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A blue-tinted background image showing a call center environment with several people working at desks.

# **EXTender™ 6000**

## **Quick Installation Guide**

G-6000-RXM Rev AI  
May 20, 2005

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## Purpose of this Document

This document provides the step-by-step process for the complete installation, basic configuration, and troubleshooting of the EXTender 6000 for Branch Offices.

## Naming Convention

The EXTender 6000 is also referred to as the EXTender or the Remote Unit within this document.

## Safety Considerations



### IMPORTANT SAFETY INSTRUCTIONS

- Do not install this product near water.  
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 place this product where anyone can step on the cord.
- Do not operate the system if chemical gas leakage is suspected in the area. Use a telephone located in another, safe area to report the trouble.

## Support Telephone Numbers

For Customer Support please contact MCK technical assistance at 1-888 454-5828 between 8:30am - 8:00pm (EST). If you are outside North America please dial 1-617-454-6192.

**NOTE:** *RemoteConneX is not available in Europe.*

# Specifications

## Regulatory Approvals

FCC	Parts 15 & 68, Subpart B, Class B
NRTL/C	CSA Standard C22.2 No.0-M91, 225-M90
CE Mark	EN50081-1, EN50082-1, EN60950
Industry Canada	CS-03
UL Standard	950

## System Architecture

CPU	Motorola 68 MH360, 33MHz
DSP	5 Analog Devices 2187, 52 MIPS
Memory	
DRAM	4MB
Flash Memory	4MB
Boot ROM	512KB

## WAN Ports

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

## Interfaces

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

## Voice

Voice compression G.729a, G.711, G.726 (ADPCM 32 and ADPCM 24)

## Protocols and Services

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

## Electrical

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

## Environment

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

## Dimensions

17 in x 8 in x 1 3/4 in (432 mm x 203 mm x 44 mm)

## Weight

6 lbs 7 oz (3 kg)

## Prerequisites for Installation

You must meet the following requirements before installing the EXTender 6000:

### Network Requirements

- You must install and configure appropriate network terminating devices at both the corporate facility and the branch office. Both network-terminating devices must be fully functional and both must support an RS-232, V.35, or RS-530 synchronous, asynchronous or Voice over IP (VOIP) interface.
- If you use an asynchronous connection, you must install the appropriate ISDN Terminal Adapters (TAs), from the list below. The TAs must be operational at both the corporate facility and the Branch Office. This list is complete as of the release date of this document. Refer to the MCK's Web site: <http://www.mck.com/> for the most recent list of recommended ISDN TAs. If using a synchronous connection please see page 19 for more information.

**Table 1: ISDN TAs**

Manufacturer	Model
3Com	3Com U.S. Robotics
Adtran	ISU 2X64 ISU 128 Express NTU Express 3000
Motorola	Bitsurfr Pro (rev 1M) Bitsurfr Pro EZ Bitsurfr Pro for Europe
--	<MANUAL_SETUP_1> <MANUAL_SETUP_2>
* Connect	IQ 400 Series
* Multitech	IWAY Hopper (Async only)

*\* European Use*

**Note:** For the Async-RS 232 Dial feature to work properly for these devices, you must set up each device to accept incoming "AT Commands". Consult the documentation provided with each device for proper instructions.

Provide proper wiring with adequate punchdown blocks to connect the Remote Unit to the telephones. Follow the details in Pin Out Assignments on page 14, and provide an RJ-21 female connector.

## **ISDN Requirements (for asynchronous connections)**

Before you install your units, order an ISDN BRI line at both the local site and the remote branch office. This ISDN line should be capable of the following:

- The ability to make two “data” calls, one on each B Channel of the ISDN line.
- If long distance, both “data” calls must be set up as “data”.

*Note: Confirm this with your long distance provider when you order your ISDN Line. A call is defined as “voice” or “data” in the setup message.*

## **Information for the System Administrator**

When your ISDN BRI line is installed, you receive two Service Profile Identifiers (SPIDs) and two Directory Numbers (DNs). Provide these numbers to the System Administrator. Record the SPID and DN information and keep it in a safe place for reference when installing the ISDN TAs. If you do not have the SPIDs or DNs, you cannot program the ISDN TAs.

# Compatible Telephones

## Alcatel

Reflexes 4023  
Reflexes 4034  
Reflexes 4035

## Avaya

6402+ \*  
6408+  
6416D+  
6424D+  
8403  
8410D  
8410DR  
8434DX  
CallMaster III  
CallMaster IV  
CallMaster V  
CallMaster VI  
Gray Market  
9031DCP

*\* This digital display telephone is NOT recommended for administrative purposes.*

## Ericsson

Dialog 3200  
Dialog 3201  
Dialog 3202  
Dialog 3203  
Dialog 3210  
Dialog 3211  
Dialog 3212  
Dialog 3213  
AOM  
Ericsson headset

## Panasonic DBS Digital Telephones

VB-41200 DSLT Digital Single Line Telephone  
VB-44210 16 key standard phone  
VB-44220 22 key standard phone  
VB-44223 22 key small-display speakerphone  
VB-44224 22 key small-display speakerphone (voice recognition)  
VB-44225 22 key large-display speakerphone  
VB-44230 34 key standard phone  
VB-44233 34 key small-display speakerphone

## Panasonic DBS Supported Add-on Modules

VB-44310 EM24 - 24 Button Expansion Module  
VB-44320 DSS72 - 72 Button DSS/BLF Module

## Iwatsu ADIX Digital Telephones

The EXTender will support many of the ADIX digital telephones. It is recommended that each telephone connected to the EXTender have a display. The use of display telephones provides important status information regarding the connection to the PBXgateway.

## Magix Digital Telephones

4424LD+  
4424D+  
4412D+  
4406D+  
4400D+  
4400+

## Nitsuko i-Series Digital Telephones

92550 - Digital Single Line  
92753 - 12 Line, 22 Button, with Display  
92750 - 12 Line, 22 Button, no Display  
92783 - 24 Line, 34 Button, with Display  
92760 - 18 Line, 28 Button, no Display  
92763 - 18 Line, 28 Button, with Display  
92773 - 24 Line, 34 Button, Super Display

*Note: A minimum of one display telephone is required on each EXTender.*

IX-8KTD and IX-8KTS  
IX-12KTD-2 and IX-12KTS-2  
IX-24KTD and IX-24KTS  
IX-MKT  
IX-VTA

**Nitsuko i-Series Digital  
Telephones**

92550 - Digital Single Line  
92753 - 12 Line, 22 Button, with Display  
92750 - 12 Line, 22 Button, no Display  
92783 - 24 Line, 34 Button, with Display  
92760 - 18 Line, 28 Button, no Display  
92763 - 18 Line, 28 Button, with Display  
92773 - 24 Line, 34 Button, Super  
Display

**Nortel**

**Meridian**

M2006 \*  
M2008 \*  
M2216  
M2317  
M2616  
M2616CT  
M3903  
M3904  
M3905

**Norstar**

M7100 \*  
M7208  
M7310  
M7324  
M7410  
ATA2  
T7208  
T7316  
T7316E

*\* This digital display telephone is NOT  
recommended for administrative  
purposes*

**Toshiba**

DKT 2004  
DKT 2010-SD  
DKT 2020-SD

## Parts provided with the EXTender

**Table 2: Part Provided with the EXTender**

Quantity	Description
1	EXTender 6000
1	Power Cord
1	DB-25, RS-530 cable
1	DB-9 RS-232 cable
1	Cat 5 Ethernet Cable
-	Mounting Hardware
2	Mounting Brackets
1	Quick Install Guide

## Parts not provided with the EXTender

- Digital telephones and communication line cords are NOT supplied with this system.

*Note: Use two-wire digital telephones only.*

- Punchdown blocks necessary to interface between the RJ-21 connector and the remote telephones.
- 50 pin cable with male RJ-21 connectors to interface between the punchdown block and the EXTender. (See Pin Out Assignments on page 14)
- Analog telephone line for local use, if you purchased an analog line card.

*Note: The analog line card is not available outside North America.*

## Installation Considerations

- The system operates from 100-240 VAC, 50-60 Hz. Do not apply power to the unit until instructed to in the installation procedures.
- Install the power supply and cabling away from high power/high RF noise devices such as computers, fans, fluorescent ballast, or power supplies.
- Use good wiring practices. Do not run wires over fluorescent lights, computers, air conditioners, etc., as this can introduce noise to the modems.
- The distance from the telephones to the EXTender should NOT exceed 500 feet.

# Typical Installation

The figure below shows a typical installation of the EXTender.

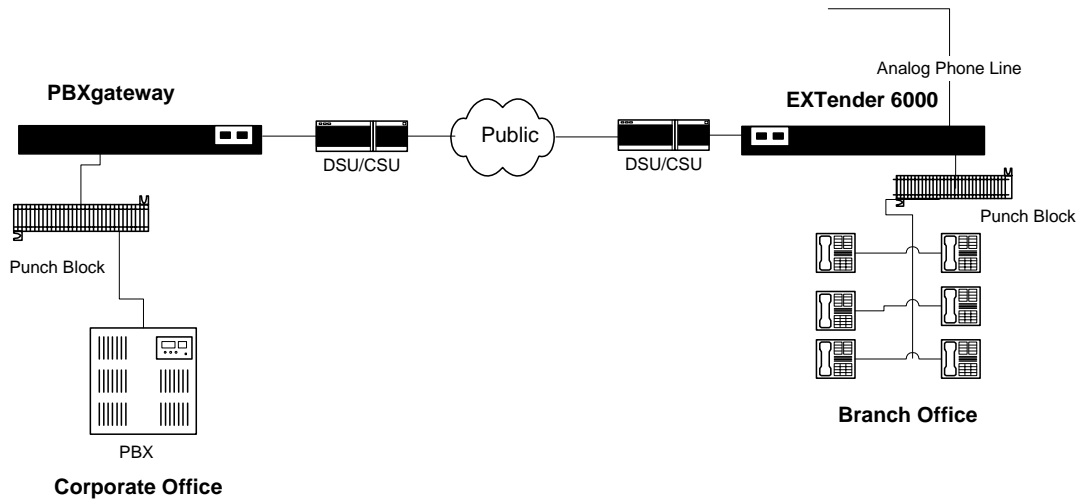


Figure 1: Typical 6000 Installation

## Mounting the EXTender 6000

You can mount the EXTender in a standard 19-inch communication rack using the brackets provided or simply place it on a shelf within the rack.

