



Quadro

The IP PBXs



Manual I:

Installation Guide

for Quadro6L; Quadro4L; Quadro2x2

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FCC Statement (Part 15) Class A

- The Epygi Quadro6L/4L/2x2 has been tested and found to comply with the limits for a class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which is found by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the aforementioned measures.

You are cautioned that any change or modification to the equipment not expressly approved by the manufacturer could void the user's authority to operate this device.

Administrative Council for Terminal Attachments (ACTA) Customer Information

This equipment complies with Part 68 of the FCC rules and the requirements adopted by the ACTA. On the back of this equipment is a label that contains, among other information, a product identifier in the format US:AAAEQ###TXXXX, made out to HX7OT00BHX70100. If requested, this number must be provided to the telephone company.

Any plug or jack that is used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ATCA.

The Ringer Equivalence Number is an indicator of the maximum number of devices allowed for connection to a telephone network. The termination on an interface may consist of any combination of devices subject only to the requirements that the sum of the RENs of all the devices does not exceed five. Excessive RENs on a telephone line may result in the devices not ringing in response to an incoming line. The REN for this product is part of the product identifier that has the format US:AAAEQ###TXXX, made out to HX7OT00BHX70100. The digits represented by ### are the REN without a decimal point (in this case 00B is a REN of 0.0B.)

If the Quadro causes harm to the telephone network, the telephone company will notify you in advance that a temporary discontinuance of service may be required. But if advance notice isn't practical, the telephone company will notify the customer as soon as possible. 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 for you to make the necessary modifications to maintain uninterrupted service.

Connection to a party line service is subject to state tariffs. Contact the state public utility commission, public service commission or the corporation commission for information.

If your home has specially wired alarm equipment connected to the telephone line, ensure the installation of the Quadro does not disable your alarm equipment. If you have any questions about what will disable alarm equipment, consult your telephone company or a qualified installer.

Electrical Safety Advisory

To reduce the risk of damaging power surges, we recommend you install an AC surge arrester in the AC outlet from which the Quadro is powered.

Industry Canada Statement

This product meets the applicable Industry Canada technical specifications.

Safety Information

Before using the Quadro, please review and ensure the following safety instructions are adhered to:

- To prevent fire or shock hazard, do not expose your Quadro to rain or moisture.
- To avoid electrical shock, do not open the Quadro. Refer servicing to qualified personnel only.
- Never install wiring during a lightning storm.
- Never install telephone jacks in wet locations unless the jack is specified for wet locations.
- Never touch uninsulated telephone wire or terminals unless the telephone line has been disconnected at the network interface.
- Use caution when installing or modifying cable or telephone lines.
- Avoid using your Quadro during an electrical storm.
- Do not use your Quadro or telephone to report a gas leak in the vicinity of the leak.
- An electrical outlet should be as close as possible to the unit and easily accessible.

Emergency Services

The Quadro SIP Service is intended to function as a secondary telephone service. This service is made available through the Internet and therefore is dependent upon a constant source of electricity and network availability. If a power outage occurs, the Quadro SIP Service automatically will be disabled. User understands in the event of a power or network outage, the Quadro SIP Service will not support 911 emergency services, and further, such services only will be available via the user's regular telephone line that is not connected to the Quadro. User further acknowledges that any interruption in the supply or delivery of electricity or network availability is beyond Epygi's control and Epygi shall have no responsibility for losses arising from such interruption.

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Manual II: see Administrator's Guide

This guide describes in detail the menus available for administrators only. Furthermore, it includes all the system's default values at a glance.

Manual III: see Extension User's Guide

This guide describes in detail the menus available for extension users. Furthermore, it includes all the call codes at a glance.

About This Installation Guide

This Installation Guide explains the installation of the Quadro IP PBXs of Quadro6L, Quadro4L and Quadro2x2 series.

- **Quadro6L** offers 6 phone lines (FXO), 1 Ethernet LAN port and 1 Ethernet WAN port as external interfaces.
- **Quadro4L** offers 4 phone lines (FXO), 2 phone extensions (FXS), 1 Ethernet LAN port and 1 Ethernet WAN port as external interfaces.
- **Quadro2x2** offers 2 phone lines (FXO), 2 phone extensions (FXS), 1 Ethernet LAN port and 1 Ethernet WAN port as external interfaces.

This Installation Guide gives step-by-step instructions to provision the Quadro and configure the phone extensions with the Epygi SIP Server. After successfully configuring the Quadro, a user will be able to make SIP phone calls to remote Quadro devices, make local calls to the PSTN and access the Internet from devices connected to the LAN.

This Installation Guide neither describes the PBX, Auto Attendant, Call Relay, and Voice Mail features of the Quadro nor does it provide advanced firewall and VPN configuration information. For these features, refer to the Administrator's and Extension User's Guides.

[Step 1: Installing the Quadro](#) explains the connection of cables and devices to the Quadro.

[Step 2: Configuring the Quadro](#) describes the configuration steps necessary to integrate the Quadro into your network environment.

[Step 2-A: Using IP Lines](#) explains how to configure IP lines on the Quadro IP PBX and to connect IP phones to become functional in the Quadro's LAN.

[Step 2-B: Using Key System Emulation](#) explains how to configure SLA lines.

[Step 2-C: Using Receptionist](#) refers to the document describing Receptionist's configuration on the Quadro.

[Step 3: Registering on Epygi's Technical Support](#) shows you how to access the Epygi Technical Support Center and the Epygi SIP Server.

[Step 4: Making/Receiving Calls](#) explains how to enable the Quadro's various telephony features.

[Appendix: Changing the Admin Password](#) explains how to change the default administrator password.

[Appendix: Configuring NAT Traversal](#) explains configuration of the Quadro if it is placed behind a NAT enabled router.

[Appendix: Registering on Epygi's SIP Server](#) explains how to register on Epygi's powerful SIP server.

[Appendix: Checking the Connections](#) gives hints on solving common problems.

Requirements

- One 120/240 VAC power outlet in close proximity to the Quadro.
- One RJ45 Ethernet 10/100 broadband Internet connection.
- At least one RJ11 telephone connection is recommended to connect the Quadro to the PSTN network.
- At least one IP phone with an RJ45 connector connected to the Quadro WAN port directly or through a hub or switch.
- One CAT 5 Ethernet cable with an RJ45 connector to connect to the Quadro LAN port.
- One PC with a 10/100 Mbps Ethernet card or adapter installed.
- TCP/IP network protocol installed on each PC.
- For optimal results, Internet Explorer 5.5 or higher, or Netscape Navigator 4.7 or higher are recommended.

Please Note: The Quadro6L/4L/2x2 is shipped with one RJ11 cable and one straight RJ45 CAT 5 cable. If the LAN connector of the Quadro connects to a hub or switch, a crossover cable may be required.

Hardware Overview

The Connectors Panel of Quadro6L/4L/2x2

The illustration below includes the connector's panel of Quadro6L model.

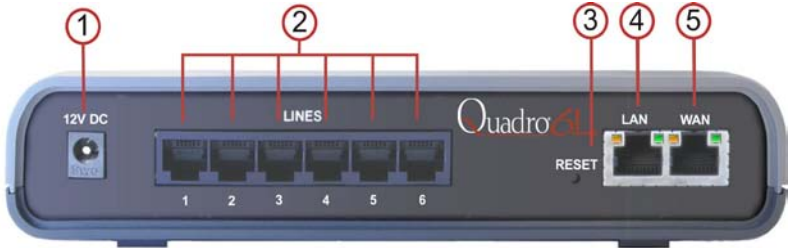


Fig. I- 1: Connectors Panels of Quadro6L IP PBX

The illustration below includes the connector's panel of Quadro4L/2x2 models.



Fig. I- 2: Connectors Panels of Quadro4L IP PBX

1. Power supply socket. **Use only the power adapter delivered with the Quadro.**
2. LINES sockets to connect the Quadro to the PSTN network using standard analog phone service. These are FXO (Foreign Exchange Office) analog ports.
3. The **Reset** button may be used in two ways: (1) to initiate a normal reset or (2) to carry out a factory reset. A normal reset is executed by pressing the **Reset** button with a paper clip for an instant.

Pressing the reset button and holding it down for seven seconds or more will execute a factory reset. This will restore the factory defaults and clear all settings including the IP address and the administration password you entered.

Please Note: A Factory Reset forces the default LAN IP address of 172.30.0.1 and default admin password of 19.

4. RJ45 socket to attach to the Local Area Network (LAN) via an Ethernet CAT 5 cable. If a PC is connected directly to this socket, a straight cable is used. If an Ethernet hub, router or switch is used; a crossover cable may be required. This port may also be used to connect IP phones to the Quadro (optional). In this case, it is recommended to use a hub or a switch to connect the PC along with IP phones to the Quadro's LAN port.

5. RJ45 socket to attach the Internet Uplink (WAN) via an Ethernet CAT 5 cable. This port may also be used to connect IP phones to the Quadro. The default configuration settings assume that IP phones are attached to this, rather than the LAN port.
6. PHONE sockets with RJ11 connectors enable connectivity of regular analog telephones. These are FXS (Foreign Exchange Station) analog ports.

Quadro6L/4L/2x2's Front Panel LEDs



Fig. I- 3: Quadro4L's Front Panel LEDs

1	BUSY , green Status of CPU	off : No power on or blinking : Normal activity	
2	INFO/FAULT , yellow/red/green System information	on (yellow): device is booting on (red): error or system is booting on (green): system is operational	blinking (yellow/green): event occurred, details specified in the System Event section of the Man- agement interface blinking (red/green): system unusable blinking (red/yellow): emergency firmware is needed blinking (red/green/red/yellow): firmware update
3	For Quadro 6L- Green LED for FXO Lines 1 – 6	on or blinking : line in use off : line not in use	
4	For Qudaro4L- Green LED for FXO Lines 1 – 4	on or blinking : line in use off : line not in use	
5	For Qudaro2x2- Green LED for FXO Lines 1 – 2	on or blinking : line in use off : line not in use	
6	EXT 1 – Green LED (available only for Qua- dro4L and Quadro2x2)	on or blinking : line in use off : line not in use	
7	EXT 2 – Green LED (available only for Qua- dro4L and Quadro2x2)	on or blinking : line in use off : line not in use	

LED Indication during a firmware update

A firmware update is indicated by the yellow/red/green **Info/Fault** LED. It will blink red/green for about five minutes while the firmware is updated. The Quadro will then re-boot automatically showing the boot LED sequence.

LED Indication during a boot sequence

A boot sequence is indicated as follows: The yellow/red/green **Info/Fault** LED will glow red for a few seconds, then turn to yellow for another four or five minutes while the green **Busy**

LED is blinking. Once the **Info/Fault** LED is green, the boot sequence has been completed successfully.

LED indication during uploading an emergency firmware

The yellow/red/green **Info/Fault** LED will stop blinking alternately red/yellow and start blinking red/green/red/yellow. This shows that Quadro has accepted the emergency firmware and is loading it. After a few seconds, Quadro will boot, showing the boot LED sequence.

Step 1: Installing the Quadro

Networking Overview

To establish a connection between the Internet and your local area network (LAN), an access router is needed. The Quadro6L/4L/2x2 may serve, among other functions, as an access router, and will perform the task of connecting your LAN, or a group of one or more PCs, to the wide area network (WAN) or the Internet. The Quadro will process and regulate the data traffic between these two networks. The Quadro6L/4L/2x2 has one LAN port that can connect to Ethernet hubs and switches on the LAN, allowing additional devices to be connected to the network.

The Quadro is a device with two sides: one side connects to your LAN, and the other side connects to the Internet, or the WAN. Quadro's firewall and Network Address Translation (NAT) functionality protects your LAN from being seen from the Internet side making the LAN private and secure.

The Ethernet WAN port transmits up to 10 Mbps, and the LAN port transmits at 10 Mbps or 100 Mbps.

Every device within an IP network requires a unique IP address to identify itself. Since the Quadro connects to both the LAN and the WAN, it has to be part of both networks, and must have two IP addresses: one for the WAN side and one for the LAN side. The Quadro's integrated firewall/NAT functionality will hide the LAN IP address from the WAN (Internet) side.

There are two ways of assigning an IP address: statically or dynamically.

A Static IP address is a fixed, manually assigned IP address that remains valid until changed. If you plan to use the Quadro as your Internet access router, contact your Internet Service Provider (ISP) to find out if a static IP address is assigned to your account. If so, you will need this static IP address when configuring the Quadro device.

