media5 corporation

Mediatrix ®

Hardware Installation Guide

Mediatrix® 3600 Series
Digital Gateways
Mediatrix 3621 / 3631 / 3632 (E1 PRI)

Product Version 1.1   Document Revision 14

July 16, 2010

RoHS COMPLIANT 2002/95/EC

50

Media5 Corporation
4229 Garlock Street
Sherbrooke, Québec, Canada J1L 2C8

Mediatrix® 3600 Series Hardware Installation Guide

© 2010, Media5 Corporation

Trademarks

Microsoft and Windows are registered trademarks of Microsoft Corporation.

Adobe and Acrobat are registered trademarks of Adobe Systems Incorporated.

All other trademarks and registered trademarks are the property of their respective owners.

Third-Party Software Copyright Information

The Mediatrix® 3600 Series firmware aggregates some third-party software modules (open source and commercial) that are distributed to you in accordance with their respective licenses. Refer to the *Third Party Software Copyright Information* addendum available on the Mediatrix Download Portal, which lists the third-party software modules along with any copyright and license information.

Contents

Preface

Chapter 1

Chapter 2

Chapter 3

Chapter 4

Appendix A

Appendix B

Appendix C

Appendix D

Appendix E

Appendix F

About this Manual

Thank you for purchasing the Mediatrix 3600 Series from Media5 Corporation.

The Mediatrix 3600 Series ISDN VoIP Digital Gateways allow enterprises to lower communications costs over any IP link. The Mediatrix 3600 units constitute an ideal solution for enterprise voice applications or for connecting to a service provider's broadband access.

Table 1: Mediatrix 3600 Series Models

Model	Interfaces	VoIP Call Capacity
Mediatrix 3621	1xE1-PRI interface	up to 15
Mediatrix 3631	1xE1-PRI interface	up to 30
Mediatrix 3632	2xE1-PRI interface	up to 60

Document Objectives

The *Mediatrix 3600 Hardware Installation Guide* provides technical information on how to physically install the Mediatrix 3600. It also describes the cabling required for the Mediatrix 3600 device.

The information included in this guide consists of:

- ▶ Hardware descriptions of the Mediatrix 3600 device
- ▶ Hardware installation instructions
- ▶ Installation scenarios examples
- ▶ LED indications
- ▶ Cabling and pin-out data

> **Note:** There are many flavours of the Mediatrix 3600 device. Because of this, some of the information provided may not apply to your particular Mediatrix 3600 device model.

Please refer to the *Dgw v1.1 Software Configuration Guide* for software configuration information.

Use the *Mediatrix 3600 Hardware Installation Guide* in conjunction with the appropriate publications listed in .

Intended Audience

This guide is intended for the following audiences:

- ▶ Technical staff who are familiar with electronic circuitry, networking theory and have experience as an electronic technician.
- ▶ System administrators with a basic networking background and experience, but who might not be familiar with the Mediatrix 3600 device.
- ▶ System administrators who are responsible for installing and configuring networking equipment and who are familiar with the Mediatrix 3600 device.

Related Documentation

In addition to this manual, the Mediatrix 3600 document set includes the following:

▸   *Dgw v1.1 Software Configuration Guide*

Describes how to configure and operate the Mediatrix 3600.

▸   *Mediatrix 3600 Quick Start Guide*

This printed booklet allows you to quickly setup and work with the Mediatrix 3600.

▸   *Configuration Reference Guide*

Lists all the parameters, tables, and commands available in the Mediatrix 3600.

▸   *Notification Reference Guide*

Lists and describes all syslog messages and notification messages that the Mediatrix 3600 may send.

▸   *Third Party Software Copyright Information*

This document lists the third-party software modules used in the Mediatrix 3600 along with any copyright and license information.

Be sure to read any readme files, technical bulletins, or additional release notes for important information.

Document Structure

The Mediatrix 3600 *Hardware Installation Guide* contains the following information.

Table 2: Mediatrix 3600 Hardware Installation Guide Chapter/Appendices

Title	Summary
"Chapter 1 - Overview" on page 1	Provides a brief description of the Mediatrix 3600.
"Chapter 2 - Installation Scenarios" on page 9	Describes deployment scenarios for the Mediatrix 3600.
"Chapter 3 - Installation" on page 11	Contains instructions for installing the Mediatrix 3600 and connecting the cables.
"Chapter 4 - Powering on the Mediatrix 3600" on page 21	Leads you through the basic steps to start the Mediatrix 3600.
"Appendix A - Standards Compliance and Safety Information" on page 29	Lists the various standards compliance of the Mediatrix 3600.
"Appendix B - Cabling Considerations" on page 37	Describes the pin-to-pin connections for cables used with the Mediatrix 3600.
"Appendix C - Standard Hardware Information" on page 43	Lists the technical hardware information of the Mediatrix 3600.
"Appendix D - Interface Card Installation Instructions" on page 49	Describes how to install interface cards in a Mediatrix 3600 unit.

Document Conventions

The following information provides an explanation of the symbols that appear on the Mediatrix 3600 and in the documentation for the product.

Warning Definition

> **STOP** **Warning:** Means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, you must be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents.

Where to find Translated Warning Definition

For safety and warning information, see "Appendix A - Standards Compliance and Safety Information" on page 29.

This Appendix describes the international agency compliance and safety information for the Mediatrix 3600. It also includes a translation of the safety warning listed in the previous section.

Other Conventions

The following are other conventions you will encounter in this manual.

> ⚠ **Caution:** Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury and/or damage to the equipment or property.

> ☞ **Note:** Indicates important information about the current topic.

Standards Supported	Indicates which RFC, Draft or other standard document is supported for a specific feature.

SCN vs PSTN

In Media5' and other vendor's documentation, the terms SCN and PSTN are used. A SCN (Switched Circuit Network) is a general term to designate a communication network in which any user may be connected to any other user through the use of message, circuit, or packet switching and control devices. The Public Switched Telephone Network (PSTN) or a Private Branch eXchange (PBX) are examples of SCNs.

Standards Supported

When available, this document lists the standards onto which features are based. These standards may be RFCs (Request for Comments), Internet-Drafts, or other standards.

The Mediatrix 3600's implementations are *based* on the standards, so it's possible that some behaviour differs from the official standards.

For more information on and a list of RFCs and Internet-Drafts, refer to the IETF web site at http://www.ietf.org.

Obtaining Documentation

These sections explain how to obtain documentation from Media5.

Media5 Web Site

Media5 offers the latest version of its products' documentation on its web site. You will thus be able to access and download the most current Media5 documentation. Follow this link: http://www.media5corp.com/categories.

> 👉 **Note:** This site does not contain any firmware versions.

Media5 Download Portal

Media5 offers online documentation via a self register web-portal. You will thus be able to access and download the most current Media5 documentation. Follow this link to register: http://www.media5corp.com/support/mediatrix--media5boss/support-portal.

> 👉 **Note:** This site does not contain any firmware versions.

Documentation Feedback

Media5 welcomes your evaluation of this manual and any suggestions you may have. These help us to improve the quality and usefulness of our publications.

Please send your comments to:

> Media5 Corporation
> Attention: Documentation Department
> 4229, Garlock Street
> Sherbrooke, Quebec
> Canada J1L 2C8
> Fax: +1 (819) 829-5100

We appreciate your comments.

End User Technical Support

In order to maximize technical support resources, Media5 works through its partners to resolve technical support issues. All end users requiring technical support are encouraged to contact their vendor directly.

Overview

This chapter describes the Mediatrix 3600 connectors and indicators.

Overview

Provider-specific profiles ensure that the Mediatrix 3600 is a genuine plug and play solution. It offers a low total cost of ownership as it reduces installation and maintenance costs.

The Mediatrix 3600 series ISDN VoIP Digital Gateways allow enterprises to lower communications costs over any IP link. Designed specifically for enterprise applications, the Mediatrix 3600 digital gateways make use of existing broadband access equipment to connect to any standards-based VoIP network.

The Mediatrix 3600 digital gateways meet the requirements of enterprises that want to connect their ISDN equipment, such as PBXs, through a PRI (Primary Rate Interface) interface to an IP network or as a gateway to the PSTN.

Mediatrix 3600 digital gateways provide transparent ISDN port extensions over an IP network. The remote ISDN terminals can be managed centrally and benefit from PBX services such as calling groups and voice mail.

The following are the Mediatrix 3600 Series models currently available:

Table 3: Mediatrix 3600 Models

Model	Interfaces	VoIP Calls Capacity	Service Slot Used
Mediatrix 3621	1xE1-PRI interface	up to 15	Slot 2
Mediatrix 3631	1xE1-PRI interface	up to 30	Slot 2
Mediatrix 3632	2xE1-PRI interface	up to 60	Slots 2 and 3

Key Features

- Up to 60 simultaneous calls
- ISDN BRI and T1/E1 PRI interface ports
- R2 CAS E1 interface ports
- HTTP, SNMP, FTP and TFTP for configuration and management
- True Plug-and-Play
- Automatic configuration script download
- Call Routing service
- SNMPv3 and web management
- DHCP Client
- PPPoE Client
- T.38 support
- Command Line Interface (CLI)

Mediatrix 3600 Connectors and Indicators

This section provides an overview of the front and rear panels of the Mediatrix 3600.

The rear panel differs depending on the Mediatrix 3600 model you have.

Product Serial Number Location

The serial number label for the Mediatrix 3600 device is located on the bottom of the unit.

Front Indicators and Connectors

See "Indicators (LEDs)" on page 23 for a description of the LED patterns the Mediatrix 3600 may have and the states they represent.

Figure 1: Front Panel Indicators
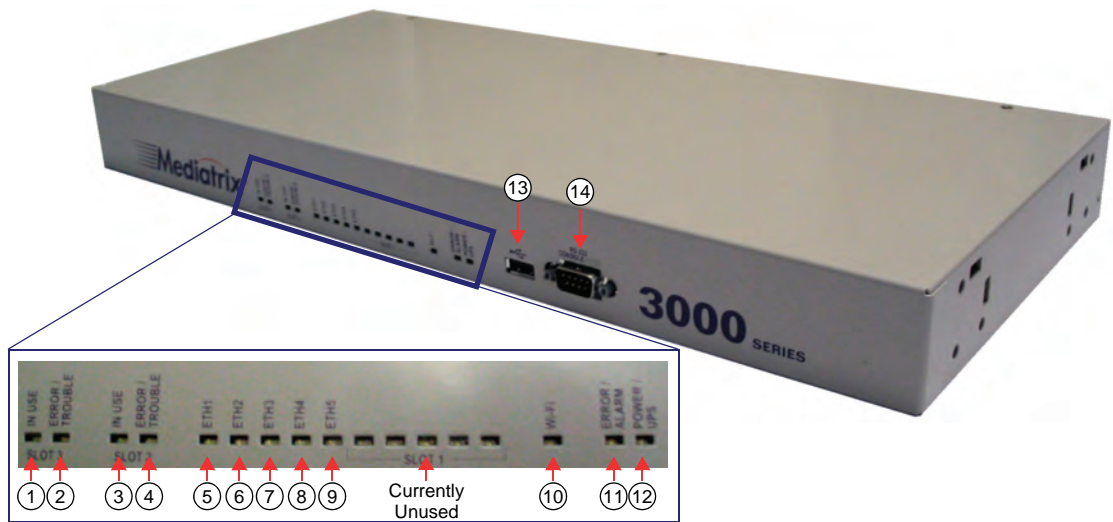
See "Rear Panel" on page 4 for a description of the Mediatrix 3600 Service Slot sections for your specific model.

Front LEDs

All indicators (LEDs) located on the front panel are also duplicated on the rear of the Mediatrix 3600, which allows you to rack-mount the unit with the front or rear facing forwards. See "Location and Mounting Requirements" on page 14 for more details.

Table 4 describes the LEDs on the front panel of the Mediatrix 3600.

Table 4: Front Panel LEDs

	LED	Description
1.	IN USE	When lit, at least one of the channels of the E1/T1 connector in Service Slot 3 is in use.
2.	ERROR/ TROUBLE	This LED is not currently used on the Mediatrix 3600.
3.	IN USE	When lit. at least one of the channels of the E1/T1 connector in Service Slot 2 is in use.
4.	ERROR/ TROUBLE	This LED is not currently used on the Mediatrix 3600.

