

# Mediant™ 2000 VoP Media Gateway

## Fast Track Installation Guide For Nortel H.248, SIP, H.323, MGCP

Version 4.2

Document #: LTRT00904 Rev 001



## Declaration of Conformity

**We AudioCodes Ltd, declare under our sole responsibility that the products:**

### Mediant 2000

To which this declaration relates, is in conformity with all applicable essential requirements following the provisions of the European Directive **1999/5/EC**

The conformity assessment procedure used for this declaration is the Annex-II of the Directive.

Eli Nir

V.P. R&D

25 September 2003.

Este producto está en conformidad con la directiva Europea 1999/5

Dette produkt er i overensstemmelse med Europæiske Direktiver 1999/5

Dieses Produkt ist konform mit der europäischen Richtlinie 1999/5

Ce produit est conforme aux exigences de la Directive européenne 1999/5

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Το προϊόν, είναι σύμφωνο με τους κανονισμούς της Ευρωπαϊκής Κοινότητας 1999/5

Tæki þetta er í samræmi við tilskipun Evrópusambandsins 1999/5

Dette produktet er i samhörighet med det Europeiske Direktiv 1999/5

## Network Information and Intent of Use

The product is for access to ISDN at 2048 kb/s and for access to G.703 Leased lines at 2048 kb/s.

### Network Compatibility

The product supports all the Telecom networks in EU that comply with TBR4 and TBR13.

### Telecommunication Safety

The safety status of each port is declared and detailed in the table below:

Ports	Safety Status
<b>E1 or T1</b>	<b>TNV-1</b>
<b>Ethernet (100 Base-T)</b>	<b>SELV</b>

**TNV-1:** Telecommunication network voltage circuits whose normal operating voltages do not exceed the limits for SELV under normal operating conditions and on which over voltages from telecommunication networks are possible.

**SELV:** Safety extra low voltage circuit.

### FCC Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This equipment complies with Part 68 of the FCC rules and the requirements adopted by ACTA. On the bottom of this equipment is a label containing a product identifier in the format US:AC11SNANMED2KDC. If requested, this number must be provided to the telephone company.

The telephone company may make changes in the facilities, equipment, operations or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service

Should you experience trouble with this telephone equipment, please contact:

**AudioCodes Inc.**  
**San Jose, CA USA**  
**Tel: (408) 577 0488**

**Do not attempt to repair this equipment!**

**Facility Interface Code:** 04DU9.BN, 04DU9.DN, 04DU9.1KN, 4DU9.ISN  
**Service Order Code:** 6.0N  
**USOC Jack Type:** RJ21X or RJ48C

If this gateway causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice isn't practical, the telephone company will notify the customer as soon as possible. You will also be advised of your right to file a complaint with the FCC if you believe it is necessary.

### Safety Warning

**The unit may contain a Class I Laser/LED emitting device, as defined by 21 CFR 1040 and IEC825. Avoid staring into the beam.**

**Prior to installation, always correctly connect the chassis to a safety ground according to local laws. Only authorized, qualified service personnel must install and service this device.**

Refer to the following AudioCodes manuals for additional information:

Mediant 2000/MGCP-MEGACO User's Manual, Document #: LTRT-00727

Mediant 2000/H.323 User's Manual, Document #: LTRT-00699

Mediant 2000/H.323 Release Notes, Document #: LTRT-00696

Mediant 2000/SIP User's Manual, Document #: LTRT-00725

Mediant 2000/SIP Release Notes, Document #: LTRT-00726

TrunkPack/Mediant Series Release Notes, Document #: LTRT-00619

VoPLib User's Manual, Document #: LTRT-00844.

VoPLib API Reference Manual, Document #: LTRT-00840

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## Customer Support

Customer technical support and service are provided by AudioCodes' Distributors, Partners, and Resellers from whom the product was purchased. For Customer support for products purchased directly from AudioCodes, contact [support@audiocodes.com](mailto:support@audiocodes.com).

## Abbreviations and Terminology

Each abbreviation, unless widely used, is spelled out in full when first used. Only industry-standard terms are used throughout this manual. **Mediant 2000** refers to all versions: MGCP, MEGACO, H.323 and SIP, except where identified individually.

### Notice

This Fast Track Installation Guide describes quick installation of the AudioCodes **Mediant 2000** MGCP, MEGACO, H.323 or SIP Media Gateway, operating with software version 4.2. Information contained in this document is believed to be accurate and reliable at the time of printing. However, due to ongoing product improvements and revisions, AudioCodes cannot guarantee the accuracy of printed material after the Date Published nor can it accept responsibility for errors or omissions. Updates to this document and other documents can be viewed by registered Technical Support customers at [www.audiocodes.com](http://www.audiocodes.com) under Support / Product Documentation.

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This document is subject to change without notice.

Refer to the current release notes that may be included with your documentation or hardware delivery.

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## Table of Contents

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<b>1</b>	<b>Quickly Setting Up the Mediant 2000 .....</b>	<b>6</b>
<b>2</b>	<b>Installing the Mediant 2000 .....</b>	<b>7</b>
2.1	Unpacking .....	7
2.2	Package Contents .....	7
2.3	Installing the Mediant 2000 in 19-inch Rack or on Desktop.....	8
2.3.1	Installing a Mediant 2000 in a 19-inch Rack .....	8
2.3.2	Installing the Mediant 2000 on a Desktop.....	8
2.4	Cabling the Mediant 2000 .....	8
<b>3</b>	<b>Getting Started .....</b>	<b>12</b>
3.1	Correlating PC / Mediant 2000 IP Address & Subnet Mask .....	12
3.2	Accessing AudioCodes' Embedded Web Server .....	13
3.3	Setting Mediant 2000 IP Address / Subnet Mask .....	13
3.4	Restoring Your PC's IP Address / Subnet Mask .....	13
<b>4</b>	<b>Configuring MGCP-MEGACO Parameters .....</b>	<b>14</b>
<b>5</b>	<b>Configuring H.323 Parameters .....</b>	<b>16</b>
<b>6</b>	<b>Configuring SIP Parameters .....</b>	<b>18</b>
<b>7</b>	<b>Monitoring Channels – All Protocols .....</b>	<b>19</b>
<b>8</b>	<b>Trunk Configuration .....</b>	<b>21</b>
<b>9</b>	<b>Downloading Software Updates .....</b>	<b>23</b>
<b>10</b>	<b>Monitoring/Diagnosing the Mediant 2000 .....</b>	<b>25</b>

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## List of Figures

---

Figure 2-1: Mediant 2000 Front Panel (16 trunks).....	7
Figure 2-2: Mediant 2000 Rear Connectors (16 trunks, AC power) .....	9
Figure 2-3: Mediant 2000 Rear Panel Cabling (16 trunks, AC power) .....	10
Figure 2-4: 50-pin Female Telco Board-mounted Connector .....	10
Figure 2-5: Mediant 2000 Rear Panel Cabling (8 trunks, DC power)) .....	11
Figure 2-6: Pinout of RJ-48c Trunk Connectors .....	11
Figure 2-7: Pinout of RJ-45 LAN Connectors .....	11
Figure 3-1: Enter Network Password Prompt.....	13
Figure 4-1: Mediant 2000/MGCP-MEGACO Quick Setup.....	14
Figure 5-1: Mediant 2000/H.323 Quick Setup .....	16
Figure 5-2: Trunk Group Table.....	17
Figure 5-3: Tel to IP Routing Table .....	17
Figure 6-1: Mediant 2000/SIP Quick Setup.....	18
Figure 7-1: Trunk & Channel Status .....	19
Figure 7-2: Specific Channel Status Details .....	20
Figure 8-1: Trunk Configuration Screen .....	21
Figure 9-1: Downloading Software Updates.....	24
Figure 10-1: Mediant 2000 Front Panel.....	25

