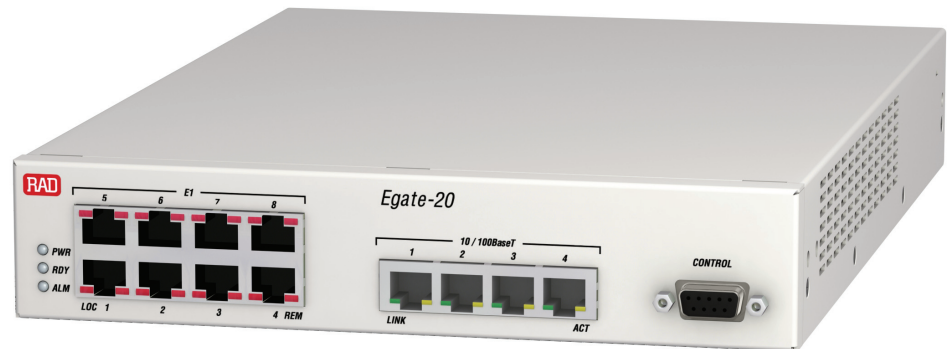


Egate-20

Channelized Ethernet Gateway

Flexible Ethernet aggregation of Fast Ethernet to eight fully channelized E1 or T1 circuits

Up to 248 or 192 remote LANs over fractional E1 or T1 channels



- Transparent Ethernet services in point-to-point and point-to-multipoint topologies by utilizing VLAN tagging, stacking and switching
- Efficient utilization of WAN interface at wire-speed
- Equipment and maintenance costs lower than other alternatives
- Four-level QoS according to 802.1p, DSCP, IP Precedence and per port

Egate-20 is a channelized Ethernet gateway for interconnecting PDH and packet-based networks.

Egate-20 aggregates and switches Ethernet traffic into eight channelized E1 or T1 circuits, each supporting up to 248 or 192 Ethernet channels (248 over E1 or 192 over T1). The traffic is combined into channelized E1 or T1 streams, and handed over to the PSN via the unit's Fast Ethernet ports.

Egate-20 replaces current high-priced solutions, such as channelized $n \times$ E1/T1 routers or multibox solutions based on cross-connects and switches.

Together with service scalability, small footprint, and low power consumption, Egate-20 significantly reduces equipment cost and simplifies network operation.

Egate-20 is typically deployed at a central location (see *Figure 1*), aggregating user Ethernet traffic received from remote devices, such as RAD's RICI-E1/T1, FCD, and ASMi, thus completing a full access solution from the service provider central site to the customer premises.

Typical applications include:

- Ethernet private E-line/E-LAN services
- Aggregation of Ethernet traffic over PDH wireless links
- Network management backhauling.



Egate-20

Channelized Ethernet Gateway

BRIDGE

Using Egate-20 as a bridge in an SDH/SONET environment, service providers achieve seamless interconnection between customers utilizing different networks (TDM and packet-based), while maintaining the same service level attributes.

The bridge filters and forwards traffic at wire-speed, enabling full utilization of the high-priced WAN circuit.

VLAN tagging, stacking and striping at ingress and egress enable transporting user traffic transparently while keeping all user VLAN settings intact. In addition, the management traffic may be tagged as a different VLAN, fully separating user traffic from management data.

In VLAN-aware mode (IVL), frames are forwarded according to VLAN tags and MAC address.

This allows defining different user traffic domains to create point-to-point (E-Line) or point-to-multipoint (E-LAN) topologies. A VLAN tunnel can be created for separating management and user traffic.

Each bridge port switches and filters any number of VLANs. This enables each remote location to be part of numerous VLAN domains.

In a typical service provisioning structure (see *Figure 2*), Egate-20 links between users connected to the packet-switched network, and users connected to the TDM network. Virtual channels are established between the far-end users by tagging separate user traffic channels with VLANs (B, C and D). These virtual channels transparently forward all user traffic. In addition, all devices are managed over the VLAN A management channel, which enables secure separation between user traffic and management traffic.

QUALITY OF SERVICE (QoS)

Egate-20 provides differentiated services on the same link according to Ethernet or IP marking. Classification is based on 802.1p, IP Precedence, DSCP or per port, while the traffic is forwarded by four strict priority queues.

PROTOCOLS

Egate-20 utilizes native HDLC for encapsulating Ethernet traffic over E1/T1 circuits.