<p align="center">**Table 4:** Front Panel LEDs (Continued)</p>

	LED	Description
5. **6.** **7.** **8.**	ETH 1-4	Provides the state of the LAN network connected to the *ETH 1-4* connectors: • Green: The Mediatrix 3600 uses a 10 Mbps connection. • Yellow: The Mediatrix 3600 uses a 100 Mbps connection. The LED remains ON to indicate a Link and blinks if traffic passes.
9.	ETH 5	Provides the state of the WAN network connected to the *ETH 5* connector: • Green: The Mediatrix 3600 uses a 10 Mbps connection. • Yellow: The Mediatrix 3600 uses a 100 Mbps connection. The LED remains ON to indicate a Link and blinks if traffic passes.
10.	WI/FI	This LED is not currently used on the Mediatrix 3600.
11.	ERROR/ ALARM	This LED is not currently used on the Mediatrix 3600.
12.	POWER/ UPS	Indicates the status of the power feeding: • Green: The Mediatrix 3600 is powered by its power supply. • Yellow: The Mediatrix 3600 is powered by an external UPS.

Front Connectors

Table 5 describes the connectors on the front panel of the Mediatrix 3600.

<p align="center">**Table 5:** Front Panel Connectors</p>

	Connector	Description
13.	USB	USB 2.0 Type A connector.
14.	RS-232	RS-232 connector that connects the Mediatrix 3600 with a serial terminal such as a PC or workstation with a RS-232 interface. You must use a cross-over or null-modem cable.

Rear Panel

The following are the rear connectors and indicators of the Mediatrix 3621 / 3631 / 3632 models.

Rear Connectors

Standards Supported	• ETSI 300 753: Acoustic Noise

The Mediatrix 3600 has four main sections on its rear panel. These sections may or may not be available depending on your Mediatrix 3600 model:

▸ WAN/LAN Slot: Contains the Ethernet connectors and their associated LEDs.

▸ Service Slot 1: Currently unused.

▸ Service Slot 2: Contains 1 E1/T1 connector.

▸ Service Slot 3: Contains 1 E1/T1 connector (available only on the Mediatrix 3532 and Mediatrix 3632).

Figure 2: PRI Models Slot Sections
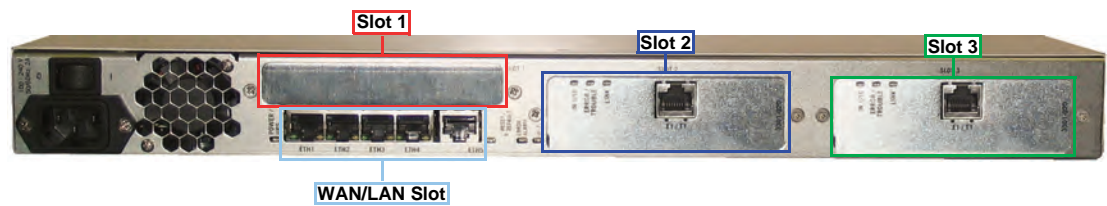
Figure 3 shows the rear panel of the Mediatrix 3600.

Figure 3: PRI Models Rear Panel Connectors
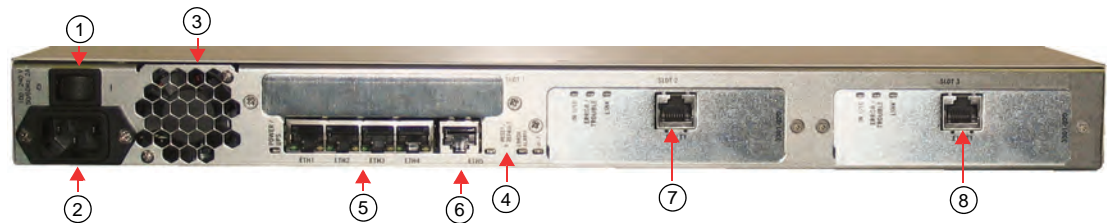
Table 6: PRI Models Rear Panel Connectors

	Connector	Description
1.	On/Off Switch	Turns the Mediatrix 3600 on or off.
2.	Power connector	Standard universal input (100-240 VAC; 50-60 Hz; 2A) power supply.
3.	Fan	Variable speed fan. The noise level complies with the ETSI 300 753 standard (63 dB for office, 75 dB for telecom environment).
4.	Reset Default button	Resets configuration parameters of the Mediatrix 3600 to default (known) values. It can be used to reconfigure the unit. See "RESET/DEFAULT Button" on page 25 for more details.
	WAN/LAN Slot	
5.	ETH 1-4	Four 10/100 BaseT Ethernet RJ-45 connectors for access to a LAN. See "WAN/LAN Slot – Ethernet Connectors" on page 6 for more details. **Note**: These connectors are only used to contact the unit on the LAN side.
6.	ETH 5	One 10/100 BaseT Ethernet RJ-45 connector for access to a WAN. See "WAN/LAN Slot – Ethernet Connectors" on page 6 for more details.

Table 6: PRI Models Rear Panel Connectors (Continued)

	Connector	Description
Service Slot 2		
7.	E1 / T1	One RJ-45 connector offering E1/T1 ISDN connectivity. See "Service Slots 2/3 – PRI Connector" on page 7 for more details.
Service Slot 3		
8.	E1 / T1	One RJ-45 connector offering E1/T1 ISDN connectivity. See "Service Slots 2/3 – PRI Connector" on page 7 for more details.

Rear Indicators

All LEDs located on the front panel are also duplicated on the rear of the Mediatrix 3600, which allows you to rack-mount the unit with the front or rear facing forwards. See "Location and Mounting Requirements" on page 14 for more details.

Figure 4: PRI Models Rear Panel Indicators
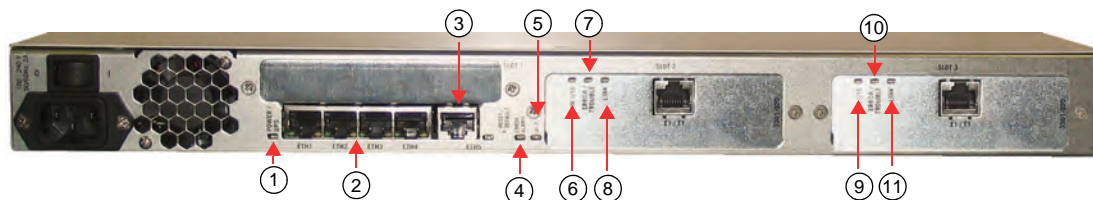
Table 7: PRI Models Rear Panel LEDs

	LED	Description
1.	POWER/ UPS	Indicates the status of the power feeding: • Green: The Mediatrix 3600 is powered by its power supply. • Yellow: The Mediatrix 3600 is powered by an external UPS.
2.	LAN	Two indicators directly incorporated into each LAN connector that provide the state of the LAN network connected to it: • Green LED: The Mediatrix 3600 uses a 10 Mbps connection. • Yellow LED: The Mediatrix 3600 uses a 100 Mbps connection. 10 Mbps Connection 100 Mbps Connection The LEDs remain ON to indicate a Link and blink if traffic passes.
3.	WAN	Provides the state of the WAN network connected to the *ETH 5* connector: • Green: The Mediatrix 3600 uses a 10 Mbps connection. • Yellow: The Mediatrix 3600 uses a 100 Mbps connection. The LED remains ON to indicate a Link and blinks if traffic passes.
4.	ERROR/ ALARM	This LED is not currently used on the Mediatrix 3600.
5.	Wi-Fi	This LED is not currently used on the Mediatrix 3600.
6.	IN USE	When lit, at least one of the channels of the E1/T1 connector of Service Slot 2 is in use.
7.	ERROR/ TROUBLE	This LED is not currently used on the Mediatrix 3600.

Table 7: PRI Models Rear Panel LEDs (Continued)

	LED	Description
8.	LINK	Indicates the state of the ISDN network connected to this connector: • Yellow LED: The connection has a Loss of Signal (LOS). • Green LED: The connection works properly.
9.	IN USE	When lit, at least one of the channels of the E1/T1 connector of Service Slot 3 is in use.
10.	ERROR/ TROUBLE	This LED is not currently used on the Mediatrix 3600.
11.	LINK	Indicates the state of the ISDN network connected to this connector: • Yellow LED: The connection has a Loss of Signal (LOS). • Green LED: The connection works properly.

Port Numbering Convention

The following describes the port numbering conventions of the Slot sections.

WAN/LAN Slot – Ethernet Connectors

Standards Supported	• IEEE 802.3: LAN/MAN CSMA/CD Access Method • EIA/TIA 568-A: Commercial Building Wiring Standard

The following describes the port numbering conventions of the Ethernet connectors.

Figure 5: Ethernet Connectors Port Numbering Conventions
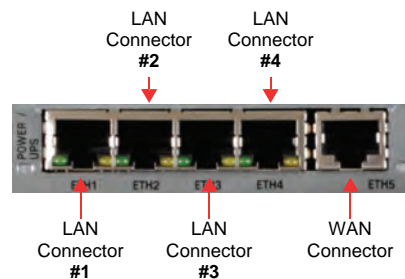
> **Note:** The LAN connectors are used to contact the unit on the LAN side. They can also be used as a SIP gateway to be bound on the LAN. However, there is no routing between the LAN and the uplink interface.

Service Slot 1

This slot is currently unused.

Service Slots 2/3 – PRI Connector

Standards Supported	• EIA/TIA-464-B: Requirements for Private Branch Exchange (PBX) Switching Equipment

> **Note:** Service Slot 3 is available only on the Mediatrix 3532 and Mediatrix 3632 models.

Each slot has only one PRI connector. This connector has software configurable pin outs, and can be set in either Network or User mode.

- ▶ User mode: The connector emulates the subscriber (terminal) side of the digital connection. You can connect the SCN to the connector.
- ▶ Network mode: The connector emulates the central office (network) side of the digital connection. You can connect a PBX to the connector.

Refer to the *Software Configuration Guide* for more details. Also refer to for information on the proper cabling.

2

Installation Scenarios

This chapter describes scenarios in which the Mediatrix 3600 could be used.

VoIP Connectivity via ISDN in a Corporate Network Scenario
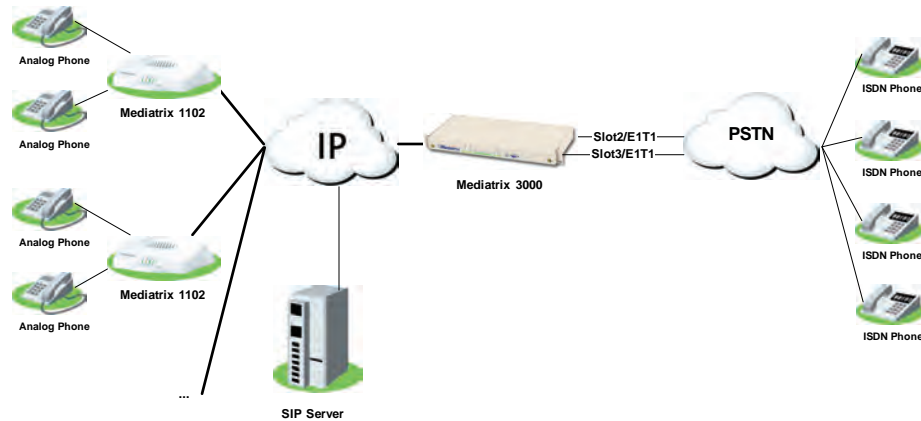
This scenario uses one Mediatrix 3600 digital gateway to act as a gateway with the PSTN in a corporate network. The connection is based on the SIP protocol and is overlooked by a central SIP server. Each ISDN endpoint is registered with the SIP server with its own number. When an end-user device makes a call, the call routing is performed by the SIP server.

For more information on this scenario, please refer to *Configuration Notes 242: Mediatrix 3000 Digital Gateway - Corporate Network Use Case* that is on the Media5 Support Portal.