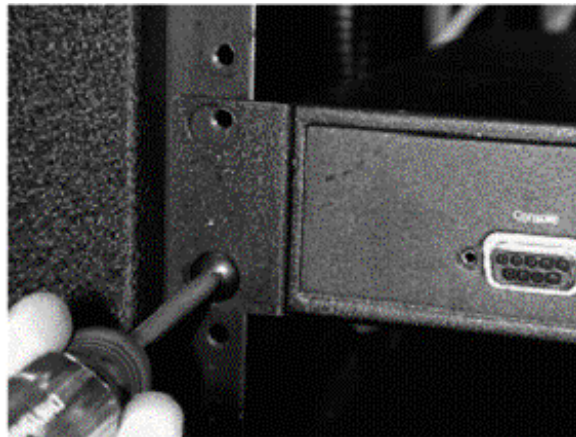
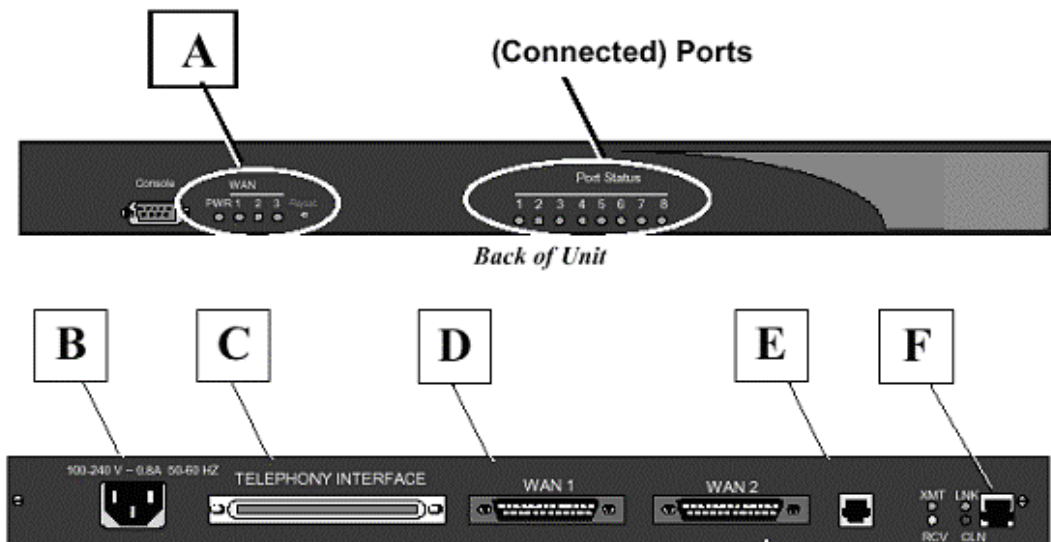


Figure 2: Securing the Unit to a Rack

## Connections to the EXTender 6000

The following figures show the required EXTender connections, A through C.

**Note:** Connection “D” is for synchronous or asynchronous-serial only; “E” is for connection to an analog line; and connection “F” is for VOIP.



**Figure 3: Front and Back of EXTender 6000**

**Table 3: EXTender Connections**

Letter	Label	Cable Type	Description
A	Console	DB-9	Connect to a PC COM port  <i>Note: Set the COM port as follows: Baud rate: 9600, Databits: 8, Parity: none, Stopbits: 1, Software flow control: Xon/Xoff.</i>
B	-	Power	Connect to a 120 VAC outlet
C	Telephony Interface	RJ-21	Wire to a punchdown block and then to the PBX. (See Pin Out Assignments on page 14)
D	WAN1	DB-25, serial, straight-through	Connects the EXTender to a synchronous or asynchronous- serial device (CSU/DSU or other network device).  <i>Note: Use an RS-530 type cable or DB-25 to M34 cable should for high-speed links to V.35 equipment.</i>
E	Analog (if purchased)  <i>Note: Not available outside of North America.</i>	RJ-11	Connects to an analog line for local dialing.  <i>Note: This port does not provide PBX functionality or features.</i>
F	LAN	RJ-45 Ethernet	Connects the EXTender to the LAN for use in VOIP applications.

## Telephony Wiring (RJ-21)

**Table 4: Pin Out Assignments**

Pin	Cable Pair	Port	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

**Wire Color Abbreviations:**

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

## VT-100 Setup

Make sure the EXTender is connected as shown on page 12.

You must use communications software — for example, HyperTerminal — to configure and test the EXTender. Attach one end of the RS-232 cable to your PC COM port and the other end to the DB-9 Console port connector on the front of the EXTender.

Set up HyperTerminal as follows:

<b>A</b>	Access: Start button > Programs > Accessories > HyperTerminal folder > HyperTerminal icon.
<b>B</b>	When prompted for a name, type <b>gateway</b> and click <b>OK</b> .
<b>C</b>	(Determine what port [n] you will connect to on your pxc. At the Telephone Number dialog, select Connect using = <b>Direct to COMn</b> (ignore other settings) and click <b>OK</b> .
<b>D</b>	At the COMn <sup>1</sup> Properties dialog, set the parameters to <b>9600, 8, none, 1</b> and <b>Xon/Xoff</b> and click <b>OK</b> .
<b>E</b>	When the HyperTerminal window appears, it is blank; that is, there is no logon prompt.
<b>F</b>	Click on <b>File</b> , then <b>Properties</b> . Select <b>Settings</b> tab and go to <b>Emulation</b> window. Select <b>VT100</b> and click <b>OK</b> .

<sup>1</sup> n is the number of the COM port on the PC.

Go to *Power-Up* sequence on the next page.

## Power-Up

Once the VT-100 program is set up, plug the unit into an AC outlet. The device begins a series of self-diagnostic tests, which are displayed as a series of LED flashes.



**Figure 4: Back of Unit (LAN Connections)**

### LAN Notes:

*The state of the LEDs labeled XMT (Transmit), RCV (Receive), and CLN (Collision) varies depending on the status of the network. These LEDs are not critical for verifying the Sequence”.*

*LNK LED should be solid green.*

*If you are connecting an EXTender to an IP network, the unit requires an assigned IP address.*

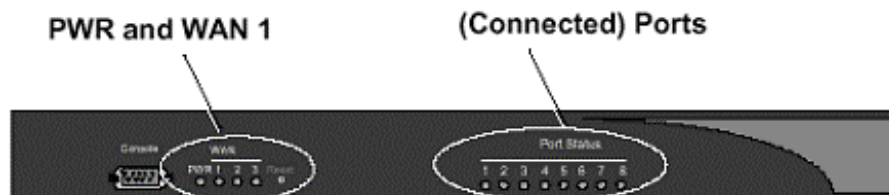
*The Ethernet port on the Remote Unit operates on 10 megabit Ethernet networks only. It does not support 100 megabits.*

Once the power-up sequence is finished, the state of the following LEDs should be Green.

### LED States:

<b>PWR</b>	Solid Green.
<b>WAN1</b>	Solid Green (Ready) if a synchronous device is connected to WAN 1. Solid Orange (Ready) if an asynchronous ISDN TA is connected and accepting commands (but there is no link up- in Call Suspend mode or has not dialed it yet).
<b>Port LEDs</b>	Solid Green if connected properly to the PBX.

**IMPORTANT:** If any of the LEDs DO NOT power as explained, refer to the System Administrator's Guide for troubleshooting information.



**Figure 5: Front of Unit**

On initial power-up (or before the config file is changed) the Management Interface (MI) asks you to run the "Setup Wizard".

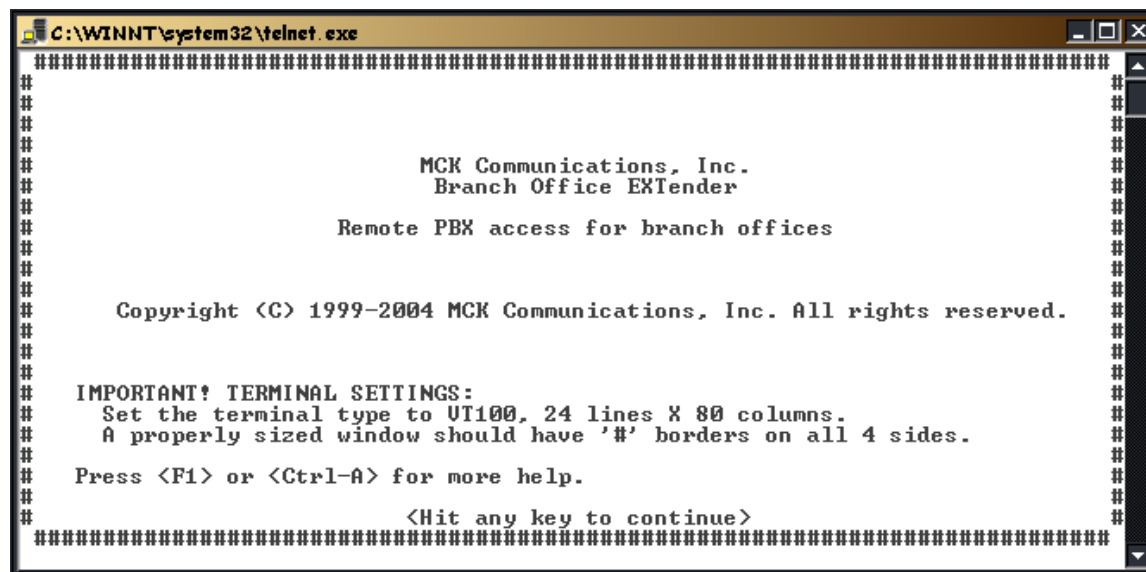
- If you type “Yes”, the wizard asks a series of configuration questions. (See page 31.)
- If you type “No”, the PC displays the following message:  
Press “Enter” to start the EXTender shell.....

*Note: If the EXTender is powered up prior to opening the terminal program, this message does not appear.*

Go to *Basic Configuration* on the next page.

## Basic Configuration

Press **Enter**. The *MI Welcome Screen* is displayed.



**Figure 6: 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 the figure above.

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

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

Press any key to continue. The *Main Menu* is displayed.

If you already familiar with using the MI, proceed to page 18 for information on setting the parameters for the different Network Environments.

**Or.....**

Press **F1** for the *MI Help Screen*, which provides basic information for navigating through the interface.

# Installation Environment

This section provides the necessary information to configure the EXTender using the MI. The units are programmed at the factory with “default” settings providing basic parameters to accommodate most network environments.

