

**Lucent Technologies**  
Bell Labs Innovations



**DEFINITY<sup>®</sup> Branch Office Extender 6000**  
PBXgateway

**System Administrator's Guide**

**555-025-210**

**Issue 2.1**

**December 1999**

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**Notice**

Every effort was made to ensure that the information in this book was complete and accurate at the time of printing. However, information is subject to change.

**Your Responsibility for Your System's Security**

Toll fraud is the unauthorized use of your telecommunications system by an unauthorized party, for example, persons other than your company's employees, agents, subcontractors, or persons working on your company's behalf. Note that there may be a risk of toll fraud associated with your telecommunications system and, if toll fraud occurs, it can result in substantial additional charges for your telecommunications services.

You and your system manager are responsible for the security of your system, such as programming and configuring your equipment to prevent unauthorized use. The system manager is also responsible for reading all installation, instruction, and system administration documents provided with this product in order to fully understand the features that can introduce risk of toll fraud and the steps that can be taken to reduce that risk. Lucent Technologies does not warrant that this product is immune from or will prevent unauthorized use of common-carrier telecommunication services or facilities accessed through or connected to it. Lucent Technologies will not be responsible for any charges that result from such unauthorized use.

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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 when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. For further FCC information, see "Customer Support Information" below.

**Industry Canada (IC) Interference Information**

This digital apparatus does not exceed the Class A limits for radio noise emissions set out in the radio interference regulations of the Canadian Department of Communications.

Le Présent Appareil Numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la class A prescrites dans le règlement sur le brouillage radioélectrique édicté par le ministère le ministère des Industrie Canada.

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For more information about Lucent Technologies documents, refer to the section entitled "Related Documents" in "About This Book"

**Support Telephone Number**

In the continental US, Lucent Technologies provides a toll-free customer helpline 24 hours a day. Call the Lucent Technologies Helpline at 1 800 242-2121 or your Lucent Technologies authorized dealer if you need assistance when installing programming, or using your system. Outside the continental US, contact your local Lucent Technologies representative.

**Warranty**

Lucent Technologies provides a limited warranty on this product. Refer to "Limited Warranty" in "Customer Support Information."

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## Important Safety Instructions

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### Lifeline or 911 Phone Notice



**CAUTION: THIS IS NOT A LIFELINE or 911 PHONE.**

If you dial 911 on your display telephone, when the telephone is connected to the Remote unit and linked to the PBXgateway, you will reach the 911 facility that serves the location of the corporate facility and **not** the location of your Remote unit. To ensure that you reach the correct 911 service for your area, use a telephone connected locally.

*Note: Branch Office Extender™ 6000 Remote units provide an analog port for local dialing.*

## **Important Safety Instructions**

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### **Important Safety Instructions**



The exclamation point in an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

#### **IMPORTANT SAFETY INSTRUCTIONS**

To reduce the risk of fire, electrical shock, and injury to persons when installing telephone equipment, always follow basic safety precautions including:

- Read and understand all instructions.
- Follow all warnings and instructions marked on or packed with the product.
- Never install this unit, or the telephone wiring for it, during a lightning storm.
- Never install a telephone jack in a wet location unless the jack is specifically designed for wet locations.
- Never touch non-insulated telephone wires or terminals unless the telephone wiring has been disconnected at the network interface.
- Use caution when installing or modifying telephone lines.

### **Important Safety Instructions**

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- Do not install this product near water, for example, in a wet basement location.
- Do not overload wall outlets, as this can result in the risk of fire or electrical shock.
- Do not attach the power supply cord to building surfaces. Do not allow anything to rest on the power cord. Do not locate this product where the cord will be abused by persons walking on it.
- Unplug the product from the wall outlet before cleaning. Use a damp cloth for cleaning. Do not use cleaners or aerosol cleaners.
- Do not operate the system if chemical gas leakage is suspected in the area. Use telephones located in some other safe area to report the trouble.



### **WARNING:**

DO NOT open the PBXgateway or Branch Office units. There are no user serviceable parts inside. Only an authorized technician should open the unit for required maintenance or upgrading purposes.

**SAVE THESE INSTRUCTIONS**

## **Customer Support Information**

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### **Support Telephone Number**

Call the Lucent Technologies Help-line (at 1-800-242-2121), or your Lucent Technologies authorized dealer if you need assistance when installing, programming, or using your system. Ask for customer service. Outside the United States or Canada, contact your local Lucent Technologies representative.

## **Customer Support Information**

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### **Security of Your System: Preventing Toll Fraud**

As a customer of a new telephone system, you should be aware that there is an increasing problem of telephone toll fraud. Telephone toll fraud can occur in many forms, despite the concerted efforts of telephone companies and telephone equipment manufacturers to control it. Some individuals use electronic devices to prevent or falsify records of these calls. Others charge calls to someone else's number by illegally using lost or stolen calling cards, billing innocent parties, clipping on to someone else's line, or breaking into someone else's telephone equipment physically or electronically. In certain instances, unauthorized individuals make connections to the telephone network through the use of remote access features.

Common carriers are required by law to collect their tariff charges. While these charges are fraudulent charges made by persons with criminal intent, applicable tariffs state that the customer of record is responsible for payment of all long-distance or other network charges. Lucent Technologies cannot be responsible for such charges and will not make any allowance or give any credit for charges that result from unauthorized access.

## Customer Support Information

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### Security of Your System: Preventing Toll Fraud continued

To minimize the risk of unauthorized access to your Lucent Technologies PBXgateway, when possible, restrict the off-network capability of off-premises callers, using calling restrictions, Facility Restriction Levels, and Disallowed List capabilities.

When possible, block out-of-hours calling through Time-of-Day Routing. Frequently monitor system call detail reports for quicker detection of any unauthorized or abnormal calling patterns.

Limit out-calling to persons on a need-to-have basis. The Lucent Technologies PBXgateway, through proper administration, can help you reduce the risk of unauthorized persons gaining access to the network. However, telephone numbers and authorization codes can be compromised when overheard in a public location, lost through theft of a wallet or purse containing access information, or when treated carelessly (writing codes on a piece of paper and improperly discarding them).

Additionally, hackers may use a computer to dial an access code and then publish the information to other hackers. Substantial charges can accumulate quickly. It is your responsibility to take appropriate steps to implement the features properly, to evaluate and administer the various restriction levels, and to protect and carefully distribute access codes.

Under applicable tariffs, you will be responsible for payment of toll charges. Lucent Technologies cannot be responsible for such charges and will not make any allowance or give any credit resulting from unauthorized access.

## **Customer Support Information**

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### **FCC Regulations**

Lucent Technologies PBXgateway, complies with FCC Part 15, Subpart B, Class B.

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

The telephone company may make changes in its 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 the necessary modifications in order to maintain uninterrupted service.

## Customer Support Information

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### Equipment Attachment Limitations

The Industry Canada label means that the equipment meets certain telecommunications network protective, operational and safety requirements.

Industry Canada REN: CS-03

The department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, the system administrator should ensure that it is permissible to be connected to the off-premises lines of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases the wiring associated with a single line individual service may be extended by means of a certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

**Caution:** Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority or electrician.

## **Customer Support Information**

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### **Limited Warranty**

Lucent Technologies warrants this equipment to be free of defects in materials and workmanship for a period of one year from date of shipment. All defects within this time will be repaired without charge upon return of the unit to the factory.

This warranty is null and void if the manufacturer determines that any modifications have been made to the unit or the unit has been subjected to physical or electrical stress.

This warranty covers parts and labor only, and does not include shipping costs, travel expenses or travel time.

Installation of the equipment is the sole responsibility of the purchaser. The manufacturer, its agents, or distributors accept no responsibility for malfunction or damage caused by improper treatment or connection of the unit.

The manufacturer, its agents, or distributors are not liable for any losses incurred through use or malfunction of the equipment or any losses or damages incurred by the use of the equipment in any means whatsoever.

This warranty is limited to the repair of the equipment to its normal functioning capability.

This warranty is complete as stated and all other warranties, expressed or implied, are invalid.

The PBXgateway should be installed by qualified personnel. No user serviceable parts are contained within the units. Installation or programming should not begin prior to review of all Chapters of this manual.

## About This Manual

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### About This Manual

#### Intended Audience

This manual is intended to help with the installation, configuration, and troubleshooting of the Lucent Technologies PBXgateway and compatible remote units. Additional information is provided for Remote products, which can be 'mixed & matched' to communicate with the PBXgateway depending on the clients' needs. This document is intended for use by anyone needing such information, including system administrators, support personnel, and technicians.

#### Terms and Conventions

- ✓ The Lucent Technologies Branch Office EXTender 6000 **PBX**gateway is henceforth referred to as the PBXgateway or Gateway unit.
- ✓ The Lucent Technologies Branch Office EXTender 6000 Remote Extender product is henceforth referenced as the Extender 6000, Branch Office unit, or remote unit.
- ✓ The Lucent Technologies Management Interface is henceforth referred to as the MI.

## About This Manual

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### Conventions used in this Manual

Certain type fonts and styles are used as visual cues to help you rapidly understand the information presented:

Example	Purpose
<i>Note: Do not recycle old passwords.</i>	Italics indicate a note to add additional reference information.
Type in the new password and press <b>Enter</b> .	Text in <b>bold</b> print is used to indicate a command key option or parameter within the MI.
<u>Example:</u> First Name	Text that is <u>underlined</u> provides an example of the subject matter.

## About This Manual

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### How to Use This Manual

The manual is divided into eight Chapters and five Appendices as follows.

<b><u>Chapter Number</u></b>	<b><u>Title</u></b>	<b><u>Description</u></b>
1	Product Overview	Provides information including a product overview, product feature list, hardware, and related software.
2	Specifications	Lists all appropriate electrical, communications, and data specifications.
3	Installation	Provides the system administrator with a process for installing the PBXgateway. An installation checklist is provided for each Remote unit. It includes pre-installation checklists and connectivity information.
4	Configuration	Provides a detailed checklist and step-by-step procedures for properly setting up each remote unit based on the type of network connection available.
5	The Management Interface (MI)	Provides information on all parameters within the Management Interface (MI). Information includes the parameter description, usage, location, and references.

## **About This Manual**

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### How to use this Manual continued

<b><u>Chapter Number</u></b>	<b><u>Title</u></b>	<b><u>Description</u></b>
6	Troubleshooting	Provides task lists to determine operational errors, communication errors, and functional problems with the PBXgateway.
7	File Management & System Upgrades	Provides a process for updating, copying and deleting files using the MI.
8	Glossary	Provides a list of terms that are used in the operation or set up of the Lucent Technologies product line.

## **About This Manual**

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### How to use this Manual continued

<b><u>Chapter Number</u></b>	<b><u>Title</u></b>	<b><u>Description</u></b>
Appendix A	Management Interface (MI) Menus Defined	Provides a complete list of each menu within the MI. The information includes default settings and available parameters.
Appendix B	Bandwidth vs. Remote Users	Provides information on bandwidth requirements vs. remote users desired.
Appendix C	Phone-Set Interface	Provides reference information on the Branch Office Phone-Set Interface. This interface uses a digital telephone keypad to input commands in order to manage certain parameters on Remote units.
Appendix D	SNMP	Provides information on SNMP as it applies to the PBXgateway.
Appendix E	Log Messages	Provides an in-depth listing of Log Messages helpful for troubleshooting purposes.

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## Product Overview

# 1

This Chapter provides a Product Overview for the PBXgateway including; a Product Feature List, Voice Compression vs. Bandwidth Requirements, Typical Installation Information, a Management Interface (MI) Overview, and Diagnostic Information.

## **1. PRODUCT OVERVIEW**

**Introduction** This Chapter provides a product overview of the PBXgateway, and Branch Office Extender 6000 units. The information includes: basic functionality, connectivity, voice compression, configuration and diagnostics.

**Product Summary** The PBXgateway is a multi-user telephony device enabling remote teleworkers seamless connectivity and full functionality of DEFINITY ECS. The PBXgateway is referred as a “gateway ” because it is the central receiving point for routing voice conversations from one or more locations to the DEFINITY ECS.

Teleworkers, usually working from an off-site location, can place a call through the corporate DEFINITY ECS by simply dialing the number as if they were in the main office. The remote phones are connected to the multiple-user unit called the Branch Office Extender 6000. The multi-user device is referred to as the “Branch Office or remote unit”.

The Gateway, and Remote units are linked through a wide variety of network devices (TA, FRAD, CSU/DSU) and network types (ISDN, IP, Frame Relay, T1, Fractional T1, ATM).

## Product Overview

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### Types of Network Connections

**Introduction** The PBXgateway is designed to connect over a wide variety of third party network devices using two types of network connections;

1. Synchronous-Serial connection  
(V.35, RS-530, RS-232)
2. IP (10baseT Ethernet)

**Voice Transmission** At both the branch office and corporate sites, all voice and signaling information is placed into digital data packets, which are then sent out over the data network. This data is transmitted digitally over the connection as a series of “ones” and “zeroes”. The data packets are encapsulated within an MCK Proprietary protocol called Remote Voice Protocol™ (RVP)

**Synchronous-serial** A synchronous-serial connection defines when each character begins and ends by providing a clock signal to indicate the starting and stopping points of the characters. Voice and signaling packets are sent using the High level Data Link Control (HDLC) protocol using the synchronous serial WAN ports. A network termination device (TA, CSU/DSU, FRAD) handles the transmission of the HDLC data to the alternate device over the appropriate network circuit. (See page 1-5 for more information)

**Voice Over IP (VoIP)** The voice and signaling packets are sent using Internet Protocol (IP) over the packet-switched data networks as opposed to using the traditional circuit-switched protocols. Voice packets get delivered to the alternate device using the RVP. This protocol handles the timing and delivery of the packets. (See page 1-6 for more information)

*Note: Use of the PBXgateway over IP Networks is currently not supported by Lucent Technologies.*

## Product Overview

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Types of connections		Remotes Supported		
Type	Configuration	Model(s)	Protocols	Connection type
RVP_Direct	1 remote per Gateway	6000	*RVP over HDLC	Serial WAN Ports
RVP_IP	Many remotes per Gateway. (up to 12)	6000	*RVP_over_IP	Ethernet (10baseT)

\* Remote Voice Protocol™ (RVP), MCK Proprietary protocol.

**Table 1-1. Connections vs. Remotes**

*Note: Use of the PBXgateway over IP Networks is currently not supported by Lucent Technologies.*

## **Product Overview**

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### **Synchronous-Serial**

**Synchronous-Serial**     **Definition:** A connection type utilizing the RVP protocol, encapsulated over HDLC, to send voice packets over the network (using traditional network devices: TA, CSU/DSU, FRAD) using a synchronous-serial bit stream via the WAN port of the unit. A synchronous connection relies on a master clock (an oscillator generated signal) to identify the starting point of each digital bit (ons & offs or “ones” and “zeroes”) being sent. Voice packets are spaced by time.

**Connection Type:**

RVP\_Direct

**Advantages:**

- Synchronous transmission of data requires fewer bits (and takes less time).
- Uses common network circuits.
- Circuit switched networks are generally more reliable for voice transmission.

**Network types:**

- T1/FracT1
- Switched 56/64K
- ISDN
- Frame Relay
- ATM

**Connection:**

(2) DB-25 male connectors (WAN ports)

**Interface Types:**

- RS-232
- V.35
- RS-530

**Branch Office Extender Models:**

Extender 6000

## **Product Overview**

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### Voice over IP (VoIP)

**Voice over IP (VoIP)**    **Definition:** A network connection allowing voice packets to be delivered to the alternate site using the Internet Protocol (IP). In most IP circuits two types of devices are utilized. A server (PBXgateway) is the main hub of information being requested, and a client (the Remote unit) or user obtaining the information. The Remote unit receives the voice packets from the user phone and transmits the packets via the LAN and sends them over the WAN to the PBXgateway at the corporate facility.

*Note: Use of the PBXgateway over IP Networks is currently not supported by Lucent Technologies.*

**Connection Type:**

RVP\_IP

**Advantages:**

- Avoids toll charges charged by ordinary telephone services.
- IP connections are common and readily available.
- Makes use of existing network infrastructure.
- Avoids fixed costs associated with T1 & ISDN circuits.

**Network types:**

- T1/FracT1
- Switched 56/64K
- ISDN
- Frame Relay
- ATM

**Connection:**

(1) RJ-45 10baseT connector

**Remote Extender Models:**

Extender 6000

## **Product Overview**

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### **PBX/KSU Features**

All features of the DEFINITY ECS are maintained providing individual users seamless access to the corporate phone system from the remote location.

Digital phones extended by the PBXgateway have the full functionality of phones located in the corporate facility.

Features include;

- the ability to place and receive calls
- extension-to-extension dialing
- speed dialing
- the ability to transfer calls
- conference calls
- full access to voicemail
- the use of the auto-attendant
- the utilization of ACD systems and call accounting software

## Product Overview

---

### Voice Compression Vs. Bandwidth

The PBXgateway provides a choice of voice compression algorithms to allow up to 12 phones to be extended over T1, Fractional T1, or ISDN lines.

The compression algorithm selected determines the bandwidth required.

**T1:** A digital transmission link at speeds of 1.544 million bits per second (or Twenty-four DS0s).

**DS0:** The worldwide standard speed for digitized voice conversation at 64,000 bits per second.

**ISDN:** A digital transmission link consisting of two "B" channels (bearer) for voice and one "D" channel (data). Each "B" channel transmits voice signals at 64,000 bits per second.

The following are user selectable voice compression methods supported by the PBXgateway to accommodate the available bandwidth:

- G.729A (8 Kbps)
- ADPCM 24 (24 Kbps)
- ADPCM 32 (32 Kbps)
- G.711 (64 Kbps)

*Note: These numbers indicate the bandwidth required per phone, not including overhead.*

#### References:

- Bandwidth Requirements*, see Appendix B
- Setting the Voice Compression*, see *Setting the Voice Compression Method* in Chapter 4.

## Product Overview

---

### Physical Characteristics

The PBXgateway is an enclosed metal chassis, which can be stacked and installed in a standard 19" telecommunications or data communication rack.

Additional physical characteristics:

#### Front of Unit

- ❑ One DB-9 port used to connect a PC or terminal to the Management Interface.
- ❑ Four dual-color system status LEDs
- ❑ Twelve single-color port status LEDs

#### Back of Unit

- ❑ One 50-pin, RJ-21 connector used to connect to the DEFINITY ECS
- ❑ Two DB-25 WAN ports to connect to the network device.
- ❑ One RJ-45 Ethernet port for LAN connection for Voice over IP traffic and/or Telnet management access.
- ❑ Four Ethernet Status LEDs

#### References:

- For detailed information on physical attributes, see *Extender Views* in Chapter 3.
- For detailed information and physical attributes of each single-user or Branch Office unit, see each individual *Quick Installation Guide* (QIG) which is shipped with each unit

## Product Overview

### Typical Installation

The PBXgateway can be installed in a variety of different configurations depending on available bandwidth, the type of third-party termination equipment, and the type of Extender installed at the remote location.

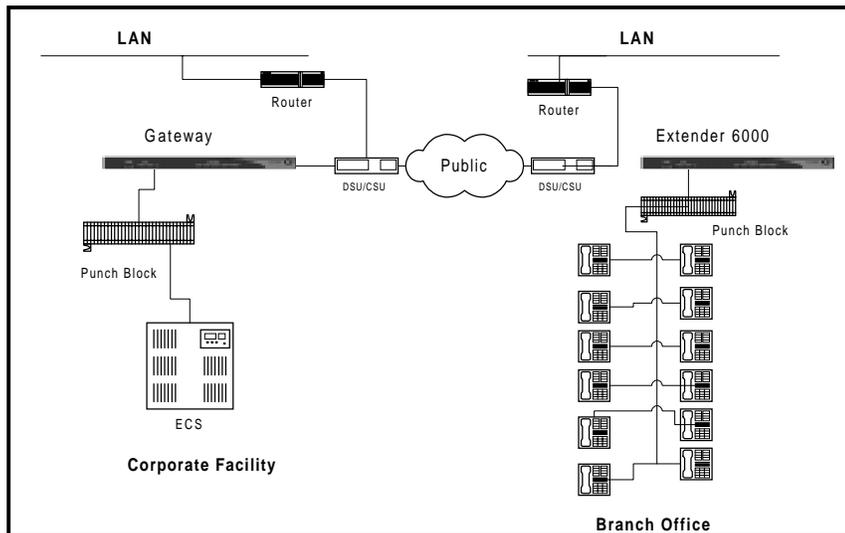


Figure 1.1 Synchronous (RVP\_Direct) Installation

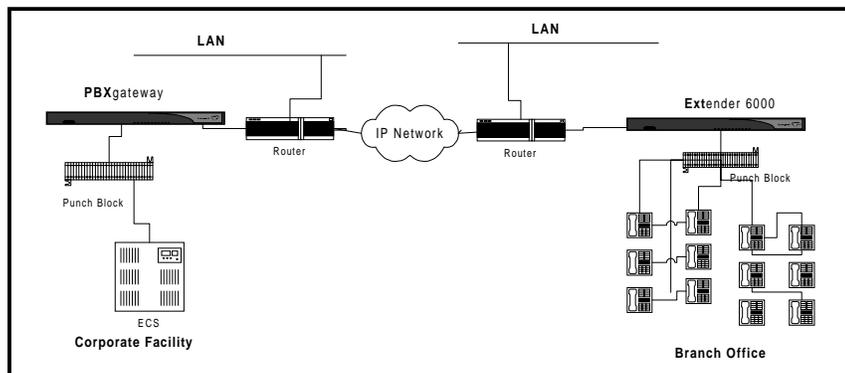


Figure 1.2. VoIP (RVP\_IP) Installation

## Product Overview

---

**Configuration and Management** The configuration, operational, and troubleshooting features of the PBX gateway are accessible through the Management Interface (MI). The MI can be accessed with a PC or terminal connected in one of three ways:

- Accessibility**
- Direct Serial connection (see page 4-5).
  - TCP/IP-based Telnet access (see page 4-7).
  - Inband login between the Switch and Remote units. (see page 4-49)

**The MI** The MI is a menu system compatible with VT-100 Enhanced Terminal Interface (ETI) enabling the system administrator:

- the capability for full configuration of the phone and WAN ports plus IP configuration.
- the access for full management capabilities
- the access to status information on port usage
- the information necessary to troubleshoot problems
- the ability to review and monitor log messages (for possible signs of error)
- the ability to perform complete software upgrades.

**Phone Set Interface (Remote only)** The **Phone-Set** user interface allows limited access (to the MI) including: Console port configuration for serial access and IP configuration for Telnet access. (see Appendix C)

The Phone-Set interface is accessible through any phone (password required) at the Remote site and provides a few useful diagnostic commands, status displays, and a limited set of configuration options-TCP/IP, console bit rate, and connection.

(Refer to Appendix C, *Phone-Set Interface* for more information)

## Product Overview

---

### **Diagnostic Capabilities**

The PBXgateway Management Interface (MI) provides the system administrator with numerous diagnostic capabilities. In addition, each time the PBXgateway is powered-up, it performs a diagnostic self-test.

Through the MI, you can:

- ❑ View statistics of the unit
- ❑ Reset the WAN and Telephony ports
- ❑ Test the WAN ports
- ❑ View results of the power-up self-test.
- ❑ Set up SNMP traps for capturing and viewing statistics and error conditions.

#### **References:**

- Refer to Chapter 6 *Troubleshooting* for more information.
- Refer to Appendix D *SNMP* for more information on SNMP traps.

---



## Specifications

# 2

This Chapter provides information and specifications including; Regulatory approvals, system architecture, memory, WAN design, interfaces, voice, and electrical specifications.

## Specifications

---

## 2. SPECIFICATIONS

**Introduction** This Chapter contains information on specific electrical and mechanical parameters. These specifications are provided as a reference for design characteristics of the PBXgateway.

*Note: Specifications for each Remote unit are contained within the individual Quick Installation Guide (QIG).*

*Note: Specifications are subject to change without notice as technological or manufacturing changes warrant.*

### Regulatory Approvals

FCC	Parts 15 & 68, Subpart B, Class B
CE Mark	EN50081-1, EN50082-1, EN60950
NRTL/C	CSA Standard C22.2 No.0-M91 , 225-M90
Industry Canada	CS-03

### System Architecture

CPU	Motorola 68MH360, 33MHz
DSP	Five Analog Devices 2187 (52 MIPS)

### Memory

DRAM	4MB
Flash Memory	4MB
Boot ROM	512KB

### WAN Ports

Protocol	Synchronous-serial
Interface	RS-232, V.35 or RS-530
Encapsulation	High level Data Link Control (HDLC)

**Table 2-1. PBXgateway Specifications**

## Specifications

---

### Interfaces

Ethernet	Single 10BaseT, RJ-45
Serial/WAN	EIA/TIA-232, EIA/TIA-530, EIA/TIA-V35
Management	Serial RS-232, DB9
ECS	Up to 12 digital line interfaces over a 25 pair, RJ-21 cable.

### Voice

Voice compression	G.729A, G.711, ADPCM 32, ADPCM 24
-------------------	-----------------------------------

### Protocols and Services

WAN	Remote Voice Protocol (RVP™) (proprietary) over HDLC
LAN	RVP™ over Internet Protocol (IP)

### Electrical

Line Voltage	100-240VAC
Frequency	50-60 Hz
Max Power Consumption	0.8 Amps
Power Input Filter	IEC (with 2A Fuse)

### Mechanical

Dimensions	17" x 8" x 1 3/4" (432mm x 203mm x 44mm)
Weight	6lbs 7 oz (3 kg)

### Environmental

Temperature	32° - 130°F (0° - 55°C)
Relative Humidity	5 to 95%

Table 2-1. continued

## **Specifications**

---

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---

# Installation

# 3

## Chapter Contents

<b>Subject</b>	<b>page</b>
<b>Introduction</b>	3-2
<b>Safety Checklist</b>	3-2
<b>Hardware Components</b>	3-3
<b>Pre-Installation Requirements</b>	
Lucent Supplied Equipment	3-5
Customer Supplied Equipment	3-6
Network Requirements	3-7
<b>Installation</b>	
Connecting the Gateway Unit	3-9
Mounting	3-13
Connections to the Network Device	3-14
<b>Before you Power Up the Units</b>	3-18

## **3. INSTALLATION**

### **Introduction**

This Chapter provides the following information for installing both the Switch and Remote units:

- Pre-installation requirements
- How to install the hardware
- How to wire the hardware
- Complete power-up sequence

### **Safety Checklist**



#### **IMPORTANT SAFETY INSTRUCTIONS**

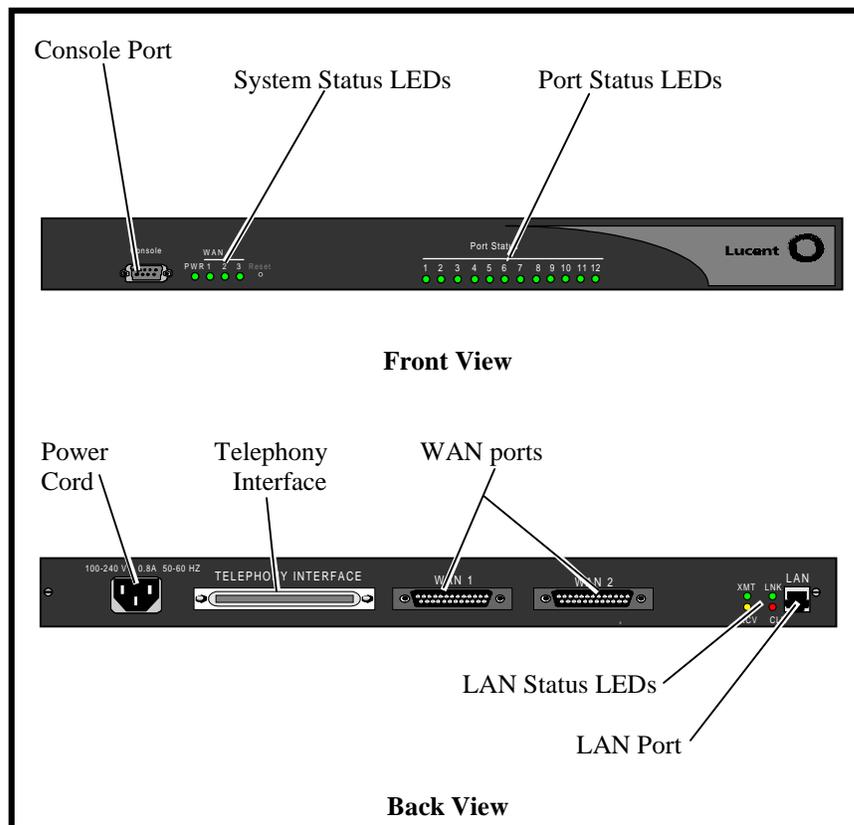
- Do not install this product near water, for example, in a wet basement location.
- Do not overload wall outlets, as this can result in the risk of fire or electrical shock.
- Do not attach the power supply cord to building surfaces.
- Do not allow anything to rest on the power cord.
- Do not locate this product where the cord will be damaged by someone walking on it.
- Do not operate the system if chemical gas leakage is suspected in the area. Use telephones located in some other safe area to report the trouble.
- Never install telephone wiring during a lightning storm.
- Never install telephone jacks in wet locations unless the jack is specifically designed for wet locations.
- Never touch non-insulated telephone wires or terminals unless the telephone line has been disconnected at the network interface.

## PBXgateway Installation

### Hardware Components

**Introduction** Figure 3.1, below, shows the PBXgateway front panel display and rear panel connectors. Refer to Table 3-1, on the next page for component descriptions.

*Note: For details on the components of the Remote Units, refer to the specific Quick Installation Guides (QIG) shipped with each device.*



**Figure 3.1. PBXgateway front & back view**

## **PBXgateway Installation**

---

<b>Component</b>	<b>Description</b>	<b>Label Placement</b>
WAN Ports	(2) RS-232/V.35/RS-530, DB25 male connectors. Provide a serial connection to the Network Device.	Label placed above each port.
Telephony Interface	RJ-21, 50-pin male connector. Connects the unit to the PBX. (see Table 3-2, page 3-10)	Label placed above the connector.
LAN Port	RJ-45 connector. Connects the Gateway to the LAN for use in IP applications and for management interface access.  <i>Note: Use of the PBXgateway over IP Networks is currently not supported by Lucent Technologies.</i>	Label placed above the connector.
System Status LEDs	Four, tri-color LEDs. Displays the PBXgateway system status.	Label placed above the LEDs.
LAN Status LEDs	Four LEDs display the status of the Ethernet connection	Label placed above each status LED.
Port Status LEDs	Eight or Twelve LEDs display the status of the phone ports.	Label placed above the LEDs.
Console Port	RS-232, DB-9 serial connector. Connects the unit to a PC for configuration and port management via a VT-100 terminal.	Label placed above the connector.

**Table 3-1. PBXgateway components defined**

## **PBXgateway Installation**

---

### **Pre-Installation Requirements**

#### Lucent Supplied Equipment

- PBXgateway**
- One eight or twelve user, rack mountable device
  - Two Mounting brackets and hardware
  - One power cord
  - One RS-530 Cable
  - One System Administrator's Guide
  - One Application Guide
  - One QIG (Quick Installation Guide)
- 

- Extender 6000**
- One Remote unit
  - Two Mounting brackets and hardware
  - One power cord
  - One RS-530 Cable
  - One DB-9 Console Cable
  - One QIG (Quick Installation Guide)

## **PBXgateway Installation**

---

### **Customer Supplied Equipment**

*Note: This includes information for installing the PBXgateway. For information on "Customer Supplied Equipment" for each Remote unit, refer to the specific User's Guide.*

The customer must supply the following equipment:

- ❑ Telephones and line cords

*Note: Use two-wire digital display phones only.*

- ❑ Two 50-pin RJ 21 female connectors for connecting the ECS to the PBXgateway and digital phones to the Extender 6000.  
(Refer to Table 3-2, on page 3-10, for wiring information)
- ❑ Punch blocks capable of cross connecting the PBXgateway to the ECS and digital phones to the Remote locations.
- ❑ A PC (or VT-100 compatible terminal) for configuration.
- ❑ One 10baseT RJ-45 cable if connecting the units to the Ethernet network.
- ❑ T1, Fractional T1, ISDN, Frame Relay or ATM circuit at both Remote and Switch locations. Must be capable of connecting the remote branch office to the Switch location.
- ❑ A network terminating device capable of interfacing with the PBXgateway and Remote units. Must support synchronous serial protocol using RS-232, V.35, or RS-530 interface types, or a 10BaseT Ethernet for an IP connection.

*Note: Voice over IP installations have greater circuit flexibility.*

- ❑ ECS digital ports programmed correctly for the telephone type being used at the remote location.

## **PBXgateway Installation**

---

### Network Requirements

The PBXgateway must be installed on an existing LAN or WAN network.

- ❑ Each unit requires a network device which supports a synchronous-serial interface or a Ethernet connection to a TCP/IP network.
- ❑ The network must be operational and active to complete the installation of the PBXgateway.
- ❑ The network device must support one of the following:
  1. Synchronous serial signaling on its data port using an RS-232, V.35, or RS-530 interface.

**Or**

2. 10baseT Ethernet connection

## **PBXgateway Installation**

---

### **Power Requirements**

The system has been designed to operate from 100-240 VAC, 50-60Hz. Power should not be applied to the PBXgateway until specified in the installation procedures.

### **Location Requirements**

- ❑ The maximum length of cable between the PBXgateway and the DEFINITY ECS is 500 ft (150 meters).
- ❑ The maximum length of cable between the Remote unit and the digital phones is 500 ft (150 meters).
- ❑ The PBXgateway's power supply and cabling should be installed away from high power/high RF noise devices such as computers, fans, fluorescent ballast, power supplies, etc.
- ❑ Use good wiring practices. Do not run wires over fluorescent lights, computers, air conditioners, etc. as this can introduce noise to the signals.
- ❑ The PBXgateway must be installed in a secure location. Unauthorized access could lead to toll fraud.

## **PBXgateway Installation**

---

### **Installation**

#### Connecting the PBXgateway to the ECS

##### **Required Components**

- One RJ-21 cable with a 50-pin female connector.
- Up to twelve digital lines from the DEFINITY ECS.
- Active network from the Branch Office to the corporate facility over T1, Fractional T1, Frame Relay, ATM or ISDN.
- Installed network device at each location.
- Cross-connection telephony wiring blocks sufficient for the installation
- Additional wiring sufficient for the digital lines.

##### **Procedure**

*Note: For detail wiring information, see Figure 3.2 and Table 3-2 on the next page.*

1. Install (2) cross-connect wiring blocks.
2. Connect the digital lines from the ECS to one of the cross-connect blocks via an RJ-21 cable.
3. Connect the PBXgateway's telephony port to the other cross-connect block using an RJ-21, 50-pin cable.
4. Cross-connect the PBXgateway digital ports to the ECS digital lines via (2) cross-connection blocks.