VoIP Trunking with a Legacy PBX Scenario
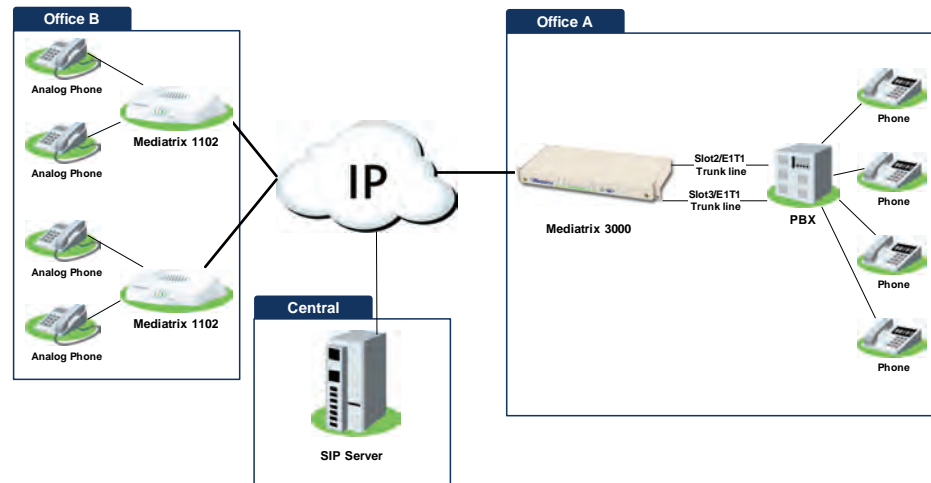
This scenario uses one Mediatrix 3600 digital gateway to provide VoIP trunking via ISDN. It is connected to a legacy PBX. The connection is based on the SIP protocol and is overlooked by a central SIP server. Each ISDN endpoint is registered with the SIP server with its own number. When an end-user device makes a call, the call routing is performed by the SIP server.

For more information on this scenario, please refer to *Configuration Notes 243: Mediatrix 3000 Digital Gateway - VoIP Trunking with a Legacy PBX* available on the Media5 Support Portal.

For more information on this scenario, please refer to *Configuration Notes 244: Mediatrix 4400 Digital Gateway - VoIP Trunking with a Legacy PBX* available on the Media5 Support Portal.

3

Installation

This chapter describes the installation of the Mediatrix 3600.

Planning the Installation

Before installing the Mediatrix 3600, you should complete the following tasks:

▶ Create a network diagram (see section "Network Diagram" on page 12).

▶ Gather IP-related information (see section "IP-Related Information" on page 12 for more information).

▶ Install the hardware and software needed to configure the Mediatrix 3600 (see section "Network Information" on page 12).

Installation Checklist

The installation checklist lists the tasks for installing the Mediatrix 3600. Print a copy of this checklist and mark the entries as you complete each task. Include the completed checklist in your site log.

Figure 6: Installation Checklist

Mediatrix 3600 name/serial number _____

Task	Verified By	Date
Network information available & recorded in site log		
Environmental specifications verified		
Site power voltages verified		
Installation site pre-power check completed		
Required tools available		
Additional equipment available		
Mediatrix 3600 received		
Quick start guide received		
Regulatory compliance and safety information received		
Warranty card received		
Software version verified		
Rack, desktop, or wall mounting of chassis completed		
Initial electrical connections established		
ASCII terminal attached to console port		
Cable length limits verified		
Initial configuration performed		
Initial operation verified		

Site Log

Media5 recommends that you maintain a site log to record all actions relevant to the Mediatrix 3600, such as:

▶ Installation: Print a copy of the installation checklist and insert it into the site log.

▶ Upgrades and maintenance: Use the site log to record ongoing maintenance and expansion history. Update the site log to reflect the following:

- Configuration changes

- Maintenance schedules, requirements, and procedures performed

- Comments, notes, and problems

- Software changes and updates to firmware

Network Information

When planning the installation of the Mediatrix 3600, you should consider the following network information.

Network Diagram

It is always good practice to draw a network overview diagram that displays all neighbouring IP nodes, serial connected elements, and other components. It is recommended that you keep a copy in the site log (see "Site Log" on page 12 for more information on keeping a site log).

IP-Related Information

Before you can install the Mediatrix 3600, you need to have the following information:

▶ IP addresses used for Ethernet LAN and WAN connectors

▶ Subnet mask used for Ethernet LAN and WAN connectors

▶ IP addresses of the central SIP server

▶ IP addresses of the central server used for configuration upload and download

Power Source

If you suspect that your AC power is not reliable, for example if room lights flicker often or there is machinery with large motors nearby, have a qualified professional test the power. Install a power conditioner if necessary.

Safety Recommendations

The following are safety recommendations and best practices to follow when working with the Mediatrix 3600.

Maintaining Safety with Electricity

> **STOP** **Warning:** Do not work on the Mediatrix 3600, connect or disconnect cables during periods of lightning activity.

> **STOP** **Warning:** Disconnect all power before servicing the Mediatrix 3600.

> **STOP** **Warning:** Hazardous network voltages might be present in WAN, LAN, and telephone networks connectors regardless of whether power to the device is OFF or ON. Use caution when working near these connectors to avoid electric shock. When detaching cables, detach the end away from the Mediatrix 3600 first.

General Safety Practices

Follow these guidelines to ensure personal safety and protect the equipment:

▸ Keep the Mediatrix 3600 clear and dust-free during and after installation.

▸ Locate the emergency power-off switch for the room in which you are working. Then, if an electrical accident occurs, you can act quickly to turn off the power.

▸ Disconnect all power before installing the Mediatrix 3600.

▸ Do not work alone if potentially hazardous conditions exist.

▸ Never assume that power is disconnected from a circuit. Always check.

▸ Do not perform any action that creates a potential hazard to people or makes equipment unsafe.

> **STOP** **Warning:** This equipment must be installed and maintained by service personnel. Incorrectly connecting this equipment to a general-purpose outlet could be hazardous. The telecommunications lines must be disconnected before unplugging the main power connector.

Preventing Electrostatic Discharge Damage

Always follow electrostatic discharge (ESD) prevention procedures when installing or working around the Mediatrix 3600.

▸ Ensure that the Mediatrix 3600 chassis is electrically connected to earth ground.

▸ Wear an ESD-preventive wrist strap, ensuring that it makes good skin contact. Connect the clip to earth ground to channel unwanted ESD voltages to ground safely. If no ESD wrist strap is available, ground yourself by touching the metal part of the chassis.

Required Mounting Tools and Equipment

You will need the following tools and parts to properly install the Mediatrix 3600:

▸ Screwdriver as required for attaching brackets to rack or wall.

▸ Philips screwdriver for attaching brackets to the Mediatrix 3600.

▸ Screws and anchors for wall-mounting, if required.

• Four wood screws or other fasteners, for installing the chassis on a wall.

▸ ESD-preventive wrist strap.

In addition, you might need the following external equipment:

▸ Modem for remote access.

▸ RJ-45 cables for the WAN and LAN connections.

Unpacking and Inspection

If you haven't already done so, unpack the Mediatrix 3600 device. Carefully remove it from the package and packing material. The Mediatrix 3600 package contains the following items:

▸ 1 x Mediatrix 3600 unit

▸ 1 x power cord for the country in which you are using the Mediatrix 3600

▸ 1 x wall/rack mounting kit

▸ 1 x Bumpon^{TM} kit for desktop use

▸ 3 x 10/100 BaseT Ethernet RJ-45 cables (Mediatrix 3621/3631)

▸ 5 x 10/100 BaseT Ethernet RJ-45 cables (Mediatrix 3632)

▸ 1 x Quick Start booklet

▸ 1 x Printed Flyer

You may also need additional 10/100 BaseT Ethernet RJ-45 cables.

Location and Mounting Requirements

> **STOP**   **Warning:** To prevent fire or shock hazard do not expose the unit to rain or moisture.

The Mediatrix 3600 is suitable for use in an office environment where it can be placed in the same room or cabinet where the PBX/telephony equipment is located. The unit can be wall-mounted, mounted on a standard 48.26 cm (19 in.) equipment rack, or free standing. In addition, the Mediatrix 3600 can be rack-mounted in a wiring closet or equipment room.

Location

Install the Mediatrix 3600 in a well-ventilated location where it will not be exposed to high temperature or humidity. Do not install the Mediatrix 3600 in a location exposed to direct sunlight or near stoves or radiators. Excessive heat could damage the internal components.

When deciding where to position the Mediatrix 3600, ensure that:

▸ The Mediatrix 3600 is accessible for future upgrade, maintenance and troubleshooting, and cables can be easily connected.

▸ The cabling is away from the following:

• Sources of electrical noise such as radios, transmitters, and broadband amplifiers.

- • Power lines and fluorescent lighting fixtures.
- • Water or moisture that could enter the casing of the Mediatrix 3600.
- ▶ The fan on the Mediatrix 3600 is not blocked or that the rear of the unit is not too close to the wall. The unit requires a minimum of 25 mm (1 in.) clearance.
- ▶ The operating temperature is between 0°C and 40°C.
- ▶ The humidity is not over 85% and is non-condensing.

Wiring Requirements

Make sure that the telephone wiring, LAN and WAN cables reach the device and can be dressed in a manner that is safe for the wiring, does not pull or create lateral stress on the connectors on the device, and does not present a trip hazard to personnel working in the vicinity of the equipment. Do not connect any cable or wiring at this time.

Mounting Brackets

The Mediatrix 3600 ships with two brackets for rack-mount installation in a 19-inch rack or wall-mount installation.

Figure 7: Mounting Bracket

Rack-Mounting

| Standards Supported	• EIA-310-D • ETS 300 119

The Mediatrix 3600 fits in most standard 48.26 cm (19 in.) racks. Media5 recommends to use a rack compliant EIA-310-D.

All LEDs located on the front panel are also duplicated on the rear of the Mediatrix 3600, which allows you to rack-mount the unit with the front or the rear facing forwards.

▶ **To rack-mount the Mediatrix 3600:**

1. Disconnect all of the cables from the Mediatrix 3600, if applicable.

2. Place the Mediatrix 3600 right side up on a hard flat surface, with the front or rear facing toward you according to the way you want to insert it in the rack.

3. Place one bracket over the mounting holes on the left side of the Mediatrix 3600.
    •   For a front facing installation, place the bracket at the front of the unit.
    •   For a rear facing installation, place the bracket at the rear of the unit, inverted.

4. Align the bracket with the screw holes and tab hole as illustrated in Figure 8.

Figure 8: Rack-Mounting Installation

Front Facing Installation   Rear Facing Installation
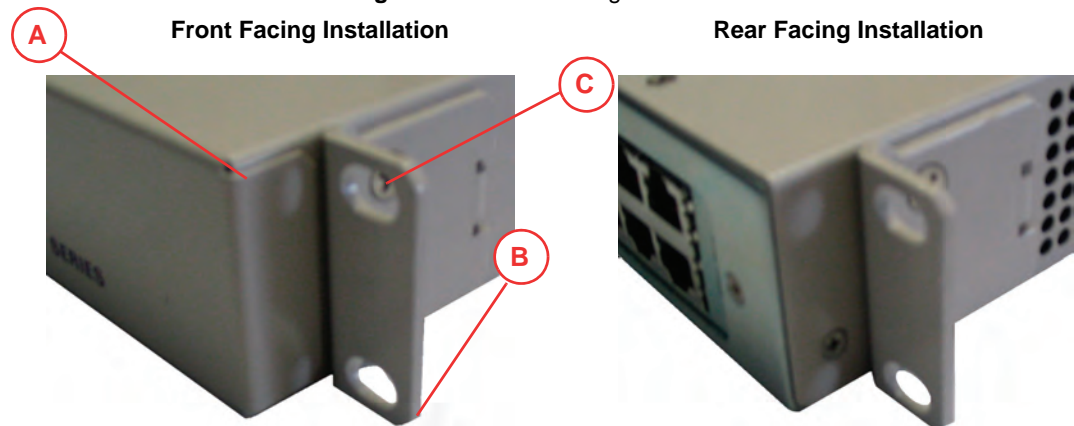
Table 8 describes the mounting pieces you need to rack-mount the Mediatrix 3600.

