



Manual I: Installation Guide

Edition 1, October 2014
SW Release 6.0.1 and higher

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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. Located on the equipment is a label that contains, among other information, the ACTA registration number and ringer equivalence number (REN). If requested, this information must be provided to the telephone company.

The REN is used to determine the quantity of devices which may be connected to the telephone line. Excessive REN's on the telephone line may result in the devices not ringing in response to an incoming call. In most, but not all areas, the sum of the REN's should not exceed five (5.0). To be certain of the number of devices that may be connected to the line, as determined by the total REN's contact the telephone company to determine the maximum REN for the calling area.

This equipment cannot be used on the telephone company-provided coin service. Connection to Party Line Service is subject to State Tariffs.

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

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

If trouble is experienced with this equipment, please contact EPGYI TECHNOLOGIES, LTD.

If the trouble is causing harm to the telephone network, the telephone company may request you to remove the equipment from the network until the problem is resolved.

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 or QX is powered.

Industry Canada Statement

This product meets the applicable Industry Canada technical specifications.

Safety Information

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

- To prevent fire or shock hazard, do not expose your Quadro or QX to rain or moisture.
- To avoid electrical shock, do not open the Quadro or QX. 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 or QX during an electrical storm.
- Do not use your Quadro, QX 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 use of VoIP telephony is made available through IP networks such as the Internet and is dependent upon a constant source of electricity, network availability and proper operation of the equipment. If a power outage, network disruption or equipment failure occurs, the VoIP telephony service could be disabled. User understands that in any of those events the Quadro or QX may not be able to support 911 emergency services, and further, such services may only be available via the user's regular telephone line or mobile lines that are not connected to the Quadro or QX. User further acknowledges that any interruption in the supply or delivery of electricity, network availability or equipment failure is beyond Epygi's control and Epygi shall have no responsibility for losses arising from such interruption.

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The default Music on Hold on the Quadro or QX is a 22 second fragment from Chopin's *Nocturne Op.9 #2* performed by Marina Vardanyan and kindly provided to Epygi Technologies, LTD. The recording is royalty free.

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Table of Contents

About This Installation Guide	6
Requirements	7
Hardware Overview	8
The Connectors Panel of QXFX04/QXISDN4/QXE1T1/QXFXS24	8
QXFX04/QXISDN4/QXE1T1/QXFXS24’s Front Panel LEDs	10
Step 1: Installing the QXFX04/QXISDN4/QXE1T1/QXFXS24	11
Networking Overview	11
Connecting the Hardware	14
Step 2: Configuring QX Gateways in Standalone Mode	15
Step 2.1: Logging in to QX Gateway	16
Basic Setup	16
Step 2.2: Basic Setup - System (LAN)	18
System Configuration	18
DHCP Settings for the LAN Interface	20
Regional Settings and Preferences	20
Finishing the System Configuration Wizard	21
Step 2.3: Basic Setup - Internet (WAN)	23
Uplink Configuration	24
PPP/PPTP Configuration	24
WAN IP Configuration	26
WAN Interface Configuration	26
DNS Settings	27
Finishing the Internet Configuration Wizard	28
Configuring the Firewall	28
Step 3: Configuring the QXFX04, QXISDN4 and QXE1T1 Gateways as an IP PBX Expansion device	30
Step 3.1: Enable the DHCP Server on the QX IP PBX	31
Step 3.2: Sharing Mode Configuration on QX IP PBX	32
Step 3.3: Sharing Mode Configuration on QX Gateways	33
Step 4: Configuring the QXFXS24 Gateway as an IP PBX Expansion device	36
Connecting the QXFXS24	36
Step 4.1: QXFXS24 Plug-and-Play Detection	36
Step 4.2: Auto Configuration	37
How this Configuration Works	39
Step 4.3: Enable the DHCP Server on the QX IP PBX	39
Step 5: Registering on Epygi’s Technical Support	41
Appendix: Changing the Admin Password	43
Appendix: Configuring NAT Traversal	45
Appendix: Registering on Epygi’s SIP Server	48
Appendix: Checking the Connections	53
Appendix: Software License Agreement	55

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.

About This Installation Guide

This guide explains the installation of the Epygi QX Gateways. It gives step-by-step instructions to provision the QX Gateway. After successfully configuring the QX Gateway, a user will be able to make SIP and local PBX calls, as well as calls to the PSTN and access the Internet from devices connected to the LAN.

- **QXFX04** offers 4 phone ports (FXO), 1 Ethernet WAN port and 1 Ethernet LAN port
- **QXISDN4** offers 4 phone ports (ISDN), 1 Ethernet WAN port and 1 Ethernet LAN port
- **QXE1T1** offers 1 phone port (E1T1), 1 Ethernet WAN port and 1 Ethernet LAN port
- **QXFXS24** offers 24 phone ports (FXS), 1 Ethernet WAN port and 1 Ethernet LAN port

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

The QX Gateways are designed to add additional outside PSTN Lines to a corporate phone network when paired with an Epygi QX IP PBX. Integrating these products with any QX IP PBX allows the Gateway to then be managed through the IP PBX's GUI.

[Step 1: Installing the QXFX04/QXISDN4/QXE1T1/QXFXS24](#) explains the connection of cables and devices to the QX Gateway.

[Step 2: Configuring QX Gateways in Standalone Mode](#) describes the configuration steps needed to establish QX gateway as a standalone gateway.

[Step 3: Configuring the QXFX04, QXISDN4 and QXE1T1 Gateways as an IP PBX Expansion device](#) describes the configuration steps that might be needed to establish QXFX04, QXISDN4 and QXE1T1 as a LINE expansion for a QX IP PBX.

[Step 4: Configuring the QXFXS24 Gateway as an IP PBX Expansion device](#) describes the configuration steps that might be needed to establish QXFXS24 as a FXS lines expansion for a QX IP PBX.

[Step 5: Registering on Epygi's Technical Support](#) shows you how to access the Epygi Technical Support Center and the Epygi SIP Server.

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

[Appendix: Configuring NAT Traversal](#) explains configuration of the QX Gateway 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.

[Appendix: Software License Agreement](#) includes the contract for using QX IP PBX's hardware and software.

Requirements

- One 100-240 VAC power outlet in close proximity to the QX.
- One RJ45 Ethernet 10/100 broadband Internet connection.
- For QXFXS24 at least one analog phone, RJ21 connector (F) with cable and distributed panel.
- One CAT 5 Ethernet cable with RJ45 connector to connect to the QX LAN port.
- One PC with a 10/100 Mbps Ethernet card or adapter installed.
- TCP/IP network protocol installed on each PC.
- Internet Explorer, Mozilla Firefox, Google Chrome or Opera browser is recommended.

Hardware Overview

The Connectors Panel of QXFX04/QXISDN4/QXE1T1/QXFXS24

The illustration below includes the connector's panel of QXFX04, QXISDN4, QXE1T1 and QXFXS24 gateways.

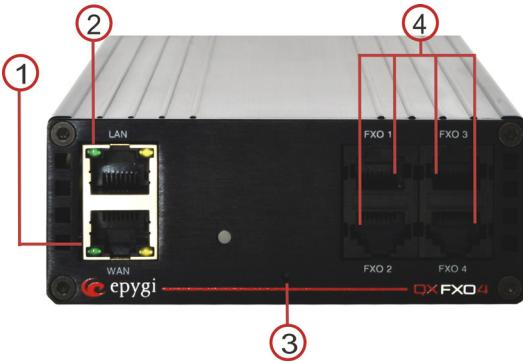


Fig. I- 1: QXFX04's Connectors Panel

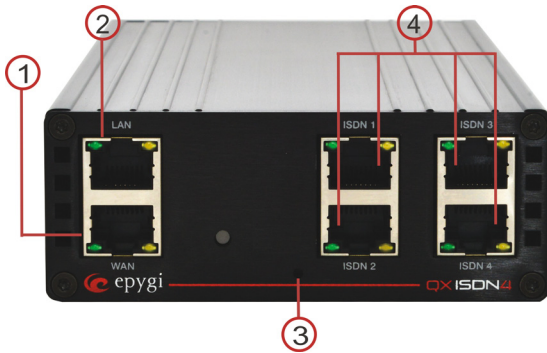


Fig. I- 2: QXISDN4's Connectors Panel

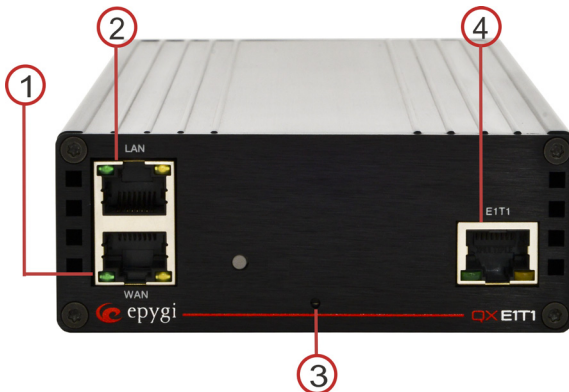


Fig. I- 3: QXE1T1's Connectors Panel



Fig. I- 4: QXFXS24's Connectors Panel

- 1 WAN RJ45 socket to attach the Internet Uplink (WAN) via an Ethernet CAT 5 cable.
- 2 LAN RJ45 socket to attach a Local Area Network (LAN) via an Ethernet CAT 5 cable. If a QX IP PBX or a PC is connected directly to this socket, a straight cable is used.
- 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 172.28.0.1 (default username - **admin** and password - **19**).
- 4 Line sockets to attach the FXO, ISDN and E1/T1 trunk to QX Gateway depending on the model of QX Gateway. For QXFXS24 gateway - PHONE sockets with RJ11 connectors enable connectivity of regular analog telephones. These are FXS (Foreign Exchange Station) analog ports.
- 5 AUX PWR (DC Power – placed in the back panel of QX gateway) connector to connect two units together. The second unit will get the power from the first unit by using 12V DC power connector.
- 6 AC Power (placed in the back panel of QX gateway) supply socket to connect a power cable.

QXFX04/QXISDN4/QXE1T1/QXFXS24's Front Panel LEDs

System Status	LED Color	State Description
Busy	GREEN	Blinking: normal activity
Info	ORANGE	Blinking: an event occurred; details specified in the System Event section of the Management interface
Fault	RED	On: steady red, system unusable

ETH Interface Status	LED Color	State Description
WAN	GREEN	on: link ok off: no link flickering: traffic on the link
LAN	ORANGE	on: full duplex mode off: half duplex mode

LED indication during a firmware update or reboot

1. Power **ON** – steady **GREEN** LED for about 3 seconds
2. Bootstrap loading – steady **RED** LED for about 3 seconds
3. Steady **ORANGE** LED for about 15 seconds
4. During Reboot – **RED/GREEN** LEDs are blinking
5. After Reboot – Slow blinking **GREEN** LED – normal activity

LED indication during emergency firmware update

1. Power **ON** – steady **GREEN** LED for about 3 seconds
2. Bootstrap loading – steady **RED** LED for about 1 second
3. Steady **ORANGE** LED for about 5 seconds
4. **RED** LED blinking for about 1 second
5. Steady **ORANGE** LED for about 1 minute
6. Fast blinking **ORANGE** LED for about 5 second
7. Reset the board and see the LED indication steps described for firmware update or reboot.

LED indication during emergency firmware update failure

1. Power **ON** – steady **GREEN** LED for about 3 seconds
2. Bootstrap loading – steady **RED** LED for about 1 second
3. Steady **ORANGE** LED for about 5 seconds
4. **RED** LED blinking for about 1 second
5. Steady **ORANGE** LED for about 1 minute
6. Fast blinking **RED** LED for about 5 second
7. Steady **ORANGE** LED for about 15 seconds

Step 1: Installing the QXFX04/QXISDN4/QXE1T1/QXFXS24

Networking Overview

To establish connections between the PSTN (or legacy PBX) and the Internet, a gateway is needed. The QX gateway, used as a standalone device, will perform the task of connecting your PSTN (or PBX) to a Private Data Network or the Internet. The QX gateway will process and regulate the voice traffic between these networks according to specified dial plan.