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## List of Tables

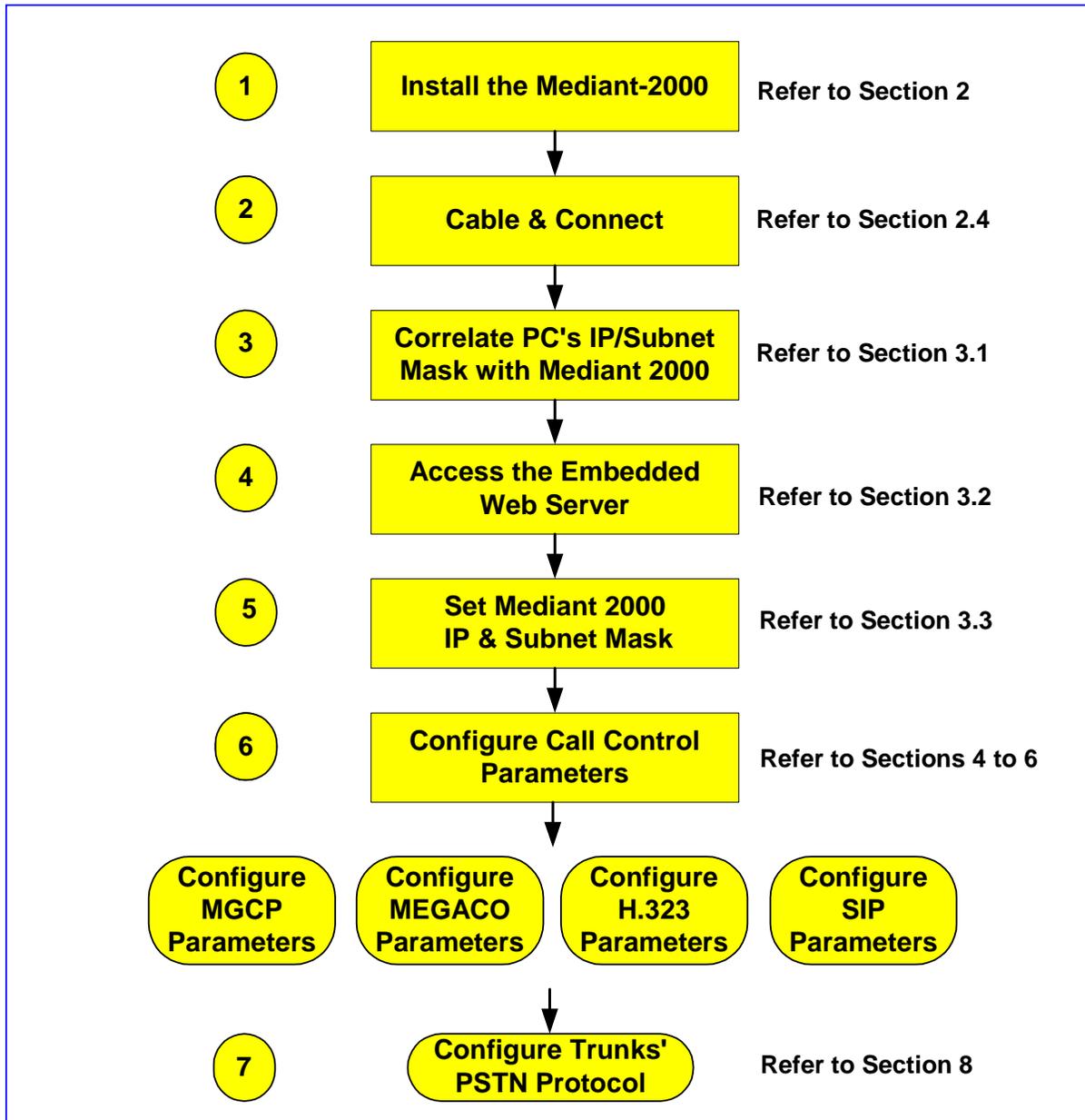
---

Table 2-1: Mediant 2000 Cables and Cabling Procedures.....	9
Table 2-2: E1/T1 Connections on each 50-pin Telco Connector.....	10
Table 3: Mediant 2000 Default IP Address / Subnet Mask.....	12
Table 10-1: Mediant 2000 Front Panel LED Indications.....	25

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# 1 Quickly Setting Up the Mediant 2000

➤ To quickly set up the Mediant 2000, follow these 7 procedures:



## 2 Installing the Mediant 2000

### 2.1 Unpacking

➤ **To unpack:**

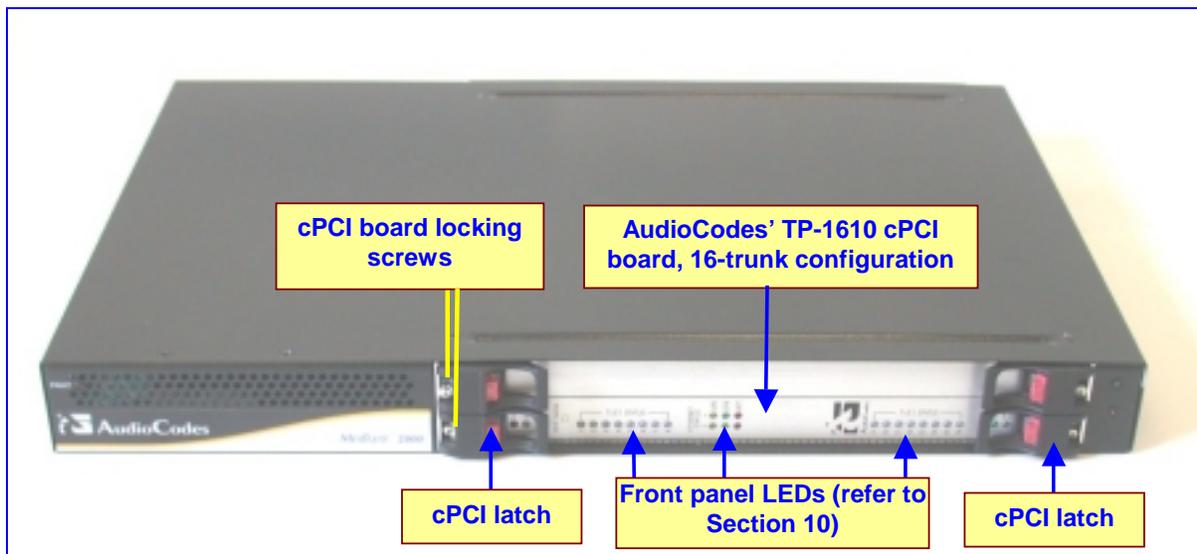
- Open the carton and remove packing materials
- Remove the **Mediant 2000** Media Gateway from the carton
- Check that there is no equipment damage
- Check, retain and process any documents
- Notify AudioCodes of any damage or discrepancies
- Retain any diskettes or CDs

### 2.2 Package Contents

Ensure that the **Mediant 2000** package contains (in addition to the device):

- For the dual AC power supply version of the **Mediant 2000** (documented in this Guide), two AC power cables are supplied; for the single AC power supply version of the **Mediant 2000**, 1 AC power cable is supplied.
- CD (software and documentation)
- Plastic envelope containing 2 brackets and bracket-to-device screws for 19-inch rack installation option

**Figure 2-1: Mediant 2000 Front Panel (16 trunks)**



The 8-trunk device's front panel is similar to the 16-trunk device's front panel (refer to Figure 2-1), *except for trunks 9-16 and corresponding LEDs*. The 4-trunk, 2-trunk and 1-trunk devices' front panels are *similar in appearance* to the 8-trunk device's front panel.

If the device supports 1 trunk, only the first LED is functional; if 2 trunks, the first two LEDs are functional; if 4 trunks, the first four LEDs are functional.

## 2.3 Installing the Mediant 2000 in 19-inch Rack or on Desktop

AudioCodes' Mediant 2000 can be installed, as required, on a desktop or in a standard 19-inch rack. Refer to Section 2.4 for cabling the device.

### 2.3.1 Installing a Mediant 2000 in a 19-inch Rack

Two brackets, supplied in a plastic envelope, must be attached to the flanks of the device to enable installation in a rack.

➤ **To install the Mediant 2000 in a 19-inch rack:**

1. Remove the 2 screws nearest the front panel on either side of the device.
2. Align a bracket over 2 holes on one side (so that the bracket's larger holes face front) and with the 2 replacement screws supplied, screw in the bracket.
3. Perform the same procedure on the other side.
4. Insert the **Mediant 2000** into the rack, line up the bracket holes with the rack frame holes, and use 4 standard rack screws (not supplied) to secure the brackets to the rack frame, and cable it as in Section 2.4. Note that there is an option for additional rear brackets.