Table 8: Mounting Pieces

Item	Qty.	Description
A	1	Mediatrix 3600 casing
B	2	Bracket
C	4	18-8 SS Flat Head Philips Machine Screw 8-32 Thread, 5/16" Length

5. Insert the two screws in the mounting bracket, and then tighten.

Note: Use the screws supplied with the mounting brackets. Damage caused to the unit by using incorrect screws invalidates your warranty.

6. Repeat steps 3, 4 and 5 for the other side of the Mediatrix 3600.

7. Insert the Mediatrix 3600 into the rack and secure with suitable screws (not provided). Be sure that the fan is not obstructed.

To prevent bodily injury when mounting or servicing the Mediatrix 3600 in a rack, ensure that the rack remains stable. The following guidelines are provided to ensure your safety:

- Mount the Mediatrix 3600 at the bottom of the rack if it is the only unit in the rack.
- When mounting the Mediatrix 3600 in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack.
- If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the Mediatrix 3600 in the rack.

8. Proceed to "Hardware Installation" on page 19.

Wall-Mounting

You can use the mounting brackets to wall-mount a single Mediatrix 3600.

> ⚠ **Caution:** You can wall-mount the Mediatrix 3600 with either the right or left side facing up; however, the front and rear panels must be vertical.

▶ **To wall-mount the Mediatrix 3600:**

1. Disconnect all of the cables from the Mediatrix 3600 before mounting, if applicable.

2. Ensure that the wall you are using is smooth, flat, dry and sturdy. Attach a piece of plywood, approximately 305 mm x 510 mm x 12 mm (12 inches x 20 inches x 0.5 inches) securely to the wall, if necessary.

3. Place the Mediatrix 3600 right side up on a hard flat surface, with the front facing toward you.

4. Place one bracket over the mounting holes on the left side of the Mediatrix 3600 and align the bracket with the screw holes and tab hole as illustrated in Figure 9.

Figure 9: Wall-Mounting Installation

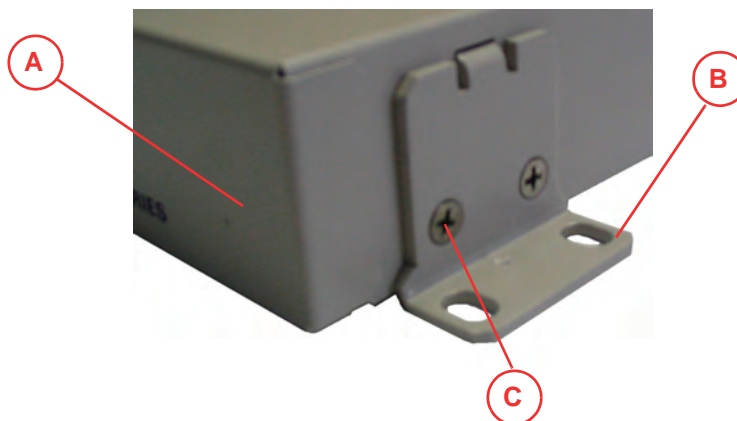Table 8 describes the mounting pieces you need to wall-mount the Mediatrix 3600.

Table 9: Wall-Mounting Pieces

| Item	Qty.	Description
A	1	Mediatrix 3600 casing
B	2	Bracket
C	8	18-8 SS Flat Head Philips Machine Screw 8-32 Thread, 5/16" Length

5.   Insert the two screws in the mounting bracket, and then tighten.

> **Note:** Use the screws supplied with the mounting brackets. Damage caused to the unit by using incorrect screws invalidates your warranty.

6.   Repeat steps 3 to 5 for the bracket on the other side of the Mediatrix 3600.

Media5 recommends to place the second bracket in the opposite corner to the first bracket for increased stability.

7.   Position the Mediatrix 3600 against the wall (or plywood) with the front and rear panels vertical.

Figure 10: Wall-Mount Installation Example
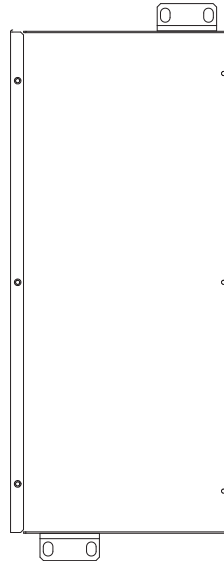
8.   Attach the Mediatrix 3600 to the wall (or plywood) with screws (not provided) to ensure that it is secure.

9.   Proceed to "Hardware Installation" on page 19.

Free Standing Unit

When installing the Mediatrix 3600 on a desk or table, it should be located at least 20 cm from your monitor, computer casing or other peripherals, including speakers. Never put books or paper on the Mediatrix 3600.

You must also apply the Bumpon^{TM} authoadhesive protective products to the bottom of the Mediatrix 3600. These will stabilize the Mediatrix 3600 and offer skidding resistance.

Condensation

When bringing the unit into a warm environment from the cold, condensation may result that might be harmful to the unit. If this occurs, allow the unit to acclimatize for an hour before powering it on.

Cleaning

To clean the Mediatrix 3600, wipe with a soft dry cloth. Do not use volatile liquids such as benzine and thinner that are harmful to the unit casing.

For resistant markings, wet a cloth with a mild detergent, wring well and then wipe off. Use a dry cloth to dry the surface.

Hardware Installation

This section describes how to set the connectors of the Mediatrix 3600.

> ⚠️ **Caution:** The Mediatrix 3600 must be installed on a circuit equipped with a breaker so that you can easily power the unit off if required.

> 🛑 **STOP** **Warning:** To avoid electrical shock, apply the following instructions:
> - The device must be installed by technical personnel.
> - Be sure the ground path is connected.

See "Appendix B - Cabling Considerations" on page 37 for more details on the cables the Mediatrix 3600 uses.

Connecting Cables

The following describes how to connect the various cables to the Mediatrix 3600.

Figure 11: Hardware Installation
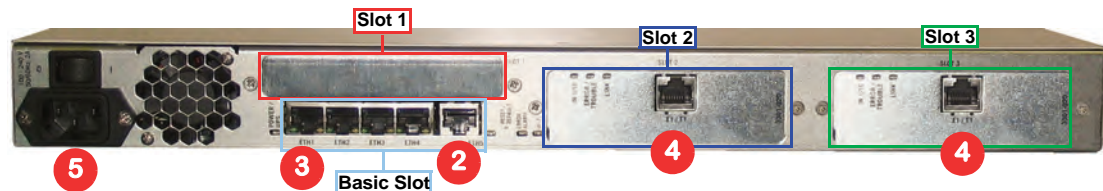
▶ **To install the cables:**

1. Before you begin, be sure that the Mediatrix 3600 is powered off.

2. Create a WAN connection by connecting a 10/100 BaseT Ethernet RJ-45 cable into the *ETH5* connector of the Mediatrix 3600.

   The other end of the cable is connected to the WAN via a modem or other means.

   See "Ethernet RJ-45 Cable" on page 37 for more details on this cable.

3. If you want to contact the unit via its LAN side, connect a 10/100 BaseT Ethernet RJ-45 cable into either the *ETH1*, *ETH2*, *ETH3*, or *ETH4* connectors of the Mediatrix 3600. Connect the other end to a computer.

   See "Ethernet RJ-45 Cable" on page 37 for more details on this cable.

4. Create an ISDN connection by connecting an E1 RJ-45 cable into any of the two *E1 / T1* connectors of Slot 2/3 sections of the Mediatrix 3600 (Slot 3 is available on the Mediatrix 3632 model).
   - If you are using the Mediatrix 3600 with a PBX, connect the other end of the cable to the PBX.
   - If you are using the Mediatrix 3600 with the PSTN, connect the other end of the cable to a proper PSTN outlet.

5. Connect the power cord to the Mediatrix 3600 and then connect the other end to an electrical outlet.

> 🛑 **STOP** **Warning:** The electrical outlet must be installed near the Mediatrix 3600 so that it is easily accessible.

You are now ready to start the Mediatrix 3600.

C H A P T E R

4

Powering on the Mediatrix 3600

This chapter describes the initial provisioning of the Mediatrix 3600.

IP Address Discovery or Configuration

This section describes how to contact the Mediatrix 3600's management interface to start with unit configuration.

Once the physical connection is complete and the Mediatrix 3600 is powered up, you must first find out the IP address the Mediatrix 3600 is using. The Mediatrix 3600's WAN IP address can be set either dynamically or statically. The default behaviour of the Mediatrix 3600 is to try to obtain a dynamic IP address through a DHCP server.

You can also access the Mediatrix 3600 through its private LAN interface.

Dynamic WAN IP Address Discovery

The default configuration is set so that the unit can be directly plugged into a network and provisioned with a DHCP server. Media5 strongly recommends to set your DHCP server before installing the unit on the network. This way, you know the WAN IP address associated with a particular unit.

See the *Software Configuration Guide* for more details on how to set an external DHCP server.

> ⚠️ **Caution:** If you are experiencing problems, or if you do not want to use a DHCP server and use a static IP address instead, perform a Partial Reset procedure, as explained in .

DHCP servers generally allocate a range of IP addresses for use on a network and reserve IP addresses for specific devices using a unique identifier for each device. The Mediatrix 3600 unique identifier is its media access control (MAC) address. You can locate the MAC address as follows:

▶ It is printed on the label located on the bottom side of the unit.

▶ It is stored in the *System Information* page of the web interface.

If you have not reserved a WAN IP address, you can discover which WAN IP address has been assigned to the Mediatrix 3600 by either:

▶ consulting your DHCP server's logs to find out details on the DHCP lease that was given to the Mediatrix 3600.

▶ using a network packet sniffer (e.g., Wireshark) to examine the DHCP messages exchanged between the Mediatrix 3600 and your DHCP server while the Mediatrix 3600 boots up.

▶ **To start the Mediatrix 3600 with a dynamic IP address:**

1. If you need to discover the IP address of the Mediatrix 3600, install and start your network packet sniffer.

2. Power on the Mediatrix 3600 by flipping the power switch. If this is the very first time you are installing the Mediatrix 3600, it will restart twice.

3. Power on the PCs.

Your computers do not have to be turned on for the telephone or fax services.

You can now access the Mediatrix 3600 web interface. Refer to the *Software Configuration Guide* for more details.

Initial Provisioning Sequence

When starting the Mediatrix 3600 for the first time, it needs to be configured before it can support calls. This process is known as *provisioning*. This sequence assumes that you have installed the Mediatrix 3600 hardware as per "Hardware Installation" on page 19.

The Mediatrix 3600 requests its configuration only on the first restart. You can change the configuration at will after the initial provisioning and the provisioning system can refresh the Mediatrix 3600 configuration.

▶ **Initial provisioning sequence:**

1.   When the Mediatrix 3600 starts, it broadcasts a message requesting DHCP services (if the unit is configured to start in DHCP mode).

2.   The DHCP server responds with a set of WAN IP addresses and network parameters, one of which is the Mediatrix 3600 WAN IP address.

The following are some of the network parameters assigned via DHCP:

   •   Mediatrix 3600 WAN IP address

   •   Subnet Mask

   •   Default Router IP address

   •   DNS IP addresses

   •   Configuration script server IP address and port number (optional)

   •   SIP Servers IP address and port number

3.   The Mediatrix 3600 request its configuration by using a configuration file.

Default Static WAN IP Address Configuration

If there is no DHCP server in your network, then the WAN IP address has to be configured statically.

▶ **To start the Mediatrix 3600 with a static WAN IP address:**

1.   Power on the Mediatrix 3600 by flipping the power switch. If this is the very first time you are installing the Mediatrix 3600, it will restart twice.

2.   Reconfigure the IP address of your computer to **192.168.0.11** and the Subnet Mask to **255.255.255.0**. Restart the computer.

3.   Power on the PCs.

Your computers do not have to be turned on for the telephone or fax services.

4.   Insert a small, unbent paper clip into the *RESET/DEFAULT* hole located at the rear of the Mediatrix 3600.

The *Power* LED will start blinking, and after a few seconds, all the LEDS will start blinking. Release the paper clip after all the LEDs start blinking and before they all stop blinking (between 7-11 seconds).

This procedure is called a partial reset. After a partial reset is performed, the Mediatrix 3600 uses the default WAN IP address 192.168.0.1/24. Refer to "Partial Reset" on page 25 for details on the partial reset procedure.