A dynamic IP address is a temporary address that is automatically assigned by your ISP and will change periodically. If your ISP offers a dynamic IP address, the Quadro will act as a DHCP client and will receive a new IP address from the ISP's DHCP server or PPPoE feature.

Please Note: A DHCP client is a piece of software that requests an IP address from a DHCP server. A DHCP server assigns on request a unique IP address to a device. The Quadro, like many routers, acts as a DHCP client on its WAN interface and as a DHCP server on its LAN interface.

The Quadro must be visible to the Internet to be able to receive and send VoIP calls. When the Quadro is placed in a private network, typically behind existing routers, it will by default attempt to pass through the NAT of this router with its STUN (Simple Traversal of UDP over NAT) feature. STUN will work without user configuration with the majority of basic routers. In some scenarios, port forwarding on the router is required to make the Quadro accessible to other Quadro devices and the Epygi SIP Server on the Internet. Another configuration option is to use the Quadro as the Internet access router, connected directly to the WAN, eliminating the traverse to the local NAT firewall.

LAN/WAN Connection Options

- A Quadro6L with an Ethernet WAN port behind a router, which is connected to a cable or xDSL modem. IP phones are placed on the WAN side of the Quadro6L.

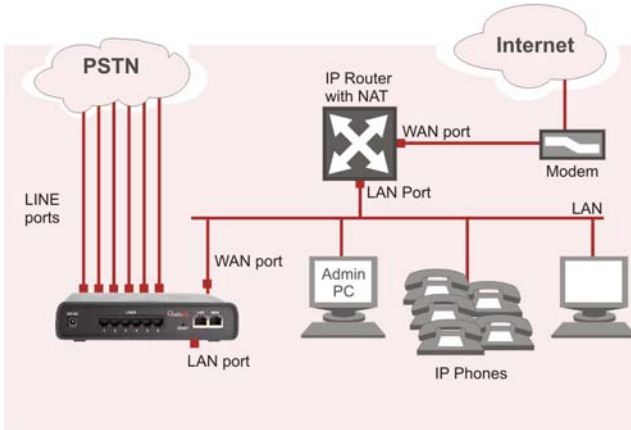


Fig. I-4: Configuration: Quadro6L behind a router with IP phones on WAN

- A Quadro4L/2x2 with an Ethernet WAN port behind a router, which is connected to a cable or xDSL modem. IP phones are placed on the WAN side of the Quadro4L/2x2.

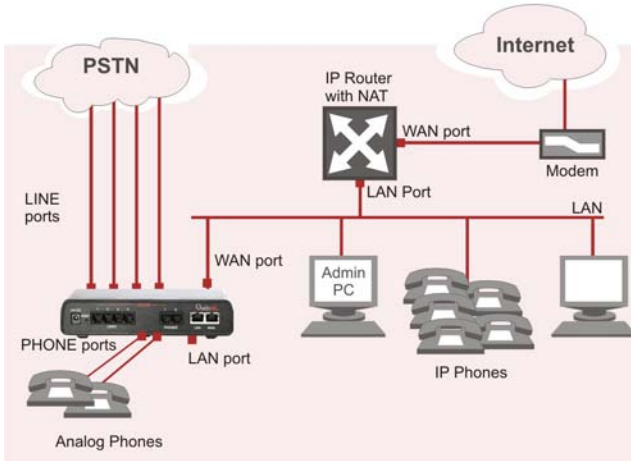


Fig. I-5: Configuration: Quadro4L/2x2 behind a router with IP phones on WAN

In this and the following configuration (Fig. I-4, Fig. I-5, Fig. I-6 and Fig. I-7), the IP router typically acts as a DHCP server for the LAN and assigns the IP addresses to the PCs and other devices. The Quadro can be connected through its WAN port directly to one of the router's LAN ports and will get an IP address from the router. By default, the Quadro acts as a DHCP client on the WAN port. The IP phones are placed on the WAN side of the Quadro4L/2x2, connected to the company LAN.

The Admin PC can be connected to the Quadro WAN or LAN port to access the Web Man-

agement of the Quadro.

Please Note: Since Quadro uses STUN by default, it will work with most basic routers without any further configuration.

- A Quadro6L with an Ethernet WAN port behind a router, which is connected to a cable or xDSL modem. IP phones are placed on the LAN side of the Quadro6L.

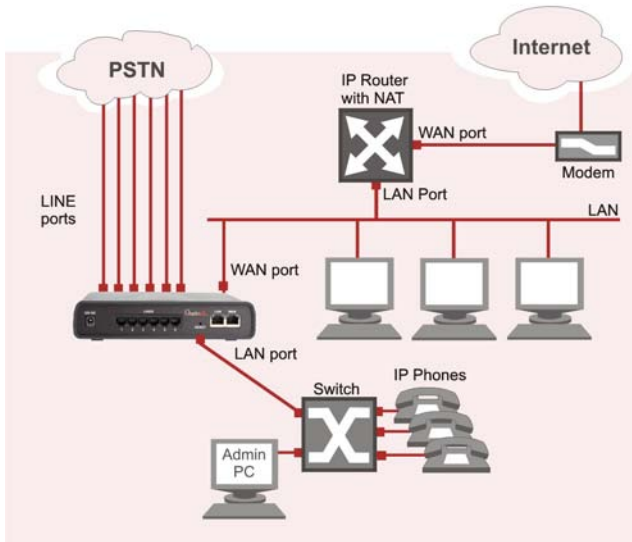


Fig. I- 6: Configuration: Quadro6L behind a router with IP phones on LAN

- A Quadro4L/2x2 with an Ethernet WAN port behind a router, which is connected to a cable or xDSL modem. IP phones are placed on the LAN side of the Quadro4L/2x2.

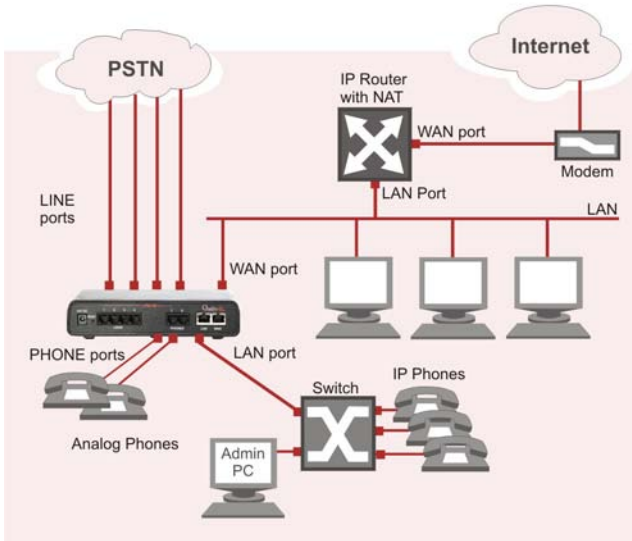


Fig. I- 7: Configuration: Quadro4L/2x2 behind a router with IP phones on LAN

- **A Quadro6L used as an Internet Access Router, connected directly to the Internet.**

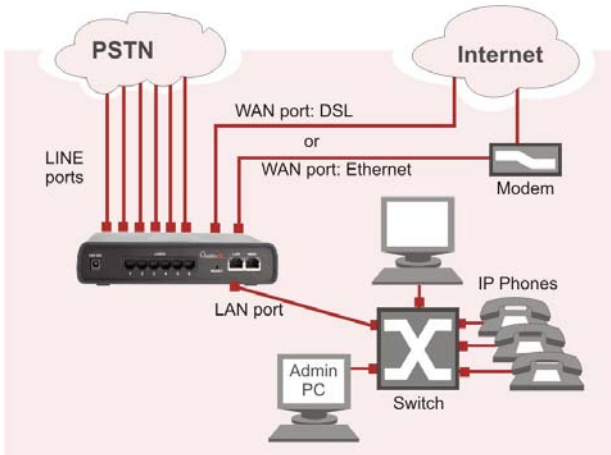


Fig. I- 8: Configuration: Quadro6L used as Internet Access Router

- **A Quadro4L/2x2 used as an Internet Access Router, connected directly to the Internet.**

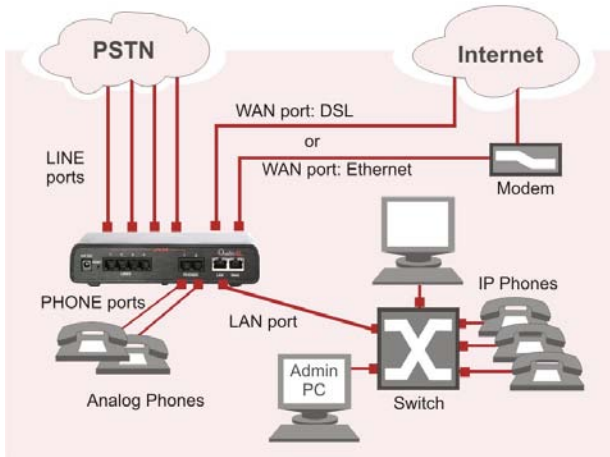


Fig. I- 9: Configuration: Quadro4L/2x2 used as Internet Access Router

Please Note: The Admin PC is connected to the Quadro's LAN port through a switch/hub to access the Web Management of the Quadro (Fig. I -6, Fig. I -7, Fig. I -8 and Fig. I -9). It is recommended to have Admin PC acting as a DHCP client and obtaining IP address from the Quadro.

Connecting the Hardware

- **Quadro6L behind a router with IP phones connected to WAN**

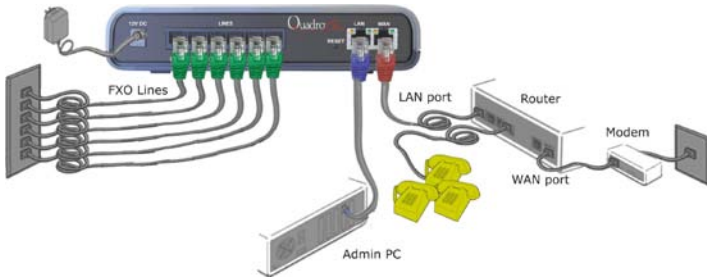


Fig. I- 10: Installation: Quadro6L behind a router with IP phones on WAN

- **Quadro4L behind a router with IP phones connected to WAN**
Quadro2x2 is connected accordingly.

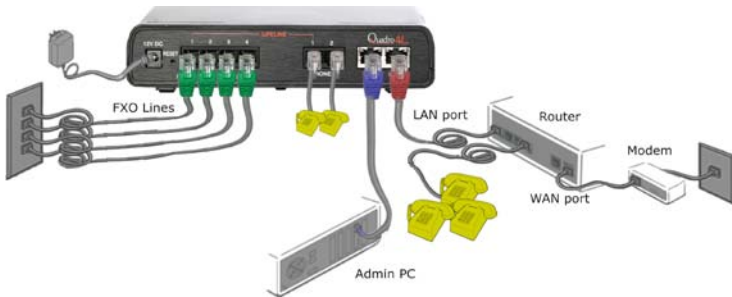


Fig. I- 11: Installation: Quadro4L behind a router with IP phones on WAN

- **Quadro6L behind a router with IP phones connected to LAN**

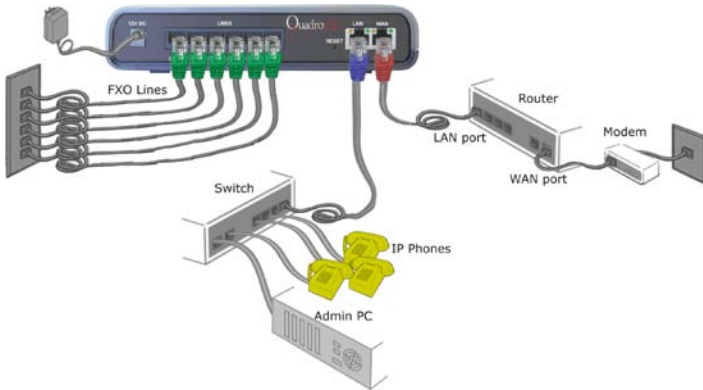


Fig. I- 12: Installation: Quadro6L behind a router with IP phones on LAN

- Quadro4L behind a router with IP phones connected to LAN**
 Quadro2x2 is connected accordingly.

