

# Quadro<sup>®</sup>4xi

THE GLOBAL PHONE NETWORK IN A BOX



## Quadro4xi: The IP PBX with 1 ISDN Port, 4 FXS Ports and up to 16 IP Phones

The Quadro4xi is the fully-featured ISDN IP PBX for small businesses. Connected by one ISDN line to the PSTN and over 10Base-T Ethernet to the Internet, the Quadro4xi provides up to 70 physical and virtual extensions to make up to 20 calls in parallel.

Besides four FXS phones, up to 16 fully-featured SIP phones may be attached to Quadro4xi's LAN port. In addition, all extensions assigned to a line may be mirrored and act as remote IP extensions. Wherever you are, calls will reach you, and you will be able to make calls as if you were in your office.

VPN functionality with DES, 3DES and AES encryption makes an additional contribution to data security.

### VoIP Carriers

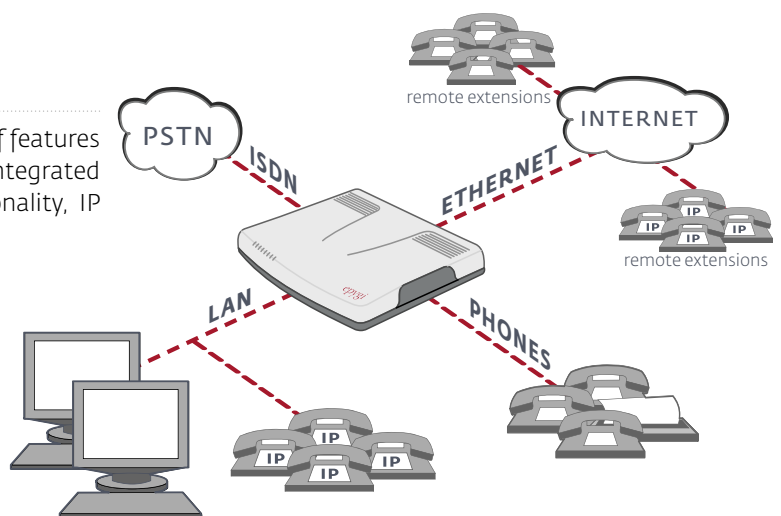
The Quadro4xi IP PBX is easily applicable for VoIP Carriers as well as small businesses. For VoIP carriers, a special wizard has been implemented that facilitates the configuration of the Quadros to work according to individual requirements.

### Fully-Featured IP PBX

The Quadro4xi offers the same multitude of features as Quadro4x: extensive PBX functionality, integrated voicemail, cost saving call routing functionality, IP routing, SIP call signaling and much more.

### Integrated Internet Access Router

The Quadro4xi IP PBX embodies a fully-fledged Internet access router with firewall security, including IDS, NAT, policy and service based filtering as well as stateful inspection. An extensive IPSec



## Telephony

### Voice Features

Voice Coding G.711, G.723 (5.3, 6.3 kbit/s), G.726 (16, 24, 32, 40 kbps),  
G.729, iLBC (13.33 kbit/s, 15.2 kbit/s);  
(RFC 3951, ITU-T: G.711, G.723, Annex A, G.726, G.729 Annex A; IETF;  
ITU-T Q.23, Q.24, Bellcore GR.506, GR.181; ITU-T  
G.168-2000, 2002; ETS\_300659\_1, 2, 3)  
NAT traversal (both manually and STUN)  
VAD, CNG, G.168 echo cancellation

### Bandwidth Requirements

Per call WAN bandwidth requirements for the following codecs (non-encrypted/VPN encrypted):

G.711a/G.711u	20 msec	84 kbps/105 kbps
G.726-16	20 msec	37 kbps/59 kbps
G.726-24	20 msec	45 kbps/65 kbps
G.726-32	20 msec	52 kbps/74 kbps
G.726-40	20 msec	60 kbps/80 kbps
G.729a	20 msec	29 kbps/49 kbps
G.723	30 msec	21 kbps/34 kbps
iLBC	30 msec	27 kbps/41 kbps

### PBX Features

Call block, forward, hold, ID, park, relay, transfer, wait  
Voice mail  
Multilevel auto attendant with Interactive Voice Response (IVR)  
Directory assistance  
Distinctive ring, hold music, speed dialing  
Hunt group  
Many extensions ring  
Call statistics  
Do not disturb service  
Unified messaging  
3-way conferencing  
Hotline service  
T.38 fax, fax relay and clear channel fax  
Unified Fax Messaging  
Busy auto redial  
Multiple user extensions (up to 70 physical/virtual extensions)