**IMPORTANT:  
DO NOT connect phones to a Switch Unit.**

## PBXgateway Installation

### Connecting the PBXgateway to the ECS *continued*

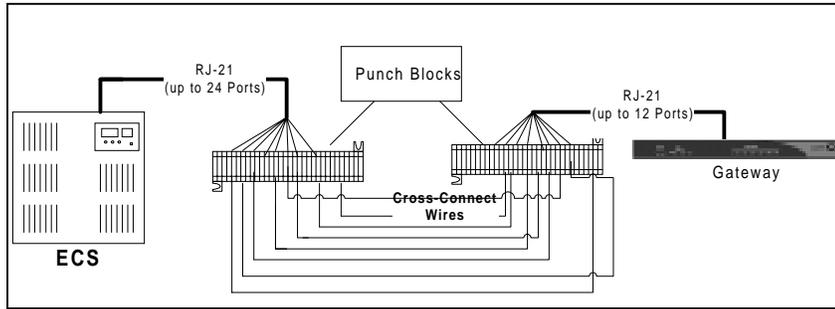


Figure 3.2. Connections to the ECS

Connector pin	Cable Pair	Port	Connector Pin	Cable Pair	Port
26 1	WH/BL BL/WH	1	38 13	BK/GN GN/BK	7
28 3	WH/GN GN/WH	2	40 15	BK/SL SL/BK	8
30 5	WH/SL SL/WH	3	42 17	YL/OR OR/YL	9
32 7	RD/OR OR/RD	4	44 19	YL/BR BR/YL	10
34 9	RD/BR BR/RD	5	46 21	VI/BL BL/VI	11
36 11	BK/BL BL/BK	6	48 23	VI/GN GN/VI	12

Table 3-2. Pin Assignments (25-Pair Cable)

#### Wire Color Abbreviations:

BK=Black	GN=Green
BL=Blue	YL=Yellow
VI=Violet	WH=White
BR=Brown	SL=Slate
RD=Red	
OR=Orange	

## **PBXgateway Installation**

---

### Connecting the Remote Unit to the User phones

<b>Introduction</b>	The PBXgateway is compatible with the following Remote unit:
<b>Remote Unit</b>	The <b>Extender</b> 6000 – up to 12 user Remote unit The unit must be hard-wired to each remote phone using the following procedure.
<b>Required Components</b>	<ul style="list-style-type: none"><li><input type="checkbox"/> One RJ-21 cable with 50-pin female connector.</li><li><input type="checkbox"/> Active network from the Branch Office to the corporate facility over a T1, Fractional T1, ISDN, Frame Relay or ATM.</li><li><input type="checkbox"/> Installed network device.</li><li><input type="checkbox"/> Digital phone(s) and line cord(s)</li><li><input type="checkbox"/> Cross-connection wiring block or break-out box sufficient for the installation</li><li><input type="checkbox"/> Additional RJ-11 or RJ-45 phone cords.</li></ul>
<b>Procedure</b>	<p><i>Note: For detail wiring information, see Figure 3.3 and Table 3-3 on the next page.</i></p> <ol style="list-style-type: none"><li>1. Install (2) cross-connect wiring block or use a single break-out box.</li><li>2. Connect the Remote phones to a punch block or break-out box.</li><li>3. Wire break-out box or punch block to 50-pin cable RJ-21 connector.</li><li>4. Connect the 50-pin, RJ-21 cable to telephony interface at the Remote unit.</li></ol>

**IMPORTANT:**  
**DO NOT connect the Remote Unit to a DEFINITY ECS.**

## PBXgateway Installation

### Connecting the Extender 6000 Remote Unit to the Remote Phones

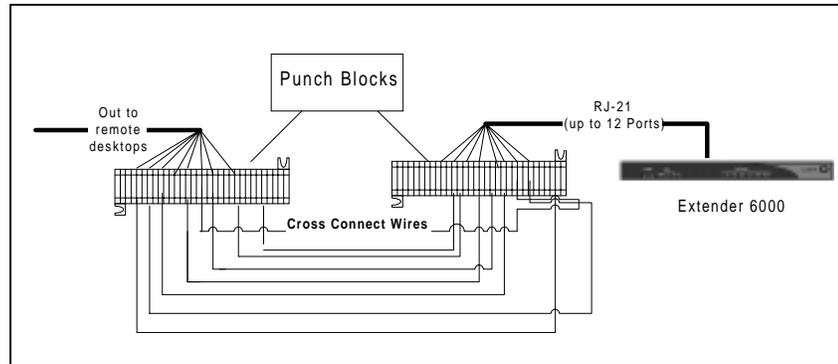


Figure 3.3. Connections to the Extender 6000

Connector Pin	Cable Pair	Port	Connector Pin	Cable Pair	Port
26	WH/BL	1	38	BK/GN	7
1	BL/WH		13	GN/BK	
28	WH/GN	2	40	BK/SL	8
3	GN/WH		15	SL/BK	
30	WH/SL	3	42	YL/OR	9
5	SL/WH		17	OR/YL	
32	RD/OR	4	44	YL/BR	10
7	OR/RD		19	BR/YL	
34	RD/BR	5	46	VI/BL	11
9	BR/RD		21	BL/VI	
36	BK/BL	6	48	VI/GN	12
11	BL/BK		23	GN/VI	

Table 3-2. Pin Assignments (25-Pair Cable)

#### Wire Color Abbreviations:

BK=Black	GN=Green	RD=Red
BL=Blue	YL=Yellow	OR=Orange
VI=Violet	WH=White	
BR=Brown	SL=Slate	

## **PBXgateway Installation**

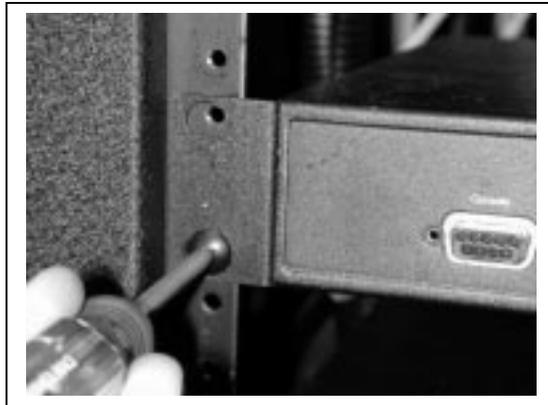
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### Mounting the PBXgateway

**Introduction** The following procedure explains the steps necessary to secure the PBXgateway to a standard 19 inch communications rack.

*Note: The Rack is not supplied with the unit.*

- Procedure**
1. Attach the mounting brackets to the unit.
  2. Position the unit so the mounting brackets are aligned with the mounting holes of the chassis.  
(see Figure 3.4 below)
  3. Secure the unit with mounting hardware (4 screws) provided.



**Figure 3.4. Mounting the unit**

## **PBXgateway Installation**

---

### Connecting to a Network Device

**Introduction** The PBXgateway connects to a variety of network devices through a Synchronous-serial connection, or 10BaseT Ethernet connection. The physical connection is accomplished through two DB-25 connectors labeled WAN1 and WAN2, or an RJ-45 Ethernet connector. The following protocols are recommended:

**Synchronous Protocol**

- High level Data Link Control (HDLC)  
A link layer protocol standard for point-to-point and multi-point communications.

**Connection Types**

- RS-232 (see page 3-15 for pinouts)
- V.35 (see page 3-16 for pinouts)
- RS-530 (see page 3-17 for pinouts)

**Internet Protocol**

**Protocol**

- Internet Protocol (IP)  
Standard network protocol.

**Connection Type**

- 10BaseT Ethernet

**Reference Information**

For more information on specific network requirements, refer to the *PBXgateway Application Guide*.

## PBXgateway Installation

**Wiring Info** Figure 3.5 through 3.7, lists each pin within the DB-25 connector with the signal description and signal/voltage source, using the Electronics Industry Association (EIA) standard.

### RS-232 (DB-25) Serial Connector Pinouts

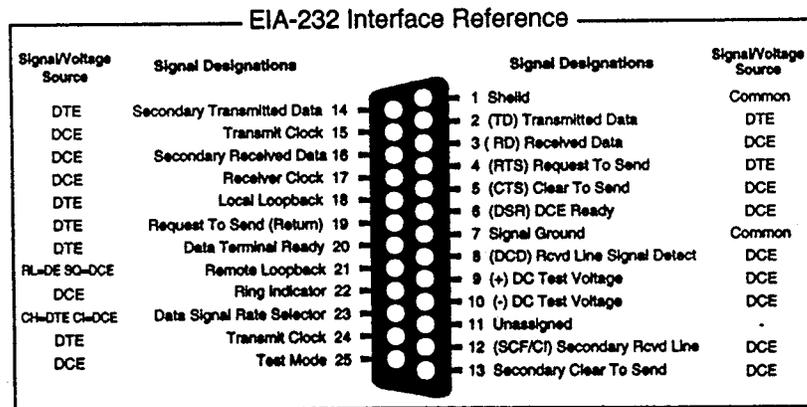


Figure 3.5. RS-232 Cable Pinouts

## PBXgateway Installation

### V.35 (DB-25) Serial Connector Pinouts

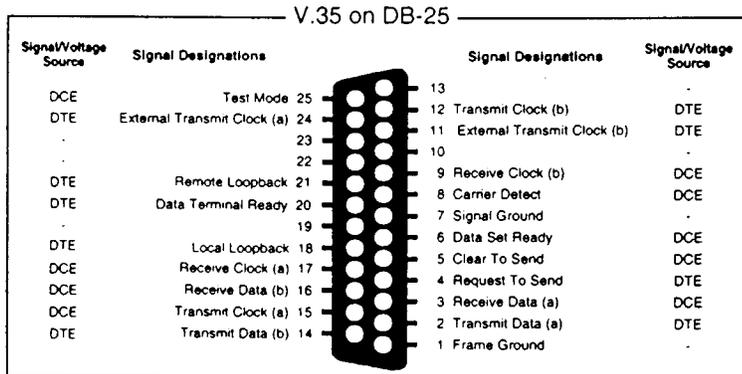


Figure 3.6. V.35 Cable Pinouts

## PBXgateway Installation

### RS-530 (DB-25) Serial Connector Pinouts

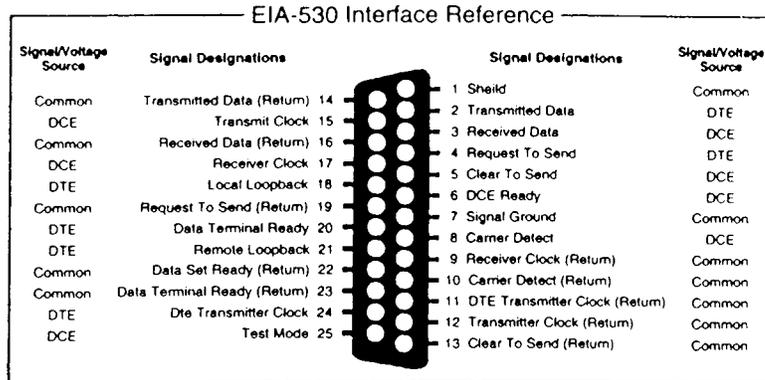


Figure 3.7. RS-530 Cable Pinouts

## **PBXgateway Installation**

---

### **Before you Power-Up the PBXgateway**

**Introduction** This procedure will detail the necessary steps to perform BEFORE bringing the units online.

- Checklist**
- The units are secured to a rack or placed on a shelf within the rack.
  - The appropriate 50-pin female, RJ-21 connectors are connected to the Telephony Interface and wired to the ECS (PBXgateway) and remote user phones (Remote unit).
  - At least one WAN port is connected to the appropriate network-terminating device.

**or**

- The LAN port is connected to your network using a standard RJ-45 Ethernet cable.

*Note: Required only if you plan to manage or connect to the Remote units via an IP network.*

**Power Up** If the above checklist is OK, plug the power cord into an AC outlet.

**Power-Up Sequence** The WAN (PWR, 1, 2) and the Port Status LEDs (1-12) will begin to flash. The unit automatically runs through a series of self-tests. After the tests are complete, all active WAN port LEDs and connected phone ports should be lit solid "Green".

*Note: If the LEDs do not light as described above, see Chapter 6-Troubleshooting.*

---

# Configuration

(Changing the active config file)

# 4

## Chapter Contents

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## 4. CONFIGURATION

**Introduction** This Chapter provides information for configuring the PBXgateway and the Remote units through the Management Interface (MI).

*Note: All configuration parameters for the Remote units can be accessed from the Switch unit via the "Remote Login" menu selection within the MI.*

**Interface Methods** The PBXgateway has a terminal based user interface for access to the MI for configuration purposes.

**Console User Interface:**

VT-100 Enhanced Terminal Interface (ETI) accessed from a PC via one of three possible methods:

1. Direct Serial connection through the console port located on the front of the PBXgateway. (refer to page 4-5)
2. LAN-based Telnet access (see page 4-7)
3. In-band management connection between the Switch and Remote (see page 4-49)

**Security** It is recommended that an administrator password be assigned to prevent unauthorized access to the Remote and Gateway. The PBXgateway has two separate levels of password security:

- ❑ **Connect Password:** Set by the system administrator, provides a secure WAN link between the Switch and Remote units. (see page 4-24 for more information)
- ❑ **Admin Password:** Set by the system administrator and provides security to restrict access to the MI. (see page 4-47 for more information)

*Note: Connect Passwords for Remotes and Gateway must match.*

## Configuration

---

**System Administrator** A system administrator is defined as the sole person responsible for the maintenance and administration of the PBXgateway at the corporate facility.

*What a System Administrator must know* Figure 4.0, on the next page, displays the information required by the system administrator to accurately configure the PBXgateway switch unit within the active network. (Refer to page 4-13 for steps to configure the PBXgateway)

- 1.** The type of network connectivity used at the Corporate location. (ie: Serial or IP)
- 2.** The type of network through which the PBXgateway communicates with the branch location. (ie: ISDN, T1, Fractional T1, Frame Relay)
- 3.** The type of network connectivity used at the Branch location. (ie: Serial, or IP)

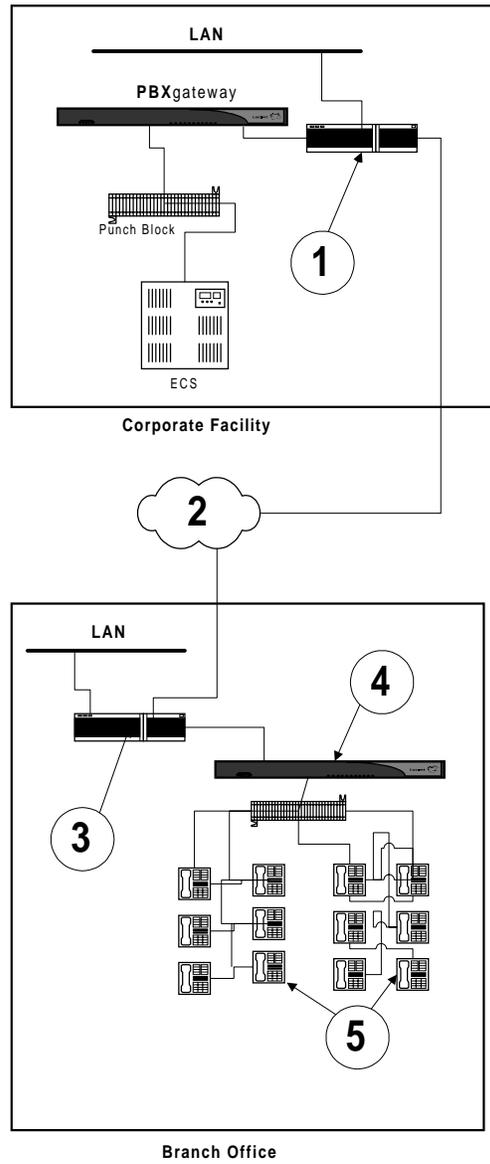
*Note: The type of connectivity used at the Branch location, should match the Corporate location.*

- 4.** The types of unit(s) installed at the remote location, (ie: Extender 6000).
- 5.** Information on which phones communicate with which PBXgateway ports.

*Note: If you are already familiar with the Lucent Management Interface, proceed to page 4-13 to begin system configuration.*

## Configuration

---



**Figure 4.0. Network Considerations**

## Configuration

---

### Connecting to the Management Interface (MI)

#### Direct Serial Connection

**Introduction** The console port provides a direct serial connection for the PBXgateway allowing access to all features and functions of the MI and the ability to configure, monitor and troubleshoot the unit.

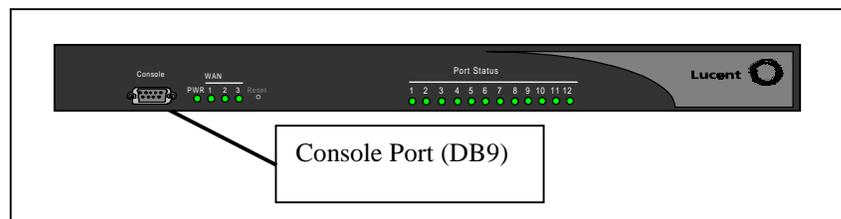
**Required cable** A standard RS-232 serial straight-through (DB-9, Male) cable is required. Use this cable to connect the PC's COM Port to the console port on the front of the unit. (see Figure 4.1 below)

*Note: Cable length should not exceed 50 ft.*

**Before you connect** Before connecting to the PBXgateway you must confirm that the PC's COM port settings match the console port settings as follows:

Baud rate: 9600  
Databits: 8  
Parity: none  
Stopbits: 1  
Flow Control: XON/XOFF

*Note: See Setting the Console Baud on page 4-43 for more information on setting the PBXgateway baud rate.*



**Figure 4.1. Console Port Connection**

## **Configuration**

---

### **Direct Serial Connection continued**

#### **Procedure**

1. Once the PC is connected to the unit through the console port, open an Enhanced Terminal Interface (ETI) program on the PC.

Example: Windows Hyperterminal

*Note: The MI configuration menus can be accessed through any generic Windows 95, or Windows 98, VT-100 Enhanced Terminal Interface (ETI) program.*

2. Within the ETI program, change the data settings to match those shown on page 4-5.
3. Save the changes within the ETI and restart the program for the changes to take effect.
4. Power up the Switch or Remote.

The unit performs a series of boot-up tests and upon finishing the boot-up process, displays the following message:

Press "Enter" to start the Gateway shell.....

**IMPORTANT NOTE:** If the unit is already powered-up the screen may display garbage characters. Press **F4** to refresh the screen.

5. Press **Enter**.

The MI Welcome Screen appears (refer to page 4-8).

## Configuration

---

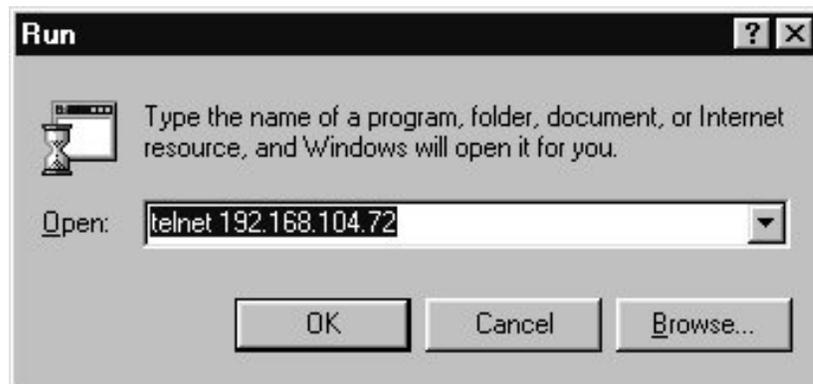
### Telnet Connection

**Introduction** The PBXgateway can be configured using a Telnet session over the existing LAN connection. There is a maximum of four Telnet connections per unit at one time.

**IMPORTANT NOTE:** All IP parameters must be configured before a Telnet session can be established to a unit. (see page 4-35 for more information)

#### Procedure

1. On a computer running Windows, open the Telnet application by selecting **Start/Run** from the desktop.
2. Enter telnet command along with the IP address assigned to the unit (see Figure 4.2, below).



**Figure 4.2. Telnet address**

3. Click **OK**.

The MI Welcome Screen appears (see next page).

## Configuration

---

### Welcome Screen

Once the system administrator has connected to the MI the following Welcome Screen appears (see Figure 4.3 below):



Figure 4.3. Welcome Screen

#### IMPORTANT TERMINAL SETTINGS

The MI requires a screen size of 24 lines X 80 columns. Make sure the Welcome Screen is bordered on all four sides with a # symbol, as shown in Figure 4.3.

**To enlarge the screen** (within the VT-100 application):

- Click any corner of the screen.
- Drag the screen to enlarge.
- Check that the screen is bordered by “#” symbols.

Press **Enter** to access the Main Menu

*Note: See page 4-10 for detail information on a typical menu.*

**or**

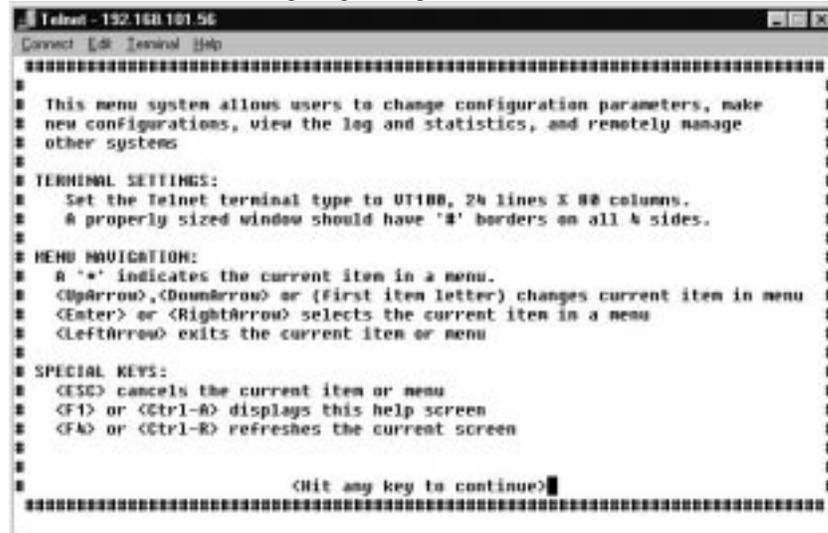
Press **F1** for the MI Help Screen (see next page)

## Configuration

---

### Help Screen

The MI has a built-in Help Screen (see Figure 4.4 below) which provides basic information for navigating through the interface.



```
Telnet - 192.168.101.56
Connect [OK] Terminal Help
*****
#
# This menu system allows users to change configuration parameters, make
# new configurations, view the log and statistics, and remotely manage
# other systems
#
# TERMINAL SETTINGS:
#   Set the Telnet terminal type to VT100, 24 lines X 80 columns.
#   A properly sized window should have '#' borders on all 4 sides.
#
# MENU NAVIGATION:
#   A '*' indicates the current item in a menu.
#   <UpArrow>, <DownArrow> or (first item letter) changes current item in menu
#   <Enter> or <RightArrow> selects the current item in a menu
#   <LeftArrow> exits the current item or menu
#
# SPECIAL KEYS:
#   <ESC> cancels the current item or menu
#   <F1> or <Ctrl-A> displays this help screen
#   <F4> or <Ctrl-R> refreshes the current screen
#
#
#                               <Hit any key to continue>
*****
```

Figure 4.4. Help Screen

The following information is provided:

**Terminal Settings** - These settings are necessary for properly displaying the configuration screens.

**Menu Navigation** – Explains the necessary command keys used for navigating through the MI. (see page 4-12 for more information)

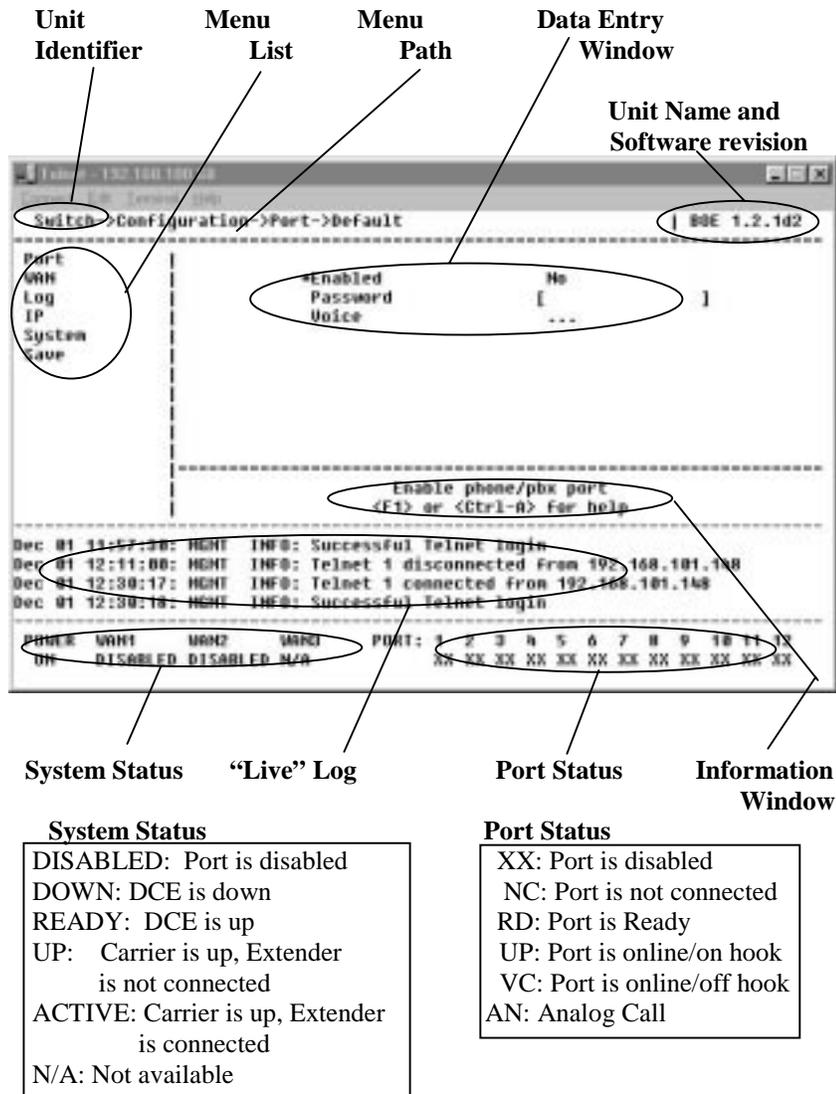
**Special Keys** – Explains the function keys used for special commands.

Press **Enter** to access the Main Menu.

*Note: See the next page for detailed information on a typical menu.*

## Configuration

### Typical Menu



**Figure 4.5. Typical Menu**

*Note: See the next page for information on the Menu Components.*

## Configuration

---

### Menu Components

Area	Description
<b>Unit Identifier</b>	Displays either “Remote” or “Switch” depending on which unit you are connected to.
<b>Menu List</b>	List of sub-menus used to configure the PBXgateway Switch and Remote units. An * indicates the active menu selection.
<b>Menu Path</b>	Displays the menu hierarchy.
<b>Data Entry Window</b>	This is the only area on the main menu where information can be changed. It is also where submenus are selected.
<b>Unit Name and Software Revision</b>	Displays the name assigned to the unit, and the software revision of the firmware.
<b>Information Window</b>	Each menu contains specific parameters. This window provides a context sensitive help message which provides a brief description of the selected item
<b>Port Status</b>	Provides status information on all phone ports.
<b>“Live” Log</b>	This window provides the system administrator with log messages on the status of the unit and error conditions. Last four messages are displayed. This is not the entire log file. The entire log file can be viewed using the following path: ( <b>Path:</b> Status->Display Log)  <i>Note: This log is not “live” via Remote Login menu item. Use F4 (Ctrl R) to refresh the screen.</i>
<b>System Status</b>	Provides status info for power, and both WAN ports

**Table 4-0. Menu Components**

## Configuration

---

### Command Keys

**Introduction** The Management Interface (MI) utilizes a minimal set of command keys to navigate through the different sub menus.

The following keys are used:

Key	Description
	Cancel
	Accepts the change or menu, or exits the current menu.
 or 	Selects the current item in a menu.
 or 	Changes the current item in a menu. <i>Note: Selecting an item can also be accomplished by typing in the first character.</i>
 or  <b>A</b>	Help screen.
 or  <b>R</b>	Refreshes the current screen.

Table 4-1. Command Keys

## Configuration

---

### Configuration Steps

#### Types of Networks

**Introduction** This section of the manual provides the necessary information to configure the PBXgateway using the Management Interface (MI). The units are programmed at the factory with “default” settings providing basic parameters to accommodate most network environments.

**Which type of Network Device do you have?** Before beginning the configuration process, it is necessary to identify which type of network device is connected to the PBXgateway. Once you know the type of connection, Table 4-2, below, will direct you to the appropriate checklist that should be used for configuration.

*Note: See page 4-3 “What the System Administrator must know” for more information.*

To configure the PBXgateway with .....	See page.....
a Synchronous-Serial device (RVP_Direct)	4-14
an IP device (RVP_IP)	4-16
<i>Note: Use of the PBXgateway over IP Networks is currently not supported by Lucent Technologies.</i>	

**Table 4-2. Network devices**

## Configuration

---

### Synchronous-Serial Device Configuration (RVP\_Direct)

**Introduction** This section of the manual provides the necessary information to configure the PBX gateway for connection to a synchronous-serial device. The units are programmed at the factory with “default” settings providing basic parameters to accommodate many network environments.

#### Prerequisites for Configuration

- ❑ Both units must be installed properly (see Chapter 3) and the network link between both devices must be operational.

#### Basic Configuration

You must .....	to.....	Follow these steps.....
Set the voice compression algorithm for all active phone ports.	Provide adequate bandwidth for all users.	<ul style="list-style-type: none"><li>❑ Refer to page 4-20</li><li>❑ Refer to Appendix B, Bandwidth Requirements.</li></ul>
Enable/Disable WAN ports	Enable WAN ports to connect to network device.	Refer to page 4-31
Set the Sync Rate of the WAN port	Match the data rate (sync rate) of the network device.	Refer to page 4-32
Set the mode (interface type) of the WAN	Match the interface type of the network device.	Refer to page 4-34
Configure the Remote unit.	Set the required parameters.	Refer to page 4-52
Increase Jitter (for Frame Relay installs)	Match network characteristics.	Refer to page 4-20

**Table 4-3. Basic Configuration Steps**

## Configuration

---

### Synchronous-Serial Device Configuration continued

#### Optional Configuration

This section of the manual provides information for setting up optional parameters providing customization, identification and security for the Switch and Remote units.

To .....	for.....	Refer to.....
Enable/Disable individual phone ports	Managing and isolating the ports for troubleshooting purposes.	page 4-22
Set up a Connect Password	Providing a secure WAN connection restricting access to the PBX gateway from the Remote unit.	page 4-24
Set IP Information	Telnet/FTP access to both the Gateway and Remote units.  <i>Note: The network administrator must allocate an IP address for each unit.</i>	page 4-35
Provide a System Name	Identification purposes. (not an IP Host name)	page 4-41
Set the Date/Time	Accurate time and date stamps for troubleshooting and for system maintenance.	page 4-45
Set an Admin Password	Restricting access to the MI.	page 4-47
Set User ID	Map remote users with specific ECS ports.	page 4-26
Set SNMP parameters.	Configuring necessary information to utilize the Simple Network Management Protocol functions of the MI.	Appendix D

**Table 4-4. Optional Administrative Items**

## Configuration

---

### IP Network Configuration (RVP\_IP)

*Note: Use of the PBXgateway over IP Networks is currently not supported by Lucent Technologies.*

**Introduction** This section of the manual provides the necessary information to configure the PBXgateway for connection within an IP network.

*Note: The units are programmed at the factory with RVP\_Direct "default" settings. The "connect" parameter (see page 4-54) must set to RVP\_IP.*

#### Prerequisites for Configuration

- ❑ Both units must be installed properly (see Chapter 3) and the network link between both devices must be operational.
- ❑ The network administrator must allocate an IP address for each unit.

#### Basic Configuration

You must .....	to.....	Follow these steps.....
Set IP parameters.	Allow the PBXgateway to communicate over the IP network.	Refer to page 4-35
Set up voice parameters for all active phone ports, and tune Jitter delay and packet size.	Enable each port to select compression method and tune voice parameters to accommodate IP network.	Refer to page 4-20
Disable both WAN ports.	Disable ports that are unnecessary for RVP_IP.	Refer to page 4-31
Configure the Remote unit.	Set the required IP and Connect parameters.	Refer to page 4-52

**Table 4-5. Basic Configuration Steps**

## **Configuration**

---

### RVP\_IP Network Configuration continued

#### **Optional Configuration**

This section of the manual provides information for setting up optional parameters providing customization, identification and security for the PBXgateway.

<b>To .....</b>	<b>for.....</b>	<b>Refer to.....</b>
Enable/Disable individual phone ports	Managing and isolating the ports individually.	page 4-22
Set up a Connect Password	Providing a secure connection to restrict access to the PBXgateway.	page 4-24
Provide a System Name	Identification purposes. (not an IP Host name)	page 4-41
Set the Date/Time	Providing accurate time and date stamps for troubleshooting and for system maintenance.	page 4-45
Set an Admin Password	Restricting access to the MI.	page 4-47
Set User ID	Map remote users with specific ECS ports.	page 4-26
Set SNMP parameters.	Utilizing the Simple Network Management Protocol (SNMP) functions of the MI.	Appendix D

**Table 4-6. Optional Administrative Items**

## Configuration

---

### Setting PBXgateway Parameters

**IMPORTANT:** Changes made in this section, via the MI, are saved to the “Active” config file stored on the Extender unit. All configuration files are saved with a .rem extension for Remote unit files, and a .swt extension for PBXgateway files. The MI will prompt you to save changes as necessary. There are options for saving these parameters under a different file name, or creating and editing a “non-active” configuration file. (see Chapter 7, for more information)

#### IMPORTANT INFORMATION

- ✓ **Initial MI Connection**  
The initial set up of the PBXgateway **MUST** be done through a direct serial connection (see page 4-5), until the IP parameters have been entered (see page 4-35) allowing configuration via Telnet through the Ethernet port.
- ✓ **Default Settings**  
The units are programmed at the factory with “default” settings providing basic parameters to accommodate many network environments. It may be necessary to change these settings depending on the network.
- ✓ **Multiple Remotes (RVP\_IP only)**  
The PBXgateway can interface with multiple clients from one to twelve users. It is necessary to know the type of Remote units that are communicating with the PBXgateway for proper configuration.

## Configuration

---

### Port Set up

#### <Default> vs. Individual Port Settings

##### **Introduction**

The PBXgateway provides voice connectivity for up to twelve remote users. All phone ports on the PBXgateway are cross-wired to a digital port on the PBX. This provides the remote user with full ECS functionality as if they were placing calls from the corporate office. The Branch Office Extender unit is connected to the remote phones through an RJ-21 connector wired to a punch down block or wall field.

Once the units are connected (see Chapter 3 *Installation*) the Management Interface (MI) has two methods for setting up the PBXgateway ports:

##### **<Default> settings vs. individual settings**

**The <Default> settings:** Sets all eight or twelve ports identically. With <Default> selected for a specific parameter for any port, that parameter will be set to whatever value the Port-><Default> parameter is set to.

Example: If the Port-><Default> value for “Voice method” is set to ADPCM 32, and Port 1 has <Default> selected for “Voice Method” then Port 1 will utilize ADPCM 32 for its voice compression.

**Individual port settings:** Sets each port individually. This method is used for customizing ports by providing the flexibility of changing parameters for specific users.

Example: If Port 1 has the “Voice method” set to G.729A, rather than the <Default>, Port 1 will utilize G.729A for its voice compression.

## **Configuration**

---

### Setting Voice Parameters

**Introduction** The MI provides a menu for setting voice parameters for each phone port for the PBXgateway. The following parameters are covered:

- **Method** (of compression)-Selectable voice compression methods reduce network bandwidth requirements. (refer to *Appendix B* for more information on Bandwidth Settings)
- **Companding**-Companding standards for N. America ( $\mu$ Law) and Europe (aLaw).
- **Jitter**-The amount of delay (in msec) in sending voice packets. Used to accommodate jitter (or variable delay) in an IP network or Frame Relay circuit. If not set properly voice may sound choppy.
- **Packet Size**-The number of voice windows included within HDLC on an IP Packet. It generally reduces packet loss and bandwidth needs, but it will cause some additional delay in voice delivery.
- **Packet Trace**-Used for debug purposes only.

### **Procedure**

1. Access the Voice Menu for the specific phone port from the main menu using the following path:

**Path:** ->Configuration->Port->Default->Voice

## Configuration

### Setting Voice Parameters *continued*

The following menu appears:

```
Telnet - 192.168.100.00
Switch->Configuration->Port->Default->Voice | 80E 1.2.1d2
-----
Port
WAN | *Method | 80PCH32
Log | Companding | ulaw
IP | Jitter Delay | [ 0 ]
System | Packet Size | [ 2 ]
Save | Packet Trace | Disabled
-----
Select voice compression method
<F1> or <Ctrl-A> for help
-----
Dec 01 11:57:30: NHTM INFO: Successful Telnet login
Dec 01 12:11:00: NHTM INFO: Telnet 1 disconnected from 192.168.101.148
Dec 01 12:30:17: NHTM INFO: Telnet 1 connected from 192.168.101.148
Dec 01 12:30:18: NHTM INFO: Successful Telnet login
-----
POWER WAN1 WAN2 WAN3 PORT: 1 2 3 4 5 6 7 8 9 10 11 12
ON DISABLED DISABLED N/A XX XX
```

Figure 4.6. Default Voice Menu

2. Press the → key to access the **Method** parameter and press the → key to scroll through the various compression methods available.
3. Press the ↓ key to the **Companding** parameter and set accordingly.
4. Press the ↓ key to the **Jitter Delay** parameter and set to 20 or greater if using RVP\_Direct on Frame Relay or RVP\_IP. Otherwise leave at 0.
5. Press the ↓ key to the **Packet size** parameter and set to 2.

*Note: May need to increase to 4 if using Frame Relay or RVP\_IP*

6. Press the ← key to accept changes and go back to the Configuration Menu.
7. Press the ↓ key to the **Save** parameter.
8. Press **Enter** to save changes to the active config (.swt) file.

## Configuration

### Enabling/Disabling Telephony Ports

**Introduction** The system administrator can disable unused phone ports through the MI. The following procedure describes the process for disabling individual phone ports.