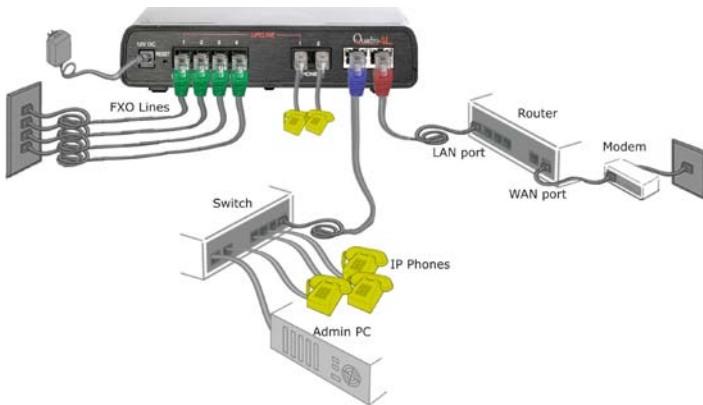


Fig. I- 13: Installation: Quadro4L behind a router with IP phones on LAN

- Quadro6L used as Internet access router**

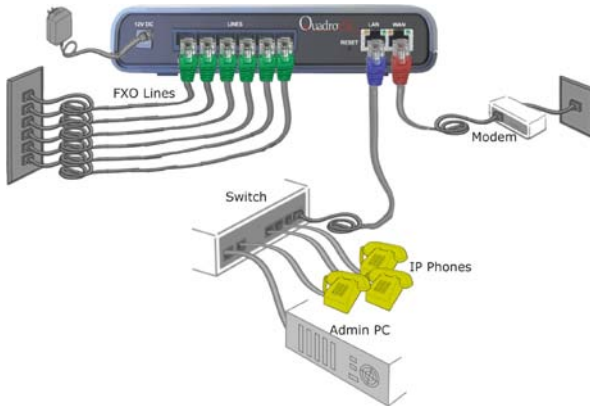


Fig. I- 14: Installation: Quadro6L used as an Internet Access Router

- **Quadro4L used as Internet access router**

Quadro2x2 is connected accordingly.

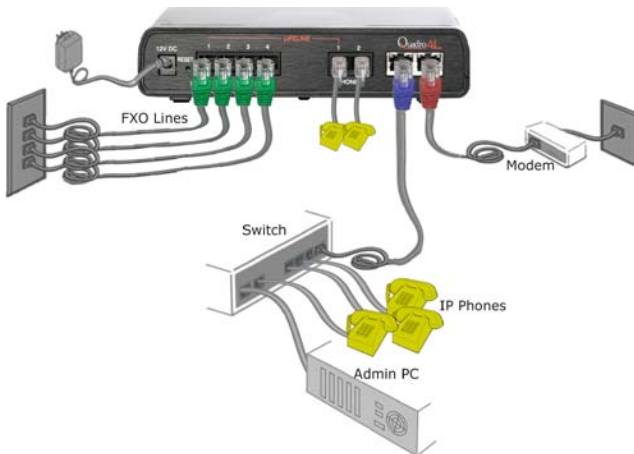


Fig. I- 15: Installation: Quadro4L used as an Internet Access Router

- Verify the product package contents are complete. Refer to the contents sheet included in the packaging to determine if all the items were shipped in the box.
- Before you connect the hardware, make sure that all devices are powered off.
- Connect at least one of Quadro's LINE (FXO) ports to the telephone service from the PSTN. The Quadro6L offers connectivity of six lines, the Quadro4L offers connectivity of four lines and the Quadro2x2 offers connectivity of two lines.
- **Please Note:** If your Internet connection is a DSL modem, you may need to use a micro filter between the FXO LINE port and the phone line. Micro filters are typically provided by your ISP but are also available at most computer stores. If a micro filter is already installed, simply connect the RJ11 from the existing phone to the Quadro6L port leaving the micro filter connection as is.

- Connect the Ethernet port on your PC via a straight CAT 5 cable with an RJ45 connector to the LAN socket of the Quadro. If a hub or switch is connected between the Quadro and your PC, use a crossover cable from the LAN interface of the Quadro to the hub/switch.
- Connect at least one SIP phone to the Quadro. You will need an intermediate hub/switch. Use a crossover cable to connect the hub/switch to the Quadro's LAN or WAN socket. Plug your SIP phones to the hub/switch with a straight CAT 5 cable with an RJ45 connector. The same hub/switch can also be used to connect PCs to the Quadro.
- Connect the WAN port of the Quadro to the Internet service via a cable or DSL modem.
- Power up the DSL or Cable modem first.
- Connect the power adapter to the POWER port on the Quadro's rear panel and plug the power adapter into a power outlet. Only use the original Quadro power adapter and plug it into a power strip with surge protection or to a UPS if available.
- The red LED (Fault) will glow for several seconds followed by the yellow LED (Info), which will glow for several minutes. When Info LED is off, the Quadro is operational.
- Power up any hub or switch followed by any PC and other devices on the LAN side.
- Check the LEDs: The green Busy LED must glow continuously. The green LAN and WAN LEDs will blink when cables are connected to these ports and all devices are powered up. If the green LAN and WAN LEDs do not blink, verify cabling and ensure that all devices are powered up.

Please Note: CAT 5 cables can be faulty without any visual indication. The LAN and WAN LEDs verify that the Ethernet connection is established between the end points. If these LEDs are not illuminated, there is a connection problem between the Quadro and the other device. Some modems, hubs, switches and routers will require the use of crossover cables.

Step 2: Configuring the Quadro

Step 2.1: Logging into Quadro

- Start a browser (MS Internet Explorer, Netscape, Opera) on a PC connected to the Quadro6L/4L/2x2 via the LAN or WAN interface.
- In the address field, enter **http://Quadro_WAN_IP** (the IP address assigned by the company's DHCP sever) if the PC is connected to the Quadro WAN port; or **http://172.30.0.1** (Quadro's default LAN IP address) if the PC is connected to the Quadro's LAN port.
- The **Login** page of the Quadro will be displayed (see Fig. I- 16).




Fig. I- 16: Login page

Enter **admin** as the Username and **19** as the password to log in as the administrator. Once you log in, you will enter into the Quadro Management Menu.

Please Note: If you consecutively enter a wrong password and/or username for five times the device will be unavailable for login for five minutes.

After logging in, the **Quadro Management** page will be displayed.

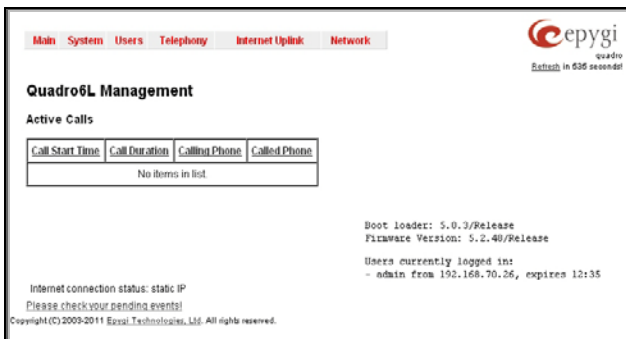


Fig. I- 17: Quadro Management page

Step 2.2: System Configuration Wizard

The **System Configuration Wizard** must be run upon Quadro first startup. The **System Configuration Wizard** is a tool for the administrator to specify regional configuration settings and to define the Quadro's Local Area Network settings.

To run the wizard, select the **System Configuration Wizard** from the **System** menu.

For the basic configuration, some pages in this wizard may be skipped and left default for the basic configuration.

Please Note: It is strongly recommended that factory default settings are left unchanged if their meanings are not completely understandable to the party administrating the Quadro.

System Configuration

The first page of System Configuration Wizard shows all items to be configured. Click the **Next** button to start. Enter into the **Host Name** field the unique name (top right corner, under Epygi logo) for the Quadro device. The **Domain Name** text field requires the LAN side domain name which the Quadro belongs to.

For a basic configuration, the **LAN IP address** does not need to be changed, but if you must change it (for example, to integrate the device into an existing LAN), record the new LAN IP address and have it handy. You'll need it for subsequent access to Quadro's management from its LAN interface.

Please Note: The **Host Name** is very useful when many Quadro's are part of a network and one administrator has remote access to all of them. All Quadro pages show the hostname on the top right corner under Epygi logo.

Fig. I- 18: System Configuration page

Clicking **Next** shows the page **DHCP Settings for the LAN Interface**.

DHCP Settings for the LAN Interface

If the DHCP server is enabled, the Quadro will automatically assign dynamic IP addresses to the stations connected to its LAN port.

If you didn't change the default LAN IP address of the Quadro, you also may leave the default values for the **IP Address Range**. Make sure your connected LAN devices belong to the same network as the LAN port of your Quadro.

Please Note: Make sure there is only one DHCP server on the LAN, otherwise, unpredictable network behavior can occur.

The screenshot shows the 'System Configuration Wizard' window with the 'Network' tab selected. The title is 'DHCP Settings for the LAN Interface'. There is a checked checkbox for 'Enable DHCP Server'. Below it, the 'Dynamic IP Address Range' is set from 172.30.0.100 to 172.30.0.254, with 'IP-Clipboard' buttons next to the last octets. The 'WINS Server' is set to 0.0.0.0 with an 'IP-Clipboard' button. The 'Static mappings' section is empty. At the bottom, there are 'Previous', 'Next', 'Cancel', and 'Help' buttons. A small footer contains the text: 'Please check your e-mail events! Copyright (C) 2009-2011 Epygi Technologies, LLC. All rights reserved.'

Fig. I- 19: DHCP Settings for the LAN Interface page

Click on **Next** to display the **Regional Settings** page.

Regional Settings

If your Quadro is located outside of the United States, it is important to properly configure your line connections to the PSTN in your location.

The screenshot shows the 'System Configuration Wizard' window with the 'Network' tab selected. The title is 'Regional Settings and Preferences'. The 'Your locale (location)' is set to 'US'. The 'Timezone' is set to '(GMT-06:00) Central Time (US & Canada)'. Under 'Choose Default OUI Theme', there are radio buttons for 'Plain' and 'Dynamic', with 'Dynamic' selected. There is also a checked checkbox for 'Choose Theme on Login'. At the bottom, there are 'Previous', 'Next', 'Cancel', and 'Help' buttons. A small footer contains the text: 'Please check your e-mail events! Copyright (C) 2009-2011 Epygi Technologies, LLC. All rights reserved.'

Fig. I- 20: Regional Settings page

Proper configuration of **Regional Settings** is important for the functionality of the voice subsystem. The Regional Settings determine the proper telephony parameters on the LINE

ports of the Quadro for the specified country. Select the country where the Quadro is located. If you do not find your country in the list, pick the closest in your timezone.

The Quadro obtains the correct time automatically over the Internet from a time server. If you are not located in the US/Central standard time zone, you will need to change the **Timezone** to your region.

Click on **Next** to display the **Emergency and PSTN Access Code Settings** page.

Emergency and PSTN Access Code Settings

The screenshot shows a web-based configuration wizard titled "System Configuration Wizard" with a sub-header "Emergency Codes and PSTN Access Code Settings". The main instruction reads: "Please enter all your Emergency Codes separated by commas and PSTN Access Code into following fields:". There are two input fields: "Emergency Codes:" containing the text "911" and "PSTN Access Code:" with a dropdown menu showing "9". At the bottom, there are four buttons: "Previous", "Next", "Cancel", and "Help". A small footer note says "Please check your pending events!" and "Copyright (C) 2000-2011 Ezyal Technologies, Ltd. All rights reserved."

Fig. I- 21: Emergency and PSTN Access Code Settings page

You may enter your local specific emergency codes into the appropriate field. For example, in the United States the emergency number is 911, whereas in Germany it is 112,110. This setting will take effect for regular extensions if at least one FXO line is detached from the SLA. In the default configuration (FXO lines are attached to SLAs), to call the emergency number, press the SLA button on any IP phone connected to the Quadro and dial your configured emergency code without any prefixes (see [Step 4: Making/Receiving Calls](#)). Calling the emergency number is accomplished in the same way if FXO lines are not attached to SLAs. But in this case you should use your extension buttons (Line1-Line3 on Aastra phones, Programmable Button 1 -6 on snom phones by default).