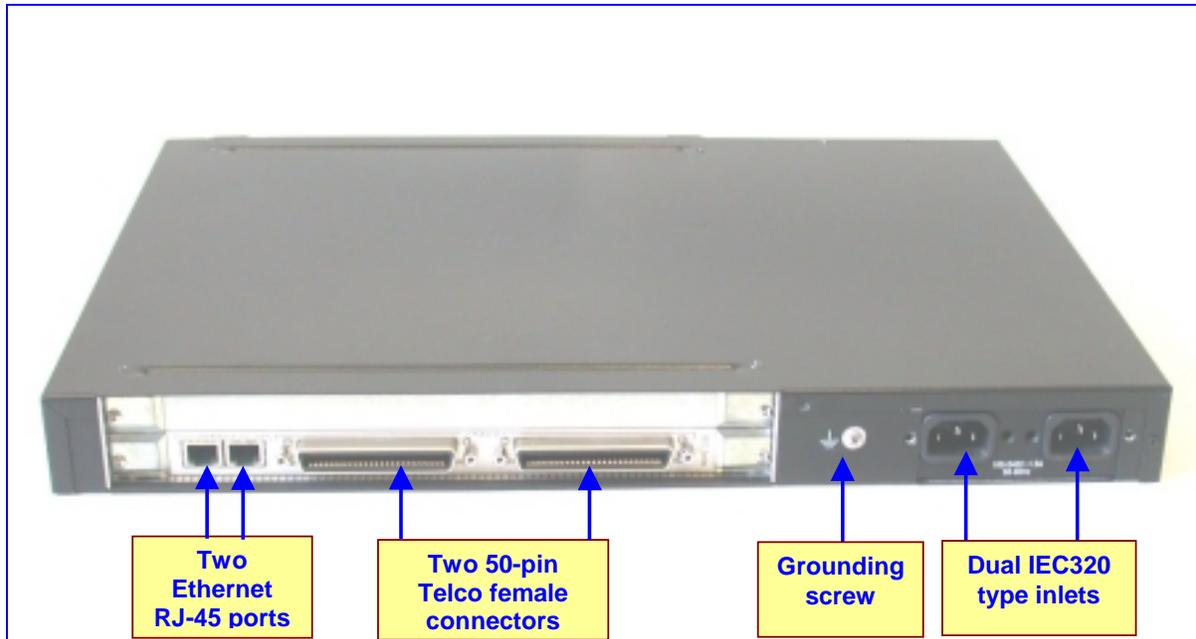
### 2.3.2 Installing the Mediant 2000 on a Desktop

No brackets are required. Simply place the device on the desktop in the position you require and cable it as in Section 2.4.

## 2.4 Cabling the Mediant 2000

Refer to Table 2-1 on page 9 for the rear panel cables and cabling procedures. Refer to Figure 2-2 for the rear connectors on the 16- trunk version. Refer to

on page 10 for the rear connectors on the 8-trunk version. Note that the **Mediant 2000** is available in *all configuration combinations*, i.e., AC or DC, in the 16-trunk, 8-trunk, 4-trunk, 2-trunk or 1-trunk device. The 16-trunk AC and the 8-trunk DC configuration combinations are illustrated here *as representative*.

**Figure 2-2: Mediant 2000 Rear Connectors (16 trunks, AC power)****Table 2-1: Mediant 2000 Cables and Cabling Procedures**

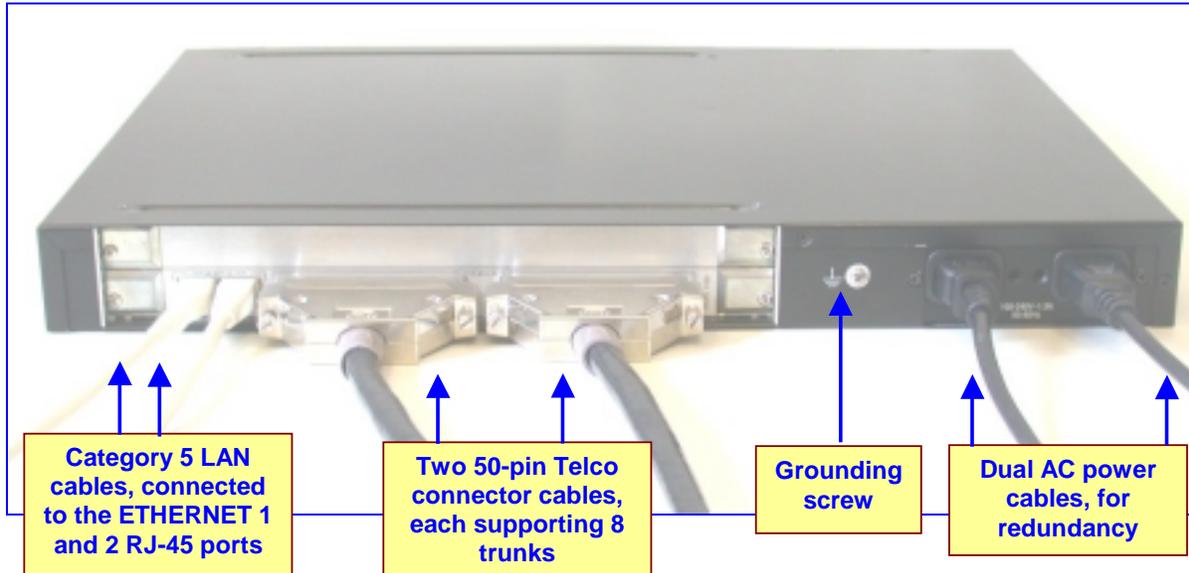
Cable	Cabling Procedure
<b>10/100 Base-T Ethernet cable</b>	Connect the 10/100 Base-T RJ-45 ETHERNET port directly to the PC network port with a crossed Ethernet cable (when changing the IP address). After changing the IP address, connect both ports to the IP network, using standard Ethernet cables. One port is for redundancy.
<b>50-pin Telco cable</b>	Customers assembling the 50-pin Telco cable connector <i>must</i> wire it according to the pinout in Figure 2-4 and Table 2-2 on page 10. Attach the (male) Telco cable connector to the 50-pin (female) connector on the Rear Transition Module (RTM). Connect the other end to the PBX/PSTN switch.
<b>Grounding</b>	Permanently connect the device to a suitable ground with the grounding screw on the rear connector panel, using 14-16 AWG wire.
<b>Power cable (for single AC)</b>	Connect the 100-240V~50-60 Hz power socket to the mains using the supplied cord (with the single AC power supply version of the device).
<b>Two power cables (for dual AC)</b>	Connect each of the dual 100-240V~50-60 Hz power sockets to separate mains circuits (for power source redundancy) using the two supplied cords (with the dual AC power supply version of the device)
<b>DC power cord</b>	Connect the wire's 2-pin female to its mating on the terminal block. The DC version is equipped with a -48 VDC (floating) inlet. Use #14-16 AWG cables for the DC connection.

➤ **To cable the Mediant 2000, take the following 6 steps:**

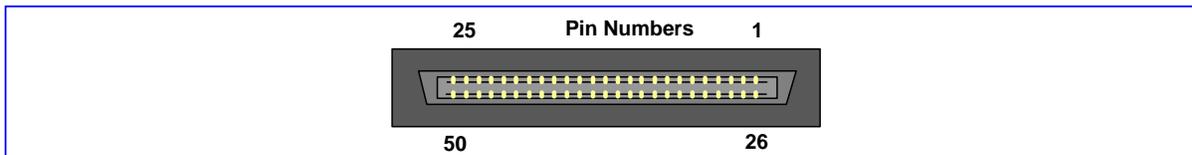
1. Connect the power supply using either the IEC32 connector cable (supplied) for the AC version (refer to Figure 2-2 and Figure 2-3) or the 2-pin connector for the DC version (refer to to Figure 2-5).

- When using the 16-trunk device (with two 50-pin Telco E1/T1 connectors on the RTM), connect a cable to the connector labeled “Trunks 1→8”; connect the 2<sup>nd</sup> cable to the connector labeled “Trunks 9→16”. These two 50-pin female Telco connectors on the RTM are shown in Figure 2-4 on page 10 and detailed in Table 2-2 on the same page.

**Figure 2-3: Mediant 2000 Rear Panel Cabling (16 trunks, AC power)**



**Figure 2-4: 50-pin Female Telco Board-mounted Connector**



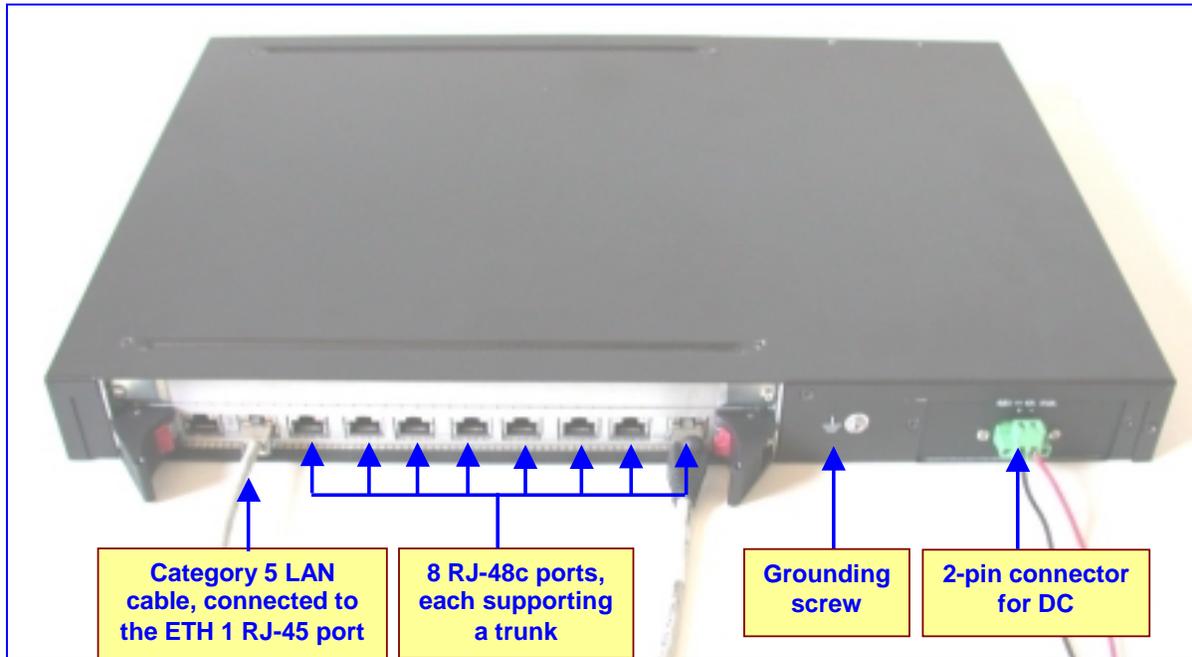
**Table 2-2: E1/T1 Connections on each 50-pin Telco Connector**