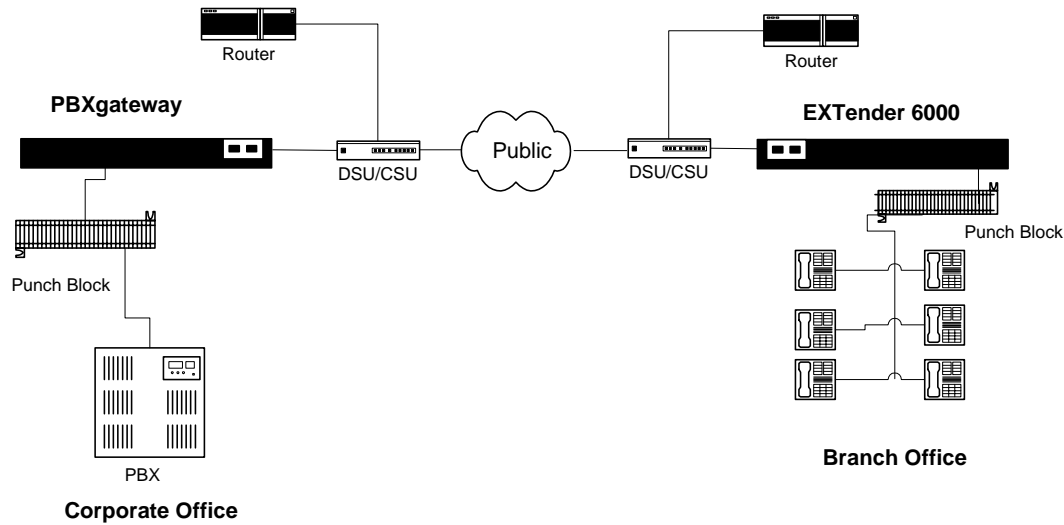
**Which type of Network Device do you have?** Before beginning the configuration process, identify the network device type that is connected to the EXTender. Once you know the connection type, use Figure 4: Back of Unit (LAN Connections), to determine the appropriate checklist to use for configuration.

**Table 5: Network Devices**

To configure the EXTender with.....	See.....
a Synchronous -serial device via WAN Port(s) 1 or 2 (RVP_Direct) using one of the following protocols: <ul style="list-style-type: none"> <li>• V. 3 5</li> <li>• RS-232</li> <li>• RS-530</li> </ul>	Page 19
an Asynchronous -serial device via WAN Port(s) 1 or 2 (RVP_Direct) using RS-232 Protocol.	page 24
an IP device – via Ethernet port (RVP_IP).  <i>* MCK's IP-based products utilize VOIP technology to deliver remote voice solutions. The voice quality of these solutions is dependent on variables such as available bandwidth, network latency and quality of service (QoS) initiatives, all of which are controlled by the network and internet service providers. Because these variables are not our control, we cannot guarantee the performance of the user's IP-based remote voice solution.</i>	page 30

## Synchronous-Serial (RVP\_Direct)

This section of the manual provides the necessary information to configure the EXTender 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.



**Figure 7: RVP\_Direct Installation**

### Prerequisites for Configuration

- The Gateway (at the corporate site) and the EXTender (at the branch office) must be installed properly and the network link between both devices must be operational.
- The network administrator must assign an IP address for both units if you plan to configure and test them over a LAN or WAN.

**Table 6: Configuration Steps**

You must.....	To.....	Default Setting	Refer to...
Set Connect Parameters	Select network type	RVP_Direct	page 20
Setup the WAN ports	Enable WAN ports to connect to network device.	WAN 1 - Enabled	page 21
Set the Sync Rate of the WAN port	Match the data rate (sync rate) of the network device	512,000 kbps	page 22
Set the mode (interface type) of the WAN port. (v.35, RS-232, RS-530)	Match the interface type of the network device.	V.35	page 23

## Connect Parameters

The EXTender utilizes a direct serial connection to provide remote user connectivity. This means that the wide area network (WAN) port is plugged directly into a network device. Use the RVP Direct menu to identify the WAN port (WAN 1 or WAN 2) that is the main or “primary” port.

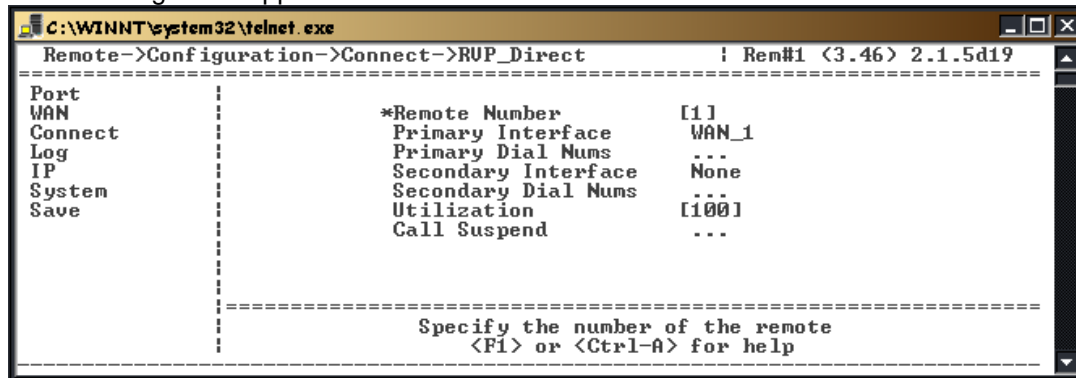
### Procedure

Before beginning this procedure ensure you have set the *Connect Type* to **RVP\_Direct**. This item is located on the Connect menu.

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

**Path:** Remote->Configuration->Connect->RVP\_Direct

The following menu appears:



**Figure 8: RVP\_Direct Menu**

2. Press the → key and ↓ key to the **Primary Interface** parameter. This is the main WAN port that connects the Remote Unit to the network device.
3. Press the → key to scroll through the choices.
4. Press the ↓ key to the **Secondary Interface** parameter. This identifies the secondary WAN port. This parameter is normally set to None.
5. Press the ↓ key to the **Utilization** parameter. This parameter is a numeric value that represents the percentage of bandwidth used by the remote unit. Contact the system administrator for more information on setting this parameter.
6. Press the ← key to accept changes and go back to the Configuration Menu. Press the ← key to the **Save** option. Press **Enter**.

## WAN Port Set up

The EXTender has two WAN ports (WAN 1 and WAN 2). The ports communicate via an RS-232, RS-530 or V.35 interface and provide the connections to the third party network devices.

### Settings

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

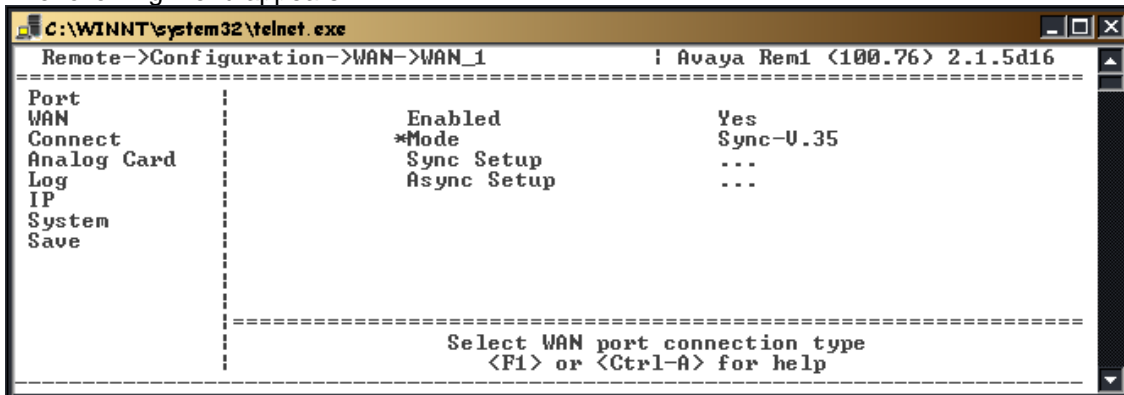
- **Enabling/Disabling WAN ports**- Individually Enable or Disable a specific WAN port (below)
- **Setting the Sync Rate** – Sets the specific WAN port to the sync rate (synchronous serial port transfer speed) of the network device (CSU/DSU). (refer to page 22)
- **Setting the Interface Mode**- Choose the interface signaling type used to communicate with the network device. (refer to page 23)

### Procedure

1. Access the *WAN 1* or *WAN 2 Menu* using the following path;

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

The following menu appears.



**Figure 9: WAN Menu**

2. Press the → key to access the **Enabled** parameter.
3. Press the → key to change the availability of the port to: Enabled (Yes ) or Enabled (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 (.rem) file.

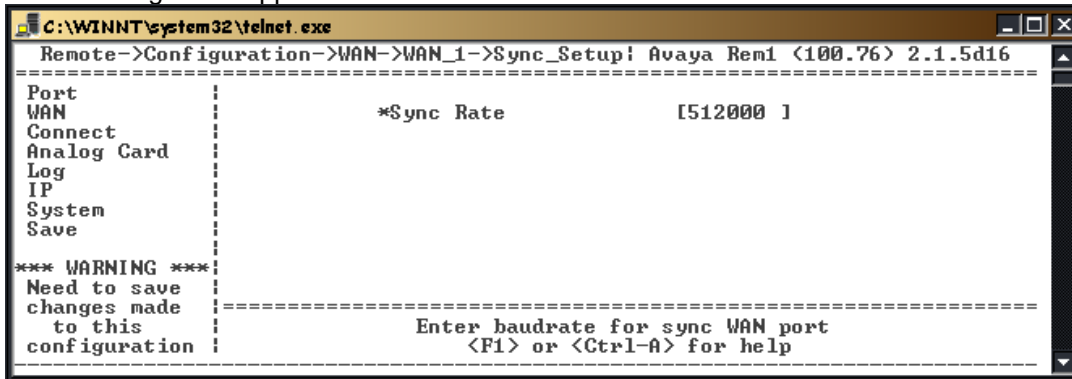
## Setting the Sync Rate

### Procedure

1. Access the *WAN 1* or *WAN 2 Sync\_Setup Menu* using the following path;

**Path:** Remote or Gateway->Configuration->WAN 1 or 2->Sync\_Setup

The following menu appears.



**Figure 10: Sync Rate**

2. 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.*

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) file.