*Note: The Port-><Default> setting enables all twelve ports.*

### Procedure

1. Access the specific Port Menu from the Main Menu using the following path:

**Path:** ->Configuration-> Port->Port 1 through 8  
->Port 1

The following menu appears:

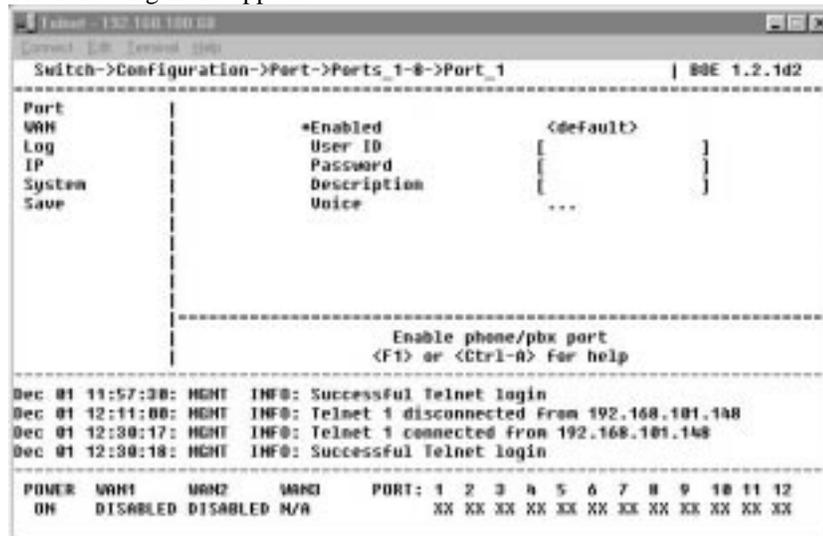


Figure 4.7. Port selection screen

## **Configuration**

---

Enabling/Disabling Telephony Ports *continued*

2. Press the → key to change the parameter of the port.  
Choices are: Enabled (**Yes**), or (**No**), or <default>.
3. Press the ← key to accept changes and go back to the Configuration Menu.
4. Press the ↓ key to the **Save** parameter.
5. Press **Enter** to save changes to the active config (.swt) file.

## Configuration

### Setting a Connect Password

**Introduction** A connect password provides an authorized link between the Remote unit and the PBXgateway. A Connect Password restricts access to the phone port and is matched to the User Id. Both must be entered for access.

*Note: A Connect password is only required at the remote site if the system administrator has set the password at the PBXgateway.*

### Procedure

1. Access the Port Menu from the Main Menu using the following path:

**Path:** ->Configuration-> Port->Port 1 through 8  
->Port 1

The following menu appears:

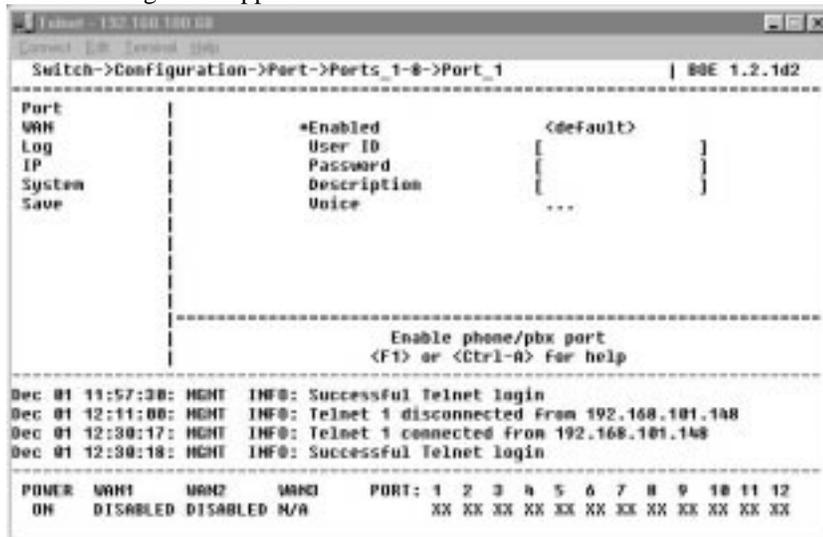


Figure 4.8. Default Menu

2. Press the → key and ↓ key to access the **Password** parameter.

## Configuration

---

### Setting a Connect Password continued

3. Assign a connect password (16 characters maximum) using the following guidelines:



#### **Security Alert:**

Passwords should be hard to guess and therefore should not contain:

- all the same numbers

Example: 88888888

- sequential numbers

Example: 987654321

- number strings associated with you or with the remote user or with your business. These include:

Birthdays  
Telephone numbers  
Social security numbers

Passwords should be changed regularly, at least on a quarterly basis. Do not recycle old passwords.

*Note: The Connect password assigned to the Remote unit must match the password assigned by the system administrator, otherwise, each user will be prompted individually for the connect password on their phones (not recommended). Keep the password in a safe place.*

4. Press the ← key to accept changes and go back to the Configuration Menu. Press the ↓ key to the **Save** option and press **Enter**.

## **Configuration**

---

### Set User ID

**Introduction** The PBXgateway is wired to 8 or 12 different digital lines on the PBX. Each of these lines reflects a remote user extension. If remote users are connected through different Remote units or Extenders, it is important to “Map” the extensions to the appropriate remote user. This is accomplished by using a User ID. A User ID is a text field which identifies which user is connected to which digital port on the PBX.

*Note: This is only applicable for RVP\_IP configurations.*

#### **IMPORTANT NOTE:**

If a remote user enters a numeric value (1-12) as a User ID on the remote phone, the phone will be connected to that port number on the PBX.

Example: John Smith (at extension 6143) needs to place a call from his phone connected to a Branch Unit. His extension at the corporate facility is wired to port #2 on the PBXgateway.

The MI would show that for port #2 the User ID is X6143. He would also have his connect password entered in his Remote unit.

### **Procedure**

1. Access the specific Port Menu from the Main Menu using the following path:

**Path:** ->Configuration-> Port->Port 1 through 12

The following menu appears:

## Configuration

Set User ID *continued*

```
Telnet - 192.168.100.00
Connect [?] Terminal Help
Switch->Configuration->Port->Parts_1-8->Port_2->User_ID | 80E 1.2.1d2
-----
Port |
WAN | Enabled | <default>
Log | *User ID | [36143 | ]
IP | Password | [ | ]
System | Description | [ | ]
Save | Unice | ...
-----
*** WARNING ***
Need to save |
changes made |
to this |
configuration |
-----
Enter 'user id' required for this P8X port
<F1> or <Ctrl-A> for help
-----
Dec 01 11:57:30: HGMT INFO: Successful Telnet login
Dec 01 12:11:00: HGMT INFO: Telnet 1 disconnected from 192.168.101.148
Dec 01 12:30:17: HGMT INFO: Telnet 1 connected from 192.168.101.148
Dec 01 12:30:18: HGMT INFO: Successful Telnet login
-----
POWER WAN1 WAN2 WAN3 PORT: 1 2 3 4 5 6 7 8 9 10 11 12
ON DISABLED DISABLED N/A XX XX
```

Figure 4.9. Port selection screen

2. Press the → and ↓ key to User ID parameter.
3. Type in the User ID for the port.

*Note: It is recommended that the User ID reflect the phone port, extension, or name of the remote user.*

4. Press the ← key to accept changes and go back to the Configuration Menu.
5. Press the ↓ key to the **Save** parameter.
6. Press **Enter** to save changes to the active config (.swt) file.

## Configuration

### Set Port Description

**Introduction** The Description parameter provides 16 characters of text to identify the user or specific port. It is used for administration purposes only.

Example: If John Smith's extension (6143) is connected to Port 1 on the PBXgateway, the Port Description field for port 1 could be set to:

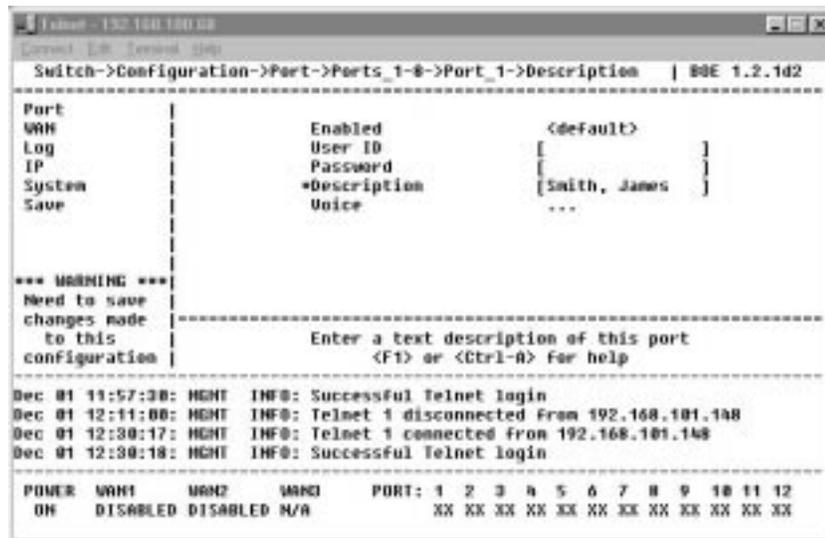
Smith, James

### Procedure

1. Access the specific Port Menu from the Main Menu using the following path:

**Path:** ->Configuration-> Port->Port 1 through 12

The following menu appears:



```
Telnet - 192.168.100.100
Connected to 192.168.100.100
Switch->Configuration->Port->Parts_1-8->Port_1->Description | 80E 1.2.1d2
-----
Port      |
WAN      | Enabled      | <default>
Log      | User ID     | [          ]
IP       | Password    | [          ]
System   | *Description| [Smith, James ]
Save     | Voice      | ...
-----
*** WARNING ***
Need to save
changes made
to this
configuration | Enter a text description of this port
                  <F1> or <Ctrl-A> for help
-----
Dec 01 11:57:30: NIGHT INFO: Successful Telnet login
Dec 01 12:11:00: NIGHT INFO: Telnet 1 disconnected from 192.168.101.148
Dec 01 12:30:17: NIGHT INFO: Telnet 1 connected from 192.168.101.148
Dec 01 12:30:18: NIGHT INFO: Successful Telnet login
-----
POWER  WAN1  WAN2  WAN3  PORT: 1 2 3 4 5 6 7 8 9 10 11 12
ON     DISABLED DISABLED N/A      XX XX
```

Figure 4.10. Port selection screen

## **Configuration**

---

### Set Port Description continued

2. Press the → and ↓ key to the Description parameter.
3. Type in the Description for the port.

*Note: It is recommended that the Description parameter reflect the user connected to the specific phone port.*

4. Press the ← key to accept changes and go back to the Configuration Menu.
5. Press the ↓ key to the **Save** parameter.
6. Press **Enter** to save changes to the active config (.swt) file.

## Configuration

---

### WAN Port Set up

**Introduction** The PBXgateway has two WAN ports (WAN 1 and WAN 2) used for a synchronous-serial connection. The ports communicate via an RS-232, RS-530 or V.35 interface and provide the connections to the third party network devices.

*Note: Used for RVP\_Direct only.*

**Settings** The following settings are available to the system administrator to manage these WAN ports:

- Enabling/Disabling WAN ports-** Individually Enable or Disable a specific WAN port (refer to page 4-31)

*Note: It is recommended that you disable ports not in use.*

- Setting the Sync Rate** – Sets the specific WAN port to the sync rate (synchronous serial port transfer speed) of the network device (CSU/DSU). (refer to page 4-32)
- Setting the interface Mode-** Choose the interface signaling type used to communicate with the network device. (refer to page 4-34)

## Configuration

### Enabling/Disabling WAN Ports

#### Procedure

1. Access the WAN 1 or WAN 2 Menu using the following path:

**Path:** ->Configuration->WAN-> WAN 1 or WAN 2

2. The following menu appears. Press the → key to access the **Enabled** parameter.

```
Telnet - 192.168.100.00
Switch->Configuration->WAN->WAN_1 | 80E 1.2.1d2
-----
Port |
WAN | *Enabled | No
Log | Mode | Sync-U.35
IP | Sync Setup | ---
System |
Save |
-----
*** WARNING ***
Need to save
changes made
to this
configuration |
-----
                                Enable WAN port
                                <F1> or <Ctrl-A> for help
-----
Dec 01 11:57:30: NHTM  INFO: Successful Telnet login
Dec 01 12:11:00: NHTM  INFO: Telnet 1 disconnected from 192.168.101.148
Dec 01 12:30:17: NHTM  INFO: Telnet 1 connected from 192.168.101.148
Dec 01 12:30:18: NHTM  INFO: Successful Telnet login
-----
POWER WAN1  WAN2  WAN3  PORT: 1 2 3 4 5 6 7 8 9 10 11 12
ON    DISABLED DISABLED N/A    XX XX
```

Figure 4.11. WAN Menu

3. Press the → key to change the availability of the port to:  
Enabled (**Yes**) or Disabled (**No**).
4. Press the ← key to accept changes and go back to the Configuration Menu.
5. Press the ↓ key to the **Save** parameter.
6. Press **Enter** to save changes to the active config (.swt) file.

## Configuration

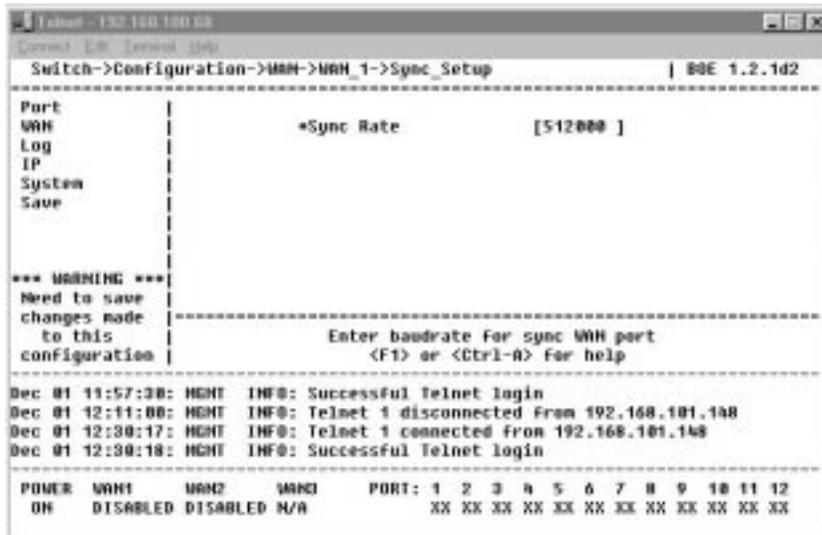
### Setting the Sync Rate

#### Procedure

1. Access the WAN 1 or WAN 2 Menu using the following path:

**Path:** ->Configuration->WAN-> WAN 1 or WAN 2

2. Press the → key to access the parameters.
3. The following menu appears.



```
Telnet - 192.168.100.00
Switch->Configuration->WAN->WAN_1->Sync_Setup | B0E 1.2.1d2
-----
Port
WAN          *Sync Rate      [512000 ]
Log
IP
System
Save
-----
*** WARNING ***
Need to save
changes made
to this
configuration
-----
Enter baudrate for sync WAN port
<F1> or <Ctrl-A> for help
-----
Dec 01 11:57:30: HGHT  INF0: Successful Telnet login
Dec 01 12:11:00: HGHT  INF0: Telnet 1 disconnected from 192.168.101.148
Dec 01 12:30:17: HGHT  INF0: Telnet 1 connected from 192.168.101.148
Dec 01 12:30:18: HGHT  INF0: Successful Telnet login
-----
POWER  WAN1  WAN2  WAN3  PORT: 1 2 3 4 5 6 7 8 9 10 11 12
ON     DISABLED DISABLED N/A      XX XX
```

Figure 4.12. WAN Menu

4. Press the → key to the **Sync Rate** parameter and type in the correct Sync rate. This parameter sets the synchronous data transfer speed of the WAN port and must match the network device speed.

*Note: This Sync Rate information, displayed in bytes, must be obtained through the network device documentation and corresponds to network rate.*

## **Configuration**

---

### Setting the Sync Rate continued

5. Press the ← key to accept changes and go back to the Configuration Menu.
6. Press the ↓ key to the **Save** parameter.
7. Press **Enter** to save changes to the active config (.swt) file.

## Configuration

Setting the Mode (signaling protocol)

### Procedure

1. Access the WAN 1 or WAN 2 Menu using the following path:

**Path:** ->Configuration->WAN-> WAN 1 or WAN 2

2. The following menu appears. Press the → key to access the parameters

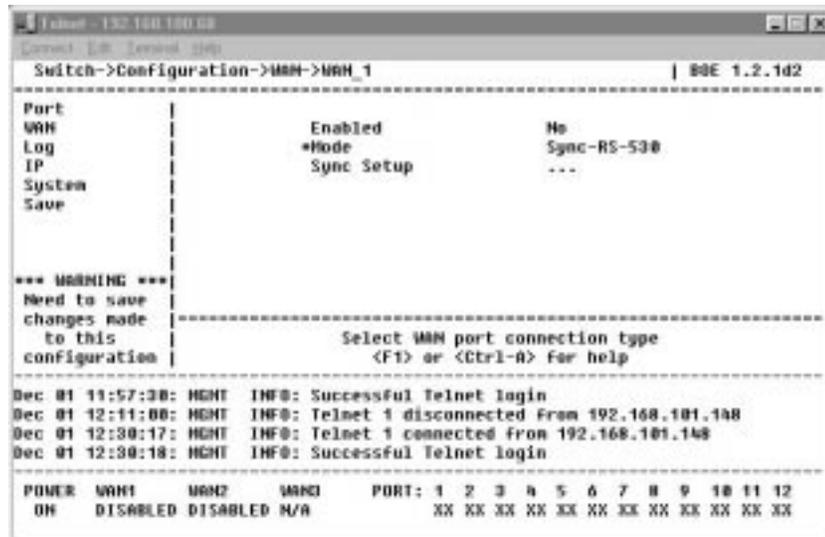


Figure 4.13. WAN Menu

3. Press the ↓ key to the **Mode** parameter. This parameter must match the protocol (V.35, RS-530, or RS-232) used by the network device connected to the WAN port. Press the → key to scroll through the available protocols.
4. Press the ← key to accept changes and go back to the Configuration Menu.
5. Press the ↓ key to the **Save** parameter. Press **Enter** to save changes to the active config (.swt) file.

## **Configuration**

---

### **IP Parameters**

*Note: Use of the PBXgateway over IP Networks is currently not supported by Lucent Technologies.*

#### **IP Address Parameters**

**Introduction** An Internet Protocol (IP) address and associated routing parameters must be entered within the IP menu to locate the PBXgateway on the LAN (Local Area Network) over an IP connection. This is required to manage the PBXgateway using Telnet or to configure the PBXgateway to use RVP\_IP.

*Note: The IP address (as well as any required mask or router addresses) must be provided by the network administrator.*

**Settings** The following IP settings are required:

- Address**- This is the IP address which identifies the PBXgateway on the LAN.
- Subnet Mask** – A number used to identify the IP subnetwork on the LAN.
- Default Router** – The address of a device used to reach IP hosts not on this IP subnetwork.

#### **Procedure**

1. Access the IP Menu using the following path;

**Path:** ->Configuration->IP ->Address

The following menu appears:

## Configuration

```
Telnet - 192.168.100.00
Connect To: Telnet 000
Switch->Configuration->IP->Address                               | 00E 1.2.1d2
-----
Port |
WAN  | *Address [192.168.100.68 ]
Log  | Subnet Mask [255.255.255.0 ]
IP   | Default Router [192.168.100.12 ]
System
Save

*** WARNING ***
Need to save
changes made
to this
configuration |
-----
Enter IP address
<F1> or <Ctrl-A> for help
-----
Dec 01 11:57:30: NCHT  INFO: Successful Telnet login
Dec 01 12:11:00: NCHT  INFO: Telnet 1 disconnected from 192.168.101.148
Dec 01 12:30:17: NCHT  INFO: Telnet 1 connected from 192.168.101.148
Dec 01 12:30:18: NCHT  INFO: Successful Telnet login
-----
POWER  WANI  WAN2  WAN3  PORT: 1 2 3 4 5 6 7 8 9 10 11 12
ON     DISABLED DISABLED N/A      XX XX
```

Figure 4.14. Address Menu

2. Press the → key to access the parameters

*Note: The following parameters must be assigned by the network administrator.*

3. Press the → key to the **Address** parameter. Enter the IP Address of the PBX gateway and press **Enter**.
4. Press the ↓ key to the **Subnet Mask** parameter. Enter the IP Address of the Subnet Mask and press **Enter**.
5. Press the ↓ key to the **Default Router** parameter. Enter the IP Address of the Default Router and press **Enter**.
7. Press the ← and ↓ key to the **Save** option.
8. Press **Enter** to save changes to the active config (.swt) file.



## **Configuration**

---

### **Enabling/Disabling Telnet** continued

2. Press the → and ↓ key to the **Telnet** parameter.
3. Press the → key to toggle the **Telnet** parameter between Enabled and Disabled.
4. Press the ← key to go accept changes and go back to the Configuration Menu
5. Press the ↓ key to the **Save** option.
6. Press **Enter** to save changes to the active config (.swt) file.

### **Enabling/Disabling FTP**

1. Press the → and ↓ key to the **FTP** parameter.
2. Press the → key to toggle the **FTP** parameter between Enabled and Disabled.
3. Press the ← key to go accept changes and go back to the Configuration Menu
4. Press the ↓ key to the **Save** option.
5. Press **Enter** to save changes to the active config (.swt) file.

## Configuration

---

### DNS Set up

**Introduction** The Domain Name System (DNS) is used in IP networks for translating host domain names (ie: mck.com) into IP addresses. Basically, if you are not sure of the IP address of the device you are trying to connect to, and there is a DNS server on the network with DNS enabled, simply type in the name of the device and the IP address will be displayed.

**Settings** The following DNS settings are required:

- Enabled**- This simply enables or disables the parameter.
- Server IP Address** – This is the IP Address of the DNS. Used to resolve names to IP addresses.
- Domain Name** – Name assigned to the network subnet on which the DNS server resides.

*Note: At this time, DNS is not required for any PBXgateway or Remote unit operation. Therefore, we recommend leaving this parameter disabled.*

### Enabling/Disabling DNS

1. Access the IP Menu from the Main Menu using the following path:

**Path:** ->Configuration->IP -> DNS

The following menu appears:

## Configuration

```
Telnet - 192.168.101.56
Connect [?] Terminal Help
Switch->Configuration->IP->DNS | BDE 1.2
-----
Port |
WAN | *Enabled | No
Log | Server IP Address | [ | ]
IP | Domain Name | [ | ]
System |
Save |
-----
Enable DNS resolver
<F1> or <Ctrl-A> for help
-----
Dec 15 13:01:37: : 2)Saving connect_entry to flash - /flash0/port2.
Dec 15 13:11:15: : 1)Saving connect_entry to flash - /flash0/port1.
Dec 15 13:13:07: : 2)Saving connect_entry to flash - /flash0/port2.
Dec 15 13:14:31: : 2)Saving connect_entry to flash - /flash0/port2.
-----
POWER WAN1 WAN2 WAN3 PORT: 1 2 3 4 5 6 7 8
ON DOWN DISABLED N/A RD UP UP NC NC NC NC NC
```

Figure 4.16 DNS Menu

2. Press the → key to the Enabled parameter. Enabled (Yes) or (No).
3. Press the → and ↓ key to the Domain Name parameter. Type in the name of the domain which the PBXgateway belongs to.

*Note: The Domain name must be provided by the network administrator.*

Example: Lucent.com

4. Press the → and ↓ key to the Server IP Address. Type in the address of the server which the PBXgateway belongs to.

*Note: The Server IP Address must be provided by the network administrator.*

5. Press the ← key to go accept changes and go back to the Configuration Menu. Press the ↓ key to the **Save** option.
6. Press **Enter** to save changes to the active config (.swt) file.

## Configuration

### System Parameters

Assign a Name to the PBXgateway

**Introduction** The MI provides a means of identifying the Gateway on the network. This procedure explains the method of assigning a name to the PBXgateway for identification purposes.

*Note: This name is used strictly for ID purposes only. It is not an IP host name.*

#### Procedure

1. Access the System Menu from the Main Menu using the following path:

**Path:** ->Configuration->System

The following menu appears:

This is where the name of the Gateway is displayed.

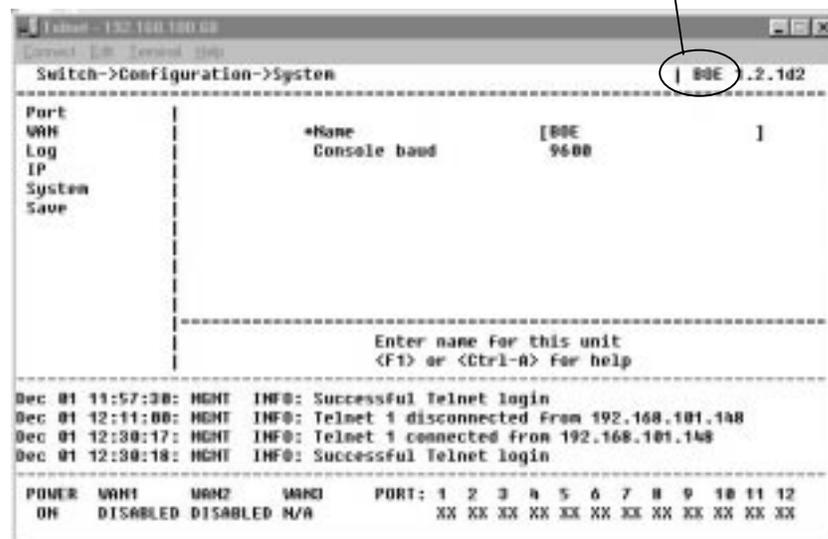


Figure 4.17. System Menu

## **Configuration**

---

Assign a Name to the PBXgateway continued

2. Press the → key and type in a name for the PBXgateway.

*Note: The name must not exceed 16 characters.*

3. Press the ← key to accept changes and go back to the Configuration Menu.
4. Press the ↓ key to the **Save** parameter.
5. Press **Enter** to save changes to the active config (.rem or .swt) file.

## Configuration

### Console Baud

**Introduction** The Console Baud is the speed at which information is transmitted to and from the PBXgateway through the console port (DB-9) located on the front of the unit.

*Note: This setting must match the baud rate of the PC serial port connected to the console port.*

### Procedure

1. Access the System Menu from the Main Menu using the following path:

**Path:** ->Configuration->System

The following menu appears:

```
Telnet - 192.168.100.00
Switch->Configuration->System | B0E 1.2.1d2
-----
Port      |
VAM       |          None          [B0E      ]
Log       |          *Console baud  19200
IP        |
System    |
Save      |
-----
Select console baud rate
<F1> or <Ctrl-A> for help
-----
Dec 01 11:57:30: MGMT  INFO: Successful Telnet login
Dec 01 12:11:00: MGMT  INFO: Telnet 1 disconnected from 192.168.101.148
Dec 01 12:30:17: MGMT  INFO: Telnet 1 connected from 192.168.101.148
Dec 01 12:30:18: MGMT  INFO: Successful Telnet login
-----
POWER VAM1  VAM2  VAM3  PORT: 1 2 3 4 5 6 7 8 9 10 11 12
ON    DISABLED DISABLED N/A      XX XX
```

Figure 4.18. System Menu

## **Configuration**

---

### Console Baud continued

2. Press the ↓ key to the Console Baud parameter.
3. Press the → key to modify the setting.

*Note: The <Default> setting is 19200.*

4. Press the ← key to accept changes and go back to the Configuration Menu.
5. Press the ↓ key to the **Save** parameter.
6. Press **Enter** to save changes to the active config (.swt) file.

## Configuration

### Utilities

#### Setting the Date

**Introduction** The Real Time Clock (RTC) provides an accurate date/time stamp for log messages and statistics used in the Management Interface (MI). The time is displayed using a 24 hour clock.

Example:

Date: December 10, 1999

Time: 15:46:37 (no a.m. or p.m.- 24 hour clock)

#### Procedure

1. Access the Set Date Menu from the Main Menu using the following path:

**Path:** ->Utilities->System->Set date

The following menu appears:

```
Telnet - 192.168.100.00
Switch->Utilities->System->Set Date | BSE 1.2.1d2
-----
Set Password |
Set Date | *Month December
Clear Log | Day of month [1]
Dump Log | Year [1999]
Dump Config | Hour [12]
Reset Stats | Minute [56]
Reboot | Second [3]
 | Daylight Savings Enabled
-----
Select the current month
<F1> or <Ctrl-A> for help
-----
Dec 01 11:57:30: NCHT INFO: Successful Telnet login
Dec 01 12:11:00: NCHT INFO: Telnet 1 disconnected from 192.168.101.148
Dec 01 12:30:17: NCHT INFO: Telnet 1 connected from 192.168.101.148
Dec 01 12:30:18: NCHT INFO: Successful Telnet login
-----
POWER WANI WAN2 WAN3 PORT: 1 2 3 4 5 6 7 8 9 10 11 12
ON DISABLED DISABLED N/A XX XX
```

Figure 4.19. Set Date Menu

## **Configuration**

---

### Setting the Date continued

2. Press the ↓ key to access each parameter and fill in the appropriate information as required.

*Note: Press the → key to scroll through the choices for Month.*

3. Press the ← key to accept changes and go back to the **System** menu.

*Note: The PBXgateway and **Extender** 6000 preserve their date and time even when power is lost.*

## Configuration

---

### Setting the Administrator's Password

#### How the administrator password works

The administrator password provides access to the Management Interface (MI). It is very important to set up an initial administrator password because the units are shipped without one programmed. You should set an administrator's password for both the Branch Office unit and PBXgateway for security reasons.

#### Administrator Password Guidelines



#### Security Alert:

Passwords should be hard to guess and therefore should not contain:

- all the same numbers or characters

Example: 88888888 or aaaaaaaaa

- sequential numbers or characters

Example: 987654321 or abcdefg

- number strings associated with you or with the remote user or with your business. These include:
  - Birthdays
  - Telephone numbers
  - Social security numbers

- Passwords should be changed regularly, at least on a quarterly basis. Do not recycle old passwords.

## **Configuration**

---

Setting the Administrator's Password continued

### **Procedure**

1. Select Set Password from the Main Menu using the following path:

**Path:** ->Utilities->System->Set Password

You will be prompted to enter the **Old Password**.

*Note: There is no default admin password.*

2. Press **Enter**.

You will be prompted to enter the **New Password**.

3. Assign an administrator password keeping the length of password to 10 characters.
4. Type in **New password** and Press **Enter**.
5. You will be prompted to confirm the **New Password**, press **Enter**.

When the password has been changed, "Password changed" appears on the screen.

6. Press the ← key to go back to the **System** Menu.

*Note: Write the password down, and keep in a secure place.*

## Configuration

### Login to Alternate Remote Unit

**Introduction** The system administrator can connect to each Remote unit from the PBXgateway through the “Remote Login” command within the Management Interface (MI). This command allows the system administrator to access all Remote units for configuration, troubleshooting, and file transfers.

#### Procedure

1. Access the Main Menu
2. Press the ↓ key to select Remote Login and press Enter.
3. A menu will appear displaying the Remotes that are connected and that can be accessed from the PBXgateway. Select the Remote from the list displayed.

```
Telnet - 192.168.101.56
Connect [?] Terminal Help
Switch->Remote Login | BDE 1.2
-----
Configuration |
Status | # Select remote |
Utilities | #-----# |
*Remote Login | #* Part 1: 192.168.101.190 RD - |
Logout | # Part 2: 192.168.101.164 UP |
| # Part 3: 192.168.101.57 UP |
| # Part 4: Unknown NC |
| # Part 5: Unknown NC |
| # Part 6: Unknown NC |
| # Part 7: Unknown NC |
| #-----# |
| |
| Log into the remote unit |
| <F1> or <Ctrl-A> for help |
|-----|
Dec 15 13:01:37: : 2)Saving connect_entry to flash - /flash0/port2.
Dec 15 13:11:15: : 1)Saving connect_entry to flash - /flash0/port1.
Dec 15 13:13:07: : 2)Saving connect_entry to flash - /flash0/port2.
Dec 15 13:14:31: : 2)Saving connect_entry to flash - /flash0/port2.
-----
POWER  WAN1  WAN2  WAN3  PORT: 1 2 3 4 5 6 7 8
ON      DOWN  DISABLED  N/A      RD  UP  UP  NC  NC  NC  NC  NC
```

Figure 4.20. Available Remotes

*Note: This menu only appears if you run in RVP\_IP mode. Otherwise, “Remote Login” just connects to the corresponding Branch Extender.*

## **Configuration**

---

### **Login to Alternate Remote Unit continued**

The screen will display:

Connecting....., and the Welcome Screen appears for the unit at the alternate site.

*Note: You may have to enter the Administrator Password if passwords are used.*

Go to the next page for configuration steps.

*Note: The live log window will not automatically update. Press F4 to update the log messages.*

## **Configuration**

---

### **Remote Unit Configuration Parameters**

**Introduction** This section of the manual provides a list of parameters for configuring each Remote. All configuration parameters necessary for the installation and configuration for the Remote unit are contained within the Remote unit User's Guide.

**For a list of Required Parameters:** See page 4-52

**For a list of Optional Parameters:** See page 4-53

## Configuration

---

### Remote Unit Configuration Parameters continued

#### Required Parameters

*Note: Use of the PBXgateway over IP Networks is currently not supported by Lucent Technologies.*

To .....	Extender 6000 (Synchronous)	Extender 6000 (IP)	See page
Enable/Disable WAN ports	Enable	Disable	4-31
Choose the voice compression method	✓	✓	4-20
Set WAN mode	✓		4-34
Set Sync Rate	✓		4-32
Set serial connection using RVP_Direct  or  Set IP Parameter using RVP_IP  Gateway IP Destination	✓	✓  ✓	4-54  4-35  4-56

**Table 4-7. Remote Configuration Parameters**

## Configuration

---

### Optional parameters

Parameter	Extender 6000 (Synchronous)	Extender 6000 (IP)	See page
<u>User ID</u> <i>To map the Remote unit to the correct port on the PBX.</i>	✓	✓	4-26
<u>Auto-Connect</u> <i>Set the Remote to automatically re-connect the remote phones after power-up, reboot, or disconnect</i>	✓	✓	4-59
<u>Banner</u> <i>Provides a single line of text, or banner, which is displayed on the phone when not connected (off-line).</i>	✓	✓	4-59
<u>Password</u> <i>If entered, this password would be required to connect a phone to the PBXgateway.</i>	✓	✓	4-60
<u>Analog Port</u> <i>Sets up the Analog port on the Remote unit.</i>	✓	✓	4-61

Table 4-8. Optional Remote Parameters

## Configuration

### Direct Serial Connection (RVP\_Direct)

**Introduction** The Extender 6000 Branch Office unit utilizes a direct serial connection to provide remote user connectivity. This means that the WAN port is plugged directly into a network device. The WAN port (WAN 1 or WAN 2) that is used as the main or “primary” port must be identified on the RVP\_Direct menu.

*Note: The WAN port must already be enabled and properly configured (see page 4-30)*

#### Procedure

1. Access the Connect Menu from the Main Menu using the following path:

**Path:** Remote->Configuration->Connect->

2. Set the “Connect Type” to RVP\_Direct and access the Menu.

The following menu appears:

```
Telnet - 192.168.100.69
Connect Edit Terminal Help
Remote->Configuration->Connect->RVP_Direct | 80E 1.2.1d2
-----
Port
WAN      Primary Interface  WAN_1
Connect  Secondary Interface None
Analog Card Utilization      [100]
Log
IP
System
Save
-----
Select WAN Interface for this connection
<Ft> or <Ctrl-A> for help
-----
Dec 01 13:10:28: MGMT  INFO: Successful Telnet login
Dec 01 13:29:30: MGMT  INFO: Telnet 1 disconnected from 192.168.101.148
Dec 01 13:56:43: MGMT  INFO: Telnet 1 connected from 192.168.101.148
Dec 01 13:56:43: MGMT  INFO: Successful Telnet login
-----
POWER  WAN1  WAN2  ANALOG  PORT: 1 2 3 4 5 6 7 8 9 10 11 12
ON     DISABLED  DISABLED  @NHOOK  XX XX
```

Figure 4.21. RVP\_Direct Menu

## **Configuration**

---

### Direct Serial Connection continued

3. Press the → key to the Primary Interface parameter. This is the main WAN port (usually WAN1) that connects the Remote unit to the network device.
4. Press the → key to scroll through the choices.
5. Press the ↓ key to the Secondary Interface parameter. This identifies the secondary WAN port.

*Note: This parameter is normally set to None.*

6. Press the ↓ key to the Utilization parameter. This parameter is a numeric value that represents the percentage of bandwidth used by the remote unit. See page 5-41 for more information on setting this parameter.

*Note: This should be left at 100.*

7. Press the ← key to accept changes and go back to the Configuration Menu. Press the ↓ key to the **Save** option. Press **Enter**.