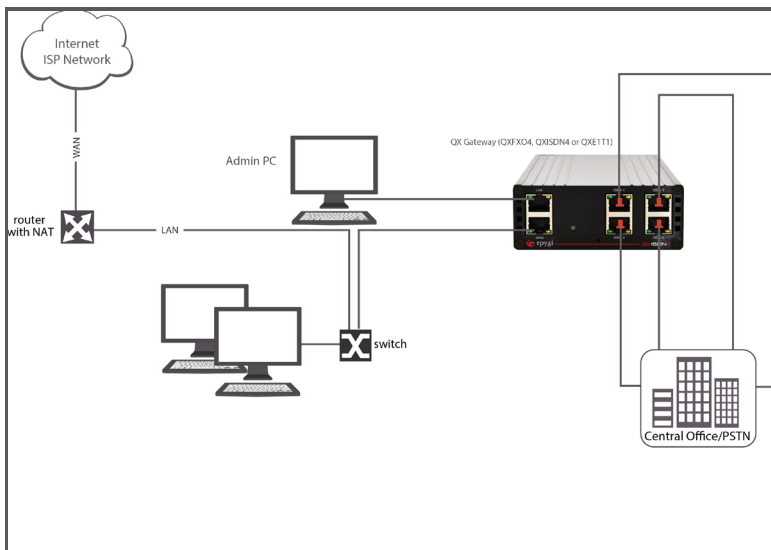


Fig. I- 5: Standalone gateway (QXFX04, QXE1T1 or QXISDN4): Connection overview

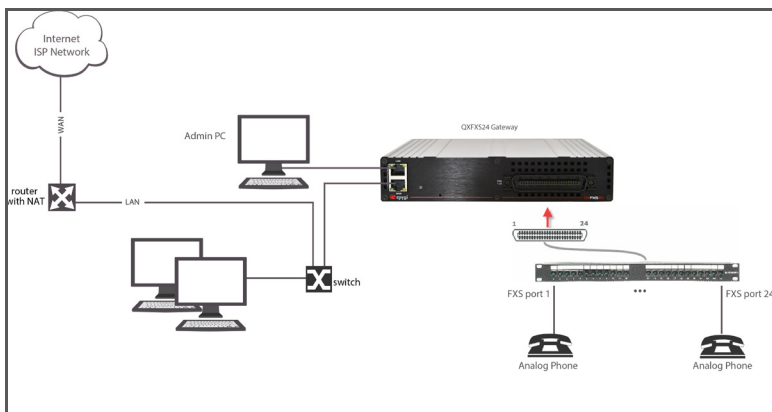


Fig. I- 6: Standalone gateway (QXFXS24): Connection overview

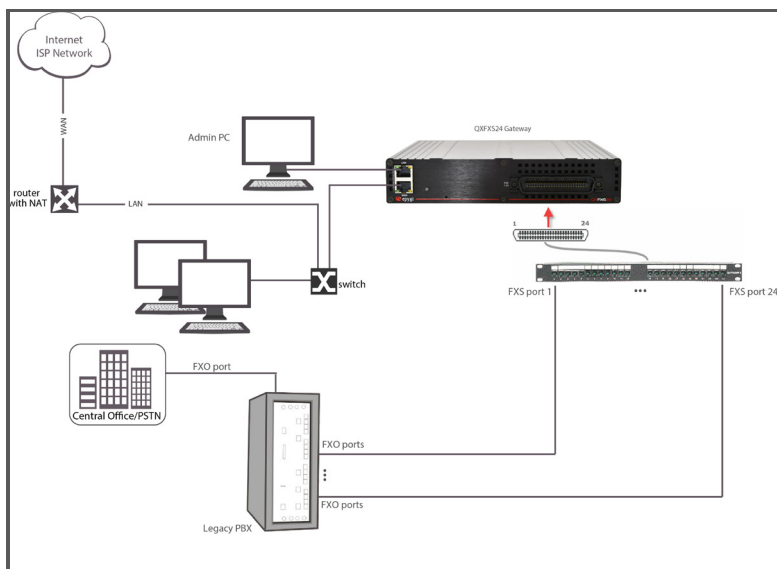


Fig. I- 7: Standalone gateway with Legacy PBX (QXFXS24): Connection overview

Every device within an IP network requires a unique IP address to identify itself. Since the QX gateway, 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 QX gateway's integrated firewall/NAT functionality will hide the LAN IP address from the WAN side.

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

Besides acting as a standalone device, QX gateways may serve as a LINE expansion for QX IP PBXs. In this case, QX gateway needs only a LAN IP address which it gets from the DHCP server of the attached QX IP PBX (see chapter [Step 3: Configuring the QXFX04, QXISDN4 and QXE1T1 Gateways as an IP PBX Expansion device](#) and [Step 4: Configuring the QXFXS24 Gateway as an IP PBX Expansion device](#)).

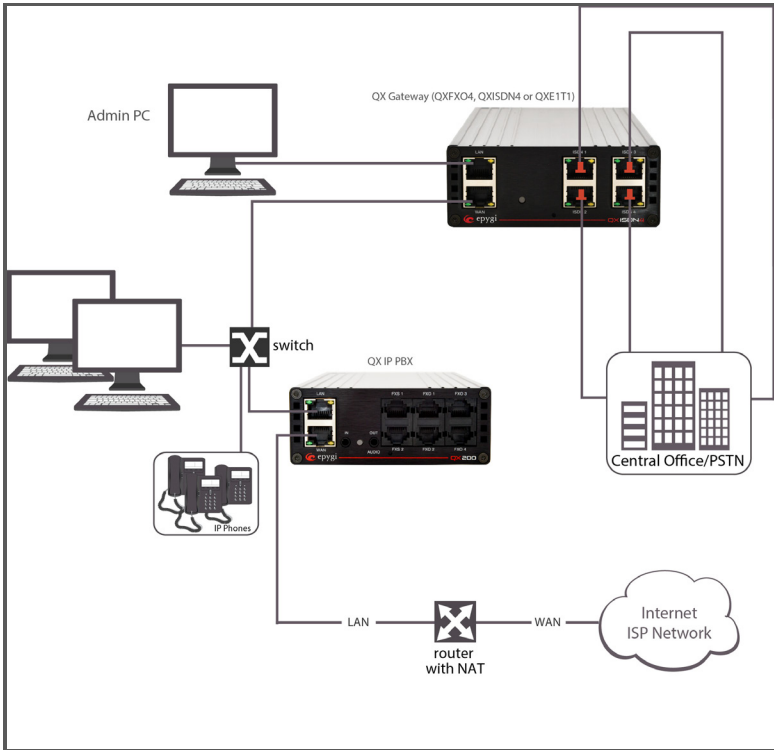


Fig. I- 8: QX gateway (QXFX04, QXE1T1 or QXISDN4) in shared mode: Connection overview

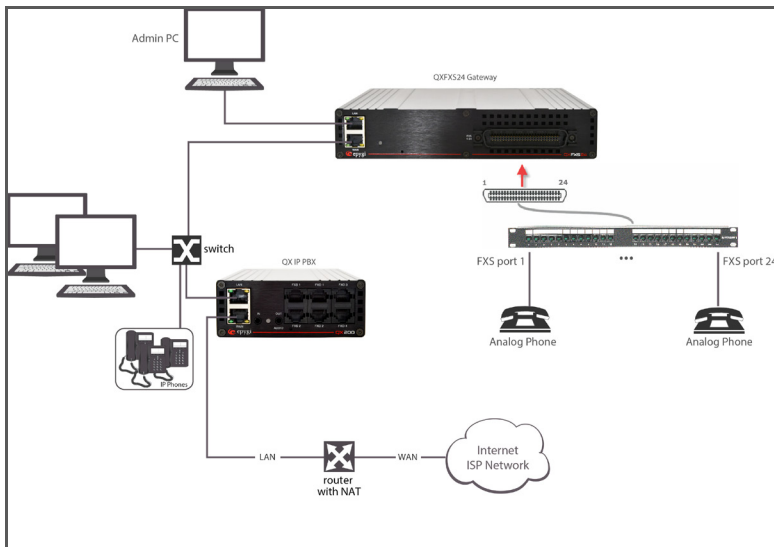


Fig. I- 9: QX gateway (QXFXS24) in shared mode: Connection overview

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.
- Before you connect the hardware, make sure that all devices are powered off.
- Connect the Ethernet port on your PC via a straight CAT 5 cable with an RJ45 connector to the LAN socket of the QX.
- Connect the WAN port of the QX to the ISP network.
- Connect the power cable to the POWER port on the back side of your QX and plug the power plug into the power outlet.
- Power up any hub or switch followed by any PC and other devices on the LAN side.
- Check the LEDs: The green WAN LED will blink when cables are connected to these ports and all devices are powered up. If the green WAN LED does 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 QX gateway and other device.

Step 2: Configuring QX Gateways in Standalone Mode

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

Step1: Basic Setup 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 Setup** are:

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

Bandwidth - used to regulate a number of calls allowed by the QX Gateway to avoid degradation in low bandwidth conditions.

Regional Settings - if your QX Gateway is located outside the United States, it is important to properly configure your line settings according to your location

Firewall - enable and configure the firewall to make the QX Gateway safe and accessible for management.

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

Step 2.1: Logging in to QX Gateway

- Start a browser (MS Internet Explorer, Opera, Mozilla Firefox or Google Chrome) on a PC connected to QX Gateway's LAN port. Enter **http://172.28.0.1** (QX Gateway's default LAN IP address) into the address field. QXE1T1 gateway is used in this example.
- The **LogIn** page of the QX Gateway will be displayed (see Fig. I- 10).

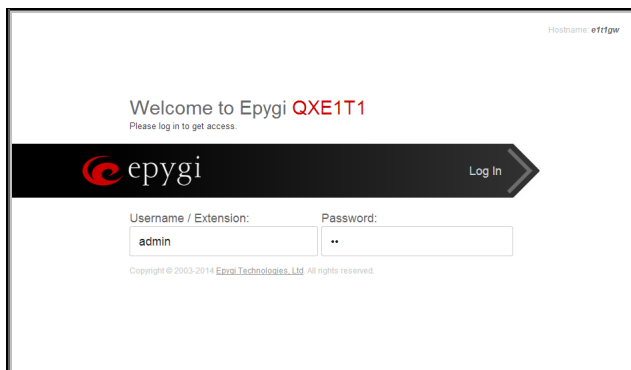


Fig. I- 10: Login page

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 QX 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 log in, the **Epygi QX Management** page will be displayed.

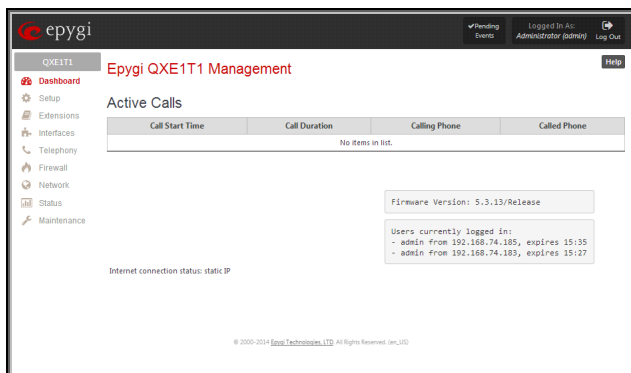


Fig. I- 11: Epygi QX Management page

Basic Setup

The following configuration wizards are available to accomplish the basic configuration of QX Gateway devices:

- The **System (LAN) - System Configuration Wizard** - a tool for the administrator to define the QX Gateway's Local Area Network settings and to specify regional configuration settings to make QX Gateway operational in its LAN. It must be run upon QX Gateway first startup.
- The **Internet (WAN) - Internet Configuration Wizard** - a tool for the administrator to configure the WAN settings and to adjust QX Gateway's connectivity in the global network. It must be run if QX Gateway 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.

