 1+1 system requires 2 VLANs for the Tmedia Control Network. Both gigabyte layer 2 Ethernet switches **MUST** have their VLANs configured and the Tmedia must be properly connected **BEFORE** proceeding. The default VLAN IDs are:

- ETH0: 710
- ETH1: 711

Once you are ready, click **Save** to configure the VLANs.

3. Click **Yes** to configure the Vlans







2.7 Verifying the LED Status Indications

Front of Unit

When the Tmedia VoIP Gateway has been powered, verify the front panel to determine that all indications are normal. See Table 2.3 on page 38.

Table 2.3 Tmedia Unit Displays

LED	Description
	<ul style="list-style-type: none"> Unused
	<ul style="list-style-type: none"> Off: Not Ready Flashing Red: Unit has failed during the boot up process. Flashing Orange: The unit will shut down in a few minutes. Flashing Green: The unit is performing a boot up. Steady Green. The unit has successfully performed a boot up.
	<ul style="list-style-type: none"> Off: Unpowered Steady Red: Initial Startup sequence Steady Green: Powered
	<ul style="list-style-type: none"> Off: No hard drive activity Steady Green: Read/Write activity on the hard drive.

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 2.14 Front display and LEDs



2.8 Powering Down

Powering down the Tmedia VoIP Gateway requires you to connect to the management interface using SSH, and enter:

```
shutdown -hP now
```

Attention DO NOT TURN OFF the power to the Tmedia VoIP Gateway using the power switch located at the rear of the unit, 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.

Note For alternative methods of shutting down your VoIP gateway, refer to Section 2.7 “Verifying the LED Status Indications” on page 38 that describes how to power down using the reset button.

Chapter 3 Initial System Configuration

This chapter provides information about the following topics:

- Section 3.1 “Connecting to the Serial Port of the Tmedia VoIP Gateway”
- Section 3.2 “Configuring the Terminal Emulator Application”
- Section 3.3 “Connecting to the Tmedia VoIP Gateway”
- Section 3.4 “Retrieving Tmedia VoIP Gateway Information”
- Section 3.5 “Changing the Tmedia VoIP Gateway Management Port IP Address”
- Section 3.6 “Changing Tmedia VoIP Gateway Management Port Passwords”
- Section 3.7 “Setting the Time Zone”
- Section 3.8 “Configuring the Tmedia VoIP Gateway Using the Web Portal”
- Section 3.9 “Changing VoIP Interface Addresses”

3.1 Connecting to the Serial Port of the Tmedia VoIP Gateway

Note By default, the TMG800 management port is set to DHCP.

Sections 3.1 and 3.2 provide instructions on how to convert the DHCP management port to a static IP address. If your network supports DHCP, skip sections 3.1 and 3.2.

The serial port interface enables administrators to perform management tasks on the Tmedia VoIP Gateway.

To connect to the serial port of a Tmedia VoIP Gateway:

1. Connect one end of a CAT5 RJ-45 (male-male) cable to the DB-9 to RJ-45 adapter (both supplied with unit). Connect the DB-9 to RJ-45 to your computer serial port and the other end of the CAT5 RJ-45 (male-male) cable to the Tmedia serial port (labelled 10101) of the Tmedia VoIP Gateway as shown in figure 3.1 on page 42. See Section A.2 “RJ48 Console Wiring Diagram” on page 93 for a RJ-45 pinout description.
2. If your computer’s serial port features a DB9 connector, use the DB9 to RJ-45 adapter supplied with your Tmedia VoIP Gateway. If your computer’s serial port features a USB connector, you will need to provide a USB to DB9 adaptor. Refer to figure 3.2 on page 42.

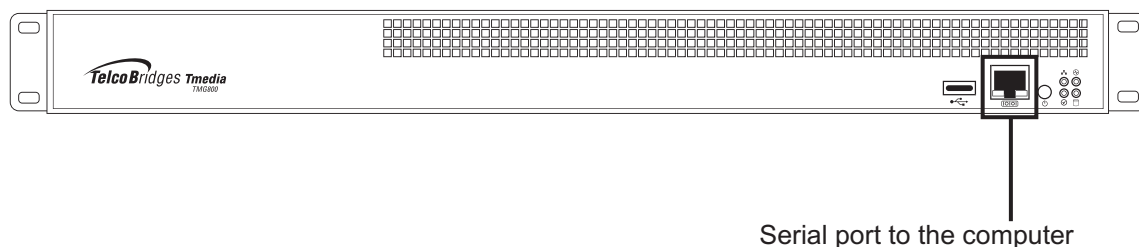


Figure 3.1 Computer to Tmedia VoIP Gateway Serial Port Connection

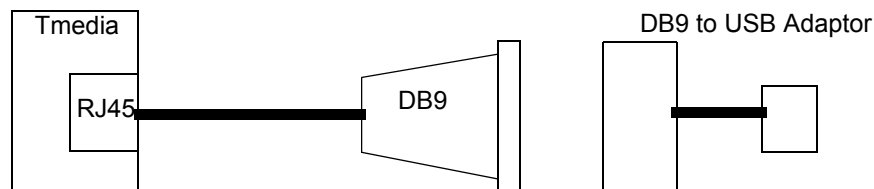


Figure 3.2 Conceptual View of a Serial Connection from the Tmedia VoIP Gateway to a Computer

3.2 Configuring the Terminal Emulator Application

Before communicating with the Tmedia Management Interface, you must first configure a terminal emulator or console application to communicate with the Tmedia VoIP Gateway in order to configure initial settings. Available terminal emulation software includes:

- HyperTerminal
- 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 45 to learn how to change the IP address of the MGMT0 port.

