Tmedia

TMP800 System Installation Guide

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TelcoBridges

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Preface

About this Guide

This guide describes the installation and setup of the Tmedia TMP800 telecom platforms, as well as the connections to the Tmedia control, voice, and IP networks.

Conventions

Terminology	Description
Tmedia Control Network	The network link between Tmedia units, the Toolpack application server and stream servers.
Tmedia System	This term includes the combination of Tmedia units and the Tmedia control network, the Toolpack application server and stream servers.
Tmedia Unit	A generic reference to the TMP800.

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If you have comments about this guide or any other TelcoBridges technical documentation, please send an E-mail to support@telcobridges.com.

Table of Contents

Chapter 1   Introduction

This chapter provides an introduction to the installation and setup of the TMP800.

The following topics are covered:

- Installation overview
- Installation prerequisites
- Other recommended reading

1.1 Installation Overview

The installation and setup of the TMP800 consists of a procedures organized into chapters in following order:

- Rack mounting the TMP800

- Connecting to the Tmedia control network

- Connecting to the VoIP network

- Connecting to the PSTN

- Powering Up

- Installing Toolpack

- Initial System Configuration

- System Upgrades

- Troubleshooting

Front   Rear
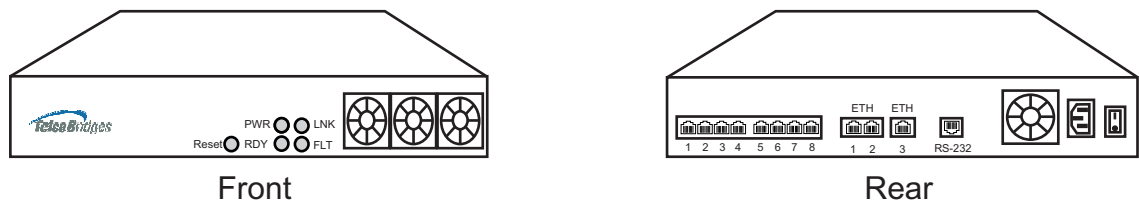
Figure 1.1   TMP800 front and rear views

1.2   Installation Prerequisites

In order for the TMP800 system installation to proceed without interruption, it is important that you verify that you have on hand all of the necessary materials. Prior to beginning the installation, you should have prepared for the following:

- Adequate space for the installation of your Tmedia system. Consider that you will need to mount the TMP800 on a 19" customer-provided equipment rack.

- Adequate power supply and power connections. In order to guarantee an uninterrupted supply, the TMP800 must be powered by a dedicated power source. Consider that a TMP800 will require one power connection in addition to PCs, servers, and Ethernet switches.

- In order to run your telecom applications on the TMP800, you will need to have purchased an adequate number of licenses for the features that you will use.

In addition, you will need the following equipment:

Gigabit Ethernet Switches

TelcoBridges recommends that the Tmedia Control Network be separated from the IP network; therefore, it is recommended that you use one managed gigabit Ethernet switch usingVLAN to connect the TMP800 to the networks, as shown in Section 1.2 "Recommended Network Setup" on page 3. Depending on your current network setup, other configurations can be selected.
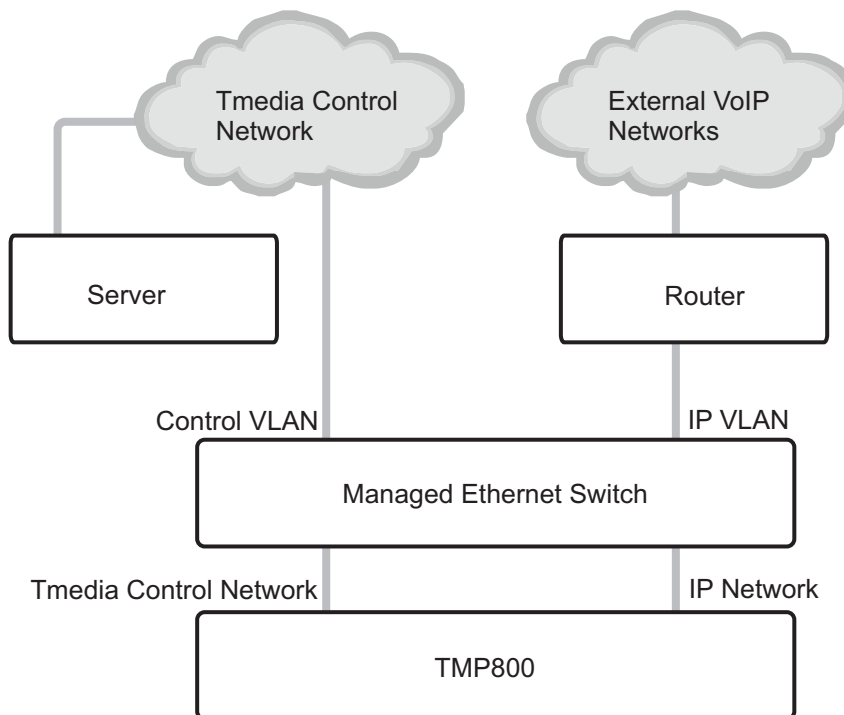
Figure 1.2   Recommended Network Setup

Two gigabit Ethernet switches must be used to support full control redundancy. In its lab studies, TelcoBridges has not encountered problems with a large variety of switches available in the market. The following is a list of some switches that TelcoBridges has used:

- Dell Powerconnect 2708, 8 gigabit Ethernet ports

- Dell Powerconnect 2716, 16 gigabit Ethernet ports

- Netgear GSM7324, Layer 3 managed, 24 gigabit Ethernet ports

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.

Attention   Always follow ESD prevention procedures when removing and replacing modules:

- Ensure that the TelcoBridges Tmedia units are electrically connected to earth ground.

- 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 unit 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 Tmedia units, ground yourself by touching a metal part of the chassis.

1.4   Recommended Reading

This document assumes that you are well versed in the installation of TelcoBridges Tmedia units and have been trained to work with the equipment. If you have any technical questions, please contact TelcoBridges technical support or send an E-mail to support@telcobridges.com.

Other documents exploring various aspects of the Tmedia system are available on the TelcoBridges TB Wiki at: http://docs.telcobridges.com/mediawiki/index.php/Main_Page

Chapter 2   Equipment Connections

This chapter provides the procedures for the connection of a TMP800 to a Tmedia control network, and the PSTN and IP networks. Topics covered are:

- Verifying the list of materials
- Rack mounting the Tmedia equipment
- Connecting to the Tmedia Control network
- Connecting to the VoIP network
- Connecting to a PSTN Network
- Power Up

2.1 Package Contents

You will have received a TMP800, a telecom platform on which you will run your telecom applications.

2.1.1 TMP800 Package Contents

In the TMP800 box, you will find:

- One TMP800

- One set of mounting brackets with screws. These are used for the mounting of a TMP800 on a 19" rack.

- One DB-9 to RJ-45 adapter. Allows you to interface the serial port of your computer with the RJ-45 console port of the TMP800. See pinout description in Section 2.4.3 "Connecting to the Serial Port of the TMP800" on page 13.

- Three RJ45 CAT5 Ethernet straight cables (male-male), three meters in length. One can be used to connect the console port to a terminal. The remaining two cables can be used to connect to VoIP or Tmedia Control networks.

