



QuadroFXO

The PSTN/VoIP Gateway



Manual I: Installation Guide

for QuadroFXO, SW-Version 3.0.x

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The Epygi Quadro 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 according to 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 following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and device
- Connect the equipment to an outlet different from the receiver
- Consult a dealer or an experienced Radio/TV technician for assistance

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. A plug and jack 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.

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

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

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

If your home has specially wired alarm equipment connected to the telephone line, ensure the installation of the QuadroFXO 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 a quality AC surge suppressor in the AC outlet from which the QuadroFXO is powered.

Industry Canada Statement

This product meets the applicable Industry Canada technical specifications.

Safety Information

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

- To prevent fire or shock hazard, do not expose your QuadroFXO to rain or moisture.
- To avoid electrical shock, do not open the QuadroFXO. 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 un-insulated 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 QuadroFXO during an electrical storm.
- Do not use your QuadroFXO 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 QuadroFXO SIP Service is intended to function as a secondary telephone service. These services are made available through the Internet and therefore are dependent upon a constant source of electricity and network availability. In the event of a power outage, the QuadroFXO SIP Service will automatically be disabled. User understands that in the event of a power or network outage, the QuadroFXO SIP Service will not support 911 emergency services and further that such services will only be available via the user's regular telephone line not connected to the QuadroFXO. User further acknowledges that any interruption in the supply or delivery of electricity or network availability is beyond Epygi's control and that Epygi shall have no responsibility for losses arising from such interruption.

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Manual II: see Administrator's Guide

Describes in detail the QuadroFXO management menus and includes all system default values at a glance, too.

About This Installation Guide

This Installation Guide explains the installation of the QuadroFXO gateway.

This Installation Guide does not provide advanced configuration information. For these features, refer to the Administrator's Guide.

The QuadroFXO is an analogue gateway that allows connectivity between the PSTN and a VoIP network. The QuadroFXO gateway can be configured to work as

- An FXO expansion board to supplement a Quadro IP PBXx with additional LINE ports.
- A standalone analogue gateway.

In case of using QuadroFXO as LINE expansion board it can be connected both to WAN and LAN for Quadro 4x/16x to emulate additional FXO ports on Quadro 4x/16x with diverse configurations depend on usage scenarios.

This document describes how to configure the QuadroFXO as an LINE expansion board connected to the LAN interface of a Quadro 4x/16x to increase the FXO capability on the Quadro 4x/16x with minimal configuration.

For the detailed information on how to install and use the QuadroFXO refer to the **QuadroFXO Manual II: Administrator's Guide**

For the detailed information on how to install and use Quadro IP PBXs refer to the **Quadro IP PBX Manual I and II: Installation and Administrator's Guide**.

[Hardware Overview](#) shows all plugs and LEDs of the QuadroFXO

[Installing the Quadro FXO](#) explains connection of cables and devices to the QuadroFXO.

[Configuring the Standalone Gateway QuadroFXO](#) describes the configuration steps needed to establish QuadroFXO as a standalone gateway. The chapter includes information about the System and Internet Configuration Wizards to integrate the QuadroFXO in your network environment and about the basic setting up of the call routing functionality.

Please Note: The QuadroFXO configuration described in this Installation Guide describes basic configurations. For more complex configurations, please refer to the QuadroFXO Administrator's Guide.

[Configuring the IP PBX Expansion QuadroFXO](#) describes the configuration steps that might be needed to establish QuadroFXO as a LINE expansion for a Quadro IP PBX.

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

[Appendix: PC DHCP Settings](#) explains how to configure your PC to access the Quadro configuration GUI.

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

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

[Appendix: Checking the Connections](#) gives hints to solve common problems.

Requirements

- One 120/240 V power outlet in close proximity to the QuadroFXO.
- One RJ-45 Ethernet 10/100 broadband Internet connection, if QuadroFXO shall be used as a standalone gateway
- One CAT 5 Ethernet cable with an RJ-45 connector to connect to the QuadroFXP LAN port
- One PC with a 10Mbps or a 10/100 Mbit/s 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 QuadroFXO is shipped with one straight RJ-45 CAT 5 cable. If the LAN connector of the QuadroFXO is to be connected to a hub or switch, a crossover cable may be required.

Hardware Overview

QuadroFXO's Rear Panel



Fig. I-1: QuadroFXO's backplate

- 1 Power supply socket. **Use only the power adapter delivered with the QuadroFXO.**
- 2 LINE 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, (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 7 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 administrator's password of 19.

- 4 RJ-45 socket to attach a Local Area Network (LAN) via an Ethernet CAT 5 cable. If a Quadro IP PBX or 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.
- 5 RJ-45 socket to attach the Internet Uplink (WAN) via an Ethernet CAT 5 cable.

QuadroFXO's Front Panel LEDs



Fig. I-2: QuadroFXO'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 Management interface blinking (red/green): system unusable or firmware update blinking (red/yellow): emergency firmware is needed
3	LINE 1 , green Status of the FXO LINE 1	on : line in use off : line not in use	
4	LINE 2 , green Status of the FXO LINE 2	on : line in use off : line not in use	
5	LINE 3 , green Status of the FXO LINE 3	on : line in use off : line not in use	
6	LINE 4 , green Status of the FXO LINE 4	on : line in use off : line not in use	
7	LINE 5 , green Status of the FXO LINE 5	on : line in use off : line not in use	
8	LINE 6 , green Status of the FXO LINE 6	on : 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 QuadroFXO 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. 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.

Installing the QuadroFXO

Networking Overview

To establish a connection between the PSTN (or your PBX) and the Internet, a gateway is needed. The QuadroFXO, used as a standalone gateway, will perform the task of connecting your PSTN (or PBX) via its WAN port to a Private Data Network that includes Quadro IP PBXs (Quadro2x, -4x and/or16x) or the Internet. The QuadroFXO will process and regulate the voice traffic between these networks by means of Call Routing paths that are specified by the administrator according to a dial plan. The QuadroFXO has one LAN port that is used to connect a PC for management purposes. The WAN port transmits up to 10 Mbps, and the LAN port transmits at 10 Mbps or 100 Mbps.

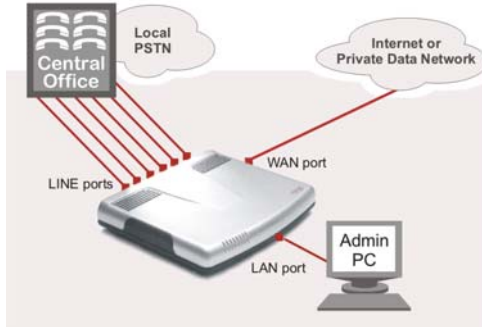


Fig. I-3: Standalone gateway: Connection overview

Every device within an IP network requires a unique IP address to identify itself. Since the QuadroFXO, used as a standalone gateway, connects to both the LAN (Admin PC) and the WAN (Private Data Network or Internet), 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 QuadroFXO's integrated firewall/NAT functionality will hide the LAN IP address from the WAN (Internet) side. (As the firewall is switched off per default, you need to enable it.)

There are two ways of assigning an IP address: statically or dynamically. The QuadroFXO can be configured with a static IP address on the WAN interface. You also can use a DHCP server assigned IP address on the WAN side.

Please Note: A DHCP client is software that requests an IP address from a DHCP server. A DHCP server assigns on request a unique IP address to a device. The QuadroFXO acts as a DHCP client on its WAN interface and as a DHCP server on its LAN interface.

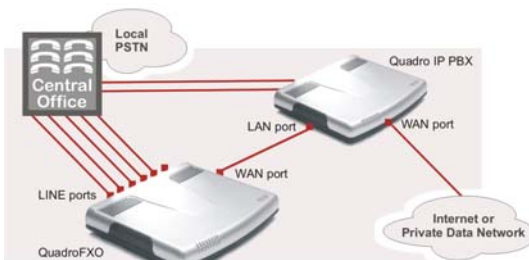


Fig. I-4: LINE expansion: Connection overview

Besides acting as a standalone gateway, Quadro FXO may serve as a LINE expansion for Quadro IP PBXs. In this case, QuadroFXO needs only a LAN IP address which it gets from the DHCP server of the attached Quadro IP PBX (see [Configuring the IP PBX Expansion QuadroFXO](#))

Connecting the Hardware

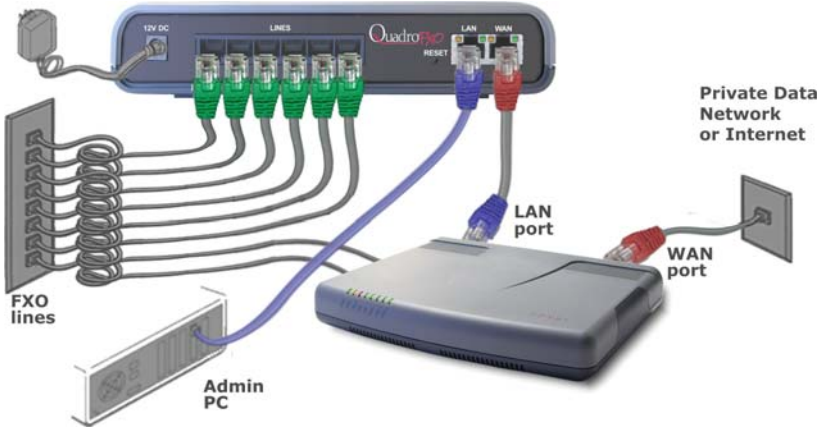


Fig. I-5: Connecting the Hardware

- 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.
 - Connect the QuadroFXO's LINE ports to your PBX or the trunk from the PSTN Central Office
 - If the QuadroFXO is used as a standalone gateway, a PC may be connected via a straight CAT 5 cable with an RJ45 connector to the LAN socket of the QuadroFXO. If a hub or switch shall be connected, use a crossover cable from the LAN interface of the QuadroFXO to the hub or switch.
The LAN port is not needed, if QuadroFXO shall be used as a LINE expansion
 - If the QuadroFXO shall be used as a standalone gateway, connect its WAN port to the Internet service via a cable or DSL modem. In this case, you should enable the firewall, as it is disabled by default).
Connect the WAN port of the QuadroFXO to the LAN port of the Quadro IP PBX to use the QuadroFXO as an LINE expansion for the Quadro IP PBX.
 - When using a DSL or Cable modem, power up the modem before the Quadro.
 - Connect the power adapter to the POWER port on the QuadroFXO's rear panel and plug the power adapter into a power outlet. Only use the original 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. As soon as Info is off, the QuadroFXO is operational.
 - Check the LEDs: The green Busy LED should 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 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 QuadroFXO and the other device. Some modems, hubs, switches and routers will require the use of crossover cables.