## Configuration

### IP Connection (RVP\_IP)

*Note: Use of the PBXgateway over IP Networks is currently not supported by Lucent Technologies.*

**Introduction** The Extender 6000 Remote unit utilizes an IP connection to provide remote user connectivity. This means that the Ethernet port on the back of the unit is plugged directly into the existing network through an RJ-45 connector.

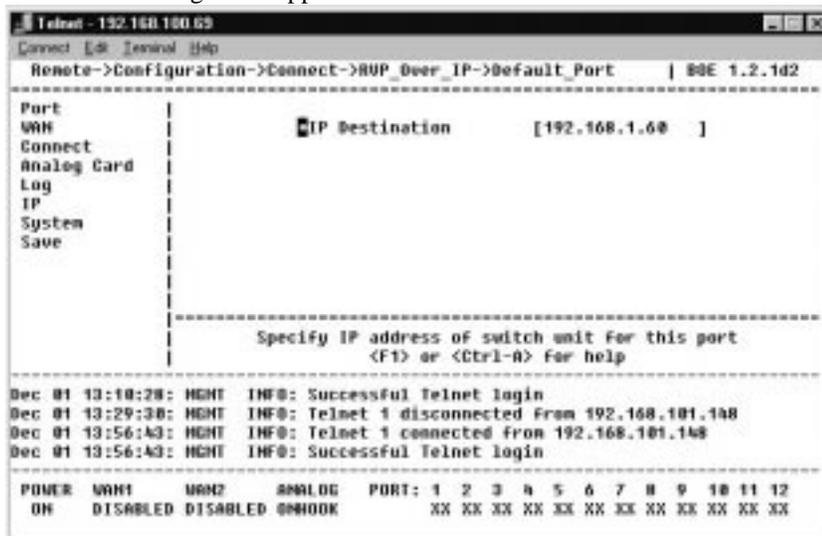
The PBXgateway IP address must be entered within the Management Interface (MI) of the Remote unit to locate the PBXgateway within the IP network.

### Procedure

1. **For the Extender 6000 Branch unit** access the Connect Menu from the Main Menu using the following path:

**Path:** Remote->Configuration->Connect->RVP\_over\_IP->Default Port

2. The following menu appears:



```
Telnet - 192.168.100.69
Connect [?] Terminal Help
Remote->Configuration->Connect->RVP_Over_IP->Default_Port | B0E 1.2.1d2
-----
Port
WAN          [IP Destination      [192.168.1.60  ]
Connect
Analog Card
Log
IP
System
Save
-----
Specify IP address of switch unit for this port
<F1> or <Ctrl-A> for help
-----
Dec 01 13:10:28: MGMT  INF0: Successful Telnet login
Dec 01 13:29:30: MGMT  INF0: Telnet 1 disconnected from 192.168.101.148
Dec 01 13:56:43: MGMT  INF0: Telnet 1 connected from 192.168.101.148
Dec 01 13:56:43: MGMT  INF0: Successful Telnet login
-----
POWER  WANI  WANI2  ANALOG  PORT: 1 2 3 4 5 6 7 8 9 10 11 12
ON     DISABLED  DISABLED  ONHOOK  XX XX
```

Figure 4.22. RVP\_over\_IP Menu

## Configuration

---

### IP Connection *continued*

*Note: The <Default> setting will connect all ports to the same PBXgateway. Individual ports can be set to connect to different PBXgateway units by simply selecting the port.*

3. Press the → key to the IP Destination parameter.
4. Enter the IP address of the PBXgateway.

*Note: Each port can actually have a unique IP Destination if you have multiple PBXgateways. This address must be assigned by the network administrator.*

5. Press the ← key to accept changes and go back to the Configuration Menu. Press the ↓ key to the **Save** option. Press **Enter**.

## Configuration

### Customizing Individual Ports

**Introduction** The system administrator can customize each individual port for phones connected to the Remote unit. The following parameters are described:

- Auto-Connect (see page 4-59)
- User ID (see page 4-26)
- Password (see page 4-60)
- Description (see page 4-28)
- Banner (see page 4-59)
- Logout (see page 4-63)

### Procedure

1. Access the specific Port Menu from the Main Menu using the following path:

**Path:** Remote->Configuration->Port

The following menu appears:

```
Telnet - 192.168.101.56
Connect [?] Terminal Help
Remote->Configuration->Port->Port_1 | BDE 1.2
-----
Port | |
WAN | | *Enabled | | <default>
Connect | | Auto connect | | <default>
Log | | User ID | | [ ]
IP | | Password | | [ ]
System | | Description | | [ ]
Save | | Banner | | [ ]
| | Logout | | [ ]
-----
Enable phone/pbx port
<F1> or <Ctrl-A> for help
-----
- - - - - AUTO UPDATE DISABLED - - - - -
Dec 15 14:13:59: PDRT INF0: 6)Waiting For UT Connection
Dec 15 14:13:59: PDRT INF0: 3)Waiting For UT Connection
Dec 15 14:14:26: NGNT INF0: Rlogin session 1 connected from 192.168.101.56
Dec 15 14:14:26: NGNT INF0: Successful Rlogin login
-----
POWER:  WAN1  WAN2  WAN3  PORT:  1  2  3  4  5  6  7  8
ON      DOWN  DISABLED  N/A  UP  NC  NC  NC  NC  NC  NC  NC
```

Figure 4.23. Port selection screen

## **Configuration**

---

### Customizing Individual Ports continued

#### **Auto Connect**

This feature attempts to permanently keep the Remote connected to the Gateway and prevents user from having to press '1' to connect.

1. Press the ↓ key to access the Auto Connect parameter.
2. Press the → key and select, Enabled (**Yes**), (**No**), or Default.

*Note: The Default setting is Auto Connect: Disabled*

#### **To Save changes**

Press the ← key to accept changes and go back to the Configuration Menu.

Press the ↓ key to the **Save** parameter.

Press **Enter** to save changes to the active config (.rem) file.

#### **Banner**

1. Press the ↓ key to access the Banner parameter.
2. Press the → key and type in a line of text to be displayed on the Remote phones.

*Note: The description is limited to alpha-numeric (1,2,3, a, b, c etc) characters only, and the total length must not exceed 16 characters.*

Example: Acme Inc.

#### **To Save changes**

Press the ← key to accept changes and go back to the Configuration Menu.

Press the ↓ key to the **Save** parameter.

Press **Enter** to save changes to the active config (.rem) file.

## **Configuration**

---

### **Password**

A (connect) password provides a secure WAN link between the PBXgateway and Remote Unit. If assigned, the connect password must be entered for communication between the PBXgateway and a Remote unit.

1. Press the ↓ key to access the Password parameter.
2. Press the → key and type in a password.



#### **Security Alert:**

Passwords should be hard to guess and therefore should not contain:

- all the same numbers or characters  
Example: 88888888 or aaaaaaaaa
- sequential numbers or characters  
Example: 987654321 or abcdefg
- number strings associated with you or with the remote user or with your business. These include:
  - Birthdays
  - Telephone numbers
  - Social Security numbers

Passwords should be changed regularly, at least on a quarterly basis. Do not recycle old passwords.

#### **To Save changes**

Press the ← key to accept changes and go back to the Configuration Menu.

Press the ↓ key to the **Save** parameter.

Press **Enter** to save changes to the active config (.rem) file.

## Configuration

### Analog Port

**Introduction** The Branch Office **Extender** 6000 is equipped with an extra RJ-11 port on the back panel. This port is labeled “Analog” and it provides a connection to an analog phone line (provided at the remote location) for the purpose of reaching emergency services (fire, police).

Once the unit is connected to the analog line, the remote user simply presses the assigned key on the digital handset and dials the phone number. Only one remote user can dial out at any one time.

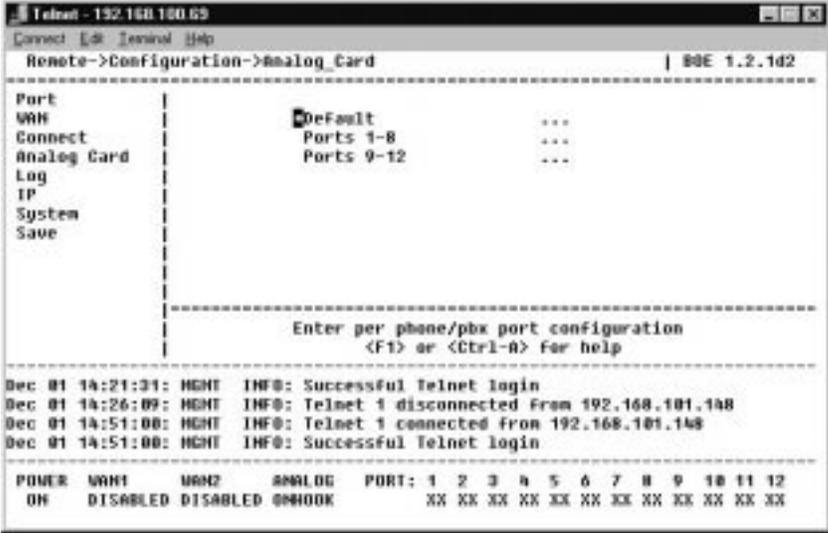
**IMPORTANT NOTE:** If power to the remote unit fails, the Analog port is not available.

### Procedure

1. Select Analog command using the following path:

**Path:** Remote->Configuration->Analog Card

The following menu appears:



```
Telnet - 192.168.100.69
Connect [Q] Terminal Help
Remote->Configuration->Analog Card | 80E 1.2.1d2
-----
Port
VARI           Default          ...
Connect
Analog Card   Ports 1-8          ...
              Ports 9-12        ...
Log
IP
System
Save
-----
Enter per phone/pbx port configuration
<F1> or <Ctrl-A> for help
-----
Dec 01 14:21:31: HGHT  INFO: Successful Telnet login
Dec 01 14:26:09: HGHT  INFO: Telnet 1 disconnected from 192.168.101.148
Dec 01 14:51:00: HGHT  INFO: Telnet 1 connected from 192.168.101.148
Dec 01 14:51:00: HGHT  INFO: Successful Telnet login
-----
POWER  VARI1  VARI2  ANALOG  PORT: 1 2 3 4 5 6 7 8 9 10 11 12
ON     DISABLED  DISABLED  000000  XX XX
```

Figure 4.24. Analog Card

## Configuration

### Analog Port *continued*

- Press the → key to enable analog port access for all 12 ports, or press the ↓ key to set individual ports.

*Note: This procedure will set the <Default> setting for all ports.*

```
Remote->Configuration->Analog Card->Default | BOE 1.2.1d3
-----
Port
*Enabled                               Yes
Connect Key                             [4 ]
Analog Card Ring                         Yes
Log
IP
System
Save
-----
Enable analog phone port
<F1> or <Ctrl-A> for help
-----
Dec 20 10:00:28: PORT DEBUG: 11)Tx CHD (VOX_OFFHOOK)(0 aa: 00 00)
Dec 20 10:00:28: PORT DEBUG: 11)Rx ACK (VOX_OFFHOOK)(0 ca: ef 80)
Dec 20 10:00:34: NCHT  INFO: Rlogin session 1 connected from switch
Dec 20 10:00:35: NCHT  INFO: Successful Rlogin login
-----
POWER  VARI1  VARI2  ANALOG  PORT: 1 2 3 4 5 6 7 8 9 10 11 12
ON      ACTIVE  DISABLED  OFFHOOK  NC  NC  UP  UP  UP  UP  UP  UP  UC  UP  UP  UC
```

- Press the → key to enable or disable the analog port.
- Press the ↓ key to set the numeric “call key” which must be pressed on the remote phone before placing an analog call.

*Note: Key range is 0-15. Do not use a key which already has a function programmed.*

- Press the ↓ key to enable (Ring-yes/no) the specific port from receiving incoming analog calls.
- Press the ← key to accept changes and go back to the Configuration Menu.
- Press the ↓ key to the **Save** option. Press **Enter**.

## **Configuration**

---

### Logout Code Set up

**Introduction** The Logout Code is the sequence of commands sent to the ECS when you disconnect the phone port (go offline) from the Branch Unit.

*Note: This only applies to the Lucent protocol units.*

#### **Procedure:**

1. Select Logout Code command using the following path:

**Path:** Remote->Configuration->Port

2. Press the → key the ↓ key to access the specific port (1-12).
3. Press the → key access the port menu.
4. Press the ↓ key to access the Logout code parameter.

The following buttons are used to set the logout code sequence:

Use the Digits 0 through 9 as their own value.

#0 = “D” represents a press of the switchhook.

#1 = “U” represents the release of the switchhook.

*Note: The normal on-site operation of logging out your telephone using logout codes is to lift the receiver, dial the logout code, then hang up. When you program the Logout Code you must enter the character sequences that simulate the same three actions.*

Example: for a logout code of \*89, enter #1\*89#0.

If your Logout Code begins with a ‘#’ you must precede the Logout Code with a ‘#’. For example, for a logout code of #89, enter #1##89#0.

## Configuration

### System Reboot

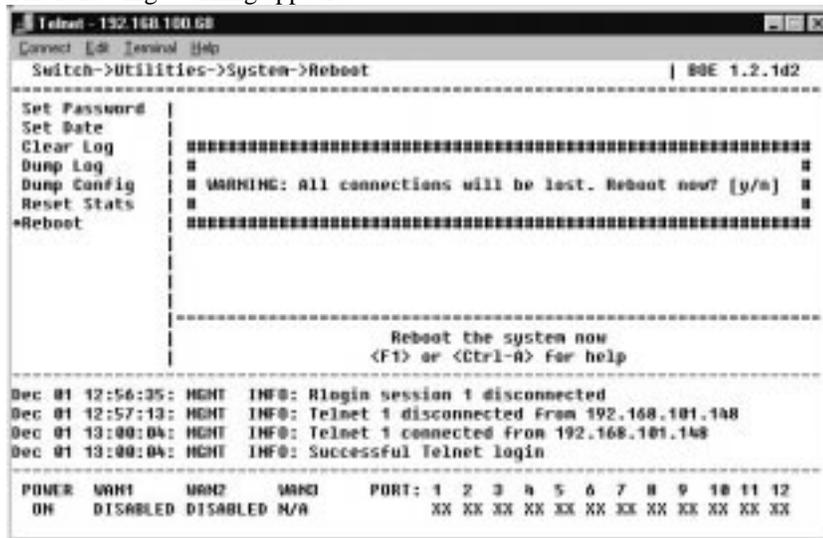
**Introduction** The PBXgateway or any remote, can be rebooted through the Management Interface (MI). This parameter is used for resetting the unit during troubleshooting or software upgrades. The MI Reboot is a “soft” reboot, which means that the unit is re-started through the software. A “hard” reboot refers to a re-start by unplugging the unit.

#### Procedure

2. Select Reboot command using the following path:

**Path:** Utilities->System->Reboot

The following Warning appears:



```
Telnet - 192.168.100.68
Connect Edit Terminal Help
Switch->Utilities->System->Reboot | 80E 1.2.1d2
-----
Set Password |
Set Date |
Clear Log | *****
Dump Log | #
Dump Config | # WARNING: All connections will be lost. Reboot now? [y/n] #
Reset Stats | #
*Reboot | *****
-----
Reboot the system now
<F1> or <Ctrl-A> for help
-----
Dec 01 12:56:35: NCHT INFO: Rlogin session 1 disconnected
Dec 01 12:57:13: NCHT INFO: Telnet 1 disconnected from 192.168.101.148
Dec 01 13:00:04: NCHT INFO: Telnet 1 connected from 192.168.101.148
Dec 01 13:00:04: NCHT INFO: Successful Telnet login
-----
POWER VANT VAND VAND PORT: 1 2 3 4 5 6 7 8 9 10 11 12
ON DISABLED DISABLED N/A XX XX
```

Figure 4.25. Reboot Warning

**IMPORTANT NOTE:** If the “y” selection is chosen, the following connections will be terminated: All active phones, Telnet connection, FTP connection and in-band logins.

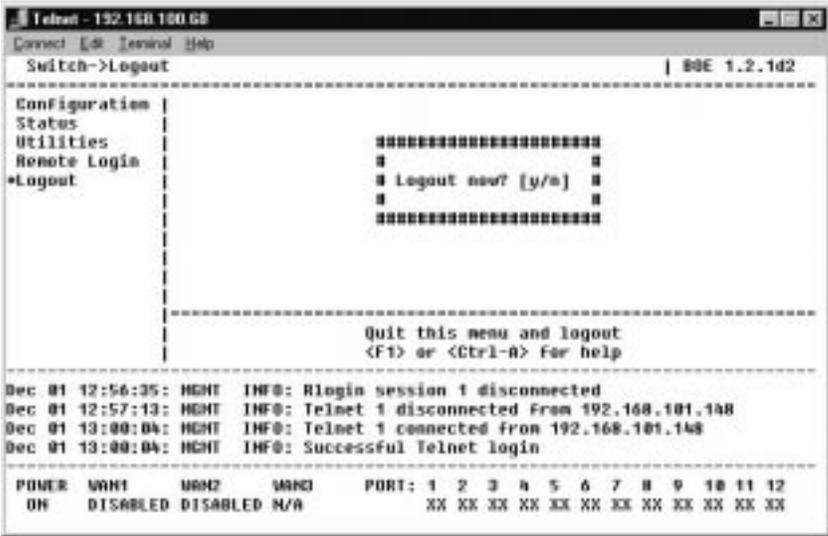
## Configuration

---

### Logout

#### Procedure

1. Select the **Logout** parameter from the Main Menu, the following message appears:



```
Telnet - 192.168.100.00
Connect [?] Terminal Help
Switch->Logout | 00E 1.2.1d2
-----
Configuration |
Status |
Utilities |
Remote Login |
*Logout |
-----
| Logout now? [y/n] |
| |
| |
-----
| Quit this menu and logout |
| <F1> or <Ctrl-A> for help |
-----
Dec 01 12:56:35: NCHT INFO: Rlogin session 1 disconnected
Dec 01 12:57:13: NCHT INFO: Telnet 1 disconnected from 192.168.101.148
Dec 01 13:00:04: NCHT INFO: Telnet 1 connected from 192.168.101.148
Dec 01 13:00:04: NCHT INFO: Successful Telnet login
-----
POWER WANI WAND WAND PORT: 1 2 3 4 5 6 7 8 9 10 11 12
ON DISABLED DISABLED N/A XX XX
```

Figure 4.26. Logout Warning

2. The Management Interface (MI) will ask for confirmation. Press **Y** to 'Logout' out of the PBXgateway.

*Note: After Configuring a Gateway or Remote you should logout for security reasons.*

## **Configuration**

---

*This page intentionally left blank.*

---

## **The Management Interface**

# **5**

This Chapter provides information on all parameters within the Management Interface (MI). Information includes the parameter description, usage, location, and references.

## **5. THE MANAGEMENT INTERFACE**

**Introduction** This Chapter provides background information for each parameter within the Management Interface (MI). The parameters are defined using two different methods:

1. Parameters listed by menu location
2. Parameters listed alphabetically using the name displayed within each menu.

**Parameters listed by menu location** This method sorts all parameters within the MI by the configuration menu on which the parameter appears. All applicable menus are displayed with reference information for each parameter.

*Note: For information on every parameter within the MI including default settings and all available values, see Appendix A.*

The following menus are detailed in this section:

### **Gateway/Remote units**

- Port Menu
  - Voice Menu
- WAN Menu
- Log Menu
- IP Menu
  - SNMP Menu
  - Syslog Menu
- System Menu
- Utilities

### **Remote unit only**

- Connect Menu
  - RVP\_Direct Menu
  - RVP\_over\_IP Menu

## **The Management Interface (MI)**

---

### **Parameters listed alphabetically**

This method sorts all parameters within the MI alphabetically by the parameter

*Note: Some of the names require additional information (in parenthesis), because the name within the MI is too generic to provide an adequate reference.*

Example: Host  
(Syslog)

Host : The parameter name within the MI.  
(Syslog): provides parameter detail.

Each entry includes the following support information:

**Parameter Location:** The Parameter Location text shows you where to find the parameter within the MI.

**Description:** the Description text explains the parameter.

**Usage:** The Usage text explains how to use the parameter.

**Example:** The Example text shows you an example or setting.

**Dependencies:** The Dependencies text tells you what other information you need to configure and use the parameter.

**See Also:** The See Also text points you to related parameters within the MI.

## The Management Interface (MI)

### Gateway & Remote Menus

#### Port Menu

```

Telnet - 192.168.101.56
Connect [?] Terminal Help
Remote->Configuration->Port->Port_1 | BDE 1.2
-----
Port
WAN          *Enabled          <default>
Connect      Auto connect    <default>
Log          User ID          [          ]
IP           Password        [          ]
System      Description     [          ]
Save        Banner         [          ]
           Logout      [          ]
-----
                Enable phone/pbx part
                <F1> or <Ctrl-A> for help
-----
Dec 15 14:13:59: PDRT  INF0: 6)Waiting For UT Connection
Dec 15 14:13:59: PDRT  INF0: 3)Waiting For UT Connection
Dec 15 14:14:26: HCHT  INF0: Rlogin session 1 connected from 192.168.101.56
Dec 15 14:14:26: HCHT  INF0: Successful Rlogin login
-----
POWER  WAN1  WAN2  WAN3  PORT: 1  2  3  4  5  6  7  8
ON     DOWN  DISABLED  N/A  UP  NC  NC  NC  NC  NC  NC  NC

```

Parameter	To set this parameter	For more information on this parameter
	see page	see page
Enabled	4-22	-
Auto Connect (B)	4-59	5-17
User ID	4-26	5-40
Password	4-24	5-29
Banner (B)	4-59	5-18
Voice (S)	-	5-5
Logout	4-63	5-26

**Figure 5.1. Port Menu**

- (S) PBXgateway only
- (B) Remote unit only

## The Management Interface (MI)

### Voice Menu (Gateway only)

```

Telnet - 192.168.100.08
Connect [?] Terminal Help
Switch->Configuration->Port->Ports_1-8->Port_1->Voice | 80E 1.2.1d2
-----
Port
WAN          *Method          <default>
Log          Companding        <default>
IP           Jitter Delay      [  ]
System      Packet Size       [  ]
Save        Packet Trace      <default>
-----
                Select voice compression method
                <F1> or <Ctrl-A> for help
-----
Dec 01 12:56:35: HGMT  INFO: Rlogin session 1 disconnected
Dec 01 12:57:13: HGMT  INFO: Telnet 1 disconnected from 192.168.101.148
Dec 01 13:00:04: HGMT  INFO: Telnet 1 connected from 192.168.101.148
Dec 01 13:00:04: HGMT  INFO: Successful Telnet login
-----
POWER WAN1  WAN2  WAN3  PORT: 1 2 3 4 5 6 7 8 9 10 11 12
ON   DISABLED DISABLED N/A      XX XX

```

Parameter	To set this parameter	For more information on this parameter
	see page	see page
Method	4-20	5-40
Companding	4-20	5-20
Jitter Delay	4-20	5-26
Packet Size	4-20	5-28
Packet Trace	4-20	5-29

Figure 5.2. Voice Menu

## The Management Interface (MI)

### WAN Menu

```

Telnet - 192.168.100.00
Connect [Q] Terminal Help
Switch->Configuration->WAN->WAN_1 | 00E 1.2.1d2
-----
Port |
WAN | *Enabled | No
Log | Mode | Sync-U.35
IP | Sync Setup | ...
System |
Save |
-----
Enable WAN port
<F1> or <Ctrl-A> for help
-----
Dec 01 12:56:35: NHT INF0: Rlogin session 1 disconnected
Dec 01 12:57:13: NHT INF0: Telnet 1 disconnected from 192.168.101.148
Dec 01 13:00:04: NHT INF0: Telnet 1 connected from 192.168.101.148
Dec 01 13:00:04: NHT INF0: Successful Telnet login
-----
POWER WAN1 WAN2 WAN3 PORT: 1 2 3 4 5 6 7 8 9 10 11 12
ON DISABLED DISABLED N/A XX XX

```

Parameter	To set this parameter	For more information on this parameter
	see page	see page
Enabled	4-31	-
Mode	4-34	5-27
Sync Setup	4-32	5-36

Figure 5.3. WAN Menu

## The Management Interface (MI)

### Log Menu

```

Telnet - 192.168.100.68
Connect [?] Terminal Help
Switch->Configuration->Log | 80E 1.2.1d2
-----
Port |
WAN |
Log |
IP |
System |
Save |
Size | [32768 ]
Default Priority | Info
SYS Priority | <default>
MGMT Priority | <default>
NET Priority | <default>
PORT Priority | <default>
-----
Enter internal log size in bytes
<F1> or <Ctrl-A> for help
-----
Dec 01 12:56:35: MGMT INFO: Rlogin session 1 disconnected
Dec 01 12:57:13: MGMT INFO: Telnet 1 disconnected from 192.168.101.148
Dec 01 13:00:04: MGMT INFO: Telnet 1 connected from 192.168.101.148
Dec 01 13:00:04: MGMT INFO: Successful Telnet login
-----
POWER WAN1 WAN2 WAN3 PORT: 1 2 3 4 5 6 7 8 9 10 11 12
ON DISABLED DISABLED N/A XX XX

```

Parameter	To set this parameter	For more information on this parameter
	see page	see page
Size	-	5-35
Default Priority	-	5-32
SYS Priority	-	5-32
MGMT Priority	-	5-32
NET Priority	-	5-32
PORT Priority	-	5-32

Figure 5.4. Log Menu

## The Management Interface (MI)

### IP Menu

```

Telnet - 192.168.100.68
Connect [?] Terminal Help
Switch->Configuration->IP | 80E 1.2.1d2
-----
Port      |
WAN1     |      *Address      |   ...
Log       |                    |
IP        |      Telnet        |   Enabled
System   |      FTP           |   Enabled
Save      |      DNS           |   ...
          |      SNMP          |   ...
          |      Web Server    |   Disabled
          |      Syslog        |   ...
-----
Enter IP address configuration
<F1> or <Ctrl-A> for help
-----
Dec 01 12:56:35: NGMT  INFO: Rlogin session 1 disconnected
Dec 01 12:57:13: NGMT  INFO: Telnet 1 disconnected from 192.168.101.148
Dec 01 13:00:04: NGMT  INFO: Telnet 1 connected from 192.168.101.148
Dec 01 13:00:04: NGMT  INFO: Successful Telnet login
-----
POWER  WAN1  WAN2  WAN3  PORT: 1 2 3 4 5 6 7 8 9 10 11 12
ON     DISABLED  DISABLED  N/A      XX XX
  
```

Parameter	To set this parameter	For more information on this parameter
	see page	see page
Address	4-35	5-17
Telnet	4-37	5-38
FTP	4-37	5-24
DNS	4-39	5-21
SNMP	-	5-9
Web Server	-	5-41
Syslog	-	5-10

Figure 5.5. IP Menu

## The Management Interface (MI)

### SNMP Menu

```

Telnet - 192.168.100.00
Connect [?] Terminal Help
Switch->Configuration->IP->SNMP | 80E 1.2.1d2
-----
Port      |
VLAN     |  Enabled      | No
Log       | Trap Hosts    | ...
IP        | Trap Priority | Info
System   | Community    | [public      | ]
Save     | Trap Path    | LAN
          | sysContact   | [Rick Jones  | ]
          | sysName      | [Device 1    | ]
          | sysLocation  | [New York    | ]
-----
                Enable SNMP
                <F1> or <Ctrl-A> for help
-----
Dec 01 12:56:35: NCHT  INFO: Rlogin session 1 disconnected
Dec 01 12:57:13: NCHT  INFO: Telnet 1 disconnected from 192.168.101.148
Dec 01 13:00:04: NCHT  INFO: Telnet 1 connected from 192.168.101.148
Dec 01 13:00:04: NCHT  INFO: Successful Telnet login
-----
POWER VLAN1  VLAN2  VLAN3  PORT: 1 2 3 4 5 6 7 8 9 10 11 12
ON   DISABLED DISABLED N/A      XX XX

```

Parameter	To set this parameter	For more information on this parameter
	see page	see page
Enabled	-	-
Trap Hosts	-	5-38
Trap Priority	-	5-40
Community	D-17	5-19
Trap path	-	5-39
Sys Contact	-	5-37
Sys Name	-	5-37
Sys Location	-	5-37

Figure 5.6. SNMP Menu

## The Management Interface (MI)

### SysLog Menu

```

Telnet - 192.168.100.00
Connect [?] Terminal Help
Switch->Configuration->IP->Syslog                               | 80E 1.2.1d2
-----|-----
Port      |
WAN       |       Enabled      No
Log       |      Host      [192.168.104.21 ]
IP        |      ID        [0x00      ]
System   |      Default Priority
Save     |      SYS Priority <default>
         |      MGMT Priority <default>
         |      NET Priority <default>
         |      PORT Priority <default>
*** WARNING ***
Need to save
changes made
to this
configuration |-----|-----
                  Enable sending log messages to syslog host
                  <F> or <Ctrl-A> for help
-----|-----
Dec 01 12:56:35: MGMT  INFO: Rlogin session 1 disconnected
Dec 01 12:57:13: MGMT  INFO: Telnet 1 disconnected from 192.168.101.148
Dec 01 13:00:04: MGMT  INFO: Telnet 1 connected from 192.168.101.148
Dec 01 13:00:04: MGMT  INFO: Successful Telnet login
-----|-----
POWER  WAN1  WAN2  WAN3  PORT: 1 2 3 4 5 6 7 8 9 10 11 12
ON     DISABLED DISABLED N/A      XX XX

```

Parameter	To set this parameter	For more information on this parameter
	see page	see page
Enabled	-	-
Host	-	5-24
ID	-	5-25
Default Priority	-	5-33
SYS Priority	-	5-33
MGMT Priority	-	5-33
NET Priority	-	5-33
PORT Priority	-	5-33

Figure 5.7. Syslog Menu

## The Management Interface (MI)

### System Menu

```

Telnet - 192.168.100.00
Connect [?] Terminal Help
Switch->Configuration->System | B0E 1.2.1d2
-----
Port |
WAN |  None | [B0E |
Log | Console baud | 9600 | ]
IP |
System |
Save |
-----
*** WARNING ***
Need to save
changes made
to this
configuration | Enter name for this unit
| <F1> or <Ctrl-A> for help
-----
Dec 01 12:56:35: NCHT INF0: Rlogin session 1 disconnected
Dec 01 12:57:13: NCHT INF0: Telnet 1 disconnected from 192.168.101.148
Dec 01 13:00:04: NCHT INF0: Telnet 1 connected from 192.168.101.148
Dec 01 13:00:04: NCHT INF0: Successful Telnet login
-----
POWER WAN1 WAN2 WAN3 PORT: 1 2 3 4 5 6 7 8 9 10 11 12
ON DISABLED DISABLED N/A XX XX

```

Parameter	To set this parameter	For more information on this parameter
	see page	see page
Name	4-41	-
Console Baud	4-43	5-19

Figure 5.8. System Menu

## The Management Interface (MI)

### Utilities->System Menu

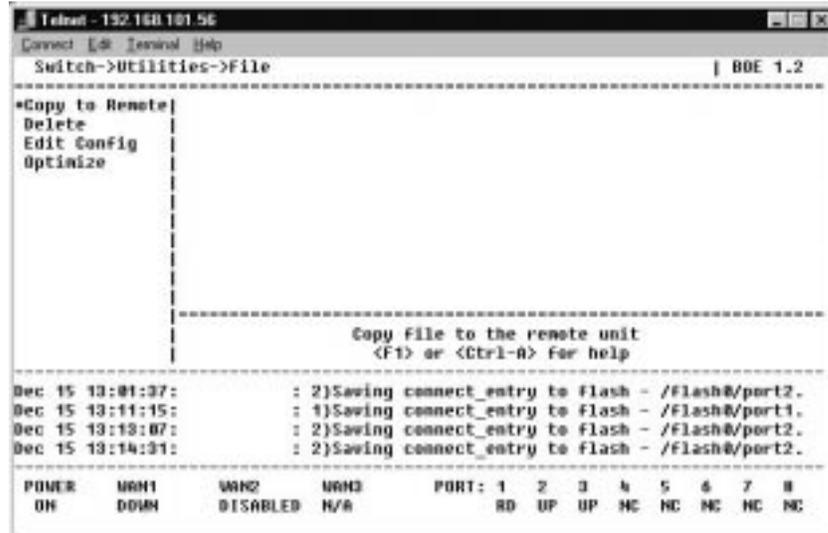
```
Telnet - 192.168.100.00
Connect [?] Terminal Help
Switch->Utilities->System | 00E 1.2.1d2
-----
Set Password |
Set Date |
Clear Log |
Dump Log |
Dump Config |
Reset Stats |
Reboot |
-----
Enter password to limit menu access
<F1> or <Ctrl-A> for help
-----
Dec 01 12:56:35: NGMT INFO: Rlogin session 1 disconnected
Dec 01 12:57:13: NGMT INFO: Telnet 1 disconnected from 192.168.101.148
Dec 01 13:00:04: NGMT INFO: Telnet 1 connected from 192.168.101.148
Dec 01 13:00:04: NGMT INFO: Successful Telnet login
-----
POWER WAND WAND WAND PORT: 1 2 3 4 5 6 7 8 9 10 11 12
ON DISABLED DISABLED N/A XX XX
```

Parameter	To set this parameter	For more information on this parameter
	see page	see page
Set Password	4-47	-
Set Date	4-45	-
Clear log	-	5-18
Dump log	-	5-23
Dump Config	-	5-22
Reset Stats	-	5-33
Reboot	4-64	-

Figure 5.9. Utilities->System Menu

## The Management Interface (MI)

### Utilities->File Menu

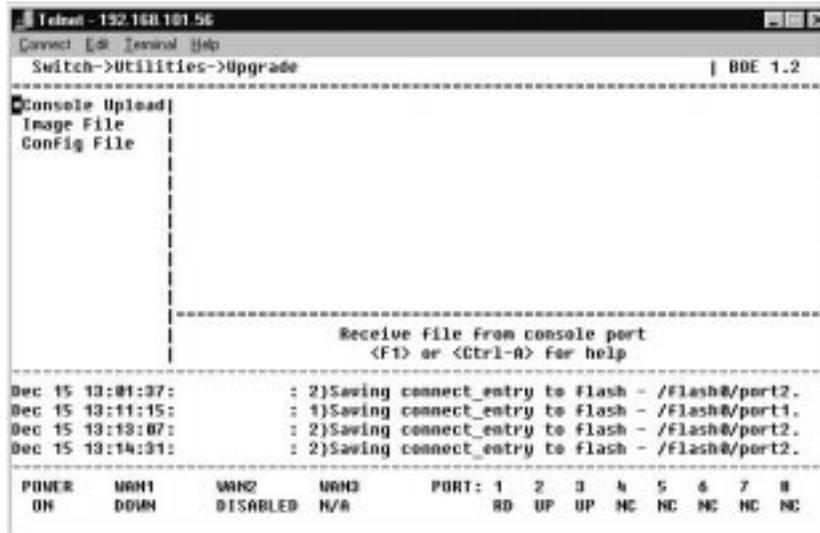


Parameter	To set this parameter	For more information on this parameter
	see page	see page
Copy to (unit)	7-8	-
Delete	-	-
Edit Config	7-5	5-23
Optimize	-	5-28

Figure 5.10. Utilities->File Menu

## The Management Interface (MI)

### Utilities->Upgrade Menu



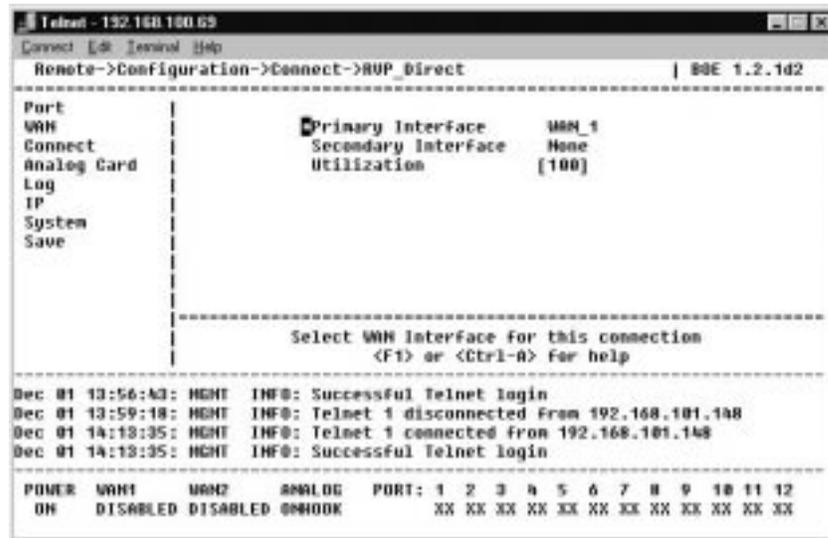
Parameter	To set this parameter	For more information on this parameter
	see page	see page
Console Upload	7-8	-
Image File	7-16	-
Config File	7-4	-

**Figure 5.11. Utilities->Upgrades Menu**

## The Management Interface (MI)

### Remote Menus

Connect->RVP\_Direct



Parameter	To set this parameter	For more information on this parameter
	see page	see page
Primary Interface	4-54	5-31
Secondary Interface	4-54	5-34
Utilization	4-54	5-41

Figure 5.12. RVP\_Direct Menu

## The Management Interface (MI)

### Connect->RVP\_over\_IP Menu

```

Telnet - 192.168.100.69
Connect [?] Terminal Help
Remote->Configuration->Connect->RVP_over_IP->Ports_1-8->Port_1| 80E 1.2.1d2
-----
Port
WAN          *IP Destination   [          ]
Connect
Analog Card
Log
IP
System
Save
-----
Specify IP address of switch unit for this port
<F1> or <Ctrl-A> for help
-----
Dec 01 13:56:43: NCHT  INF0: Successful Telnet login
Dec 01 13:59:18: NCHT  INF0: Telnet 1 disconnected from 192.168.101.148
Dec 01 14:13:35: NCHT  INF0: Telnet 1 connected from 192.168.101.148
Dec 01 14:13:35: NCHT  INF0: Successful Telnet login
-----
POWER  WAN1  WAN2  ANALOG  PORT: 1 2 3 4 5 6 7 8 9 10 11 12
ON     DISABLED  DISABLED  ONHOOK  XX XX

```

Parameter	To set this parameter	For more information on this parameter
IP Destination	see page 4-56	see page 5-25

Figure 5.13. RVP\_over\_IP Menu

## **The Management Interface (MI)**

---

### **MI Parameters**

Address  
(IP)

**Parameter Location:**  
Configuration->IP

**Description:** Enter Internet Protocol (IP) Address

**Usage:** A 32-bit address used for IP connectivity. When assigned, the IP Address identifies the PBX gateway on the network.