Please Note: If FXO lines are attached to SLAs, the emergency code specified on this page will not work if the **Blind Transfer to Extension** service is activated with an empty access code and three-digit extensions are used on the system. For more information on the **Blind Transfer to Extension** Service, please see Manual II: Administrator's Guide.

The PSTN Access Code is the prefix number you choose to dial to tell the Quadro to "make this call over PSTN" (see [Step 4: Making/Receiving Calls](#)). Users in the United States will usually choose 9 here. European users usually would want to enter zero (0). If you do not enter anything into this field the currently configured PSTN Access Code will stay unchanged.

Click on **Next** to display the **Summary Page**.

Finishing the System Configuration Wizard



Fig. I- 22: System Configuration Wizard finishing page

Click on **Finish** to complete the System Configuration Wizard. The Quadro will then stop internal functions and apply the changes made in the Wizard.

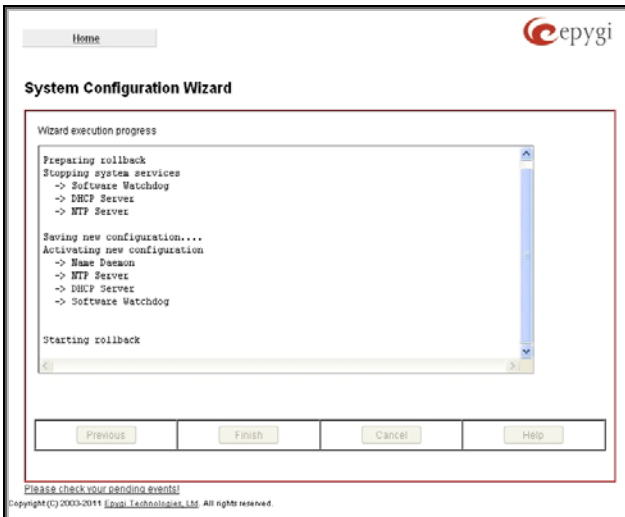


Fig. I- 23: Wizard Execution Progress page

After this is complete, the Quadro will reply with the **Confirm Settings** page requesting confirmation of the changes. Press **OK** to confirm the settings.

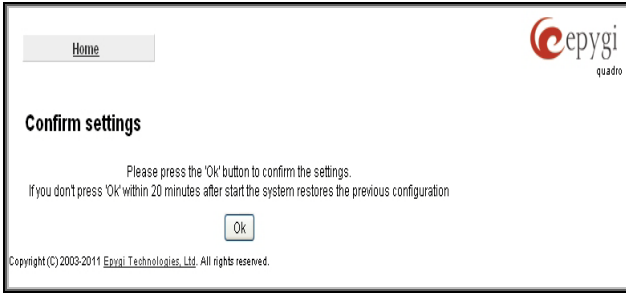


Fig. I- 24: Confirm Settings page

Please Note: You must confirm the settings within 20 minutes. Otherwise the device will **revert back to the previous configuration and reboot.**

Please Note: If you do not use DHCP for your LAN and you have changed your LAN settings, make sure that the IP address of the PC connected to Quadro is still within the specified IP address range, otherwise your PC may not establish a connection to Quadro.

If you changed the network configuration of the LAN, restart your LAN connection to receive a new IP address from the new network. Then you can access the Web Management of the Quadro on the new IP address you've assigned to the Quadro.

Step 2.3: Internet Configuration Wizard

Open the **Internet Configuration Wizard** by selecting the corresponding menu item on the **System** menu. The **Internet Configuration Wizard** is a tool for the administrator to configure the WAN settings and to adjust Quadro's connectivity in the global network. It must be run if Quadro is desired to be connected to the Internet.

The page **Getting Started** will be displayed:

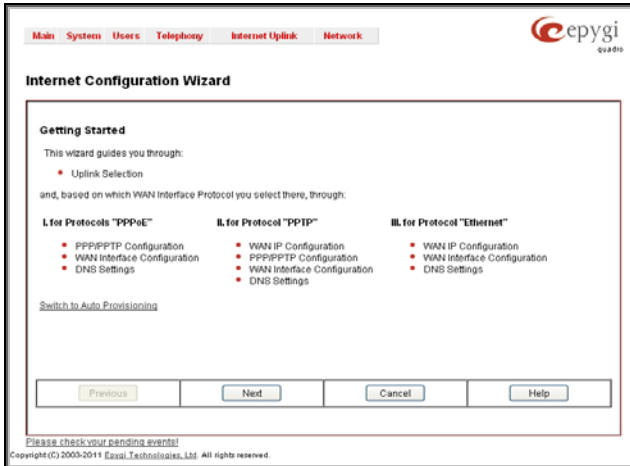


Fig. I- 25: Internet Configuration Wizard

This first page of the **Internet Configuration Wizard** is for informational purposes only and lists the items to be configured, Click on the **Next** button for the **Uplink Configuration** page.

Before configuring the WAN port to the Internet, you need to get the following information from your internet service provider:

- **Bandwidth** - how much is available upstream and downstream?
- **WAN IP Configuration** - is DHCP supported? If yes, no more information is needed. If DHCP is not supported, the following data is needed: the WAN IP address, the subnet mask, the IP address of the standard gateway and the IP address of the Domain Name Server (DNS).
- **MAC address** - needed when the ISP requires a specific MAC address for the WAN.

Additionally, for Point-to-Point Protocol over Ethernet (PPPoE) WAN interface, you need to get the following information from your internet service provider:

- **PPP Configuration** - does your ISP use a dynamic or fixed WAN IP address? If the WAN IP address is dynamic, no more information is needed. If the WAN IP address is fixed, you will have to enter it.
- **Authentication** - does your ISP require authentication? If authentication is required, information about the corresponding method (PAP, CHAP or MSCHAP) is needed including the username and password of the PPPoE account.

This information will be needed to be inserted in the Internet Configuration Wizard.

Uplink Configuration

Select the desired WAN Interface Protocol and enter the **WAN Interface Bandwidth** to assure the quality of IP calls.

The screenshot shows the 'Internet Configuration Wizard' with the 'Uplink Configuration' step. The 'WAN Interface Protocol' section has three radio buttons: PPPoE, PPTP, and Ethernet. The Ethernet option is selected. The 'WAN Interface Bandwidth' section has three input fields: 'Upstream' with a value of 10000 [kbit/s] (max. 10000), 'Downstream' with a value of 10000 [kbit/s] (max. 10000), and 'Min Data Rate' with a value of 0 [kbit/s]. At the bottom, there are four buttons: 'Previous', 'Next', 'Cancel', and 'Help'. A footer note says 'Please check your pending events!' and 'Copyright (C) 2009-2011 Epygi Technologies, Ltd. All rights reserved.'

Fig. I- 26: Uplink Configuration

If the available bandwidth is used to the point where the quality of an additional IP call would suffer, then new IP calls are rejected.

The bandwidth provided by your ISP must be specified for both **Upstream** and **Downstream** fields. The default entry in both fields is **10000**, the maximum bandwidth of the 10 Mbit/s uplink module. For basic DSL and cable modem service in the United States, typical values are **300** for Upstream and **1500** for Downstream.

The **Min Data Rate** text field is used to specify the amount of bandwidth reserved for data applications. The value entered here needs to be smaller than the value specified for **Upstream Bandwidth**.

Specify the **WAN Interface Protocol** by choosing between available WAN interface protocols: **PPPoE** (Point to Point over Ethernet), **PPTP** (Point to Point Tunneling Protocol) and **Ethernet**. Use Ethernet for DHCP or static IP.

For **Ethernet**, clicking **Next** will display the **WAN IP Configuration** page. If **PPPoE** is the selected WAN Interface Protocol, the next page will be **PPP/PPTP Configuration**. For **PPTP** WAN Interface Protocol, **PPP/PPTP Configuration** page will follow the **WAN IP Configuration**.

WAN IP Configuration

Your Internet Service Provider (ISP) should provide this information.

- **Assign automatically via DHCP** - The parameters are set automatically by the ISP. This is common with cable modem and DSL service.
- **Assign Manually** requires the administrator to enter the external **IP Address**, the corresponding **Subnet Mask**, and the IP address of the **Standard Gateway**. This is common when you have a static IP address with your ISP.

Internet Configuration Wizard

WAN IP Configuration

IP configuration of the WAN interface

Assign automatically via DHCP
 Assign manually

IP Address:	192	168	74	117	IP-Clipboard
Subnet Mask:	255	255	255	0	IP-Clipboard
Default Gateway:	192	168	74	5	IP-Clipboard

Please check your pending events!

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Fig. I- 27: WAN IP Configuration page

Click on **Next** to display the **WAN Interface Configuration** page.

PPP/PPTP Configuration

Enter the IP address of the PPTP server into the **PPTP Server** text field.

Choose the encryption for the traffic over the PPTP interface from the **Encryption** drop down list.

Authentication Settings require the Username and the Password used for the authentication on the ISP server.

Dial Behavior radio buttons:

- **Dial Manually** - if this radio button is activated, a button will be displayed in the main management window that serves to switch the Internet connection on/off. When accessing the Internet, every station of the connected LAN has to connect to Quadro first.
- **Always connected** - Quadro stays in the always connected mode. This will allow Quadro always remain online in the network.

The **IP Address Assignment** field is used to specify the external IP address given to the Quadro. Usually it is a dynamic address but in some cases you may be given a static IP address.

The screenshot shows the 'Internet Configuration Wizard' window with the 'PPP / PPTP Settings' tab selected. The configuration includes:

- PPTP Server:** 172.11.169.80 (with an IP-Clipboard button)
- Encryption:** 128 Bit (dropdown menu)
- Authentication Settings:**
 - User name: quadro
 - User password: ****
- Dial behaviour:**
 - Dial manually
 - Always connected
- IP Address Assignment:**
 - Dynamic IP Address
 - Fixed IP Address (Fixed IP Address: 192.168.75.235 with an IP-Clipboard button)
- Keep connection alive

Navigation buttons at the bottom: Previous, Next, Cancel, Help.

Fig. 1- 28: PPP/PPTP Configuration page

If your ISP assigns a dynamic IP address, activate the **Dynamic IP Address** radio button, otherwise activate the **Fixed IP Address** radio button and enter the IP address you were assigned by your ISP.

Keep Connection Alive checkbox enables keeping the connection alive by sending control packets dedicated for the link state verification.

Click the **Next** button to display the **WAN Interface Configuration** page.

WAN Interface Configuration

If your ISP requires a specific MAC address, (for example, for authentication), it can be entered on this page. The required MAC address can be entered into the **User defined** field. If a specific MAC address is not required, leave the default selection **This device** selected.

The screenshot shows the 'WAN Interface Configuration' section of the 'Internet Configuration Wizard'. It features a 'MAC Address Assignment' section with two radio buttons: 'This device' (selected) and 'User defined'. The 'This device' option shows the MAC address '00:09:bd:01:0d:20'. The 'User defined' option has five empty input fields. Below this is the 'Maximum Transfer Unit (MTU)' section, with a dropdown menu set to '1500' and the unit 'Bytes'. At the bottom, there are four buttons: 'Previous', 'Next', 'Cancel', and 'Help'. A small note at the bottom left says 'Please check your pending events!' and 'Copyright (C) 2009-2011 Epygi Technologies Ltd. All rights reserved.'

Fig. I- 29: WAN Interface Configuration page

Use the **MTU** drop down list to select the maximum packet size on the Ethernet (in bytes). Click **Next** to display the **DNS Settings** page.

DNS Settings

For DNS, the selection is set to **Dynamically by Provider**. When using a static IP address, fixed values must be entered.

The screenshot shows the 'DNS Settings' section of the 'Internet Configuration Wizard'. It features a 'Nameserver assignment' section with two radio buttons: 'Dynamically by provider' and 'Fixed Nameserver Address' (selected). The 'Fixed Nameserver Address' option has two rows of input fields. The first row is for 'Nameserver' with values '192', '168', '0', '2' and an 'IP-Clipboard' button. The second row is for 'Alternative Nameserver' with values '192', '168', '0', '156' and an 'IP-Clipboard' button. At the bottom, there are four buttons: 'Previous', 'Next', 'Cancel', and 'Help'. A small note at the bottom left says 'Please check your pending events!' and 'Copyright (C) 2009-2011 Epygi Technologies Ltd. All rights reserved.'

Fig. I- 30: DNS Settings page

The Quadro will suggest the correct settings. If **Dynamically by Provider** is selected, the DNS server settings will be set automatically whenever a connection to the Internet is established.