E1/T1 Number		Tx Pins (Tip/Ring)	Rx Pins (Tip/Ring)
1 to 8	9 to 16		
1	9	27/2	26/1
2	10	29/4	28/3
3	11	31/6	30/5
4	12	33/8	32/7
5	13	35/10	34/9
6	14	37/12	36/11
7	15	39/14	38/13
8	16	41/16	40/15

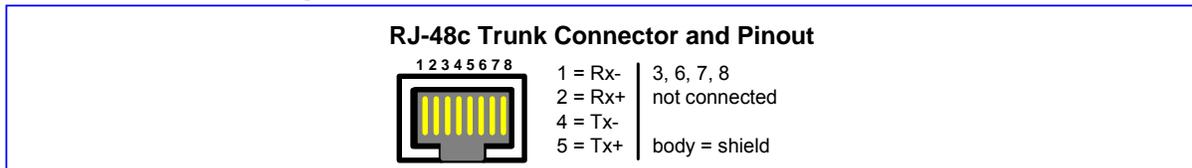
- When using an 8-trunk device (or 4 or 2 or 1-trunk device) with eight RJ-48c E1/T1 ports (or 4 or 2 or 1, respectively), connect E1/T1 cables to the ports (labeled “Trunks 1 to 8” in the case of the 8-trunk device) (refer to Figure 2-5 on page 11).

RJ-48c trunk connectors are wired according to Figure 2-5 below.

**Figure 2-5: Mediant 2000 Rear Panel Cabling (8 trunks, DC power))**

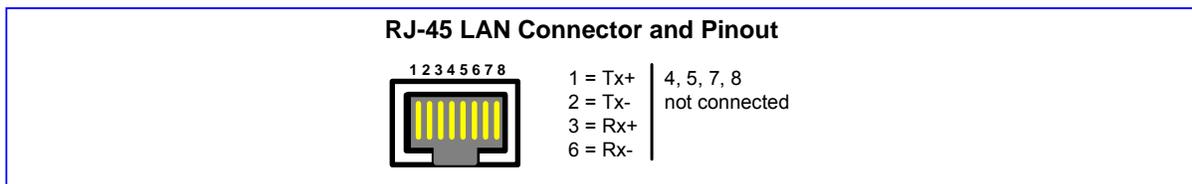


**Figure 2-6: Pinout of RJ-48c Trunk Connectors**



4. Connect a Category 5 LAN cable to an Ethernet RJ-45 port (and the other as optional redundancy/backup) to your IP network. Connect the other end of the Category 5 LAN cable to your IP network. The RJ-45 connectors are wired according to Figure 2-7.
5. Permanently connect the device to a suitable ground with the grounding screw on the rear connector panel, using 14-16 AWG wire.

**Figure 2-7: Pinout of RJ-45 LAN Connectors**



6. Power up the device; installation is now complete.

## 3 Getting Started

AudioCodes' **Mediant 2000** application software already resides in the device's flash memory when it is supplied (with factory default parameters). **Mediant 2000** devices are also supplied with an Embedded (integrally stored) Web Server, used to configure the device and monitor it during run time. Modifications made to the **Mediant 2000** via the Embedded Web Server (not explicitly requiring a reset) are "on-the-fly" and do not affect service.

AudioCodes' Embedded Web Server enables Users to:

- Set the **Mediant 2000** device's IP address & Subnet Mask (refer to Section 3.3 on page 13)
- Configure control protocol parameters:
  - MGCP/MEGACO (refer to Section 4 on page 14)
  - H.323 (refer to Section 5 on page 16)
  - SIP (refer to Section 6 on page 18)
- Monitor trunk and channel status (refer to Figure 7-1 on page 19)
- Download software updates (refer to Section 9 on page 23)

### 3.1 Correlating PC / Mediant 2000 IP Address & Subnet Mask

Before using your Web browser to access the Mediant 2000 device's Embedded Web Server, change your PC's IP address and Subnet Mask to correspond with the **Mediant 2000's** factory default IP address and Subnet Mask, shown in Table 3. For details on changing the IP address and Subnet Mask of your PC, refer to Windows™ Online Help (Start>Help).

**Table 3: Mediant 2000 Default IP Address / Subnet Mask**

E1/T1 Trunks	IP Address	Subnet Mask
Trunks 1-8	10.1.10.10	255.255.0.0
Trunks 9-16	10.1.10.11	255.255.0.0

**Note:** The two IP addresses (one IP address for Trunks 1-8 and one for Trunks 9-16) refer to two different modules (AudioCodes' TPM-1100), which reside in the same board (AudioCodes' TP-1610) inside the Mediant 2000.

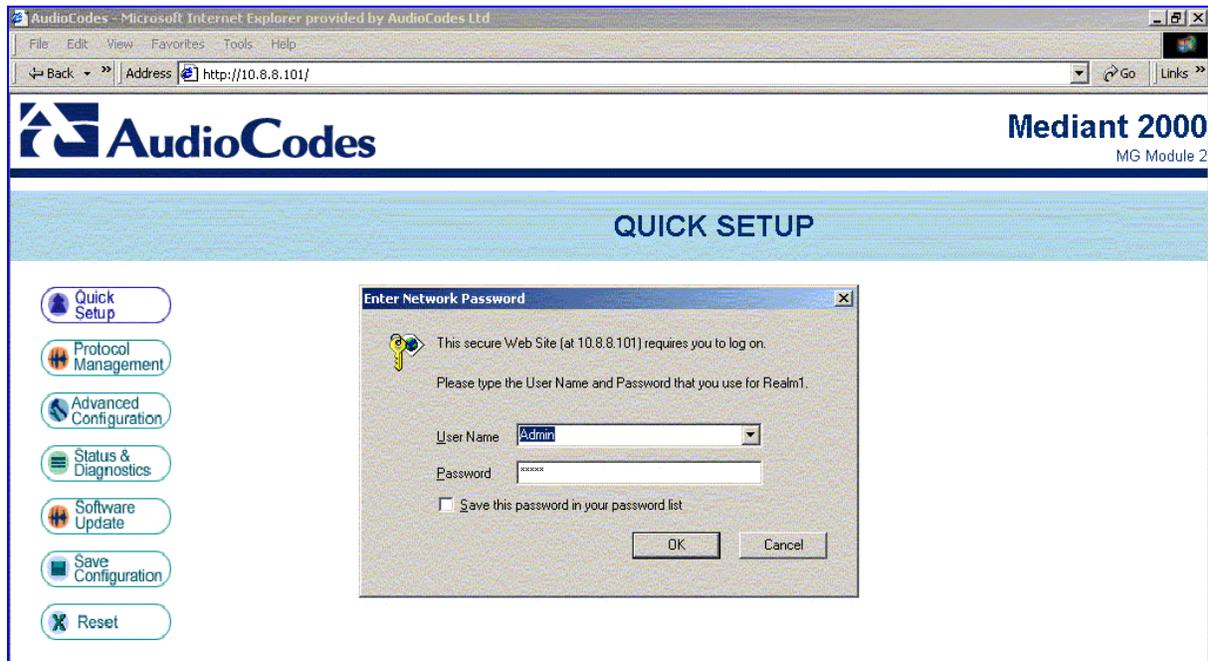
**Note:** Write down the IP Address and Subnet Mask you assign the device. Do the same when defining User Name and Password (refer to Section 3.2 on page 13). If the Embedded Web Server is unavailable (for example, if you've lost your User Name and Password), use AudioCodes' BootP/TFTP Server to access the device, "reflash" the load and reset the password (refer to the Mediant 2000 User's Manual for detailed information on using a BootP/TFTP server to access the Mediant 2000).