Step 2.2: Basic Setup - System (LAN)

Select the **Basic Setup – System (LAN)** from the **Setup** menu. The **System (LAN)** is a tool for the administrator to define the QX Gateway's Local Area Network settings and to specify regional configuration settings to make QX Gateway operational in its LAN. **The System (LAN) must be run upon QX Gateway first startup.**

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 QX Gateway.

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

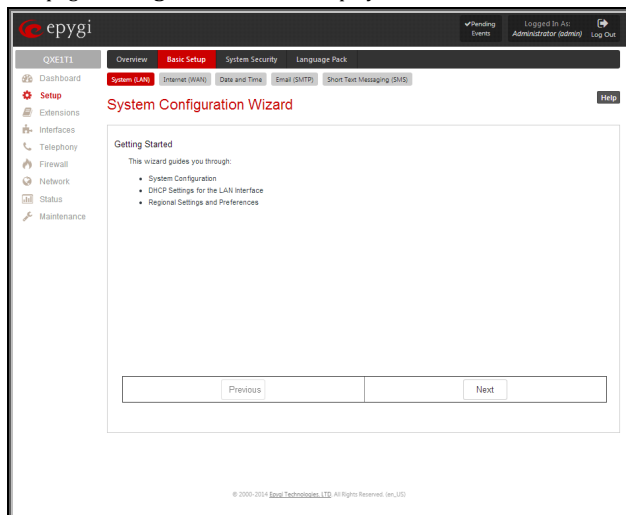


Fig. I- 12: System Configuration Wizard page

System Configuration

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

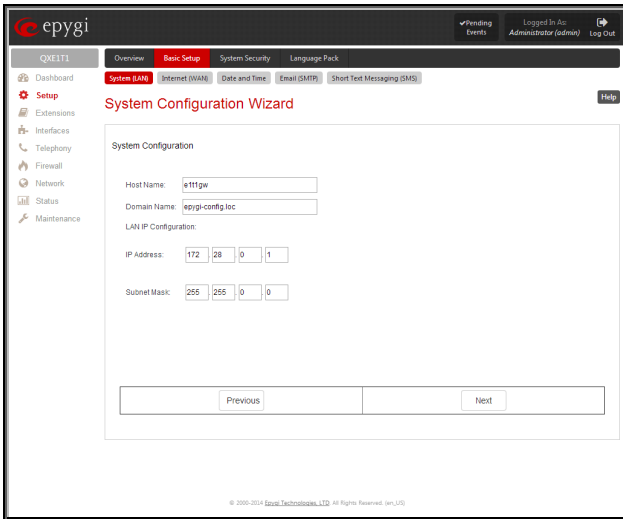


Fig. I- 13: System Configuration page

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

DHCP Settings for the LAN Interface

If the DHCP server is enabled, QX 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 QX, 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 QX.

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

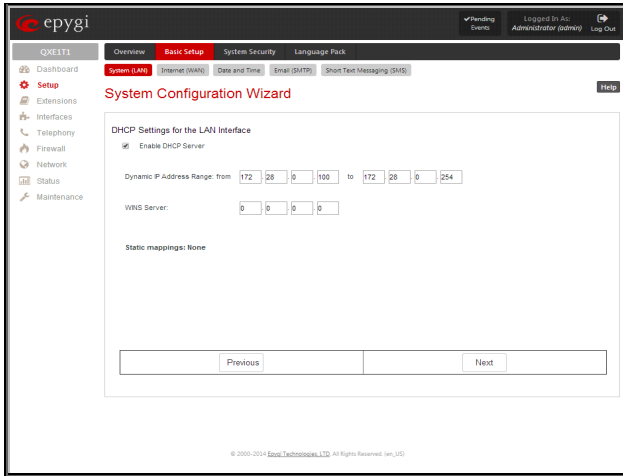


Fig. I- 14: DHCP Settings for the LAN Interface page

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

Regional Settings and Preferences

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

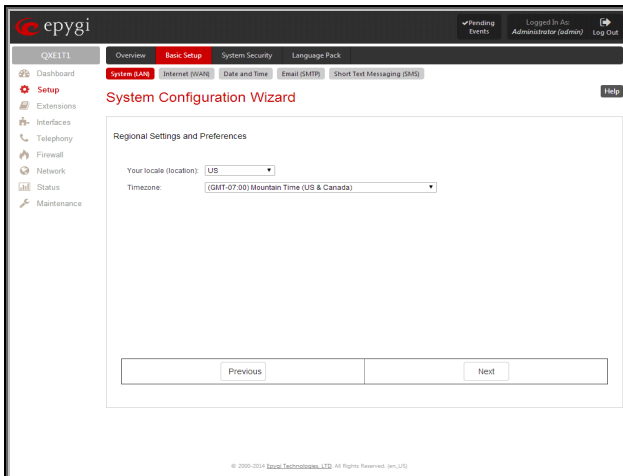


Fig. I- 15: Regional Settings page

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

The QX 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 **Summary Page**.

Finishing the System Configuration Wizard

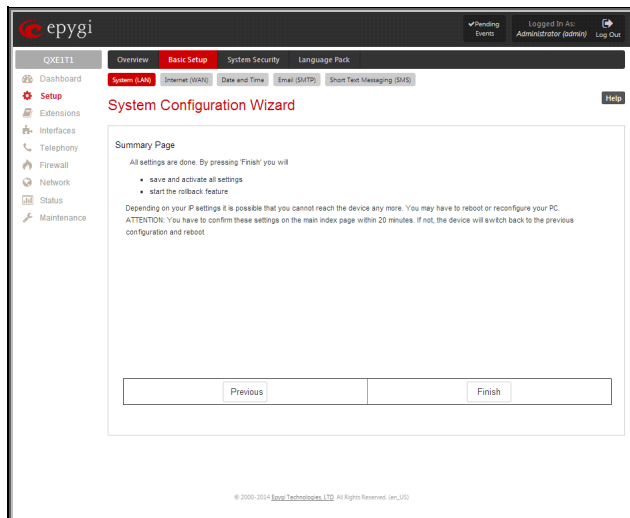


Fig. I- 16: System Configuration Wizard finishing page

Click on **Finish** to complete the System (LAN). The QX gateway will then stop internal functions and apply the changes made in the Wizard.

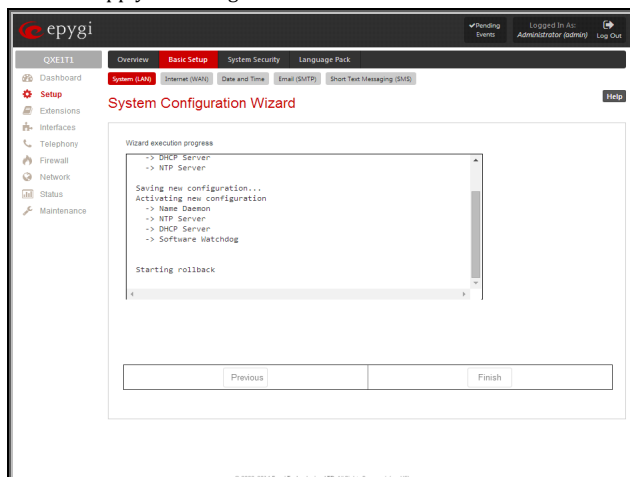


Fig. I- 17: Wizard Execution Progress page

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

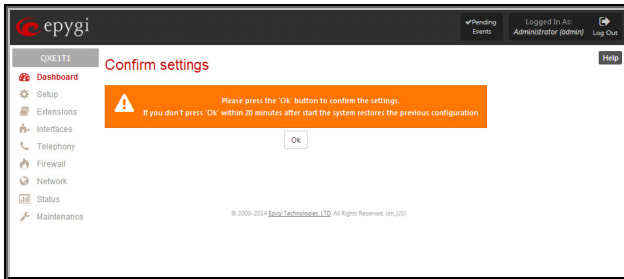


Fig. I- 18: Confirm Settings page

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 QX is still within the specified IP address range, otherwise your PC may not establish a connection to QX.

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 QX on the new IP address you've assigned to the QX.

Step 2.3: Basic Setup - Internet (WAN)

Open the **Internet (WAN)** by selecting the corresponding menu item on the **Setup - Basic Setup** menu. The **Internet (WAN)** is a tool for the administrator to configure the WAN settings and to adjust QX's connectivity in the global network. It must be run if QX gateway is desired to be connected to the Internet.

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

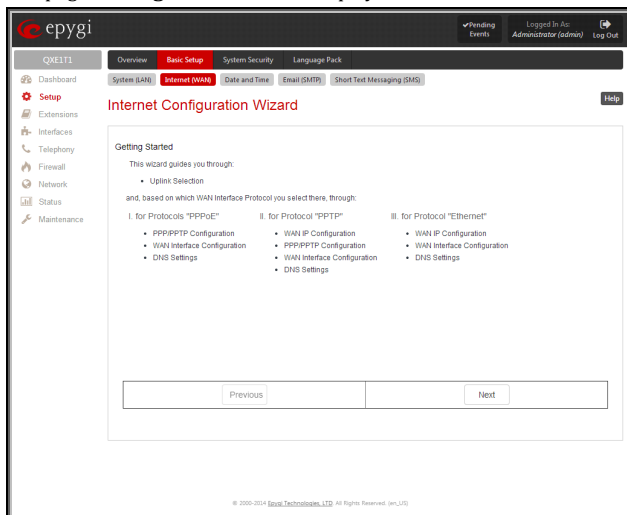


Fig. I- 19: Internet Configuration Wizard

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** – the 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 default 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.

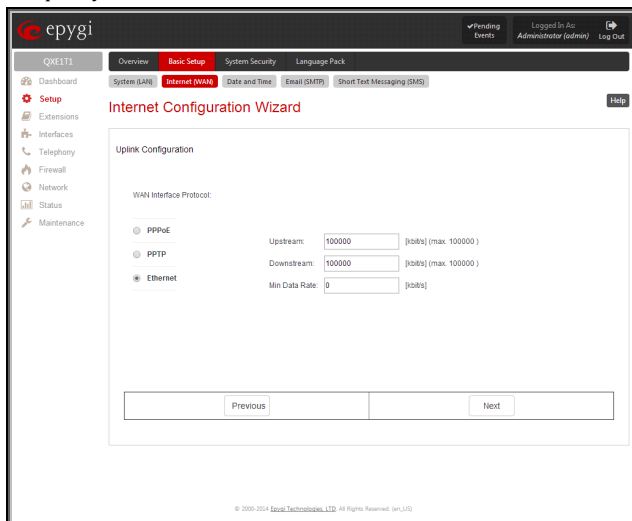


Fig. I- 20: Uplink Configuration

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 **100000**, the maximum bandwidth of the 100 Mb up-link 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**.

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 QX first.
- **Always connected** - QX stays in the always connected mode. This will allow QX always remain online in the network.

