

# Quadro<sup>®</sup>E1/T1

THE VOICE OVER IP GATEWAY



## QuadroE1/T1: The Voice over IP Gateway

The QuadroE1/T1 is the complete PSTN/VoIP gateway for growing small businesses that want to establish for example a corporate telephone network.

Connected over an E1/T1 voice trunk for up to 24 (T1) or 30 (E1) concurrent calls to a PBX or directly to the local PSTN and via Ethernet to the Internet, the QuadroE1/T1 seamlessly combines the cost reducing benefits of IP technology with the ubiquity of the PSTN, which opens a multitude of scenarios for free phone calls all over the world.

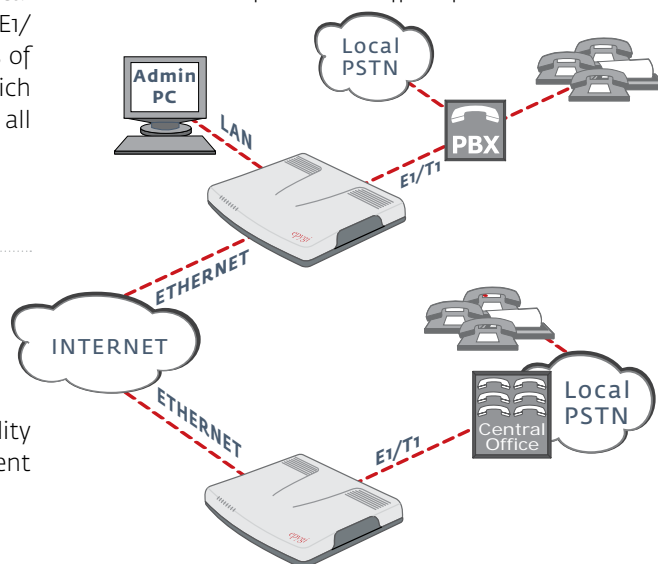
### Integrated Internet Access

The QuadroE1/T1 VoIP Gateway allows voice Internet access with firewall security, including NAT, policy and service based filtering.

The QuadroE1/T1 shapes network traffic by prioritizing voice over data to ensure optimal voice quality at all times and is compatible with legacy equipment configurations like standard PBXs and routers.

### Broad Management Features

The included RADIUS client functionality gives detailed information about every call and allows both accurate and easy billing. Further, statistic information about the current and former IP traffic is provided.



## 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.723.1 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;  
A-law,  $\mu$ -law coding)  
NAT traversal (both manually and STUN)  
VAD, CNG, G.168 echo cancellation  
Reduced simultaneous channel capacity

### Bandwidth Requirements

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

G.711A/G.711u	20 msec	84 kbps
G.726-16	20 msec	37 kbps
G.726-24	20 msec	45 kbps
G.726-32	20 msec	52 kbps
G.726-40	20 msec	60 kbps
G.729a	20 msec	29 kbps
G.723	30 msec	21 kbps
iLBC	30 msec	27 kbp

### PBX Features

Call statistics  
Call routing  
Auto Attendant  
T.38 fax, fax relay and clear channel fax

### Call Signaling

SIP (RFCs: 3261, 3263, 3265, 3311, 3323, 3324, 3325, 3428, 3515, 3578, 3581, 3725, 3891, 3892, 3842, 3856, 3863, 4028, 4235)  
SDP (RFC 2327)  
RTP (RFCs: 1889, 1890, 2833, 3389, 3550, 3551, 3555, draft-ietf-avt-rfc2833bis-05, draft-ietf-avt-rtp-ilbc-05),  
H.323 (optional) (ITU-T: H.225.0, H.235, H.245, H.323, H.450.x, Q.931, Q.932)  
Fax over IP (ITU-T: T.4, T.30, T.38, V.17, V.21, V.27 ter, V.29)

### POTS Signaling

Loop start

### CSS Signaling

ITU-T: Q.921, Q.931 (DSS1), Q.951; ETSI ETS300 102 (NET5); ECMA-143 (QSIG); SR-NWT-00210 (NI2)  
NTT INS1500 for Japan  
PRI switch types: DSS1, NET5, QSIG, 5ESS,  
NTT ins1500 DMS 100

### CAS Signaling

CAS (MELCAS, ITU, ITU-T2, IUT-T: Q.400, Q.411, Q.421, Q.422, Q.440-Q.442, Q.450-Q.452, Q.454, Q.455, Q.457, Q.458, Q.460-Q.468, Q.470-Q.476  
Types: Loop Start, Ground Start;  
E&M Delay Dial, E&M Wink Start, E&M Immediate Start,  
R2 DTMF, R2 compelled, R2 non-compelled, R2 compelled with ANI, R2 non-compelled with ANI; R2 Parameters for Brazil, Guatemala and Mexico etc.)  
ANSI T1.403, 02-199, T1.403, 02a-2001

### DTMF

In band and out of band signaling support

## Connectivity

### Premise Connections

1 short-loop FXS port (RJ11)  
1 Ethernet 10/100BASE-T port to connect a PC for configuration purposes (RJ45)

### Uplink Connection

1 E1/T1 port to the Central Office (RJ45)  
1 Ethernet 10BASE-T (RJ45)

### Billing

Radius Client (RFCs: 2865, 2866)

## Internet

STUN/NAT traversal (RFC 3489)  
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  
DNS support  
Port forwarding  
Port translation

## System

### Management

WEB interface accessible from LAN and WAN (HTTP/HTTPS), the WAN management access can be switched off  
Password control  
Remote diagnostics and software upgrade  
Download/restore configuration  
Reset button with factory reset option  
Custom Language Pack

### Diagnostics/Testing

LEDs: Busy, Info, Fault, LAN, WAN, Line  
E1/T1 diagnostics, Loop settings  
Remote testing  
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)  
Rack-mountable devices:  
Measurements: 19" x 7.56" x 1.77"  
(48.0 x 19.2 x 4.5 cm)  
Weight: 2.47 lbs. (1090 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: UL 60950; CSA 22;  
EMC: FCC Part 68, FCC Part 15 Class B;  
EN55022, EN55024;  
Telecom: TBR12, TBR13

### Certification:

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