Configuring the Standalone Gateway QuadroFXO

To configure the standalone gateway QuadroFXO basically, two steps are needed:

Step1: Basic Configuration using the System Configuration Wizard and the Internet Configuration Wizard

Step 2: Specifying the **Call Routing paths** according to your dial plan

The most important settings required in **Step 1: Basic Configuration** are:

Static IP address for the WAN Interface. If you use a DHCP server, please configure it to deliver a static IP address. In this case, QuadroFXO will get its IP address automatically, as it acts as a DHCP client on the WAN side.

Bandwidth - to regulate the number of calls allowed by the QuadroFXO to avoid degradation in low bandwidth conditions.

Regional Settings - if your QuadroFXO is located outside the United States, it is important to properly configure your line connections to the PSTN in your location

Firewall - if your QuadroFXO enable and configure the firewall to make the QuadroFXO either safe and accessible for management.

To customize these settings, connect a PC to QuadroFXO's LAN port, log in and complete the **Basic Configuration** as described in the following sections.

Logging in to QuadroFXO

Start a browser (MS Internet Explorer, Netscape, Opera) on a PC connected to QuadroFXO's LAN port. Enter <http://172.28.0.1> (QuadroFXO's default LAN IP address) into the address field. The **Login** page of the QuadroFXO will be displayed:

QuadroFXO Management

Login

Login as an Administrator

Username:

Password:

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Fig. I-6: QuadroFXO's login page

Enter **admin** as the Username and **19** as the Password to log in as the administrator. After logging in, the **QuadroFXO Management** page will be displayed.

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

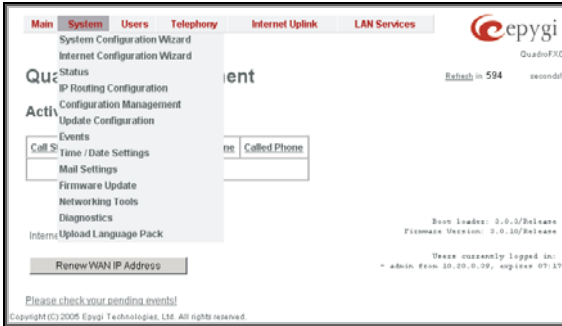


Fig. I-7: QuadroFXO's Management page

Basic Configuration

Two Configuration Wizards are available to accomplish the basic configuration of Quadro devices:

- **The System Configuration Wizard** - a tool for the administrator to define the Quadro's Local Area Network settings and to specify regional configuration settings to make Quadro operational in its LAN. It must be run upon Quadro first startup.
- **The Internet Configuration Wizard** - 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.

Please Note: It is strongly recommended that factory default settings are left unchanged if their meanings are not completely clear.

Run The System Configuration Wizard

Open the **System Configuration Wizard** by selecting the corresponding menu item on the **System** menu. The page **Getting Started** will be displayed:

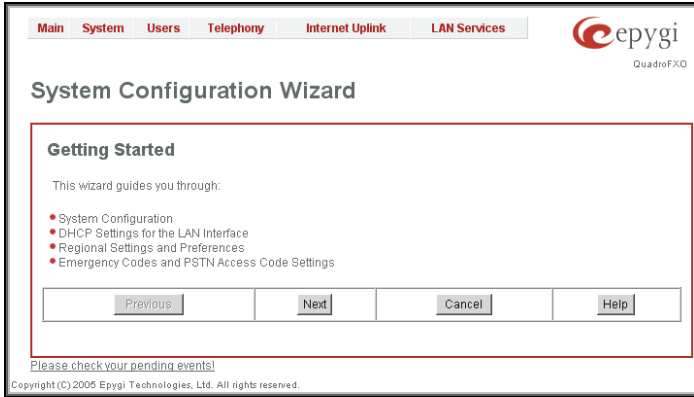


Fig. I-8: System Configuration Wizard

This first page of the System Configuration Wizard is for information only and lists the items to be configured, Click on the **Next** button to get to the **System Configuration** page.

System Configuration

Enter into the **Host Name** field a unique name for the QuadroFXO. This is useful when many Quadro's are part of a network and one administrator has remote access to all of them. All Web Management pages show this **Host Name** in the top right corner.

For a basic configuration, the **LAN IP address** needn't be changed. If you have to change it, e.g. to integrate the device into an existing LAN, record the new LAN IP address and have it handy. You need it to re-access Quadro management.

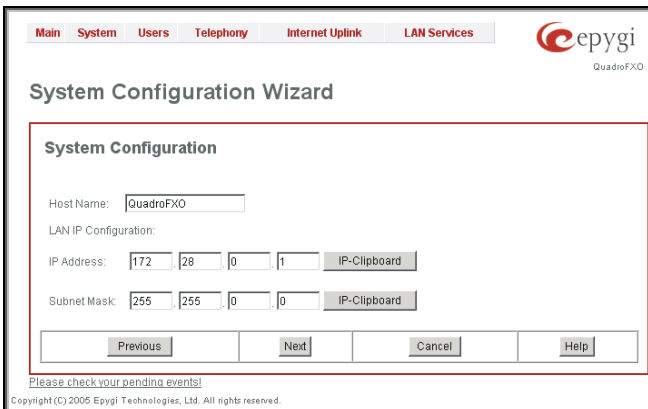


Fig. I-9: System Configuration page

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

DHCP Settings for the LAN Interface

If the DHCP server is enabled, the QuadroFXO will assign dynamic IP addresses to the Admin PC connected to its LAN port.

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

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

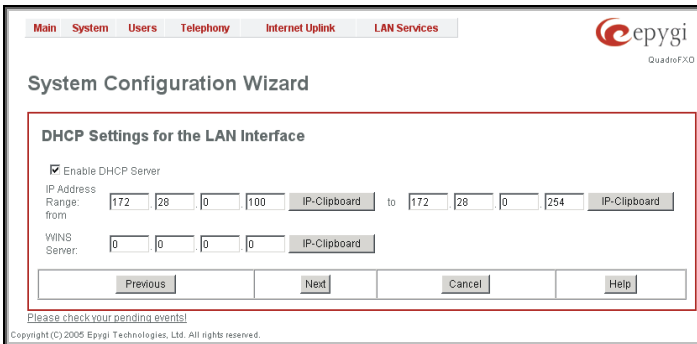


Fig. I-10: DHCP Settings for the LAN Interface page

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

Regional Settings

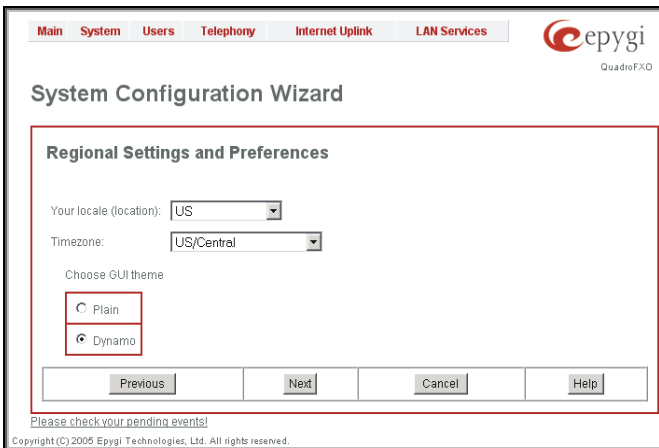


Fig. I-11: Regional Settings page

Proper configuration of **Regional Settings** is important to the functionality of the voice sub-system. The Regional Settings determine the proper telephony parameters for the specified country. Select the country where the QuadroFXO is located. If you do not find your country in the list, pick the closest. If this setting does not work, issue a request to Epygi technical support under the Support section of www.epygi.com.

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

Click **Next** to show the summary page.