- One warranty sheet

- One packing slip

- One TMP800 Quick Installation guide.

Not included with the TMP800:

- A power cord. Used to supply power to the TMP800.

- A 19" equipment rack. You will use a standard 19" wide equipment rack to install the TMP800.

2.2   Rack mounting the TMP800

The TMP800 is mounted on a customer provided equipment rack using the mounting hardware packaged in the box.

2.2.1   Prerequisites

To rackmount the TMP800, you will need:

- One 19" customer provided equipment rack. Racks 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 TMP800 is housed in a 1U chassis, as tabulated in Table 2.1 on page 9. It is important that you provide for enough room on the equipment rack to allow for the installation of the TMP800 and other related equipment. Consider the available space on your equipment rack and the individual heights of each unit. Due to the rear-exhaust heat vents and the efficient heat dissipation design, there is no need to leave any physical vertical space between the placement of the TMP800 on the equipment rack.

Table 2.1   Tmedia Physical Height

Tmedia Model Number	Vertical Height
TMP800	1U
Gigabit Switches[a]	1U (or more)
Control Servers[b]	1U (or more)

a. Verify the manufacturer specifications for placement and spatial requirements.

b. Verify the manufacturer specifications for placement and spatial requirements. Depending upon the server that you will use the vertical height may range beyond a 1U size.

2.2.3 Mounting the TMP800

The TMP800 is mounted on the 19" equipment rack using the angle brackets and screws provided in the box. To mount the hardware, proceed as follows:

To mount the TMP800, proceed as follows:

1. Using two metal screws, attach one angle bracket to the front, left-hand side of the TMP800 when viewed from the front, as shown in Figure 2.1 on page 10. Repeat the same for the angle bracket on the right-hand side.

2. Mount the TMP800 on the rack, keeping in mind the space required on the equipment rack for other equipment as described in Section 2.2.2 "Vertical Placement of Tmedia Equipment" on page 9.

Attach Bracket to Tmedia Unit

Attach Tmedia Unit to Equipment Rack
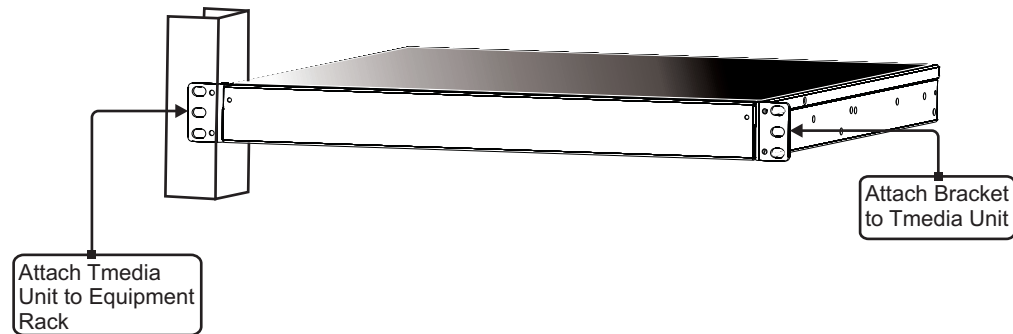
Figure 2.1   Mounting the TMP800

2.3   Connecting to the Tmedia Control Network

The Tmedia Control network enables the Toolpack application and stream servers to control the TMP800 using a Gigabit Ethernet switch.

2.3.1   Prerequisites

To connect the TMP800 to the Tmedia Control network, you will need:

•   Customer provided gigabit Ethernet switch.

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

2.3.2   Interconnections

The TMP800 is connected to the Tmedia Control network by one Gigabit Ethernet network link, as shown in Figure 2.2 on page 11.

To connect the TMP800 to the Tmedia control network:

1.   Connect a CAT5 Ethernet straight cable with RJ45 male-male terminations to ETH1 at the rear of the TMP800. Connect the other end of the same CAT5 cable to the Gigabit Ethernet switch.
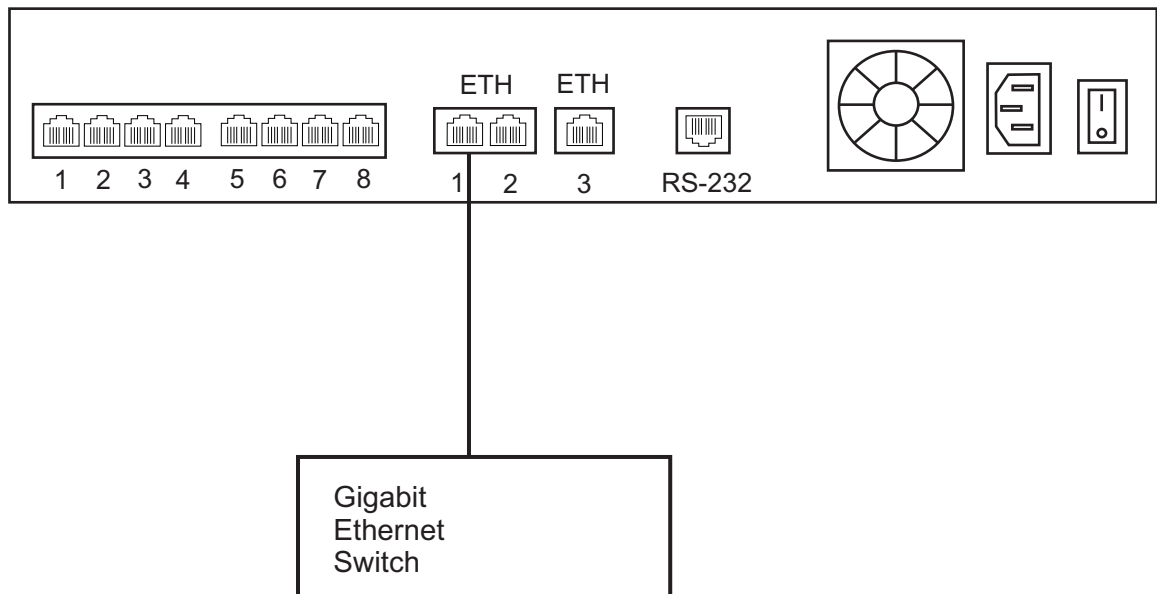
Figure 2.2   Connecting to the Tmedia Control Network

2.4 Connecting to the VoIP Network

The TMP800 features one GigE port for connection to a VoIP network. This provides an access point to manage VoIP traffic.

Note: **Certain configurations of the TMP800 will exceed 100 Mbps, therefore 1000 Mbps is recommended.**

2.4.1 Prerequisites

To connect the TMP800 to the VoIP network, you will need:

- Gigabit Ethernet switch.
- One CAT5 Ethernet straight cable with RJ45 male-male terminations.

2.4.2 Connections

The TMP800 is connected to the VoIP network by one Ethernet GigE network link, as shown in Figure 2.3 on page 12.

