

# Quadro<sup>2x</sup>

THE GLOBAL PHONE NETWORK IN A BOX



## Quadro2x: The IP PBX with 1 FXO Port, 2 FXS Ports and 2 IP Phones

The Quadro2x is the fully-featured IP PBX for home-offices and teleworkers. Connected by one FXO line to the PSTN and over 10Base-T Ethernet to the Internet, the Quadro2x allows attaching 2 FXS phones and two fully-featured LAN IP phones (SIP/MGCP). Additional virtual extension allow e.g., registering at various SIP servers.

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.

### Fully-Featured IP PBX

The Quadro2x offers a multitude of features including extensive PBX functionality, integrated voicemail, cost saving call routing functionality, IP routing, SIP call signaling and much more.

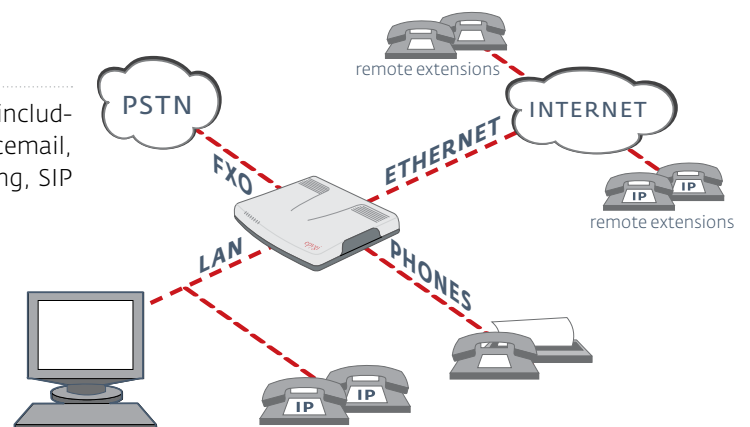
### Integrated Internet Access Router

The Quadro2x IP PBX embodies a fully-fledged Internet access router with firewall security, including NAT, policy and

service based filtering. An extensive IPsec VPN functionality with DES, 3DES and AES encryption makes an additional contribution to data security.

### VoIP Carriers

The Quadro2x 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 Quadro2x to work according to individual requirements.



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## 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  
Lifeline POTS (single line)

### Bandwidth Requirements

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

G.711/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)  
Distinctive ring, hold music, speed dialing  
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 32 physical/virtual/re-  
mote 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-sip-  
ping-dialog-package-05)  
SDP (RFC 2327)  
RTP (RFCs: 1889, 1890, 2833, 3389, 3550, 3551, 3555,  
draft-ietf-avt-rfc2833bis-05, draft-ietf-avt-rtp-  
05), in band and out of band signaling support  
RTP Proxy  
MGCP with support of the full MGCP business exten-  
sions 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: T4, T30, T38, V17, V21, V27 ter, V29)

### POTS Signaling

Loop start  
FSK and DTMF Caller ID support

## Connectivity

### Extensions

Total 70 extensions including FXS phones (2), LAN  
IP phones (2), remote extensions (4) and virtual  
extensions  
The virtual extensions allow e.g., registering on  
several SIP servers  
4 remote extensions for any FXS extension and any  
LAN IP phone

### LAN IP Phones

2 SIP/MGCP phones  
Remote IP extensions may be enabled for both  
SIP/MGCP phones

### System Capacity

8 simultaneous VoIP calls with external parties  
Unlimited station to station calling for IP phones  
Unlimited station to station calling for analog phones  
1 PSTN call with external parties  
2 simultaneous calls through a VPN

### Premise Connections

2 short-loop FXS ports (RJ11)  
1 Ethernet 10/100BASE-T port (RJ45)

### Uplink Connection

1 FXO ports to the Central Office (RJ11)  
1 Ethernet 10BASE-T (RJ45)  
(Other Quadro IP PBX models offer also ISDN, ADSL  
or G.SDSL uplink connectivity. Please refer to the cor-  
responding Technical Data Sheets.)

### Billing

Radius Client (RFCs: 2865, 2866)

## Internet

NAT address translation  
STUN/NAT traversal (RFC 3489)  
IPSec VPN with DES, 3DES and AES encryption in tun-  
nel mode (RFCs: 2402, 2406, 2409)  
PPTP VPN  
L2TP VPN  
Manual and automatic IKE key support  
Firewall security via:  
NAT (Network Address Translation)  
Policy and service-based filtering  
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 attach-  
ments (.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  
Loop-back testing

## Environmental

### Physical Dimensions

Desktop devices, wall-mountable:  
Measurements: 7.41" x 6.24" x 1.77"  
(19 x 16 x 4.5 cm)  
Weight: 13 ounces (360 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; 0.5A  
Output 12.0 VDC; 1.5A

### Regulatory Compliance

Safety: UL 60950; CSA 22;  
EMC: FCC Part 15 Class B;  
EN55022 Class B, EN55024;  
Telecom: CTR21/TBR21

### Certification:

For Australia, Brazil, Canada, European Community,  
Mexico, Russia, USA



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