Finishing the System Configuration Wizard

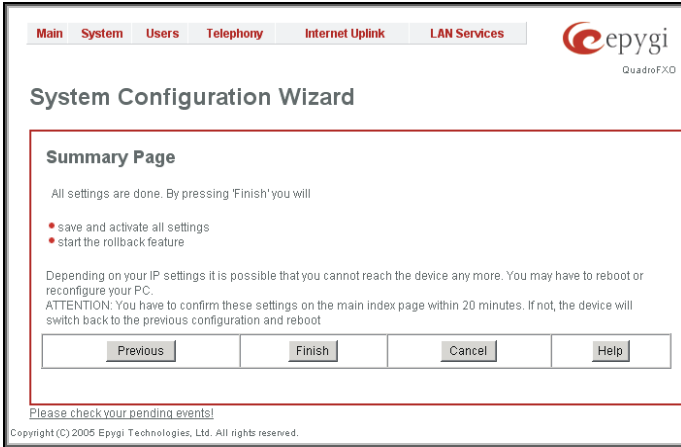


Fig. I-12: System Configuration Wizard finishing page

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

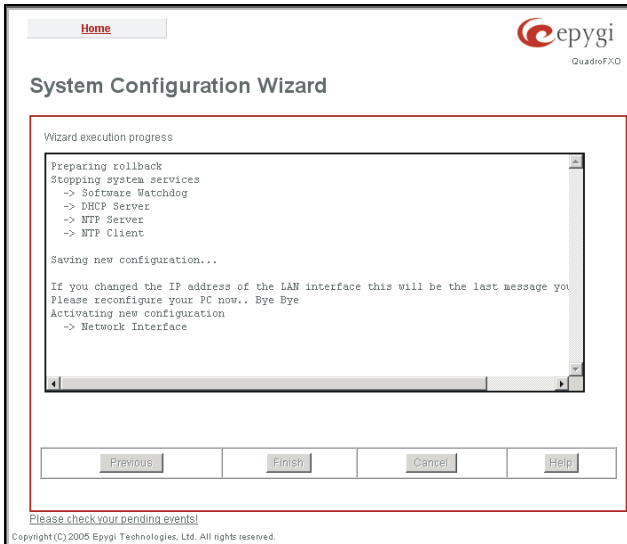


Fig. I-13: Wizard execution process

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

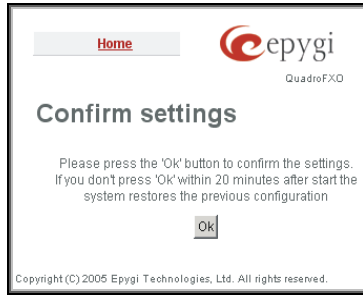


Fig. I-14: Confirm Settings page

Please Note: you must confirm the settings within 20 minutes. If not, 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 might be unable to establish a connection to Quadro.

If you changed the network configuration of the LAN, you may have to reboot your PC to get a new IP address from the new network. You can then access the Web Management of the Quadro on the new IP address you assigned to the Quadro.

Run The Internet Configuration Wizard

Open the **Internet Configuration Wizard** by selecting the corresponding menu item on the **System** menu. The page **Getting Started** will be displayed:

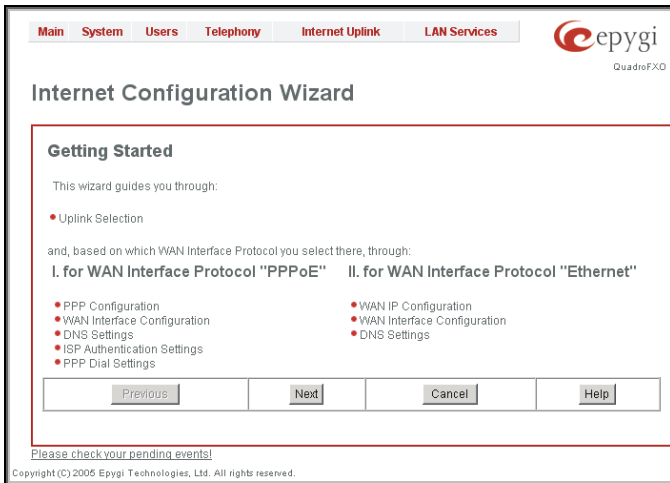


Fig. I-15:Internet Configuration Wizard

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

Uplink Configuration

Select here the **WAN Interface Protocol** required by you ISP: **PPPoE** (Point to Point Protocol over Ethernet) **PtP** (Point to Point tunneling Protocol) or **Ethernet**.

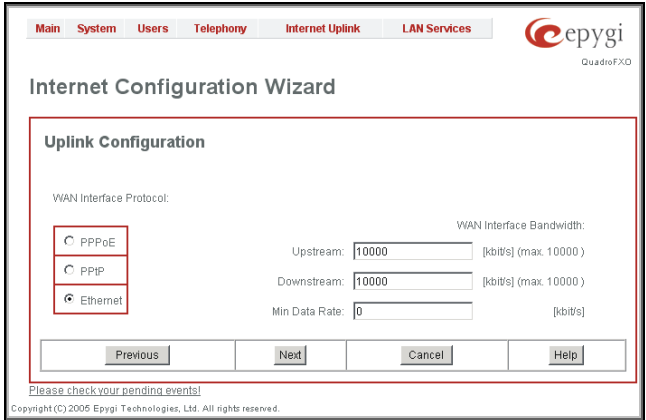


Fig. I-16:Uplink Configuration

Enter **WAN Interface Bandwidth** to assure the quality of IP calls. If available bandwidth is used to the point of which the quality of an additional IP call would suffer, 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 MB uplink module.

The **Min Data Rate** text field is used to specify the amount of bandwidth reserved for data applications. The value entered here has to be smaller than the value specified for **Upstream Bandwidth**. Specify the **WAN Interface Protocol** by choosing between **PPPoE** (Point to Point over Ethernet) and **Ethernet**. Use Ethernet for DHCP or static IP.

Clicking **Next** shows **WAN IP Configuration** page. If **PPPoE** is the selected WAN Interface Protocol, the next page will be **PPP 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.

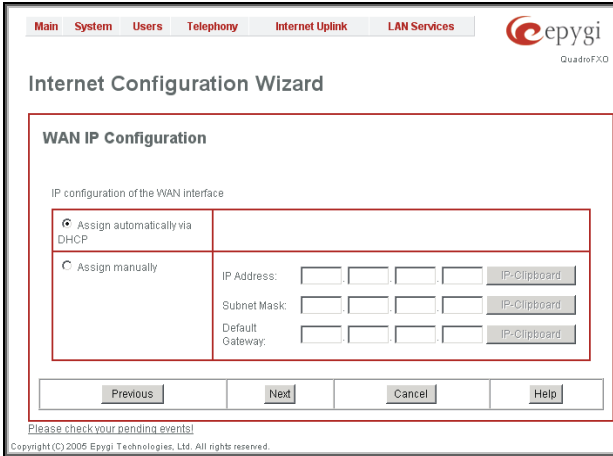


Fig. I-17: WAN IP Configuration page

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

PPP Configuration

The **IP Address Assignment** field is used to specify the external IP address. As a static WAN IP address is preferred, you will select Fixed IP Address in most cases.

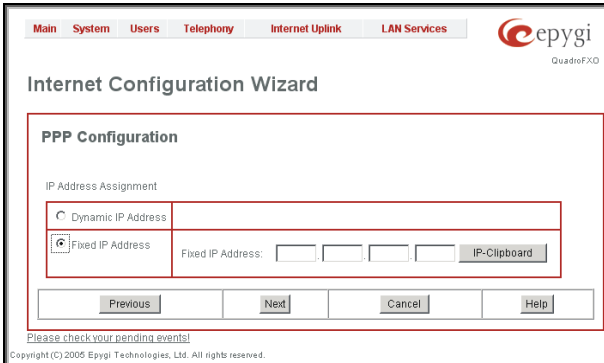


Fig. I-18: PPP Configuration page

In the case of using your PPPoE server that is configured to always deliver the same IP address, select Dynamic IP address

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

WAN Interface Configuration

If your ISP requires a specific MAC address (e.g., 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.

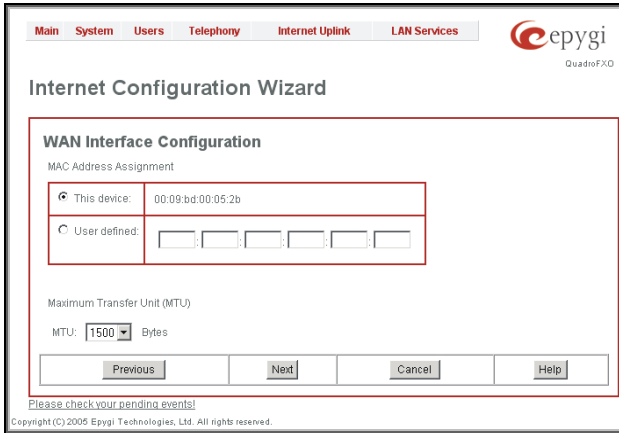


Fig. I-19: WAN Interface Configuration page

Click **Next** to display the **DNS Settings for the LAN Interface** page.

DNS Settings

Select **Fixed Nameserver** and enter its IP address. If you use your DHCP server and if it will deliver a DNS server, you may select **Dynamically by Provider**. When using a static IP address, fixed values must be entered.

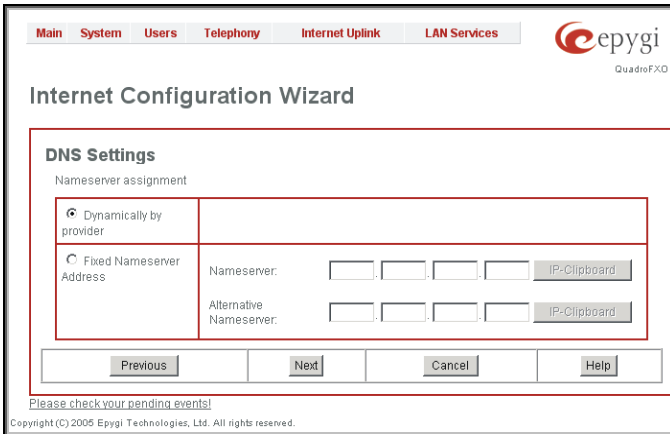


Fig. I-20: DNS Settings page

If **Ethernet** or **PPTp** is the selected WAN Interface protocol, clicking **Next** shows the summary page of the Internet Configuration Wizard, if **PPPoE** is the selected WAN Interface protocol, the next page will be **ISP Authentication Settings**.