**Example:** 193.245.101.67

**Dependencies:**

- Must be assigned by the network administrator
- IP Address is required for unit management and RVP\_IP connections.
- Must be an assigned static (fixed) address

**See Also:** Chapter 4 *Setting IP Information*

---

Auto  
Connect

**Parameter Location:**  
Remote->Configuration->Port->Default or  
Port x

**Description:** If Enabled, the phone ports automatically connect when the Switch and Remote units are powered-up. This feature also includes a retry timer with backoff. This means that the unit will wait a few seconds between retries and will only try and connect up to a minute before it stops.

**Usage:** No need to press "1" on Remote phone to connect.

**Dependencies:** Remote unit only

**See Also:** Chapter 4 *Auto Connect*

---

## **The Management Interface (MI)**

---

### **Banner**

**Parameter Location:**

Remote->Configuration->Port->

**Description:** A message or banner is displayed on the Remote phone on power-up or reboot while the phone is offline.

**Usage:** Used for ID purposes and customization.

**Example:** Acme Inc.- Service Division

**Dependencies:** Auto-Connect must be disabled, works with Two-line display phone only.

**See Also:** Chapter 4 *Banner*

---

### **Clear Log**

**Parameter Location:**

Utilities->System->

**Description:** Clears the log of events that occur on the Gateway and Remote units.

**Usage:** When you want to clear the log of boot-up and other information that you don't need.

**Dependencies:** N/A

**WARNING:** Cannot "Undo" this command. Once selected the Log Messages are permanently removed.

---

## **The Management Interface (MI)**

---

### **Console Baud**

**Parameter Location:**  
Configuration->System

**Description:** Baud rate of the Console port. The correct Console Baud is a data transfer speed measured in Kbps (kilobits per second)

**Usage:** The Console Baud rate is required for the PBXgateway to properly communicate with a PC via the console (serial) port.

**Example:** 9600

**Dependencies:** The Console Baud rate of the PBXgateway must match the PCs COM (serial) port speed.

**See Also:** Chapter 4 *Setting the Console Baud*

---

### **Community**

**Parameter Location:**  
Switch or Remote->Configuration->IP

**Description:** Used for SNMP. The Community string can be set to any character string, but note that a network manager wishing to access a particular Extender must use the same Community string. This is only a weak form of security as this Community string is passed in plain text in each SNMP packet.

**Usage:** This variable serves as a password to allow Network Managers to read SNMP information on the Extender. You should normally set the string to PUBLIC.

**Example:** If SNMP is used for control and not for management, we recommend using "Public" as a read only community string.

**See Also:** Appendix D *SNMP*

---

## **The Management Interface (MI)**

---

### Compadding (Voice)

**Parameter Location:**

Switch->Configuration->Port

**Description:** Compadding is a contraction of the words “compressing” and “expanding”. Compadding is the process of compressing the voice signal at one end and then expanding the signal on the other end.

**There are two methods;**

- aLaw: Standard for Europe
- $\mu$ Law: Standard for North America

**Example:**  $\mu$ Law

**Dependencies:** None

---

### Default Router

**Parameter Location:**

Configuration->IP->Address

**Description:** Enter Internet Protocol (IP) address of the default router to use to access device not on your network.

**Usage:** A 32-bit address used as part of the complete IP Default gateway address. When assigned, the default router is used to reach an IP Address not on the local subnet.

**Example:** 193.245.101.1

**Dependencies:**

Must be assigned by the network administrator

**See Also:** Chapter 4 *Setting IP Information*

---

## **The Management Interface (MI)**

---

### **Description**

#### **Parameter Location:**

Configuration->Port->Port 1 - 12

**Description:** Entering text in this field identifies individual phone ports on the PBXgateway.

**Usage:** The description field provides up to 16 characters for customizing each port with descriptive text.

**Example:** Mary Ellen in Dallas TX

**See Also:** Chapter 4 *Setting Port Description*

---

### **DNS**

#### **Parameter Location:**

Configuration->IP->DNS

**Description:** Domain Name System (DNS) works in conjunction with a DNS Server. The DNS server resolves Domain names to IP addresses.

**Usage:** Use this field to specify the IP address of your DNS Server and the fully qualified Domain Name.

**Example:** Lucent.com

**See Also:** Chapter 4 *Setting up DNS*

---

## **The Management Interface (MI)**

---

### **DTMF**

**Parameter Location:**

Configuration->Port->Voice

**Description:** DTMF is a signal generated by pressing numbers on the keypad of a phone. These tones can be sent across the network and received at the alternate unit as an in-band (voice) signal. The in-band signal is generated by the DEFINITY ECS or remote phone.

If the DTMF tone is sent out-of-band (signaling) the DSP on the alternate unit generates the tone. Enable/Disable sending Dual Tone Multi-Frequency (DTMF) tones as voice (in-band) as opposed to signaling (out-of-band).

**Usage:** Out-of-band provides a clearer tone for higher compression algorithms (G.729A).

**Dependencies:** Lucent Protocol only.

---

### **Dump Config**

**Parameter Location:**

Utilities->System

**Description:** This parameter will dump the entire configuration file to the screen to allow a terminal program to capture the text.

**Dependencies:** A PC must be connected to the console port.

**Usage:** This provides an easy way to transfer the configuration file to a text file on the PC.

---

## **The Management Interface (MI)**

---

### **Dump Log**

**Parameter Location:**

Utilities->System

**Description:** This parameter will dump the entire log file to the screen to allow a terminal program to capture the text.

**Dependencies:** A PC must be connected to the console port.

**Usage:** This provides an easy way to transfer the log file to a text file on the PC.

---

### **Edit Config**

**Parameter Location:**

Remote/Switch->Utilities->File

**Description:** This is a file saved within the Extender Flash file system, which contains all configuration parameters. Use this command to create a new config file.

**Example:** Runtime.rem (remote) or .swt (switch)

**Dependencies:** Must use the correct file type for the unit.

**See Also:** Chapter 7 *Editing a Non-Active Config File*

---

## **The Management Interface (MI)**

---

### **FTP**

**Parameter Location:**

Configuration->IP

**Description:** Enable/Disable File Transfer Protocol (FTP) access.

**Usage:** When FTP is enabled, files can be transferred to/from the flash file system via the LAN.

**Dependencies:**

1. IP Address
2. LAN
3. IP Network

**See Also:** Chapter 7 *Uploading Files Using an FTP Connection*

---

### **Host (Syslog)**

**Parameter Location:**

Configuration->IP->Syslog

**Description:** Used to send Syslog messages to a Syslog Host. Consult with your O/S vendor regarding configuration information.

---

## **The Management Interface (MI)**

---

ID  
(Syslog)

**Parameter Location:**  
Configuration->IP->Syslog

**Description:** Enter Syslog ID

---

IP  
Destination

**Parameter Location:**  
Remote->Configuration->Connect->RVPoIP->Port 1-12

**Description:** This is the IP address of the PBXgateway. It is programmed on remote units.

**Usage:** When connected over an IP network, it is necessary to provide a destination address so that the Remote unit can locate the PBXgateway.

**Dependencies:** Must be assigned by the network administrator.

---

## The Management Interface (MI)

---

### Jitter Delay

**Parameter Location:**

Configuration->Port->Default->Voice

**Description:** Jitter is the deviation or displacement of voice packets between network devices. Jitter can cause pops and clicks (noise) in the voice transmission. The Jitter Delay parameter provides storage (in milliseconds, up to 250 maximum) capabilities for a delay buffer.

**Usage:** The jitter delay parameter reduces audible audio noise. Prevents audio from sounding choppy. Only necessary on packet networks (i.e. Frame Relay or IP)

**Dependencies:** Gateway only. The more Jitter Delay, the more tolerant for jitter in the network, but voice is actually delayed.

**Recommendations:** Start setting at 20-30 msec.

**See Also:** Chapter 4 *Setting the Voice Parameters*

---

### Logout

**Parameter Location:**

Main menu

**Description:** This parameter will end the current MI session; either Telnet or VT-100.

**See Also:** Chapter 4 *Logout*

---

### Logout Code

**Parameter Location:**

Configuration->Port

**Description:** A code which is used to log ACD agents out of the ACD queue in the event that the connection between the units cannot be established.

**Dependencies:** Lucent protocol remote units only.

**See Also:** Chapter 4 *Setting the Logout Code*

---

## **The Management Interface (MI)**

---

### **Method (Voice)**

**Parameter Location:**

Configuration->Default->Port->

**Description:** Select voice compression method. Voice is compressed to reduce bandwidth requirements.

**Usage:** Provides the system administrator with the ability to change the compression method on a port-by-port basis.

**Example:** G.729A

**Dependencies:** Gateway only. The network must provide adequate bandwidth.

**See Also:**

Chapter 4 *Setting the Compression Method*,

Chapter 6 *Voice Quality Expectations*

Appendix B *Bandwidth Requirements*

---

### **Mode (WAN)**

**Parameter Location:**

Configuration->WAN 1 or WAN 2

**Description:** Selects the WAN port connection type.

**Usage:** The WAN port of the PBX gateway connects the unit to the network device (i.e. CSU/DSU). The mode or interface type selects the protocol used by the unit.

RS-232, RS-530, and V.35 for Synchronous connections

**Dependencies:** The mode must match the interface type of the network device.

**See Also:** Chapter 4 *Setting the WAN Mode*

---

## **The Management Interface (MI)**

---

### Optimize

**Parameter Location:**  
Utilities->File->

**Description:** This parameter will optimize the internal flash file system.

**Usage:** Used for advanced troubleshooting. Often used to prepare file system for upgrade.

**IMPORTANT: Do not use on an active system**

---

### Packet Size

**Parameter Location:**  
Configuration->Port->Default->Voice

**Description:** A packet is a generic term for a bundle of data, usually in binary form, which includes the data itself and certain control information. The packets are sent via HDLC over a synchronous-serial connection or via IP over Ethernet. The size of the voice packet can increase voice quality while reducing bandwidth needs. A bigger packet size contains less overhead, but will increase the delay in sending the packets.

**Usage:** Gateway only. This parameter selects the number of voice frames or windows to be included in a single RVP voice packet.

**Recommendation:** 2 (may need to increase to 4 for some packet networks such as Frame Relay or IP)

---

## **The Management Interface (MI)**

---

### **Packet Trace**

**Parameter Location:**

Configuration->Port->Port1

**Description:** Enable/Disable detection of lost voice packets

**Usage:** If a problem with voice is suspected, enable this feature to allow viewing sent voice packets over the connection.

**Dependencies:** Enabling this feature will add overhead to the system and may affect voice quality. Only used for debugging.

---

### **Password (Connect)**

**Parameter Location:**

Configuration->Port

**Description:** A connect password provides a secure link between the PBXgateway and Remote Unit.

**Usage:** If assigned, the connect password must be entered for communication between the PBXgateway and a Remote unit.

**Example:** 427stamp

**Dependencies:** The connect passwords for both units must match.

**See Also:** Chapter 4 *Setting a Connect Password*

---

## **The Management Interface (MI)**

---

**Path**  
**(Voice)**

**Parameter Location:**

Configuration->Port->Default->Voice

**Description:** Dynamic/Constant voice path following off-hook/on-hook.

*Dynamic* means that the Branch Office unit uses the available bandwidth when the remote user goes off-hook.

*Constant* means that the voice path is always reserved.

**Usage:** Used for applications that are “oversubscribed” allowing the maximum use of available bandwidth. If bandwidth is not available to a user and dynamic voice path is enabled, they hear a “fast busy” and the call will be blocked.

Oversubscribed: Number of users exceeds available bandwidth.

**Dependencies:** Gateway only.

**Recommendations:** Constant

---

## **The Management Interface (MI)**

---

### **Primary Interface**

#### **Parameter Location:**

Remote->Configuration>Connect-  
>RVP\_Direct

**Description:** This parameter tells the PBX gateway which Serial WAN port it should try to use in order to bring up phone connections and voice paths. Your Primary Connection port must coincide with the WAN port that is enabled and connected to an appropriate network device. In other words, if you select WAN 1 you must have WAN 1 enabled and connected to a network device.

#### **Available Options:**

WAN 1  
WAN 2

**Dependencies:** The WAN port corresponding to this connection parameter must be enabled and connected to appropriate network equipment.

**See also:** Secondary Interface on page 5-34

---

## **The Management Interface (MI)**

---

### **Priority (Log)**

#### **Parameter Location:**

Configuration->Log

**Description:** Selects log message priority

#### **Important**

This info  
applies to:

Sys,  
Mgmt,  
NET and  
Port priority  
parameters as  
well.

**Usage:** Used to determine which messages are logged. The log message priority is used to customize the level of troubleshooting desired.

Log messages include:

- Fatal: Unit is not functioning
- Error: Failure
- Warning: Problem with unit, still operational
- Info: Extender session, someone connected
- Debug: Detailed message (for troubleshooting)
- Trace: Packet type tracing

**Example:** If the (Log) Priority was set to “Info”, then the only log messages that would NOT be saved are messages related to “Debug” and “Trace”.

---

## **The Management Interface (MI)**

---

### **Priority (Syslog)**

**Parameter Location:**

Configuration->IP->Syslog

**Description:** Selects log message priority to Syslog host.

**Usage:** Used to determine which messages are logged. The Syslog message priority is used to customize the level of troubleshooting desired.

Log messages include:

- Fatal: Unit is not functioning
- Error: Failure
- Warning: Problem with unit, still operational
- Info: Extender session, someone connected
- Debug: Detailed message (for troubleshooting)
- Trace: Packet type tracing

**Example:** If the (Syslog) Priority was set to “Info”, then the only log messages that would NOT be saved are messages related to “Debug” and “Trace”.

---

### **Reset Stats**

**Parameter Location:**

Utilities->System

**Description:** Resets the WAN stats and Connect stats.

**Usage:** Used to clean up the statistics and to help pinpoint problems associated with the unit.

## **The Management Interface (MI)**

---

### **Secondary Interface**

**Parameter Location:**

Configuration->Connect->RVP\_Direct

**Description:** This parameter tells the PBXgateway which Serial WAN port it should try to use if the Primary Interface fails or runs out of bandwidth. The Secondary Interface is used as a backup or network overflow of the Primary Interface. If you do not have both WAN ports enabled, you do not need a Secondary Interface.

**Available Options:**

None  
WAN1  
WAN2

**Dependencies:** The WAN port corresponding to this connection parameter must be enabled and connected to appropriate network equipment.

**See also:** Primary Interface on page 5-31.

---

## **The Management Interface (MI)**

---

Size  
(Log)

**Parameter Location:**  
Configuration->Log

**Description:** The size of the log message in bytes.

*Note: After the log is full, the log messages are written over each other, starting from the first message.*

**Usage:** Limits the size of Log messages.

**Example:** [ 4098-131072 ]

---

Set  
Password  
(Admin)

**Parameter Location:**  
Utilities->System

**Description:** This parameter sets the admin password for the PBXgateway. This is NOT the Connect Password.

**Usage:** The admin password will restrict access to the Management Interface (MI).

**Example:** doc345

**See Also:** Chapter 4 *Setting the Admin Password*

---

## **The Management Interface (MI)**

---

### **Subnet Mask**

**Parameter Location:**

Configuration->IP->Address

**Description:** Enter Subnet Mask IP Address

**Usage:** A Subnet Mask identifies the network number (class) and the range of valid machine addresses on the network.

**Example:** 255.255.255.0

**Dependencies:**

- Must be assigned by the network administrator

**See Also:** Chapter 4 *Setting IP Information*

---

### **Sync Set up**

**Parameter Location:**

Configuration->WAN1 or WAN2

**Description:** Enter data rate of device connected to the WAN port of the Extender unit.

**Usage:** Matches the synchronize data transfer rate of the Switch and Remote units connected to the network device (CSU/DSU).

**Example:** 384,000

**Dependencies:** Sync rate of the Extender units must match the CSU/DSU device

**See Also:** See Chapter 4 *Setting the Sync Rate*

---

## **The Management Interface (MI)**

---

### **Sys Contact**

**Parameter Location:**  
Configuration->IP->SNMP

**Description:** Used for SNMP. The name, phone number, etc. of the individual to contact with errors or questions about the Extender.

**Usage:** Used for reference purposes.

**Example:** Ralph Jones

**Dependencies:** SNMP must be enabled.

**See Also:** Appendix D *SNMP*

---

### **Sys Location**

**Parameter Location:**  
Configuration->IP->SNMP

**Description:** Used for SNMP. The location of the Extender.

**Example:** Boston, MA

**Dependencies:** SNMP must be enabled.

**See Also:** Appendix D *SNMP*

---

### **Sys Name**

**Parameter Location:**  
Configuration->IP->SNMP

**Description:** Used for SNMP. The name of the Extender user.

**Example:** John Smith

**Dependencies:** SNMP must be enabled.

**See Also:** Appendix D *SNMP*

---

## **The Management Interface (MI)**

---

### **Telnet**

**Parameter Location:**  
Configuration->IP

**Description:** Enable/Disable Telnet Access

**Usage:** Enabling this parameter provides Telnet access to the PBXgateway through a PC connected to an IP network.

**Dependencies:** The IP Address must be assigned by the network administrator.

**See Also:** See Chapter 4 *Setting IP Information*

---

### **Trap Host**

**Parameter Location:**  
Configuration>IP->SNMP

**Description:** Used for SNMP. This menu allows the user to input one to eight IP addresses of nodes or devices (PC) to which to send SNMP Traps. These nodes should be capable of running some sort of Network Management software (HP Openview®) that is compatible with the SNMPv2c standard. Only these devices will be targeted for Traps. The Extender does not broadcast Trap packets over the network.

**Usage:** Used to Set up SNMP.

**Dependencies:** SNMP must be enabled.

**See Also:** See Appendix D *SNMP*

---

## **The Management Interface (MI)**

---

### **Trap Path**

#### **Parameter Location:**

Configuration->IP->SNMP

**Description:** Used for SNMP. This variable determines the path the Extender should use to send Traps to the Trap Hosts entered above. The choices are [LAN | WAN | BOTH].

If this variable is set to LAN then the SNMP agent will attempt to send Trap packets out via a wire connection such as Ethernet. If such a connection does not exist then the packet is dropped.

Setting the variable to WAN will cause the SNMP agent to attempt to send Trap packets via the proprietary WAN connection. This is necessary if the Remote is not directly connected to the Net and is being serviced via the proxy SNMP server on the Switch. If such a connection fails, then the packet is dropped.

Setting the variable to BOTH will cause the SNMP agent to send the Trap packet via both the LAN and WAN connections. If both paths are valid this will produce duplicate Trap messages on the Trap Hosts.  
Select SNMP Trap path.

**Dependencies:** SNMP must be enabled.

**See Also:** See Appendix D *SNMP*

---

## The Management Interface (MI)

---

### Trap Priority

**Parameter Location:**

Configuration->IP->SNMP

**Description:** This variable sets the minimum priority of log messages to be sent as Traps. It has the possible values of:

- Warning
- Info
- Error
- Fatal

**Notes:**

- Setting the value to Warning will allow Traps of priority Warning and above.
- Setting the value to Error will also allow Traps of priority Fatal, but will exclude Warning and Info.

**Usage:** This variable is useful for controlling the amount and type of Traps being sent to network managers.

**Dependencies:** SNMP must be enabled.

**See Also:** See Appendix D *SNMP*

---

### User ID

**Parameter Location:**

Configuration->Port->Port1

**Description:** The User ID is a numeric value assigned to the phone port.

**Usage:** The system administrator assigns a User ID for identification purposes and security. It also determines which Gateway port a remote connects to.

**Dependencies:** Must be entered for access to the phone port.

**See Also:** Chapter 4 *Set user ID*

---

## **The Management Interface (MI)**

---

### **Utilization**

#### **Parameter Location:**

Remote->Configuration->Connect->RVP\_Direct

**Description:** This parameter allows the system administrator to oversubscribe the network link. It is the amount of total required bandwidth to actually reserve for each phone.

**Example:** Need 128K of bandwidth but only have 115 K available.

$$\frac{\text{Required bandwidth}}{\text{Available bandwidth}} = \frac{115}{128} = 90\%$$

A value of "90" would be entered under Utilization.

**Dependencies:** Remote unit only.

---

### **Web Server**

#### **Parameter Location:**

Configuration->IP

**Description:** This parameter provides status information on the PBXgateway & Branch Office units via a Web server as opposed to using Telnet or direct connection.

**Dependencies:** Only used for status purposes. Configuration parameters cannot be changed.

---

## **The Management Interface (MI)**

---

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---

# Troubleshooting

# 6

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## **6. TROUBLESHOOTING**

### **Introduction**

This Chapter provides information to locate, isolate, and correct operational errors, communication errors, and functional problems with the PBXgateway, and Branch Office units.

This Chapter is divided into six principal areas for troubleshooting:

1. Baseline Checklist
2. Status LEDs
3. Troubleshooting Procedure
4. Voice Issues
5. Status Menus
6. Remote Phone Messages

(See the next page for a brief description of these areas.)

## **Troubleshooting**

---

<b>Baseline Checklist</b>	A list of simple checks used as a starting point for troubleshooting the devices. It covers basic installation requirements, wiring info and network information.
<b>Status LEDs</b>	Single and tri-color LEDs, located on the front and back panels of each unit. The LEDs blink in specific sequences indicating the unit status during Power-Up as well as providing status information on the System, WAN Port and Ethernet (LAN) connections, during normal operations.
<b>Troubleshooting Procedures</b>	A set of procedures providing step-by-step instructions to identify and rectify problems.
<b>Voice Quality Expectations</b>	Information on common issues associated with voice compression.
<b>Status Menus</b>	Diagnostic menus providing statistical information on all 12 phone ports, both WAN ports, Connect stats, Log and IP stats and general System information.
<b>Remote Phone Messages</b>	A chart listing error messages that are displayed on the Remote phones (connected to the Remote unit).

## Troubleshooting

---

### Baseline Checklist

**Introduction** The Baseline Checklist is a logical list of items that are associated with an active and operational installation. These items should be checked-off BEFORE you attempt to troubleshoot either the Gateway or Remote unit.

*Note: If any of the items are NOT true as stated, they should be corrected as detailed herein, and then continue with the remaining items for both units to verify a complete installation.*

### Network Checklist

- Verify that the existing network is capable of transmitting and receiving data packets.
- Verify the correct cable is used to connect the unit to the network device.

#### *Synchronous Serial/RVP\_Direct*

- Check that the sync rate of the network device matches the sync rate setting for both the PBXgateway and Branch unit.  
*(see page 4-32 for setting the Sync Rate)*
- Make sure the synch mode of the Gateway and Branch units match the network device signaling type (V.35, RS-530, RS-232).  
*(see page 4-34 for setting the Synch Mode )*

#### *IP/RVP\_IP*

Check that the IP address information (IP Address, Subnet Mask, Default Router) for the PBXgateway, and Branch unit is set correctly. *(see page 4-35 for setting IP Parameters)*

## **Troubleshooting**

---

### **Baseline Checklist** continued

#### **PBXgateway Unit Checklist**

- Verify that the unit is plugged into an active AC outlet.
- Verify that the RJ-21 cable between the unit and the DEFINITY ECS or punch-down block is secure.
- Verify that the DB-25 cables are secure between the units and network devices. (Synchronous-serial connection only)
- Verify that the Ethernet cable is connected and there is an active link status on the Gateway and Network Hub.(RVP\_IP connection only)

#### **Branch Office Unit Checklist**

- Verify that the unit is plugged into an active AC outlet.
- Verify that the RJ-21 cable between the Branch Unit and the break-out box or punch-down block is secure.
- Verify that the DB-25 cables are secure between the unit and network devices. (RVP\_Direct connection only)
- Verify that the Ethernet cable is connected and there is an active link status on the Branch and Network Hub.(RVP\_IP connection only)

## Troubleshooting

---

### Status LEDs

#### PBXgateway and Branch Office Extender

**Introduction** When the units are powered-up, a series of self-diagnostic tests are performed and displayed as a series of LED blinks. The following chart lists the different status sequences.

<b>For information on the .....</b>	<b>See page.....</b>
Power-Up Sequence	6-7
System Status LEDs	6-10
Port Status LEDs	6-11
Ethernet/LAN Status LEDs	6-13

## Troubleshooting

---

### Power Up Sequence

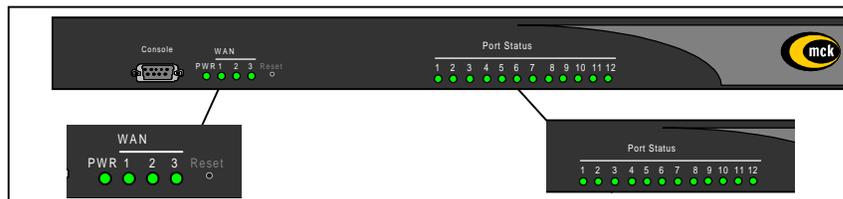
The following steps are performed automatically when the PBXgateway and Branch Office units are powered-up.

**DRAM Tests** – Checks the internal DRAM (Dynamic Random Access Memory) chips.

**Selftest** – Diagnostic routine to verify operation of various hardware components of the unit.

**ROM Countdown** – A series of LED blinks that display the process of loading the Runtime image.

**Runtime Image** – This is the software executable file.



**Figure 6.1. Front of PBXgateway & Extender 6000**

### Step #1 DRAM Tests

When the unit is powered on it runs four DRAM tests. The Power LED flashes green while these run. If you look closely the Power LED flashes at slightly different speeds as the different tests run. If the tests pass then the Power LED goes solid green. If any of the tests fail then all four status LEDs go solid red and the Extender halts. (Refer to the System Status LED chart on the next page for more information)

*Note: The DRAM tests are only run when the unit is powered on, rebooting the device without power cycling it will jump right into the selftest diagnostics.*

## Troubleshooting

### Step # 2 Selftest

After the DRAM tests a set of selftest diagnostics run. The selftest diagnostics only affect the LEDs if there is a failure. On failure, the Power LED changes from solid green to solid yellow (and remains that way as long as the unit is powered on, or the selftests are run again and pass).

Additionally, the first four Port Status LEDs are temporarily lit with a code indicating the last selftest failure. The pattern is a binary number indicating the kind of failure. Table 6-1, shown below, provides information on the port failure patterns including a short description and required action.

*Note: If there are multiple failures you will only see the pattern for the last failure. (refer to the System Status LED chart, on page 6-10, for more information)*

The error code will remain on the Port Status LEDs until the runtime image is entered (when these LEDs are cleared so they can show Port Status). The Power LED will remain “Yellow” (indicating a failure) instead of “Green”.

*Note: The selftest diagnostic results can be viewed at anytime from the MI using the following path: Status->System->HW Diagnostics*

Power LED	Port LED				Description	Action
	1	2	3	4		
Yellow	ON	OFF	OFF	OFF	RTC failure (error code 0x8)	<ul style="list-style-type: none"><li>• Power cycle the units</li><li>• If self-test fails repetitively, contact customer service.</li></ul>
Yellow	ON	OFF	OFF	ON	DSP failure (error code 0x9)	
Yellow	ON	OFF	ON	OFF	I <sup>2</sup> C failure (error code 0xA)	
Yellow	ON	OFF	ON	ON	Ethernet failure (error code 0xB)	
Yellow	ON	ON	OFF	OFF	PLD failure (error code 0xC)	

**Table 6-1. Failure Patterns**

## **Troubleshooting**

---

### **Step #3 ROM Countdown**

After the diagnostics run the ROM goes through a short countdown on the console. During this time the WAN1 LED flickers green. The WAN1 LED goes solid green and the WAN2 LED 'flickers' green while the runtime image is being loaded into memory. WAN2 goes solid green when the runtime image is successfully loaded into memory. Control is then passed to the runtime image (see Step #4).

### **Step #4 Runtime Image**

The runtime image first turns all system status and Port Status LEDs off, except for the Power LED (which is solid green if there are no self-test failures or solid yellow if there are self-test failures).

During initialization the runtime image flickers Port Status LED1 while it's downloading the Programmable Logic Device (PLD), and then makes Port LED1 solid once the PLD download is complete. Similar flickering and solid LED patterns are used when downloading each Digital Signal Processor (DSP), where Port LED2 is the signaling DSP, and Port LED3-LED8 are the voice DSPs. So when the runtime image is starting up you see each Port LED 1 through 8 successively flicker and go solid until all eight are solid.

After the PLD and DSP downloads are complete the Port LEDs drop into their normal operating patterns. (Refer to Table 6-5 for more information)

**Troubleshooting**

**System Status LEDs**

**Introduction** The PBXgateway and Branch Office units have four tri-color LEDs – (RED, Yellow, and Green) indicating the unit status once the runtime image is operating and the status condition of the WAN ports has been determined.

**IMPORTANT:** Refer to page 6-15 for troubleshooting the units using the System Status LEDs.

	<b>LED States</b>						
<b>LED LABEL</b>	<b>Off</b>	<b>Solid RED</b>	<b>Solid Yellow</b>	<b>Flashing Yellow</b>	<b>Solid Green</b>	<b>Slow Green Flash</b>	<b>Fast Green Flash</b>
<b>PWR</b>	Off	DRAM Test failed	Self-test Diagnostic Error	-	Has power	-	-
<b>WAN1</b>	Not enabled	No Device connected	DCE Ready	DCE Ready	Carrier Up	Remote Up	Remote test
<b>WAN2</b>	Not enabled	No Device connected	DCE Ready	-	Carrier Up	Remote Up	Remote test
<b>WAN3</b>	Not enabled	No Device connected	DCE Ready		Carrier UP	In Use	Remote test
<b>OR</b>							
<b>*Analog</b>	-	-	Card detected and Onhook	Ringing	Onhook on analog call.	-	-

↓

Go to Table 6-3 on next page.

↓

Go to Table 6-4 on the next page.

\* Applies to **Extender 6000** only.

**Table 6-2. WAN and Power Status LEDs**

## Troubleshooting

---

**DRAM Test failed:** This indicates that one or all of the four DRAM tests have failed. This hardware failure condition can be caused by a faulty internal DRAM chip. Recycle the power on the unit and contact Lucent if the light remains “Red”.

**Selftest Diagnostic Error:** This indicates that there is a problem with a selftest, indicating a possible hardware problem. Recycle the power on the unit and contact Lucent if the light remains “Yellow”.

**Not Enabled:** Enable the WAN port, if the WAN port is needed. (see Chapter 4 - *Enabling the WAN Port* for information)

**No Device Connected:**

- Check the wiring and cable pinouts between both units and the network device. (*see page 3-15 for pinout information*)
- Check the cable.

**DCE Ready:** Device connected but no network link to the alternate site. Possible a network error between devices. Check all cables and power to the units.

**Table 6-3. Error Conditions**

**Carrier Up:** Network link established. Try to establish phone connection from the Remote unit.

**Remote Up:** Phone at the remote site is online.

**Remote test:** This test sends packets to the alternate site to check the network condition. (see page 6-20 for more info)

**Table 6-4. Normal Operation**

## Troubleshooting

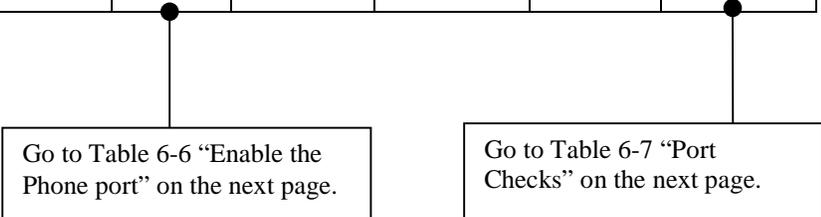
---

### Port Status LEDs

**Introduction** The PBXgateway and Branch Office units each have eight or twelve LEDs indicating the status of the twelve user phones (Branch unit) or ECS ports (PBXgateway).

**IMPORTANT:** Refer to page 6-17 for troubleshooting the unit using the Port Status LEDs.

LED	Off	Solid Green	Slow Green Flash	Fast Green Flash	Green Flicker
Meaning	Port is disabled	Port is enabled, but not extended	Extended, and user is on-hook (phone is not in use).	Extended and the user is off-hook. (phone is in use)	Port is enabled, there is a bad connection to the ECS or phones.



Go to Table 6-6 "Enable the Phone port" on the next page.

Go to Table 6-7 "Port Checks" on the next page.

**Table 6-5. Port Status LEDs**

## Troubleshooting

---

### Enable the Phone port as follows:

1. Connect the Gateway or Branch unit to the Management Interface (MI).
2. Navigate to the Port menu using the following path:  
->Configuration->Port
3. Check the "Enabled" field indicates "YES" or if the field is set to <Default>, *check that the default setting has all ports enabled.*

**Table 6-6. Enable the Phone Port**

### Check the following:

- Check that the correct module is installed at the location. (Gateway unit installed at the corporate facility, and a Remote unit at the Branch office)
- Check the wiring to the punch-down block.
- Check for a loose connection on the back of the units.
- Check for a damaged RJ-21 cable.
- If you are sure everything is correct, you may have a bad telephony port on the Extender or PBX.

*Note: The most common cause of this problem is faulty wiring. You should double-check all wiring.*

**Table 6-7. Port Checks**

## Troubleshooting

### LAN Status LEDs

**Introduction** The back panel contains four LEDs which provide a status of the LAN connection.

*Note: The “ANALOG” port applies to the Branch Office unit only.*

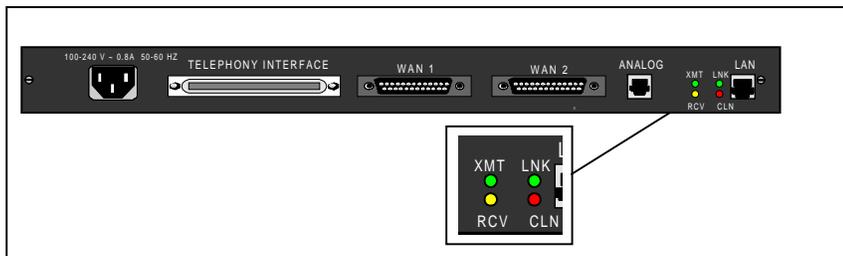


Figure 6.2 LAN LEDs

Label	Color	Description	Action
XMT	Green	Indicates transmitted packets.	None required
LNK	Off	Indicates there is no Ethernet cable attached, or the connection is bad.	<ul style="list-style-type: none"><li>• Connect cable</li><li>• Check cable</li><li>• Replace cable</li></ul>
	Green	Indicates Ethernet connectivity is present.	None required
RCV	Yellow	Indicates received packets.	None required
CLN	Red	Indicates an Ethernet collision error.	None required. <i>Note: Excessive collisions may indicate an Ethernet problem</i>

Table 6-8. LAN Status LEDs

## Troubleshooting

---

### Troubleshooting Procedure

#### PBXgateway & Branch Office units

The following procedure provides a step-by-step process for identifying and rectifying problems with the PBXgateway and Branch Office units. Each step is a question requiring a “Yes” or “No” response. Each response has a series of checks or actions necessary to correct the problem.