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

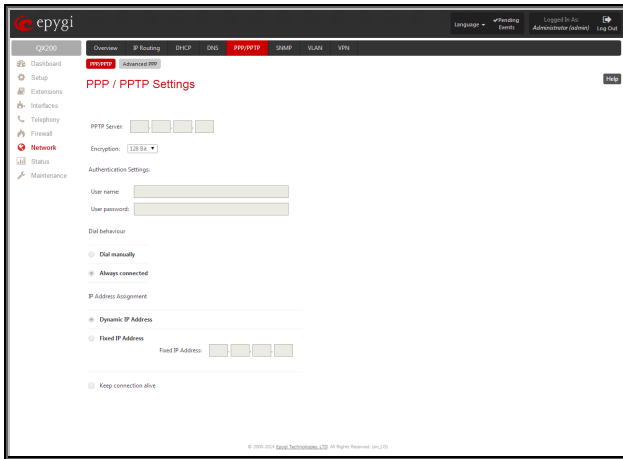


Fig. I- 21: PPP/PPTP Configuration page

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.

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 **Default Gateway**. This is common when you have a static IP address with your ISP.

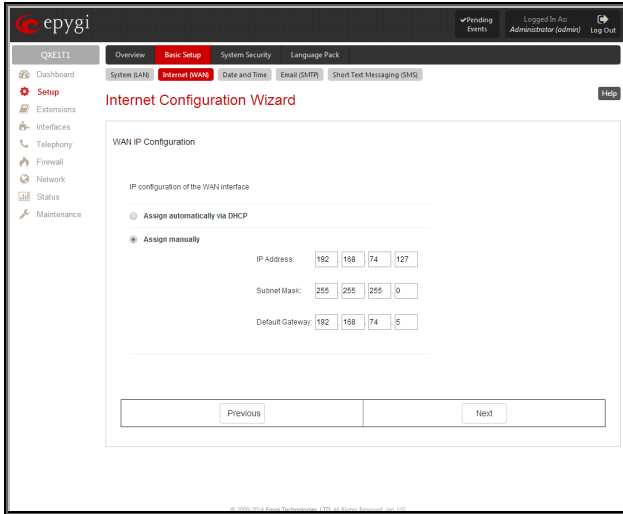


Fig. I- 22: WAN IP Configuration page

Click on **Next** 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.

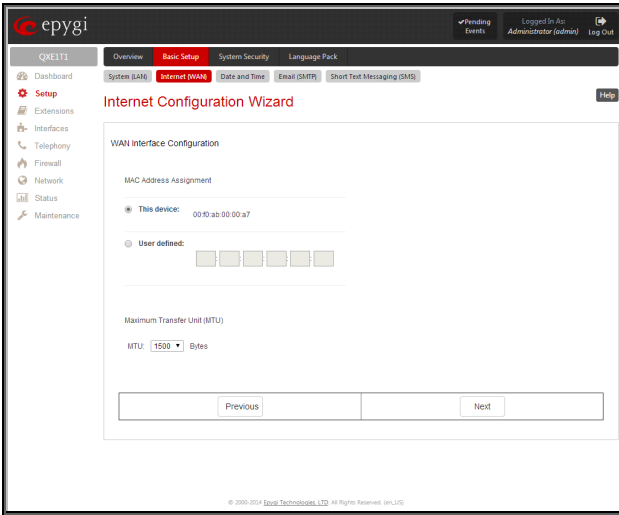


Fig. I- 23: WAN Interface Configuration page

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.

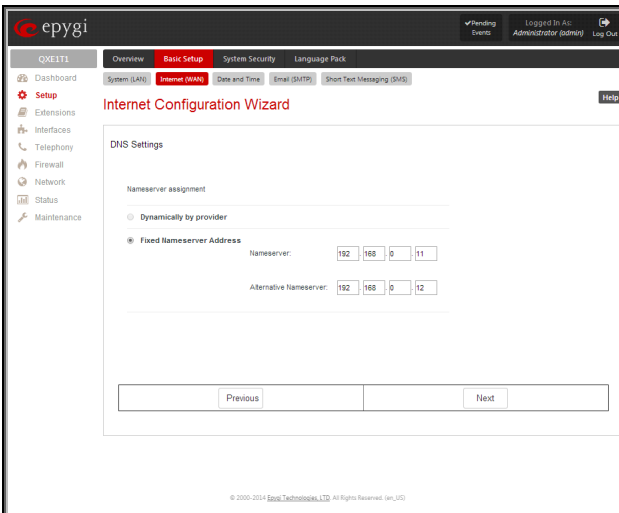


Fig. I- 24: DNS Settings page

The QX 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

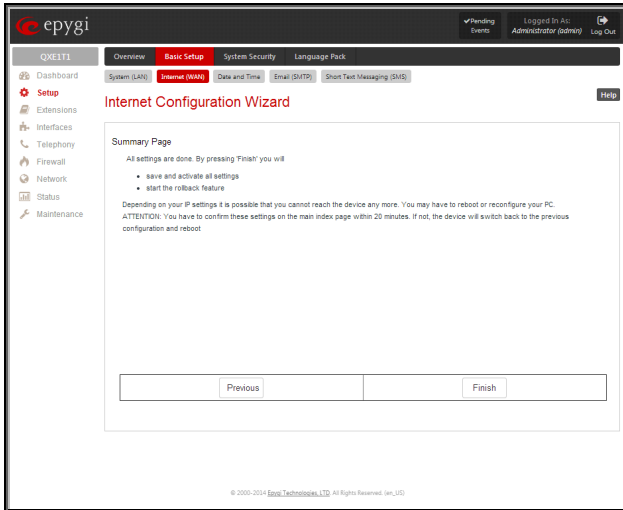


Fig. I- 25: Internet Configuration Wizard Summary page

Click the **Finish** button to complete the Internet Configuration Wizard. The QX will then stop internal functions and apply the changes made in the Wizard. After this is complete, the QX 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**.

Configuring the Firewall

Select **Firewall/NAT** from the **Firewall - Firewall** menu to open the **Firewall Configuration** page. By default, the **Firewall** configuration is disabled on the QX, which allows any incoming traffic from the WAN.

It is recommended to leave the firewall disabled if QX gateway acts as an expansion board.

If QX gateway acts as a standalone board, it is recommended to configure the firewall on the QX. To do so, check the **Enable Firewall** checkbox and select an adequate security level to protect your QX:

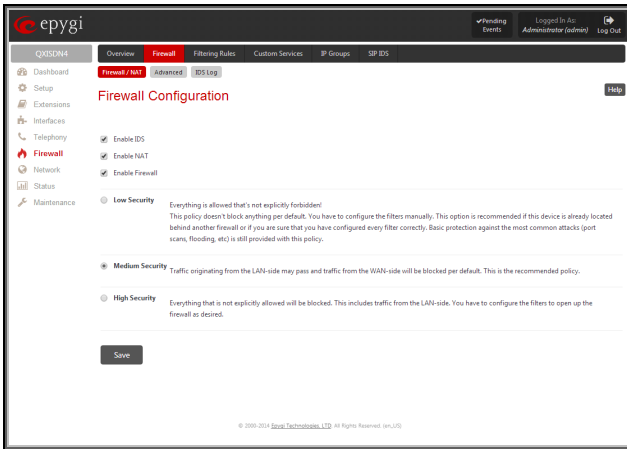


Fig. I- 26: Firewall Configuration page

Step 3: Configuring the QXFX04, QXISDN4 and QXE1T1 Gateways as an IP PBX Expansion device

QXFX04, QXISDN4 and QXE1T1 Gateways as a LINE expansion device does not require further configuration but the FXO, ISDN and/or E1T1 line sharing, if the QX IP PBX

- **is connected to the network and all network settings are done without any issues**
- **still acts as a DHCP Server as it does by default**

The only required configuration for sharing the FXO lines of QXFX04, ISDN and E1T1 trunks of the QXISDN4 and QXE1T1 Gateways respectively to the QX IP PBX is the sharing mode configuration on both devices (see details in [Step 3.2: Sharing Mode Configuration on QX IP PBX](#) and [Step 3.3: Sharing Mode Configuration on QX Gateways](#)).

If your QX 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 QX IP PBX and QX Gateway setups for incoming/outgoing calls through QX Gateway ports.

Step 3.1: Enable the DHCP Server on the QX IP PBX

The QX Gateway has to have an IP address to identify itself in the QX IP PBX LAN. This IP address can be assigned to it manually or dynamically via the DHCP server of the QX IP PBX. The simple way from the configuration perspective is to dynamically get an IP address from the QX IP PBX (default IP is 172.28.0.1). This will be done automatically, if the connected QX IP PBX acts as a DHCP server and the QX Gateway acts as a DHCP client.

To make sure, that the QX IP PBX will serve as a DHCP server, login to the QX IP PBX as an administrator and select **DHCP Server** from the **DHCP** menu.

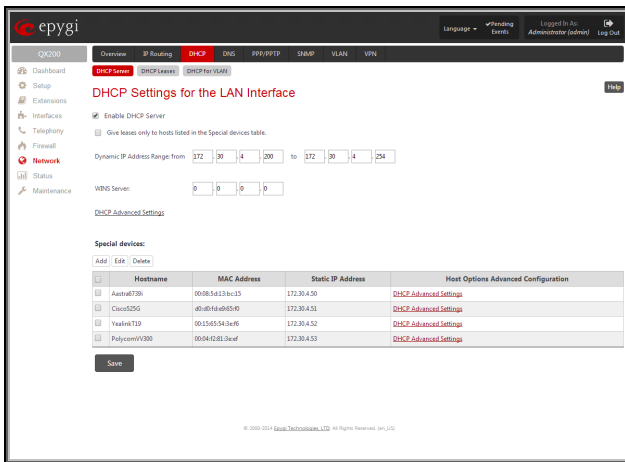


Fig. I- 27: DHCP Settings for the LAN Interface page

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

To make sure, that the DHCP Server of the QX IP PBX assigned a valid IP address to the QX Gateway, go to the **DHCP - DHCP Leases** tab of the QX IP PBX. The table on the opened page should list the IP address and other details of the QX Gateway.

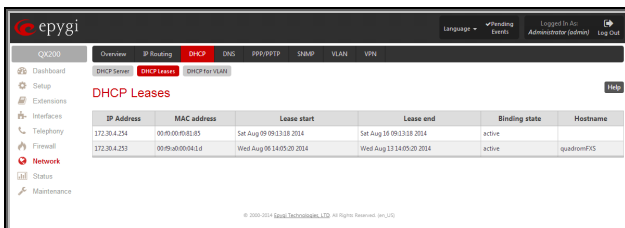


Fig. I- 28: DHCP Leases page of the QX IP PBX

Step 3.2: Sharing Mode Configuration on QX IP PBX

This configuration is required on the QX IP PBX in order to make it use the shared FXO, ISDN and/or E1T1 lines on the QX Gateways, as well as to configure the appropriate settings for the successful authorization between QX IP PBX and the QX Gateway.

Connect to the Web GUI of the QX IP PBX and login as an administrator. From **Interfaces** menu, enter **PSTN Gateways** page.

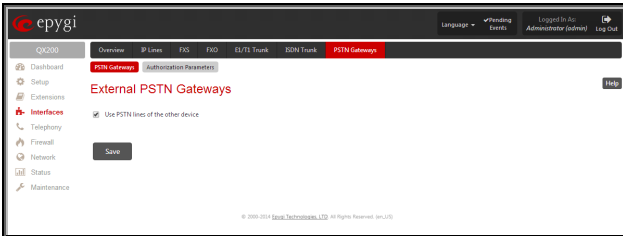


Fig. I- 29: External PSTN Gateways page on QX IP PBX

Select the **Use PSTN lines of the other device** checkbox and press **Save** to apply changes. Go to the **Authorization Parameters** tab. Here, a list of authorized devices should be configured.