## 3.2 Accessing AudioCodes' Embedded Web Server

### ➤ To access the Embedded Web Server:

1. Open any standard Web-browsing application such as Microsoft™ Internet Explorer™ (Ver. 5.0 and higher) or Netscape™ Navigator™ (Ver. 7.0 and higher).
2. Specify the IP address of the Media Gateway in the 'Address' field (e.g., http://10.1.10.10); the Embedded Web Server 'Enter Network Password' screen appears, shown in Figure 3-1.

Figure 3-1: Enter Network Password Prompt



3. Enter the User Name (default: Admin), and Password (default: Admin),. Note that the User Name and Password fields are case-sensitive. Click OK; the 'Quick Setup' screen is accessed, shown respectively in Figure 4-1 on page 14 (MGCP/MEGACO), Figure 5-1 on page 16 (H.323), and Figure 6-1 on page 18 (SIP).

## 3.3 Setting Mediant 2000 IP Address / Subnet Mask

### ➤ To set the Mediant 2000 IP Address / Subnet Mask:

- In 'Quick Setup', set the **Mediant 2000** 'IP Address' and 'Subnet Mask' fields under 'IP Configuration' to correspond with your network IP address settings; click 'RESET' and click OK in the prompt.

## 3.4 Restoring Your PC's IP Address / Subnet Mask

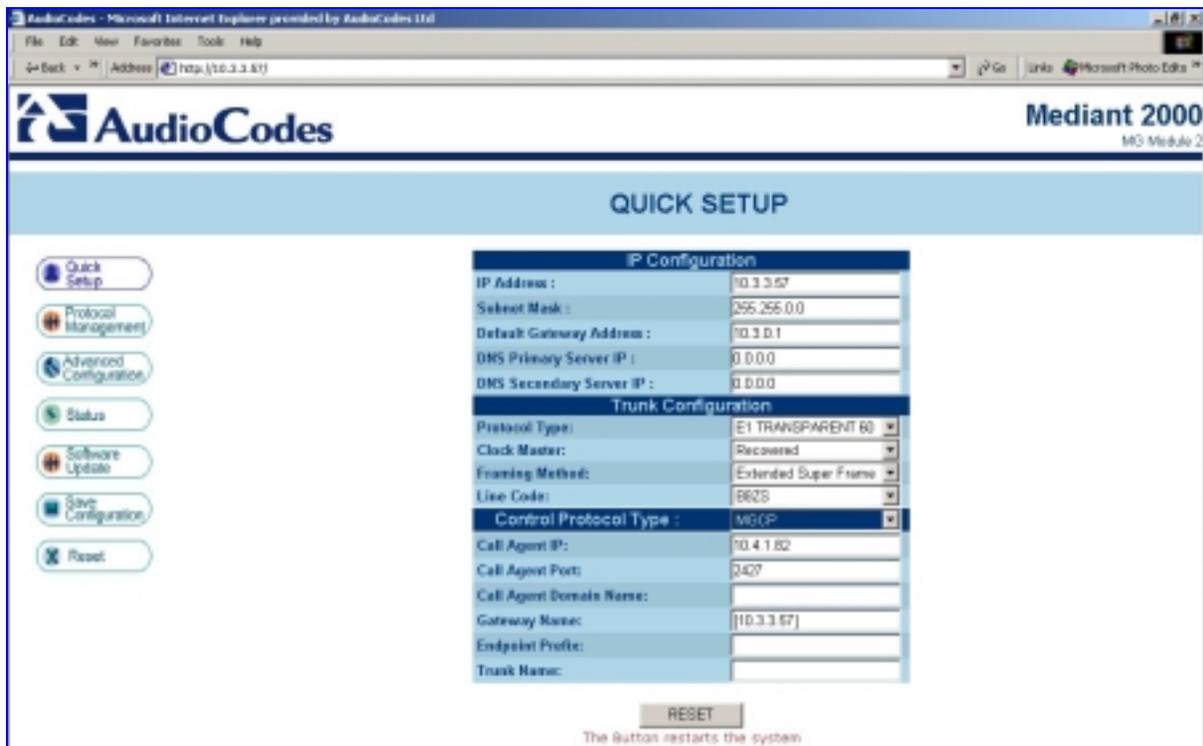
After setting the **Mediant 2000** IP address/Subnet Mask, restore your PC's IP address and Subnet Mask to what it originally was. If necessary, restart your PC and re-access the **Mediant 2000** via the Embedded Web Server with its new IP address, to configure the device (refer to Section 4).

## 4 Configuring MGCP-MEGACO Parameters

This section describes configuration of *basic* MGCP-MEGACO parameters, using a standard Web browser such as Microsoft™ Internet Explorer™ (Ver. 5.0 and higher) or Netscape™ Navigator™ (Ver. 7.0 and higher) to access the Embedded Web Server.

- To configure basic MGCP-MEGACO parameters take the next 12 steps:

Figure 4-1: Mediant 2000/MGCP-MEGACO Quick Setup



IP Configuration	
IP Address :	10.3.3.57
Subnet Mask :	255.255.0.0
Default Gateway Address :	10.3.0.1
DNS Primary Server IP :	0.0.0.0
DNS Secondary Server IP :	0.0.0.0
Trunk Configuration	
Protocol Type:	E1 TRANSPARENT 80
Clock Master:	Recovered
Framing Method:	Extended Super Frame
Line Code:	B8ZS
Control Protocol Type :	
Call Agent IP:	10.4.1.82
Call Agent Port:	2427
Call Agent Domain Name:	
Gateway Name:	[10.3.3.57]
Endpoint Profile:	
Trunk Name:	

1. Define fields “DNS Primary Server IP” and “DNS Secondary Server IP” (if your network features a DNS server; clarify with your Network Administrator).
2. Under the section “Trunk Configuration”, select “Protocol Type” and “Framing Method”. (For E1 trunks, always set the Framing Method to Extended Super Frame). Note that the Trunk Configuration parameters are *global*, and apply to all trunks. To configure trunks *per trunk*, refer to Section 8 on page 21.
3. Select the Clock Master (the trunk clock source) from the drop-down list: Choose either ‘Recovered’ (the clock is recovered from the trunk; default) or ‘Generated’ (the trunk clock source is provided by the internal/TDM bus clock source, depending on the parameter ‘TDM Bus Clock Source’ (Advanced Configuration > TDM Bus Settings)
4. Select the Line Code. Choose either B8ZS (bipolar 8-zero substitution) for T1 trunks only; HDB3 (high-density bipolar 3) for E1 trunks only; or AMI (for both T1 and E1).
5. Define the “Call Agent IP” if your network doesn’t feature a DNS server that will automatically define the Call Agent’s IP address. If you have a DNS server, the field is optional.

6. Define the “Call Agent Port”. The default is 2427.
7. Enter the “Call Agent Domain Name”. When using the DNS server option, enter the Domain Name of the Call Agent operating with the **Mediant 2000**. The DNS server will automatically deduce the Call Agent’s IP address from the Domain Name.
8. Assign a name to the device in the “Gateway Name” field. (For example: ‘gateway1.com’). Ensure that the name you choose is the one that the Call Manager/Agent is configured with to identify your **Mediant 2000**.
9. If you’re working with MGCP, define an “Endpoint Prefix”. Ensure that the prefix you choose is the one that the Call Manager/Agent is configured with to identify your device.
10. Define a “Trunk Name”. Ensure that the name you choose is the one that the Call Manager/Agent is configured with to identify your **Mediant 2000**.
11. If you’re working with MEGACO, define an “Endpoint Name”. Ensure that the name you choose is the one that the Call Manager/Agent is configured with to identify your device.
12. Click the RESET button and click OK in the prompt; wait approx. 60 seconds; the Ready and LAN LEDs on the front panel are lit green. Now you can operate your phones according to your specific configurations.

Use the “Advanced Configuration” and “Protocol Management” screens to modify all other Mediant Gateway parameters.

For detailed directions of operating under Web management control, refer to Section 6.2 of the Mediant 2000/MGCP-MEGACO User’s Manual, Document #: LTRT-00698.

**Now continue with Section 7 Monitoring Channels – All Protocols on page 19 until the end of this guide.**

## 5 Configuring H.323 Parameters

This section describes configuration of *basic* H.323 parameters, using a standard Web browser such as Microsoft™ Internet Explorer™ (Ver. 5.0 and higher) or Netscape™ Navigator™ (Ver. 7.0 and higher) to access the Embedded Web Server.