If **Fixed Nameserver Address** is selected, manually enter the IP addresses provided by your ISP for the name server and the alternative name server.

Clicking **Next** shows the summary page of the Internet Configuration Wizard.

Finishing the Internet Configuration Wizard



Fig. I- 31: Internet Configuration Wizard Summary page

Click the **Finish** button to complete the Internet Configuration Wizard. The Quadro will then stop internal functions and apply the changes made in the Wizard. After this is complete, the Quadro will display the **Confirm Settings** page requesting confirmation of the changes. Press the **OK** button to confirm the settings.

Please Note: the settings should be confirmed within 20 minutes; otherwise, the device will **revert back to the previous configuration and reboot**.

Step 2-A: Using IP Lines

Before starting the IP Lines configuration, the appropriate IP phone should be connected to the Quadro either through its WAN or LAN port. If the phones are placed on the Quadro WAN, which the default configuration assumes, please ensure that the **Connect IP phones from WAN side** checkbox is enabled on the **Line Settings** page (see Fig. I- 32).

The Quadro6L/4L/2x2 provides two options for configuring IP phones:

- The **Plug-and-Play** option is available for supported SIP phones only. The list of these phones is given [below](#). The **Plug-and-Play** option does not require any specific configuration except that the **Enable PnP for IP lines** checkbox should be enabled on the **Line Settings** page (see Fig. I- 32).
- The **Auto-Configuration** option is available for tested and supported SIP phones. The list of tested SIP phones is given [below](#). The **Auto-Configuration** option (described in detail below) requires specifying some basic parameters on the Quadro and restarting the phone.

Please Note: With the both options, IP phones download their configuration from the Quadro’s TFTP server. Therefore, if the phones obtain their network parameters from a DHCP server other than the Quadro’s built-in DHCP server, please ensure that either the server does not provide the “TFTP server” parameter or the parameter is set to the Quadro’s LAN or WAN IP address depending on the location of IP phones.

When using the automatic-configuration option, each IP line should be configured individually from the **Telephony** menu, **Line Settings** page.

Open from the **Telephony** menu and choose **Line Settings** page. The **IP Line Settings** page is displayed.

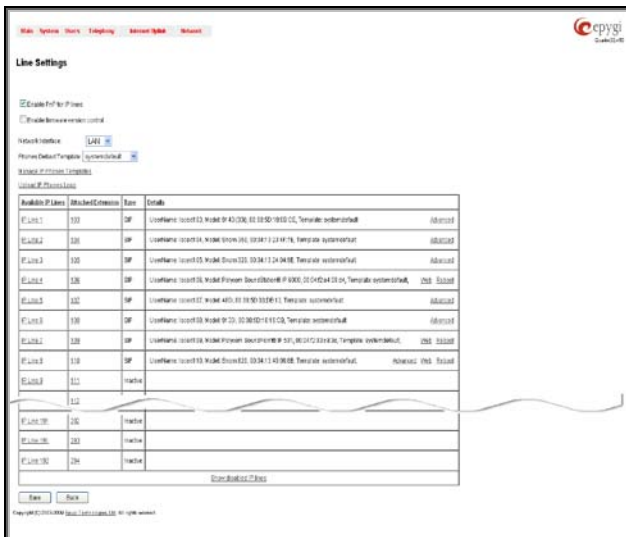


Fig. I- 32: Line Settings page

Click on the IP Line number to enter the **IP Lines Settings** page.

Fig. I- 33: IP Line Settings page

Select the **SIP Phone** radio button. Select the SIP IP phone model from the **Phone Model** drop-down list.

Please Note: If your IP phone is not listed in the **Phone Model** drop-down list, select the **Other** option from the list to configure the SIP phone manually. The SIP phone's configuration is different dependent on the SIP phone model. For more information about SIP Phone configuration, refer to the SIP phone manual or user's guide.

Insert the SIP Phone's **MAC address** in the corresponding fields. The MAC address of an IP phone is usually printed on the back of the phone's base unit.

In the **Line Appearances** text box, enter the number for simultaneous calls supported by the SIP IP phone – which is the sum of the number of active and held calls. For example, if this field is set to **1**, only one active call is possible to have on the phone and making or accepting a second call while the other is on hold will not be allowed. Note, that this number depends on the phone brand and model, and cannot exceed the number of simultaneous calls supported by the phone.

Username and **Password** are required to be inserted for this selection. They should match on both Quadro and SIP phone for a successful connection. The **Password** field is checked against its strength and you may see how strong is your inserted password right below that field. To achieve the well protected strong password minimum 8 characters of letters in upper and lower case, symbols and numbers should be used. If you are unable to define a strong password, press **Choose Generated Password** to use one of system defined strong passwords.

The **Transport** drop down list is used to select the SIP protocol transport layer - UDP, TCP or TLS. For TLS you may activate the TLS certificate update mechanism from IP Phone to obtain the latest certificate generated by the Quadro.

The **Use Session Timer** enables the SIP session timer for the corresponding IP line. This checkbox enables advanced mechanisms for connection activity checking. This option allows both user agents and proxies to determine if the SIP session is still active. Reset the SIP Phone. After restart, the appropriate configuration will be automatically downloaded from the Quadro to the SIP Phone.

Some SIP phones require only reboot for configuration download. Other SIP Phones may require additional configuration. For example, by default IP Dialog SIP Tone II is in non-auto-provisioning mode, therefore the user has to manually enable it on the phone.

To make sure the IP line is configured properly, do the following:

- Go to **Quadro Status – SIP Registration status – Registered IP Lines** to see if IP Line registration is successful.
- Dial *74 to get the line information.
- Make outgoing and accept incoming calls.

Supported SIP Phones

Below is the list of SIP phones that are officially supported by Epygi and can be configured to work with Quadro6L/4L/2x2 using both Plug and Play and/or the automatically configuration options, as well as the full set of advanced features, like paging and intercom:

- snom 190
- snom 200
- snom 220
- snom 300
- snom 320)
- snom 360
- snom 370
- snom 710
- snom 720
- snom 760
- snom 820
- snom 821
- snom 870
- snom MeetingPoint
- snom M3
- snom PA1
- snom m9
- Polycom SoundPoint IP 300SIP
- Polycom SoundPoint IP 330SIP*
- Polycom SoundPoint IP 331SIP*
- Polycom SoundPoint IP 335SIP*
- Polycom SoundPoint IP 450SIP*
- Polycom SoundPoint IP 501SIP
- Polycom SoundPoint IP 550SIP*
- Polycom SoundPoint IP 601SIP
- Polycom SoundPoint IP 650SIP*
- Polycom SoundStation IP 5000*
- Polycom SoundStation IP 6000*
- Polycom VVX 300/310*
- Polycom VVX 400/410*
- POLYCOM VVX 1500*
- POLYCOM KIRK wireless server 6000
- POLYCOM KIRK wireless server 300
- Akuvox SP-R53P
- Aastra 480i
- Aastra 480iCT
- Aastra 9112i
- Aastra 9133i
- Aastra 9143i(33i)
- Aastra 9480i(35i)
- Aastra 9480iCT
- Aastra 6751i
- Aastra 6753i
- Aastra 6755i
- Aastra 6757i(57i)
- Aastra 6757iCT (57iCT)
- Aastra 6730i
- Aastra MBU400
- Aastra 6731i
- Aastra 6735i
- Aastra 6737i
- Aastra 6739i
- Fanvil C62
- Linksys SPA921
- Linksys SPA922
- Linksys SPA941
- Linksys SPA942
- Linksys SPA2002
- Linksys PAP2T
- Yealink SIP-T20P
- Yealink SIP-T22P
- Yealink SIP-T26P
- Yealink SIP-T28P
- Yealink SIP-T32G
- Yealink SIP-T38G
- Yealink SIP-T46G

- SIPUra SPA 841
- Swissvoice IP 10S
- Thomson ST2030S
- Berkshire (ATL) 5000
- Grandstream BT100
- Grandstream BT200
- Grandstream GXP1400
- Grandstream GXP1405
- Grandstream GXP1450
- Grandstream GXP2000
- Grandstream GXP2100
- Grandstream GXP2110
- Grandstream GXP2120
- Grandstream GXP2124
- Grandstream GXP2200
- Grandstream GXV3140
- Grandstream GXV3175
- Grandstream HT286
- Grandstream HT386
- IpDialog SipTone II
- Yealink VP-2009/VP-2009P
- Yealink VP-530
- Yealink W52P
- Telematrix IP550 Spectrum Plus
- Telematrix IP 3300
- Telematrix IP9600 MWD5
- AudioCodes 310HD
- AudioCodes 320HD
- Panasonic KX-UT136-B
- Panasonic KX-UT123-B
- Panasonic KX-UT123NE-B
- Panasonic KX-TGP550T04
- Alcatel T emporis IP200
- Alcatel T emporis IP600
- Alcatel T emporis IP800
- CISCO 7960
- CISCO SPA525G2
- CISCO SPA303
- CISCO SPA501G
- CISCO SPA509G

To use Plug and Play (PnP) option for supported IP phones, connect them to LAN/WAN for the Quadro and power up. If the phone is in default settings then it will automatically select a free IP line and attach to an extension. If not, reset the phone to factory defaults manually.

Please Note: To use PnP the appropriate option should be selected in the IP line settings.

Please Note: In the model's list the Polycom phones with (*) sign are also presented as **Polycom-xx-Pre-3.3.0** due to backward incompatibility of UCSoftware 3.1.1 configuration. It is recommended to use **Pre-3.3.0** models with Application SIP software 3.2.2.0477.

Step 2-B: Using Key System Emulation

The **Key System Emulation** is a widely used service in legacy PBXs simplifying the direct connection to the available PSTN lines. On the Quadro6L/4L, the usage of Key System Emulation services (not available for Quadro2x2) is limited to the IP phones attached to the Quadro through the available IP lines and provides direct connection to the available PSTN lines and SIP networks. In its turn, the IP phones are limited to the following models with the perspective to enlarge the list of recommended IP phones in the future:

- Aastra 480i
- Aastra 480iCT
- Aastra 9133i
- Aastra 9480i
- Aastra 9480iCT
- Aastra 9143i
- Aastra 55i
- Aastra 57i
- Aastra 57iCT
- Aastra 6730i
- Aastra 6731i
- Aastra6735i
- Aastra 6737i
- Aastra 6739i
- snom 320
- snom 360
- snom 370
- snom 710
- snom 720
- snom 760
- snom 820
- snom 821
- snom 870

The Key System Emulation feature allows to:

- Have a direct connection to the available PSTN lines and SIP networks behind the Quadro by pushing the programmable keys on the IP phone.
- Monitor the availability and status of all configured external lines via programmable keys on the IP Phones.
- Place the call on hold from one IP phone and pick it from another IP phone attached on the Quadro.

Go to the **Telephony** menu of the Quadro's Web Management for **Key System Emulation** service configuration.

By default, the 8 SLA lines of the Quadro6L/4L are in inactive mode.

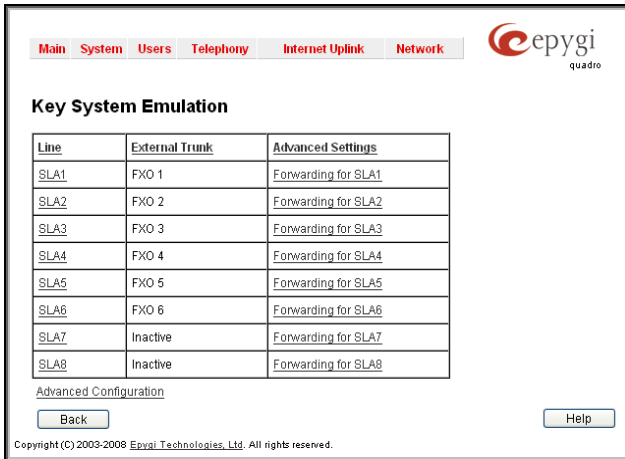


Fig. I- 34: Key System Emulation page

To activate an SLA line, assign FXO lines or SIP number to the SLA lines and configure the IP phone's programmable buttons.

For how to use SLA lines for SIP calls, see the section below.