### Call Signaling

SIP on the WAN and LAN side (RFCs: 3261, 3263, 3265, 3311, 3428, 3515, 3842, 3856, 3891, 3892, 3581, draft-ietf-sip-session-timer-15, draft-ietf-sipping-dialog-package-05;  
Presence: RFCs: 3842, 3856, 3863, draft-ietf-sipping-dialog-package-05)  
SDP (RFC 2327)  
RTP (RFCs: 1889, 1890, 2833, 3389, 3550, 3551, 3555, draft-ietf-avt-rfc2833bis-05, draft-ietf-avt-rtp-ilbc-05), in band and out of band signaling support  
RTP Proxy  
MGCP with support of the full MGCP business extensions and full screen and soft buttons control of the MGCP phones on the LAN side  
(RFCs: 3149, 3435, 3660, draft-foster-mgcp-returncodes-01,  
PKT-SP-EC-MGCP-110-040402)  
Fax over IP (ITU-T: T.4, T.30, T.38, V.17, V.21, V.27, V.29)

### POTS Signaling

Loop start  
FSK and DTMF Caller ID support

### ISDN Signaling

ITU-T: Q.921, Q.931, Q.951; ETSI ETS300 102;  
NTT INS64 for Japan

## Connectivity

### Extensions

Up to 70 extensions including FXS phones (4), IP phones (up to 16) and virtual extensions  
The virtual extensions allow e.g., registering on several SIP servers  
Up to 20 remote extensions for any physical extension

### LAN IP Phones

4 SIP/MGCP phones;  
12 additional SIP/MGCP phones may be added per feature key  
Remote IP extensions may be enabled for all SIP/MGCP phones

### System Capacity

20 simultaneous VoIP calls with external parties  
Unlimited station to station calling for IP phones  
Unlimited station to station calling for analog phones  
2 simultaneous ISDN calls with external parties  
4 simultaneous calls through a VPN

### Premise Connections

4 short-loop FXS ports (RJ11)  
1 Ethernet 10/100BASE T port (RJ45)  
1 USB master connection

### Uplink Connection

1 ISDN port to the Central Office (RJ45)  
1 Ethernet 10BASE T (RJ45)  
(Other Quadro IP PBX models offer also FXO, ADSL or G.SDSL uplink connectivity. Please refer to the corresponding Technical Data Sheets.)

### USB Expansion

USB memory sticks for additional voice mail storage

### Billing

Radius Client (RFCs: 2865, 2866)

## Internet

NAT address translation  
STUN/NAT traversal (RFC 3489)  
IPSec VPN with DES 3DES and AES encryption in tunnel mode (RFCs: 2402, 2406, 2409)  
PPTP VPN  
L2TP VPN  
Manual and automatic IKE key support  
Firewall security via:  
Intrusion Detection System  
NAT (Network Address Translation)  
Policy and service-based filtering  
Stateful inspection firewall  
DHCP server on the LAN side  
DHCP client on the WAN side  
DNS server with forwarding functionality  
SNTP (Simple Network Time Protocol) server/client for computer clock synchronization  
PPPoE connection to the ISP with PAP/(MS)CHAP authentication  
IP DIFFSERV for QoS  
Mail client to send voice messages as e-mail attachments (.wav) and system notifications  
DNS (DYNDNS) support with third party  
Port forwarding  
Port translation

## System

### Management

Multilingual WEB interface accessible from LAN and WAN (HTTP/HTTPS), the WAN management access can be switched off  
Password control  
Remote diagnostics and software upgrade  
VoIP Carriers wizard  
Download/restore configuration  
Legible and editable configuration files  
Auto-configuration via TFTP  
Reset button with factory reset option

### Diagnostics/Testing

LEDs: Busy, Info, Fault, USB, LAN, WAN, Line 1, Line 2  
IP Call Quality Rating  
Remote testing and VoIP diagnostics  
Power-up diagnostics

## Environmental

### Physical Dimensions

Desktop devices, wall-mountable:  
Measurements: 10.04" x 8.27" x 1.77"  
(25.5 x 21.0 x 4.5 cm)  
Weight: 22.6 ounces (640 g)

### Conditions

41°F - 104°F (5°C - 40°C) operating temperature  
41°F - 140°F (5°C - 60°C) storage temperature  
5% - 90% non-condensing humidity

### Power Supply

Input 100 - 240 VAC; 50/60 Hz; 0.5 A  
Output 12.0 VDC; 1.5 A

### Regulatory Compliance

Safety: EN60950  
EMC: EN55022 Class B, EN55024;  
Telecom: TBR3 (ISDN)

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