- To configure basic Mediant 2000/H.323 parameters:

**Figure 5-1: Mediant 2000/H.323 Quick Setup**

IP Configuration	
IP Address :	10.8.24.13
NAT IP Address :	0.0.0.0
Subnet Mask :	255.255.0.0
Default Gateway IP Address :	10.8.0.1

H323 Parameters	
Working with Gatekeeper :	No
GateKeeper IP address :	10.8.8.80
Enable Annex D/T.38 FAX relay :	Yes
Coder :	g711Alaw64k(20ms)

Tables	
Tel to IP Routing table:	-->
Trunk Group Table:	-->

**RESET**

The Button Restarts the system

1. Set the parameters under the 'H323 Parameters' section, shown in Figure 5-1:
  - When using a Gatekeeper set the "Working with Gatekeeper" field to "Yes" and specify the *primary* Gatekeeper's IP address in the "Gatekeeper IP Address" field.
  - Leave parameters "Enable Annex D/T.38 Fax Relay" and "Coder" at their defaults unless your technical requirements differ.
2. Open the "Trunk Group Table" and configure the E1/T1 "B" channels to be activated (refer to Figure 5-2 on page 17). For example, for four T1 trunks, enter "0-95" in the "Channels" field and the starting phone number, such as 1001, in the adjacent "Phone Number" field; phone numbers 1001 to 1096 are automatically allocated to the channels. These are virtual numbers, used only to define enabled B-channels. For eight T1 trunks, set the "Channels" field to "0-191".
3. After configuring, press the 'SUBMIT' button and close the window.

**Figure 5-2: Trunk Group Table**

		Trunk Group Index 1-12	
Trunk Id	Channels	Phone Number	Trunk Group Id
1	0-95	1001	
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

- Open the “Tel to IP Routing Table” (when working without a Gatekeeper, this internal routing table *must* be defined). Configure the “Destination Phone Prefix” (the prefix of the called number) and its associated “IP Address”. In Figure 5-3 (example), an incoming call with the called number starting with 10xx or 20xx is sent to IP address 10.2.32.160. When a Gatekeeper is used, the routing table can be used optionally as fallback.

**Figure 5-3: Tel to IP Routing Table**

		Routing Index 1-10	
	Destination Phone Prefix	IP Address	
1	10	10.2.32.160	
2	20	10.2.32.160	
3	30	10.2.32.170	
4			
5			
6			
7			
8			
9			
10			

- After configuring, click the ‘SUBMIT’ button and close the window. Reset the device by clicking the ‘RESET’ button in the main screen. Wait about 60 seconds and refresh the Web page.
- For trunk configuration, refer to Section 8 on page 21.

Use the “Advanced Configuration” and “Protocol Management” screens to modify all other H.323 parameters.

For detailed directions of operating under Web management control, refer to the Mediant 2000/H.323 User’s Manual, Document #: LTRT-00699 Rev H01.

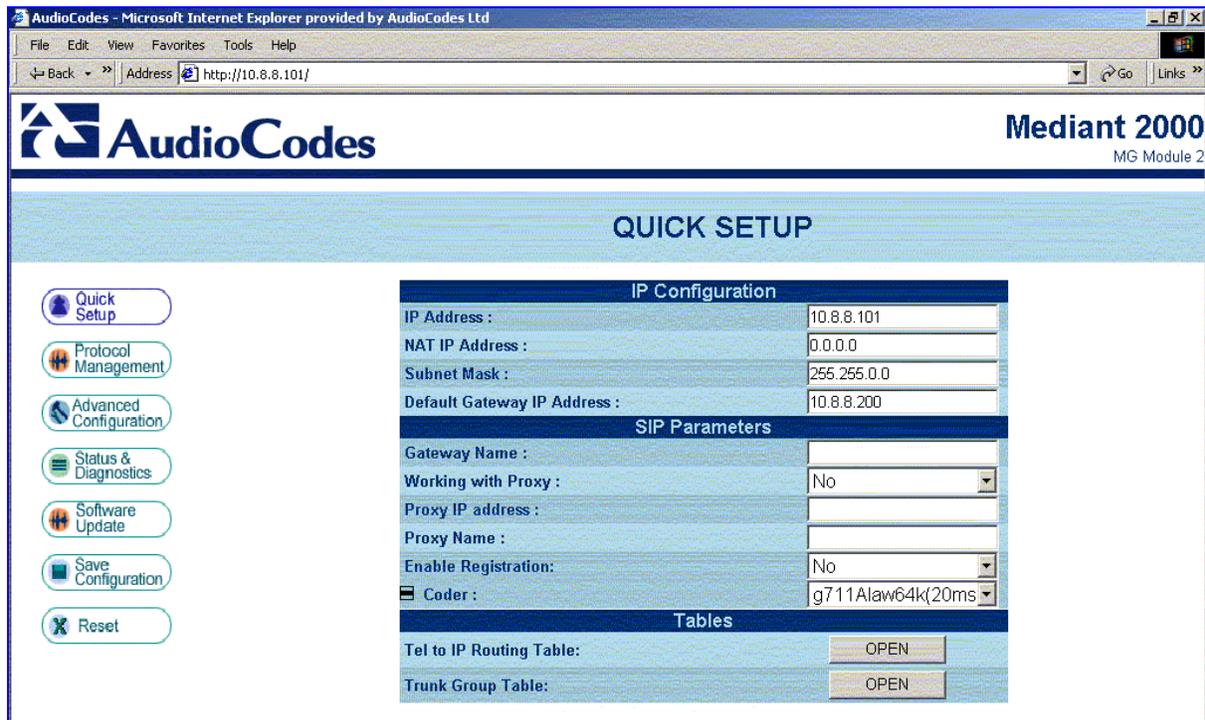
**Now continue with Section 7 Monitoring Channels – All Protocols on page 19 until the end of this guide.**

## 6 Configuring SIP Parameters

This section describes configuration of *basic* SIP parameters, using a standard Web browser such as Microsoft™ Internet Explorer™ (Ver. 5.0 and higher) or Netscape™ Navigator™ (Ver. 7.0 and higher) for Embedded Web Server access.

- To configure basic Mediant 2000/SIP parameters:

**Figure 6-1: Mediant 2000/SIP Quick Setup**



IP Configuration	
IP Address :	10.8.8.101
NAT IP Address :	0.0.0.0
Subnet Mask :	255.255.0.0
Default Gateway IP Address :	10.8.8.200

SIP Parameters	
Gateway Name :	
Working with Proxy :	No
Proxy IP address :	
Proxy Name :	
Enable Registration:	No
Coder :	g711Alaw64k(20ms)

Tables	
Tel to IP Routing Table:	OPEN
Trunk Group Table:	OPEN

1. Set the parameters under the 'SIP Parameters' section, shown in Figure 6-1:
  - Enter the Mediant 2000 Domain Name in the field 'Gateway Name'. If the field is not specified, the Mediant 2000's IP address is used instead (default).
  - Leave the field 'Working with Proxy' at its default ('No') when no Proxy is used (when only the internal routing fields are used to route the phones). Otherwise, when working with Proxy, select 'Yes' and enter the IP address of the Proxy IP Server in the field 'Proxy IP Address'.
  - If the 'Proxy Name' field is used, it will replace the "Proxy IP Address" in all SIP messages. This means that messages will still be sent to the physical "Proxy IP Address" but the "TO" field will contain the 'Proxy Name' instead.
  - Configure 'Enable Registration' to 'Yes' or 'No'. 'No' = the Mediant 2000 will not register to the Proxy (default); 'Yes' = the Mediant 2000 will register to the Proxy at power up.
  - Select the coder that best suits your VoIP system requirements. The default coder is: G7231 (30 msec).

**Note:** From this step on, routing the phones in the internal routing tables is similar in SIP and H.323, therefore refer to Step 2 on page 16, until the reset in Step 5. (Note that the equivalent of the Gatekeeper in H.323 is the Proxy in SIP.)

For detailed directions of operating under Web management control, refer to Section 6.2 of the Mediant 2000/SIP User's Manual, Document #: LTRT-00725 Rev 001.

Use the "Advanced Configuration" and "Protocol Management" screens to modify all other SIP parameters.