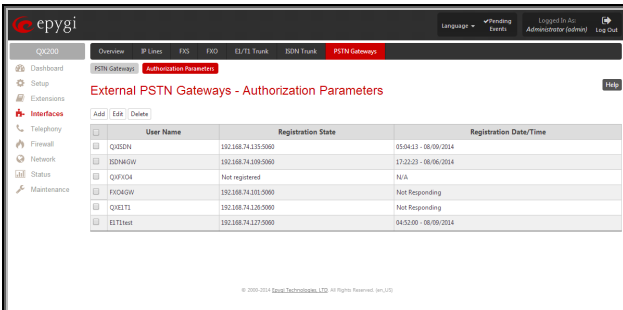


Fig. I- 30: PSTN Gateways – Authorization Parameters page on QX IP PBX

Press **Add** functional link to add new authorization parameters for the QX Gateway.

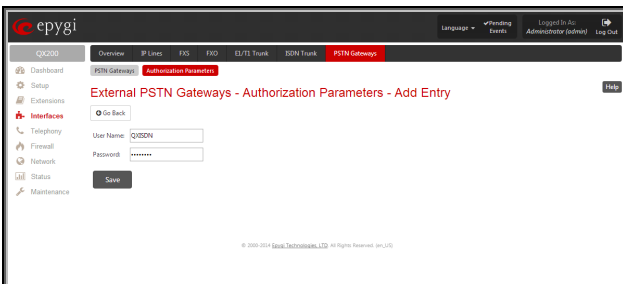


Fig. I- 31 : PSTN Gateways – Authorization Parameters – Add Entry page on QX IP PBX

On the opened page, insert the **User Name** and the **Password** in the corresponding text fields. These authentication parameters should match on QX IP PBX and QX Gateway. **Save** the parameters.

Step 3.3: Sharing Mode Configuration on QX Gateways

This configuration is required on the QX Gateway to share its FXO, ISDN and/or E1T1 lines to the QX IP PBX. Open the Web Management of the QX Gateway (QXISDN4 Gateway is used in this example) in your browser (the QX Gateway IP address is 172.28.0.1 by default).

Go to **Interfaces** menu, enter **PSTN Lines Sharing** menu.

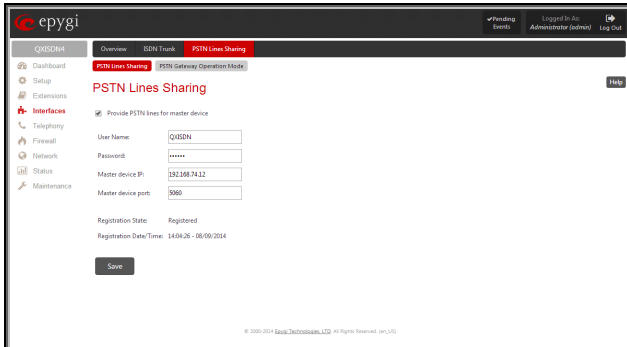


Fig. I- 32: PSTN Lines Sharing page on QX Gateway

Select the **Provide PSTN lines for master device** checkbox. Insert the **User Name** and the **Password** in the corresponding text fields. These authentication parameters should match on both QXs. Enter the IP address of the QX IP PBX into the **Master device IP** text field. Enter the SIP Port of the QX IP PBX into the **Master device port** text field. **Save** the inputs.

The results:

The configuration above will cause the corresponding FXO, ISDN and/or E1T1 trunks of the QX Gateway to be shared to the QX IP PBX.

ISDN/E1T1 trunks and additional FXO lines appear on the QX IP PBX **ISDN Trunk**, **E1T1 Trunk** and **FXO Settings** pages respectively:

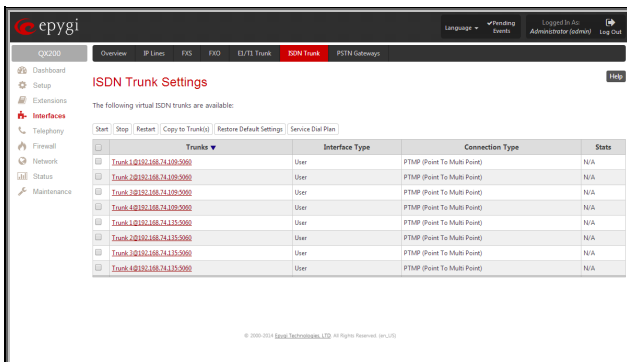


Fig. I- 33: ISDN Trunk Settings page with shared ISDN trunks on QX IP PBX

New routing rule (#12) is automatically added to the **Call Routing Table** on the QX IP PBX:

ID	State	Destination Number	Pattern Modification	Call Settings	Followed Reasoned	Local Authentication	Source Number	Pattern/ Caller ID Modification	Source Type	UES / UBP	Metrics	Description
1	Enabled	31*	NDC-1	FWD anyExtAnyExt	None	No	*		PEP	No	30	Main P2PH Call
2	Enabled	7*	NDC-1	SP 101.100.0.200-2000	None	No	*		URP	No	30	Main SIP call
3	Enabled	171.5		PEP	None	No	*		URP	No	30	Call to Extensions
4	Enabled	43*	NDC-2	FWD anyExtAnyExt	None	No	*			No	30	FWD calls
5	Enabled	31*	NDC-2	SP 101.100.0.200-2000	None	No	*		URP	No	30	P2PH calls
6	Enabled	31*	NDC-2	SP 201.100.0.0-20000	None	No	*		URP	No	30	P2PH calls
7	Enabled	31*	NDC-2	SP 171.30.2.0-3000	None	No	*		URP	No	30	L2PH calls
8	Enabled	30*	NDC-2	SP/Queue trunked_EP_Same_2415	None	No	*		URP	No	30	
9	Enabled	30	NDC-2	SP 101.100.0.200-2000	None	No	*		URP	No	30	
10	Enabled	43*	NDC-2	FWD anyExt FWD	None	No					30	FWD calls View Auth.
11	Enabled	31*	NDC-1	FWD anyExt AnyPort(101.100.0.200-2000)	Any	No	*		PEP	No	30	
12	Enabled	31*	NDC-1	SDN trunk AnyPort(101.100.0.200-2000)	Any	No	*		PEP	No	30	

NDC - Number of Discarded Symbols UES - Use Extension Settings ENDC - Restrict the Number of Simultaneous Calls
URP - Use RFP Proxy AAA - Authentication, Authorization, Accounting

Fig. I- 34: Call Routing Table on QX IP PBX

FXO, ISDN Trunk and E1T1 Settings pages become read-only on the QX Gateway:

Trunks	Interface Type	Connection Type	Stats
Trunk 1	User	PTMP (Point To Multi Point)	ISDN Stats
Trunk 2	User	PTMP (Point To Multi Point)	ISDN Stats
Trunk 3	User	PTMP (Point To Multi Point)	ISDN Stats
Trunk 4	User	PTMP (Point To Multi Point)	ISDN Stats

Fig. I- 35: ISDN Trunk Settings page in read-only mode on QXISDN4

New routing rules (#4-7) are automatically added to the **Call Routing Table** on QX Gateway:

ID	State	Destination Number	Pattern Modification	Call Settings	Followed Reasoned	Local Authentication	Source Number	Pattern/ Caller ID Modification	Source Type	UES / UBP	Metrics	Description
1	Enabled	31*	NDC-1	SP anyExtAnyExt	None	No	*		URP	No	30	Main SIP call
2	Enabled	7*		PEP	None	No	*		URP	No	30	Call to Extensions
3	Enabled	171.5		SDN trunk AnyPort(101.100.0.200-2000)	None	No	*		URP	No	30	Per-Reading P2PH calls to Master Device
4	Enabled	30		SP 101.100.0.200-2000	None	No	*	Profile 1 trunk ISDN Trunk1	URP	No	30	Per-Reading P2PH calls to Master Device
5	Enabled	30		SP 101.100.0.200-2000	None	No	*	Profile 2 trunk ISDN Trunk2	URP	No	30	Per-Reading P2PH calls to Master Device
6	Enabled	30		SP 101.100.0.200-2000	None	No	*	Profile 3 trunk ISDN Trunk3	URP	No	30	Per-Reading P2PH calls to Master Device
7	Enabled	30		SP 101.100.0.200-2000	None	No	*	Profile 4 trunk ISDN Trunk4	URP	No	30	Per-Reading P2PH calls to Master Device
8	Enabled	30		SDN trunk AnyPort(101.100.0.200-2000)	None	No	*		URP	No	30	Per-Reading P2PH calls from Master Device to P2PH
9	Enabled	31*	NDC-1	SDN trunk AnyPort(101.100.0.200-2000)	None	No	*		URP	No	30	Per-Reading calls from Master Device to P2PH

NDC - Number of Discarded Symbols UES - Use Extension Settings ENDC - Restrict the Number of Simultaneous Calls
URP - Use RFP Proxy AAA - Authentication, Authorization, Accounting

Fig. I- 36: Call Routing Table on QX Gateway

All these routing rules cannot be edited or deleted.

Please Note: Any changes made in the **FXO, ISDN Trunk** or **E1T1 Trunk Settings** on the QX IP PBX will automatically be reflected in this table.

Please Note: Following dependencies are used when sharing the FXO, ISDN and E1T1 lines:

- The configuration of all FXO, ISDN and E1T1 lines (line state, PSTN Number, Allowed Call Type, etc.) on the QX gateway is transparent to QX IP PBX and will be displayed in the table on the **FXO, ISDN** and **E1T1 Settings** pages respectively.
- Independent of the configuration on the QX gateway, the incoming calls on all shared FXO, ISDN and E1T1 lines will be automatically routed to the default Auto Attendant (00) on QX IP PBX once FXO, ISDN and/or E1T1 sharing is activated. Occasionally, routed destinations can be changed on QX IP PBX by clicking on the corresponding FXO, ISDN or E1T1 line.
- Any changes applied to the configuration of shared FXO, ISDN and E1T1 lines on QX IP PBX will be automatically reflected in the **FXO, ISDN** and **E1T1 Settings** pages and **Call Routing Table** on the QX gateway.
- All custom Call Routing rules created on the QX IP PBX and dedicated for some advanced call routing through the shared QX gateway will be automatically deleted once the FXO, ISDN and/or E1T1 line sharing is disabled. Those routing rules will not be recovered if the sharing is enabled again.

How this configuration works:

When the QX IP PBX user dials 9 followed by a PSTN number (or 9+ # + PSTN number) and no FXO, ISDN or E1T1 line is available on the QX IP PBX (they are either unavailable, in use or disabled), the call will be routed to QX gateway and will go through the first available FXO, ISDN or E1T1 line port on the QXFX04, QXISDN4 and QXE1T1 gateways respectively.

When incoming call arrives to either of the FXO port on the QXFX04, ISDN trunk on the QXISDN4 or E1T1 trunk on the QXE1T1 gateway, it will be automatically routed to the Auto Attendant on the QX IP PBX (unless stated otherwise from the **FXO, ISDN** or **E1T1 Settings** pages on the QX IP PBX).

Step 4: Configuring the QXFXS24 Gateway as an IP PBX Expansion device

QXFXS24 as a FXS expansion device does not require further configuration if the QX IP PBX

- Is connected to the network and all network settings are done without any issues
- Acts as a DHCP Server for its LAN interface
- PnP for IP lines is enabled as it does by default
- The LAN interface is selected for configuring the IP phones

Connecting the QXFXS24

- Connect the WAN port of the QXFXS24 to the LAN port of the QX IP PBX via a straight through Cat 5 cable with a RJ 45 connector.

Two ways of QXFXS24 configuration on the QX IP PBX are available:

- Plug-and-play detection
- Auto configuration

Step 4.1: QXFXS24 Plug-and-Play Detection

To perform the QXFXS24 gateway Plug-and-Play detection on the QX IP PBX, only one step is required:

- Factory reset the QXFXS24 by pressing and holding the **RESET** button on the device for at least seven seconds.

Once this is done, following changes occur on the QX IP PBX:

- 24 inactive IP lines in the IP Lines page on the QX IP PBX are automatically configured and shown as "Epygi QXFXS24" with appropriate registration usernames (see Fig. I-37).