To connect the TMP800 to the VoIP network:

1. Connect a CAT5 Ethernet straight cable to ETH-2 at the rear of the TMP800. Connect the other end of the same CAT5 cable to the Gigabit Ethernet switch.
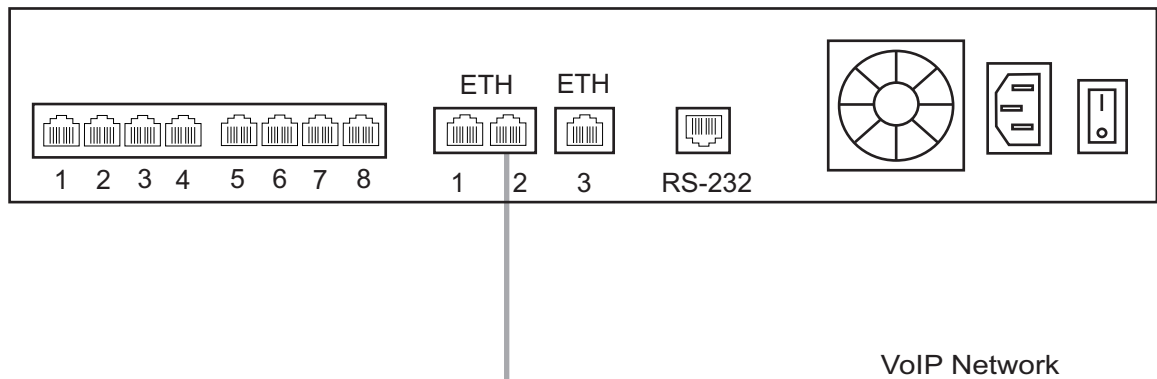
Figure 2.3   Connecting to the VoIP Network

2.4.3   Connecting to the Serial Port of the TMP800

To communicate with the Tmedia control network, you must first connect your computer to the serial port of the TMP800 unit and configure the initial network settings that will enable communication with all of the Tmedia units of your network.

To connect to the serial port of a Tmedia unit:

1. Connect a RJ45 CAT5 straight cable (supplied with unit) between the com port of your computer and the serial port (labelled RS-232) of the TMP800 as shown in Figure 2.4 on page 13. See Section 2.6 "Console pinout" on page 14 for a RJ-45 pinout description.

2. If your computer's serial port features a DB9 connector, use the DB9 to RJ45 adapter supplied with your Tmedia unit. If your computer's serial port features a USB connector, you will need to provide a USB to DB9 adaptor. Refer to Figure 2.5 on page 13.

Serial Port to the Computer
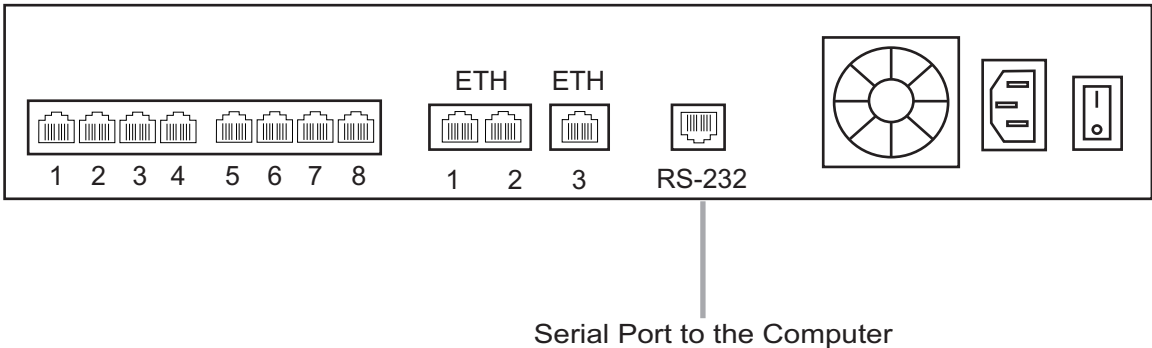
Figure 2.4   Computer to TMP800 Serial Port Connection
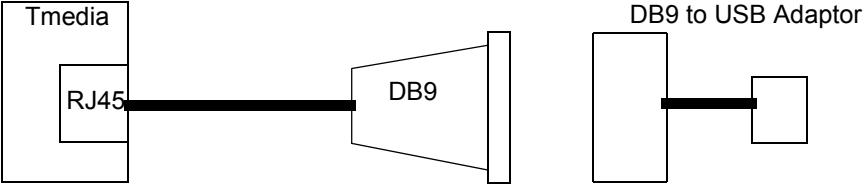
Figure 2.5   Conceptual View of a Serial Connection from the TMP800 to a Computer

DB 9

1	N/C
2	Rx
3	Tx
4	N/C
5	GND
6	N/C
7	N/C
8	N/C
9	N/C

RJ 45

1	N/C
2	N/C
3	N/C
4	GND
5	Tx
6	Rx
7	N/C
8	N/C
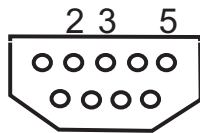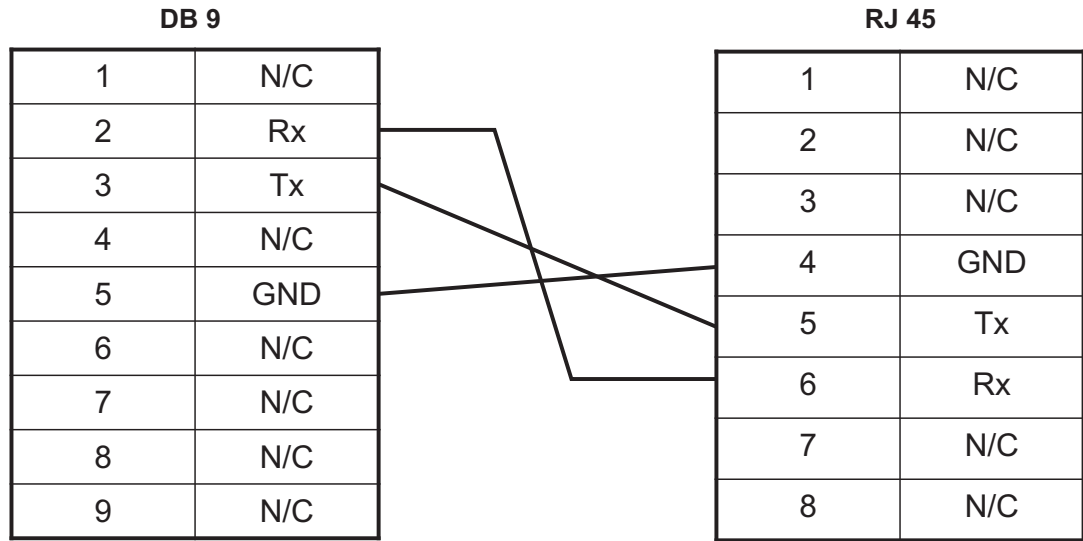
Figure 2.6   Console pinout

2.5   Connecting to the PSTN

The TMP800 features 8 modular 8-conductor RJ48 type jacks for connection to T1/E1/J1 lines. You will need one cable for each (T1/E1/J1) interface on the TMP800.

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 line impedances to 75 ohms.

Note   All ports may not be active. T1/E1/J1 ports are activated by software license; the number of active ports depends on the licenses purchased.

To connect the TMP800 (RJ48 type) to the PSTN:

1. Start with port 1 located at the top and left-most position. Connect one cable between this port and the T1/E1/J1 line (Figure 2.7 on page 15).