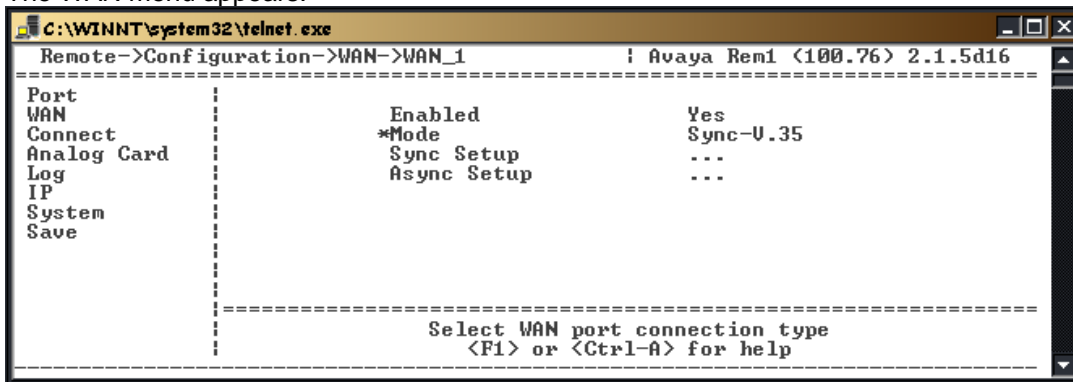
## Setting the Mode (signaling protocol)

### Procedure

1. Access the *WAN 1* or *WAN 2 Menu* using the following path;

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

The WAN menu appears.

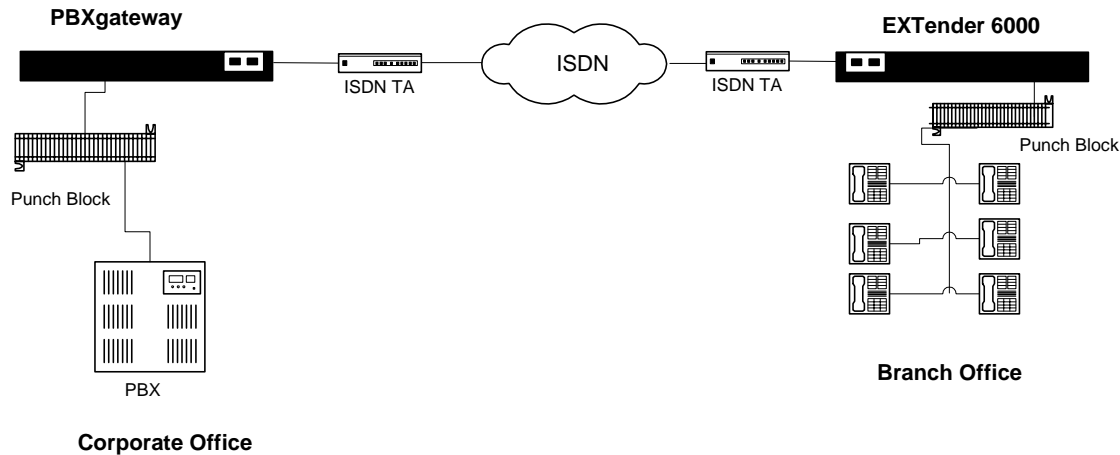


**Figure 11: Mode**

2. Press the →key to access the parameters.
3. Press the ↓key to the **Mode** parameter. This parameter must match the protocol 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.
6. Press **Enter** to save changes to the active config (.rem) file.

## Asynchronous-Serial (RVP\_Direct)

This section of the manual provides the necessary information to configure the EXTender for connection to an asynchronous-serial device. The units are programmed at the factory with "default" settings providing basic parameters to accommodate many network environments.



**Figure 12: RVP\_Direct Async Connections**

### Prerequisites for Configuration

- The Gateway (at the corporate site) and the EXTender (at the branch office) must be installed properly and the network link between both devices must be operational.
- The network administrator must assign an IP address for both units in order to configure and test them over a LAN or WAN.

**Table 7: Basic Configuration**

You must....	To....	Default Setting	Refer to...
Set the Primary Dial Numbers (DNs)	Identify the first and second ISDN B-channels at the Gateway unit.	-	page 25
Set the mode (interface type) of the WAN port.	Match the interface type of the network device.	V.35	page 26
Set the Async parameters for the selected WAN port	Match the settings for the device being used.	-	page 26

## Primary Dial Numbers

The EXTender utilizes an RVP\_Direct connection over an ISDN line to the Gateway unit. The “Primary Dial Num 1” is the Directory Number (DN) assigned to the first B-channel of the ISDN line connected at the Gateway unit. The “Primary Dial Num 2” is the Directory Number (DN) assigned to the second B-channel of the ISDN line connected at the Gateway unit. Dial these telephone numbers to connect to the Gateway.

**Note:** Both Primary Dial Num 1 and 2 must be entered.

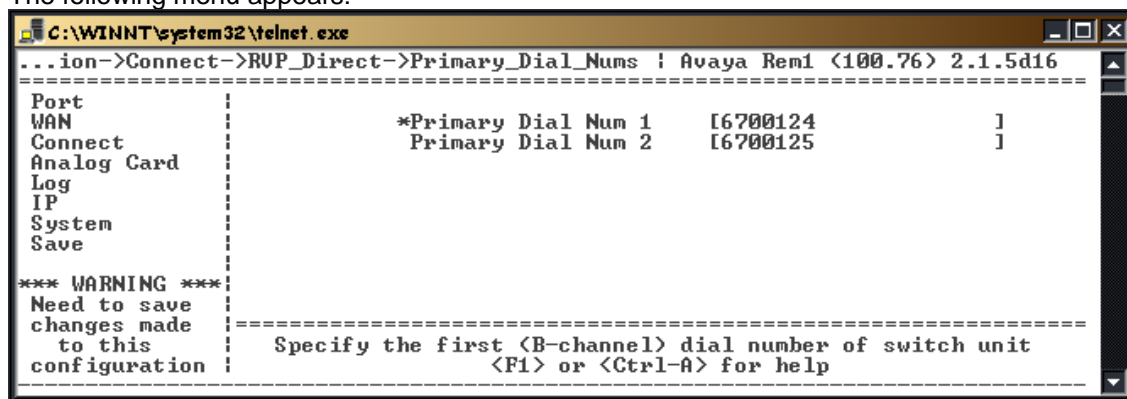
### Procedure

Before beginning this procedure ensure you have set the *Connect Type* to **RVP\_Direct**. This item is located on the Connect menu.

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

**Path:** Remote->Configuration->Connect->RVP\_Direct->Primary Dial Num

The following menu appears:



**Figure 13: Primary Dial Number**

2. Press the → key to the *Primary Dial Num 1* parameter. Enter the DN number assigned to the first B-Channel at the Gateway unit.

Example: 1 617 5551000  
1: used for long distance  
**617**: area code  
**5551000**: telephone number

3. Press the ↓ key to the *Primary Dial Num 2* parameter. Enter the DN number assigned to the second B-Channel at the Gateway unit.
4. Press the ← key to accept changes and go back to the *Configuration Menu*. Press the ← key to the **Save** option. Press **Enter**.

## WAN Mode

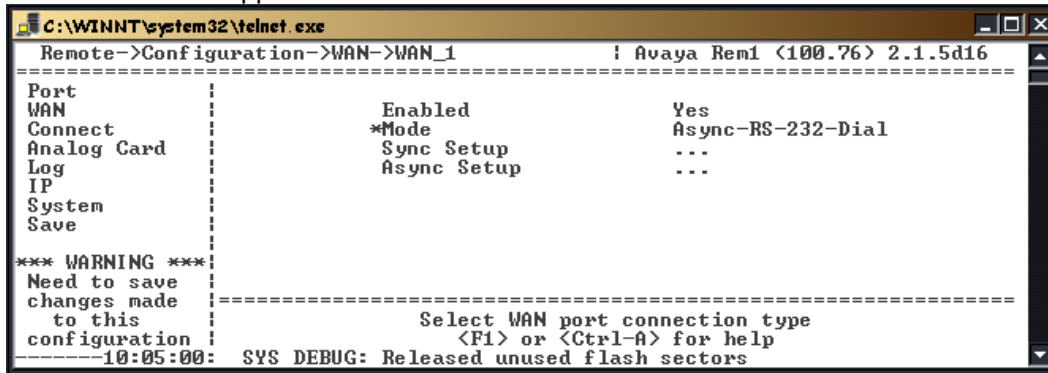
The EXTender utilizes a direct serial connection to provide remote user connectivity. This means that the WAN port is plugged directly into a network device. The WAN port (WAN 1 or WAN 2) that is used as the main or “primary” port must be set for Async Mode.

### Procedure

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

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

The WAN 1 menu appears.



```
C:\WINNT\system32\telnet.exe
Remote->Configuration->WAN->WAN_1 | Avaya Rem1 (100.76) 2.1.5d16
-----
Port      |
WAN      | Enabled      | Yes
Connect  | *Mode       | Async-RS-232-Dial
Analog Card |           |
Log      | Async Setup | ...
IP       | Async Setup | ...
System   |
Save     |
*** WARNING ***
Need to save changes made to this configuration
-----
Select WAN port connection type
<F1> or <Ctrl-A> for help
-----10:05:00: SYS DEBUG: Released unused flash sectors
```

Figure 14: WAN Menu

2. Press the → key ↓ key to the **Mode** parameter. This sets the WAN port to the async protocol required.
3. Press the → key to select the *Async-RS-232-Dial* value.
4. Press the ← key to accept changes and go back to the Configuration Menu. Press the ← key to the **Save** option. Press **Enter**.