ISP Authentication Settings

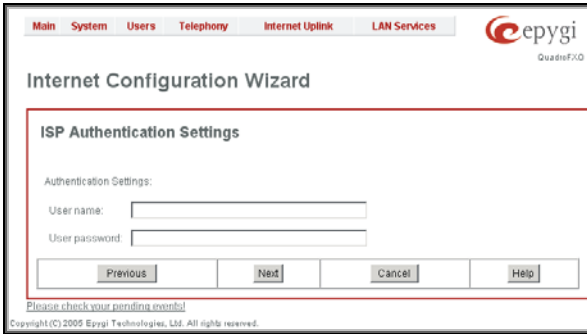


Fig. I-21: ISP Authentication Settings page

This applies only if PPPoE is your **WAN Interface** protocol.

Enter the authentication parameters provided by your Internet Service Provider (ISP).

Please Note: Typically, the User name is your email account, and the password is a string of characters.

Click **Next** to show **PPP Dial Settings** page.

PPP Dial Settings

This applies only if PPPoE is your **WAN Interface** protocol.

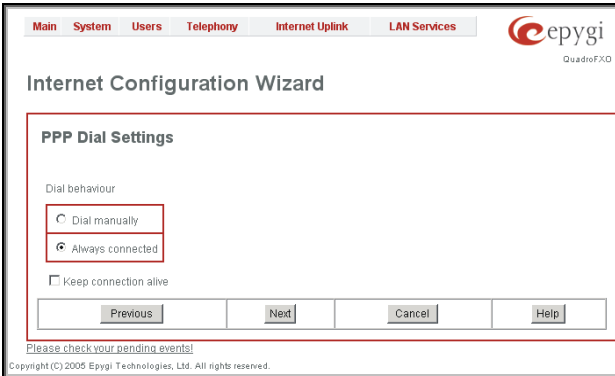


Fig. I-22: PPP Dial Settings page

The default value is **Always connected**.

Dial Manually enables a button on the main **Quadro Management** page to open or close the Internet connection manually.

The **Keep connection alive** checkbox is used to create some traffic to the Internet. It is useful, if your ISP disconnects you when there is no traffic on the link.

Click **Next** to show the summary page of the Internet Configuration Wizard:

Finishing the Internet Configuration Wizard

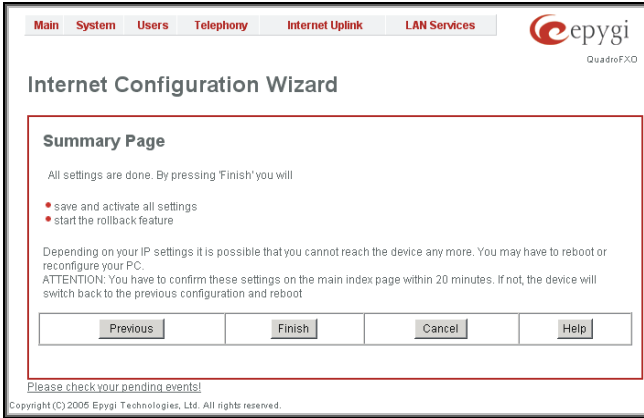


Fig. I-23: Internet Configuration Wizard Summary page

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 reply with the **Confirm Settings** page requesting confirmation of the changes. Press the **OK** button to confirm the settings.

Please Note: you must confirm the settings within 20 minutes. If not, 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 the QuadroFXO is still within the specified IP address range. Otherwise, your PC might be unable to establish a connection to the QuadroFXO.

If you changed the network configuration of the LAN, you may have to reboot your PC to get a new IP address from the new network. You can then access the Web Management of the QuadroFXO on the new IP address you assigned to the QuadroFXO.

Configuring the Firewall

Select **Firewall/NAT** from the **Internet Uplink** menu to open the **Firewall Configuration** page. Check the **Enable Firewall** checkbox and select an adequate security level to protect your QuadroFXO:

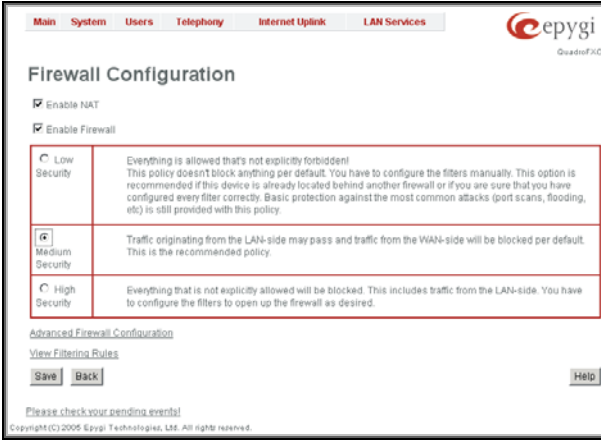


Fig. I-24: Firewall Configuration page

If the QuadroFXO shall be managed through the WAN port, a configuration of the filtering rules is needed. Open **View Filtering Rules** from the **Firewall Configuration** page and configure the rule **Management Access** accordingly.

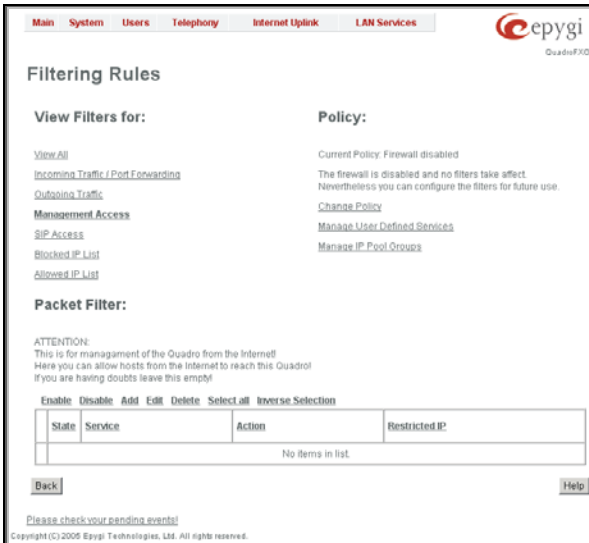


Fig. I-25: Filtering Rules page

Setting up Call Routing

The Call Routing service allows you to specify the communication structure between all involved devices by developing a dialing plan and setting the call routing paths accordingly. For the Quadro extension users, the call procedure should be simple and familiar for all kinds of calls (internal, IP, PSTN or IP-PSTN).

The possibilities Call Routing offers are numerous. The following configuration just a single and simple example used to explain the setup of the QuadroFXO as a gateway:

In this example, the QuadroFXO is connected within a protected Private Data Network built of a Quadro2x with the extensions 111, 112 and a Quadro4x with the extension 211, 212, 213 and 214. Each of these extensions will be configured such that they all shall reach the PSTN using the prefix 8. All extensions also shall be reached by calls from the PSTN.

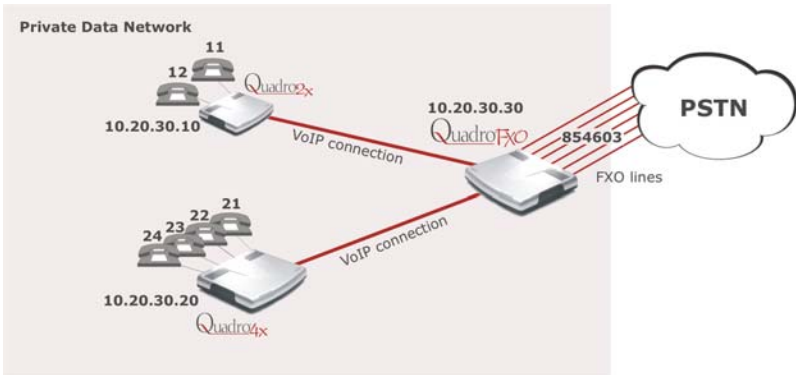


Fig. I-26: Call Routing example

Your PSTN Service Provider supplies you with a telephone number for the FXO lines connected to the QuadroFXO. If you want to allocate the incoming calls of that number, you need to

- Create a dial plan to define **Call Routing paths** on the QuadroFXO and on each of the other Quadro devices.
- modify the QuadroFXO's Auto Attendant welcome message inform the callers about the extension numbers to enable them to reach the desired destination

To illustrate the dial plan with an example, we will assume, you have got the phone number 854603 and you want to offer connections assigned the numbers as follows:

Quadro 2x (IP: 10.20.30.10)		Quadro4x (IP: 10.20.30.20)		QuadroFXO (IP: 10.20.30.30)
Extension 11	-11	Extension 21	-21	All incoming calls from the PSTN will be caught in the Auto Attendant: The welcome message of the Auto Attendant may inform the callers about the extension numbers.
Extension 12	-11	Extension 22	-21	
		Extension 23	-21	
		Extension 24	-21	

In this case, the following call routes are needed:

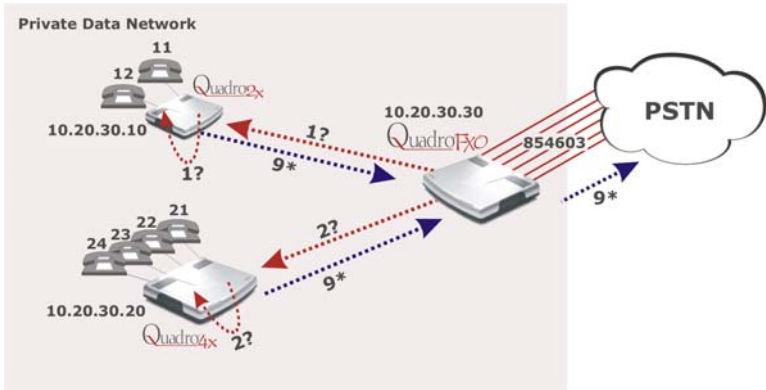


Fig. I-27: Call Routing example; dialing plan

QuadroFXO

Pattern	NDS	Prefix	Call Type	Destination Address	Description
1?			SIP	10.20.30.10	path to Quadro2x
2?			SIP	10.20.30.20	path to Quadro2x 1
9*			PSTN	10.20.30.70	path for all outgoing calls to PSTN