2. Repeat step 1, using the next available port.
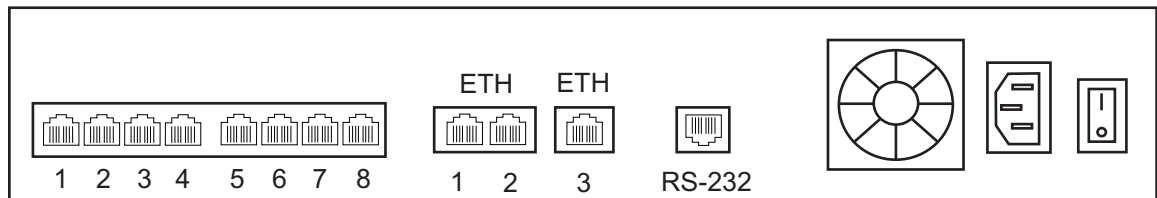
Figure 2.7   8-Port Interface to the PSTN

2.6 Powering Up

The TMP800 is furnished with one AC or DC termination points. Only once all other equipment installation work has been completed should the TMP800 be powered up.

2.6.1 Prerequisites

To power the TMP800, you will need:

- A dedicated power source for the TMP800.

- One power cable for the TMP800.

2.6.2 Connecting to AC Power

The TMP800 is furnished with one AC power connector (Figure 2.8 on page 16).

To connect the TMP800 to AC Power:

1. Connect an AC power cable between the AC connector of the Tmedia unit and an AC supply. See Figure 2.8 on page 16.

2. Power up the TMP800 by turning on the AC power switch.
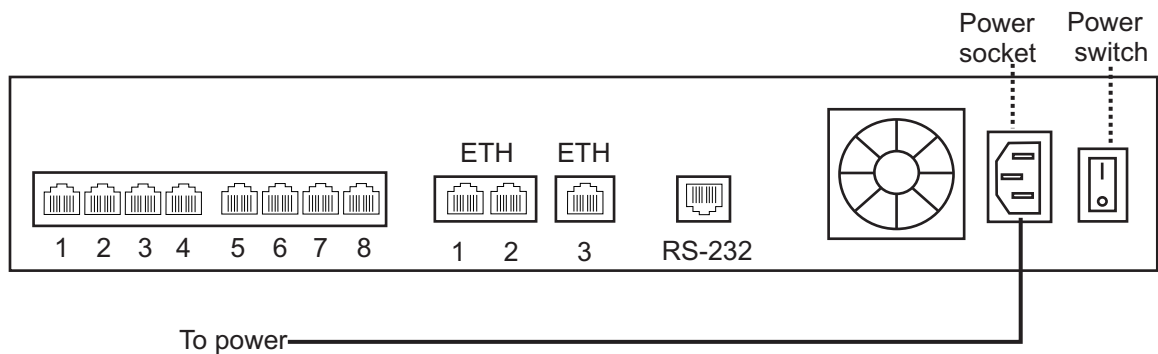
Figure 2.8   AC Power Connection

2.6.3   Connecting to DC Power

The TMP800 is furnished with one DC power connection port and supplied with a DC power cable.

To connect the TMP800 to DC power:

1. Connect a ground wire to the ground lug located at the rear of the TMP800, as shown in Figure 2.9 on page 17.

2. Connect a 14 AWG wire between the positive terminal of a DC power source and the terminal on the TMP800 labelled as ⎓.

3. Connect a 14 AWG wire between the negative terminal of a DC power source and the terminal on the TMP800 labelled as 48V.

4. Turn on the DC power source.
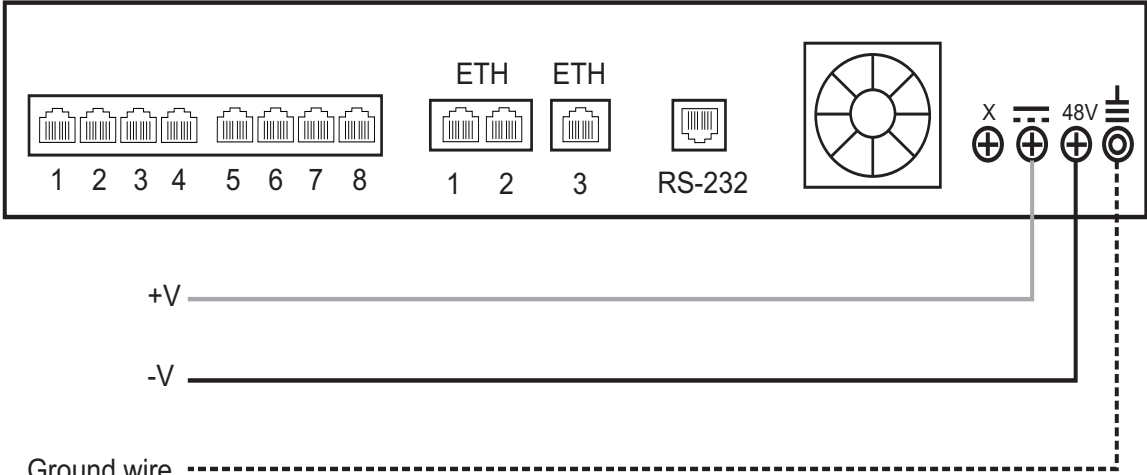
Figure 2.9   TMP800 DC wiring diagram

2.6.4   Verifying the LED Status Indications

Front of Unit

When the TMP800 has been powered, verify the front panel to determine that all indications are normal. See Table 2.2 on page 18.

Table 2.2   Tmedia Unit Displays

LED	Description
PWR	• Off. Unpowered • Steady Red. Initial Start Up • Steady Green. Powered
RDY	• Off. Not Ready • Steady Red. On while the FPGAs are being programmed • Blinking Red. Unit has failed during the boot up process. • Blinking Orange. The unit will be shutting down in a few seconds. • Blinking Green. The unit is booting up. • Steady Green. The unit has successfully booted up.
LNK	Provides status of the ETH-1 port link. • Off. While the FPGA is being programmed. • Steady Red. No link detected on the management port. • Steady Green. The link (10M, 100M, or 1000M) has been detected.
FLT	• Off. While the FPGA is being programmed, or the software is being properly managed. • Steady Red. An error has occurred. The customer should connect to the Tmedia Web Portal or use other debugging software.
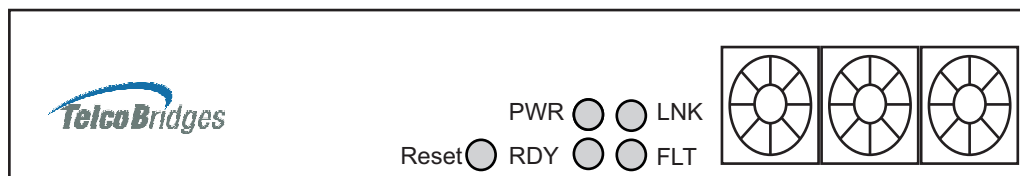
Figure 2.10   Front display and LEDs

Note   Pressing the Reset button for 1 second will force the unit into a graceful shutdown. This will take a few seconds.

Rear of Unit

When the TMP800 has been powered, verify the rear panel LEDS for each of the 8 trunks ports to assure that indications are normal. See Table 2.3 on page 19.