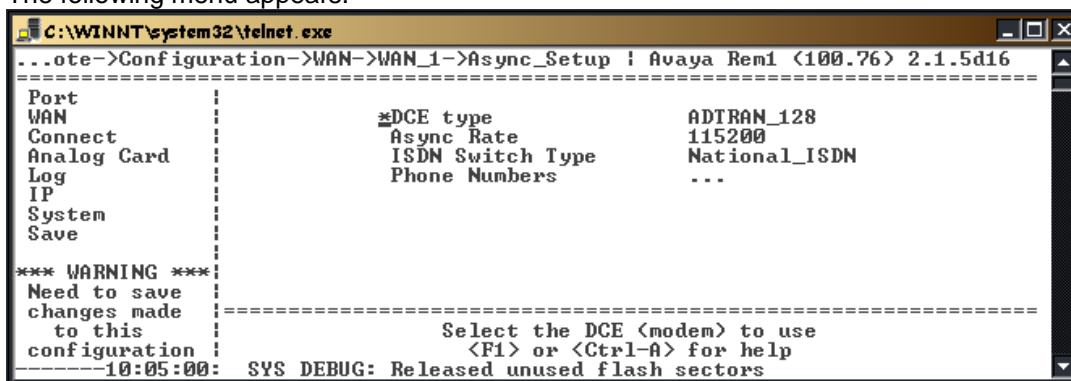
### Setting the Async Parameters

#### Procedure

1. Access the *WAN 1* or *WAN 2 Menu* using the following path;

**Path:** Remote->Configuration->WAN 1 or 2->Async\_Setup

The following menu appears.



```
C:\WINNT\system32\telnet.exe
...ote->Configuration->WAN->WAN_1->Async_Setup | Avaya Rem1 (100.76) 2.1.5d16
-----
Port      |
WAN      | *DCE type   | ADTRAN_128
Connect  | Async Rate  | 115200
Analog Card |           |
Log      | ISDN Switch Type | National_ISDN
IP       | Phone Numbers | ...
System   |
Save     |
*** WARNING ***
Need to save changes made to this configuration
-----
Select the DCE (modem) to use
<F1> or <Ctrl-A> for help
-----10:05:00: SYS DEBUG: Released unused flash sectors
```

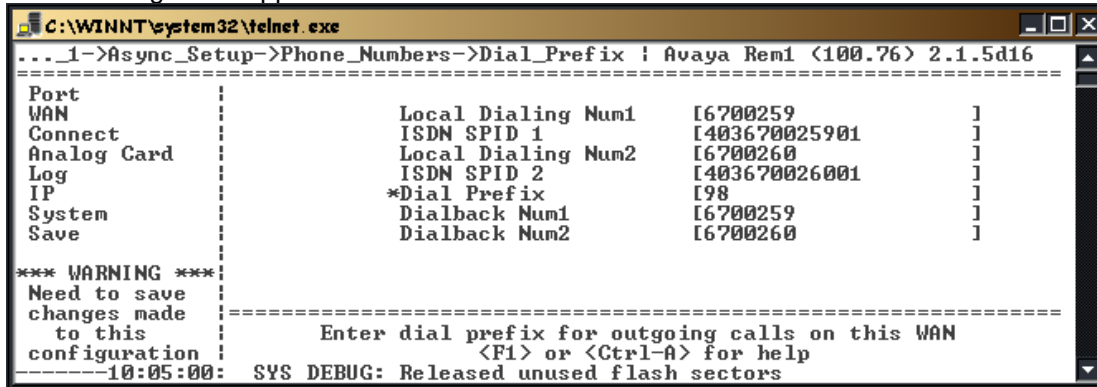
Figure 15: Async\_Setup Menu

2. Press the →key to access the parameters
3. Press the → key to the **DCE Type** parameter. Press the → key to select the ISDN TA being used. (See page 7 for a list of recommended devices.)
4. Press the ↓ key to the **Async Rate** parameter. Press the → key to select the rate required. This parameter sets the asynchronous data transfer speed of the WAN port and **MUST** match the TA speed setting.  
**Note:** This Async Rate should be left at the <default> setting of 115200.
5. Press the ↓ key to the **ISDN Switch Type** parameter. Press the → key to select the type of Central Office (CO) switch being used for the ISDN connection.

**Note:** Leave the ISDN Switch Type at the “default” setting of National\_ISDN. This setting should work for most types of Central Office switches. If problems occur, contact the local telephone company and inquire about the switch in use.

6. Press the ↓ key to the **Phone Numbers** menu.

The following menu appears:



**Figure 16: Phone Numbers Menu**

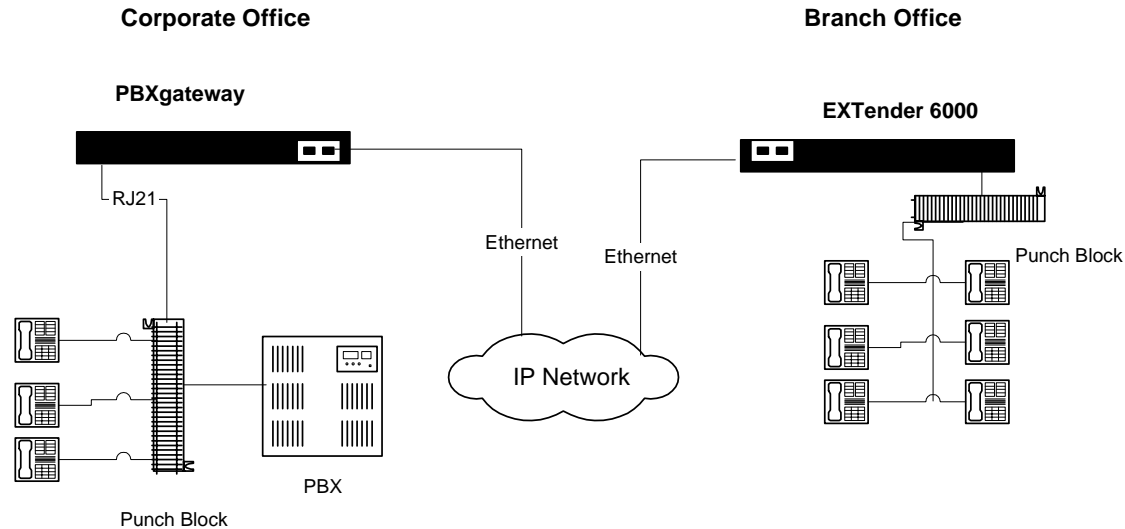
*Note:* Press the → key to enter the appropriate information provided by the system administrator.

- **Local Dialing Num1** parameter. Enter the DN 1 number assigned to the ISDN line, which was provided when the ISDN line was installed. **Example:** 2881918
  - **ISDN SPID 1** parameter. Enter SPID 1 assigned to the first ISDN B-channel. **Example:** 40328819180101
  - **Local Dialing Num2** parameter. Enter the DN 2 number assigned to the ISDN line.
  - **ISDN SPID 2** parameter. Enter SPID 2 assigned to the second ISDN B-channel.
  - **Dial Prefix** parameter. Enter the required prefix for dialing out on this WAN port. **Example:** 98
  - **Dialback Num1** parameter. Enter the telephone number for dialing the first ISDN B-channel of the EXTender from the PBX location where the Gateway is installed. **Example:** 914032881918
  - **Dialback Num2** parameter. Enter the telephone number for dialing the second ISDN B-channel of the EXTender from the PBX location where the Gateway is installed.
7. Press the ← key to accept changes and go back to the Configuration Menu.
  8. Press the ↓ key to the **Save** parameter. Press **Enter** to save changes to the active config (.rem) file.

## IP Network (RVP\_IP)

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

*Note: The units are programmed at the factory with RVP\_Direct “default” settings. The **Type** parameter must be set to RVP\_Over\_IP.*



**Figure 17: RVP\_IP Typical Installation**

### Prerequisites for Configuration

- The Gateway (at the corporate site) and the EXTender (at the branch office) must be installed properly and the network link between both devices must be operational.
- The network administrator must assign IP address information for both units.

### TCP/UDP Requirements

Ensure that the correct TCP/UDP ports have been opened to allow the EXTender to connect to the Gateway through your company firewall. The following TCP/UDP port requirements must be met:

The EXTender 6000 uses even numbered ports 12,288 to 12,544. The port numbers start at 12,288 and increment by 2 to the total number of ports used. For example, if you have an 8 port EXTender 6000 with 3 telephones connected, ensure that ports 12,288, 12,290, and 12,292 are opened.

The Gateway unit uses TCP/UDP port 2698.

### Basic Configuration

**Table 8: RVP\_IP Basic Configuration Steps**

You must ...	to...	Refer to...
Set Connect Parameters	Configure the Remote Unit to communicate over the IP net-work.	page 29
Set IP Parameters	Configure the Remote Unit with required IP information.	page 30

## RVP\_Over\_IP Connect Parameters

The EXTender utilizes an IP connection to provide remote user connectivity. This means that the local area network (LAN) port on the back of the unit is plugged directly into the existing network through an RJ-45 connector. The IP Destination (the IP address of the Gateway) must be entered within the MI of the EXTender.

### Procedure

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

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

2. Set the **Type** parameter to *RVP\_Over\_IP*.
3. Press ↓ and →key to access the RVP Over IP menu.

The following menu appears:

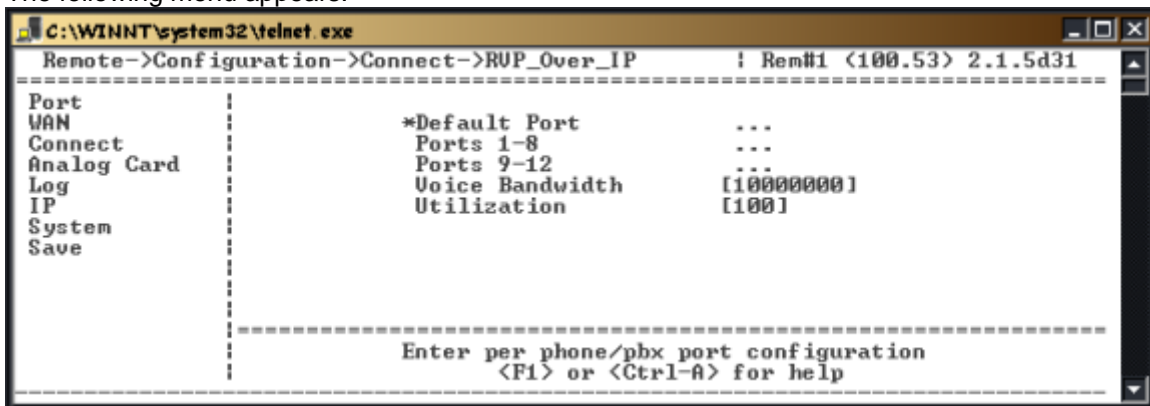


Figure 18: RVP\_IP Menu

*Note: The <Default> setting connects all ports to the same Gateway unit. You can set ports individually by simply selecting the port.*

4. Press the → key to access the Default Port menu.
5. Press the → key to the **IP Destination** parameter.
6. Enter the IP address of the Gateway.

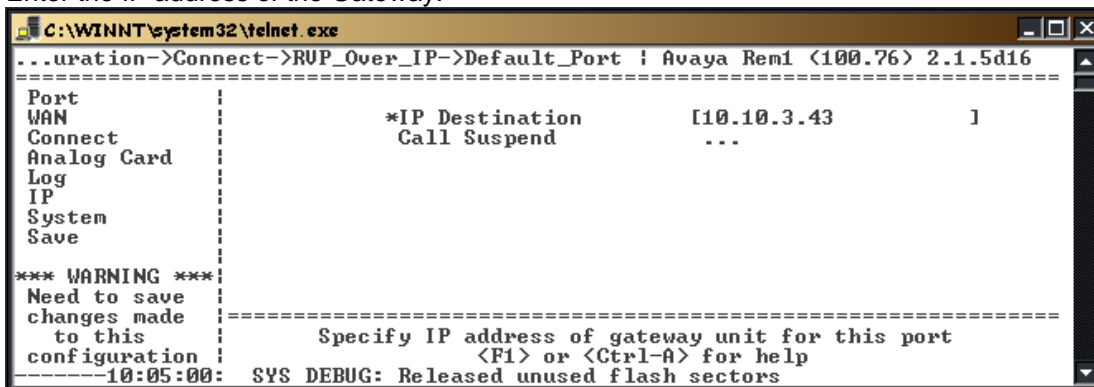


Figure 19: RVP\_IP Default Port Menu

*Note: The network administrator must assign this address.*

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

## IP Parameters

An Internet Protocol (IP) address and associated routing parameters must be entered within the IP menu of the EXTender for identification purposes within the LAN.