Quadro2x

Pattern	NDS	Prefix	Call Type	Destination Address	Description
1?			PBX		path to the single extensions
9*			PSTN	10.20.30.70	path for all outgoing calls to PSTN

Quadro4x

Pattern	NDS	Prefix	Call Type	Destination Address	Description
2?			PBX		path to the single extensions
9*			PSTN	10.20.30.70	path for all outgoing calls to PSTN

To define the call routing paths needed on QuadroFXO open **Call Routing** in the **Telephony** menu and select **Local Routing Table**. The **Call Routing - Local Routing** page will be displayed:

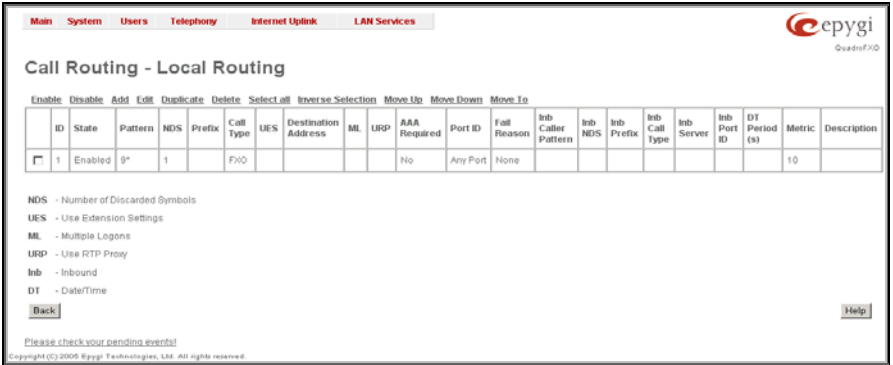


Fig. I-28: Call Routing example; dialing plan

You will find one of the routes needed on the QuadroFXO, the 9* route already defined per default.

Select **Add** to set the 1? route that leads the incoming PSTN calls to the Quadro2x:

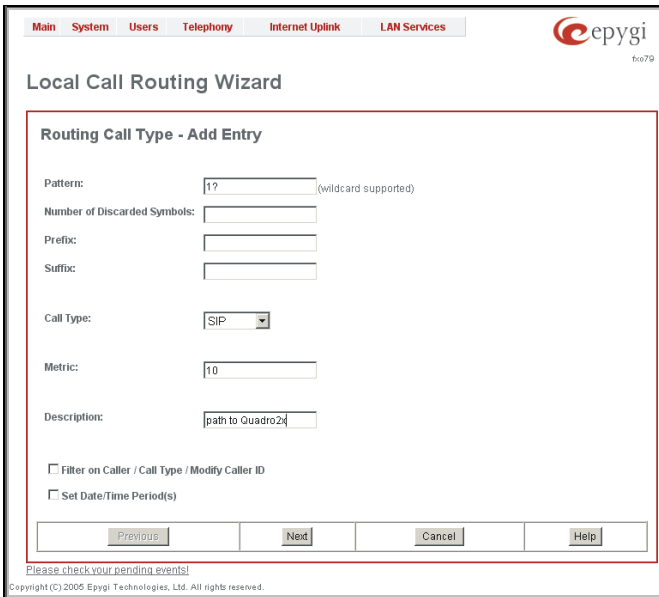


Fig. I-29: Local Call Routing Wizard: Routing Call Type Add Entry page 1

Pattern requires the routing pattern. To make the specified call, the appropriate Call Code should be dialed prior to the routing pattern. Only digit values and wildcard symbols are allowed here:

- the "?" character stands for only one unknown digit
- the "*" character stands for any number of any digits.
- '[', ']', ',', and '-' are used to define a range or a quantity of numbers

Number of Discarded Symbols (NDS) specifies the number of digits that that should be discarded from the beginning of the routing pattern. In this example, no digits have to be discarded, so leave that field empty.

Prefix specifies digits that will be inserted at the beginning of the routing pattern. Leave the field empty if no digits need to be added.

Suffix specifies digits that will be inserted at the end of the routing pattern. Leave the field empty if no digits need to be added.

Call Type gives a possibility to select the routing call type (PBX, SIP, FXO or IP-PSTN). For this example **SIP** has to be selected.

Metric allows entry of a rating for the selected route in a range from 0 to 20. If no value is inserted into this field, 10 will be used as a default. When two route entries match a user's dial string, the route with the lower metric will be preferred. In this example the **Metric** field will be left empty.

Description allows entry of short text, e.g. to name the path.

Filter on Caller/Call Type Modify Caller ID allows to limit the functionality of the current route to be used by the defined caller(s) only. If this checkbox is enabled, inbound caller information (Inbound Caller Pattern, Inbound Call Type, Inbound Port ID, etc.) will be required later in the Local Call Routing Wizard (see Manual-II, Administrator's Guide). In this example, no caller specific limitation is needed, so leave that checkbox unchecked empty.

Please Note: This checkbox selection, as well as any Inbound Caller information inserted, won't be considered and will make the current routing pattern invalid, if the E1/T1 Settings are switched to CAS mode, Loop Start, Group Start, E&M, R2 DTMF or R2 Compelled/Non Compelled (without ANI) signaling types.

Set Date/Time Period(s) allows setting a time period, during which the route shall be valid. For this purpose, and own page is displayed as the third page of the Local Call Routing Wizard.

Next will display the second page of the **Local Routing Wizard**:

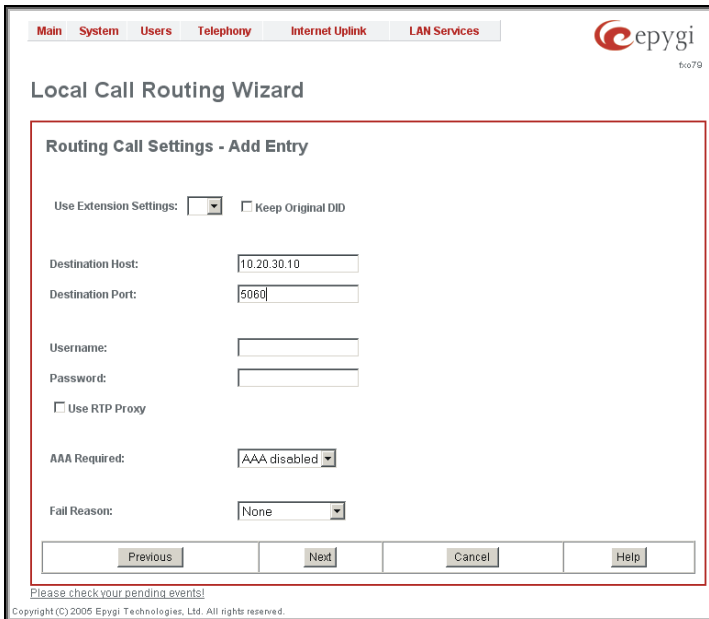


Fig. I-30: Local Call Routing Wizard: Routing Call Type Add Entry page 2

Use Extension Settings is applicable to SIP and IP-PSTN call types only and allows to select the extension (also Auto Attendant) on behalf of the call that will be placed. The SIP settings of the selected extension will be used as the caller information. If no entry is selected in this list, the original caller information will be kept. If the **Keep original DID** checkbox is selected, the called destination will receive the original caller's information, rather than the information of extension selected from the **Use Extension Settings** list.

Destination Port requires the port number of the destination or the SIP server. As Quadro devices use port 5060 per default, enter **5060**.

User Name and **Password** are identification settings for public SIP servers or servers requiring authentication. Leave these fields empty.

AAA Required is used to choose the Authentication, Authorization and Accounting (AAA):

- **AAA disabled:** Callers will be able to dial immediately without authentication.
- **Authentication:** Callers will need to pass authentication through Local AAA table (see below) when dialing the current pattern.
- **Authentication&Accounting** is available for all call types except PBX calls, if the RADIUS client is enabled. When dialing the current pattern, the callers will need to pass the authentication defined within the Local AAA table, and if the authentication fails, on the RADIUS server.
- **Accounting** is available for all call types except PBX calls if the RADIUS client is enabled. With this option, no local authentication will take place, but a caller identifying CDR (call detail report) will be sent to the RADIUS server.

If the authentication is configured based on the caller's address, callers will pass the authentication automatically; otherwise they will be required to identify themselves by a username and a password.

In the example described here, no authentication is desired, so select the default setting **AAAdisabled**.

Fail Reason offers a list of fail reasons depending on the selected call type. If the selected fail reason occurs, the local routing table will be parsed for the next matching pattern, and if found, the call will be routed to the destination specified there.

In the example described here, the default value **None** is used.

The last page of the Local Call Routing Wizard summarizes all settings and **Finish** will save the route. The **Call Routing - local Routing** page is displayed again showing the new call routing path.