Table 2.3   Tmedia Rear Unit Displays

LED	Description
Yellow LED (Left Side of Trunk Port)	• Off. No Loss of Signal (LOS) • On. Loss of Signal (LOS)
Green LED (Right Side of Trunk Port)	• Off. Loss of Frame (LOF) • On. No loss of Frame (LOF)
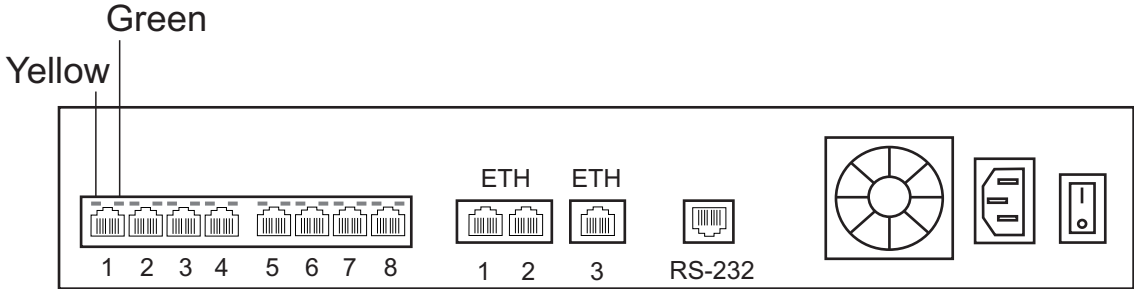
Figure 2.11   Rear Trunk Port Status LEDs

Chapter 3   Initial System Configuration

This chapter provides the initial procedures that are required in order for you to be able to use the Tmedia Web portal to configure your Tmedia units.

The following topics are covered:

- Connecting to the Tmedia unit

    Configuring the terminal emulation application
    Connecting to the Tmedia unit through Ethernet port (ETH1)

- Using the set_boot and print_boot commands

- Creating a shell password

- Applying changes

- Tmedia default IP addresses

3.1   Connecting to the Tmedia Unit

The connection to the Tmedia unit can be accomplished by either one of the following procedures in this section.

3.1.1   Configuring the Terminal Emulator Application

Before communicating with the Tmedia control network, you must first configure a terminal emulator or console application to communicate with one of the Tmedia units 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**

3.1.2   Connecting to the Tmedia unit through Ethernet port (ETH1)

Alternatively, you can use the default IP address of ETH1 (ETH0) to configure Tmedia units. See Section 3.5 "Tmedia Default IP Addresses" on page 28. To do this, connect a device on the same subnet as the default IP addresses and connect using Telnet.

3.2 Using the set_boot and print_boot Commands
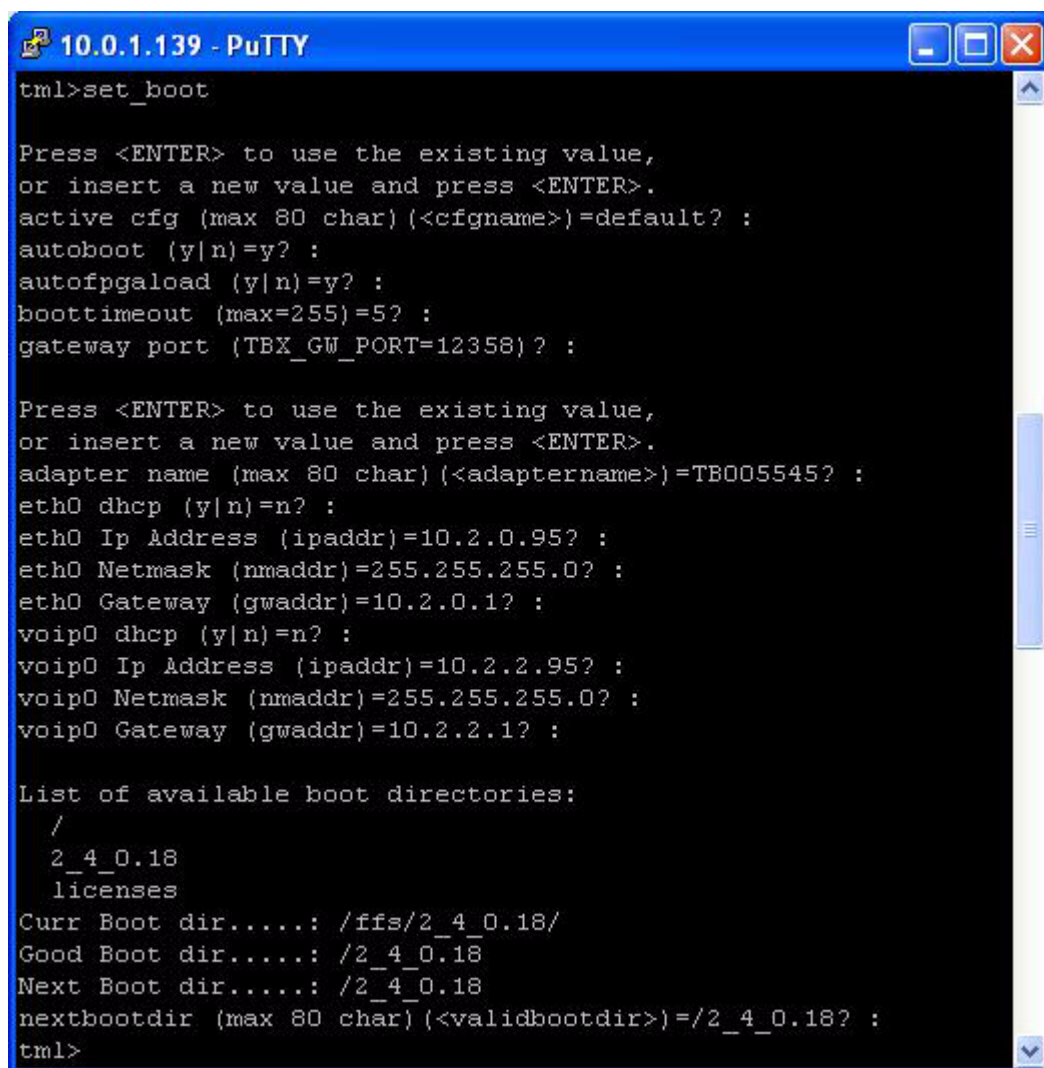
The set_boot command can be used to modify certain settings and the print_boot command can be used to review the changes. Using the set_boot command, the System ID (also known as gateway port) can be configured.

Settings will be applied on the next reboot of the platform.

Note	**System ID** is also known as **UDP gateway port**.