*Note: The network administrator must provide the IP address and any required mask or router addresses.*

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

**Address**- This is the IP address of the EXTender.

**Subnet Mask** – A number used to identify the IP subnetwork on the LAN.

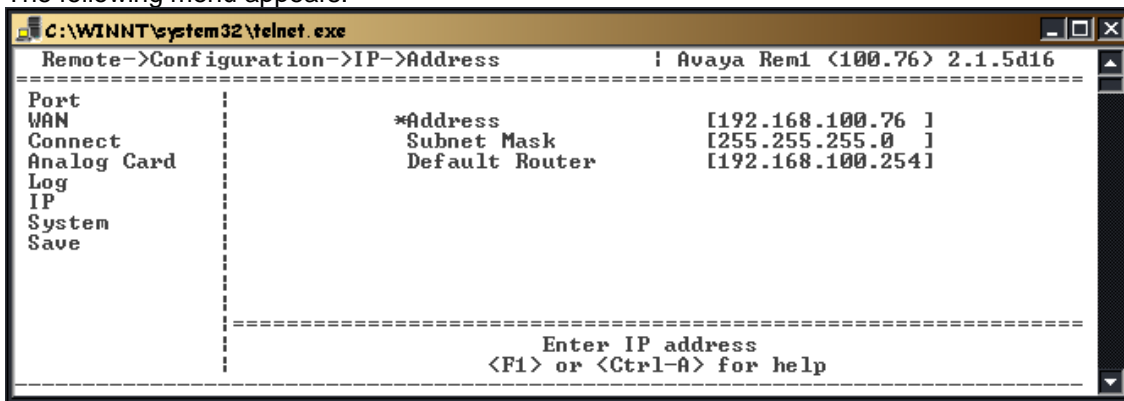
**Default Router** – The address of a device used to reach IP hosts not on this IP sub-network.

## Procedure

1. Access the IP Menu using the following path;

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

The following menu appears:



**Figure 20: IP Address Menu**

2. Press the → key to access the parameters.
3. Press the →key to the **Address** parameter. Enter the IP Address of the EXTender 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**.
6. Press the ← and ↓key to the **Save** option. Press **Enter** to save changes to the active config (.rem) file.

## Set Up Wizard

The EXTender provides a console setup wizard that guides you through many of the required programming/ configuration required to complete initial setup of the units, via the VT100 management console accessed through the DB9 management port.

You can access the setup wizard through the console MI. This requires a PC connection to the unit via the DB9 console port. The wizard requests basics configuration information to establish the initial configuration programming. You can use the MI to configure parameters that are not configurable through the wizard.

### Standard Console User Interface vs. the Setup Wizard

When a unit is first powered up it checks a Setup Wizard flag. If the flag is set, the standard console UI is displayed. If the flag is not set, the system prompts you to run the Setup Wizard. After this initial Setup Wizard prompt, the system sets the Setup Wizard flag to prevent you from receiving this prompt again. You can access the Setup Wizard through the console MI, if you want to run it later.

### How to access the Setup Wizard through the MI

**Path:** Remote->Utilities->Setup Wizard

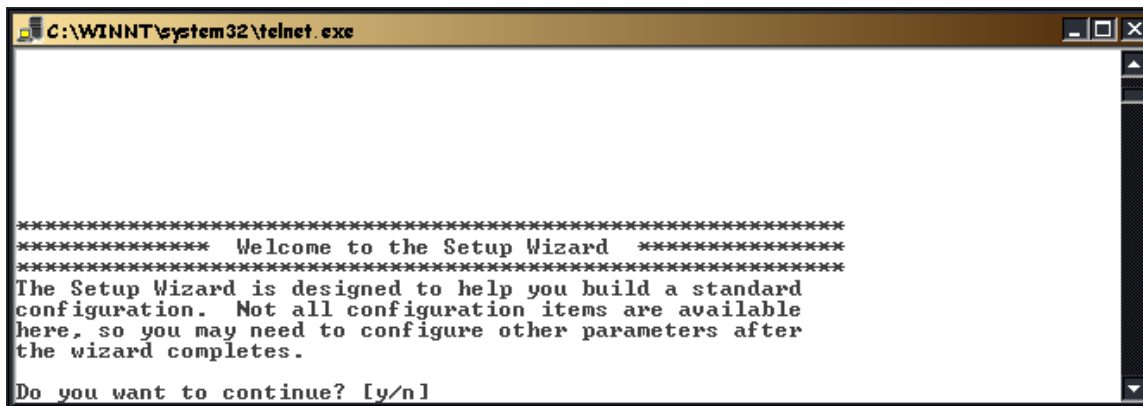


Figure 21: Set Up Wizard

## Placing a Call

### What to verify before placing a call:

- The Gateway recognizes ports on the PBX and the EXTender recognizes telephones. The MI should display "RD" (Ready).
- The Terminal device is properly configured to meet the requirements of the install.

### Examples:

**CSU/DSU:** DSO channels mapped properly, timing and framing setup correctly and configured to the protocol (V.35).

**TA:** Signal to the BRI circuits displays the correct SPID. DN numbers have been programmed.

### Using the digital telephones connected to the PBX

Once the EXTender is installed and powered-up, go on-line with the telephones at the Branch Office location. Follow the procedure below to place a call.

#### Procedure

At the Branch Office location, the telephones should display the following message:

Press "1" to connect

Press **1** on the keypad to connect the telephone to the corporate PBX.

Place a test call and check for clear reception.

*Note: If the connection is "noisy" or non-existent, refer to the System Administrator's Guide for troubleshooting steps.*

### Using the analog line connected to the EXTender

**Note:** This procedure applies only to the single analog telephone line connected to the EXTender and only digital telephones can utilize this feature. You must install and wire the EXTender according to the procedures on page 13 of this document. The analog line card is not available outside North America.

#### Procedure

1. Pick up the handset and press the **Analog Call Key** (  
**Meridian, Panasonic and Magix** - Default is Key 12  
**Iwatsu** - Default is Key 4

*Note: This key bypasses the PBX/ADIX at the corporate facility and provides you with a telephone line for dialing local and emergency (911) calls. Contact the systems administrator for the appropriate key.*

2. Dial the number.

## 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 Branch unit and linked to the Gateway, 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:** *EXTender units that are equipped with an analog card provide an analog port for local dialing.*

## Remote Telephone Messages

The following messages appear on the remote telephone display connected to the Remote Unit when a connection attempt fails. The telephone shows `Connect Error`, followed by a message. Table 9: Connect Error Messages, on the next page, contains the possible Connect Error messages.

**Table 9: Connect Error Messages**

Message	Description	Action
Already connected	Remote port is already connected.	Reset port at the Gateway.
Assigned port Busy (see note)	The switch port is being used by another user.	Wait until port is available or reset port on the PBXgateway 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 the PBXgateway.
Carrier Lost (see note)	Displayed if the network connection to the PBX is lost.	Check network links. Attempt to reconnect after network is up and running.
Connect rejected	The system rejects the connection request.	Make sure the Connect Password is correct. Check network links. Attempt to reconnect.
Connect Timeout	The EXTender cannot connect to the PBXgateway.	Check WAN connection on the 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 for telephone signaling	Change voice compression.
Normal take down	Displayed when the network device is either being rebooted or reset.	Wait until the WAN link LED is solid green, and then attempt to re-connect.
No Voice path (see note)	The unit bandwidth is oversubscribed. No network bandwidth is available for voice.	Change voice compression.
Peer disconnect	Displayed when the Switch unit has disconnected from the network device.	Check the voice compression or network at the PBXgateway.

*Note: This message is not preceded by "Connect error".*

## Optional Configuration

The EXTender MI has optional configuration parameters providing the following capabilities: Refer to the system administrator's guide for more information on configuring these options.

**Auto-Connect** – This is a Remote module option, which automatically connects remote users (telephones) when the EXTender is re-booted or brought on-line. (This eliminates the need to press “1” on the Remote telephone.) Enable this feature for non-display telephones since you cannot see the “Press ‘1’ to Connect” message.

**Admin Password** – If configured, this option restricts access to the EXTender MI, by requiring a password for entry. You must enter the *Admin Password* before you change any configuration parameters.

**Note:** *The Gateway and EXTender units have their own separate Admin Passwords.*

**Connect Password** – This option provides a secure WAN link between the Gateway and EXTender. If configured, a *Connect Password* is required for each telephone to connect to the Gateway.

**User ID** - If configured, this option assigns an ID that maps the Remote Unit to the correct port on the PBX. The remote user must enter this ID to connect to the Gateway.

## 2 to 1 Configuration (RVP\_Direct)

The EXTender Remote Unit communicates with the Gateway installed at the corporate facility. The Gateway can connect to two different EXTender remote units using RVP\_Direct to both WAN Ports. The first remote is connected to WAN1 of the Gateway and the second remote is connected to WAN2 of the Gateway. Once you configure the Gateway to accommodate two separate remote units, you must configure the following EXTender parameters:

**Remote Number:** This number (1 or 2) identifies the Gateway WAN port connected to the EXTender.

**Gateway Port Offset:** This parameter is used to allow the lower port numbers on Remote 2 access to the Gateway unit.

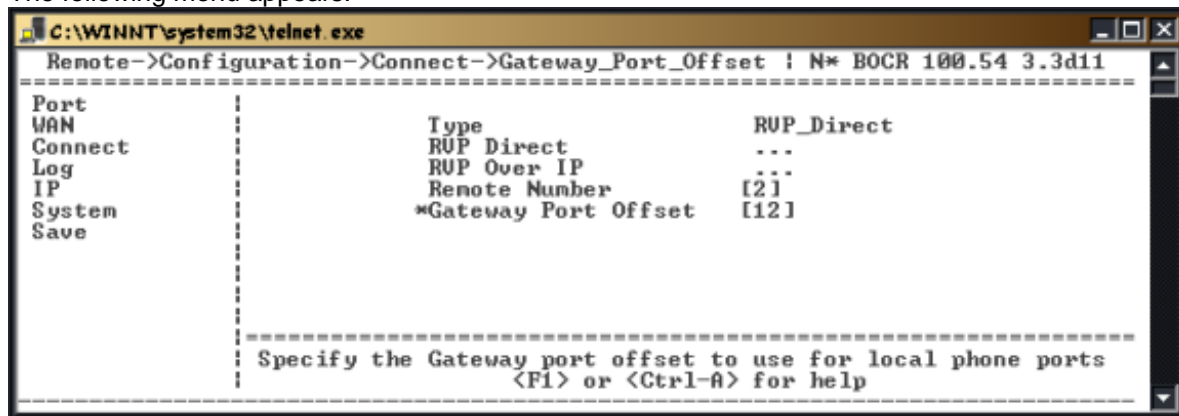
**Example:** If the Gateway port offset is set to 4, when port 1 on the Remote connects, it connects to port 5 on the Gateway.