You can now access the Mediatrix 3600 web interface. Refer to the *Software Configuration Guide* for more details.

LAN Interface Access

You can access the Mediatrix 3600 via web and SNMP on the unit's private LAN interface at the address 192.168.0.10. In that case, you must set up your PC to use the private IP address **192.168.0.11**.

1.   Power on the Mediatrix 3600 by flipping the power switch. If this is the very first time you are installing the Mediatrix 3600, it will restart twice.

You can now access the Mediatrix 3600 web interface. Refer to the *Software Configuration Guide* for more details.

Verifying the Installation

There are a few ways to verify that the Mediatrix 3600 is properly connected to the IP network and is working:

▶   By contacting it with a SNMP browser

▶   By contacting it via the CLI

▶   By contacting it via a web browser

▶   By pinging it

These procedures assume that you know the IP address of the Mediatrix 3600 you want to verify. If the Mediatrix 3600 does not respond, do the following:

▶   Verify that the LAN and WAN cables are securely connected to the Mediatrix 3600 and to the network connectors.

▶   Be sure that you did not connect crossover network cables.

▶   Verify the state of the IP network to ensure it is not down (the *ETH* LED should be ON or blinking).

Indicators (LEDs)

The indicators (LEDs) of the Mediatrix 3600 are described in "Mediatrix 3600 Connectors and Indicators" on page 2.

LED Patterns – Specific Conditions

Table 10 describes the different states a Mediatrix unit can have and their associated LED patterns.

Table 10: LED Patterns

Condition	Description	LED Pattern
RestartPending	Triggered when the *RESET/DEFAULT* button is pressed in the *ResetPending* state. The unit prepares for a physical shutdown and restart.	*Power* LEDs: • blinking green, 1Hz, 50% duty All other LEDs: • OFF
RecoveryPending	Triggered when the *RESET/DEFAULT* button is pressed at start-time or for at least 7 seconds.	All LEDs: • blinking, 1Hz, 50% duty
DefaultSettingsPending	Triggered when the *RESET/DEFAULT* button is not released while in *ResetPending* state. At run time, if the *RESET/DEFAULT* button is released within 5 seconds, the unit applies default settings, otherwise the action is cancelled and the unit goes back to the operation mode state or it resets. At start time, the unit stays in this state until the *RESET/DEFAULT* button is released. The unit then applies the default settings and restarts.	All LEDs: • steady ON
UpdateInProgress	A firmware pack is downloaded into the unit and written to persistent storage.	All LEDs: • cycling from left to right, individually blinking 1Hz, 33% duty

Table 10: LED Patterns (Continued)

Condition	Description	LED Pattern
UpdateFailed	Triggered after a failure of a firmware pack download operation. After 4 seconds, the unit restarts.	All LEDs: • blinking at 3Hz, 50% duty. One LED out of two has a 180 degree phase. This pattern lasts for 8 seconds.
Rescue Network Enabled	Triggered after the user has performed a partial reset procedure.	*Power* and *Ready* LEDs: • blinking (synchronized) 1Hz, 75% duty
BootOnRecoveryBank	Triggered when the unit is booting on the recovery bank and no update is pending.	Power LEDs: • blinking green, 0.25Hz, 75% duty

LED Patterns – Default Behaviour

When no specific condition matches those described in Table 10, the LEDs behave individually according to the following rules:

Table 11: Default LED Behaviour

LED Type[a]	Condition	Behaviour
Power	RestartInProgress	Blinking green, 1 Hz, 50% duty
	RestartCompleted	Steady green
Ethernet	No network traffic, 100 Mbits/s	Steady green
	No network traffic, 10 Mbits/s	Steady orange
	Network traffic, 100 Mbits/s	Blinking green, variable rate
	Network traffic, 10 Mbits/s	Blinking orange, variable rate
In Use	Lines Idle and Unlocked	Off
	Lines InUse and Unlocked	Steady green
	Shutting Down	Steady yellow
	Locked	Blinking yellow, 1 Hz, 50% duty

a. The ERROR/ALARM and ERROR/TROUBLE indicators do not currently have individual behaviours like the other indicators.

RESET/DEFAULT Button

The *RESET/DEFAULT* button allows you to:

- ▶ Cancel an action that was started.
- ▶ Revert to known factory settings if the Mediatrix 3600 refuses to work properly for any reason or the connection to the network is lost.
- ▶ Reconfigure a unit.

At Run-Time

The *RESET/DEFAULT* button can be used at run-time – you can press the button while the Mediatrix 3600 is running without powering the unit off. Table 12 describes the actions you can perform in this case.

Table 12: RESET/DEFAULT Button Interaction

RESET/ DEFAULT Button Pressed for:	Action	Comments	LEDs Pattern
2 to 6 seconds	Restarts the Mediatrix 3600	No changes are made to the Mediatrix 3600 settings.	*Power* LEDs: • blinking green, 1Hz, 50% duty All other LEDs: • OFF
7 to 11 seconds	Sets the Mediatrix 3600 in Partial Reset Mode	Sets some of the Mediatrix 3600 configuration to pre-determined values.	All LEDs • blinking, 1Hz, 50% duty
12 to 16 seconds	Restarts the Mediatrix 3600 in Factory Reset	Deletes the persistent configuration, creates a new configuration file with the default factory values, and then restarts the unit.	All LEDs • steady ON
17 seconds and more	No action is taken	The RESET/DEFAULT Button Pressed event is ignored	N/A

At Start-Time

You can use the *RESET/DEFAULT* button at start-time – you power the unit off, and then depress the button until the LEDs stop blinking and remain ON. This applies the "Factory Reset" procedure (see "Factory Reset" on page 26). This feature reverts the Mediatrix 3600 back to its default factory settings.

Partial Reset

The Partial reset provides a way to contact the Mediatrix 3600 in a known and static state while keeping most of the configuration unchanged.

Following a partial reset, the Mediatrix 3600 management interface is set to the *Rescue* interface. The default address for this interface is 192.168.0.1/24. Any existing network interface that conflicts with the Rescue interface address is disabled.

You can contact the Mediatrix 3600 at this address to access its configuration parameters. It is not advised to access the unit on a regular basis through the *Rescue* network interface. You should reconfigure the unit's network interfaces as soon as possible in order to access it through another interface. See "After a Partial Reset" on page 26 for more details.

In a partial reset, the following services and parameters are also affected:

- ▶ AAA service: Sets the "admin" password to **administrator** and the "public" password to an

empty string.

▶ SNMP service: Resets the *enableSnmpV1*, *enableSnmpV2*, *enableSnmpV3* and *snmpPort* values to their default values.

▶ WEB service: Resets the *serverPort* to its default value.

▶ **To trigger the Partial Reset:**

1. Insert a small, unbent paper clip into the *RESET/DEFAULT* hole located at the rear of the Mediatrix 3600. While pressing the *RESET/DEFAULT* button, restart the unit.

Do not depress before all the LEDs start blinking (between 7-11 seconds).

2. Release the paper clip.

After a Partial Reset

Following a partial reset, you should:

1. Create or activate network interfaces as described in the *Software Configuration Guide*, Chapter *Interface Parameters*, Section *Interfaces Configuration*. Do not disable the *Rescue* interface!

2. Change the Mediatrix 3600 system management network interface to something other than Rescue as described in the *Software Configuration Guide*, Chapter *Miscellaneous – Management Interface*, Section *Management Interface Configuration*.

Note that you must be able to contact the interface you select in order to continue with the following steps.

3. Contact the Mediatrix 3600 through the new system management network interface.

4. Disable the *Rescue* network interface as described in the *Software Configuration Guide*, Chapter *Interface Parameters*, Section *Interfaces Configuration*.

Factory Reset

The Factory reset reverts the Mediatrix 3600 back to its default factory settings. It deletes the persistent MIB values of the unit, including:

▶ The firmware pack download configuration files.

▶ The SNMP configuration, including the SNMPv3 passwords and users.

▶ The PPPoE configuration, including the PPP user names and passwords.

The Factory reset creates a new configuration file with the default factory values. It should be performed with the Mediatrix 3600 connected to a network with access to a DHCP server. If the unit cannot find a DHCP server, it sends requests indefinitely.

▶ **To trigger the Factory Reset:**

1. Power the Mediatrix 3600 off.

2. Insert a small, unbent paper clip into the *RESET/DEFAULT* hole located at the rear of the Mediatrix 3600. While pressing the RESET/DEFAULT button, restart the unit.

Do not depress before the LEDs stop blinking and are steadily ON.

3. Release the paper clip.

The Mediatrix 3600 restarts.

This procedure resets all variables in the MIB modules to their default value.

When the Mediatrix 3600 has finished its provisioning sequence, it is ready to be used with a DHCP-provided IP address and MIB parameters.

This procedure can also be performed at run-time.

Note: The Factory reset alters any persistent configuration data of the Mediatrix 3600.

Management Choices

Congratulations for properly installing the Mediatrix 3600. You can now configure the software parameters of the unit.

The Mediatrix 3600 offers various management options. All these options are described in the *Dgw v1.1 Software Configuration Guide*.

Table 13: Management Options

Management Choice	Features
Web GUI	The Mediatrix 3600 web interface allows you to configure the following information: • Network attributes • SIP parameters • VoIP settings • Management settings such as configuration scripts, restore / backup, etc.
SNMPv1/2/3	The Mediatrix 3600 SNMP feature allows you to configure all the MIB services.
Command Line Interface (CLI)	The Mediatrix 3600 CLI feature allows you to configure all the MIB services.
Unit Manager Network	The UMN offers the following: • Auto-discovery • Group provisioning • SNMP access and remote management.

Standards Compliance and Safety Information

This Appendix lists the various standards compliance of the Mediatrix 3600.

Standards Supported

The Mediatrix 3600 complies to the following standards:

Table 14: Standards Compliance

Category	Specification
Agency approvals	• UL mark • European Union, CE mark (Declaration of Conformity) • FCC
Safety standards	• UL60950-1: 2003 1st Edition • CAN/CSA-C22.2 No. 60950-1-03 1st Edition April 1, 2003 • IEC 60950 (1st Edition 2001 With all national deviations)
Emissions	• FCC Part 15:2004 Class B • EN55022 (2006) Class B • EN61000-3-2 (2000) Harmonic current emissions • EN61000-3-3 (1995) Voltage fluctuations and flicker (with amendment A1)
Immunity	EN55024:1998 including the following (with amendments A1 and A2): • EN61000-4-2 (1995), ESD • EN61000-4-3 (1996), Radiated RF • EN61000-4-4 (1995), Burst Transients • EN61000-4-5 (1995), Surge • EN61000-4-6 (1996), Conducted RF • EN61000-4-11 (1995), Voltage Dips and Interruptions
Telecom	• TBR4:1995 (with amendments A1: 1997)[a]

a. Clauses 9.2, 9.3.5, TC25002/4/5, TC27002/4/5, TC27003/11/12/15/19/27/28/31/40/42/46/58/404/411/413/414/417, TC28005/12/406/424, TC24020, TC10002/4/10

Note: The standards compliance of the Mediatrix 3600 are printed on a sticker located on the bottom of the unit.

Disclaimers

The following are the disclaimers related to the Mediatrix 3600.

Federal Communications Commission (FCC) Part 15

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

Note: Any changes or modifications not expressly approved by Media5 could void the user's authority to operate the equipment.

CE Marking

DECLARATION OF CONFORMITY

We Media5 Corporation, located at 4229 Garlock st. Sherbrooke, Québec, Canada J1L 2C8 declare that for the hereinafter mentioned product the presumption of conformity with the applicable essential requirements of DIRECTIVE 1999/5/EC OF THE EUROPEAN PARLIAMENT (RTTE DIRECTIVE) is given.

Any unauthorized modification of the product voids this declaration.

For a copy of the original signed Declaration Of Conformity please contact Media5 at the above address.