Please Note: QX IP PBX will provide a warning if no available inactive IP lines.

ID	Name	Status	Actions
FXLine.01	FXLine.01	Active	Edit Delete Reboot
FXLine.02	FXLine.02	Active	Edit Delete Reboot
FXLine.03	FXLine.03	Active	Edit Delete Reboot
FXLine.04	FXLine.04	Active	Edit Delete Reboot
FXLine.05	FXLine.05	Active	Edit Delete Reboot
FXLine.06	FXLine.06	Active	Edit Delete Reboot
FXLine.07	FXLine.07	Active	Edit Delete Reboot
FXLine.08	FXLine.08	Active	Edit Delete Reboot
FXLine.09	FXLine.09	Active	Edit Delete Reboot
FXLine.10	FXLine.10	Active	Edit Delete Reboot
FXLine.11	FXLine.11	Active	Edit Delete Reboot
FXLine.12	FXLine.12	Active	Edit Delete Reboot
FXLine.13	FXLine.13	Active	Edit Delete Reboot
FXLine.14	FXLine.14	Active	Edit Delete Reboot
FXLine.15	FXLine.15	Active	Edit Delete Reboot
FXLine.16	FXLine.16	Active	Edit Delete Reboot
FXLine.17	FXLine.17	Active	Edit Delete Reboot
FXLine.18	FXLine.18	Active	Edit Delete Reboot
FXLine.19	FXLine.19	Active	Edit Delete Reboot
FXLine.20	FXLine.20	Active	Edit Delete Reboot
FXLine.21	FXLine.21	Active	Edit Delete Reboot
FXLine.22	FXLine.22	Active	Edit Delete Reboot
FXLine.23	FXLine.23	Active	Edit Delete Reboot
FXLine.24	FXLine.24	Active	Edit Delete Reboot
FX Line 127 (Status: In)		Inactive	
FX Line 128 (Status: In)		Inactive	
FX Line 129 (Status: In)		Inactive	
FX Line 130 (Status: In)		Inactive	
FX Line 200 (Status: In)		Inactive	
FX Line 201 (Status: In)		Inactive	

Fig. I- 37: IP Lines page on the QX IP PBX

- QXFXS24 appears in the **FXS Gateway Management** table (to reach it, go to the **Interfaces - IP Lines - FXS Gateways** page on the QX IP PBX). From these page QXFXS24 lines assignment to the IP lines on the QX IP PBX may be modified.

MAC Address	Description
08:00:00:00:00:00	FXS24 SW
08:00:00:00:00:00	QXFXS24 (SW)

Fig. I- 38: FXS Gateway Management table on the QX IP PBX

Step 4.2: Auto Configuration

For auto configuration of the QXFXS24 gateway on the QX IP PBX, go to the **FXS Gateway Management** table (to reach it, go to the **Interfaces - IP Lines - FXS Gateways** page on the QX IP PBX).

MAC Address	Description
No items in list.	

Fig. I- 39: Empty FXS Gateway Management table on the QX IP PBX

The **FXS Gateway Management** page is used to define QX FXS Gateway devices in your network that can serve as FXS expansion modules for your QX IP PBX. Additional FXS lines provided by the FXS Gateway can be connected to the IP lines on the QX IP PBX.

Add functional button opens **FXS Gateway Configuration Wizard** where new FXS Gateway should be defined.

The **FXS Gateway Configuration Wizard - FXS Gateway Model** page contains following components:

- The **FXS Gateway Model** drop down list is used to select the FXS Gateway model to be used as an FXS expansion device.
- The **MAC Address** text fields require the MAC Address of the FXS Gateway. Based on the selected FXS Gateway model and the inserted MAC Address, the FXS Gateway can be automatically configured by simple reset/reboot.
- The **Description** text field requires the description of the FXS Gateway to be configured.

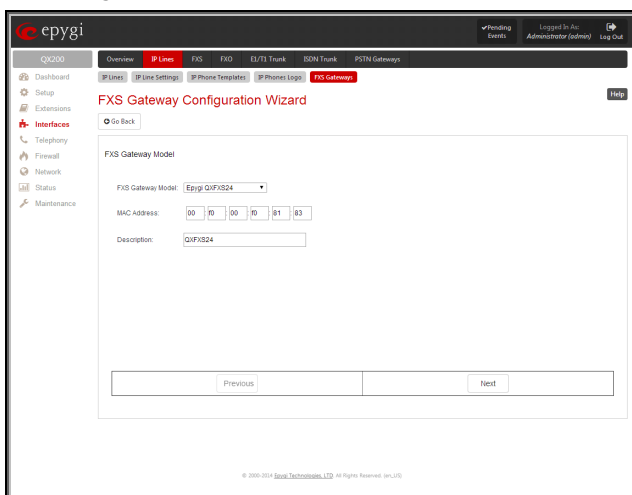


Fig. I- 40: FXS Gateway Configuration Wizard – page 1

The next page of the wizard is **FXS Gateway Configuration Wizard - FXS Gateway Lines**. This page displays a list of FXS lines provided by the FXS Gateway and is used to assign each FXS line to an IP line on the QX IP PBX. System will automatically assign the provided FXS lines to the first available IP lines on the QX IP PBX. You may adjust the configuration from this page.

Please Note: The FXS lines can be assigned only to inactive IP lines on the QX IP PBX. If there are no enough free IP lines available on the QX IP PBX, you should first deactivate the IP line from the **IP Line Settings** page to use it in the **FXS Gateway Configuration Wizard**.

The next page of the wizard is **FXS Gateway Configuration Wizard - Summary** where the configured settings should be verified.

Once **FXS Gateway Configuration Wizard** terminates, a new entry is added to the table and the corresponding FXS Gateway's configuration gets updated according to the settings defined in the wizard, i.e. corresponding routing rules will be added to the Call Routing table of the FXS Gateway. If you need to reboot the FXS gateway, use the **Reboot** functional button in the **FXS Gateway Management** page.

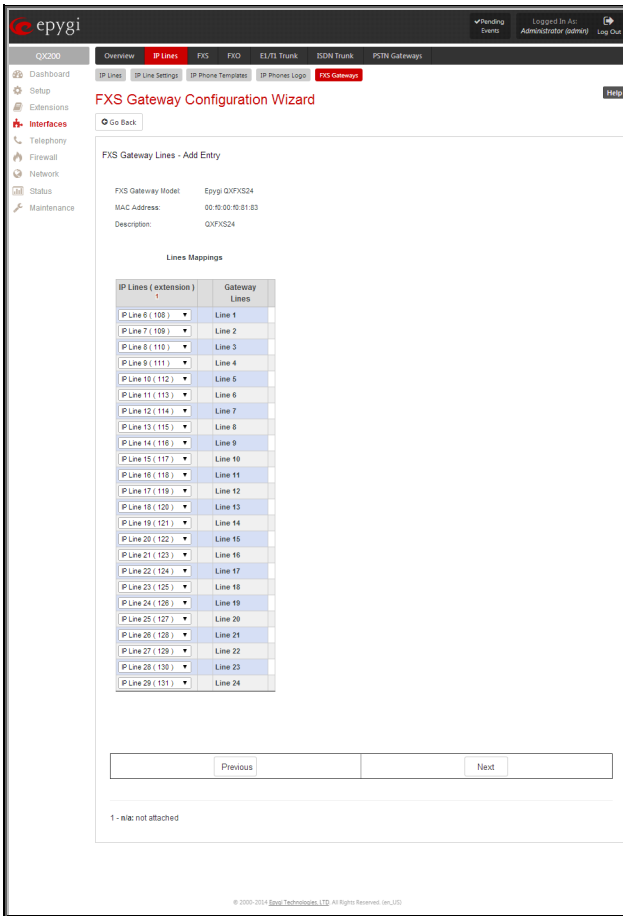


Fig. I- 41: FXS Gateway Configuration Wizard – page 2

How this Configuration Works

Once QXFXS24 is detected on the QX IP PBX, regular analog phones can be connected to the FXS ports on the QX that allow users to place and receive calls using the call routing rules for the QX IP PBX. Additionally, the whole bunch of feature codes becomes available on the FXS lines. For specific features descriptions and feature codes available on the FXS lines, please refer to the Manual II – Administrator’s Guide of the QX IP PBX.

Step 4.3: Enable the DHCP Server on the QX IP PBX

The QXFXS24 has to have an IP address to identify itself in the QX IP PBX LAN. This IP address can be assigned to it manually or dynamically via the DHCP server of the QX IP PBX. The simple way from the configuration perspective is to dynamically get an IP address from the QX IP PBX (default IP is 172.30.0.1). This will be done automatically, if the connected QX IP PBX acts as a DHCP server and if the QXFXS24 acts as a DHCP client. Both devices will do so in their default settings.

To make sure, that the QX IP PBX will serve as a DHCP server, login to the QX IP PBX as an administrator and select **DHCP Server** from the **DHCP** menu.

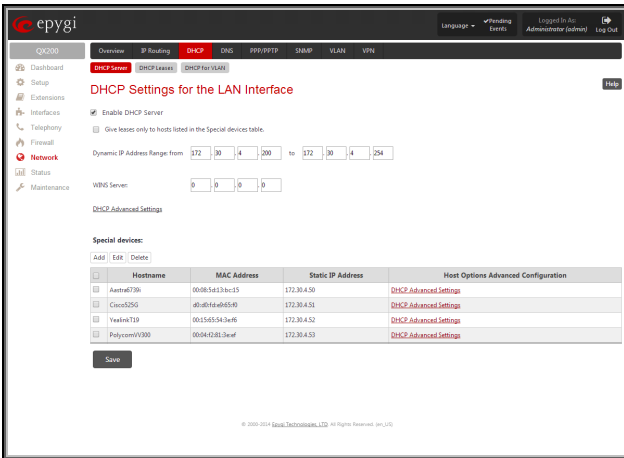


Fig. I- 42: DHCP Settings for the LAN Interface page

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

To make sure, that the DHCP Server of the QX IP PBX assigned a valid IP address to the QXFXS24, go to the **DHCP - DHCP Leases** tab of the QX IP PBX. The table on the opened page should list the IP address and other details of the QXFXS24.

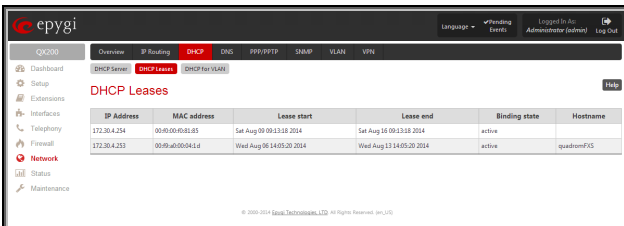


Fig. I- 43: DHCP Leases page of the QX IP PBX

Step 5: Registering on Epygi’s Technical Support

It is recommended that you register your QX on the Epygi Technical Support web page. Registration will give you access to the Technical Support Database.

The **Register Your Device in Technical Support Center** page appears when administrating an unregistered QX, and it has been created for customer support purposes. The page requires customer registration at the [Epygi Technical Support Center](#).