To modify boot settings:

1. Using the Management Interface, type **set_boot** and press the **Enter** key to move to the next prompt. See Figure 3.1 on page 23


```
10.0.1.139 - PuTTY
tml>set_boot

Press <ENTER> to use the existing value,
or insert a new value and press <ENTER>.
active cfg (max 80 char)(<cfgname>)=default? :
autoboot (y|n)=y? :
autofpgaload (y|n)=y? :
boottimeout (max=255)=5? :
gateway port (TBX_GW_PORT=12358)? :

Press <ENTER> to use the existing value,
or insert a new value and press <ENTER>.
adapter name (max 80 char)(<adaptername>)=TB005545? :
eth0 dhcp (y|n)=n? :
eth0 Ip Address (ipaddr)=10.2.0.95? :
eth0 Netmask (nmaddr)=255.255.255.0? :
eth0 Gateway (gwaddr)=10.2.0.1? :
voip0 dhcp (y|n)=n? :
voip0 Ip Address (ipaddr)=10.2.2.95? :
voip0 Netmask (nmaddr)=255.255.255.0? :
voip0 Gateway (gwaddr)=10.2.2.1? :

List of available boot directories:
  /
  2_4_0.18
  licenses
Curr Boot dir.....: /ffs/2_4_0.18/
Good Boot dir.....: /2_4_0.18
Next Boot dir.....: /2_4_0.18
nextbootdir (max 80 char)(<validbootdir>)=/2_4_0.18? :
tml>
```

Figure 3.1   Set Boot Command

The following prompts are displayed:

Prompt	Description
Adapter Name	Name of the Tmedia unit. This character string must uniquely identify the Tmedia unit. The default value is the serial number of the Tmedia unit.
DHCP	Dynamic IP address is used when the Tmedia unit is started. Currently not supported.
eth0/VoIP0: IP Address	When you are not using DHCP, the IP address is used as the static IP address for ports Ethernet 0 (ETH1), and VoIP0 (VoIP1) of the Tmedia unit.
eth0/VoIP0: NetMask	When you are not using DHCP, the network mask is used for ports Ethernet 0, and VoIP0 of the Tmedia unit.
eth0/VoIP0: Gateway	When you are not using DHCP, the gateway address is used for ports Ethernet 0 and VoIP0 of the Tmedia unit. If you are planning to use the Tmedia unit in the same subnet as the host (i.e. you do not require access to an IP address outside the subnet), then the gateway can be set to '127.0.0.1'.
Active cfg	This allows a device to make use of multiple configurations.
autoboot: auto fpgaload	When set to "no", the device will stop booting after initial bootup sequence. This is used for debugging only, the default value is "yes".
Boot timeout	This is used to set the time lapse between the initial bootup sequence and the complete bootup. The default value for this setting is 5 seconds.
gateway port	(see previous page)
list of available Boot directories	This enables the user to manually switch between available software versions.

Note   Each network interface (Eth0 and VoIP0) must be on a different subnet. For example, if the netmask is 255.255.0.0 and the IP address of ETH0 is 192.168.1.10, the VoIP0 port cannot be on any IP address starting with 192.168.x.x.

Note Do not confuse the gateway port (also known as System ID) with the IP gateway address.

The gateway port is used to control the Tmedia units and TelcoBridges strongly recommends that this setting be left at its default value: 12358.

Tmedia units on the same gateway port will be automatically detected by any Toolpack application.
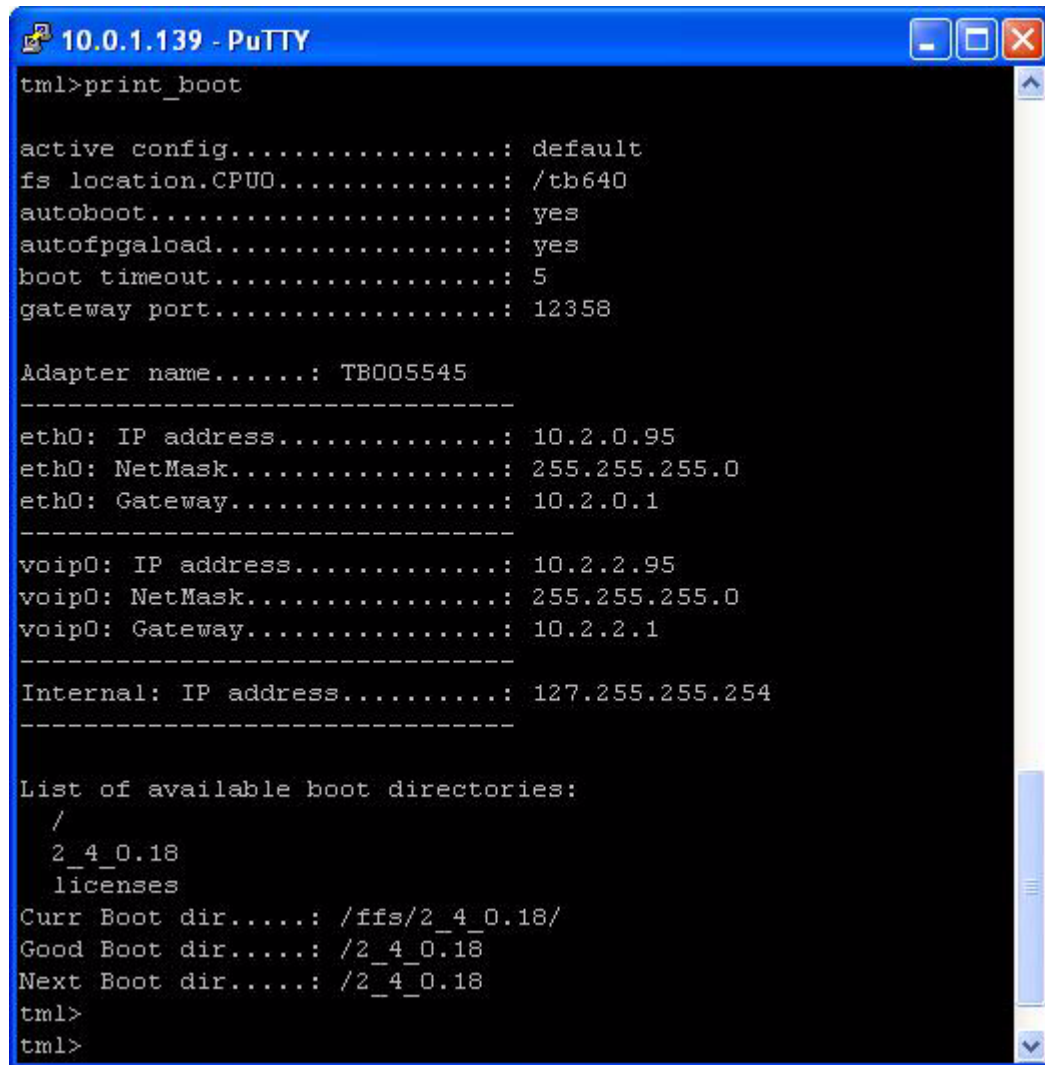
Different gateway ports can be useful for the segmentation of systems configured to operate on the same physical network and IP subnet. Make certain that all applications in the same system are configured to use the same values.

This is described in the Toolpack Installation guide; for further information, contact TelcoBridges Technical Support.

Note The management interface is reserved for future use.

To view the results of a set_boot command:

1.   Type print_boot. See figure Section 3.2 "Print Boot Command" on page 26

Figure 3.2   Print Boot Command

3.3   Creating a Shell Password

Access to the shell commands may be protected with a password.

Note	By default, access to the shell commands is not password protected.