RoHS China

这个文件涉及的是在中华人民共和国境内进口或销售的电子信息产品
Include this document with all Electronic Information Products imported or sold in the People's Republic of China

部件名称 (Parts)	有毒有害物质或元素 (Hazardous Substance)					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr⁶⁺)	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
塑料和聚合物部件 (Plastic and Polymeric parts)	○	○	○	○	×	×
集成电路 (Integrated Circuit)	×	○	×	○	×	×

○： 表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T-11363 – 2006 规定的限量要求以下。
Indicates that the concentration of the hazardous substance in all homogeneous materials in the parts is below the relevant threshold of the SJ/T-11363 - 2006 standard.

×： 表示该有毒有害物质至少在该部件的某一均质材料中的含量可能超出 SJ/T-11363 – 2006 规定的限量要求。
Indicates that the concentration of the hazardous substance of at least one of all homogeneous materials in the parts might exceed the relevant threshold of the SJ/T-11363 - 2006 standard.

除非另外特别的标注,此标志为针对所涉及产品的环保使用期限标志. 某些可更换的零部件会有一个不同的环保使用期限(例如,电池单元模块)贴在其产品上.
此环保使用期限只适用于产品是在产品手册中所规定的条件下工作.
The Environmentally Friendly Use Period (EFUP) for all enclosed products and their parts are per the symbol shown here, unless otherwise marked. Certain field-replaceable parts have a different EFUP (for example, battery modules) and so are marked to reflect such. The Environmentally Friendly Use Period is valid only when the product is operated under the conditions defined in the product manual.

Translated Warning Definition

The following information provides an explanation of the symbols which appear on the Mediatrix 3600 and in the documentation for the product.

> **STOP** **Warning:** Means danger. You are in a situation that could cause bodily injury. Before you work on any equipment, you must be aware of the hazards involved with electrical circuitry and familiar with standard practices for preventing accidents.

Waarschuwing: Dit waarschuwingssymbool betekent gevaar. U overtreat in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij elektrische schakelingen betrokken risico's en dient u op de hoogte te zijn van standaard maatregelen om ongelukken te voorkomen.

Varoitus: Tämä varoitusmerkki merkitsee vaaraa. Olet tilanteessa, joka voi johtaa ruumiinvammaan. Ennen kuin työskentelet minkään laitteiston parissa, ota selvää sähkökytkentöihin liittyvistä vaaroista ja tavanomaisista onnettomuuksien ehkäisykeinoista.

Attention: Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant causer des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers posés par les circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents.

Warnung: Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu einer Körperverletzung führen könnte. Bevor Sie mit der Arbeit an irgendeinem Gerät beginnen, seien Sie sich der mit elektrischen Stromkreisen verbundenen Gefahren und der Standardpraktiken zur Vermeidung von Unfällen bewußt.

Avvertenza: Questo simbolo di avvertenza indica un pericolo. La situazione potrebbe causare infortuni alle persone. Prima di lavorare su qualsiasi apparecchiatura, occorre conoscere i pericoli relativi ai circuiti elettrici ed essere al corrente delle pratiche standard per la prevenzione di incidenti.

Advarsel: Dette varselsymbolet betyr fare. Du befinner deg i en situasjon som kan føre til personskade. Før du utfører arbeid på utstyr, må du vare oppmerksom på de faremomentene som elektriske kretser innebærer, samt gjøre deg kjent med vanlig praksis når det gjelder å unngå ulykker.

Aviso: Este símbolo de aviso indica perigo. Encontra-se numa situação que lhe poderá causar danos físicos. Antes de começar a trabalhar com qualquer equipamento, familiarize-se com os perigos relacionados com circuitos eléctricos, e com quaisquer práticas comuns que possam prevenir possíveis acidentes.

¡Advertencia!: Este símbolo de aviso significa peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considerar los riesgos que entraña la corriente eléctrica y familiarizarse con los procedimientos estándar de prevención de accidentes.

Varning!: Denna varningssymbol signalerar fara. Du befinner dig i en situation som kan leda till personskada. Innan du utför arbete på någon utrustning måste du vara medveten om farorna med elkretsar och känna till vanligt förfarande för att förebygga skador.

Safety Warnings

This section lists the following safety warnings:

- ▶ Circuit Breaker (15A) Warning
- ▶ TN Power Warning
- ▶ Product Disposal Warning
- ▶ No. 26 AWG Warning
- ▶ LAN Connector Warning
- ▶ Socket Outlet Warning

Circuit Breaker (15A) Warning

> **STOP** **Warning:** This product relies on the building's installation for short-circuit (overcurrent) protection. Ensure that a fuse or circuit breaker no larger than 120 VAC, 15A U.S. (240 VAC, 10A international) is used on the phase conductors (all current-carrying conductors).

TN Power Warning

> **STOP** **Warning:** The device is designed to work with TN power systems.

Product Disposal Warning

> **STOP** **Warning:** Ultimate disposal of this product should be handled according to all national laws and regulations.

No. 26 AWG Warning

> **STOP** **Warning:** To reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cord.

LAN Connector Warning

> **STOP** **Warning:** Do not connect the LAN connector directly to the Public Switched Telephone Network (PSTN), to an off premise application, an out of plant application, any exposed plant application, or to any equipment other than the intended application, connection may result in a safety hazard, and/or defective operation and/or equipment damage.
>
> Exposed plant means where any portion of the circuit is subject to accidental contact with electric lighting or power conductors operating at a voltage exceeding 300V between conductors or is subject to lightning strikes.

Socket Outlet Warning

> **STOP** **Warning:** The socket outlet, if used, shall be located near the equipment and shall be easily accessible by the user.The AC adaptor inlet is considered as disconnection device. The device must be readily operational.

Advertencias de Seguridad

En esta sección se enumeran las siguientes advertencias de seguridad:

- ▶ Disyuntor (15A) Advertencia
- ▶ TN Potencia Advertencia
- ▶ Eliminación de Productos Advertencia
- ▶ N º 26 AWG Advertencia
- ▶ Conector LAN Advertencia
- ▶ Enchufe de Salida Advertencia

Disyuntor (15A) Advertencia

STOP **¡Advertencia!:** Este producto se basa en las protecciones de seguridad contra corto-circuitos (sobre corriente)instaladas en el edificio. Asegúrese de que un fusible o disyuntor no superior a 120 VAC, 15A EE.UU. (240 VCA, 10 internacionales) se utiliza en la fase de los conductores (todos los conductores de transporte).

TN Potencia Advertencia

STOP **¡Advertencia!:** El dispositivo está diseñado para trabajar con sistemas de potencia TN.

Eliminación de Productos Advertencia

STOP **¡Advertencia!:** Eliminación definitiva de este producto debe manejarse de acuerdo a las leyes y reglamentos nacionales.

N º 26 AWG Advertencia

STOP **¡Advertencia!:** Para reducir el riesgo de incendio, utilice únicamente cable telefonico N º 26 AWG o superior.

Conector LAN Advertencia

STOP **¡Advertencia!:** No conecte el conector LAN directamente a la red telefónica pública conmutada (RTPC), ni a una red de plantel exterior, ni a cualquier red expuesta al exterior, ni a ningun equipo que no sea la aplicación, la conexión puede resultar de alto riesgo, y / o funcionamiento defectuoso y / o daño del equipo.

La exposicion a una red de plante exterior implica que cualquier parte del circuito está sujeto a contacto accidental con la corriente eléctrica o conductores de energía que operan a una tensión superior a 300 V entre los conductores, o sometida a rayos.

Enchufe de Salida Advertencia

STOP **¡Advertencia!:** La toma de salida, si se utilizan, se debe encuentrar cerca del equipo y deberán ser fácilmente accesibles por el ususario. El adaptador de CA de entrada se considera como dispositivo de desconexión. El dispositivo deberá ser de operacion simple.

Safety Recommendations

To insure general safety follow these guidelines:

▶ Do not open or disassemble this product.

▶ Do not get this product wet or pour liquids into it.

▶ Do not perform any action that creates a potential hazard to people or makes the equipment unsafe.

> **Caution:** When using this equipment, basic safety precautions should always be followed to reduce the risk of fire, electric shock and injury to persons, including the following:
>
> • Do not use this product near water, for example, near a bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement or near a swimming pool.
>
> • Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.
>
> • Do not use the telephone to report a gas leak in the vicinity of the leak.

B

Cabling Considerations

This Appendix describes the pin-to-pin connections for cables used with the Mediatrix 3600.

> **STOP** **Warning:** To reduce the risk of fire, use only No. 26 AWG or larger telecommunication line cord.

Ethernet RJ-45 Cable

The RJ-45 connector is commonly used for network cabling and for telephony applications. It is used to wire both ends identically so the signals pass straight through.

RJ-45 cabling is also known as Twisted-pair Ethernet (TPE), Unshielded twisted pair (UTP) and 10/100 Base-T.

Figure 12: RJ-45 Cable
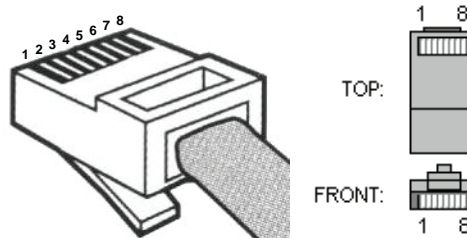
When connecting an Ethernet cable to the Mediatrix 3600, use a standard telecommunication cord with a minimum of 26 AWG wire size. It is possible to use either a crossover or straight Ethernet cable to connect in the Ethernet connectors. These connectors perform automatic MDI / MDIX detection, meaning that they adapt to the type of cable connected to them.

The auto MDI / MDIX feature works only when the connectors are configured in auto detect mode, which is the default mode.

Whenever you force the Mediatrix 3600 to use a specific Ethernet mode (for example 100 Mb Full Duplex), the type of cable to use depends on the other peer. For example, a straight cable is required to connect the Mediatrix 3600 to a hub or a switch, while a crossover cable is required to connect the Mediatrix 3600 to a PC.

Straight Through Cable

A RJ-45 straight through cable is used to connect a computer to a network device. For instance, you must use straight through cables to connect a computer to a network hub, switch, and router.

Table 15: RJ-45 Pinout Information

Pin #	Function	Colour Coding	
		EIA/TIA 568A	EIA/TIA 568B AT&T 258A
1	Transmit +	White with green stripe	White with orange stripe
2	Transmit -	Green with white stripe or solid green	Orange with white stripe or solid orange
3	Receive +	White with orange stripe	White with green stripe
4	N/A	Blue with white stripe or solid blue	Blue with white stripe or solid blue
5	N/A	White with blue stripe	White with blue stripe
6	Receive -	Orange with white stripe or solid orange	Green with white stripe or solid green
7	N/A	White with brown stripe or solid brown	White with brown stripe or solid brown
8	N/A	Brown with white stripe or solid brown	Brown with white stripe or solid brown

The RJ-45 cable uses two pairs of wires: one pair for transmission and the second pair for reception. It is wired so that pins 1 & 2 are on one twisted pair and pins 3 & 6 are on a second pair according to common wiring standards which meet the EIA/TIA T568A and T568B requirements.

Figure 13: Straight Through Connectivity

Pin 1	←→	Pin 1
Pin 2	←→	Pin 2
Pin 3	←→	Pin 3
Pin 6	←→	Pin 6
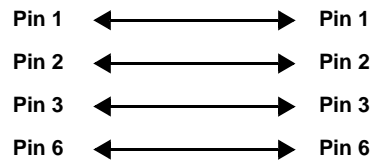
Pin Name and Function

The following is the function of each pin in a RJ-45 cable.

Table 16: Pin Name and Function

| Pin #	Name	Function
1	Transmit Data Plus	Positive signal for the TD differential pair. This signal contains the serial output data stream transmitted onto the network.
2	Transmit Data Minus	Negative signal for the TD differential pair. This contains the same output as pin 1.
3	Receive Data Plus	Positive signal for the RD differential pair. This signal contains the serial input data stream received from the network.
4	not connected	
5	not connected	
6	Receive data minus	Negative signal for the RD differential pair. This signal contains the same input as pin 3.
7	not connected	
8	not connected	

Crossover Cable

A RJ-45 crossover cable is used when only two systems are to be connected to each other, peer to peer, at the Ethernet Cards by "crossing over" (reversing) their respective pin contacts. An example would be connecting two computers together to create a network. The crossover eliminates the need for a hub when connecting two computers. A crossover cable may also be required when connecting a hub to a hub, or a transceiver to transceiver or repeater to repeater. When connecting a hub to a transceiver, a straight through cable is always used.