#### Prerequisites:

- Both units must be powered-up with some LED blinking patterns visible
- Both units must be connected to an active network capable of sending and receiving packets

#### System Status LEDs

After the units have gone through the self-diagnostics tests (see page 6-7) the PWR LED should light solid Green.

Is the PWR LED lit “Green” on each unit?

**Yes**      **No**

- If the PWR LED is lit “Yellow” this indicates a self-diagnostic problem with the unit.  
(Refer to page 6-10 for more information)
- If the PWR LED is lit “RED” this indicates the DRAM test has failed. (Refer to page 6-10 for more information)

The active WAN port (WAN 1 or WAN 2) that is connected to the network device should be lit solid “Green”. This indicates that the carrier or network link is established.

*Note: If the LED is a slow “Green” flash, this indicates that a phone at the remote site is online. A fast “Green” flash indicates that the Remote is in a test mode.*

**Go to next page**

## **Troubleshooting**

---

Is the active WAN port LED lit solid “Green”?

**Yes**

**No**

- If the LED is lit “Yellow”, this means that the network device is connected, but there is no network link to the alternate site. (Refer to page 6-10 for more information)
- If the LED is lit “RED” there is no network device connected to the unit. (Refer to page 6-10 for more information)
- If the LED is OFF, this means that the WAN port is not enabled. (Refer to page 6-10 for more information)

**Continue with Port Status LEDs on the next page**

*Note: If you are using your Gateway and Branch in RVP\_IP mode, you do not need your WAN port enabled.*

## Troubleshooting

---

### Port Status LEDs

After the units have gone through the self-diagnostics tests (see page 6-7) and loading the runtime image, all eight or twelve phone port LEDs should light solid "Green". This indicates that the phone port is connected to a digital port on the ECS and to a phone connected to the Remote, but not extended.

Are the Port LEDs (labeled 1 through 8 or 12) lit solid "Green" ?

**Yes**      **No**

- If the Port LED is OFF this indicates the port is disabled. All phone ports are enabled by default. (Refer to page 6-11 for more information)
- If the port LED blinks with a green flicker this indicates that the port is enabled but there is a bad connection to the ECS or phones. (Refer to page 6-11 for more information)

Ports are ready. Press '1' to connect. (If Auto-connect is enabled, it is not necessary to press '1'.) As each remote phone is connected the LED will begin to flash slowly. This means that the phone is enabled but still not in use (on-hook).

Does the port LED blink with a slow, green flash?

**Yes**      **No**

- Check the log messages within the MI for obvious Port errors. (see Appendix E *Log Messages* for more info)
- If using WAN connectivity, test the WAN connection. (Refer to page 6-19 for more information)
- Are there any messages displayed on the Remote phones?

**No**      **Yes**

Refer to page 6-36, for a detailed list of Remote Phone Messages.

- Check that the phone is plugged into the breakout box or equivalent.
- Check the line cord from the phone to the box.

**Go to next page**

## **Troubleshooting**

---

Place a call using a phone connected to the Remote unit. As each remote user places a call the LED will begin to flash faster. This means that the phone is extended and in use (off-hook) by the remote user.

Can you place a call? (The port LED should blink with a fast, green flash)

**Yes**      **No**

Check the wiring to the PBX. (see the page 3-15, for pinout information)

Is the Voice Quality acceptable?

**Yes**      **No**

Go to "Voice Quality Expectations" on page 6-22.

**Everything is Ok**

## Troubleshooting

---

### Test the WAN Connection

If all of your Port and WAN LEDs indicate the units are installed properly, but you still cannot connect the remote phones, you should test the WAN connection.

*Note: This is only applicable for connecting over a synchronous-serial network (RVP\_Direct).*

Test the WAN connection as follows;

**IMPORTANT NOTE:** This test will not run if any phones are off-hook.

1. Access the Management Interface (MI) on the Switch or Remote unit.
2. Reset the WAN Port.
3. Navigate to the Diagnostics menu using the following path:  
Utilities->Diagnostics->Test WAN
4. Select the proper WAN Port and using the Default values, select “Begin test”. This test will send voice packets to the offsite unit and will count the packets as they are sent back.
5. The MI will run the test and, upon its completion a “Test Results window” appears.

```
#####  
#  
#           WAN test succesful on port 1           #  
#       Sent: 20, Received: 20 packets             #  
# Pkt size: 10 bytes, Avg time/pkt: 2 msec        #  
#  
#####
```

## Troubleshooting

6. The test results are shown below;

WAN Port	1	2 [Fh - refresh]
Port Type		
Port State	INIT	INIT
Port Enabled	DISABLED	DISABLED
TX Packets	0	0
TX Bytes	0	0
RX Packets	0	0
RX Bytes	0	0
TX CTS Lost	0	0
TX Underruns	0	0
TX Queue Busy	0	0
TX Queue Busy Busy	0	0
TX Packets Queued	0	0
TX Packets Dequeued	0	0
TX Queue Full	0	0
TX Framing Err	0	0
RX Framing Err	0	0
RX Parity Err	0	0
RX CRC Err	0	0
RX Overruns	0	0
RX DCP Lost	0	0

- If the items circled register any values the problem is firmware related. Power-cycle the unit to clear the values and retest.

- If any of the circled items (shown with a "0" value) display any values, there is a problem with the network. The network device may be in a loop-back, which means the packets are sent to the device at the remote site, but the packets are not received by the Remote unit. Verify the network devices are working properly.

**Figure 6.4. WAN Test**

## Troubleshooting

---

### Test the IP Connection

*Note: Use of the PBXgateway over IP Networks is currently not supported by Lucent Technologies.*

If all of your Status LEDs indicate the units are installed properly, but you still cannot connect the remote phone, you should test the IP connection.

*Note: This is only applicable for connecting over a synchronous-serial network (RVP\_IP).*

Test the IP connection as follows;

**IMPORTANT NOTE:** This test will not run if the phone is off-hook.

1. Access the Management Interface (MI) from the unit.
2. Reset the IP Port.

Navigate to the Diagnostics menu using the following path:  
Utilities->Diagnostics->Test IP

3. Using the Default values, select "Begin test". This test will send voice packets to the offsite unit and will count the packets as they are sent back.
4. The MI will run the test and, upon its completion a "Test Results window" appears.

```
#####  
#  
# ----192.168.101.56 PING Statistics----  
# 5 packets transmitted, 5 packets received  
# round-trip (ms) min/avg/max = 0/1/5  
#  
#####
```

5. Form a PC on the remote network make sure that you can reliably ping the PBXgateway.
6. From a PC on the corporate network, make sure you can ping the Extender 6000 unit on the remote network.

## **Troubleshooting**

---

### ***Voice Quality Expectations***

Extenders use industry-standard voice compression methods to allow multiple users to connect using less bandwidth. While the voice quality should remain excellent in all circumstances, you may notice some minor affects depending on the voice compression selected. The person you are talking to on the other end should not notice these affects in most instances.

The G.729A algorithm only uses 8Kbps for its audio path (plus overhead). It therefore dramatically reduces the amount of network bandwidth required to extend multiple phones. It also provides excellent voice quality to all parties involved in a conversation. However, this algorithm is designed to optimize audio in the frequency range of the human voice. Tones outside of that range may sound muffled. Also, listening to audio that has already been compressed may sound slightly less clear. Here are some of the affects you may notice with compressed audio:

- Hold Music may sound less clear.
- Dial Tone, DTMF Tones, and phone Rings may sound garbled particularly on speakerphone. They still should function properly 100% of the time.
- May experience some minor echo and reduced audio clarity when calling some Cell phones. They often already compress audio.
- May hear some echo and notice minor delay in the conversation if calling internationally. This is caused by the delay in providing compressed audio and the fact that calling internationally may already introduce some delay.

## **Troubleshooting**

---

If you are experiencing any of these problems and feel that it is not presenting you with adequate voice quality, we recommend using the ADPCM 32 voice compression method. While it requires more network bandwidth, it uses less voice compression and therefore minimizes the chances that any of these affects ever occur.

It is important to know the following.

- **The type of audio problem**

Example: Echo (see next page) , broken or choppy audio, lost calls, etc.

- **When does the problem occur?**

- All calls
- Internal calls only
- External calls only
- Intermittently some external calls

- **Do all users experience the problem?**

## Troubleshooting

---

### Echo Problems

#### Understanding and Correcting Echo Problems

The PBXgateway and Extender 6000 employ the industry standard G.165 echo canceller with some proprietary improvements to help eliminate or reduce echo even further. However, it is not possible to cancel all instances of echo 100% of the time. It should be noted that echo perceived by extended ECS users, will not be perceived by the party on the other end of the call.

#### *Extender's Impact on Echo*

Because Lucent Extenders deal exclusively with digital audio on the line side of a PBX, they cannot cause any echo. However, if you experience any echo from your connection to the PSTN (Public Switched Telephony Network), the Extender application could make it noticeable because of increased delay in the audio path. For example, if echo occurs on a line after only a few milli-seconds, your ear cannot detect the echo. However, if the echo occurs after 100, 50, or even 20 milli-seconds, your ear will likely detect the problem. The G.165 echo canceller can cancel echo up to certain limitations. If you have a noticeable echo problem, you should look into the following:

1. If you experience echo on all external calls, you probably have a problem with your PSTN trunk lines. Most likely they are analog, and those analog lines are generating a great deal of echo when interfacing with your DEFINITY ECS. Non-extended ECS phones may not perceive the echo, due to the fact that echo without delay, does not sound like echo.

**Cause:** The most common cause of consistent echo on all external calls, are analog trunk lines that are out of specification, or a problem with the termination within the DEFINITY ECS. Most commonly there is an impedance mismatch between the analog line and your DEFINITY ECS. Also, the db level of the analog circuit may be too high. Analog circuits that are "hot" are a common cause of echo. Again, that echo may not be perceived on non-extended phones, but that is only because there is no delay.

**Possible solution:** If you have analog lines, you should consult your local phone company and ask for the exact specifications of that line. They may need to go onsite to measure the characteristics of your analog circuits.

## **Troubleshooting**

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2. If you only experience echo occasionally on external calls, your system is probably fine. The echo probably only occurs when calling to or receiving calls from a party that is using a) analog lines, b) a cell phone, or c) analog trunks on their phone system. In this case there is little you can do. The echo canceller included with the Extenders usually will cancel this echo after a second or two, but occasionally the echo goes beyond its capabilities. However, it should be noted that the party on the other end of the call will not experience this echo.
  
3. If you experience a slight echo on all external calls, but it goes away after a second or two, that is normal with analog trunk lines. If you have analog trunks into your DEFINITY ECS, the echo canceller frequently takes a second or two to detect levels of what is echo and what is voice. Then it starts to cancel the echo. The only way to improve that situation is to replace your analog trunks with digital trunk lines.

## Troubleshooting

### Management Interface (MI) Status Menus

#### RVP\_DIRECT Menus

##### Port Status

Look for:

- Significant “NC” values on any phone port. This value indicates that the port is enabled but there is a bad connection between the Remote unit and the phone or the PBXgateway and the DEFINITY ECS.

```
Telnet - 192.168.101.56
Connect Edit Terminal Help
Switch->Status->Port | B0E 1.2.1d3
-----
Port          1      2      3      4      5      6      7      8
-----
Description
Current state  NC      NC      UP      UP      UP      UP      UP      UC
-> duration   4369   4369   331    4149   44     173    12     0
Percent -> UC     0      0      1      1      1      1      1      1
-> UP     0      0     99     98     99     98     98     99
-> RD     0      0      0      0      0      0      0      0
-> NC    100    100     0      0      0      0      0      0
-> XX     0      0      0      0      0      0      0      0
Count -> UC     0      0     10     20     11     42     34     29
-> UP     0      0     11     21     12     43     35     30
-> RD     0      0      1      1      1      1      1      1
-> NC     1      1      1      1      1      1      1      1
-> XX     1      1      1      1      1      1      1      1
Average -> UC     0      0      3      3      3      1      2      2
-> UP     0      0     393    284    360    99    122    143
-> RD     0      0      0      0      0      0      0      0
```

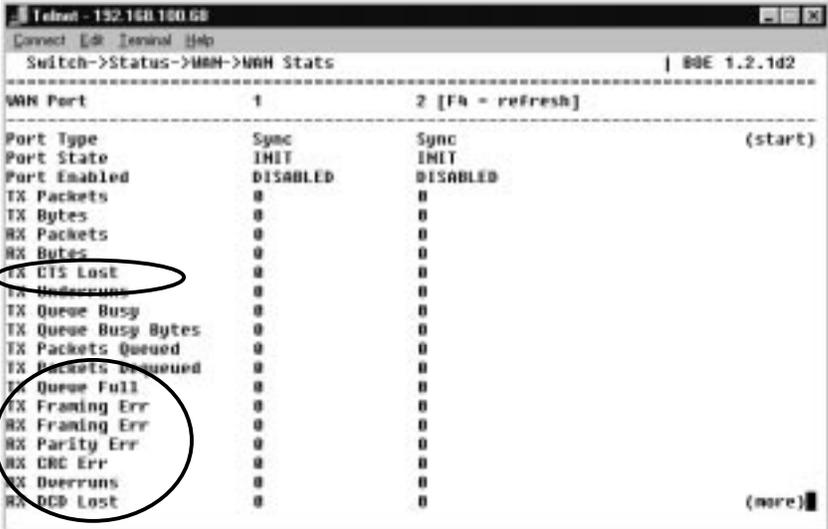
Figure 6.6 Port Stats

## Troubleshooting

### WAN Stats

#### Look for:

- Any “Framing Errors”, “Parity Errors”, “CRC Errors”, “Overruns”, “DCD Lost”, “CTS Lost” or any “Busy” type errors. Significant values indicate WAN device problems.



```
Terminal - 192.168.100.68
Connect Edit Terminal Help
Switch->Status->WAN->WAN Stats | B0E 1.2.1d2
-----
WAN Port          1          2 [Fh = refresh]
-----
Port Type         Sync       Sync
Port State        INIT       INIT (start)
Port Enabled      DISABLED  DISABLED
TX Packets        0          0
TX Bytes          0          0
RX Packets        0          0
RX Bytes          0          0
TX CTS Lost       0          0
TX Overruns       0          0
TX Queue Busy     0          0
TX Queue Busy Bytes 0          0
TX Packets Queued 0          0
TX Packets Discarded 0          0
TX Queue Full     0          0
TX Framing Err    0          0
RX Framing Err    0          0
RX Parity Err     0          0
RX CRC Err       0          0
RX Overruns      0          0
RX DCD Lost       0          0 (more)
```

Figure 6.7. WAN Stats

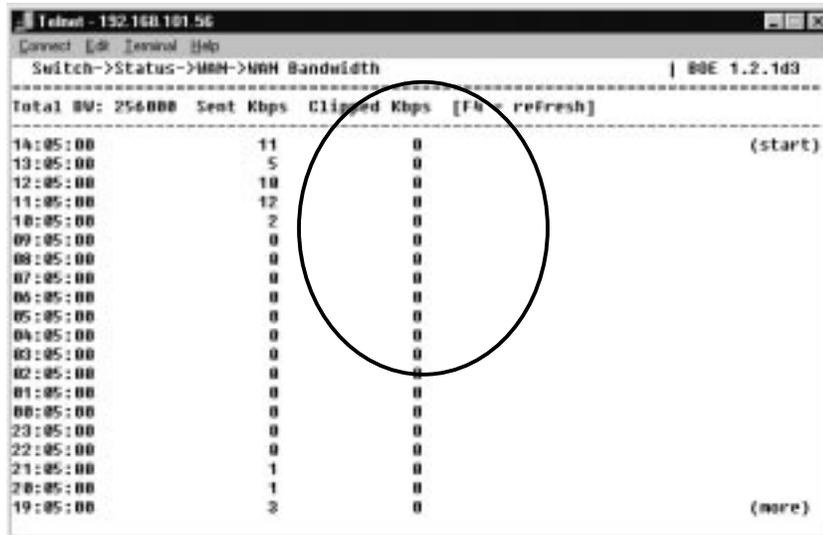
## Troubleshooting

### WAN Bandwidth

#### Look for:

- Any “Clipped ” (Kbps) count. This indicates packets that were not sent.

*Note: This Figure shows the Bandwidth used over a period of one hour. If this value exceeds the actual Bandwidth that you have assigned in the WAN menu, you may need to increase the WAN Bandwidth.*



Total BW: 256000	Sent Kbps	Clipped Kbps	[F4 refresh]
14:05:00	11	0	(start)
13:05:00	5	0	
12:05:00	10	0	
11:05:00	12	0	
10:05:00	2	0	
09:05:00	0	0	
08:05:00	0	0	
07:05:00	0	0	
06:05:00	0	0	
05:05:00	0	0	
04:05:00	0	0	
03:05:00	0	0	
02:05:00	0	0	
01:05:00	0	0	
00:05:00	0	0	
23:05:00	0	0	
22:05:00	0	0	
21:05:00	1	0	
20:05:00	1	0	
19:05:00	3	0	(more)

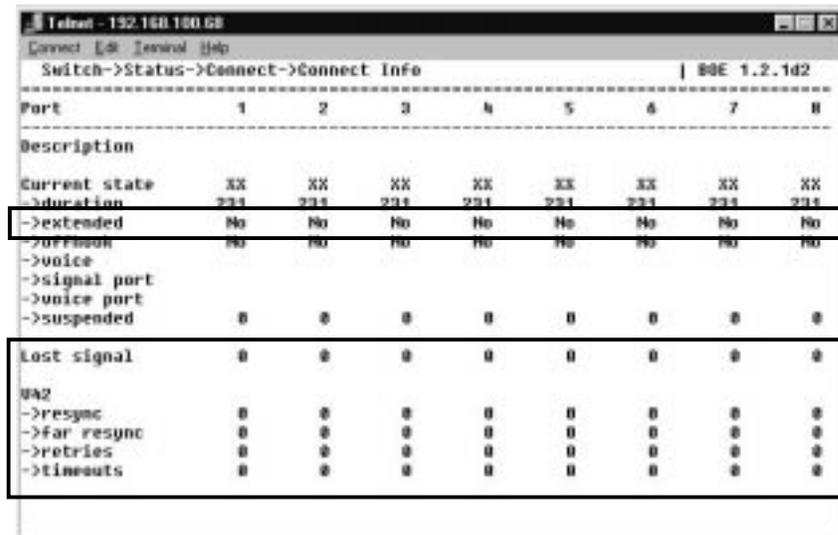
Figure 6.8. WAN Bandwidth

## Troubleshooting

### Connect Info

#### Look for:

- A “Current State -> extended” value of “No”. This indicates that the remote phone ip not extended, or may not be connected.
- Significant “Lost Signal” values on any phone port. This value indicates that the port has not completed phone connections.
- V42 “resync” errors indicates that the network device may have reset itself due to significant network errors.



```
Terminal - 192.168.100.68
Connect [?] Terminal Help
Switch->Status->Connect->Connect Info | BDE 1.2.1d2
-----
Port          1      2      3      4      5      6      7      8
-----
Description
Current state  XX    XX    XX    XX    XX    XX    XX    XX
Duration      231   231   231   231   231   231   231   231
->extended    No    No    No    No    No    No    No    No
->offhook     No    No    No    No    No    No    No    No
->voice
->signal port
->voice port
->suspended   0     0     0     0     0     0     0     0
Lost signal   0     0     0     0     0     0     0     0
V42
->resync      0     0     0     0     0     0     0     0
->far resync  0     0     0     0     0     0     0     0
->retries     0     0     0     0     0     0     0     0
->timeouts    0     0     0     0     0     0     0     0
```

Figure 6.9. Connect Info

## Troubleshooting

### Connect Stats

#### Look for:

- A high number of "Connect tries". This indicates the remote is trying to connect to the PBX gateway. If this value is high (maybe above 20), there could be a WAN problem.
- A high number of "Disconnect->carrier lost". This directly relates to WAN outages. The WAN devices may be intermittent.
- Any "Disconnect by port offline" values. This indicates the remote port has been disconnected - possibly wiring problem.
- Any "Disconnect by port in use" values. Indicates the remote is connecting to a port that is already being used. There may be a configuration problem, or the port itself has a problem.
- Any "Disconnect by no voice" values. The voice path has been lost. This could be related to a port problem or even a wiring problem.
- Significant amount of "Disconnect by bad password" values. If this value is high (maybe more than 20), an unauthorized user may be attempting to connect from the remote phone.
- Significant "Blocked call" values on any phone port. This value indicates that the unit has been oversubscribed, indicating that because of bandwidth limitations some of the phone calls must be "Blocked" or stopped from making a connection if there is no additional bandwidth available.
- "Lost signal" values on any port indicate that the unit has phone connection problems. Check all wiring.

Port	1	2	3	4	5	6	7	8
Connect Tries	10	0	0	0	0	0	0	0
-> connections	0	0	1	1	1	1	1	1
Disconnect								
-> no user	0	0	0	0	0	0	0	0
-> carrier lost	0	0	0	0	0	0	0	0
-> port offline	0	0	0	0	0	0	0	0
-> port in use	0	0	0	0	0	0	0	0
-> no voice	0	0	0	0	0	0	0	0
-> bad password	0	0	0	0	0	0	0	0
Blocked calls	0	0	0	0	0	0	0	0
Lost signal	0	0	0	0	0	0	0	0
-> disconnect	0	0	0	0	0	0	0	0
-> reconnect	0	0	0	0	0	0	0	0

Figure 6.10. Connect Stats

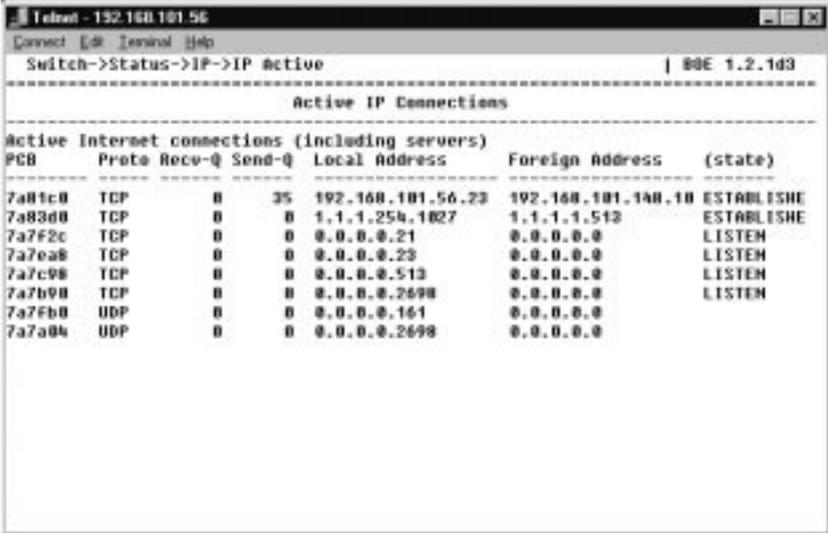
## Troubleshooting

---

### RVP\_IP Menus

#### **IP Active**

*Note: Make sure correct information is shown. If this is not correct, go to the "Configuration->IP->Address" menu, and enter the correct info. A large number of collisions could indicate network traffic problems.*



```
Telnet - 192.168.101.56
Connect [?] Terminal Help
Switch->Status->IP->IP #active | 80E 1.2.1d3
-----
Active IP Connections
-----
Active Internet connections (including servers)
PCB      Proto Recv-Q Send-Q Local Address      Foreign Address    (state)
-----
7a81c0   TCP      0      35 192.168.101.56.23  192.168.101.140.10 ESTABLISHE
7a83d0   TCP      0      0 1.1.1.254.1027    1.1.1.1.513       ESTABLISHE
7a7f2c   TCP      0      0 0.0.0.0.21       0.0.0.0.0        LISTEN
7a7ea8   TCP      0      0 0.0.0.0.23       0.0.0.0.0        LISTEN
7a7c98   TCP      0      0 0.0.0.0.513      0.0.0.0.0        LISTEN
7a7b98   TCP      0      0 0.0.0.0.2698     0.0.0.0.0        LISTEN
7a7fb0   UDP      0      0 0.0.0.0.161      0.0.0.0.0
7a7a04   UDP      0      0 0.0.0.0.2698     0.0.0.0.0
```

Figure 6.11. IP Info

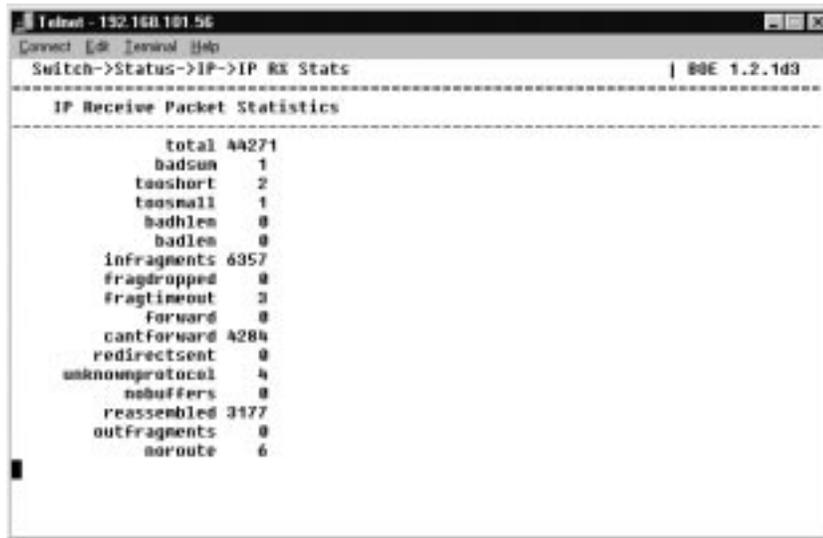
## Troubleshooting

---

### *IP RX Stats*

Look for:

- Any value, that increments other than "total", and "cantforward".



The screenshot shows a Telnet window with the title "Telnet - 192.168.101.56". The command prompt is "Switch->Status->IP->IP RX Stats" and the output is "80E 1.2.1d3". Below this, a dashed line separates the header "IP Receive Packet Statistics" from the data. The data is as follows:

Category	Count
total	44271
badsum	1
tooshort	2
toosmall	1
badhlen	0
badlen	0
infragments	6957
fragdropped	0
fragtimeout	3
forward	0
cantforward	4284
redirectsent	0
unknownprotocol	4
nobuffers	0
reassembled	3177
outfragments	0
noroute	6

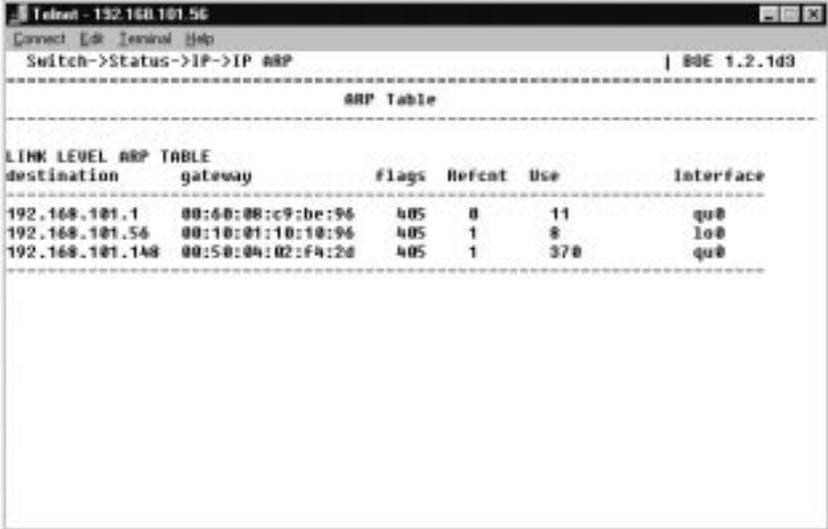
Figure 6.12. IP RX Stats

## Troubleshooting

---

### IP ARP

- Make sure you can see your "Default gateway" in this table; especially if your Branch Office unit is on a remote LAN.



The screenshot shows a Telnet session with the following text:

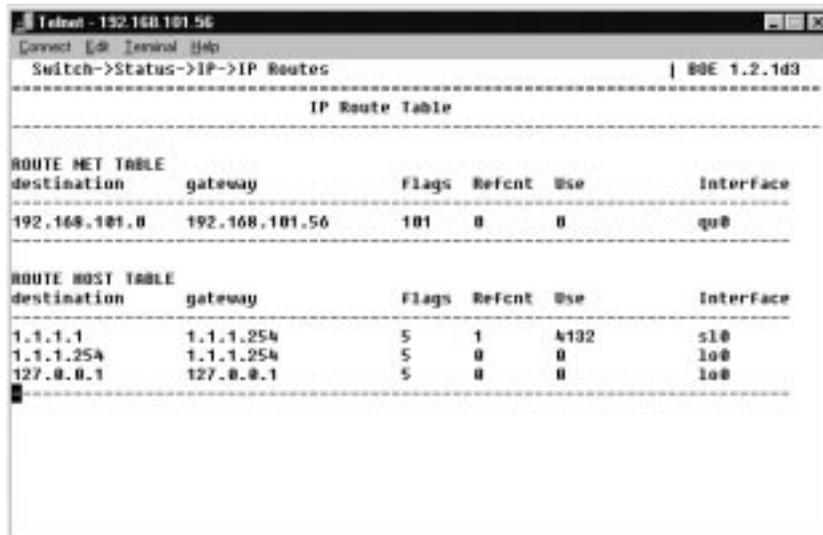
```
Telnet - 192.168.101.56
Connect Edit Terminal Help
Switch->Status->IP->IP ARP | 80E 1.2.1d3
-----
ARP Table
-----
LINK LEVEL ARP TABLE
destination gateway flags Refcnt Use Interface
-----
192.168.101.1 00:60:00:c9:be:96 405 0 11 qu0
192.168.101.56 00:10:01:10:10:96 405 1 8 lo0
192.168.101.148 00:50:04:02:F4:20 405 1 370 qu0
-----
```

Figure 6.13 IP ARP

## Troubleshooting

### IP Routes

- The path (IP) to the PBX gateway should be shown in this table.



The screenshot shows a terminal window titled "Telnet - 192.168.101.56". The prompt is "Switch->Status->IP->IP Routes" and the user ID is "BOE 1.2.1d3". The output displays two tables: "IP Route Table" and "ROUTE NET TABLE".

```
IP Route Table
```

destination	gateway	Flags	Refcnt	Use	Interface
192.168.101.0	192.168.101.56	101	0	0	qu0

```
ROUTE NET TABLE
```

destination	gateway	Flags	Refcnt	Use	Interface
1.1.1.1	1.1.1.254	5	1	4132	s10
1.1.1.254	1.1.1.254	5	0	0	lo0
127.0.0.1	127.0.0.1	5	0	0	lo0

Figure 6.14 IP Routes

## Troubleshooting

---

### General System Info

```
Telnet - 192.168.100.68
Connect [q] Terminal Help
Switch->Status->System->General Info | B0E 1.2.1d2
-----
Branch Office EXTender
-----
System Name : B0E
Serial Number : 2296100306
PBX Type : NEC
Time Since Boot : 0 days + 03:50:46
IP Address : 192.168.100.68
MAC Address : 00:10:01:10:03:06
Runtime Version : 1.2.1d2 [Nov 5 1999, 17:05:12]
PLD Version : 1.01r1
Signal DSP Version : 1.0d3h sig
Voice DSP Version : 1.0d3h vox
Flash Version : FHW1.0
ROM Version : 1.2d6 [Sep 10 1999, 15:11:50]
Hardware Version : 2
Hardware Type : Switch
Serial Ports : 2
Phone Ports : 12
DRAM (bytes) : 4194304
Heap (bytes) : 3110764 (1400172 free)
Flash (bytes) : 4029952 (1059040 free)
```

Figure 6.15. System Info

## Troubleshooting

---

### Remote Phone Messages

**Introduction** The following messages appear on the remote telephone display connected to the Branch Office remote units when a connection attempt fails. The telephone shows 'Connect Error,' followed by a message. Table 6-10 and 6-11 contains the possible Connect Error messages.

Message	Description	Action
Already connected	Remote port is already connected.	Reset port at PBXgateway.
Assigned port Busy (see note)	The switch port is being used by another user.	Wait until port is available or reset port on Gateway and try to re-connect.
Assigned port Down (see note)	The switch port is not available, due to problems (green flicker) with the port.	Check port connection at PBXgateway.
Carrier Lost (see note)	Displayed if the network connection to the DEFINITY ECS is lost.	<ul style="list-style-type: none"><li>■ Check network links.</li><li>■ Attempt to reconnect after network is up and running.</li></ul>

**Table 6-10. Connect Error Messages**

*Note: This message is not preceded by "Connect error".*

## Troubleshooting

---

### Remote Phone Messages continued

Message	Description	Action
Connect rejected	The ECS rejects the connection request.	<ul style="list-style-type: none"><li>■ Possible connect password is incorrect.</li><li>■ Check network links.</li><li>■ Attempt to reconnect.</li></ul>
Connect Timeout	Remote cannot connect to PBX gateway.	Check WAN connection on PBX gateway unit.
Network disabled	The network device is not connected, being used, or is not active.	Check network link and device.
Network down	The network device has a problem.	Check network link and device.
Network in use	The network device is being used by another device.	Reset WAN and try to re-connect.
Network not ready	The network device is not ready for use. (yellow LED)	Make sure primary connect matches "enabled" WAN port.
No bandwidth	The unit bandwidth is oversubscribed. No network bandwidth is available from phone signaling.	Check synch rate or change voice compression.

**Table 6-11. Connect Error Messages**

*Note: This message is not preceded by "Connect error".*

## **Troubleshooting**

---

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---

# File Management & System Upgrades

# 7

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## **7. FILE MANAGEMENT & SYSTEM UPGRADES**

### **Introduction**

The PBXgateway and Remote unit contains a flash file system to retain basic configuration files, the actual firmware, and the instructions necessary for starting the units. The flash memory system does not require continuous power to retain its memory.

Flash memory file system has the following properties:

- ❑ Contains the operating software known as firmware. This firmware is upgradable.
- ❑ Non-volatile storage, so it retains all saved information even when the power to your Extender is turned off.
- ❑ Stored Extender configuration files, containing specific set up parameters. These files are unit specific and include an appropriate unit extension (.swt for Switch or Gateway files and .rem for Remote files)
- ❑ Stores any other files that have been copied to the unit.

### **Access to the Flash File System**

The Extender Flash File system can be written to for copying files or updating firmware. Access to flash file system is done through various connections using a PC.

Example: Direct serial connection, FTP etc.

*Note: FTP must be enabled (see page 4-38). Access to the Flash file system can be secured by setting up an administrator's password, used by the system administrator.*

## **File Management & System Upgrades**

---

<b>Firmware</b>	<p>All firmware images stored in the Flash file system are saved with the following extension:</p> <ul style="list-style-type: none"><li>• Extender 6000 &amp; PBXgateway: .m6b</li></ul> <p><i>Note: All .m6b files are binary files.</i></p>
<b>Config Files</b>	<p>Extender configuration parameters are contained within the Flash file system under a .rem (Remote) or .swt (Switch) file extension. All changes made to items pertaining to the configuration of the units <b>MUST</b> be saved to Flash file system before they become active.</p> <p><b>IMPORTANT NOTE:</b> The Management Interface (MI) will prompt you when changes must be saved.</p>
<b>Boot.cfg</b>	<p>This is unit specific information required to startup or “boot” both the Switch and Remote units.</p> <p><b>Boot information includes:</b></p> <ul style="list-style-type: none"><li><input type="checkbox"/> IP Address information</li><li><input type="checkbox"/> the active config file to be loaded</li><li><input type="checkbox"/> the firmware (.m6B) file to boot with.</li></ul>
<b>Call Back files</b>	<p>The PBXgateway unit saves .cbk files to enable it to contact remote users that are currently disconnected.</p> <p><i>Note: This file is used specifically for Remote Login capabilities. See page 4-49 for more information.</i></p>

## **Configuration File Management**

### Changing the Active Config file

**Introduction** When the PBXgateway is powered-up, the Flash file system loads a configuration file (called the “active” .rem (Remote) or .swt (Switch) file) which contains all the parameters necessary for operation. The system administrator can change this “active” .rem (Remote) or .swt (Switch) file so that a different set of parameters loads.

*Note: The default configuration file shipped with the units is runtime.rem or runtime.swt.*

**Procedure** Access the Config Menu using the following path:

**Path:** Utilities->Upgrade->  
Config File

1. Select an existing .rem (Remote) or .swt (Switch) file from the list displayed.
2. The display reads;  
  
Change Configuration file to..  
  
Enter (Y) or (N).
3. The unit will then prompt you to reboot. This change requires a reboot in order to take affect.