To configure the IP phones to use the Key System Emulation service of the Quadro, the programmable keys should be adjusted correspondingly. To do so, go to the Telephony menu, **Line Settings**, move to the **IP Line Settings** page. If the IP Line is already configured, push the **Advanced** link for the corresponding IP line in the **Details** column, otherwise configure the IP line first as indicated in the chapter [Step 2-A: Using IP Lines](#).

The **Advanced** link leads you to the **Programmable Keys Configuration** page where programmable keys for the corresponding IP phone can be configured. Assign the SLA line to the preferred Programmable Key and save the settings. Once the corresponding IP phone is restarted, the selected programmable key will be responsible for the calls on the configured SLA line. The corresponding programmable key will be blinking during incoming calls on that SLA line. To make an outgoing call, the caller will simply need to push that programmable key to get access to the FXO line (in default configuration, as indicated above).

The **Advanced Configuration** link moves to the **Advanced Configuration** page that is used to enable/disable the blind transfer service from SLA lines to extensions or their voice mailboxes.

Please Note: By assigning the FXO line to the SLA line, it becomes unavailable for calls through Auto Attendant or Call Routing Table. If you wish to leave FXO line(s) available for calls through the Auto Attendant or Call Routing Table, go to the **Key System Emulation** page from the **Telephony** menu, push the SLA line to which the corresponding FXO (PSTN) line is assigned, choose the **Inactive** option or change the SLA assignment to a SIP server. Now the corresponding PSTN line is not used in the Key System Emulation and is available for regular PSTN calls.

Configuring SLA Lines

You may want to use the SLA lines of the Key System Emulation for SIP calls through certain SIP servers instead of assigning them to the PSTN lines. To do so, go to the **Key Sys-**

tem Emulation page from the **Telephony** menu of the Quadro's Web Management. Push the corresponding SLA line number to get its configuration page.

Fig. I- 35: Key System Emulation – SLA page

The **SLA Name** text field is used to insert the preferred name for the corresponding SLA line. On the IP phones with the display available, this name is visible on the display next to the programmable key.

A group of manipulation radio buttons allow you to configure the SLA line:

- **Inactive** - disables the corresponding SLA line.
- **PSTN** - allows you to assign the SLA line to the available PSTN lines on the Quadro. This selection disappears when there are no more unassigned PSTN lines available.

This means that each FXO line on the Quadro6L/4L is assigned to the SLA line and all incoming calls on that FXO line will be ringing on the corresponding SLA line. Along with this, the programmable key on the IP phone responsible for that SLA line will be blinking during the incoming call. Any user who has the programmable key blinking on his IP phone will be able to pick up the incoming call.

Attention: By assigning a PSTN line to the SLA line, it becomes unavailable for calls through Auto Attendant or Call Routing Table.

- **SIP** - used to assign the SLA line to the certain SIP account. This selection has two sub-selections:
 - **Custom Settings** - used to define a SIP server and SIP registration parameters. The following parameters are required for this selection:

Username - the registration username on the SIP server.

Password - the registration password on the SIP server.

SIP Server - the IP address or the host name of the SIP server.

SIP Port - the port of the SIP server.

Authentication User Name - an identification parameter to reach the SIP server. It should be provided by the SIP service provider and can be requested for some SIP servers only. For others, the field should be left empty.

Outbound Proxy Host Address and **Port** - the IP address or the host name and the port number of the outbound proxy SIP server.

- **Use SLA Settings** - choose this selection to use the SIP settings of another SLA line. This selection is also used to allow multiple line appearances on the same ITSP provider. The **SLA** drop down list is used to select the SLA line whose SIP settings will be used for the corresponding SLA line. The **DID** text field requires an optional identification number used by some ITSP providers to differentiate between the call appearances on the selected line. The **Use DID for outgoing calls** indicates whether the specified DID number should be included in the Caller ID of calls initiated from the SLA. If this checkbox is enabled, the DID number will be sent along with the SIP username. This checkbox should be enabled if the IP-PSTN provider authorizes the users by their DIDs.

For this configuration scenario, choose the **SIP** option with **Custom Settings**. Provide all required information of the SIP server. Save the settings.

Now your SLA line will be handling calls through the defined SIP server. The IP phone can be called by the SIP username of its SLA line. All incoming calls from that SIP server will be blinking on the corresponding programmable key of the IP phone, as described in the previous chapter. For outgoing calls through the defined SIP server, the user should simply push the programmable key assigned to the corresponding SLA line, and dial the SIP number of the called user.

Please Note: Quadro can also be configured in a mixed Key System Emulation mode, i.e. having one SLA lines assigned to the SIP servers will still make possible to have others assigned to the available PSTN lines.

How to disable the Key System Emulation

In the default configuration of the Quadro6L/4L, the Key System Emulation is activated. The 6 FXO lines of the Quadro6L device are correspondingly attached to the first 6 SLA lines (SLA 7 and SLA 8 are inactive) and the 4 FXO lines of the Quadro4L device are correspondingly attached to the first 4 SLA lines (SLA5, SLA6, SLA7 and SLA8 are inactive). As indicated above, this causes some limitations in using the FXO lines on the Quadro.

If you wish to move back to the regular FXO lines usage on the Quadro6L/4L, you can achieve it by disconnecting the FXO line from the SLA by inactivating the SLA or by changing the SLA assignment to a SIP server. To do that, go to the **Key System Emulation** page from the **Telephony** menu, push the SLA line to which the corresponding FXO (PSTN) line is assigned, choose the **Inactive** or **SIP** option and save the selection (in case of SIP, additional information should be provided as described above). Perform the same steps for other SLA lines, as needed. Now your FXO lines are available to be used through the Auto Attendant and Call Routing.

Step 2-C: Using Receptionist

If you wish to use the Receptionist's features, the Receptionist should be set up on the Quadro. The Quadro's basic configuration should be done in the same way as described in the Step 2.

The Receptionist related setup, with detailed instructions on how to configure the Quadro and the attached IP Phones, is described in the "**Receptionist Setup on Quadro**" document, which you can find at the Epygi's Web portal.

Step 3: Registering on Epygi's Technical Support

It is recommended that you register your Quadro on the Epygi Technical Support web page. Registration will give you access to the Technical Support Database. There, you can submit requests concerning technical problems as well as refer to the Frequently Asked Questions (FAQ) section. In addition, the technical support page allows users to download new firmware, manuals and other information. You can access the support section only if you are registered. Additionally, registration at Epygi's Technical Support web page gives you the username and password to login to the Epygi SIP Server.

To register, you need to know the serial number of your Quadro, which is located on a label on the bottom of Quadro. You will also need the date of purchase. Next, open the Epygi home page (www.epygi.com), select **Support** and click on **Registration Form**. The online registration page will appear:

Complete all fields and record the **Login Name** and **Password** in a safe place. You will need it for the SIP server.

Please Note: In some cases, the Quadro units will be shipped preconfigured from the factory with the Support login and password already set up. In this case, an information sheet is included in the packaged contents indicating the username and password to access Epygi's Online Support and the Epygi SIP Server.

The screenshot shows the Epygi online registration form. It is divided into several sections:

- Product Information:** Serial Number (112233001729), Purchase Location (United States), Purchased From (Epygi), Purchase Date (04/09/2008).
- Login Information:** Login Name (Samantha), Password (*****), Confirm Password (*****).
- Customer Information:** First Name (Samantha), Last Name (Donaldson), Company (Diontec Ltd), Email (samantha.donaldson@), Street, City (Seattle), Country / State (Washington), Zip / Postal Code, Phone 1, Phone 2, Fax.
- Information Requested:** Maintenance Announcement, New Product, New Security Issue, New Software Version.

At the bottom, there are 'Submit' and 'Cancel' buttons. The footer contains navigation links and copyright information.

Fig. I- 36: Online Registration page

Step 4: Making/Receiving Calls

Please Note: The Quadro's default settings are sufficient to make SIP phone calls. It is not necessary to make any changes unless the user wants to create new SIP extensions on the Epygi SIP Server, create a private directory for several Quadro units, or use alternate VoIP services. Refer to the Manual II - Administrator's Guide for more information on these configurations.

- To make a call to the PSTN, dial the local phone number. You may accelerate the dialing process by adding the # after the last digit, e.g., 972-661-1335#. You are making a local call through the PSTN.
- To make a VoIP call to a user on the remote Quadro, lift the handset and dial **8 + SIP Address** (of the user on the remote Quadro) + #. You are calling over the Internet to a remote user.

Please Note: Epygi has a SIP Address test line to test newly provisioned Quadro devices. Call **8 + 99 + #** and you will hear a message if the call was successful. This message comes from a Quadro in one of our offices. SIP Addresses are described below.

- Received PSTN calls will be directed to the corresponding SLA line.

Using the Default SIP Addresses

Making Internet IP calls is simple with the Quadro. By default, every standard (analog) telephone connected to one of Quadro's phone lines functions as an IP phone. If you open the **Extensions Management** page, you will see that some **SIP Addresses** are available, one attached to the Auto Attendant and one to each extension. These SIP addresses are the IP telephone numbers of these extensions. Anyone with a Quadro or any other SIP IP device on the Internet can place a call to **SIPAddress@sip.epygi.com** and the call will ring the associated extension.

Under **Extensions Management**, you may edit the **Display Names** to assign extensions to people.

Extension	Display Name	Attached Line	SIP Address	Percentage of System Resource	External Access	Codec
10	Attendant		741000@sip.epygi.loc:5060	1% (2 min 6 sec)		PCMU...
10			10	1% (2 min 6 sec)		PCMU...
11		Line 1	11	1% (2 min 6 sec)	None	PCMU...
12		Line 2	12	1% (2 min 6 sec)	None	PCMU...
13		IP Line 1	13	1% (2 min 6 sec)	None	PCMU...
14		IP Line 2	7410014@sip.epygi.loc:5060	5% (10 min 31 sec)	Call Restr: (WARNING: password is empty)	PCMU...
15		IP Line 3	15	0.3% (38 sec)	None	PCMU...
16		IP Line 4	7410016@sip.epygi.loc:5060	5% (10 min 31 sec)	None	PCMU...

Upload Universal Extension Recordings
Add Multiple Extensions
Back Help

Please check your settings!
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Fig. I- 37: Extensions Management page

To do so, click on the box in the first column next to the extension to edit and click the **Edit** button. When the page opens, go to **General Settings** and edit the **Display Name** and click the **Save** button. Do not change any other settings at this time. For more information on the **Extensions Management** settings, refer to the Administrator's Guide and [Appendix: Registering on Epygi's SIP Server](#) of this document. The default SIP addresses are based on internal parameters unique to each Quadro device. If the Quadro undergoes a factory reset, the default addresses will be restored.

If you want to establish a dial plan between several Quadro units in a private group, refer to [Appendix: Registering on Epygi's SIP Server](#), which describes how to change the default, SIP addresses on the Epygi SIP server and in the Quadro devices. With the directory service, you can create a private directory accessible from the Internet using a username/password. This service is enabled through the Epygi SIP Server.

Appendix: Changing the Admin Password

For security reasons, it is recommended that you change the default admin password. The username of the administrator (**admin**) cannot be changed.

To change the administrator password, go to the **System** menu, **User Rights Management**.

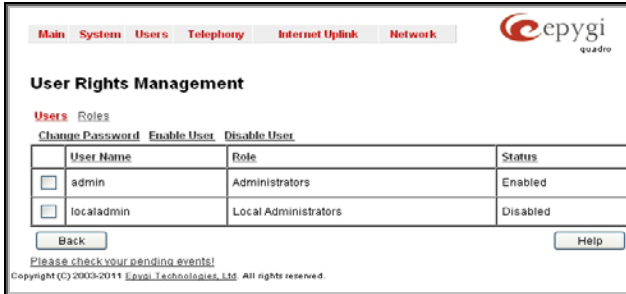


Fig. I- 38: User Right Management page

Choose **admin** from the list and press the **Change Password** functional button from the **User Right Management** page toolbar.

For **Administrator** account the page contains two parts - one for **GUI Access Password**, the other one for **Phone Access Password**.