> **Note:** This is not an IEEE supported configuration and should be used for test purposes only.

A crossover cable is sometimes called a null modem. The coloured wires at either end are put into different pin numbers, or crossed over.

Figure 14: Crossover Connectivity


```
1- TX+               TX+ -1
2- TX-               TX- -2
3- RC+               RC+ -3
6- RC-               RC- -6
```
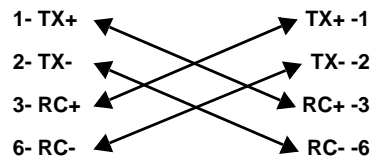
E1 PRI RJ-45 Cable

The E1 PRI is usually connected to a PBX or switch – local exchange (LE). Type and pin outs of these devices vary depending on the manufacturer. The PRI ports pin outs are configurable, so ensure that the appropriate mode (NET or USR) is configured. Refer to the *Software Configuration Guide* for more details.

> **Warning:** Hazardous network voltages may be present in the PRI cables. If you detach the cable, detach the end away from the Mediatrix 3600 first to avoid possible electric shock. Network hazardous voltages may be present on the device in the area of the PRI port, even when power is turned OFF.

> **Caution:** To prevent damage to the Mediatrix 3600, make sure that you connect the PRI cable to the PRI port only and not to any other RJ-45 socket.

The following describes the RJ-45 pinout information.

Table 17: RJ-45 Pinout Information – PRI

Pin #	NT Interface	TE Interface – Default value
1	Transmit #2	Receive #2
2	Transmit #1	Receive #1
4	Receive #2	Transmit #2
5	Receive #1	Transmit #1

Figure 15: RJ-45 Connectivity – PRI


```
Pin 1    <------->    Pin 1
Pin 2    <------->    Pin 2
Pin 4    <------->    Pin 4
Pin 5    <------->    Pin 5
```
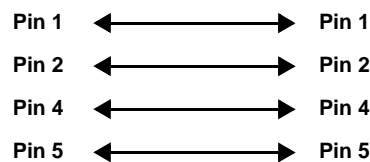
RJ-11 (Telephone) Cable

The RJ-11 cable is commonly used for telephone connection.

> ⚠️ **Caution:** Do not plug a phone jack connector into an RJ-45 port.

Wiring Conventions

For telephone connections, a cable requires one pair of wires. Each wire is identified by different colours. For instance, one wire might be red and the other, red with white stripes. Also, an RJ-11 connector must be attached to both ends of the cable.

Each wire pair must be attached to the RJ-11 connectors in a specific orientation. The following figure illustrates how the pins on the RJ-11 connector are numbered. Be sure to hold the connectors in the same orientation when attaching the wires to the pins.

Figure 16: RJ-11 Connector Pin Numbers
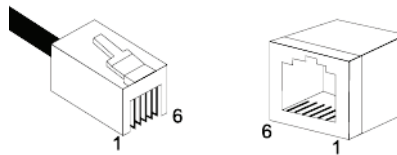
Table 18: RJ-11 Pinout Information

Pin #	Function
1	Not used
2	Not used
3	Ring
4	Tip
5	Not used
6	Not used

The RJ-11 pair of wires is wired so that pins 3 and 4 are connected to the Ring and Tip, which meets the following requirements:

▸ EIA/TIA-IS 968
▸ CS-03 Issue 8, Part III requirements.

> 🛑 **Warning:** The RJ-11 cable should comply with UL 1863 and CSA C22.2 No 233 standards.

Serial Console (RS-232)

DTE or DCE

A device that communicates over a synchronous serial interface is either a DTE (Data Terminal Equipment) or DCE (Data Communications Equipment) device. DTE devices usually connect to DCE devices. The Mediatrix 3600 and a PC are a DTE, while a CLI terminal is a DCE.

Crossover Cable (Null Modem)

The crossover version of the DB-9 cable (also known as null modem) uses a female-to-female cable in any application where you wish to connect the Mediatrix 3600 with another DTE device such as a PC or workstation. This cable is required for CLI application.

The purpose of a null-modem cable is to permit two RS-232 "DTE" devices to communicate with each other without modems or other communication devices (i.e., DCEs) between them.

To achieve this, the most obvious connection is that the TD signal of one device must be connected to the RD input of the other device (and vice versa).

Figure 17: DB-9 Crossover Connectivity
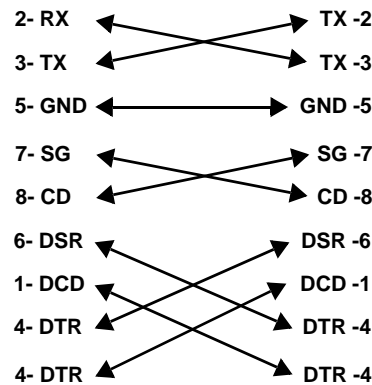
Standard Hardware Information

The specifications and information regarding this product are subject to change without notice. Every effort is made to ensure the accuracy of this document. Because of ongoing product improvements and revisions, Media5 cannot guarantee its accuracy, nor can be responsible for errors or omissions. Please contact your Media5 sales representative to obtain the latest version of the technical specifications.

Industry Standard Protocols

The Mediatrix 3600 has been designed to support all major industry standards used today, as well as those that will eventually be implemented at a later date. Because of this specific design characteristic, the Mediatrix 3600 can be integrated with existing telephone, fax and data equipment such as PCs and routers.

Table 19: Industry Standard Protocols

Parameter	Description
Vocoders	• G.711 (a-law, u-law) with optional VAD support • G.723.1a • G.726 • G.729a • G.729ab
IP Telephony Protocols	• SIP - RFC 3261, RFC 3262, RFC 3263
Real-Time Transport Protocols	• RTP/RTCP - RFC 1889, RFC 1890, RFC 2833, RFC 3389
Network Management Protocols	• SNMPv3 • DHCP - RFC 2131, RFC 2132 • TFTP - RFC 1350 • Syslog - RFC 3164 • HTTP 1.0 - RFC 1945 • HTTP 1.1 - RFC 2616 • HTTPS • Basic and digest HTTP authentication - RFC 2617
Data Features	• PPPoE client - RFC 1332, RFC 1661, RFC 1334, RFC 1994, RFC 2516, RFC 1471, RFC 1472, RFC 1473, RFC 1877. Note: some PPPoE RFCs are implemented partially. • TFTP or HTTP auto-provisioning • DHCP server • NAPT
QoS	• ToS • DiffServ • 802.1p • 802.1Q

Table 19: Industry Standard Protocols (Continued)

Parameter	Description
Voice Signalling	• Euro ISDN EDSS-1 / ETSI PRI/NET5 • ETS 300 012-1 (ITU-T I.430) • ETS 300 402-2 (ITU-T Q.921) • ETS 300 403-1/2 (ITU-T Q.931) • ETS 300 102-2 (ITU-T Q.931) • ETS 300 402-1 (ITU-T Q.921) • ETS 300 403-2 (ITU-T Q.931) • ETS 300 102-1 (ITU-T Q.931) • ISDN speech, audio and data (Fax Gr 4, UDI 64, RDI 64) • ECMA-143 (QSIG-BC)
CAS Signaling	• E1 R2 Digital Line Signalling (ITU-T Q.421) • E1 R2 MFC Interregister Signalling (ITU-T Q.441) • Country-specific R2 settings for Brazil, Argentina, Mexico and Saudi Arabia

Hardware Features

Interfaces

▶ 1 x RJ-45 WAN connector, 10/100 BaseT Ethernet access

▶ 4 x RJ-45 LAN connectors, 10/100 BaseT Ethernet access

▶ 30 or 60 simultaneous calls

▶ One or two ISDN PRI ports software configurable as NT or TE

Power

▶ AC: Standard power cord receptacle (IEC 320 – C14) for universal AC input internal SMPS.

Product Architecture Details

▶ Supports multiple concurrent communications using any vocoders.

▶ DSP-based DTMF detection and generation.

▶ DSP-based fax relay.

▶ Embedded IPv4 TCP/IP stack with configurable QoS implemented by:

• ToS byte at Network layer 3

• 802.1p at Data Link layer 2

▶ Network parameters assigned via DHCP

Real Time Fax Router Technical Specifications

Automatic selection between voice and fax.

Table 20: Fax Technical Specifications

Parameter	Description
Ethernet	10/100 BaseT Ethernet
Data Link	Ethernet
Network	IP (Internet Protocol)
Transport	TCP / UDP
Protocols	Group 3 Fax Clear channel (G.711) or T.38 Real Time Fax Over IP protocol Stack
Fax Data Compression	MH
Fax Transmission	Up to 14.4 kbps

Audio Specifications

▶ Software-adjustable dynamic and static jitter buffer protection.
▶ Programmable by country: Call progress tone generation including dial tone, busy tone, ringback and error tones.
▶ Silence detection/suppression level software adjustable.

DTMF Tone Detection

Table 21: DTMF Tone Detection

Parameter	Description
16-Digit DTMF Decoding	0 to 9, *, #, A, B, C, D
Permitted Amplitude Tilt	High frequency can be +2 dB to -8 dB relative to low frequency
Dynamic Range	-35 dBm to +3 dBm per tone
Frequency Accept	± 1.5% of nominal frequencies
Minimum Tone Duration	40 ms
Interdigit Timing	Detects like digits with a 40 ms interdigit delay

DTMF Tone Generation

Table 22: DTMF Tone Generation

Parameter	Description
Per Frequency Nominal	-6 dBm to -4 dBm

Table 22: DTMF Tone Generation (Continued)

Parameter	Description
Frequency Deviation	Less than 1%

Power Consumption

Table 23: Power Consumption

Parameter	Description
Ringing Mode (worst case, 4 REN load per port)	Mediatrix 3621/3631: 0.29Arms @ 240Vac; 0.45Arms @ 120Vac Mediatrix 3632: 0.46Arms @ 240Vac; 0.78Arms @ 120Vac

MTBF Value

The Mean Time Before Failure (MTBF) value of the Mediatrix 3600 models is estimated as follows:

▶ Mediatrix 3621/3631: 160,000 hours

▶ Mediatrix 3632: 150,000 hours

These values are at 25 degrees Celsius ambient temperature. It has been defined using RelCalc v5.0, Bellcore method (LimitedStress - Method I, Case 3), Desktop unit with 4 extensions ringing, 20 on standby.

Operating Environment

Table 24: Operating Environment

Parameter	Description
Operating Temperature	0°C to 40°C
Humidity	Up to 85%, non-condensing
Storage	-20°C to +70°C

Dimensions and Weight

Table 25: Dimensions and Weight

Parameter	Description
Dimensions	Height: 4.4 cm (1.73 in) Width, no mounting brackets: 44.5 cm (17.5 in) Width, with mounting brackets: 48.5 cm (19 in) Depth: 20.5 cm (8 in)
Weight	Mediatrix 3621/3631: 2.8 kg (6.2 lb) Mediatrix 3632: 3.0 kg (6.6 lb)

Warranty

All Media5 products carry Media5 Corporation's standard three-year hardware and software warranty. An extended warranty is available.

A P P E N D I X

D

Interface Card Installation Instructions

This Appendix describes how to install interface cards in a Mediatrix 3600 unit.

General Information

This assembly instruction is generic to any model of interface card.

▶ Some of the steps are optional, depending on the model to be assembled.

▶ The pictures shown in this Appendix are for reference only.

▶ The specification of the screws used in this assembly instruction are:

- 615-00023-00G: Screw #4-40 3/16" Flat Head Phillips 70% Undercut Stainless Steel
- 615-00039-00G: Screw #4-40 1/4" Pan head Phillips Stainless steel internal lock SEMS

Interface Card Installation Instructions

Follow these instructions with care.

1. Remove ALL cables connected to the unit prior to start working.

   The Mediatrix 3600 series has internal AC/DC power supply and telephony interfaces with hazardous sections accessible when the cover is removed. It is imperative for your own safety to remove all cables connected to the unit prior to start working.

2. Remove the screws of the ear mounting brackets on each side of the unit (keep them for re-assembly of the casing).

3. Remove all the screws of the top casing.

   There are three screws located on the top side, three screws located on the bottom side, and one screw located on each side (keep them for re-assembly of the casing).