All the other paths have to be specified accordingly on Quadro E1/T1 and the other involved Quadro devices:

Configuring the IP PBX Expansion QuadroFXO

QuadroFXO as a LINE expansion does not require further configuration but an additional entry in the Local Routing table, if the Quadro IP PBX

- **is connected to the network and all network settings are done without any issues**
- **still has its default LAN IP Address (172.30.0.1)**
- **still acts as a DHCP Server as it does by default**

In this case, the QuadroFXO has to be connected with its WAN interface to the LAN interface of the Quadro IP PBX and with its LINE ports to the FXO telephone lines. The QuadroFXO will get its IP address from the DHCP server of the Quadro IP PBX and will automatically route all incoming PSTN calls to the Auto Attendant of the Quadro IP PBX and will allow all routed calls from the Quadro IP PBX to access the FXO lines of the QuadroFXO. - As soon as the additional route is added to the routing table of the Quadro IP PBX as described in [Step 3: Call routing Configuration](#).

If your Quadro IP PBX does not act as a DHCP server and/or does not use the default LAN IP address any more, follow the step-by-step instructions presented below on both the Quadro IP PBX and QuadroFXO setups for incoming/outgoing calls through QuadroFXO ports.

Step 1: The Quadro IP PBX Acts as a DHCP Server

The QuadroFXO has to have an IP address to identify itself in the Quadro IP PBX LAN. This IP address can be assigned to it manually or dynamically via the Quadro IP PBX DHCP server. The simple way from the configuration perspective is to dynamically get an IP address from the Quadro IP PBX. This will be done automatically, if the connected Quadro IP PBX acts as a DHCP server and if the QuadroFXO acts as a DHCP client. Both devices will do so in their default settings. To make sure, that the Quadro IP PBX will serve as a DHCP server, login to the Quadro IP PBX as an administrator and select **DHCP Settings for the LAN Interface** from the **LAN services** menu.

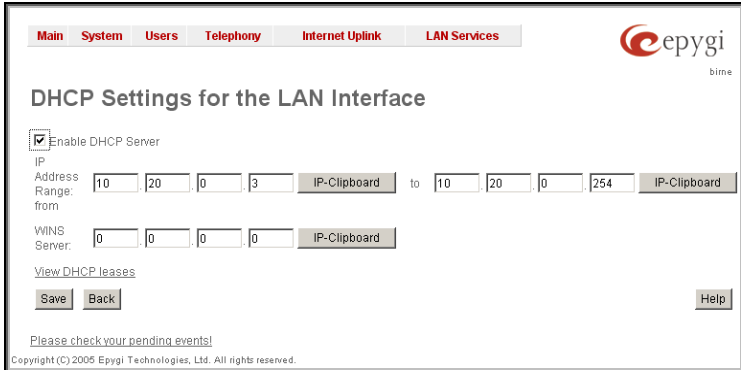


Fig. I-31: LAN-DHCP Settings pager

Make sure the **Enable DHCP Server** checkbox is selected and the **IP Address Range** is configured.

Step 2: Connecting the Quadro FXO

- Connect the WAN port of the QuadroFXO to the LAN port of the Quadro IP PBX via a straight-through Cat 5 cable with a RJ 45 connector.
- Make sure that the LINE ports of the Quadro IP PBX and the QuadroFXO are connected to FXO telephone lines.

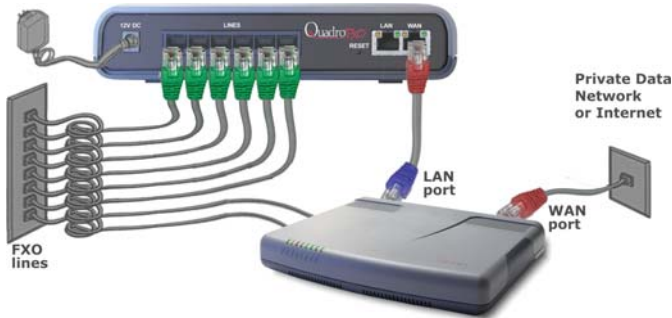


Fig. I-32: Installation of QuadroFXO as a LINE expansion for a Quadro IP PBX

- The software image SOHO-SW 3.0.26 or later must be running on the Quadro IP PBX.
- A software image FXO-SW 3.0.10 or later must be running on the QuadroFXO.

Step 3: Call routing Configuration

To be able to make outgoing PSTN calls from the phones connected to the Quadro IP PBX using QuadroFXO's LINE ports, you need to define a new routing rule in the Local Routing Table of the Quadro IP PBX for which you need to know the IP address of the QuadroFXO.

From the **LAN Services** Menu of the Quadro IP PBX click on **DHCP Settings for the LAN Interface** and select **View DHCP Leases**:

Main System Users **Telephony** Internet Uplink LAN Services

epygi home
Refresh in 23 seconds!

DHCP-Leases

IP Address	MAC address	Lease start	Lease end	Binding state	Hostname
10.20.0.102	00:40:14:85:ac:9c	Wed Sep 14 19:16:24 2005	Wed Sep 21 19:16:24 2005	active	FXO

Back Help

Please check your pending events!

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Fig. I-33: DHCP Leases page of the Quadro IP PBX

Now, as you know the IP address of the QuadroFXO (10.20.0.102) you may define a new route on the Quadro IP PBX:

1. From the **Telephony** menu select the **Call Routing** item and click on the **Local Routing Table**.

- Click the **Add** button to go through **Local Call Routing Wizard** and set the parameters for the rule to be created.

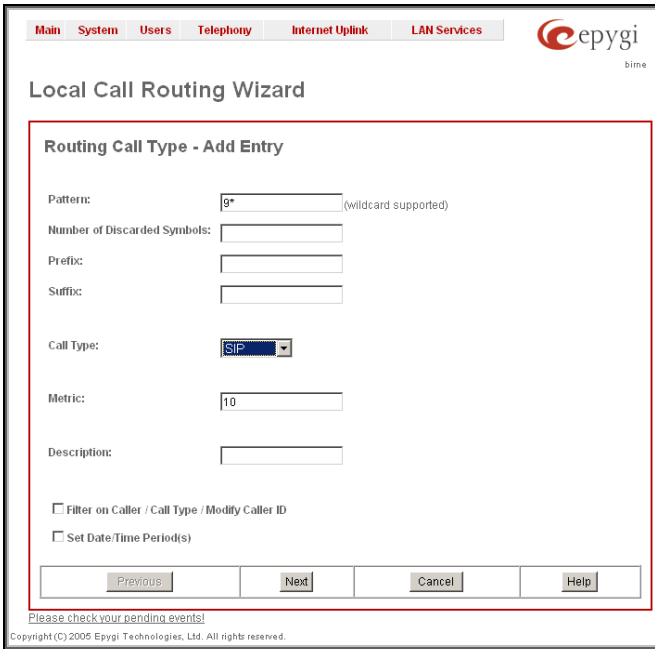


Fig. I-34: Local Call Routing Wizard of the Quadro IP PBX, page 1

On the first page of the **Local Call Routing Wizard** fill in

- The **Pattern** field should be filled by **9*** and
- Set the **CallType** parameter to **SIP**.

You may omit the other fields blank or fill with the values you find necessary (for the descriptions of those parameters refer to your Quadro IP PBX **Manual II: Administrator's Guide**).

- On the next page of the **Local Call Routing Wizard** fill in

- The **Destination IP Address** and **Destination Port** with QuadroFXO's IP address and port number. You may leave the **Destination Port** field empty if the QuadroFXO uses 5060 port number (the default port number used on the Quadro).
- Set the **Fail Reason** to **Any** and click **Next**.

You may omit the other fields or fill with the values you find necessary (for the descriptions of those parameters refer to the **Manual II: Administrator's Guide** you're your **Quadro IP PBX**)



Fig. I-35: Local Call Routing Wizard of the Quadro IP PBX, page 2

4. The last page of the wizard gives the summary of the rule to be created. Press **Finish** to create the rule with the specified properties. The newly created rule is added to the **Local Routing Table**.

How this record works. If the user dials 9 followed by a PSTN number (or 9+ # + PSTN number) and no free FXO line is available on the Quadro IP PBX (they are either in use or disabled), the call will go through a QuadroFXO LINE port.

Step 4: System Configuration of QuadroFXO

Please Note: It's strongly recommended to set the regional settings of QuadroFXO the same as they are configured in the Quadro IP PBX! If you didn't change the default regional settings of your Quadro IP PBX, you may skip this step.

1. Log in to the QuadroFXO as an administrator
 - Start a browser (MS Internet Explorer, Netscape, Opera) on a PC connected within the LAN of the IP PBX and enter **http:// 10.20.0.102** (the IP address of the QuadroFXO) into the address field.
 - In the displayed **Login** page of the QuadroFXO, enter **admin** as the Username and **19** as the password to log in as the administrator.
2. Open the **System Configuration Wizard** under the **System** menu and navigate through the wizard pages leaving the default settings until you reach the **Regional Settings and Preferences** page.

Fig. I-36: System Configuration Wizard of the Quadro FXO - Regional Settings and Preferences page

Click **Next** until you reach the last page of the **System Configuration Wizard**. To complete the basic system configuration and save the settings, click **Finish**. The **Confirm Settings** page then will be displayed. You must click **OK** within 20 minutes to confirm the changes.

Step 5: Redirecting Incoming PSTN Calls to the Quadro IP PBX

Please Note: This step is only needed, if the default LAN IP address of your Quadro IP PBX has been changed!