To create a password:

1.   At the shell prompt, type **set_pass <your password>**.

2.   Restart the Tmedia unit. This will reset the Tmedia unit and add the enable and disable shell password commands to the console commands list.
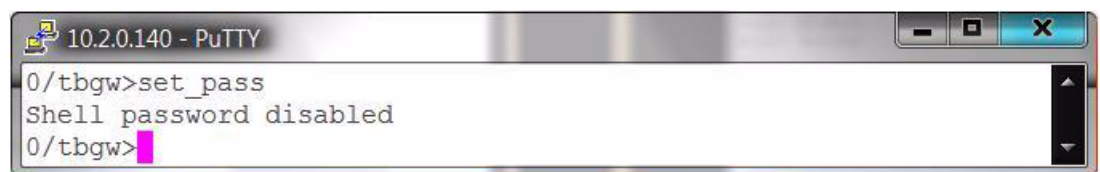
Once the shell password has been set, it cannot be changed unless you are in the **Enabled** mode. The enabled mode provides you with access to operation sensitive commands.

To enter the enabled mode:

1.   At the shell prompt, type **enable <your password>**.

To clear the password mode:

1.   At the shell prompt, type **set_pass** (without entering a password).

To exit the enabled mode:

1.   At the shell prompt, type **disable**.

3.4   Applying Changes

In order to apply all changes made, enter the following command:

```
reboot
```

This will restart the platform with the new settings taking effect.

3.5   Tmedia Default IP Addresses

All Tmedia units are shipped with default IP addresses, as follows:

- Eth0: IP address: 192.168.0.2

- Eth0: Netmask: 255.255.255.0

- Eth0: Gateway: 192.168.0.2

- VoIP0: IP address: 192.168.2.4

- VoIP0: Netmask: 255.255.255.0

- VoIP: Gateway: 192.168.2.4

Chapter 4   Toolpack Installation

This chapter provides a brief introduction of Toolpack software and provides a listing of the various versions of Toolpack Installation guides geared towards your specific operating system.

The following topics are covered:

- ToolPack operating system platforms
- Installation guidelines

4.1   ToolPack Operating System Platforms

TelcoBridges Toolpack software is designed to work with the following operating system families:

- Windows™

- Solaris™

- Linux®

To learn about which OS/distribution versions are supported by Toolpack, refer to:
Http://docs.telcobridges.com/mediawiki/index.php/Supported_operating_systems

Depending upon your choice of operating system, you must consult a Toolpack installation guide specific to your operating system. These documents are available on TelcoBridges TB Wiki at:
Http://docs.telcobridges.com/mediawiki/index.php/installing_Toolpack

4.2   Installation Guidelines

Follow the instructions of your Toolpack installation guide by first retrieving all the indicated software and then proceeding with its installation.

Chapter 5   System Upgrades

The TelcoBridges Tmedia units start up from a local system file located in flash memory. The flash memory is furnished with a version of firmware available at the time of production. If you are using Toolpack, verify that you have the required license and follow the upgrade instructions in the Toolpack Installation guide. Otherwise, you must install the firmware package that you will be using.

If you are unsure of which firmware release to install, please contact TelcoBridges customer support.

This chapter provides procedures related to the administration of firmware packages.

Note	For users of Toolpack, the system will automatically perform any required upgrades.

The following topics are covered:

• Installing a firmware package
• Removing a firmware package
• Installing a new license

5.1   Installing a Firmware Package

To install a new firmware package on the local file system:

1. Start the installation tool (install) located in the OS-specific package in the /tb/bin/release/<proc-OS-arch>/ directory.

2. The installation tool should detect all available Tmedia units in the network. If more than one Tmedia unit is discovered, select the Tmedia unit to which the firmware package is to be installed.

3. Select option 20: Install a package.

    3a. When asked for the path of the package file, enter the path of the file "tml.pkg" for a TMP800. This is located in the package tb640-adapter.release.zip under /tb/bin.

    3b. When asked, enter the directory name in which the firmware package is to be installed. The default name will be the release number as the directory name. For example: "94-8_4".

    3c. When asked for the path of the license file, enter the path where you saved the license file (XX_TB000XXX_RELEASE_VX_XX_RCX_license.dat) that you received from the TelcoBridges support group.

    Note   Tmedia units require that a new license be installed on major upgrades only. For example: if version 2.3.3 is installed on your Tmedia unit with a valid license, upgrading to version 2.3.14 will not require a new license.

    It is important that you use the license file intended for the major version of the package. You must know the serial number of the TelcoBridges Tmedia unit to be able to choose the right license. For example, the license file WD_TB000103_RELEASE_V2_3_8_RC4_license.dat would be valid for a Tmedia unit with the serial number TB000103 and any release v2.3 package.

    3d. When asked to set the new package as next boot directory, select **True**.

4. Select option **99** to restart the Tmedia unit.

    Note   Should this, or any other future firmware package not function and fail to properly start the Tmedia unit, the last known good boot directory will be used instead.

5.2   Removing a Firmware Package

A firmware package is approximately 18 MB in size. The flash memory of a Tmedia unit is 125 MB. Before you exceed the flash memory limit, it is recommended that you remove any unused firmware packages from the flash memory.

Note   Users of Toolpack software are not required to remove older versions of software. The Toolpack software will do this automatically.

To remove a firmware package from the local file system:

1. Start the install tool located in the /tb/bin/release/<proc-OS-arch>/ directory.

2. Select option 21: remove a package.

3. Enter the number associated with the package to remove.

5.3   Installing a New License

To install a new license:

1. Start the installation tool located in the /tb/bin/release/<proc-OS-arch>/ directory.

2. Select option 22: Install a license.

    When you are asked for the path of the license file, enter the path in which you saved the license file (XX_TB000XXX_RELEASE_VX_XX_RCX_license.dat) received from the TelcoBridges support group.

    It is important that you use the license file intended for the major version of the package. You must know the serial number of the TelcoBridges Tmedia unit to be able to choose the right license. For example, the license file WD_TB000103_RELEASE_V2_4_5_RC1_license.dat would be valid for any Tmedia unit with the serial number TB000103 and any release v2.4 package.

3. Select option **99** to restart the TelcoBridges Tmedia unit and apply the new license.

Note	The license installed can be verified by using option 34 or option 2 of the installation program.
	The installed license can be verified only if the firmware loaded is the same as the running firmware (same versions). This can be verified using option 10.
	To verify a license on another firmware, set the next boot directory (option 12) and restart the Tmedia unit.
	When a license expires, the Tmedia unit restarts by itself and no features will be available until a new license is installed.

Some licenses can be upgraded live without restarting the TelcoBridges Tmedia unit, others cannot.

Do not restart the TelcoBridges Tmedia unit if:

•   The license's expiry time is extended or becomes permanent. For example, the expiry date is September and there is an extension until November.

•   The license adds features to an existing feature. For example, there are 120 IVR features activated, and the new license provides 240 voice processing resources.

Restart the TelcoBridges Tmedia unit if:

•   The old license has expired and an extended or permanent license has been installed.

- A new feature has been added. For example, adding additional physical interfaces is in the new license, however, it is not in the old license.

Chapter 6   Troubleshooting Tools

This chapter provides guidance in what actions to take when encountering system problems prior to contacting TelcoBridges Customer Support.