3.3 Connecting to the Tmedia VoIP Gateway

The Tmedia VoIP Gateway is shipped with the TMG-CONTROL software preinstalled. In order to make changes to the system configuration, you must connect the port labelled MGMT0 at the rear of the Tmedia VoIP Gateway to a terminal.

To access the Tmedia VoIP Gateway, you must use an SSH connection. The password is set at the factory and is indicated on the shipment sheet.

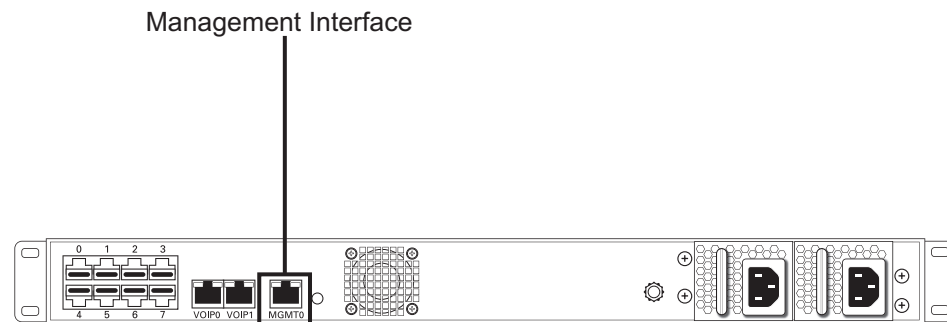


Figure 3.3 Tmedia Management Interface



3.4 Retrieving Tmedia VoIP Gateway Information

Note The Tmedia VoIP gateway enables you to retrieve system information with the following shell commands:

- `tbproduct` (retrieve the Tmedia product type)
 - `tbserial` (retrieve the Tmedia product type)
-

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



3.5 Changing the Tmedia VoIP Gateway Management Port IP Address

Note The following procedure must be performed on the Tmedia Standalone or the Tmedia 1+1 system.

The management port of the Tmedia VoIP Gateway (labeled MGMT0) is configured using DHCP by default. It can be modified using the following shell script: `tbchangeip`

3.6 Changing Tmedia VoIP Gateway Management Port Passwords

Note The following procedure must be performed on Tmedia Standalone or the Tmedia 1+1 system.

Once logged onto the Tmedia VoIP 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.
```

3.7 Setting the Time Zone

Note The following procedure must be performed on Tmedia Standalone or the Tmedia 1+1 system.

You can change the time zone of the Tmedia VoIP Gateway using the `tbtimezone` shell command.



3.8 Configuring the Tmedia VoIP 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 Tmedia VoIP Gateway.

If your system features a TMG800 standalone unit, refer to Section 2.4.5 “Start Up” on page 22.

If your system features a TMG800 working in conjunction with a TMG800 +1, refer to Section 2.5.5 “Start Up” on page 30.

To change the default configuration of a Tmedia VoIP 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 A TMG800 and TMG800 +1 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

3.9 Changing VoIP Interface Addresses

The default address of the VoIP interfaces of the Tmedia VoIP 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 3.2, 3.3, 3.4 3.5, 3.6 or 3.7, please vistis the TBWiki at: <http://docs.telcobridges.com>

Chapter 4 System Backups

This chapter 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 Tmedia VoIP 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 Tmedia device.

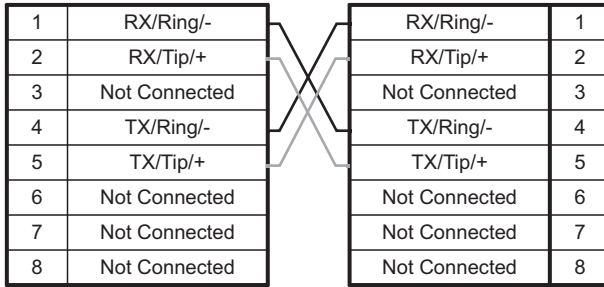
4.4 Restoring a Database Backup

In the event of a system failure requiring the replacement of a Tmedia VoIP Gateway, a previously saved backup of system settings can be restored to the new unit.

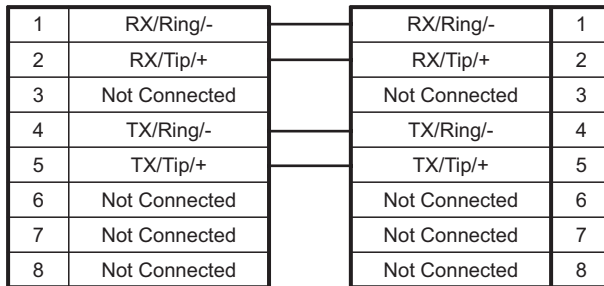
Appendix A Wiring Diagrams

A.1 RJ48C Wiring Diagram: Crossover and Straight Cables

RJ48C (T1/E1) Wiring Schematic: Crossover Cable



RJ48C (T1/E1) Wiring Schematic: Straight Cable



A.2 RJ48 Console Wiring Diagram