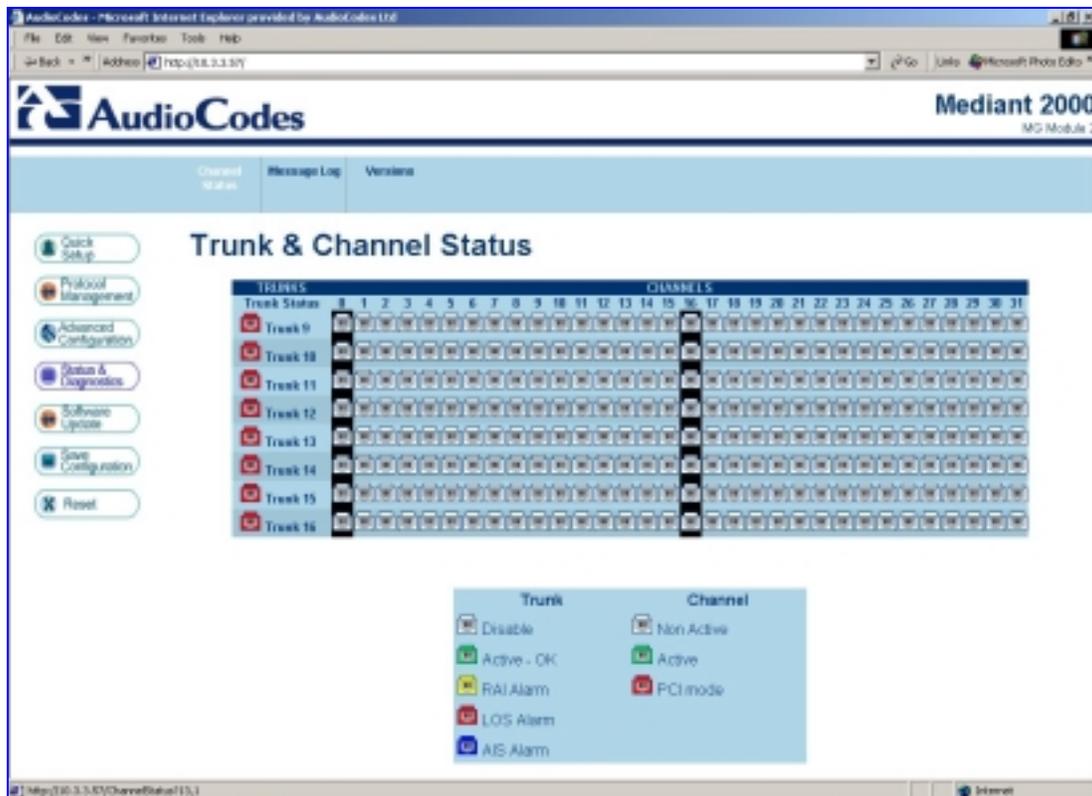
**Now continue with Section 7 below, until the end of this guide.**

## 7 Monitoring Channels – All Protocols

➤ To monitor status & detail of all channels take these 2 steps:

1. Click the 'Status & Diagnostics' menu>'Channel Status'; the 'Channel Status' screen opens (Figure 7-1), the color-coding showing the Status of each channel individually.

**Figure 7-1: Trunk & Channel Status**



2. To view the status of a specific channel, click on it and the Specific Channel Status Details are displayed as shown in Figure 7-2 on page 20.

Figure 7-2: Specific Channel Status Details

-  [Channel Status](#)
-  [RTP/RTCP Settings](#)
-  [Fax & Modem Settings](#)
-  [Transport Settings](#)
-  [Voice Settings](#)
-  [IBS Detectors Settings](#)
-  [Jitter Buffer Settings](#)

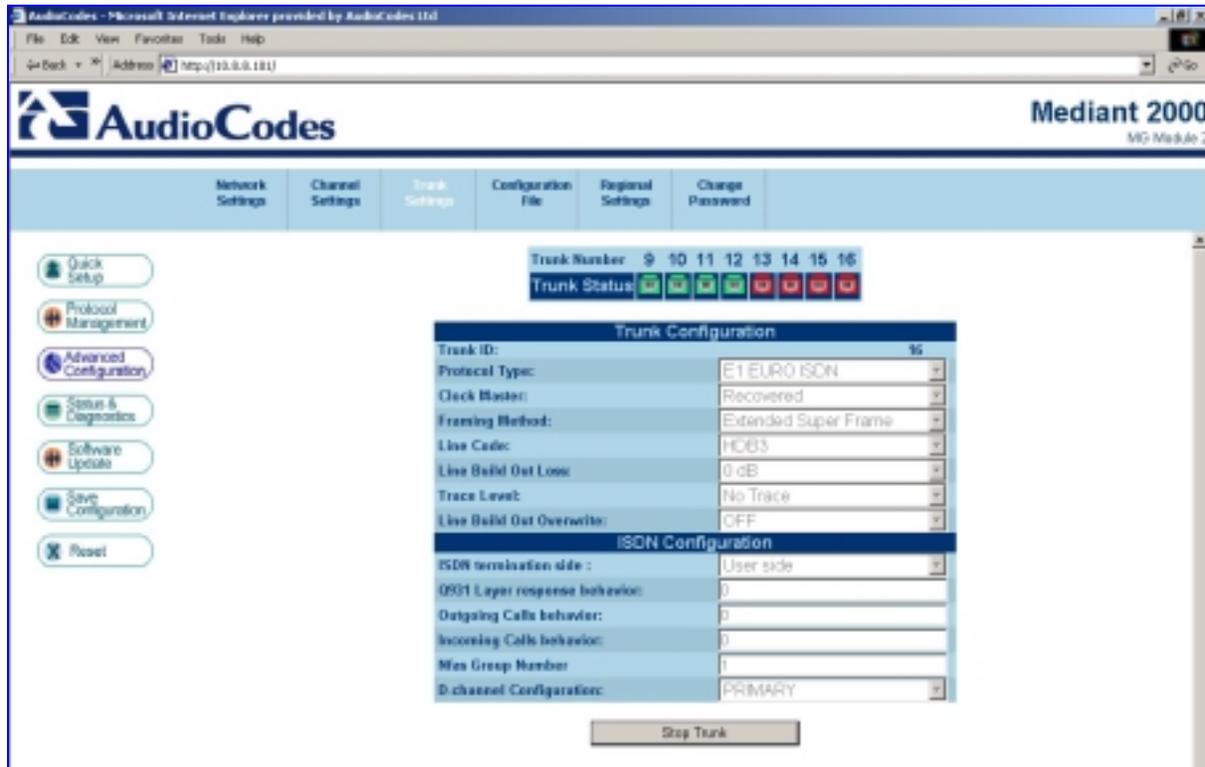
<i>Channel Status</i>	
Channel :	1
Active :	YES
RTP Active :	YES
Bypass NIC :	1
Pending Idle :	0
Tx Silence Period :	NO
Rx Silence Period :	NO
Tx Fax Mode :	0
Rx Fax Mode :	0
Tx DTMF Period :	NO
Rx DTMF Period :	NO
Packets To DSP Counter :	0
Jitter Buffer Error Counter :	0
Jitter Buffer ForcedPacketLost :	0
Jitter Buffer ForcedPacketAddition :	0
Jitter Buffer UnderRun Counter :	0
Jitter Buffer OverRun Counter :	0
Jitter Buffer Accumulated Delay :	0

## 8 Trunk Configuration

➤ To configure trunks, take the following steps:

1. Open the “Advanced Configuration” menu and choose the submenu “Trunk Settings”; the Trunk Configuration screen opens (refer to Figure 8-1).

Figure 8-1: Trunk Configuration Screen



2. Choose the specific trunk you want to configure, by clicking its icon (example, trunk 16):



In this example, trunks 9-12, colored green, are synchronized across all 3 layers; trunks 13-16, colored red, are unsynchronized.

The first parameter listed, Trunk ID, changes according to the trunk you click.

3. Click the button “Stop Trunk” in order to enable configuration; the same screen opens, only configuration is now enabled and two new buttons are displayed instead of the “Stop Trunk” button, the “Apply Trunk Settings” button and the “Apply to all Trunks” button.
4. Under the section “Trunk Configuration”, select “Protocol Type” and “Framing Method”. Since in the example displayed in Figure 8-1 Protocol Type was configured as E1 EURO ISDN, the ISDN parameters are displayed. Configure the parameter “ISDN Termination Side” as “User side” when the PSTN or PBX side is configured as “Network side”, and vice-versa. If you don’t know the Mediant 2000 ISDN termination side, choose “User side” and then refer to the Status & Diagnostics screen. If the D-channel alarm is

indicated, choose “Network side”. (For E1 trunks, always set the Framing Method to Extended Super Frame).

5. Select the Clock Master (the trunk clock source) from the drop-down list: Choose either ‘Recovered’ (the clock is recovered from the trunk; default) or ‘Generated’ (the trunk clock source is provided by the internal/TDM bus clock source, depending on the parameter ‘TDM Bus Clock Source’).

To access this parameter (TDM Bus Clock Source) in H.323/SIP configured devices, append the suffix: “TDMBusSettings“ to the IP address in the Web browser’s ‘Address’ field (e.g., <http://10.1.229.17/TDMBusSettings>). Note that the suffix is case-sensitive and should be entered as it is exemplified here.

To access this parameter (TDM Bus Clock Source) in MGCP/MEGACO configured devices, click menu Advanced Configuration > TDM Bus Settings.

6. Select the Line Code. Choose either B8ZS (bipolar 8-zero substitution) for T1 trunks only; HDB3 (high-density bipolar 3) for E1 trunks only; or AMI (for both T1 and E1).
7. Click the button “Apply Trunk Settings” (to apply to this specific trunk) or the button “Apply To All Trunks” (to apply to all trunks, globally).