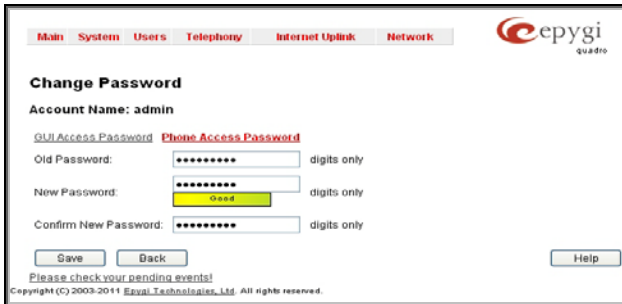
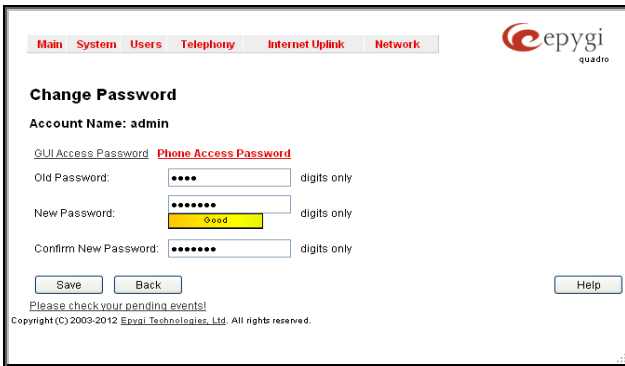



Fig. I- 39: Change Password page

The **GUI Access Password** offers the following components:

- The **Old Password** field requires the current password of the **Administrator**. An error message prevents entering the wrong password.
- The **New Password** field requires a new password for the **Administrator**. Re-entering the new password in the **Confirm New Password** field will confirm the new password. Up to twenty (0-20) digits and symbols are allowed. The **Password** field is checked against its strength and you may see how strong is your inserted password right below that field.



[Main](#) [System](#) [Users](#) [Telephony](#) [Internet Uplink](#) [Network](#)



Change Password

Account Name: admin

[GUI Access Password](#) [Phone Access Password](#)

Old Password: digits only

New Password: digits only
Good

Confirm New Password: digits only

Please check your pending events!

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Fig. I- 40: Change Password page

The **Phone Access Password** offers the following components:

- The **Old Password** field requires the current password of the **Administrator**. An error message prevents entering the wrong password.
- The **New Password** field requires a new password for the **Administrator**. Reentering the new password in the **Confirm New Password** field will confirm the new password. The **Password** field is checked against its strength and you may see how strong is your inserted password right below that field. The password can consist of numeric values only. Up to twenty (0-20) digits are allowed. A corresponding warning appears if any other symbols are inserted.

Note: If **Administrator** is changing the **Local Administrator** or **Extension** passwords or **Local Administrator** is changing the **Extension** password then the **Old Password** field is not displaying.

Attention: It is highly recommended to define a proper and non-empty password on this page if the extension is being used for the Call Relay service from the Quadro's [Auto Attendant](#).

Write down the password somewhere and keep it in a secure place. If the password is lost, a factory reset will be required on the unit (see Administrator's Guide, Hardware Overview). All settings are lost after a factory reset. After a factory reset the default password (19) will be restored.

Appendix: Configuring NAT Traversal

NAT or Network Address Translation is a common feature used to expand the use of connected PCs and other networked devices without having to use multiple global Internet public IP addresses. Most ISP's will assign one public IP address to each customer that is connected to the Internet. The customer can use a router to provide NAT capability and create a private network of PCs and other devices not visible from the Internet. This method offers security and also eliminates the need to assign global Internet public IP addresses to each device on the LAN.

The Quadro initiates and receives SIP calls from the Internet (or the network connected to the WAN port). To receive SIP calls, the Quadro must be able to receive packets from the SIP server or any other device that is trying to make an incoming call. If the Quadro is placed behind a router with NAT, like most basic routers on the market today, the Quadro will not be able to receive calls. To resolve this issue, either STUN must be enabled on the Quadro or SIP NAT traversal must be set up in the router and in the Quadro to route the incoming calls properly.

Please Note: NAT traversal only works with Internet connections that have static IP addresses. Verify from your provider that this is the case for your Internet connection. Some ISPs provide dynamic IP addresses that may change from time to time, and are not appropriate for SIP NAT traversal.

Please Note: If you have more than one router in series between the Quadro and the Internet, the same port forwarding setup must be configured on each router.

NAT Traversal Setup

- Install the Quadro behind the router. If the Quadro is configured with its factory default settings, it is already configured for DHCP and will obtain an IP address automatically from the router.
- Connect a PC to the Quadro LAN port and power it up.
- Verify the Quadro can connect to the Internet by opening a browser window and browsing to a familiar WEB site. If the Quadro cannot reach the Internet, verify the LAN/WAN LEDs and the cabling. Verify the Quadro is set up for DHCP on the WAN and that the router has the DHCP server enabled for the devices behind it.
- Find the address of the router and log into the router. Refer to the router's user manual on how to open the router configuration.
- Set up port forwarding on the router to forward UDP ports 5060, 6000-6099 to the IP address assigned to the Quadro. You can see the IP address of the Quadro in the System menu under Status, submenu Network Status. The IP address will be listed as the WAN IP address. Your router also may indicate the IP address assigned to the Quadro.
- Find out the public Internet address (WAN IP address) of the router. To do so, open a browser and go to www.whatismyip.com. The site will return your public Internet IP address. Record this IP address.
- From the **Telephony** menu of the Quadro Management go to the **NAT Traversal Settings** page, go to **General Settings** and set the enable **NAT Traversal for SIP** radio buttons selection to **Force**. **Save** the selection.

Main System Users Telephony **Internet Uplink** Network

epygi
quadro

NAT Traversal Settings

General Settings SIP Parameters RTP Parameters STUN Parameters NAT Exclusion Table

NAT Traversal for SIP

Automatic

Force

Disable

Save Back Help

Please check your pending events!

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Fig. I- 41: NAT Traversal Settings – General Setting

- Go to **SIP Parameters** page.

Main System Users Telephony **Internet Uplink** Network

epygi
quadro

NAT Traversal Settings

General Settings **SIP Parameters** RTP Parameters STUN Parameters NAT Exclusion Table

UDP Parameters

Use STUN

Use Manual NAT Traversal

Mapped Host:
215 110 10 58 IP-Clipboard

Mapped Port:
5055

TCP/TLS Parameters

Mapped TCP Host:
178 75 71 19 IP-Clipboard

Mapped TCP Port:
5060

Mapped TLS Host:
178 85 71 20 IP-Clipboard

Mapped TLS Port:
3040

Save Back Help

Please check your pending events!

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Fig. I- 42: NAT Traversal Settings - SIP Parameters

Select **Use Manual NAT Traversal** and enter the WAN IP address of the router into the **Mapped Host** text field. For **Mapped Port**, enter the router's corresponding port number, in this case **5060**. **Save** the entries.

- Go to the **RTP Parameters** page and select **Use Manual NAT Traversal**.

Main System Users Telephony **Internet Uplink** Network

epygi
quadro

NAT Traversal Settings

General Settings SIP Parameters **RTP Parameters** STUN Parameters NAT Exclusion Table

Use STUN

Use Manual NAT Traversal

Mapped Host:
156 81 150 10 IP-Clipboard

Mapped RTP/RTCP Port Range:
Min: 6000
Max: 6099

Save Back Help

Please check your pending events!

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Fig. I- 43: NAT Traversal Settings - RTP Parameters

- Enter the WAN IP address of the router into the **Mapped Host** text field. Set the **Mapped RTP/RTCP Port Range** according to the values specified on the router, in this case to **6000 (Min)** and **6099 (Max)**, respectively. Click the **Save** button to save the contents.

The Quadro will activate the settings and register the extensions on the Epygi SIP Server after a few minutes. You can verify the settings from the main **Quadro Management** menu under **Status** in the **SIP Registration Status** section.

Appendix: Registering on Epygi's SIP Server

You may login directly to Epygi's SIP Server if you have registered your Quadro at Epygi's Technical Support Center. If you have not registered with Epygi Technical Support, you cannot login to the Epygi SIP Server.

Login to the Epygi SIP Server at www.epygi.com. Click on **SIP, Login here**. Use the same login name and password you used for Epygi Support for Customer Login.

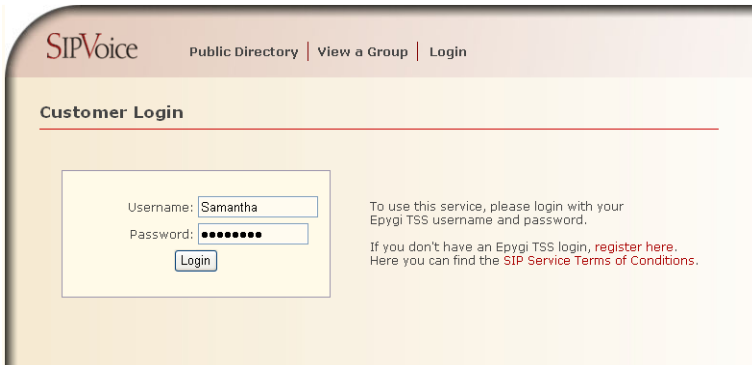


Fig. I- 44: SIP Services Login page

Read the **SIP Service Terms and Conditions** and accept it to proceed. The displayed page now welcomes you and allows you to **Subscribe a New Extension**.

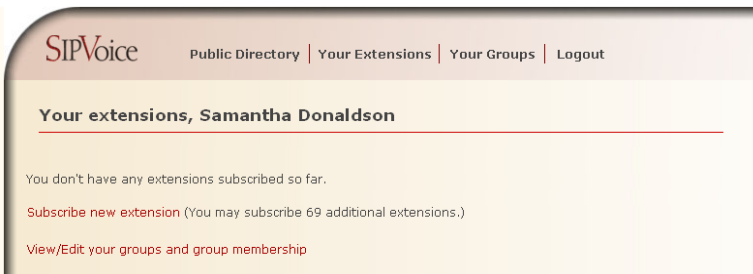


Fig. I- 45: SIP Services Welcome page

Selecting **Subscribe a New Extension** leads you to a page where you can enter the user information as shown below. The **Extension Nr.** is the eight-digit SIP number assigned to your extension. The first five are fixed by the SIP Server and cannot be changed and the last three are user defined. Notice the check box to enable this extension to be shown in the Epygi **Public SIP Directory**.

Please Note: If you enable this extension to be shown in the Epygi **Public SIP Directory**, all information related to this extension will be published in the Public SIP Directory, which is accessible by anyone from the Internet. To maintain privacy, do not check this box.

Fig. I- 46: SIP Services Add New Extension page

The **Authentication password** validates the entry and must match the password entered on the Quadro later. Make sure to record the name, Authentication Password and SIP extension number for entry into the Quadro later.

Save will store the entered information and conclude the basic SIP registration. The following page then will be displayed:

EXT.#	STAT. ?	NAME	LOCATION	COMPANY	DESCRIPTION	EMAIL	PUB	GROUPS ?
edit 30256321	unreg.	Samantha Donaldson	Seattle	OmniTec, Ltd.	Headquarters		yes	- delete

[Subscribe new extension](#) (You may subscribe 9 additional extensions.)

[View/Edit your groups and group membership](#)

Fig. I- 47: SIP Services Your Extension page

This table shows **unreg.** in the **Stat.** column. This entry will change to **reg.** when the required settings in the Quadro are complete and the Quadro successfully registers on the SIP Server.

Repeat this for all four extensions on the Quadro and the Auto Attendant.

Configuring Quadro Extensions

Once the SIP server has created extensions with the user information, create these extensions in the Quadro devices. Once they are entered in the Quadro, they will be registered and can then be used.

Login into the Quadro and go to **Extensions Management**.

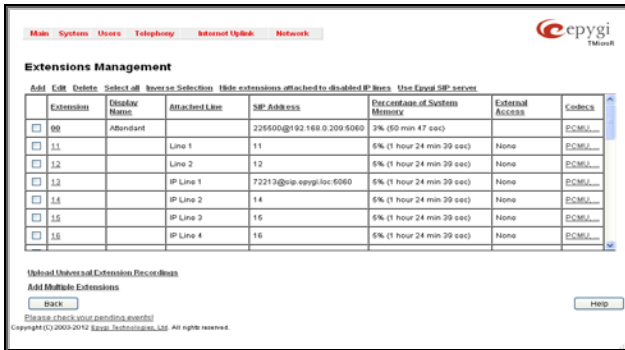


Fig. I- 48: Extensions Management page

Select the first extension to change by clicking the appropriate checkbox and press **Edit** functional button. The **Extensions Management – Edit Entry** page will be displayed.