Incoming PSTN calls from the QuadroFXO are redirected to the Quadro IP PBX per default. A virtual extension (11) is added where all incoming calls are routed to:

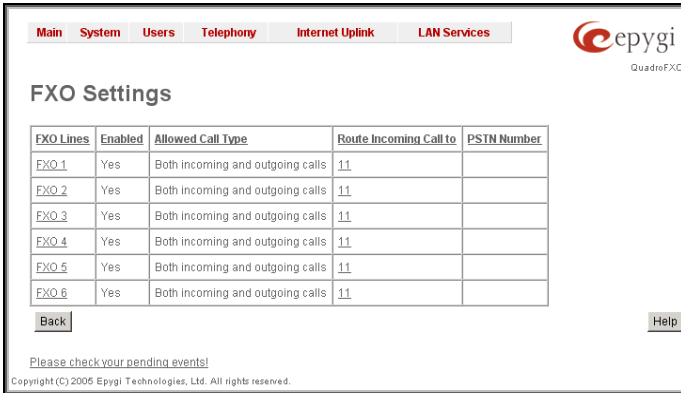


Fig. I-37: FXO Settings page of the QuadroFXO

This virtual extension 11 is configured to unconditionally forward all incoming calls to the Auto Attendant of the Quadro IP PBX. This will work per default, if the default LAN IP address of the Quadro IP PBX (172.30.0.1) has not been changed.

If the default LAN IP address of the Quadro IP PBX has been changed, a new forwarding destination for the unconditional forwarding attached to the virtual extension 11 has to be specified on the QuadroFXO:

Open the **User Management and Extension Settings** page from the **Users** menu and click on the link of extension 11 to access its **Extension settings**. Select **Supplementary Service** from the **Call Handling** menu and click on the **Any Address** link to display the **Supplementary Services for Any Address** page:

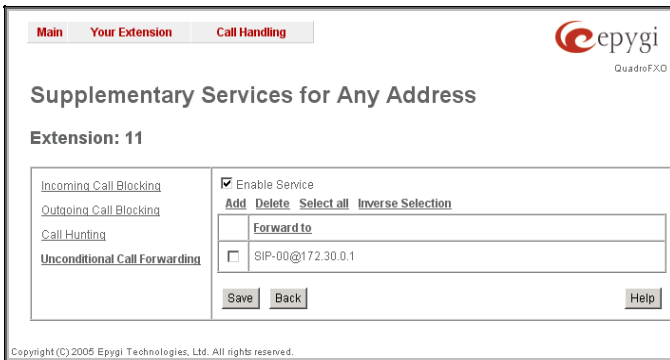


Fig. I-38: Default Supplementary Services page

Here you should add a new entry in the format **SIP-00@<IP address>** (SIP = Call type; 00 = Auto Attendant).

To do so click **Add** to display the **Supplementary Services - Add Entry** page:



Fig. I-39: Default Supplementary Services page

Select **SIP** as the Call type and enter **00@** followed by the LAN IP address of the Quadro IP PBX into the **Address** text field. Click **Save** and the **Supplementary Services** table will show a second entry.

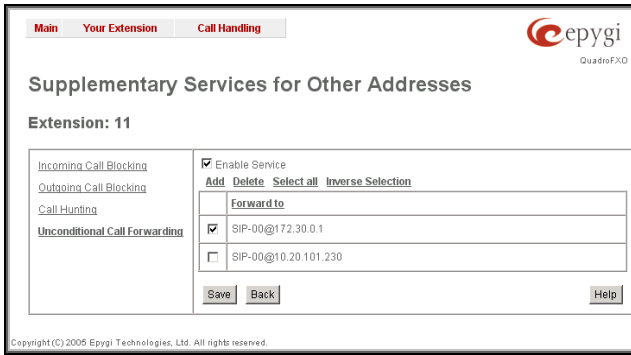


Fig. I-40: Supplementary Services page with a new entry

Now, check the first (default) entry and delete it.

Step 6: Redirecting Outgoing Calls Through QuadroFXO

The entry in the QuadroFXO's Local Call Routing table that is needed to allow routed calls from the Quadro IP PBX to access the FXO lines of the QuadroFXO is done by default:

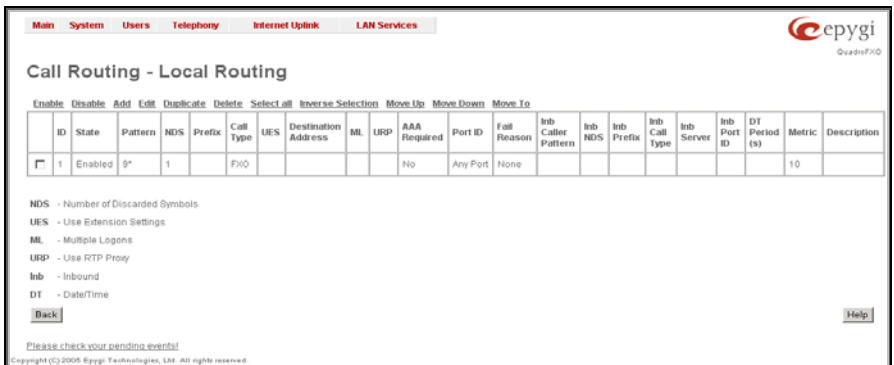


Fig. I-41: Local Routing table of the QuadroFXO

Registering on Epygi's Technical Support

It is recommended that you register your QuadroFXO on the Epygi Technical Support web page. Registration will give you access to the Technical Support Database. There, you can send requests concerning technical problems as well as refer to the frequently asked questions. 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 QuadroE1/T1, which you will find on QuadroFXO's bottom label and its purchase date. 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 QuadroE1/T1 units will be shipped pre-configured 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/password to access Epygi's online Support and the Epygi SIP Server.

The registration form is titled "Registration Form" and includes a "Required Information" indicator. It is divided into four main sections:

- Product Information:** Contains fields for Serial Number (112233001729), Purchase Location (United States), Purchased From (EPYGI), and Purchase Date (05/21/2004).
- Login Information:** Contains fields for Login Name (Samantha), Password, and Confirm Password.
- Customer Information:** Contains fields for First Name (Samantha), Last Name (Donaldson), Company (OmniTec, Ltd), Email (samantha.donaldson@omnitec.com), Street, City (Seattle), Country / State (Washington), Zip / Postal Code, Phone 1, Phone 2, and Fax.
- Information Requested:** Contains four checked checkboxes: New Software Version, New Product, New Security Issue, and Maintenance Announcement.

At the bottom right, there are "SUBMIT" and "CANCEL" buttons.

Fig. I-42: Registration form

Appendix: PC DHCP Settings

The QuadroFXO LAN port has a DHCP server that provides DHCP IP addresses to devices connected to the LAN either directly or through an Ethernet hub or switch. Appendix A describes how to configure Windows PCs for DHCP. The PC used to access the QuadroFXO must meet the following conditions:

- TCP/IP network protocol has to be installed.
- DHCP has to be activated to request the IP address automatically.

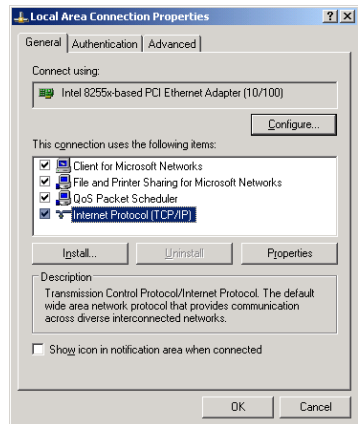
Please Note: If your PC is already configured for DHCP, then simply power it on. Verify the LAN LED is lit. If not, check the cable connections.

Follow the instructions below to install TCP/IP and enable DHCP functionality:

TCP/IP and DHCP under Windows 2000/Windows XP

Windows 2000 and Windows XP PCs with Ethernet cards or adapters normally are configured with a TCP/IP network connection by default. Nothing additional needs to be installed. To enable the DHCP functionality, you may have to modify the properties of TCP/IP:

1. Click the **Start** button. Choose **Settings**, then **Control Panel**.
2. Double-click on the **Network Connection** icon to open the corresponding window. Select **Local Area Connection** with the right mouse button and select **Properties**.
3. Highlight **Internet Protocol (TCP/IP)** and click **Properties**. The corresponding window will be displayed.



4. Select **Obtain an IP address automatically**, then click on **Advanced**.



5. You will see the entry **DHCP Enabled**.
6. Click **OK** three times to close all windows.



TCP/IP and DHCP under Windows 95/98/ME

1. Click the **Start** button. Choose **Settings**, then **Control Panel**.
2. Double-click on the **Network** icon to open your Network window. Select the **Configuration** tab.
3. Click **Add**.
4. Double-click on **Protocol**.
5. Highlight "Microsoft" under the list of manufacturers.
6. Find and double-click on **TCP/IP** in the list to the right.
7. The Network window will appear with the TCP/IP protocol now listed.
8. Highlight "TCP/IP" and click on **Properties**.
9. Select **Getting IP address automatically** to enable the DHCP functionality.
10. Click **OK**.
11. Windows will ask you to restart the PC. Click **Yes**.

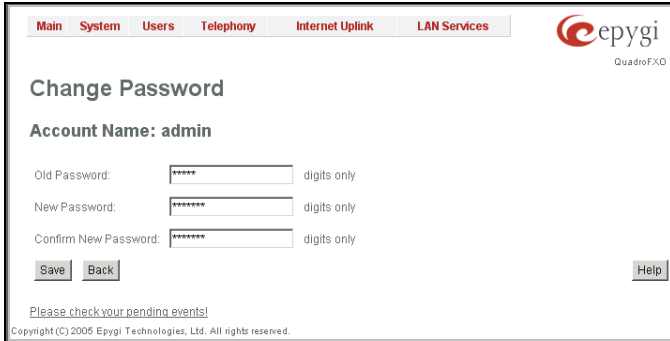
The TCP/IP installation is now complete and the DHCP functionality is enabled.

Appendix: Changing the Administrator's Password

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

Under the **Telephone Users** menu, select **Change Password**.