### Procedure

1. Access the Connect menu using the following path:

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

The following menu appears:



**Figure 22: Gateway Port Offset**

2. Press the → key, then the ↓key to access the **Gateway Port Offset** parameter. Enter a digit (0-12) to set the value and press **Enter**.
3. Press the ↑and → keys to access the RVP\_Direct menu. The RVP\_Direct menu on page 20 appears.

4. Press the → key to access the **Remote Number** parameter. Set to either 1 or 2. This will differentiate the 2 remotes to the PBXgateway in the 2 to 1 configuration.

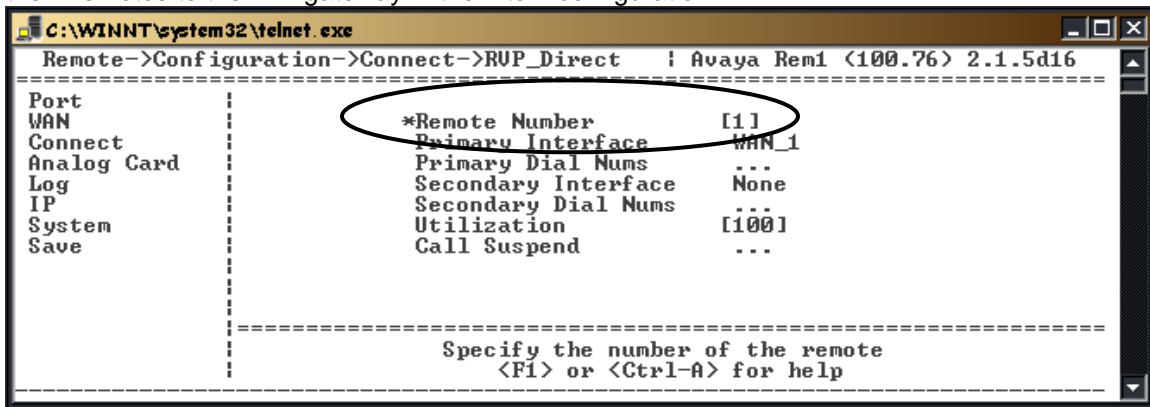


Figure 23: Remote #1

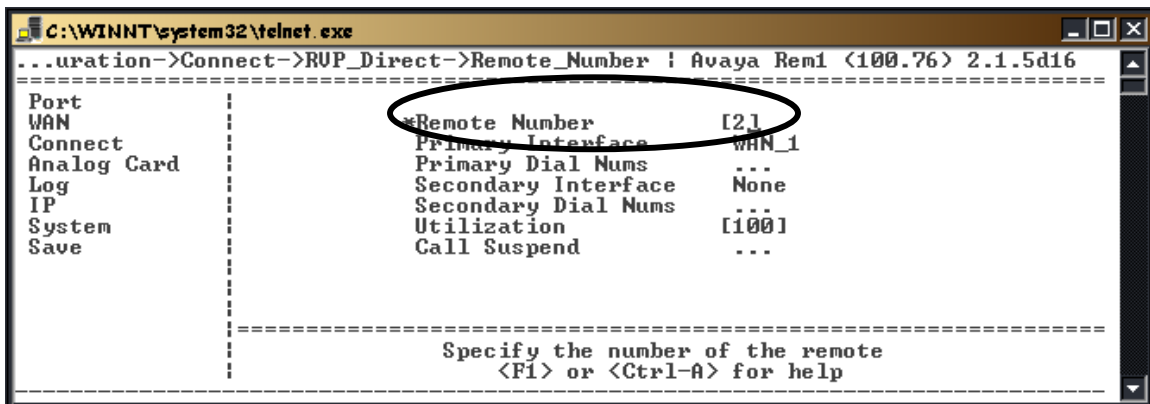


Figure 24: Remote #2

**IMPORTANT NOTE:** The Remote Unit connected to WAN 1 of the Gateway **MUST** be Remote [1].

5. Press the ← and ↓ key to the **Save** option. Press **Enter** to save changes to the active config (.rem).



**Note:** Do not use a key that already has a function programmed. Possible Keys are 1-12.

5. Press the ↓key to enable ringing (yes) on incoming analog calls.
6. Press the ←key to accept changes and go back to the Configuration Menu.
7. Press the ↓key to the **Save** option. Press **Enter**.

## Setting the Make Set Busy Key (Meridian Only)

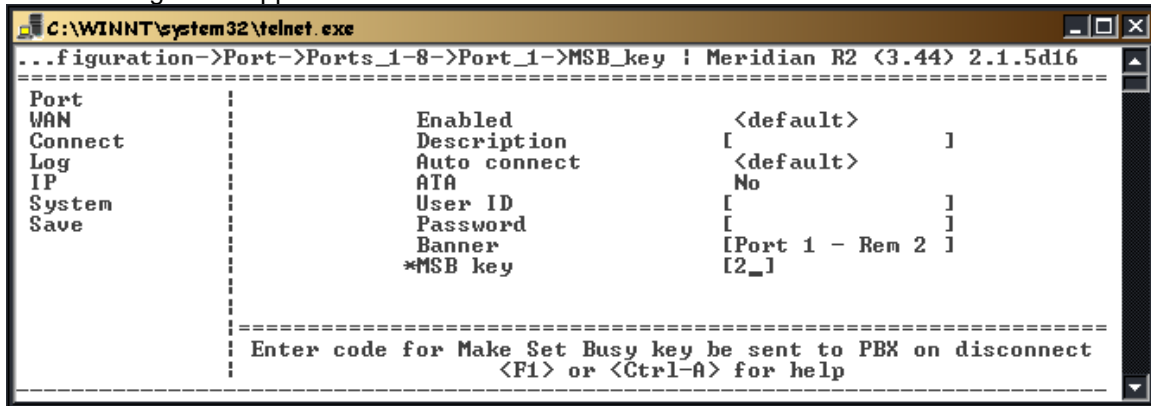
The MSB (Make Set Busy) key sends a command from the Gateway to the PBX. This command is used to log agents out of the ACD queue in the event of an abnormal disconnect. This prevents ACD agents from receiving calls during a network outage. The MSB function is programmed to represent a button on the telephone which will be pressed in the event of an abnormal disconnect. In an ACD agent application, this key should be programmed as the Unavailable Key. In a non-ACD application, this key should be programmed as the Hold/DND or Hold/Quick Forward Key.

### Procedure

1. Go to any Port menu using the following path as an example:

**Path:** Remote>Configuration->Port->Ports\_1-8->Port\_1

The following menu appears:



```
C:\WINNT\system32\telnet.exe
...figuration->Port->Ports_1-8->Port_1->MSB_key | Meridian R2 (3.44) 2.1.5d16
-----
Port      :
WAN       : Enabled          <default>
Connect  : Description      [          ]
Log       : Auto connect   <default>
IP        : ATA            No
System   : User ID        [          ]
Save     : Password       [          ]
          : Banner        [Port 1 - Rem 2 ]
          : *MSB key      [2_]
-----
Enter code for Make Set Busy key be sent to PBX on disconnect
<F1> or <Ctrl-A> for help
```

Figure 27: MSB Key

2. Press the ↓ key to scroll down to the **MSB key** parameter.
3. Enter the location of the MSB key on the ADIX telephone.
4. Press the ← key to accept changes and go back to the Configuration Menu.
5. Press the ← key to the **Save** option. Press **Enter**.

## Setting up Call-Suspend

The Call Suspend feature allows the telecom manager to reduce communication costs by bringing down the ISDN/IP connection when all phones are inactive for a configurable period of time. When the line is disconnected the phones indicate that they are in the Call Suspend mode. Whenever a user goes off-hook or an incoming call occurs, the ISDN/IP connection is brought back up and all phones are taken out of Call Suspend mode.

The Call Suspend feature operates with the assumption that if the ISDN connection is brought down, it is possible to get busy signals from the ISDN/IP network preventing the EXTenders to communicate and causing an interruption of telephone service to the branch office. This assumption leads to setting the Call Suspend timer to a value that does not allow the ISDN/IP connection to go down during normal business hours.

The expected usage pattern for the ISDN/IP connection is that at the beginning of the business day, the phones are brought out of Call Suspend mode bringing up the ISDN/IP connection when the first user either goes off-hook or an incoming call arrives. The ISDN/IP connection remains up for the remainder of the business day because all phones are not idle longer than the Call Suspend timeout value. At the end

of the day, all phones become inactive for the Call Suspend timeout value and the ISDN/IP connection is brought down. If anyone works late or comes in early, normal usage brings up the ISDN/IP connection again.

### Procedure

1. Access the *Call\_Suspend Menu* using the following path;

**Path:** Remote->Configuration->Connect->RVP\_Direct->Call\_Suspend  
**Path:** Remote->Configuration->Connect->RVP\_over\_IP->Default\_Port  
 Or for individual ports:

**Path:** Remote->Configuration->Connect->RVP\_Direct->Port\_x-y->Port\_x

The following menu appears.