## 9 Downloading Software Updates

From the CD accompanying your **Mediant 2000** or received as an e-mail attachment from AudioCodes' Customer Support ([support@audiocodes.com](mailto:support@audiocodes.com)), Users can download (using AudioCodes' Embedded Web Server) the following files:

- **mediant.cmp**: This is the main software image file. Download the file to change the software version (for example).
- **mediant.ini**: Download the file to provision the **Mediant 2000** parameters. The Embedded Web Server enables practically full **Mediant 2000** provisioning, but Customers may occasionally require new feature configuration parameters, in which case this file is downloaded. Note that the *INI* file download only provisions parameters that are contained in the *INI* file.

**Note:** When updating **mediant.cmp**, it is mandatory to replace **mediant.ini** as well (there is always a **mediant.ini** file to match the **mediant.cmp** file).

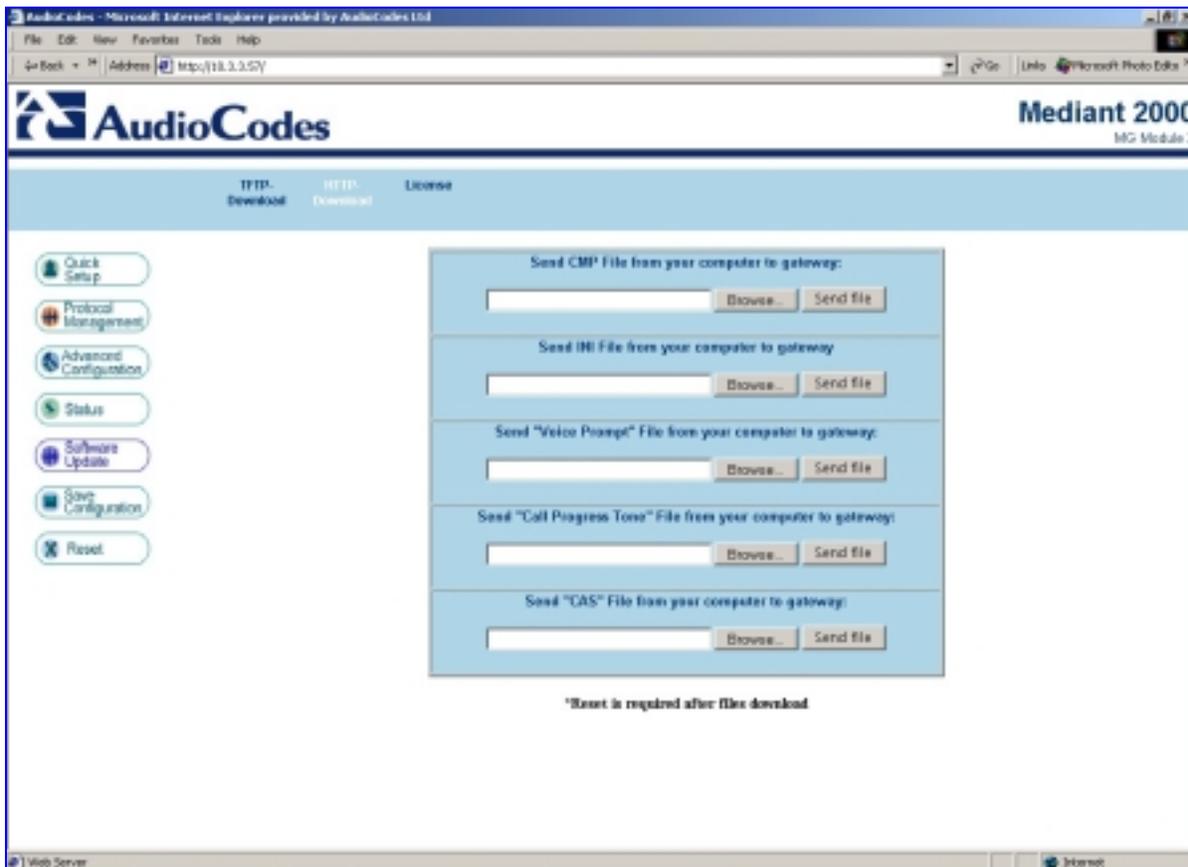
- **usa\_tones.dat**: This is a region-specific, telephone exchange-dependent file. Call Progress Tones provide call status/call progress to Customers, operators, and connected equipment. Default Tones: U.S.A.
- **usa\_tones.ini**: *the ini file is the value of the different* Call Progress Tones files (frequency, cadence, etc.). To convert the **usa\_tones.ini** file, which is a .txt file, to a **usa\_tones.dat** file that can be downloaded into the **Mediant 2000**, use the Call Progress Tones file generator utility **TPDMUtil.exe**
- **cas.dat**: E1/T1 CAS signaling files, such as **E\_M\_WinkTable.dat**, These files aren't needed for ISDN protocols.
- **\*.dat Voice Prompts file**:

If you have an MGCP/MEGACO-configured **Mediant 2000**: The \*.dat Voice Prompts file is played by the device during the phone conversation on Call Agent request. Download if you have an application requiring Voice Prompts.

If you have an H.323 or SIP-configured **Mediant 2000**: The \*.dat Voice Prompts file is played by the device on request. Download the file if you have VXML-supported device (which requires Voice Prompts).

➤ **To download software updates, take these 5 steps:**

1. Access AudioCodes' Embedded Web Server in the **Mediant 2000** (refer to Section 3.2).
2. Click the "Software Update" menu and click link 'HTTP Download' (if you have a TFTP server you can optionally click link TFTP Download); the "Send file (CMP, INI, Voice Prompt, Call Progress Tones or CAS) from your computer to gateway" screen opens; refer to Figure 9-1.

**Figure 9-1: Downloading Software Updates**


3. To download the latest version of the \*.CMP software image file, the *INI* file, Call Progress Tones (\*.DAT) file and/or the \*.DAT Voice Prompts file, click on the 'Browse' button adjacent to the file you require and navigate to the location of the file (after receiving it from AudioCodes or your local supplier).
4. Click the adjacent 'Send File' button; the file download process is begun. When the download is complete, a verification message is displayed at the bottom of the screen: 'File download succeeded'.
5. Click the 'Reset' button and the "OK" prompt (a reset is not required when downloading a \*.CMP file as it's performed automatically; a reset is only required when downloading the other files); after self-testing, the Ready and LAN LEDs on the front panel are lit green. Any malfunction causes the Ready LED to change to red.

## 10 Monitoring/Diagnosing the Mediant 2000

This section describes **Mediant 2000** LEDs (indicating device status, E1/T1 signals status, LAN status and cPCI status), enabling Users to identify error conditions and to provide a solution or workaround. Refer to the User's Manual for information on self-testing when the hardware is initialized, SNMP traps and SysLog event notification messages. Figure 10-1 shows the Mediant 2000 front panel LEDs. Table 10-1 describes the function of the LEDs as they appear from left to right on the front panel.

**Figure 10-1: Mediant 2000 Front Panel**



**Table 10-1: Mediant 2000 Front Panel LED Indications**

LED Name	LED Color	LED Function	
FAIL	Red	Normally OFF; Red shows board failure (fatal error)	
ACT	Green	Board download & initialization sequence OK	bicolor LED
	Yellow	N/A	
Status for E1/T1 Trunks Numbered 1 to 8 and 9 to 16	Green	Trunk Layer 1 (at least) is synchronized (normal operation)	bicolor LEDs
	Red	Loss due to any of the following 4 signals:	
	LOS	Loss of Signal	
	LFA	Loss of Frame Alignment	
	AIS	Alarm Indication Signal (the Blue Alarm)	
	RAI	Remote Alarm Indication (the Yellow Alarm)	
LINK	Green	All OK with the link.	
ACT	Yellow	Transmit/Receive Activity	
PWR	Green	Power is supplied to the board	
SWAP READY	Blue	The cPCI board can be removed. Before removing the board, wait for this (blue) LED to flash ON and then stay OFF.	
		The cPCI board was inserted successfully.	

**US:** AudioCodes Inc, 2890 Zanker Road, Suite # 200, San Jose, CA 95134.  
Tel: 408-577-0488 - Fax: 408-577-0492

**International:** AudioCodes Ltd, 4 HaHoresh Street, PO Box 14, Yehud 56470, Israel.  
Tel: +972-3-539 4000 - Fax: +972-3-539 4040

**China:** AudioCodes Ltd, Room 2811-12, JingGuang Center,  
HuJiaLou, Chaoyang District, Beijing 100020, P.R.China.  
Tel: +86-10-6597-4134/5 - Fax: +86-10-6597-4260

**Japan:** S Building B1F, 2-30-2, Chuou, Nakano-ku, Tokyo 164-0011, Japan  
Tel: +81-3-5348-1405 - Fax: +81-3-5348-1405