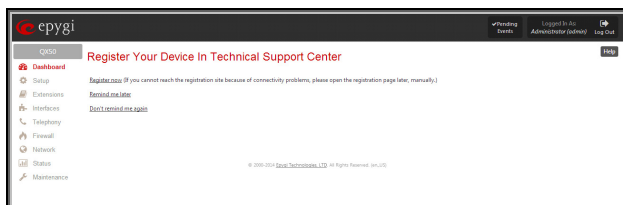
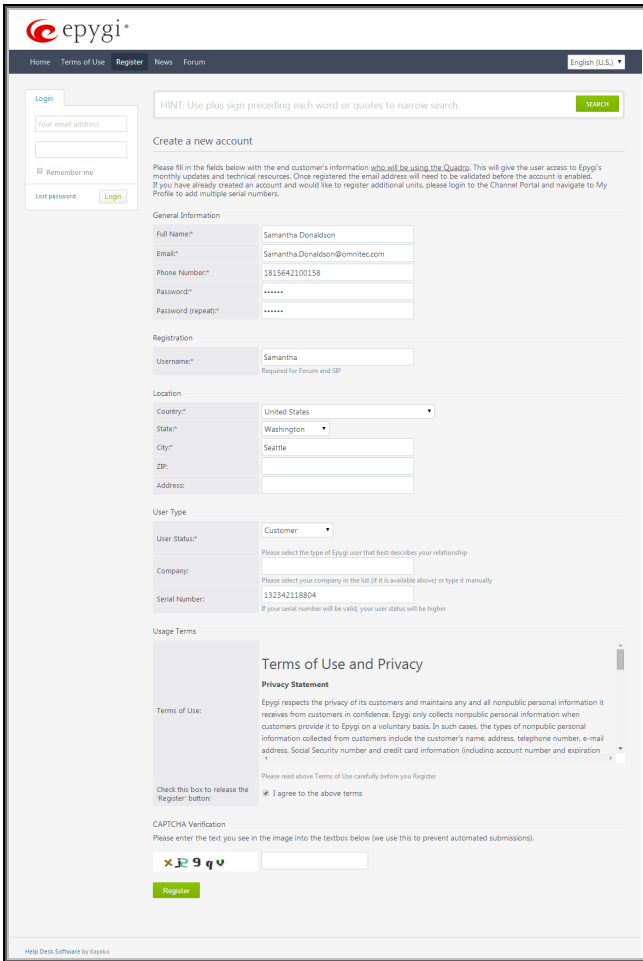


Fig. I- 44: Device Registration page

There, you can submit requests concerning technical problems as well as refer to the [Epygi Forum](#) 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 QX, which is located on a label on the bottom of QX. You will also need the date of purchase. Next, open the Epygi support page (<http://support.epygi.com>) and click on **Register**. The online registration page will appear:



epygi

Home Terms of Use Register News Forum English (U.S.)

Log in

HINT: Use plus sign preceding each word or quotes to narrow search.

Create a new account

Please fill in the fields below with the end customer's information **who will be using the Quadro**. This will give the user access to Epygi's monthly updates and technical resources. Once registered the email address will need to be validated before the account is enabled. If you have already created an account and would like to register additional units, please login to the Channel Portal and navigate to My Profile to add multiple serial numbers.

General Information

Full Name*

Email*

Phone Number*

Password*

Password (repeat)*

Registration

Username*
Required for Forum and SP

Location

Country*

State*

City*

ZIP:

Address:

User Type

User Status*

Please select the type of Epygi user that best describes your relationship

Company:
Please select your company in the list (if it is available above) or type it manually

Serial Number:
If your serial number will be valid, your user status will be higher

Usage Terms

Terms of Use and Privacy

Privacy Statement

Terms of Use: Epygi respects the privacy of its customers and maintains any and all nonpublic personal information it receives from customers in confidence. Epygi only collects nonpublic personal information when customers provide it to Epygi on a voluntary basis. In such cases, the types of nonpublic personal information collected from customers include the customer's name, address, telephone number, e-mail address, Social Security number and credit card information (including account number and expiration).

Please read above Terms of Use carefully before you Register

Check this box to release the "Register" button: I agree to the above terms

CAPTCHA Verification

Please enter the text you see in the image into the textbox below (we use this to prevent automated submissions).

Help Desk Software by Kyoko

Fig. I- 45: Registration form

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 QX 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.

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 **Maintenance** menu, **User Rights - Users** page.

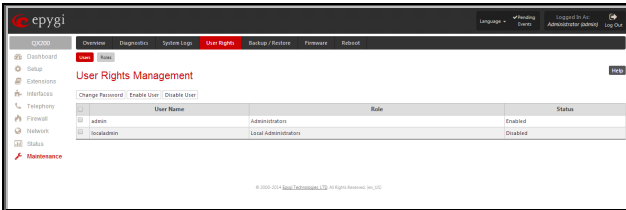


Fig. I- 46: User Rights page

Choose **admin** from the list and press the **Change Password** functional button from the **Users** tab.

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

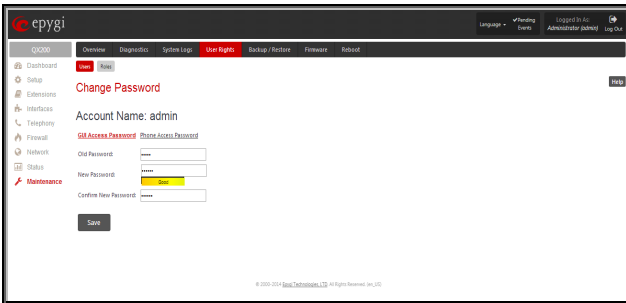


Fig. I- 47: Change Password page

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**. Reentering the new password in the **Confirm New Password** field will confirm the new password. The **New Password** field is checked against its strength and you may see how strong is your inserted password right below that field. Up to twenty (0-20) digits and symbols are allowed.

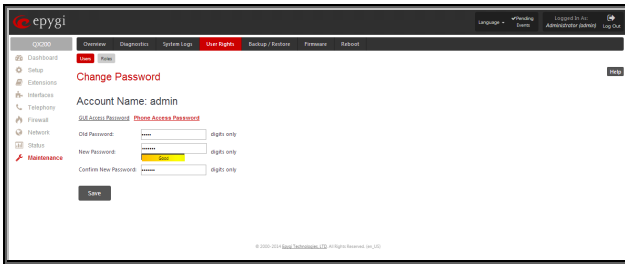


Fig. I- 48: Change Password page

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 **New 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.

Appendix: Configuring NAT Traversal

NAT or Network Address Translation is a common feature to expand the use of connected PCs and other networked devices without having to use multiple public IP addresses. Most ISP's will assign one public IP address to each customer that is connected to the Internet. Third-party routers typically are providing NAT capability and creating a private network of PCs and other devices not visible from the Internet. This method offers security and also eliminates the need to assign public IP addresses to each device on the LAN.

The QX initiates and receives SIP calls from the Internet (or the network connected to the WAN port). To receive SIP calls, the QX must be able to receive packets from the SIP server or any other device that is trying to make an incoming call. If the QX is placed behind a router with NAT, the QX will not be able to receive calls. To resolve this issue, either STUN must be enabled on the QX or SIP NAT traversal must be set up in the router and in the QX 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 between the QX and the Internet, the same port forwarding must be configured on each of them.

NAT Traversal Setup

- Install the QX behind the router. If the QX 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 QX LAN port and power it up.
- Verify the QX can connect to the Internet by opening a browser and browsing to a WEB site. If the QX cannot reach the Internet, verify the LAN/WAN LEDs and the cabling. Verify that [Assigning Automatically via DHCP](#) option is enabled on QX and the router has DHCP server enabled.
- 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 TCP port 5060, RTP/RTCP port 6000-6255 to the IP address assigned to the QX. You can see the IP address of the QX in the **Status - System Status - Network Status** page. The IP address will be listed as the WAN IP address. Your router also may indicate the IP address assigned to the QX.
- 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 QX Management go to the **NAT Traversal - General** page and set the **NAT Traversal for SIP** to **Force**. **Save** the selection.

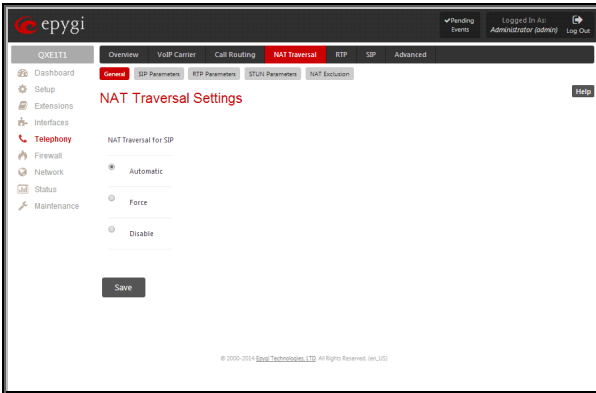


Fig. I- 49: NAT Traversal – General Settings page

- Go to the **SIP Parameters** tab.

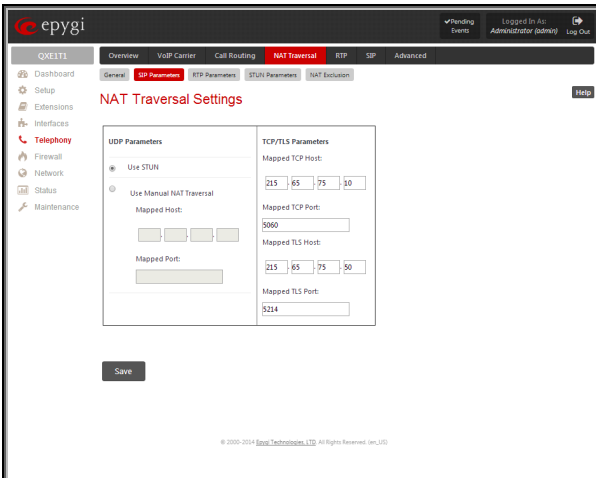


Fig. I- 50: NAT Traversal - SIP Parameters page

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** tab and select **Use Manual NAT Traversal**.

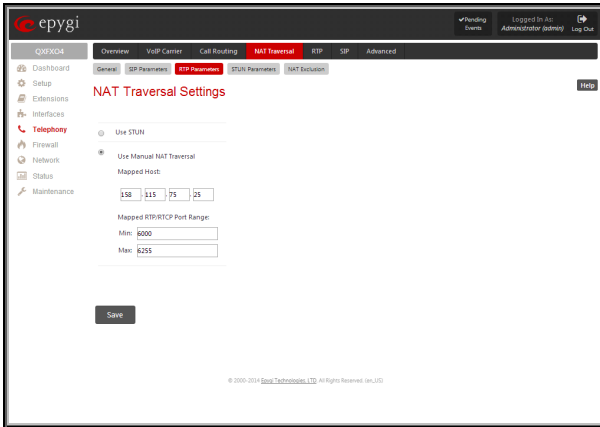


Fig. I- 51: NAT Traversal - RTP Parameters page

- 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 **6255 (Max)**, respectively. Click the **Save** button to save the contents.

QX will activate the settings and register the extensions on the Epygi SIP Server after a few minutes. You can verify the settings from the **Status – System Status – SIP Registration** tab.

Appendix: Registering on Epygi's SIP Server

Epygi maintains a SIP Server that can be used to call between QX devices. QX extensions may already be defaulted to register to the SIP Server. To create additional registrations you may login directly to Epygi's SIP Server if you have registered your QX at [Epygi's Technical Support Center](#). If you have not registered with Epygi Technical Support, you cannot login to the Epygi SIP Server.

Log in to the Epygi SIP Server at <http://sip.epygi.com/>. Use the same login name and password you used for Epygi Support for Customer Login.

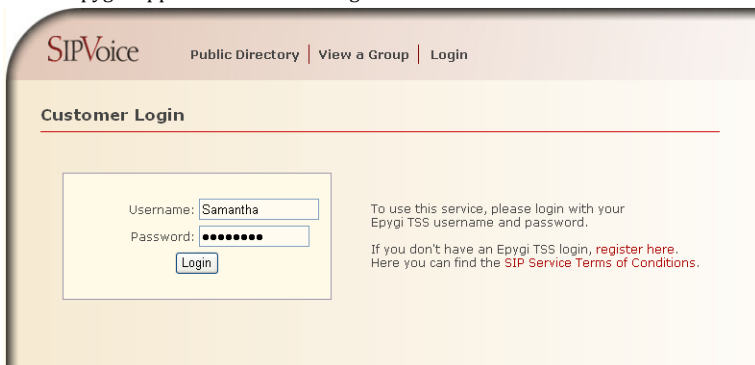


Fig. I- 52: SIP Services Login page

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**.