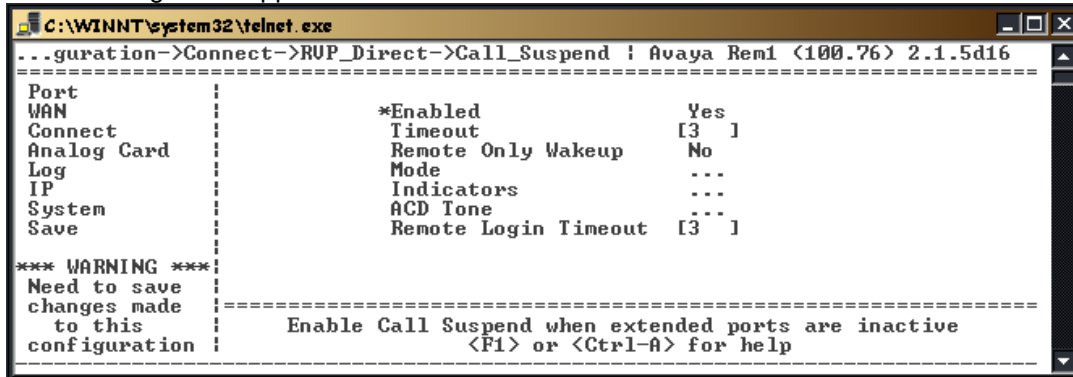


Figure 28: RVP\_Direct Call Suspend

2. Press the → key to access the parameters.

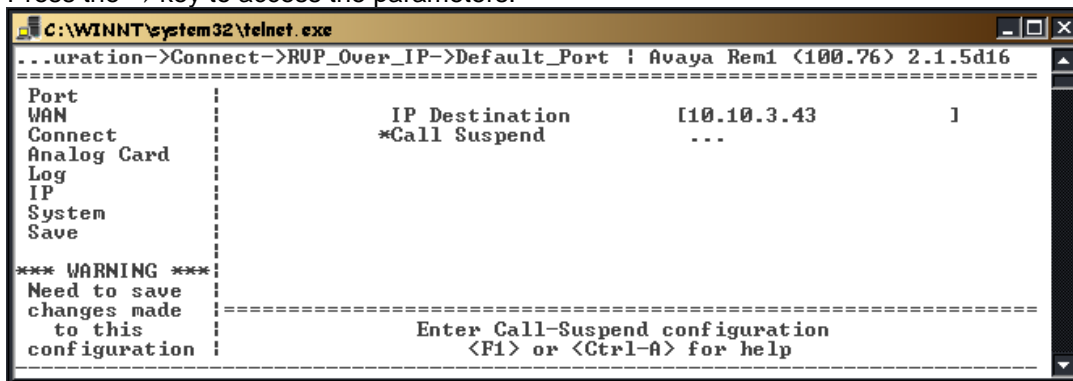


Figure 29: RVP\_Over\_IP Call Suspend

3. Press the → key to the **Enabled** parameter. Press the → key to select Yes.

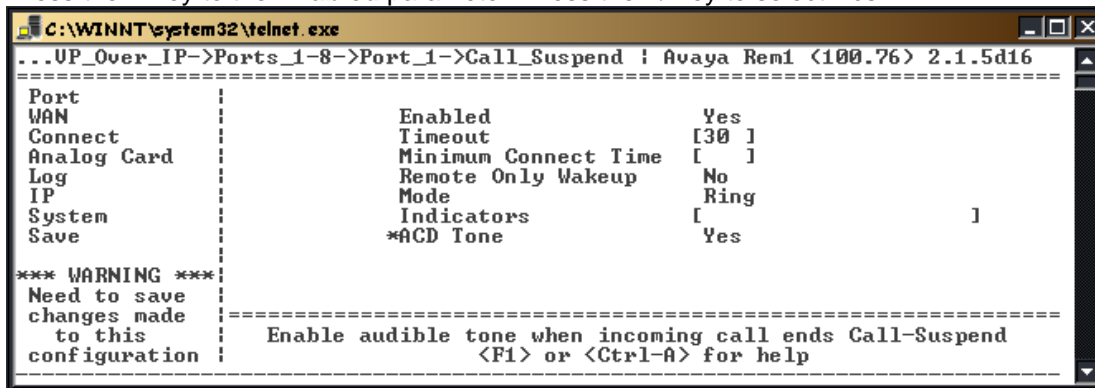


Figure 30: Call\_Suspend Settings

4. Press the ↓ and →key to the **Timeout** parameter. This parameter causes the units to go into Call Suspend mode when no activity occurs for the set Timeout value. Set the value between 15 and 240 minutes
5. Press the ↓ and →key to the **Remote Only Wakeup** parameter. If you set this parameter to Yes, you enable wakeup from Call Suspend on activity at the Branch site only (for example, when a telephone set goes off-hook or a key is pressed). If you set this parameter to No (disabled), incoming calls can also cause wakeup from Call Suspend.
6. Press the ↓ and → key to the **Mode** parameter. This sub-menu sets the Call Suspend mode for each port. The choices are *Ring*, or *Lamp*.  
**Note:** Use *Ring* mode for non-ACD sets, and use “*Lamp*” for ACD sets.
7. If you have selected *Lamp* mode for any ports, press the ↓ and →key to the **Indicators** parameter. This parameter sets the Lamp indicators that you want to monitor on the telephone.  
**Note:** Normally you should select call-appearance Lamps.
8. If the Remote has ACD sets with Headsets, press the ↓ and →key to the **ACD Tone** parameter. Enable the ACD Tone for each port that has an ACD telephone with Headset.
9. Press the ↓ and → key to the **Remote Login Timeout** parameter. This parameter sets the timeout value for a connection from the Gateway to Remote or Remote to Gateway.
10. Press the ←key to accept changes and go back to the Configuration Menu.
11. Press the ↓key to the **Save** parameter. Press **Enter** to save changes to the active config (.rem) file.  
**Note:** Make sure the “*Dial-up*” and “*Dialback*” numbers are programmed.

## Fax Support on the Second B (Ch 2) Channel

This feature is supported on Meridian and DEFINITY protocols only.

**Note:** On the DEFINITY, the B channel is known as the I channel.

You are able to send analog modem traffic over the 2<sup>nd</sup> B channel (Ch2) of each port on a remote or a PBXgateway unit.

Each of the ports on an EXTender 6000 or PBXgateway will extend both of the Meridian PBX/DEFINITY ECS B channels, allowing the use of the second B channel for analog applications such as fax and modem. You can send faxes by simply connecting the fax machine to the expansion card in the digital telephone connected to the remote unit.

The analog port will have the label based upon the telephone type used:

**Table 10: Fax Support by Protocol**

Protocol	Telephone	Name of Analog Port
Avaya	6400 Series	100A Analog Interface Module
Avaya	8411D	Analog Adjunct
Meridian	M2006, M2008, M2008HF, M2616, M2216ACD	ATA (Analog Terminal Adapter)

### Using an MCA Adapter with a Meridian Telephone

**Note:** This information applies to Meridian protocols only.

Because of an error in the way the Meridian PBX sets up a port with an MCA adapter, you must follow the steps below to get the PBX to properly recognize a digital port.

Plug the MCA unit into the extended digital telephone at the remote location and power up the MCA.

Connect the telephone and establish the connection to the PBX.

Wait until the telephone has initialized and the date and time appear in the display window.

Unplug the power to the MCA unit, then plug the power back in. After this has been done, the Meridian PBX should properly recognize the configuration.

## HTML Interface

You can configure the Gateway using a standard web server over an existing LAN connection. This feature provides the system administrator complete management capabilities as well as status information for both WAN and PORT connections.

### IMPORTANT:

- All IP parameters for the Gateway must be configured before the web server session can be established.
- The Gateway must be connected to the LAN via the *LAN* port.
- The Gateway must be powered up and online. (See *Power-up* procedure on page 16.)

### Procedure

1. Access the Management Interface (MI) using a Telnet session or via the Console Port.
2. Access the Web Server parameter using the following path:

Configuration->IP->LAN->Web Server

3. Select **Yes** for Enabled. Set the Timeout to **30**.
4. Save the settings and Log out of the MI.
5. Open any web browser from your PC. Example: Windows Internet Explorer (version 5.X or higher)
6. At the http:// prompt type in the IP Address of the Gateway.
7. Double click the Start Managing the Device link.  
The Main menu is displayed.

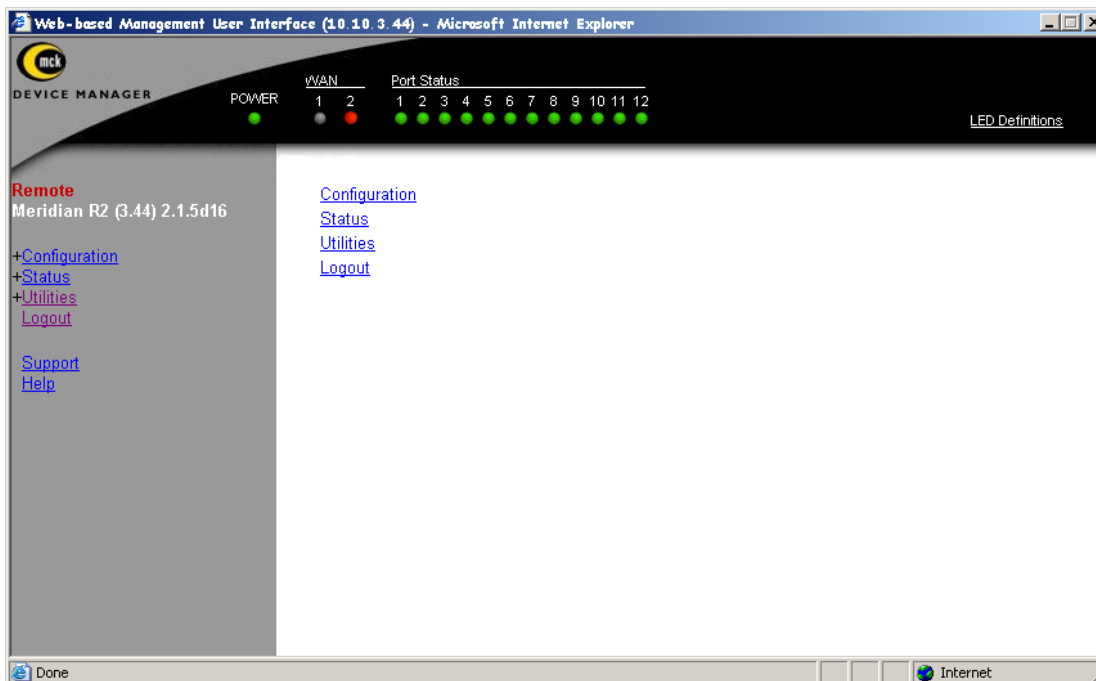


Figure 31: HTML Browser View

### LED States:

**PWR:** Solid Green

**WAN1:** Solid Green (Ready) if a synchronous device is connected to WAN 1. Solid Orange (Ready) if an asynchronous ISDN TA is connected and accepting commands (but there is no link up- in Call Suspend mode or have not dialed it yet).

**Port LEDs:** Solid Green if connected properly to PBX.

The Management Interface is now accessible for complete Gateway configuration.