Go to the **General Settings** page and adjust the **Display Name** as needed.

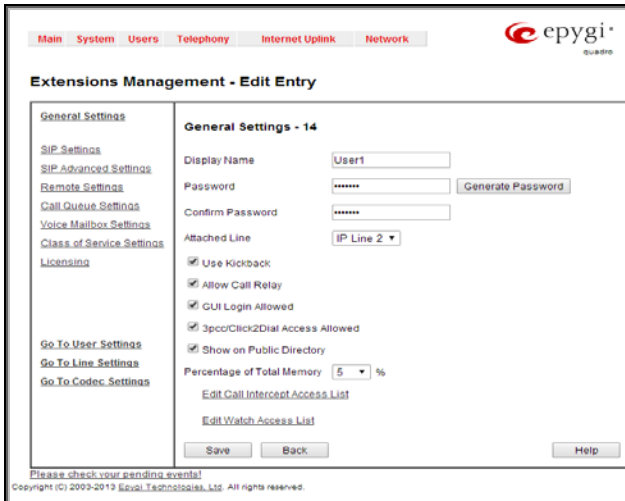


Fig. I- 49: Extensions Management - Edit Entry – General Settings page

Go to the **SIP Settings** page to enter the **SIP Registration Settings** you received from the Epygi SIP server.

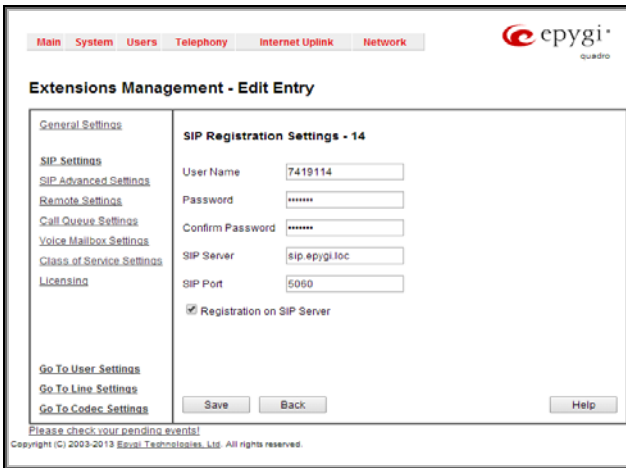


Fig. I- 50: Extensions Management - Edit Entry – SIP Settings page

- Enter the SIP registration number displayed in the column **Ext#** into the text field **Registration User Name**.
- In the **Password** field, enter the password you specified when registering at the SIP server and confirm it in the field below.
- In **Registration SIP Server**, the selected SIP server address must be entered. If you use the Epygi SIP server, you may enter **sip.epygi.com**.
- Most SIP server providers, including Epygi, use port 5060 as the **Registration SIP Port**. You may leave the default entry as is.
- Select **Registration on SIP Server** if you want to establish and receive IP calls.
- Click the **Save** button to activate the settings.

Other settings of the extension might be also modified from **Extensions Management – Edit Entry** page (refer to the Manual II - Administrator’s Guide).

Your settings will be verified, then after a few seconds the **Extensions Management** page is updated with the changes as shown in the below example, Fig.I-51.

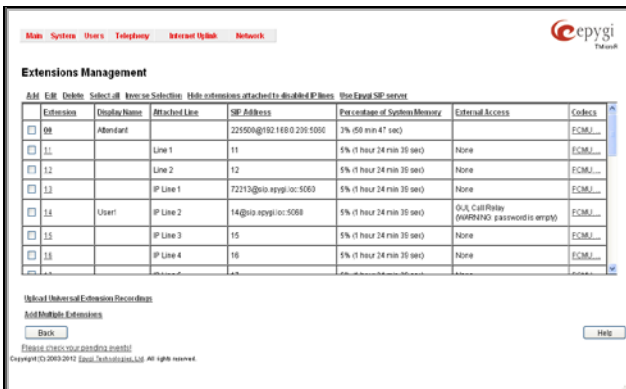


Fig. I- 51: Extensions Management page

If you go back to Epygi’s SIP Server, you will find the value **reg.** for this number in the col-

umn **Stat. Reg.** This will indicate that the Quadro has successfully registered the new number. If this does not happen after a few minutes, again verify the SIP Number and passwords.

Appendix: Checking the Connections

If the system doesn't seem to be working properly, even when all the cables are connected properly, it may be helpful to **Start Network Diagnostics**: The WAN link, IP configuration, gateway, DNS server, and STUN-NAT will all be checked.

To start diagnostics, open the **System's** menu item **Diagnostics** and click **Start Network Diagnostics**.

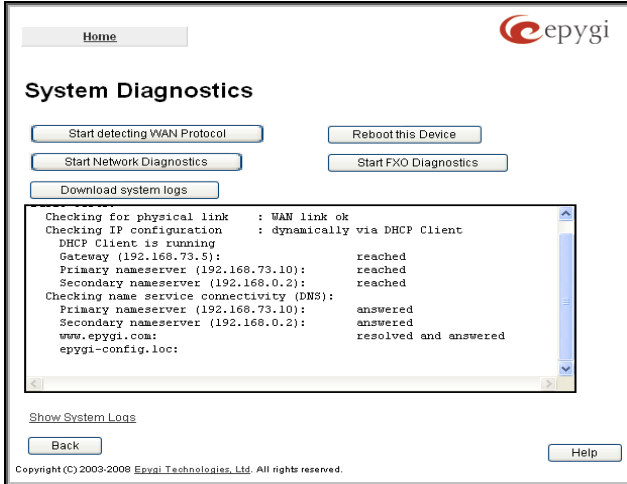


Fig. I-52: System Diagnostics - Network Diagnostics page

If the test passes, the output of the system may look as follows:

Basic Tests:

```

Checking for physical link:           WAN link ok
Checking IP configuration:           dynamically via DHCP Client
DHCP Client is running
Checking internet connectivity (ICMP ping):
Gateway:                             reached
Primary nameserver:                 reached
Secondary nameserver:               not configured
www.epygi.com:                     reached
STUN Network Address Translation (NAT) Check:
External visible address: 212.126.210.179
Detected NAT type                   : Restricted cone
Performing MTU Discovery:
preparing system
Sending UDP Datagram of size 1500    got answer
clean up
Largest usable MTU size is: 1500 Bytes
Test successful.

```

Depending on where the test is failing, the diagnostic can give some advice on how to solve the problem. See the example below of a failed test:

Basic Tests:

Checking for physical link: no WAN link
 Please check the physical connection of the WAN interface. Cable not plugged or broken?
 Test failed.

If diagnostics are successful, but you are still unable to place a call to 899# then check the SIP registration status.

Open the SIP Registration Status page using the Quadro management **System** menu item **Status**. Besides the SIP registration information for the auto attendant and each connected extension, the **Detected Connection Type** is shown. If Quadro is placed behind a NAT router and the STUN is enabled, the detected connection type and the IP address of this router's WAN port are displayed.

The screenshot shows the 'SIP Registration Status' page. At the top, there are navigation tabs: Main, System, Users, Telephony, Internet Uplink, and Network. The Epygi logo is in the top right corner. Below the navigation, the page title is 'Quadro Status - SIP Registration Status'. There are several links for status checks: General Information, Network Status, Lines Status, Memory Status, Hardware Status, SIP Registration Status (highlighted in red), IP Lines Registration Status, and License Status. A 'Back' button is at the bottom left and a 'Help' button is at the bottom right. A table titled 'Registration on SIP Servers' is displayed with the following data:

Extension	Reg. Name	Server	Registered	Registration Time
00	7411700	sip.epygi.loc	Yes	18-Nov-2011 12:42:31
12	321321	192.168.0.209	Yes	18-Nov-2011 12:43:15

At the bottom left, there is a message: 'Please check your pending events!' and a copyright notice: 'Copyright (C) 2009-2011 Epygi Technologies, Ltd. All rights reserved.'

Fig. I- 53: SIP Registration Status page

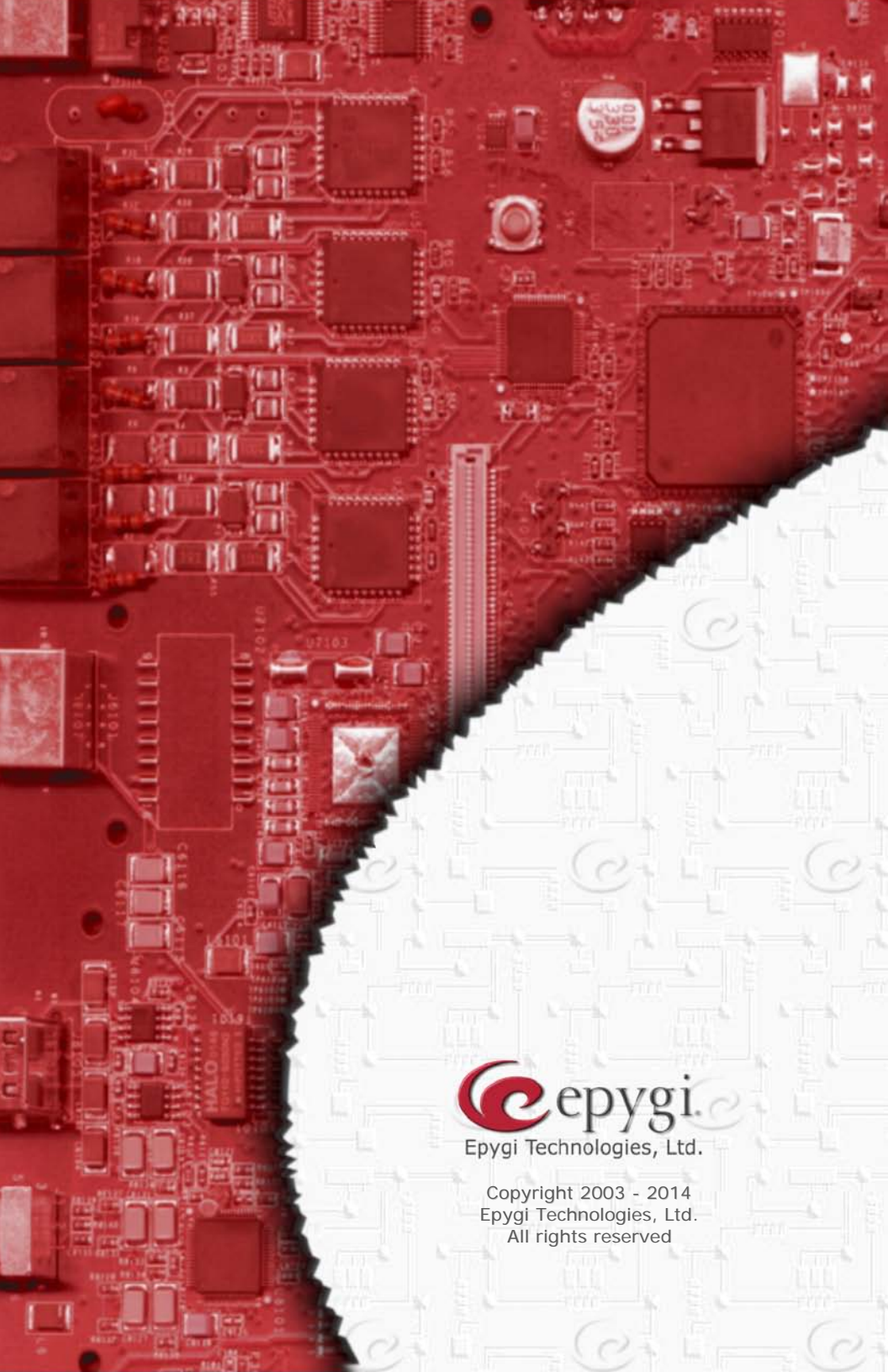
Quadro cannot work behind your router if **Detected Connection Type** is one of the following:

- Unknown connection - unexpected error
- Symmetric NAT
- Symmetric Firewall
- Blocked UDP

If you get one of the above mentioned Detected Connection Types, either connect the Quadro in front of the router, or configure NAT traversal manually as explained in [Appendix: Configuring NAT Traversal](#).

If you are unable to resolve your problems, please send us a technical support request on the **Support** section of <http://www.epygi.com/>. Please prepare a system log file and attach it to your request.

To download the system logs, open the **System Diagnostics** page from **System** menu **Diagnostics** and click **Download System Logs**.



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