All changes made to the Switch or Remote parameters will be saved under the new config file.

### **Edit Non-Active Configuration Files**

**Introduction** The PBXgateway can be used in different applications requiring different parameters. The system administrator may need to set up separate configuration files to accommodate custom parameters for each application.

The ability to modify any non-active configuration file, allows the system administrator a method for quickly setting up new units based on existing configuration parameters.

**IMPORTANT NOTE:** To edit the “active” config file, use the Configuration Menu (see Chapter 4).

**Procedure** Access the Edit Configuration Menu using the following path:

**Path:** Utilities->File->Edit Config

1. Choose Switch or Remote and select a config file from the available files, press **Enter**.
2. Modify the necessary parameters as required. (Refer to Chapter 4 for more information)
3. As required, select **Save** and press **Enter** to save changes. The following message appears:

Save changes to Filename \_\_\_\_\_.rem (Remote) or .swt (Switch)?

(Y)es (N)o (S)pecify different filename

Press (Y) to save changes  
Press (N) to not save changes  
or Press (S) to specify a different file name.

### Creating a New Config File

**Introduction** The PBXgateway can be used in different applications requiring different parameters. The system administrator may need to set up separate configuration files to accommodate custom parameters for each application.

Example: The creation of a new Remote config file on the PBXgateway, and copying that new file to the Remote unit.

The ability to modify any configuration file not in use, allows the system administrator a method for quickly setting up new units based on existing configuration parameters.

**Procedure** Access the Edit Configuration Menu using the following path:

Path: Utilities->File->Edit  
Configuration

**Message reads:** Create a new:

Select (B) for Remote file. Press **Enter**

or

Select (S) for Switch file. Press **Enter**

1. Select <new file>. Press **Enter**.
2. Enter New file name: \_\_\_\_\_, (without extension) press **Enter**.

*Note: File name must not exceed twelve characters and does not require a file extension. The MI will automatically assign an extension depending on the unit.*

3. Modify the necessary parameters as required.  
(Refer to Chapter 4 *Basic Configuration* for more information)

## **File Management & System Upgrades**

---

### Creating a New Config File continued

- Procedure** 4. Select **Save Action** and press **Enter** to save changes.  
The following message appears:

Save changes to Filename \_\_\_\_\_.rem (Remote) or .swt  
(Switch)?

(Y)es (N)o (S)pecify different file name

Press (Y) to save changes.

Press (N) to not save changes.

or Press (S) to specify a different file name.

## **Uploading Files to Flash**

### Using an FTP Connection

**Introduction** The PBXgateway is capable of transferring and receiving files using File Transfer Protocol (FTP). The FTP client is used to “put” a new PBXgateway firmware file onto the Flash file system of the unit. The procedure on page 7-16, *Upgrading Firmware* will detail the steps to use the new firmware.

*Note: Knowledge of the FTP process is helpful when performing this procedure.*

**STEP 1:** Enable FTP access through the Management Interface (MI) using the following path:

**Path:** Configuration->IP->FTP->Enabled

Press the ← key to go back to the Configuration Menu and press the ↓ key to the **Save** option. Press **Enter**.

*Note: The PBXgateway must be connected to the network and an IP address must be assigned before continuing with this procedure.*

**STEP 2:** Optimize the Flash File system through the Management Interface (MI) using the following path:

**Path:** Utilities->File->Optimize

**STEP 3:** Open the FTP application program

On a PC running Windows, open the FTP application.

*Note: There are many applications that can be used for transferring files using FTP. The program chosen in this example is included with Windows 95.*

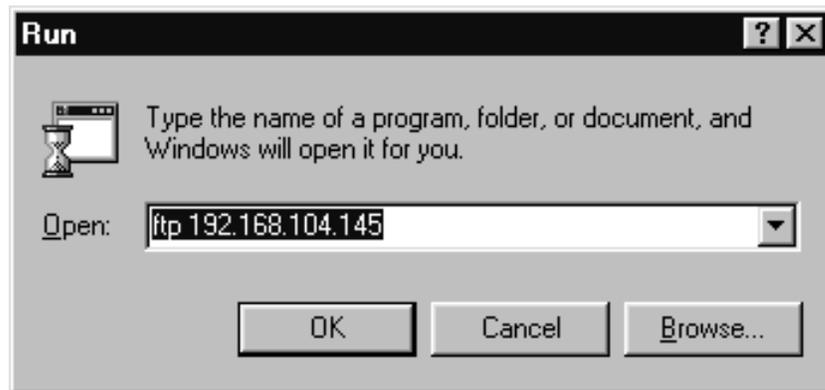
## **File Management & System Upgrades**

---

### Using an FTP Connection continued

#### **Enter the IP Address of the Extender unit**

1. **Start/Run** from the desktop. The following screen is displayed.



**Figure 7.1 FTP screen**

2. Type in the following command;

ftp (and the IP address of the unit you want to copy a file to), click **OK**.

The FTP program will connect to the Extender and provide a DOS-based screen to continue with the copying process.

## **File Management & System Upgrades**

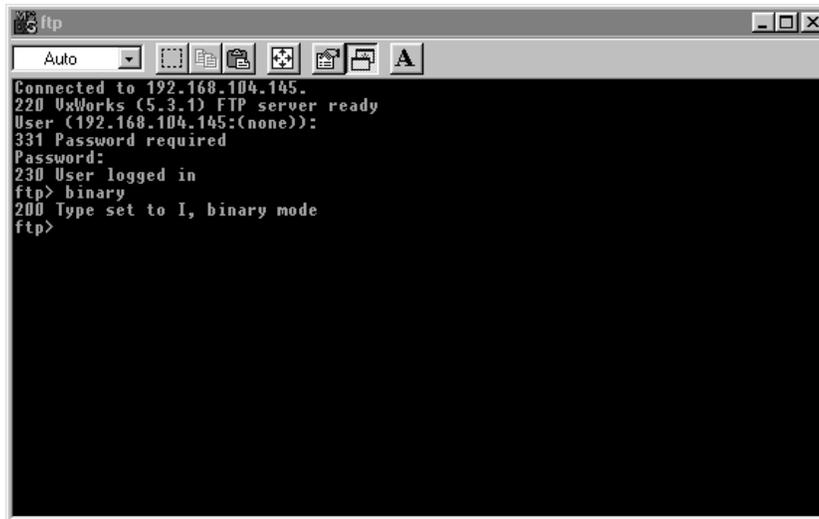
---

### Using an FTP Connection continued

3. At the “User” prompt, press **Enter**.
4. Enter the Admin Password at the “Password” prompt. Press **Enter**. (see Chapter 4, Setting the Administrator’s Password)
5. At the “ftp>” prompt type **Binary** and press **Enter**.
6. At the “ftp>” prompt type **Hash** and press **Enter**.

*Note: This sets up the format for the file being transferred. All firmware files (.m6b) are stored in binary form.*

The following screen appears:

A screenshot of a Windows-style FTP client window titled 'ftp'. The window has a menu bar with 'Auto' and a toolbar with icons for file operations. The main text area shows the following text:

```
Connected to 192.168.104.145.  
220 UxWorks (5.3.1) FTP server ready  
User (192.168.104.145:(none)):  
331 Password required  
Password:  
230 User logged in  
ftp> binary  
200 Type set to I, binary mode  
ftp>
```

**Figure 7.2** FTP login screen

## **File Management & System Upgrades**

---

### Using an FTP Connection continued

7. Upload the file to the Extender by typing in the following command:

Example: Put C:\temp\v100.m6b

**Put:** Is the FTP command for “copy”

**C:** Is the PC Hard drive location of the file you are copying

**temp:** Is the folder containing the file

**v100.m6b:** Is the file being copied to the unit. The file will be saved under this file name in Flash.

*Note: The file will be copied using this filename. If a file already exists on the Extender with the same filename it will be overwritten.*

8. Type **Quit** at the “ftp>” prompt to close the FTP program.

## **File Management & System Upgrades**

---

### Using an External WAN Connection

**Introduction** The PBXgateway is capable of transferring files using the external WAN connection between the Gateway and Remote units. This procedure is used to “put” a new file (.m6b or .rem (Remote) or .swt (Switch)) onto the Flash file system of the opposite unit.

**Procedure** Access the Copy to Remote/Switch Menu using the following path:

**Path:** Utilities->File->Copy to  
(Remote/Switch)

1. Enter the **Admin password** for the unit you are accessing.
2. Select a file to copy from the list displayed.
3. When prompted, Enter a **Destination Filename**.

*Note: File name must not exceed twelve characters and does not require a file extension. The Management Interface (MI) will automatically assign an extension depending on the type of file.*

4. Press **Enter**. The upload process will begin.

*Note: The transfer process may take some time especially if you have active phones.*

When the download is complete, the MI displays the message:

Copy Succeeded

## **File Management & System Upgrades**

---

### Using a Direct Console Connection

**Introduction** The PBXgateway is capable of transferring text files using a direct console connection between an Extender unit and a PC.

- Extender 6000 and PBXgateway: .m6t

This procedure is helpful when a LAN connection is not available.

*Note: This procedure is only used for uploading an encoded text file to the unit. An encoded text file is a firmware file encoded as text.*

### **Procedure**

1. Connect a PC to the PBXgateway through the console port. (see Chapter 4, *Direct Serial Connection*, for more information)
2. Open an Enhanced Terminal Interface (ETI) program.

Example: Hyperterminal

3. Access the Console Upload Menu using the following path:

**Path:** Utilities->Upgrade->Console Upload

*Note: You will be prompted to "Optimize the Flash File System", select (Y) or yes to optimize.*

## File Management & System Upgrades

### Using a Direct Console Connection continued

4. The following screen will appear. Press “y” to continue.

```
Switch->Utilities->File->Console Upload | BOE 1.00b1 Beta1
-----
Copy to Remote|
Delete        |
*Console Upload| #####
Edit Config   | #
              | # Upload new software (.ast file) via the console port. #
              | # WARNING: Once this process is started, it can only be #
              | # stopped from the client application. Continue [y/n]> #
              | #
              | #####
              |
              |-----
              |          Receive file from console port
              |          Fl=help
              |-----
Feb 24 16:42:58:      tlogin(1.1.1.1)
Feb 24 16:42:58: 05 INFO: Rlogin session 2 initiated from switch
Feb 24 16:43:25: 09 INFO: Rlogin session 2 disconnected from remote
Feb 24 16:44:25: 05 INFO: Rlogin session 1 disconnected from remote
-----
POWER  MAN1  MAN2  MAN3  PORT: 1  2  3  4  5  6  7  8
ON     ACTIVE  DISABLED  N/A    VC  VC  VC  VC  UP  UP  UP  VC
```

Figure 7.3 Console Upload Screen

## File Management & System Upgrades

### Using a Direct Console Connection continued

5. Select **Transfer-Send Text File** command from the ETI program.  
Locate the text file to be sent and press **Open**.

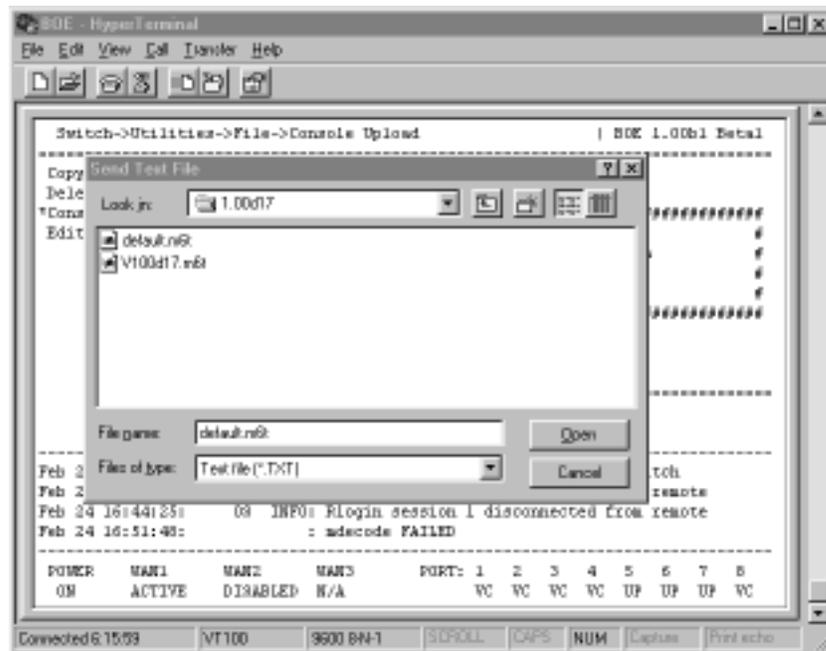


Figure 7.4 Send text file screen

The file upload will begin.

*Note: Files labeled “.m6t” are text versions of the firmware, where as “.m6b” files are binary files.*

The screen will display the Flash activity by a series of dots (.....).

*Note: Do not quit the application or stop the file upload until the process is complete. Once the file is copied to the unit, it is automatically saved as binary and renamed with a M6B extension.*

## **Upgrading Firmware**

**Introduction** The process of upgrading the firmware for the PBXgateway requires the new executable file (.M6B) to be copied to the unit BEFORE the upgrade can take place.

The file can be uploaded to the unit using one of three methods;

- Using an FTP connection (see page 7-8)
- Using an External WAN connection (see page 7-12)
- Using a Direct console connection (see page 7-13)

**Procedure** Access the Upgrade Menu using the following path:

**Path:** Utilities->Upgrade->Image File

1. A menu is displayed to indicate that the upgrade files must already be on the system before continuing. Press **Y** to continue.
2. The “\*.M6B” upgrade file should be shown. If there is more than one file, select the version you want to upgrade to. Then press **Enter**.

The PBXgateway will then set this file as the default file to boot up with, and will then prompt you to reboot the units when it is ready.

3. Select **Y** to reboot the unit. If you cannot reboot at this time, you will need to reboot later in order for the upgrade to be effective.

*Note: Firmware running on the PBXgateway and Remote units must be compatible. For best results it is required to always upgrade both units to the same firmware revision.*

---

## **Glossary**

# **8**

This Chapter provides a list of terms that are used in the operation or set up of the PBXgateway or Lucent Technologies product line.

## **8. GLOSSARY**

**+12 VDC**

12 volt direct current.

**120 vac**

120 volt alternating current (North American standard electrical supply).

### **A**

**ADPCM**

Adaptive Differential Pulse Code Modulation. A reduced bit rate variant of PCM (Pulse Code Modulation) audio encoding.

**ARP**

Address Resolution Protocol.

**ATM**

Asynchronous Transfer Mode. A high bandwidth, low-delay, connection-orientated, packet-like switching and multiplexing technique.

## **Glossary**

---

### **B**

#### **Bandwidth**

The width of a communications channel. Measured in bits per second (bps).

#### **Baud Rate**

The speed in Kbps at which digital data can be transmitted.

#### **Broadcast Address**

This is the address that sends IP packets to all devices on the same Network Number.

### **C**

#### **CSMA/CD**

Carrier Sense Multiple Access / Collision Detection. Protocol for Ethernet transmission.

#### **CSU**

Channel Service Unit. A device to terminate a digital channel on a customer's premise.

## Glossary

---

### D

#### **DB-25**

The standard 25-pin connector used for RS-232 serial data communications.

#### **DB-9**

The standard 9-pin RS-232 serial port on most computers

#### **Dedicated Subscriber Lines**

Communication lines (usually twisted pair) that are used to connect on-premise telephone equipment (such as a DEFINITY ECS) to the Central Office. Also referred to as direct lines.

#### **Default Gateway**

Normally the IP address of a router. Used to specify where IP packets are to be sent that are not destined for the same network number.

#### **Dial Line**

A telephone line which is part of the Public Switched Telephone Network and is accessed through an automatic dial-up function.

#### **DNS**

Domain Naming System. A mechanism used in the internet for translating names of host computers into addresses.

Example: DNS would change a computer name such as mck.com to the actual numeric IP address of xxx.xxx.xxx.xxx.

#### **Domain Name**

The fully qualified name of a domain of a network. Example "mck.com".

#### **DRAM**

Dynamic Random Access Memory. A readable/writable memory chip used to store data.

## **Glossary**

---

### **DS-0**

Digital Service, Level 0. It is 64,000 bps, the worldwide standard speed for digitizing one voice conversation using PCM.

### **DSP**

Digital Signal Processor. A specialized computer chip designed to perform speedy and complex operations on digitized signals.

## **E**

### **Ethernet**

A local area network used for connecting computers, printers, workstations, terminals, servers, etc. Ethernet operates over twisted wire and over coaxial cable at speeds up to 100Mbps.

## **F**

### **Facility**

Transmission facilities. Usually a two metallic pair set of cords, but can be telephone company carriers, T-1, microwave or dial-up telecommunications lines.

### **FRAD**

Frame Relay Access Device. A FRAD is responsible for framing data with header and trailer information prior to presentation of the frame to a frame relay switch. A FRAD may be a standalone device, although the function generally is embedded in a router.

### **Frame Relay**

An access standard delivered by local and long distance carriers, which can accommodate voice packets of various sizes associated with virtually any protocol.

### **FTP**

File Transfer Protocol. A connection protocol used to send and receive files.

## **Glossary**

---

### **G**

#### **G.729A**

The ITU (International Telecommunications Union) standard voice algorithm for the coding of speech signals in telecommunication networks.

### **H**

#### **H.323**

This ITU (International Telecommunications Union) standard defines a set of call control, channel set up and codec specifications for transmitting voice over networks that do not guarantee quality of service -such as the Internet.

#### **HOP**

The number of devices an IP address must connect to, to get to it's destination.

#### **Host Name**

The name of a computer or HOST as specified on a DNS server.

## **Glossary**

---

### **I**

#### **ISDN**

Integrated Services Digital Network. ISDN comes in two basic flavors- BRI, which is 144,000 bps and designed for the desktop, and PRI, which is 1,544,000 bps and designed for telephone switches. BRI uses four unshielded normal telephone wires (two twisted pairs) to deliver two "Bearer" (B channel) of 64K bps each and one "data" (D channel) of 16K bps.

#### **IP**

Internet Protocol. The most important protocol on which the Internet is based. The IP Protocol is a standard describing software that keeps track of the internetwork addresses for different nodes, routes outgoing messages, and recognizes incoming messages.

#### **IP Address**

A 32-bit address, used in IP routing. Basically, this address identifies a device within a network using a sequence of numbers.

### **L**

#### **LAN**

Local Area Network. A short distance data communications network used to link computers and peripheral devices (such as printers).

#### **LED**

Light-emitting diode. A semiconductor diode which emits light when a current is passed through it, indicating that the power is on.

## **Glossary**

---

### **M**

#### **Metric**

Normally the number of HOPs to get to the next Network Number.

#### **MI**

Management Interface. A VT-100 style Terminal Emulation (TA) program which provides the system administrator with full configuration and status capabilities for the PBXgateway and multiple Remote units.

### **N**

#### **Network Number**

Often associated with Subnet. Specifies an individual network of devices that communicate via IP to each other. Example "192.168.1.0".

### **O**

#### **On-premise Lines**

Communication lines (usually twisted-pair) that are used to connect the DEFINITY ECS to the telephone.

## **Glossary**

---

### **P**

#### **Phone-Set Interface**

An interface with the Remote units through a users phone providing a limited set of configuration parameters.

#### **PSTN**

Public Switched Telephone Network..

#### **Punch Block**

A device used to connect one group of wires to another. A punch block is used to connect the digital lines from the DEFINITY ECS to the RJ-21 cable connected to the PBXgateway.

### **Q**

#### **QOS**

Quality of Service. A measure of the telephone service quality provided to a subscriber.

## **Glossary**

---

### **R**

#### **Remote Unit**

The device that connects to the remote telephones and communicates with the PBXgateway at the Corporate facility.

#### **RJ-11**

A six conductor modular jack that is typically wired for four conductors. It is the most common jack used for connecting telephones, modems and fax machines.

#### **RJ-21**

A 25-pair connector used for connecting the PBXgateway to the DEFINITY ECS.

#### **Router**

A device used to forward packets from one or more Network Numbers, to the intended destinations.

#### **RS-232**

9 or 25 Position Non-Synchronous Interface Between Data Terminal Equipment and Data Circuit-Terminating Equipment Employing Serial Binary Data Interchange (ANS/EIA/TIA-574-90)

#### **RS-530**

Physically it is the same as an RS-232 cable, except the RS-530 cable is designed for devices that transmit at higher speeds.

#### **RTP**

Real Time Protocol. A protocol designed to address problems caused when real-time exchanges, such as voice are transported over LANs designed for data.

#### **RVP™**

Remote Voice Protocol. MCK Communications proprietary packet encapsulation protocol.

## **Glossary**

---

### **S**

#### **SNMP**

Simple Network Management Protocol.

#### **Subnet**

A smaller network that is part of a main network.

#### **Subnet Mask**

Used to mask bits of an IP address to determine which packets are destined for the Network that the device is connected to.

#### **Switch Unit**

The PBXgateway unit that connects to the DEFINITY ECS

#### **Synchronous**

A method of communication utilizing a master clock to synchronize the timing between successive bits, characters or events.

#### **Sync Rate**

The data transfer speed or rate of the synchronous serial port of the network device connected to the WAN port of the PBXgateway or Extender 6000 Remote unit. The Sync Rates of the serial ports must match.

#### **System Administrator**

Basically, the person in charge of managing the network.

## **Glossary**

---

### **T**

#### **T1**

A digital transmission link with a capacity of 1.544Mbps.

#### **TA**

Terminal Adapter. Allows non-ISDN terminals to operate on ISDN lines.

#### **TCP**

Tele Connect Protocol. An IP port, as specified in the OSI model.

#### **TCP/IP**

Transport Control Protocol / Internet Protocol.

#### **Telnet**

A connection type protocol.

### **U**

#### **UDP**

User Datagram Protocol. An IP port as specified in the OSI model.

### **V**

#### **V.35**

A ITU-T standard for a synchronous serial interface between the Switch or Remote unit and a network device for data rates greater than 19.2Kbps.

#### **VOIP**

Voice Over IP. Providing voice communications over the IP network.

---

## Appendix

# A

### Management Interface (MI) Menus

#### Menus

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Connect Menu	A-7
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RVP_over_IP Menu	A-9
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## APPENDIX A: Management Interface Menus

**Introduction** The PBXgateway Management Interface (MI) provides the system administrator with a VT-100 style interface for the complete configuration of both the Gateway and Remote units.

**Main Menu** The Main Menu which appears when the MI is first entered, displays the following submenus;

**Configuration**

The Configuration submenus contain Port and WAN set up, Log information, and System parameters.

**Status**

The Status submenus display specific functional information necessary to troubleshoot and analyze unit performance.

**Utilities**

The Utilities submenus contain system and diagnostic utilities used for copying or deleting configuration files.

**Remote/Switch Login**

This command will connect you to the unit at the alternate site.

**Logout**

This command will terminate the MI session.

## Appendix A

---

### Main Menu

Menu	Sub-Menus	For more Info see
<b>Configuration</b>	Port	Page A-4
	Default	Page A-4
	Ports 1-8	Page A-4
	Ports 9-12	Page A-4
	WAN	Page A-6
	Connect (B)	Page A-7
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	Log	Page A-10
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Save	-	
<b>Status</b>	Port	Chapter 6
	WAN	Chapter 6
	Connect	Chapter 6
	Log	Chapter 6
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**Table A.1. Main Menu**

(B) Applies to the Branch Office unit only.

**Appendix A**

---

**Port Menu**

<b>Menu</b>	<b>Parameters</b>	<b>Possible Value</b>	<b>Default value</b>	<b>For more info see page</b>
<b>Default</b>	Enabled	Yes No	Yes	4-22
	Password	[    ]		4-24
	Auto Connect (B)	Disabled Enabled	Disabled	4-59
	Banner (B)	[            ]		4-59
	Voice (G)	--	--	A-5
<b>Ports 1-8</b> <b>Ports 9- 12</b>	Enabled	Default Yes No	Default	4-22
	Auto Connect (B)	Enabled Disabled	Default	4-59
	User ID	[            ]		4-26
	Password	[            ]		4-24
	Description	[            ]		-
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	Banner (B)	[            ]		4-59
	Logout Code (B)			4-26

**Table A.2. Port Menu**

(B) Applies to the Branch Office unit only.

(G) Applies to the PBXgateway unit only.

## Appendix A

---

### Voice Menu

Parameters	Possible Value	Default value	For more info see page
Method	ADPCM 32 ADPCM 24 G.729A, G.711,	ADPCM 32	4-20
Companding	$\mu$ Law Alaw	$\mu$ Law	5-20
DTMF	In-band Out-of-band	Out-of-Band	5-22
Jitter Delay	0-250	0	5-26
Packet Size	1-12	2	5-28
Packet Trace	Enabled Disabled	Disabled	5-29

Table A.3. Voice Menu

## Appendix A

---

### WAN Menu (WAN 1 & WAN 2)

Parameters	Possible Value	Default value	For more info see page
Enabled	Yes No	WAN 1 - Yes WAN 2 - No	4-31
Mode	Sync-V.35 Sync-RS232 Sync-RS530	Sync-V.35	4-34
Sync Set up- Sync Rate	Multiples of 56K or 64K	[384000]	4-32

**Table A.4. WAN Menu**

## Appendix A

---

### Connect Menu (B)

Parameters	Possible Value	Default value	For more info see page
Type	RVP_over_IP RVP_Direct	RVP_Direct	
RVP_Direct	--		A-8
RVP_over_IP	--		A-9

**Table A.5. Connect Menu**

(B) Applies to the Branch Office unit only.

### Analog Card

Menu	Parameters	Possible Value	Default value	For more info see page
<b>Defaults</b> <b>Ports 1-8</b> <b>Ports 9-12</b>	Enabled	Yes No	Yes	4-61
	Key	[ ]	4	4-61
	Ring	Yes No	Yes	4-61

**Table A.6. Analog Menu**

**Appendix A**

---

**RVP\_Direct Menu (B)**

<b>Parameters</b>	<b>Possible Value</b>	<b>Default value</b>	<b>For more info see page</b>
Primary Interface	WAN1 WAN2	WAN1	4-54
Secondary Interface	NONE WAN1 WAN2	NONE	4-54
Utilization	[   ]	100	5-41

**Table A.7. RVP\_Direct Menu**

(B) Applies to the Branch Office unit only.

## Appendix A

---

### RVP\_over\_IP Menu (B)

Parameters	Possible Value	Default value	For more info see page
Default Port-IP Destination	Valid IP address	[    ]	4-56
Ports 1 to 8-IP Destination	Valid IP address	[    ]	4-56
Ports 9 to 12-IP Destination	Valid IP address	[    ]	4-56

**Table A.8. RVP\_over\_IP Menu**

(B) Applies to the Branch Office unit only.

## Appendix A

---

### Log Menu

Parameters	Possible Value	Default value	For more info see Page
Size	4096-131072	32768	5-35
Default Priority	Info	Info	5-32
SYS Prior	Debug	<Default>	5-32
MGMT Prior	Trace	<Default>	5-32
NET Prior	Fatal	<Default>	5-32
Port Prior	Error	<Default>	5-32
	Warning		

**Table A.9. Log Menu**

## Appendix A

---

### IP Menu

Parameters	Possible Value	Default value	For more info see page
Address	Valid IP address	[     ]	4-35
Subnet Mask	Valid IP address	[     ]	4-35
Default Router	Valid IP address	[     ]	4-35
Telnet	Enabled Disabled	Enabled	4-37
FTP	Enabled Disabled	Disabled	4-37
DNS	Enabled – Yes/No	No	4-39
	Server IP Address	[     ]	4-39
	Domain Name	[     ]	4-39
SNMP	-	-	A-12
Web Server	-	-	5-41
Syslog	-	-	A-13

**Table A.10. System Menu**

## Appendix A

---

### SNMP Menu

Parameters	Possible Value	Default value	For more info see page
Enabled	Yes No	No	-
Trap Hosts	[       ]		5-38
Trap Priority	Error Warning Info Fatal	Error	5-40
Community	[       ]		5-19
Trap Path	LAN WAN Both	LAN	5-39
Sys Contact	[       ]		5-37
Sys Name	[       ]		5-37
Sys Location	[       ]		5-37

**Table A.11. SNMP Menu**

## Appendix A

---

### Syslog Menu

Parameters	Possible Value	Default value	For more info see page
Enabled	No Yes	No	-
Host	[ ]		5-24
ID	[ ]		5-25
Default Priority	Info	Info	5-33
SYS Prior	Debug	<Default>	5-33
MGMT Prior	Trace		5-33
NET Prior	Fatal		5-33
Port Prior	Error Warning		5-33

Table A.12. SysLog Menu

## Appendix A

---

### System Menu

Parameters	Possible Value	Default value	For more info see page
Name	[     ]		4-41
Use Switch Time (B)	Yes No	No	-
Switch Time Offset (B)	[     ]	0	-
Console Baud	9600 19200 38400 2400 4800	9600	4-43

**Table A.13. System Menu**

(B) Applies to the Branch Office unit only.

**Appendix A****Utilities Menu**

<b>Menu</b>	<b>Parameters</b>	<b>Possible Value</b>	<b>Default value</b>	<b>For more info see page</b>
<b>System</b>	Set Password	-	-	4-47
	Set Date	-	-	A-16
	Clear log	-	-	5-18
	Dump Log	-	-	5-23
	Dump Config	-	-	5-23
	Reset Stats	-	-	5-33
	Reboot	-	-	4-64
<b>File</b>	Copy to (unit)	-	-	7-12
	Delete	-	-	-
	Edit Config	-	-	7-5
	Optimize	-	-	5-28
<b>Diagnostics</b>	-			A-17
<b>Upgrade</b>	Console Upload	-	-	7-13
	Image File	-	-	7-16
	Configure File	-	-	7-4

**Table A.14. Utilities Menu**

**Appendix A**

---

**Set Date Menu**

<b>Parameters</b>	<b>Possible Value</b>	<b>Default value</b>	<b>For more info see page</b>
Month	Jan-Dec	Current month	4-45
Day of month	[    ] [    ]		4-45
Year	[    ]		4-45
Hour	[    ]		4-45
Minute	[    ]		4-45
Second	[    ]		4-45
Daylight Savings	Enabled	Enabled	4-45
	Disabled		4-45

**Table A.15. Set Date Menu**

## Appendix A

---

### Diagnostics Menu

Menu	Parameters	Possible Value	Default value	For more info see page
<b>Test IP</b>	Begin Test			
	IP Address	[     ]		
	Count	[     ]	5	
<b>Test WAN</b>	Begin Test			6-19
	WAN Port	[     ]	1	-
	Count	[     ]	20	-
	Packet Size	[     ]	10	-
	Timeout	[     ]	10	-
<b>Reset WAN</b>				-
<b>Reset Port</b>				-

Table A.16. Diagnostics Menu

## **Appendix A**

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## **Appendix**

# **B**

### **Bandwidth Requirements for RVP\_Direct**

This Appendix provides information on the required bandwidth necessary to accommodate remote users connected to the PBXgateway using a synchronous-serial connection via a WAN port.

## **APPENDIX B: BANDWIDTH REQUIREMENTS**

### **Overview**

One of the most important factors in the success of your PBXgateway is to determine the necessary network bandwidth needed for your application. This Appendix will explain how to determine the size of the required bandwidth that will be needed in your application of the PBXgateway units. Determining the appropriate bandwidth is truly a function of two factors:

- Number of Users (Phones)
- Voice Compression for Each User

### **Number of Users**

The number of users is the number of simultaneous users (digital phones) that will be extended at any given branch location. Physically, there could be up to twelve simultaneous users for each PBXgateway unit.

## Appendix B

---

### Voice Compression

The PBXgateway deploys voice compression in order to extend multiple users across fewer data channels. The PBXgateway supports the following voice compression algorithms: 32 Kbps ADPCM, 24 Kbps ADPCM and G.729A. Depending on the voice compression algorithm selected, you may need anywhere from 16 Kbps (G.729A) up to 40 Kbps (ADPCM 32) per user.

**Compression Algorithms vs. Corresponding Bandwidth Size**

<b>G.711</b>	<b>ADPCM 32</b>	<b>ADPCM 24</b>	<b>G.729A</b>
64 (72) Kbps	32 (40) Kbps	24 (32) Kbps	8 (16) Kbps

- ( ) Maximum value of the combined compression bandwidth and the signaling between the Switch and Remote units. This number reflects both parties talking simultaneously in a voice conversation. Under normal conditions, this number will be lower.

Using the bandwidth management formula on the next page, you can determine the total bandwidth necessary to support your application. If you have excess bandwidth on your network circuit, your network terminating devices could allow you to use that bandwidth to connect to a router or even another PBXgateway. In order to accomplish this, you must have the multi-port capability on your CSU/DSU. For more information on your network terminating devices, please see the Network Terminating Equipment section of the Application Notes & Quick Installation Guide.

## **Appendix B**

---

### **Selecting the Proper Voice Compression**

The best voice quality is achieved by using the ADPCM 32 compression. The maximum quality comes at the expense of the highest utilized bandwidth. The largest voice compression is achieved by using G.729A. If you are using this algorithm, you will save on bandwidth and still achieve voice quality that is regarded as near toll. If absolute conversation quality is your focus and bandwidth is no object, you probably want to select ADPCM 32. If bandwidth is a priority you will employ G.729A.

If you are using different compression algorithms for each individual user (port), use the following formula to establish your aggregate data bandwidth needs.

$$\underline{\mathbf{A}} \times 16 + \underline{\mathbf{B}} \times 32 + \underline{\mathbf{C}} \times 40 = \underline{\mathbf{D}}$$

**A:** number of G.729A

**B:** number of ADPCM 24

**C:** number of ADPCM 32

**D:** Total Bandwidth

Divide this bandwidth by either 64 or 56, in order to establish the correct number of DS0 channels to be used.

Example: If your DS0s on your CSU/DSUs are set up for 56Kbps, use 56 and if they are set up for 64Kbps DS0s, use 64.

---

## **Appendix**

# **C**

### **Extender 6000 Phone-Set Interface**

Provided for reference only.

This Chapter provides information on the Phone-Set Interface. This interface provides the system administrator with limited configuration parameters using a digital telephone keypad for input commands.

## APPENDIX C: PHONE-SET INTERFACE

**Introduction** The Phone-Set interface is used for setting limited configuration parameters for the Extender remote unit from a two-wire digital phone.

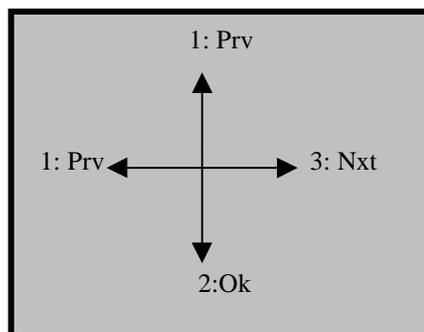
**Settings include:**

- Console Data Rate
- IP Parameters
- Default Route

**How to access the Phone-Set interface** Press 'Hold' key (on the phone) four times.

**Menu Legend** The user navigates through the Phone-Set interface using the keypad on the phone. The menu legend (Figure C-1, below) shows each applicable numeric key and the screen or command that it corresponds to within the interface.