The following topics are covered:

- Reporting a Problem
- Preparing your setup information
- tblogtrace or Udplisten Log
- TbDebug Dump Files
- Backdoor Tools
- tbsigtrace signaling traces
- General Debugging Tips

6.1   Reporting a Problem

TelcoBridges has developed extensive tools to gather information about a Tmedia system to solve problems quickly. Users **MUST** gather all related logs before reporting a problem to TelcoBridges Support via Email or MSN. Various logging methods are described in the following sections.

Once information is gathered and sent to the TelcoBridges Support group (support@telcobridges.com), the Support group will assign a tracking number to the problem. All follow-up correspondence, whether it be by E-mail, MSN, or phone call must refer to the tracking number which the problem has been assigned.

6.2   Setup Information

The setup information must include:

- Physical connections. If necessary, describe it in a network diagram.

- Specify that your product is a TMP800.

- Host controlling the TMP800 (manufacturer, CPU type, memory, OS version and patch level, Ethernet interface details)

- Telecommunication connectivity diagram (for example:. E1/T1/J1, VoIP Ethernet switch, etc)

- Application description

- Remote access to system (SSH, VPN, VNC, Remote desktop, etc.)

- For a signaling-related problem, specify which side is initiating the call

6.3   tblogtrace (Mandatory)

tblogtrace is started automatically by Toolpack.

Useful information about this application is listed as follows:

- tblogtrace captures events from the system at run-time.

- The TMP800 transmits its system messages as UDP ASCII packets.

- The tblogtrace MUST be setup to gather information at all times, when developing the application and also in a live system. In this way, Telcobridges can identify a problem even if it occurred in the past.

The Toolpack system starts and configures the tblogtrace application automatically. The files can be found in the [InstallDir]/toolpack/setup/[SystemId]/[MajorVersion]/apps/tblogtrace/ directory.

If you are not using Toolpack, start it manually, as follows:

1. Locate the tblogtrace application located in tb/apps/tblogtrace/release/<proc-OS-arch>/ directory.

    tblogtrace requires that certain parameters are specified:

    Usage : tblogtrace -port <Port> -gw <System Id> -adapter <Adapter name>

For example: tblogtrace -port 52492 -gw 12358 -adapter TB002492

When verifying the tblogtrace log, errors or failures are usually shown in RED in the console or for lines displaying 'E '. Either of these two conditions should be reported to TelcoBridges.

6.4 Tbdebug Dump Files (Mandatory)

The tbdebug copies information about TelcoBridges libraries and TMP800s into log files. This includes software, the release running on the host, the firmware release running on the TMP800, TMP800 information, available features, configuration, and status information.

The tbdebug files must be sent when a problem is reported. If the problem is reproducible, the tbdebug dump files are verified before and after the problem is reproduced. This will aid in identifying the problem quickly.

For further information about Tbdebug, refer to TelecoBridges TB Wiki at:
http://docs.telcobridges.com/mediawiki/index.php/Toolpack_Debug_Application:Tbdebug

6.5 Backdoor Tools

A number of backdoor tools are available as follows:

- tbx_cli_tools_remote

- tbshowls

- VoIP Traffic Capture

- Wireshark

- tbstreamlisten

- Stream server audio packets to wave file

- tbsigtrace

6.5.1 tbx_cli_tools_remote

The tbx_cli_tools_remote tool can be used to get the text-based GUI control of TB applications like Toolpack_Engine, Toolpack_sys_manager, tbstreamserver, and others which are run in background.

For further information about tbx_cli_tools, refer to TelecoBridges TB Wiki at:
http://docs.telcobridges.com/mediawiki/index.php/Toolpack_Application:tbx_cli_tools_remote

6.5.2   Line/Trunk Status (Tbshowls)

```
tbshowls (/tb/bin/release/[OS version]/)
```

tbshowls can be used to show trunk alarm and performance counters. The tool will check the trunk status periodically to show the most updated trunk status. Users can use the up/down/left/right arrow keys to show the performance data on different trunks. Use a-s-d-x to scroll and view other lines services.

Options 'G' and 'S' enable you to get and set the trunk interface parameters.

Option 'R' can be used to reset the performance counter value to zero.

It is also possible to allocate all line interfaces in different configurations. This is useful for DS3 and OC3/STM-1 configurations, in order to help users understand the configuration.

6.5.3   VoIP Traffic Capture

When troubleshooting VoIP related issues, a direct Ethernet connection can be established between the host's Gigabit Ethernet interface and the VoIP1 interface on the TMP800. Wireshark is connected on the Gigabit Ethernet interface on the host server.

To capture VoIP Traffic, do the following:

1. Connect VoIP1 interface to Ethernet port of a server

2. Telnet to the TMP800

3. Type this command:

    ```
    mv88eMonitor 0x4 0x4 3   (Copies everything from VoIP0 to VoIP1) *
    ```

4. Start pcap capture on the server Ethernet port (either wireshark or tcpdump)

5. To stop the tracing:

    ```
    mv88eMonitor 0 0 3
    ```

6.5.4   Wireshark (formerly called Ethereal)

Wireshark is useful for capturing both VoIP traffic as well as Streamserver packets (play/record function).

This program is available at this site: www.wireshark.org

6.5.5   Tbstreamlisten

```
tb\apps\tbstreamlisten\release\[OS version]
```

This allows the recording of the raw data from a TDM stream. Please ask customer support for instructions regarding this function.

6.5.6   Stream Server Audio Packets to Wave File

It is possible to capture all audio packets transmitted to and from the Stream Server and to convert them into wave files for analysis. You can use Wireshark or tcpdump on the server running the tbstreamserver application.

The conversion tool, streamserver_pkt_to_wav can be found at the following location:

/tb/bin/release/[OS version].

6.5.7   tbsigtrace Signaling Traces

The tbsigtrace program is a tool used to capture SS7, ISDN, and SIP signaling.

Note	This application can be started with Toolpack. For further information, refer to the TelcoBridges TB Wiki at: http://docs.telcobridges.com/mediawiki/index.php/Toolpack_Debug_Application:Tbsigtrace

6.6   General Debugging Tips

To solve problems quickly and efficiently, logs are the primary source of information that aid TelcoBridges support in determining the events that led to a reported problem.

Network configuration is important because it tells us:

- If the host applications (or TB applications) are running on a host having more than 2 Ethernet interfaces or having more than 1 IP address on the same Ethernet interface. The TBX_GW_ADDRESS_0 and TBX_GW_ADDRESS_1 must be set to match with the subnet used for ETH0 and ETH1 of the TB hardware products.

If you need run separate systems running on the same network, the communication port system_ID used on the Tmedia units and the application can be changed.

To set the system_ID on the Tmedia units, do the following:

- Telnet to the hardware and do set_boot command. Change the system_ID through the gateway port parameter.

The default value is 12358.

To set the system_ID for the pre-compiled TB applications:

- Set the system_ID through TBX_GW_PORT in the config.txt file of the TB applications. If zero is used, the application will look for the environment variable TBX_GW_PORT for the System_ID value. If the variable is missing, the default System_ID value 12358 will be used.

To set the system_ID for user application:

- Set the un32GwPort parameter in the TBX library parameters. If zero is used, the application will look for the environment variable TBX_GW_PORT for the System_ID value. If the variable is missing, the default System_ID value 12358 will be used.

Note   system_ID is also referred to as tbx_gw_port and gateway port.