4. Slide the top casing to remove it from the unit.

5. Remove the screws of the "SLOT2" and/or "SLOT3" plate where you want to install the new card (keep them for re-assembly of the casing).

> **Note:** When installing a mix of digital interface card and analog interface card, ALWAYS install the digital interface card in "SLOT2".

6.   Align the 4x21 pins header connector of the card to the receptacle on the motherboard. Make sure that the card header is well inserted onto its mating receptacle.

☞ **Note:** Special note for the interface card 3301-080 (2FXS/6FXO card): Bend slightly the capacitors on the motherboard in order to allow adequate installation of the card. Latest Motherboard assemblies have a low height capacitor model to resolve this known issue.

Figure 18: Bending of Capacitor
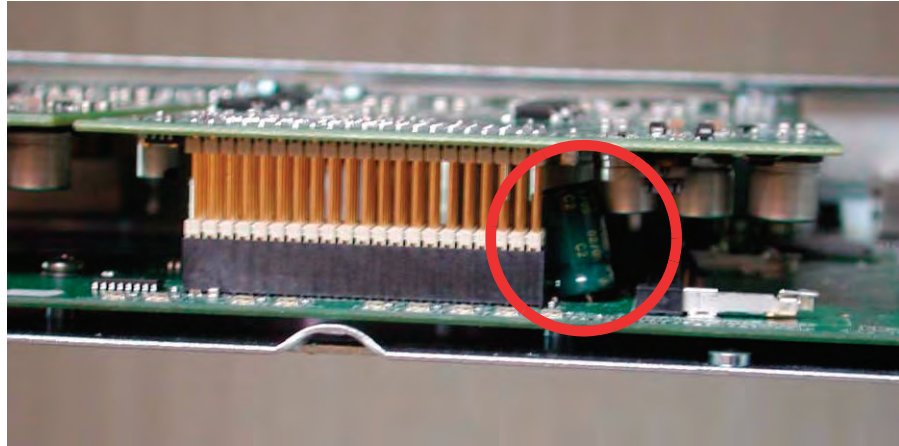
7.   Screw the interface card's plate with the 615-00023-00G screws (torque: 3 inch pounds).

Figure 19: Screw Interface Card's Plate
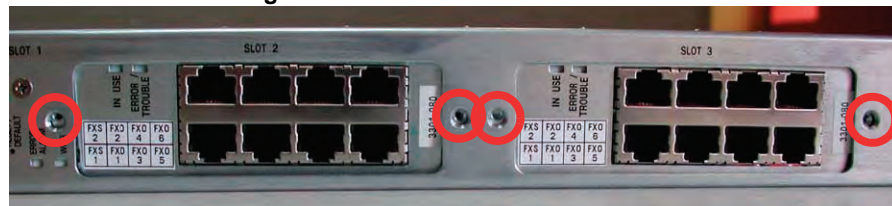
8.   Screw the center of the plate with 615-00039-00G model (torque: 3 inch pounds).

Figure 20: Screw Center of Plate
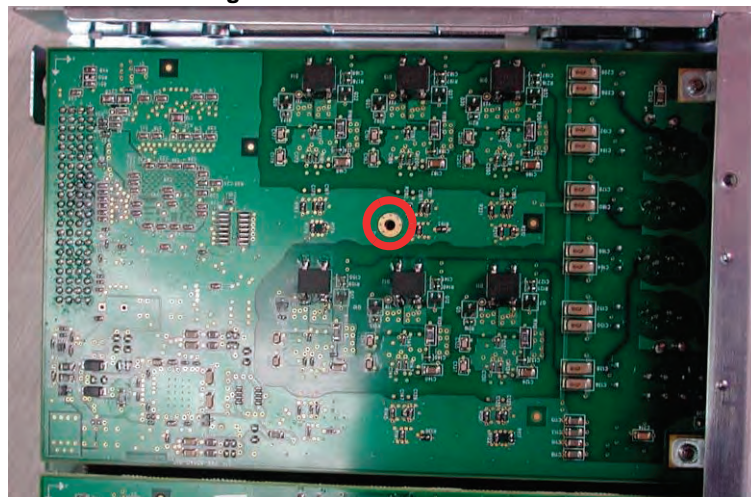
9.   Slide-in the top cover all the way to the end. Make sure that the RS-232 connector does not interfere with its opening on the top cover.

10.   Screw the top casing at all 8 locations (torque: 3 inch pounds).

      There are three screws located on the top side, three screws located on the bottom side, and one screw located on each side.

11.   Install the ear mounting brackets and screw them in place (torque: 4 inch pounds).

12.   Make sure there is no sound/rattle coming from the unit when manipulated (loose part).

13.   Apply the card serial number label next to the base unit label.

Figure 21: Applying the Card Serial Number Label
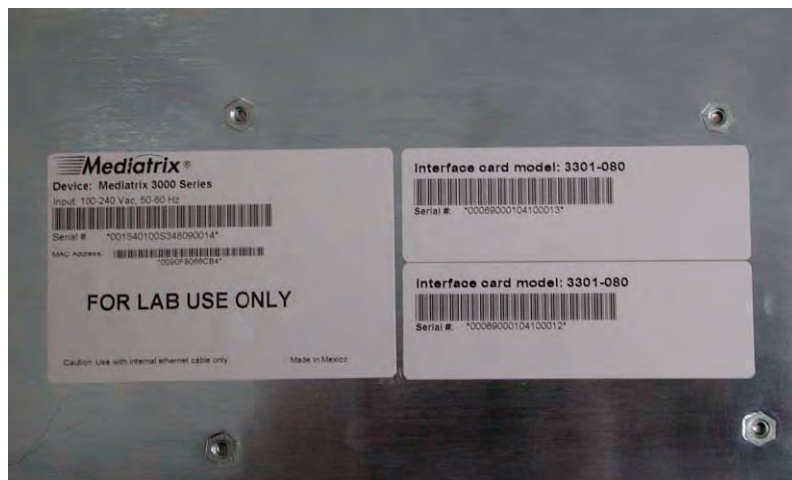
14.   Reconnect the power and telephony cables.

15.   Upgrade the unit firmware if necessary.

> **Note:** Special note for the interface card 3301-080 (2FXS/6FXO card): Use Firmware DGW v2.0r8.111 or higher.

Glossary

10 BaseT

An Ethernet local area network that works on twisted pair wiring.

100 BaseT

A newer version of Ethernet that operates at 10 times the speed of a 10 BaseT Ethernet.

Domain Name Server (DNS)

Internet service that translates domain names into IP addresses. To use a domain name, a DNS service must translate the name into the corresponding IP address. For instance, the domain name *www.example.com* might translate to 198.105.232.4.

Dual-Tone Multi-Frequency (DTMF)

In telephone systems, multi-frequency signalling in which a standard set combinations of two specific voice band frequencies, one from a group of four low frequencies and the other from a group of four higher frequencies, are used. Although some military telephones have 16 keys, telephones using DTMF usually have 12 keys. Each key corresponds to a different pair of frequencies. Each pair of frequencies corresponds to one of the ten decimal digits, or to the symbol "#" or "*", the "*" being reserved for special purposes.

Dynamic Host Configuration Protocol (DHCP)

TCP/IP protocol that enables PCs and workstations to get temporary or permanent IP addresses (out of a pool) from centrally-administered servers.

Federal Communications Commission (FCC)

U.S. government regulatory body for radio, television, interstate telecommunications services, and international services originating in the United States.

Gateway

A device linking two different types of networks that use different protocols (for example, between the packet network and the Public Switched Telephone Network).

Integrated Services Digital Network (ISDN)

A set of digital transmission protocols defined by the international standards body for telecommunications, the ITU-T (formerly called the CCITT). These protocols are accepted as standards by virtually every telecommunications carrier all over the world.

ISDN complements the traditional telephone system so that a single pair of telephone wires is capable of carrying voice and data simultaneously. It is a fully digital network where all devices and applications present themselves in a digital form.

International Telecommunication Union (ITU)

Organization based in Geneva, Switzerland, that is the most important telecom standards-setting body in the world.

Internet Protocol (IP)

A standard describing software that keeps track of the Internet's addresses for different nodes, routes outgoing messages, and recognizes incoming messages.

Light Emitting Diode (LED)

A semiconductor diode that emits light when a current is passed through it.

Local Area Network (LAN)

Data-only communications network confined to a limited geographic area, with moderate to high data rates. See also WAN.

Media Access Control (MAC) Address

A layer 2 address, 6 bytes long, associated with a particular network device; used to identify devices in a network; also called hardware or physical address.

Network

A group of computers, terminals, and other devices and the hardware and software that enable them to exchange data and share resources over short or long distances. A network can consist of any combination of local area networks (LAN) or wide area networks (WAN).

Primary Rate Interface (PRI)

A telecommunications standard for carrying multiple DS0 voice and data transmissions between two physical locations. All data and voice channels are (ISDN) and operate at 64 kbit/s.

North America and Japan use a T1 of 23 B channels and one D channel which corresponds to a T1 line. Europe, Australia and most of the rest of the world use the slightly higher capacity E1, which is composed of 31 B channels and one D channel.

Fewer active B channels (also called user channels) can be used for a fractional T1. More channels can be used with more T1's, or with a fractional or full T3 or E3.

Private Branch Exchange (PBX)

A small to medium sized telephone system and switch that provides communications between onsite telephones and exterior communications networks.

Protocol

A formal set of rules developed by international standards bodies, LAN equipment vendors, or groups governing the format, control, and timing of network communications. A set of conventions dealing with transmissions between two systems. Typically defines how to implement a group of services in one or two layers of the OSI reference model. Protocols can describe low-level details of machine-to-machine interfaces or high-level exchanges between allocation programs.

Public Switched Telephone Network (PSTN)

The local telephone company network that carries voice data over analog telephone lines.

Router

A specialized switching device which allows customers to link different geographically dispersed local area networks and computer systems. This is achieved even though it encompasses different types of traffic under different protocols, creating a single, more efficient, enterprise-wide network.

Switched Circuit Network (SCN)

A communication network, such as the public switched telephone network (PSTN), in which any user may be connected to any other user through the use of message, circuit, or packet switching and control devices.

Server

A computer or device on a network that works in conjunction with a client to perform some operation.

Session Initiation Protocol (SIP)

A protocol for transporting call setup, routing, authentication, and other feature messages to endpoints within the IP domain, whether those messages originate from outside the IP cloud over SCN resources or within the cloud.

Subnet

An efficient means of splitting packets into two fields to separate packets for local destinations from packets for remote destinations in TCP/IP networks.

Transmission Control Protocol/Internet Protocol (TCP/IP)

The basic communication language or protocol of the Internet. It can also be used as a communications protocol in a private network (either an intranet or an extranet).

Voice Over IP (VoIP)

The technology used to transmit voice conversations over a data network using the Internet Protocol. Such data network may be the Internet or a corporate Intranet.

Wide Area Network (WAN)

A large (geographically dispersed) network, usually constructed with serial lines, that covers a large geographic area. A WAN connects LANs using transmission lines provided by a common carrier.

List of Acronyms

AWG	American Wire Gauge
CE	Cummunauté européenne (French)
dB	Decibel
DCE	Data Communications Equipment
DHCP	Dynamic Host Configuration Protocol
DNS	Domain Name Server
DTE	Data Terminal Equipment
ESD	Electrostatic Discharge
ETSI	European Telecommunications Standards Institute
Hz	Hertz
IETF	Internet Engineering Task Force
LED	Light Emitting Diode
MAC	Media Access Control
MDI	Media Dependent Interface
MDIX	Media Dependent Interface Crossover
PBX	Private Branch eXchange
PRI	Primary Rate Interface
PSTN	Public Switched Telephone Network
RFC	Request for Comment
SCN	Switched Circuit Network
SIP	Session Initiation Protocol
TPE	Twisted-Pair Ethernet
UL	Underwriters Laboratories Incorporated
USB	Universal Serial Bus
UTP	Unshielded Twisted pair
VAC	Volts Alternating Current
VoIP	Voice over Internet Protocol
WAN	Wide Area Network

Index