Prv: Previous Screen  
Nxt: Next Screen  
Ok: Accept changes

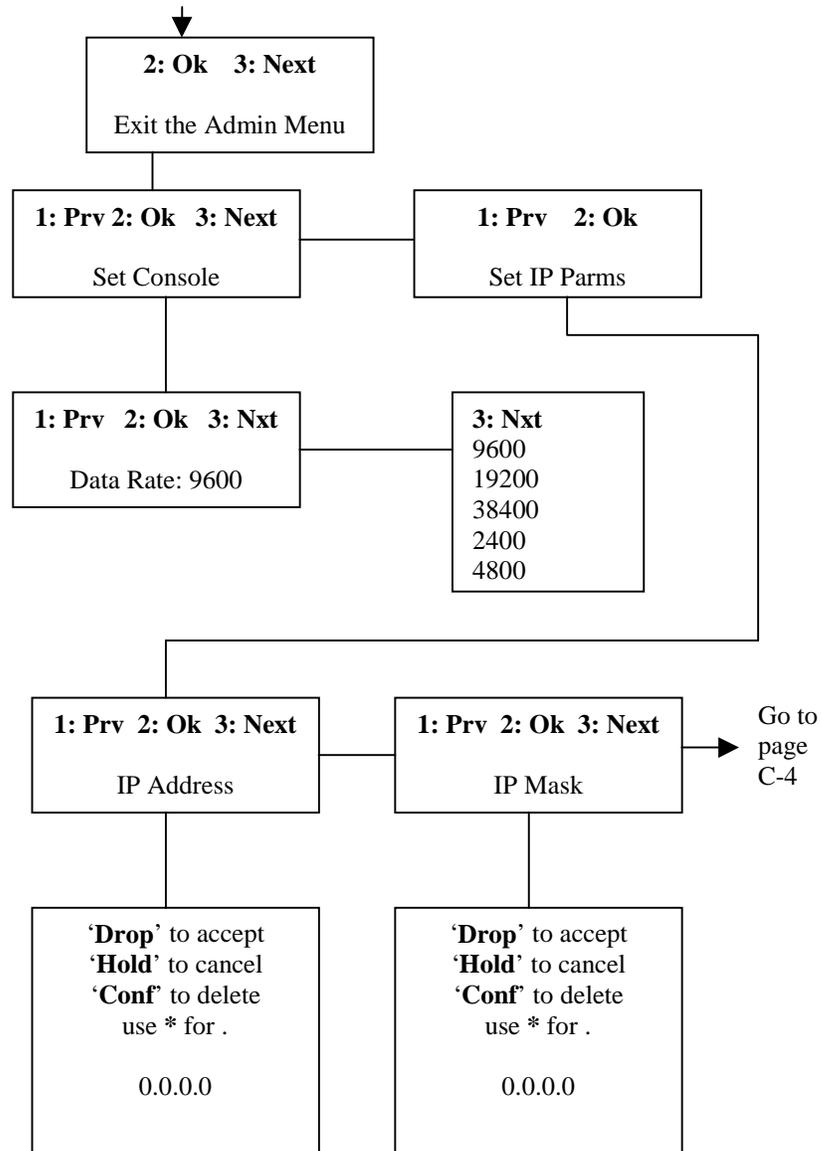


**Figure C-1. Menu Legend**

## Appendix C

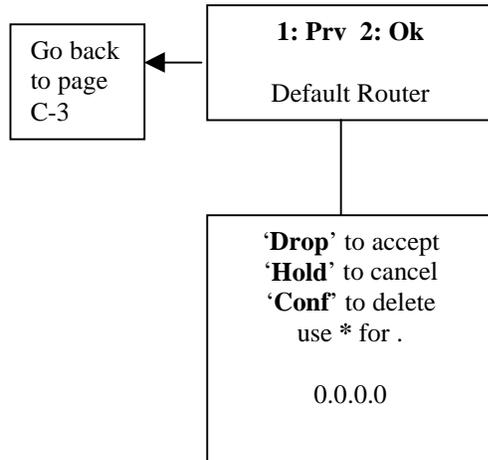
---

*Note: Once in the interface this is the first screen displayed.*



## Appendix C

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## **Appendix**

# **D**

### **SNMP**

This Chapter provides information on the PBXgateway Simple Network Management Protocol (SNMP) parameter.

## Appendix D

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### Introduction

The PBXgateway supports the Simple Network Management Protocol (SNMP) for monitoring the PBXgateway and multiple Remote units.

**SNMP:** The network management architecture for managing virtually any network type including TCP/IP and other protocols (IPX, etc...). SNMP operates on top of the Internet Protocol (IP). The purpose of SNMP is to flag failures, or error conditions with the Switch and/or Remote units and to automatically notify the network administrator. Error conditions are sent as SNMP “traps”.

**Trap:** SNMP mechanism permitting a device to send an alarm to a management workstation.

**MIB:** The network administrator must load a MIB file (Management Information Base) to properly monitor the PBXgateway Switch and remote units. This file contains numerous tables based on the MI Status tables and provides information such as error counts, and the on/off status of both the Switch and Remote units. (for reference see page D-3 *MIB vs. Status Menu comparison*)

The latest MIB files are available at [www.mck.com](http://www.mck.com).

#### Extender MIB files:

\*.**mib:** This file contains necessary information for controlling the Extenders.

#### HP® Openview (or equivalent)

A third party software package that must be installed and running on the network administrator's workstation to view and monitor all SNMP traps.

**Appendix D**

**MI Status Menu vs. MIB Group Table**

MI Status Menu (path: Switch->Status->WAN Stats)	MIB Group Table																								
<pre> Telnet - 192.168.101.56 Connect [0] Terminal Help Switch-&gt;Status-&gt;WAN-&gt;WAN Stats ----- WAN Port          1          2 ----- RX Packets        1009028      0 RX Bytes          14419906     0 RX CIS Lost       0             0 TX Overruns       0             0 TX Queue Busy     0             0 TX Queue Busy Bytes 0             0 TX Packets Queued 34            0 TX Packets Dequeued 34           0 TX Queue Full     0             0 TX Framing Err    0             0 RX Framing Err    0             0 RX Parity Err     0             0 RX CRC Err        0             0 RX Overruns       0             0 RX DCD Lost       0             0 RX Queue Busy     0             0 RX No Buffers     0             0 RX Task Busy      0             0 RX Appl Busy      0             0 RX Errors         0             0           </pre>	<table border="1"> <thead> <tr> <th>Group Name:</th> </tr> </thead> <tbody> <tr><td>extWANStatGroup</td></tr> <tr><td>extWAN</td></tr> <tr><td>extWANPortType</td></tr> <tr><td>extWANPortState</td></tr> <tr><td>extWANPortEnabled</td></tr> <tr><td>extWANTxPackets</td></tr> <tr><td>extWANTxBytes</td></tr> <tr><td>extWANRxPackets</td></tr> <tr><td>extWANRxBytes</td></tr> <tr><td>extWANTxCTSLOst</td></tr> <tr><td>extWANTxUnderruns</td></tr> <tr><td>extWANTxQueueBusy</td></tr> <tr><td>extWANTxQueueBusyBytes</td></tr> <tr><td>extWANTxPacketsQueued</td></tr> <tr><td>extWANTxPacketsDequeued</td></tr> <tr><td>extWANTxQueueFull</td></tr> <tr><td>extWANTxFramingErr</td></tr> <tr><td>extWANRxFramingErr</td></tr> <tr><td>extWANRxParityErr</td></tr> <tr><td>extWANRxCRCErr</td></tr> <tr><td>extWANRxOverruns</td></tr> <tr><td>extWANRxDCDLOst</td></tr> <tr><td>extWANmode</td></tr> </tbody> </table>	Group Name:	extWANStatGroup	extWAN	extWANPortType	extWANPortState	extWANPortEnabled	extWANTxPackets	extWANTxBytes	extWANRxPackets	extWANRxBytes	extWANTxCTSLOst	extWANTxUnderruns	extWANTxQueueBusy	extWANTxQueueBusyBytes	extWANTxPacketsQueued	extWANTxPacketsDequeued	extWANTxQueueFull	extWANTxFramingErr	extWANRxFramingErr	extWANRxParityErr	extWANRxCRCErr	extWANRxOverruns	extWANRxDCDLOst	extWANmode
Group Name:																									
extWANStatGroup																									
extWAN																									
extWANPortType																									
extWANPortState																									
extWANPortEnabled																									
extWANTxPackets																									
extWANTxBytes																									
extWANRxPackets																									
extWANRxBytes																									
extWANTxCTSLOst																									
extWANTxUnderruns																									
extWANTxQueueBusy																									
extWANTxQueueBusyBytes																									
extWANTxPacketsQueued																									
extWANTxPacketsDequeued																									
extWANTxQueueFull																									
extWANTxFramingErr																									
extWANRxFramingErr																									
extWANRxParityErr																									
extWANRxCRCErr																									
extWANRxOverruns																									
extWANRxDCDLOst																									
extWANmode																									

**Table D-1. Status Menu vs. MIB Table**

**IMPORTANT NOTE:**

This is an example of the MIB files internal group, in this case it is the *extWANStatsgroup*. This is an internal table within the Extender MIB file which accommodates every status entry for the *Status menu* within the MI.

This example applies to all of the status menus for the Extender and PBXgateway units. All status menus within the MI correlates to a MIB table.

## Appendix D

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### **Major Groups of the Extender MIB**

<b>MIB Group</b>	<b>Management Interface (MI) Menu</b>	<b>Page</b>
extSystemGroup	Status->System->General Info	D-5
extInfoTable	Status->Connect->Connect Info	D-6
extStatisticsTable	Status->Connect->Connect Stats	D-7
extPortStatTable	Status->Port	D-8
extWANStatTable	Status->WAN->WAN Stats	D-9
extBandwidthUsageTable	Status->WAN->WAN Bandwidth	D-10
extDiagnosticTable	Status-> System->HW Diagnostics	D-10
extPortTable	Status->Port->Port Stats	D-11
extAlarmNotificationGroup	The "LOG messages" that appear in the LOG.	D-12
extSnmpControlGroup	Configuration->IP	D-12
extTopologyGroup	Defines product relationships	D-13
extSuspendTable	Call Suspend information, if available.	D-13
extRVPPDirectGroup	Remote->Config->Connect->RVPPDirect	D-14
extRVPOverIPGroup	Remote->Config->Connect->RVPOverIP	D-14

**Table D-2. MIB verses MI**

## Appendix D

---

### **MIB Group Tables**

<b>Group Name:</b>	<i>Description</i>
extSystemGroup	
extHardwareType	Indicates if unit is "Switch (Gateway)" or "Remote".
extSystemName	This is the name specified in the "Configuration->System" menu.
extSerialNumber	Serial number of unit.
extTimeBooted	Time that the unit was last booted.
extIPAddress	The IP address of the unit.
extMACAddress	The MAC address of the unit.
extRuntimeVersion	The version of software that is running.
extPLDVersion	Version of PLD.
extSignalDSPVersion	Version of Signal DSP.
extVoiceDSPVersion	Version of Voice DSP.
extFlashVersion	Version of FLASH.
extROMVersion	Version of ROM.
extHardwareVersion	Version of Hardware.
extSerialPorts	Number of serial ports.
extPhonePorts	Number of digital phone ports.
extDRAM	Size of DRAM.
extHeap	Size of HEAP.
extFlash	Size of FLASH.
extBandwidthAvailable	The bandwidth available on WAN port.
extDCESupportVersion	Version of DCE Support.

**Table D-3. extSystemGroup**

## Appendix D

---

<u>Group Name:</u>	<u>Description</u>
extInfoTable	
extInfoPort	Ports 1-12.
extInfoCurrentState	State of port: UP, RD, NC, XX, VC, AN, CS
extInfoDuration	The duration in current state.
extInfoExtended	Indicates if port is extended.
extInfoOffHook	Indicates ports offhook.
extInfoVoice	The compression algorithm used.
extInfoSignalPort	Connection method for Signal: WAN1, WAN2, IP
extInfoVoicePort	Connection method for Voice: WAN1, WAN2, IP
extInfoLostSignal	Amount of Lost Signal errors.
extInfoV42Resync	Number of V42 Resync errors.
extInfoV42FarResync	Number of V42 FarResync errors.
extInfoV42Retries	Number of V42 Retry errors.
extInfoV42Timeouts	Number of V42 Timeout errors.

**Table D-4. extInfoTable**

## Appendix D

---

<b>Group Name:</b>	<i>Description</i>
extStatisticsTable	
extStatConnectTries	Amount of connect attempts.
extStatConnections	Amount of successful connections.
extStatByUser	Amount of Disconnects by User.
extStatCarrierLost	Amount of Disconnects from Lost Carrier.
extStatPortOffline	Amount of Disconnects from port being offline.
extStatPortInUse	Amount of Disconnects because port was in use.
extStatNoVoice	Amount of Disconnects because there was no Voice Path (no bandwidth).
extStatBadPassword	Amount of Disconnects from wrong Password being entered.
extStatBlockedCalls	Number of Blocked Calls (no bandwidth).
extStatLostSignalStat	Total Disconnects from Lost Signal
extStatLostSigDisconnect	Number of Disconnections due to Lost Signal.
extStatLostSigReconnect	Number of Reconnections due to Lost Signals (only applies to Call Suspend).

**Table D-5. extStatisticsTable**

## Appendix D

---

<b><u>Group Name:</u></b>	<i>Description</i>
extPortStatTable	
extPstatPercentVC	Percentage value of all call types that User/Port was on a "VC" (Voice Call).
extPstatPercentUP	Percentage value of all call types that User/Port was "UP" (connected).
extPstatPercentRD	Percentage value of all call types that User/Port was "RD" (ReaDy).
extPstatPercentNC	Percentage value of all call types that User/Port was "NC" (Not Connected).
extPstatPercentXX	Percentage value of all call types that User/Port was "XX" (disabled).
extPstatVCcount	Number of "Voice Calls" in minutes.
extPstatVCaverage	The average number of "Voice Calls".
extPstatUPcount	The number of minutes the User/Port has been "UP".
extPstatUPaverage	The average number of minutes the Port has been "UP".
extPstatRDcount	The number of minutes the User/Port has been "RD".
extPstatRDaverage	The average number of minutes the Port has been "RD".

**Table D-6. extPortStatTable**

## Appendix D

<b>Group Name:</b>	<i>Description</i>
extWANStatTable	
extWAN	Shows WAN ports: WAN1, WAN2
extWANPortType	Shows WAN port type: Sync
extWANPortState	State of WAN port: UP, DN, INIT, CNCT
extWANPortEnabled	WAN enabled state: Enabled, Disabled.
extWANTxPackets	Number of Transmitted packets.
extWANTxBytes	Number of Transmitted bytes.
extWANRxPackets	Number of Received packets.
extWANRxBytes	Number of Received bytes.
extWANTxCTSLost	Number of times CTS signal was lost
extWANTxUnderruns	Number of times WAN Transmit buffer was empty.
extWANTxQueueBusy	Number of times Transmit queue was busy.
extWANTxQueueBusyBytes	Number of Transmit bytes queued.
extWANTxPacketsQueued	Number of Transmit packets queued.
extWANTxPacketsDequeued	Number of Transmit bytes dequeued (lost).
extWANTxQueueFull	Number of times the Transmit queue was full.
extWANTxFramingErr	Number of Transmit Framing errors.
extWANRxFramingErr	Number of Receive Framing errors.
extWANRxParityErr	Number of Receive parity errors.
extWANRxCRCErr	Number of Receive Cyclic Redundancy Check errors.
extWANRxOverruns	Number of times Receive buffer was full, and data had to be resent.
extWANRxDCDLost	Number of times Receive DCD signal was lost.
extWANRxQueueBusy	Number of times Receive queue was busy.
extWANRxNoBuffers	Number of times no Receive buffers available.
extWANRxTaskBusy	Number of times Receive capability was busy.
extWANRxApplBusy	Number of times Receive Applet was busy.
extWANRxErrors	Number of Receive errors.
extWANspeed	WAN port speed.
extWANmode	WAN mode setting: Sync

**Table D-7. extWANStatTable**

## Appendix D

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<b><u>Group Name:</u></b>	<i>Description</i>
extBandwidthUsageTable	
extBandwidthIndex	Indicates the sample times: every hour
extBandwidthTime	Time at which each sample occurred.
extBandwidthSent	Bandwidth sent during sample period.
extBandwidthClipped	Bandwidth clipped during sample period.
extBandwidthPercentage	The percentage of available bandwidth, equals (BW Sent / BW Clipped).

**Table D-8. extBandwidthUsageTable**

<b><u>Group Name:</u></b>	<i>Description</i>
extDiagnosticsTable	
extDiagTest	Names of Diagnostics tests.
extDiagResult	Results of Diagnostics tests.

**Table D-9. extDiagnosticsTable**

## Appendix D

<b><u>Group Name:</u></b>	<i>Description</i>
extPortTable	
extPtabPortID	The Port ID names.
extPtabEnabled	The “Enabled” value in the Ports Default & 1-12 menus.
extPtabAutoConnect	The “Auto connect” value in the Ports Default & 1-12 menus.
extPtabBanner	The “Banner” value in the Ports Default & 1-12 menus.
extPtabDescription	The “Description” value in the Ports 1-12 menus.
extPtabUserID	The “User ID” value in the Ports 1-12 menus.
extPtabLogout	The “Logout” value in the Ports 1-12 menus (Remote only).
extPtabVoiceMethod	The “Voice” value in the Ports Default & 1-12 menus (Switch only).
extPtabVoicePath	The “Path” value in the Ports Default & 1-12 menus (Switch only).
extPtabVoiceCompanding	The “Companding” value in the Ports Default & 1-12 menus.
extPtabVoiceDTMF	The “DTMF” value in the Ports Default & 1-12 menus.
extPtabVoiceSwitchEcho	
extPtabVoiceRemoteEcho	
extPtabVoiceSilenceDetection	The “Silence Detection” value in the Ports Default & 1-12 menus (Switch only).
extPtabVoicePacketTrace	The “Packet Trace” value in the Ports Default & 1-12 menus (Switch only).
extPtabVoiceJitterDelay	The “Jitter Delay” value in the Ports Default & 1-12 menus (Switch only).
extPtabVoicePacketSize	The “Packet Size” value in the Ports Default & 1-12 menus (Switch only).

**Table D-10. extPortTable**

## Appendix D

---

<b><u>Group Name:</u></b>	<i>Description</i>
extAlarmNotificationGroup	
extAlarm	Log messages that appear in the Log file.

**Table D-11. extAlarmNotificationGroup**

<b><u>Group Name:</u></b>	<i>Description</i>
extSnmpControlGroup	
extSnmpEnabled	Indicates SNMP is enabled.
extTrapPriority	Indicates the Priority setting for SNMP traps to be sent.
extTrapHost1	The IP address or HOST name to send first trap message.
extTrapHost2	The IP address or HOST name to send second trap message.
extTrapHost3	The IP address or HOST name to send third trap message.
extTrapHost4	The IP address or HOST name to send fourth trap message.
extTrapHost5	The IP address or HOST name to send fifth trap message.
extTrapHost6	The IP address or HOST name to send sixth trap message.
extTrapHost7	The IP address or HOST name to send seventh trap message.
extTrapHost8	The IP address or HOST name to send twelfth trap message.
extTrapPath	Path where traps are sent: WAN, LAN, BOTH

**Table D-12. extSnmpControlGroup**

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<b><u>Group Name:</u></b>	<i>Description</i>
extTopologyGroup	
extTopType	The device type of the main unit: Switch, Remote
extTopDevice1	Device type connected to Port 1.
extTopDevice2	Device type connected to Port 2.
extTopDevice3	Device type connected to Port 3.
extTopDevice4	Device type connected to Port 4.
extTopDevice5	Device type connected to Port 5.
extTopDevice6	Device type connected to Port 6.
extTopDevice7	Device type connected to Port 7.
extTopDevice8	Device type connected to Port 8.

**Table D-13. extTopologyGroup**

<b><u>Group Name:</u></b>	<i>Description</i>
extSuspendTable	
extSuspendEnabled	Indicates if Call Suspend is Enabled.
extSuspendRvpMethod	
extSuspendIpDestination	The IP address or HOST name to connect to, from Call Suspend.
extSuspendRemLoginTimeout	
extSuspendTimeout	Call Suspend timeout value.
extSuspendMode	Call Suspend mode used: Ring, Lamp
extSuspendACDTone	Indicates if ACD Tone is enabled for individual Port (Remote only).

**Table D-14. extSuspendTable**

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<b>Group Name:</b>	<i>Description</i>
extRvpDirectGroup	
extRvpDirectPrimaryInterface	The RVP_Direct Primary interface: WAN1, WAN2
extRvpDirectPrimaryDialNum1	The first Primary dial number.
extRvpDirectPrimaryDialNum2	The second Primary dial number.
extRvpDirectSecondaryInterface	The RVP_Direct Secondary interface: WAN1, WAN2
extRvpDirectSecondaryDialNum1	The first Secondary dial number.
extRvpDirectSecondaryDialNum2	The second Secondary dial number.
extRvpDirectUtilization	The RVP_Direct % utilization.
extRvpDirectDialback	Indicates if Dialback is enabled over RVP_Direct.

**Table D-15. extRvpDirectGroup**

<b>Group Name:</b>	<i>Description</i>
extRvpOverIpGroup	
extRvpOverIpInterface	The IP destination address.

**Table D-16. extRvpOverIPGroup**

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### SNMP Set up

This Addendum covers information for installing all support software, accessing and identifying specific trap information, viewing the “Alarm Log” and walking the MIB.

#### Set up steps

1. Load a third party-network management software package, such as HP OpenView®, onto the PC used to manage the PBXgateway Switch and Remote units.

*Note: There are many applications that can be used to manage the SNMP parameters for the Switch and Remote units.*

2. Install the Extender configuration files, available on Lucent’s web site ([www.mck.com](http://www.mck.com)), onto the same PC mentioned in step 1.
3. Add the Extender’s MIB to the third party-network management software package database. This will allow the software to access the status and configuration variables of the Extender.
4. Set the password (Community String) to allow access to the Extender.
5. Format the Trap error messages from the Extender into an easily read form.
6. Enable SNMP within the MI.

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### Install the Extender MIB Files

The Extender MIB files are necessary for the third party software to read the Remote unit status tables, and to receive readable SNMP Trap error messages.

*Note: This procedure assumes that a third party software package has been installed on a PC.*

**Copy the following files into the directories as specified below:**

**mibs\Extenderxxxx.mib** - (where xxxx refers to the Extender release).

Copy to: c:\ov\mibs subdirectory

This file is the MIB for control of the Extender. This file must be compiled into the third party software package.

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### SETTING THE COMMUNITY PASSWORD

The Extender comes with a default SNMP read password also known as a Community String. This password must be specified inside the third party software to allow the user to view MIB objects.

*Note: Before setting the password, the units must have an IP Address assigned by the network administrator and must be part of the software “Network View”.*

#### Procedure

1. Access the “Network View” menu from within the third party software. Click on the Icon of the device to be configured.

*Note: Each Icon should be titled with the IP Address for the device.*

The default read (community) password is: public

2. Type in the password next to Community. Click **OK**. (For information on setting the SNMP Community password, see page 5-19)

*Note: The Set Community password is not used by the Extender and may be ignored.*

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### **Configuring the Trap Host**

The Extender will send alarm messages (SNMP Traps) to any Trap Host whose IP Address has been entered into one of the 12 slots provided in the User Interface SNMP Configuration Menu. These slots are named Trap Host 1, Trap Host 2, etc.

Once an address has been entered into one of these slots, the Extender will send Traps to that address.

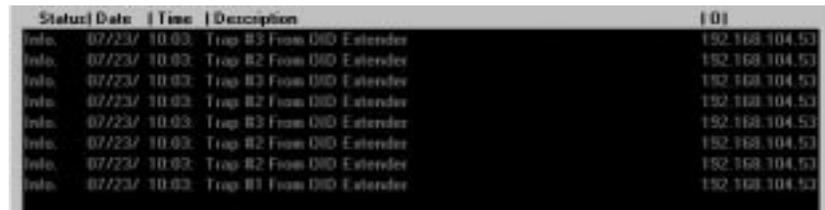
(see page 5-38, for information on setting the SNMP Trap Hosts)

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### Trap Customization

The third part software will receive and display Trap messages from the Extender. But without some configuration these messages will be a confusing list of numbers, as shown in Figure D.2.



Status	Date	Time	Description	IP
Info	07/23/	10:03	Trap: R3 From D80 Extender	192.168.104.53
Info	07/23/	10:03	Trap: R2 From D80 Extender	192.168.104.53
Info	07/23/	10:03	Trap: R3 From D80 Extender	192.168.104.53
Info	07/23/	10:03	Trap: R2 From D80 Extender	192.168.104.53
Info	07/23/	10:03	Trap: R3 From D80 Extender	192.168.104.53
Info	07/23/	10:03	Trap: R2 From D80 Extender	192.168.104.53
Info	07/23/	10:03	Trap: R2 From D80 Extender	192.168.104.53
Info	07/23/	10:03	Trap: R1 From D80 Extender	192.168.104.53

**Figure D.2**

To display friendly and readable Trap messages, the software can be configured to display all the information contained in the Trap Error messages sent by the Extender.

*Note: The Trap messages correlate with “log messages” within the MI. (see Chapter 6 for more information on Log Messages)*

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### **Defining a Fatal Trap**

Below is an example of setting up “HP Openview for Windows” to receive the Log messages from the PBXgateway Extender.

From within the third party software, navigate to the Add Trap window.

1. In the box Number: type: “1”
2. In box Name: type “Extender Fatal Error”
3. In box Severity: select choice “Critical”
4. In box Description: type “\$E, \$1”

*Note: Delete any existing text.*

5. Click on the OK button.

### **Defining an Error Trap**

From within the third party software, navigate to the Add Trap window.

1. In the box Number: type: “2”
2. In box Name: type “Extender Error”
3. In box Severity: select choice “Major”
4. In box Description: type “\$E, \$1”
5. Click on the OK button.

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### Defining a Warning Trap

From within the third party software, navigate to the Add Trap window.

1. In the box Number: type: "3"
2. In box Name: type "Extender Warning"
3. In box Severity: select choice "Warning"
4. In box Description: type "\$E, \$1"
5. Click on the OK button.

### Defining an Info Trap

From within the third party software, navigate to the Add Trap window.

1. In the box Number: type: "4"
2. In box Name: type "Extender Info"
3. In box Severity: select choice "Informational"
4. In box Description: type "\$E, \$1"
5. Click on the OK button.

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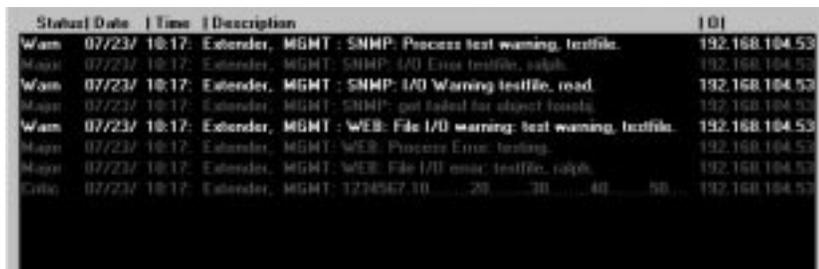
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### Viewing the Customized Alarm Log

#### Procedure

1. Click the Alarm icon.

The Following screen appears:



Status	Date	Time	Description	ID
Warn	07/23/	10:17	Extender, MGMT : SNMP: Process test warning: testfile.	192.168.104.53
Major	07/23/	10:17	Extender, MGMT : SNMP: I/O Error testfile, subfile.	192.168.104.53
Warn	07/23/	10:17	Extender, MGMT : SNMP: I/O Warning testfile, read.	192.168.104.53
Major	07/23/	10:17	Extender, MGMT : SNMP: get failed for object testfile.	192.168.104.53
Warn	07/23/	10:17	Extender, MGMT : WEB: File I/O warning: test warning, testfile.	192.168.104.53
Major	07/23/	10:17	Extender, MGMT : WEB: Process Error: testfile.	192.168.104.53
Major	07/23/	10:17	Extender, MGMT : WEB: File I/O error: testfile, subfile.	192.168.104.53
Critical	07/23/	10:17	Extender, MGMT: 1234567 10 ..... 20 ..... 30 ..... 40 ..... 50 .....	192.168.104.53

**Figure D.3. Customized trap messages**

The Customized trap messages are color coded for identification purposes:

“Red” – Trap messages that are considered Major/Critical.

“Yellow” – Trap messages that are considered a “Warning”

“Purple” – Trap messages that are considered simply “Information”.

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### Using SNMP to monitor & troubleshoot problems

Below is an example of how to use SNMP management to monitor the PBXgateway Extender.

Example: You have a PBXgateway Extender with an IP address of “10.2.1.50”. The Remote Branch has an IP address of “10.5.3.50”.

#### **You want to monitor if there are lost signal conditions.**

Use your SNMP manager to browse the “Extender.mib” and create a TRAP condition on the object name “extStatLostSignalStat”. Get the current threshold value, for example “0”. Trigger the TRAP on when the threshold exceeds “0”.

If there is a Lost Signal condition, as shown in the Management Interface menu under “Status->Connect->Connect Stats”, or anything higher than zero, a message will be indicated on the SNMP manager.

#### **You want to monitor if the CSU/DSU or ISDN Terminal Adapter is failing.**

Use your SNMP manager to browse the “Extender.mib”, for example, the Branch Office unit (IP address “10.5.3.50”) and create a TRAP condition on the object name “extWANRxFramingErr”. Get the current threshold value, for example “0” (should be zero). Trigger the TRAP on when the threshold exceeds “0”.

If the value exceeds zero, the ISDN line or Fractional T1 could be having problems. Investigate the problem.

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## **Appendix**

# **E**

### **Log Messages**

This Chapter provides information on Log Messages. A partial list is provided to define the log message, provide an example for reference, and any required action that should be taken.

## **Log Messages**

**Introduction** Each menu within the MI contains an area to display log messages which provides detailed information on the status and condition of the unit. These messages are grouped into four categories with each one detailing a specific functional area of the Extender operation.

**Message Categories** **The Log Message categories are:**

**MGMT:** These messages include information on configuration and diagnostic conditions of the unit.

**SYS:** These messages include information on the operating system and utilities related to the config files.

**PORT:** These messages include status information for all phone ports and issues related to voice compression and connection details.

**NET:** These messages include status information for both WAN ports and issues related to network connectivity.

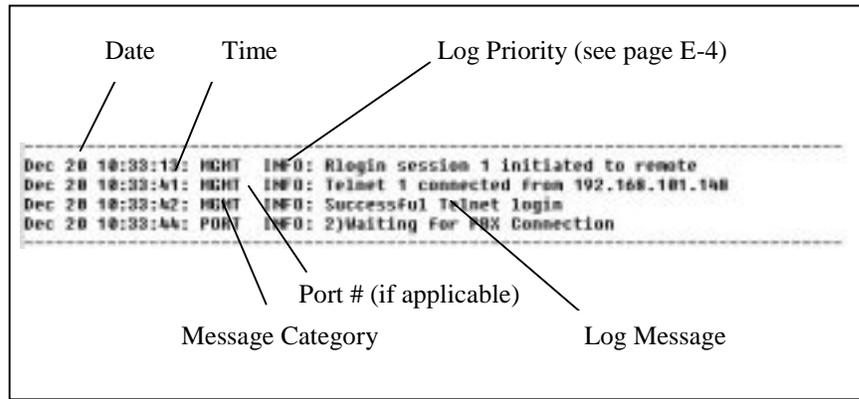
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### Typical message

A typical log message is shown in Figure E.1.

*Note: Every log message contains similar information to provide a date/time stamp followed by a descriptive message.*



**Figure E.1. Typical Log Message**

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### Log Priorities

<b>Log Priority</b>	<b>Definition</b>
<b>Fatal</b>	Unit failed. Contact customer service.
<b>Error</b>	Unit failed but may recover. Try rebooting the unit.
<b>Warning</b>	Unexpected error but unit should still function.
<b>Info</b>	Routine event occurred.
<b>Debug</b>	Details on every event only seen with priority set to "Debug" or "Trace".  <i>Note: Debug messages are NOT included in the following list.</i>
<b>Trace</b>	Details on each and every activity. Only seen with priority set to "Trace".  <i>Note: Trace messages are NOT included in the following list.</i>

**Figure E-1. Log Priorities**

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### Partial list of Log Messages

*Notes:*

- 1. This list is sorted by: 1) Priority, 2) Category, and 3) Message*
- 2. The 'SNMP' column identifies messages which are captured (YES or NO) with and SNMP Trap (see Appendix 'D' for more info).*

<b>Priority</b>	<b>Category</b>	<b>Message</b>	<b>Description/Action</b>	<b>SNMP</b>
INFO	MGMT	Administrator password changed	The administrator changed the administrator password via the MI.	YES
INFO	MGMT	Console logout	The administrator has logged off the console port.	NO
INFO	MGMT	Console upload started	The administrator began uploading a file via the console port.	YES
INFO	MGMT	Console upload succeeded	The file transfer on the console has completed successfully	YES
INFO	MGMT	Flash optimization completed	The administrator completed optimizing the flash file system.	YES

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Priority	Category	Message	Description/Action	SNMP
INFO	MGMT	Flash optimization started	The administrator began optimizing the flash file system via the MI for better performance.	YES
INFO	MGMT	IP test started, sending 5 packets to 192.168.155.1	IP test began sending the indicated number of packets to the initiated IP Address.	NO
INFO	MGMT	IP test complete: round-trip (ms) min/avg/max = 0/2/5	IP test has finished with minimum, average and maximum round-trip packet delay (with a granularity of 5ms).	NO
INFO	MGMT	Completed test on WAN 1	Test WAN completed with no errors.	NO
INFO	MGMT	Resetting all ports(1-8)	The administrator reset all of the phone ports.	YES
INFO	MGMT	Resetting Port 2	The administrator reset the indicated phone port.	YES
INFO	MGMT	Resetting WAN 1	The administrator reset the indicated WAN via the MI.	YES
INFO	MGMT	Rlogin logout	The administrator has logged out of the Rlogin session.	NO

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Priority	Category	Message	Description/Action	SNMP
INFO	MGMT	Rlogin session 1 connected from 192.168.155.1	An incoming Rlogin connection was made.	YES
INFO	MGMT	Rlogin session 1 disconnected	The Rlogin session was disconnected.	NO
INFO	MGMT	Rlogin session 1 initiated from 192.168.155.1	An outgoing Rlogin connection was made.	NO
INFO	MGMT	Starting test on WAN 1	Test WAN started.	NO
INFO	MGMT	Successful FTP login	The administrator has logged on via ftp.	YES
INFO	MGMT	Successful login on the console	The administrator has logged on via the console port.	YES
INFO	MGMT	Successful Rlogin login	The administrator has logged in via Rlogin (Remote/Switch Login)	YES
INFO	MGMT	Successful Telnet login	The administrator has logged on via telnet.	YES
INFO	MGMT	Telnet 2 connected from 192.168.155.1	An incoming Telnet connection was made.	YES
INFO	MGMT	Telnet 2 disconnected from 192.168.155.1	The telnet session was disconnected.	NO
INFO	MGMT	Telnet logout	The administrator has logged out via telnet.	NO
INFO	MGMT	The system clock has been updated	The administrator set the system time.	NO
INFO	MGMT	The system configuration has changed	The administrator changed and saved the system configuration.	YES

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Priority	Category	Message	Description/Action	SNMP
INFO	MGMT	The system configuration has changed and requires a reboot	The administrator changed and saved the system configuration and requires a reboot to take effect.	YES
INFO	MGMT	The system configuration has changed and requires a WAN reset	The administrator changed and saved the system configuration and requires a WAN port to be reset to take effect.	YES
INFO	MGMT	The system statistics have been reset.	The systems stats have been reset, and requires a reboot to take effect.	YES
INFO	MGMT	WAN 1 sent 20 (10 byte) packets, received 20. Avg time: 11(msec)	Test WAN completed. The number of packets sent, received average round trip time, and the size of the packet is displayed.	NO

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Priority	Category	Message	Description/Action	SNMP
WARNING	MGMT	Console upload failed	The file transfer on the console has failed. Check to make sure the baud rates on Branch/Terminal Application are the same. Verify attempting to transfer a .m*t file.	YES
WARNING	MGMT	Failed login on the console	There was a failed administrator login attempt on the console (invalid user/password combination)	NO
WARNING	MGMT	Failed Rlogin login	There was a failed administrator login attempt via Rlogin (invalid user/password combination)	NO
WARNING	MGMT	Failed Telnet login	There was a failed administrator login attempt via telnet (invalid user/password combination)	NO
WARNING	MGMT	SNMP: I/O Warning Trap I/O Write, failed.	The unit was unable to send an SNMP Trap over IP	YES
WARNING	MGMT	Failed FTP login	There was a failed FTP login attempt (invalid user/password combination).	YES

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Priority	Category	Message	Description/Action	SNMP
WARNING	MGMT	SNMP: Process Trap Packet build, failed.	The unit was unable to send an SNMP Trap because it had a problem building the Trap message.	YES
WARNING	MGMT	Successful FTP login	The administrator logged in via FTP to transfer files.	YES
WARNING	MGMT	Unable to test WAN 1, ports are in use	The administrator attempted to Test WAN while phone ports are in use. Need to ensure the phone ports are not in use to ensure voice quality.	NO
WARNING	MGMT	WEB: File I/O Error: /flash0/default.m6b , open.	The unit was unable to open or create a file on the flash file system or ramdisk, which the Web server requires.	YES
ERROR	MGMT	Password is corrupt - access denied	The stored password was corrupted. Contact tech support.	YES

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Priority	Category	Message	Description/Action	SNMP
ERROR	MGMT	SNMP: I/O Error proxy I/O Write, failed.	An attempt failed to send an SNMP Trap across a WAN link via a SNMP proxy.	YES
ERROR	MGMT	WAN 1 test failed: Network Error	Test WAN failed due to a network error. Check WAN configuration, DSU/CSU configuration and cabling.	NO
ERROR	MGMT	WEB: File I/O Error: int_msg.txt, open.	An error occurred while the web server was trying to perform a file I/O operation (such as open, read, write, or rename) on the specified file. This may prevent the web server from launching.	YES
ERROR	MGMT	WEB: Process Error: Init. OCB, unable launch HTTP server.	An error occurred during initialization of the unit, which prevents it from launching the Web server.	YES

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