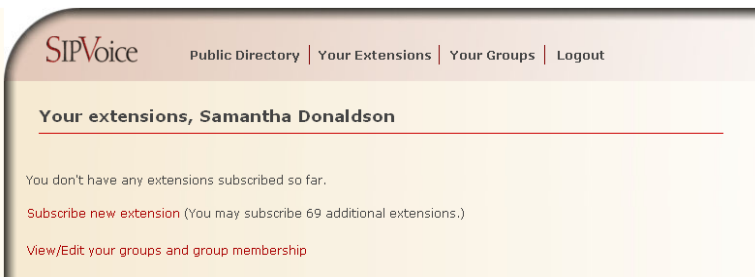
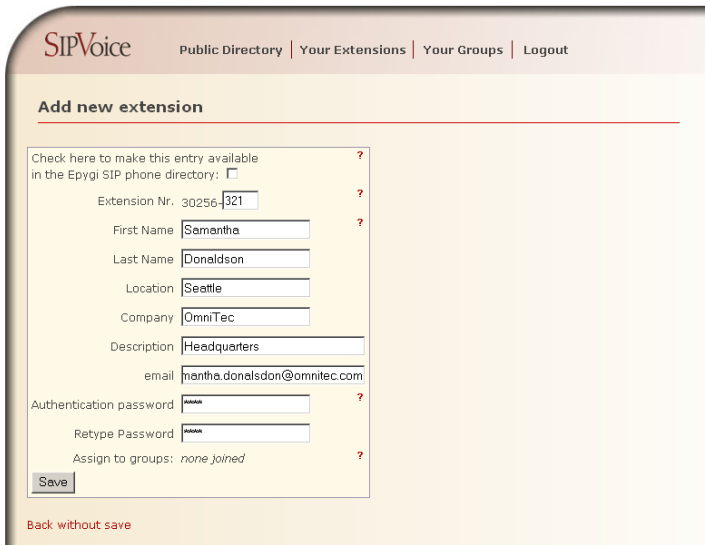


Fig. I- 53: SIP Services Welcome page

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.



SIPVoice Public Directory | Your Extensions | Your Groups | Logout

Add new extension

Check here to make this entry available in the Epygi SIP phone directory:

Extension Nr. 30256-321

First Name Samantha

Last Name Donaldson

Location Seattle

Company OmniTec

Description Headquarters

email santha.donaldson@omnitec.com

Authentication password

Retype Password

Assign to groups: none joined

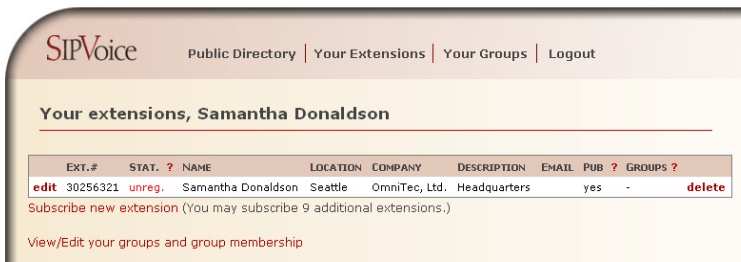
[Save](#)

[Back without save](#)

Fig. I- 54: SIP Services Add New Extension page

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

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



SIPVoice Public Directory | Your Extensions | Your Groups | Logout

Your extensions, Samantha Donaldson

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- 55: 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 QX are complete and the QX successfully registers on the SIP Server.

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

Configuring QX Gateway Extensions

Login to the QX gateway and go to **Extensions** menu (see Fig.I- 56).

When this page is accessed for the first time after the QX gateway initial boot-up or the default configuration settings restore, an intermediate page is displayed where the length of the extension should be defined.

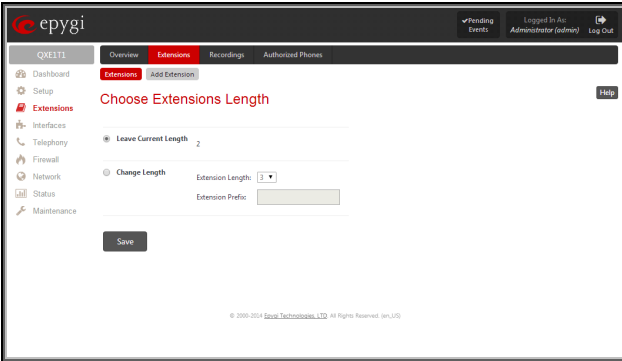


Fig.I- 56: Extensions – Choose Extensions Length

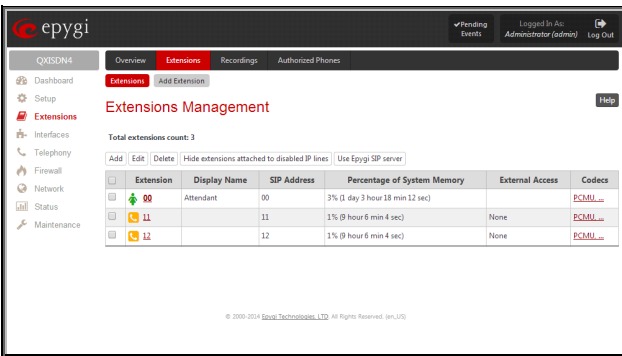


Fig. I- 57: Extensions Management page

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.

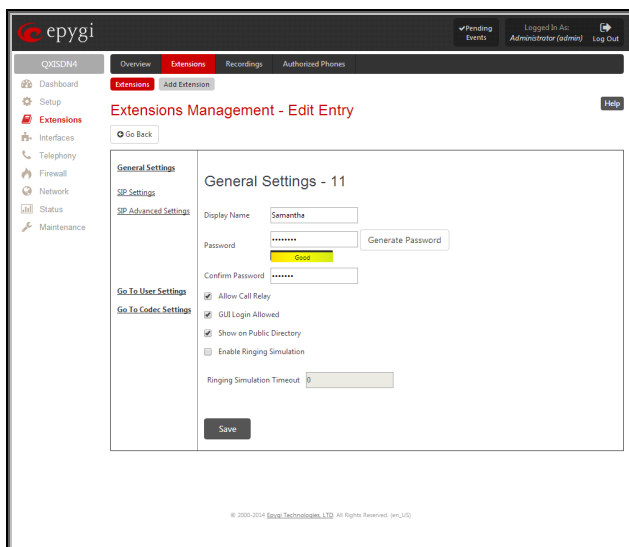


Fig. I- 58: Extensions Management - Edit Entry – General Settings page

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

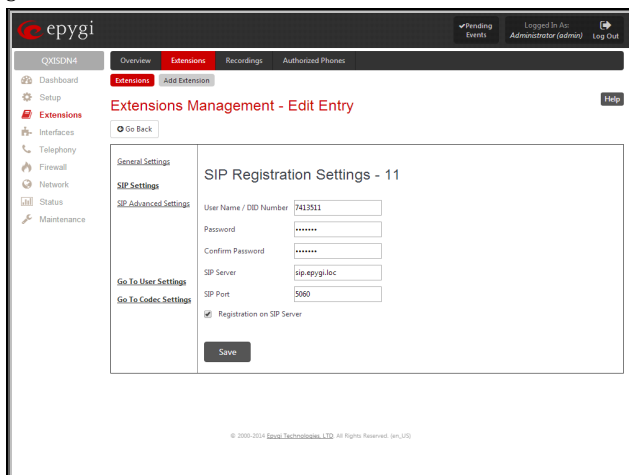


Fig. I- 59: Extensions Management - Edit Entry – SIP Settings page

- 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- 60.

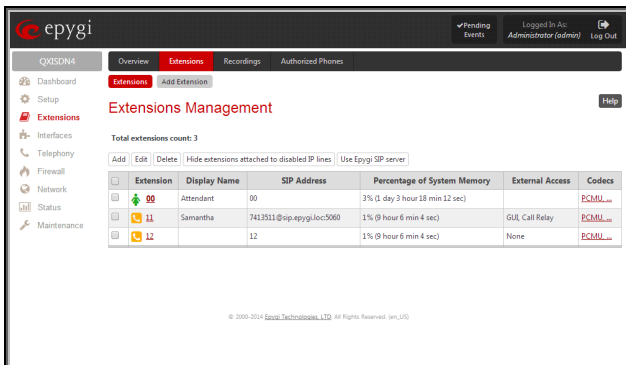


Fig. I- 60: Extensions Management page

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, go to the **Maintenance - Diagnostics** page and click **Start Network Diagnostics**.

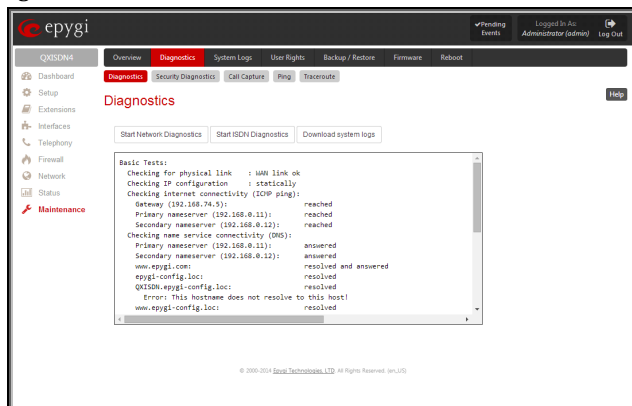


Fig. I- 61: Diagnostics – Start Network Diagnostics page

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 : statically
Checking internet connectivity (ICMP ping):
Gateway (192.168.74.5):      reached
Primary nameserver (192.168.0.11):  reached
Secondary nameserver (192.168.0.12): reached
Checking name service connectivity (DNS):
Primary nameserver (192.168.0.11):  answered
Secondary nameserver (192.168.0.12): answered
www.epygi.com:               resolved and answered
epygi-config.loc:           resolved
QXISDN.epygi-config.loc:    resolved
Error: This hostname does not resolve to this host!
www.epygi-config.loc:       resolved
Warning: The domain is registered in the internet. If the domain does not resolve to this device you are not able to reach
hosts in that domain.
STUN Network Address Translation (NAT) Check:
Checking server/port: 166.78.19.22/5060
External visible address : 212.34.248.234
Detected NAT type       : Symmetric NAT
    
```

Performing MTU Discovery:

```

preparing system
Sending UDP Datagram of size 1500 got answer
clean up
    
```

Largest usable MTU size: 1500 Bytes

Test successful.

done.

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 88888# then check the SIP registration status.

Open the SIP Registration Status page using the QX management **Status** menu item **Status**. Besides the SIP registration information for the auto attendant and each connected extension, the **Detected Connection Type** is shown. If QX 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.

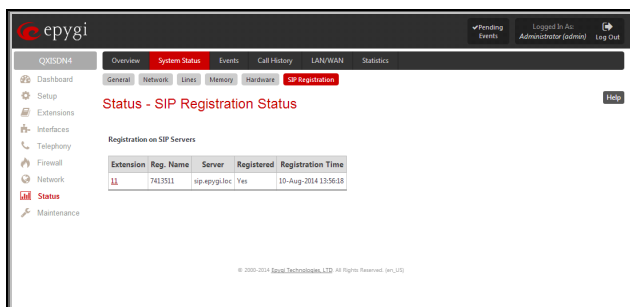


Fig. I- 62: SIP Registration Status page

QX 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 QX 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 **Maintenance** menu - **Diagnostics** page and click **Download system logs**.

Appendix: Software License Agreement

EPYGI TECHNOLOGIES, LTD. Software License Agreement

THIS IS A CONTRACT.

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