The **Change Password** page will be displayed



The screenshot shows the 'Change Password' page in the QuadroFXO web interface. At the top, there is a navigation menu with links for 'Main', 'System', 'Users', 'Telephony', 'Internet Uplink', and 'LAN Services'. The 'Users' link is highlighted. The Epygi logo and 'QuadroFXO' text are in the top right corner. The main heading is 'Change Password'. Below it, the 'Account Name' is listed as 'admin'. There are three password input fields: 'Old Password', 'New Password', and 'Confirm New Password', each with a 'digits only' label. Below the fields are 'Save', 'Back', and 'Help' buttons. At the bottom, there is a link for 'Please check your pending events!' and a copyright notice: 'Copyright (C) 2005 Epygi Technologies, Ltd. All rights reserved.'

Fig. I-43: Change Password page

Enter the **Old Password** (19) and the **New Password** in both the **New Password** and **Confirm New Password** fields. Please note that only alphanumeric characters may be entered here.

Save the password in a secure place. If the password is lost, a factory reset will need to be carried out on the unit (see Administrator's Manual, Hardware Overview). All settings are lost after a factory reset. After a factory reset, the default password (19) will be restored.

Appendix: Configuring SIP NAT Traversal

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

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 address. Most ISP 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 to the Internet. This method offers security and also eliminates the need to assign global Internet public IP addresses to each device.

Please Note: SIP NAT traversal only works with Internet connections that have static IP addresses. Verify from your provider 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 QuadroFXO and the Internet, the same port forwarding setup must be configured on each router.

SIP NAT Traversal Setup

- Install the QuadroFXO behind the router. If the QuadroFXO is configured with its factory default settings, it is already configured for DHCP and will obtain an IP address automatically from the router. If the DHCP was changed, please [Run The System Configuration Wizard](#) to place the QuadroFXO in DHCP mode. Power up the QuadroFXO.
- Connect a PC or laptop to the QuadroFXO LAN port and power it up.
- Verify the QuadroFXO can connect to the Internet by opening a browser window and browsing to a familiar WEB site. If the QuadroFXO can not reach the Internet, verify the LAN/WAN LEDs and the cabling. Verify the QuadroFXO 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 user manual on how to open the router configuration.
- Set up port forwarding on the router to forward the UDP ports according to the ports specified for SIP (Mapped Port for SIP, default: 5060) and RTP/RTCP (Min mapped RTP/RTCP port (default 6000 and Max mapped RTP/RTCP port (default 6099)) on the QuadroE1/T1. The router should forward that UDP (USP/TCP for SIP) ports to the IP address assigned to the QuadroE1/T1. You can see the IP address of the QuadroFXO in the System menu under Status. The IP address will be listed as the WAN IP address. Your router may also indicate the IP address assigned to the QuadroFXO.
- Find out the public Internet 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 **QuadroFXO Management** menu go to the **Telephony** menu, select **NAT Traversal Settings/SIP Settings** and check **Use Manual NAT Traversal** .
- For **Mapped Host**, enter the router IP address found on the step above and the port number **5060** for **Mapped Port**. **Save** the settings
- Select the **RTP Parameters** link, check **Use Manual Nat Traversal**, enter again the router's IP address into the **Mapped Host** field. In the area **Mapped RTP/RTCP Port Range for FXS Lines** enter for **Min: 6000** and for **Max 6059**.

- Click the **Save** button to save the contents.

The QuadroE1/T1 will activate the settings and register the extension on the Epygi SIP Server after a few minutes. You can verify the settings from the main **QuadroE1/T1 Management** menu under **Status** in the **SIP Registration Status** section.

Appendix: Checking the Connections

If the system seems to work incorrectly even when all cables are connected properly, it may be helpful to **Start Network Diagnostics**: The WAN link, IP configuration, gateway, DNS server, and STUN-NAT (if used) will all be checked.

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

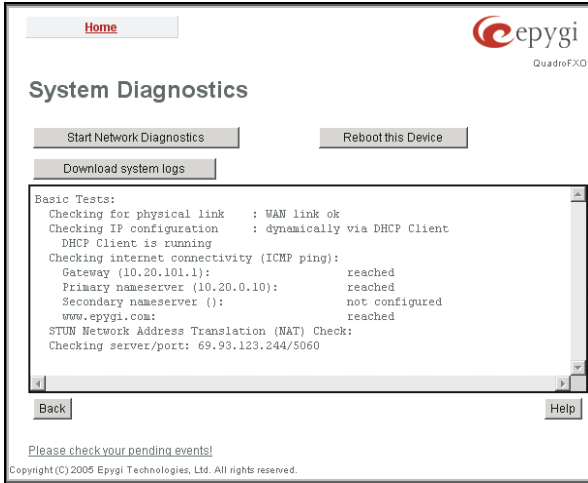


Fig. I-44: System Diagnostics page

In the case of a successful test, the output of the system looks 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 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 you pass the diagnostics successfully, but are still not able to place a call to 899# then check the SIP registration status.

Open the SIP Registration Status page using the QuadroFXO management **System** menu item **Status**. If QuadroFXO is placed behind a NAT router, the detected NAT type and the IP address of this router's WAN port are displayed.



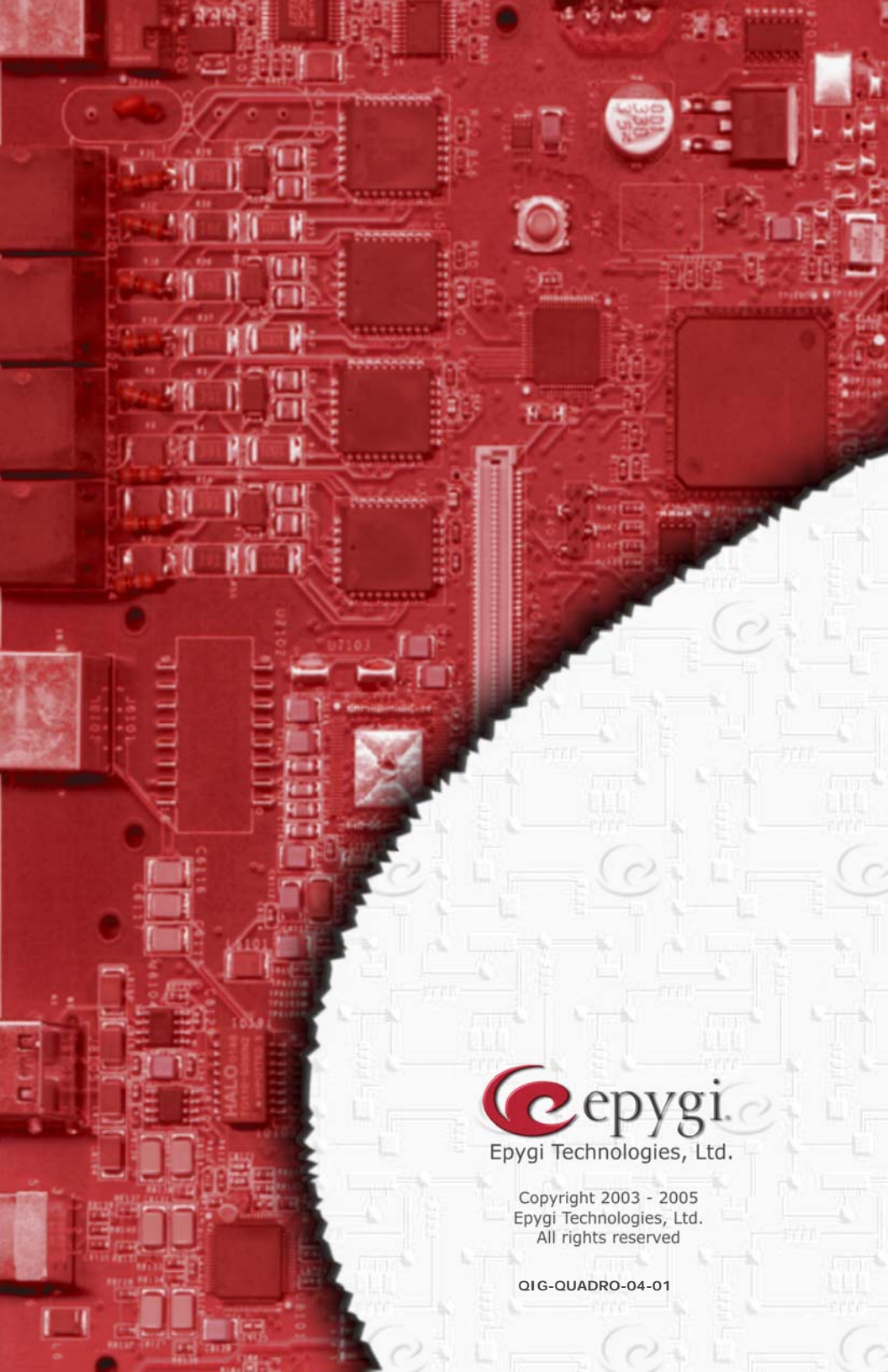
Fig. I-45: SIP Registration Status page

If you are using the STUN functionality the page shown above will additionally display the Detected Connection Type. Unsupported Connection types will cause one of the following messages:

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

If the **Detected Connection Type** is any of the types listed above, QuadroE1/T1 cannot work behind your router. You must either connect the QuadroE1/T1 in front of the router, or configure NAT traversal manually as explained in [Appendix: Configuring SIP NAT Traversal](#)

If you are unable to resolve your problems, please send us a technical support request on the **Support** section of <http://www.epyqi.com/>. Please prepare a system log file and attach it to your request. To create a system log file, open the **System Diagnostics** page **System** menu item **Diagnostics**) and click **Download System Logs**.



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