DIAGNOSTICS AND STATISTICS

Comprehensive diagnostic and performance monitoring capabilities include:

- Ping and trace route for IP connectivity checks
- Statistics and alarms for the physical E1/T1 and Ethernet interfaces, and for the internal bridge.

MANAGEMENT

Egate-20 can be managed using different ports and applications:

- Local out-of-band management via an ASCII terminal connected to the RS-232 port
- Remote out-of-band management via one of the four 10/100BaseT ports
- Remote inband management via one of the four Ethernet ports, performed using Telnet, Web browser or RADview-Lite, RAD's SNMP-based element management system.

Software upgrades and configuration files can be downloaded to Egate-20 via TFTP or XMODEM.

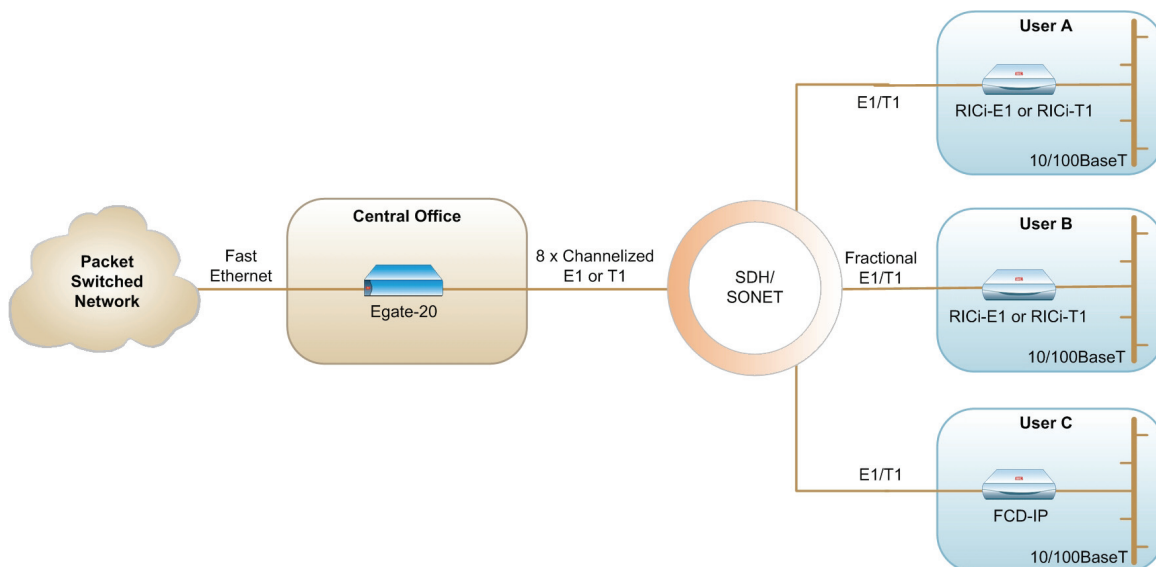


Figure 1. Aggregating Ethernet over E1/T1 Traffic

A dedicated VLAN tunnel is used to secure the management traffic and to separate it from user traffic.

Access to the unit's management software is password-protected. The unit can be managed by and report to up to 16 different managers simultaneously. This enables viewing the network status and managing the unit from different locations.

Specifications

E1 INTERFACE

Number of Ports

8

Compliance

G.703

G.704

Framing

Framed/unframed

Data Rate

2.048 Mbps

Line Coding

HDB3

Line Impedance

120Ω, balanced

75Ω, unbalanced

Connector

RJ-45, Coaxial

T1 INTERFACE

Number of Ports

8

Compliance

ANSI T1.403

Data Rate

1.544 Mbps

Line Code

B8ZS

Framing

D4, ESF (framed)

Line Impedance

100Ω, balanced

Diagnostics

Remote and FDL loopbacks

Connector

RJ-45

FAST ETHERNET INTERFACE

Number of Ports

4

Compliance

10/100BaseT, conforms to the relevant sections of IEEE 802.3 and 802.3u, 802.1p, and 802.1Q

Data Rate

100 Mbps

Max. Frame Size

1600 bytes

Supported Modes

Autonegotiation, full/half duplex, flow control

Connector

RJ-45

WAN PROTOCOL

Type

HDLC (native HDLC compatible with RAD products)

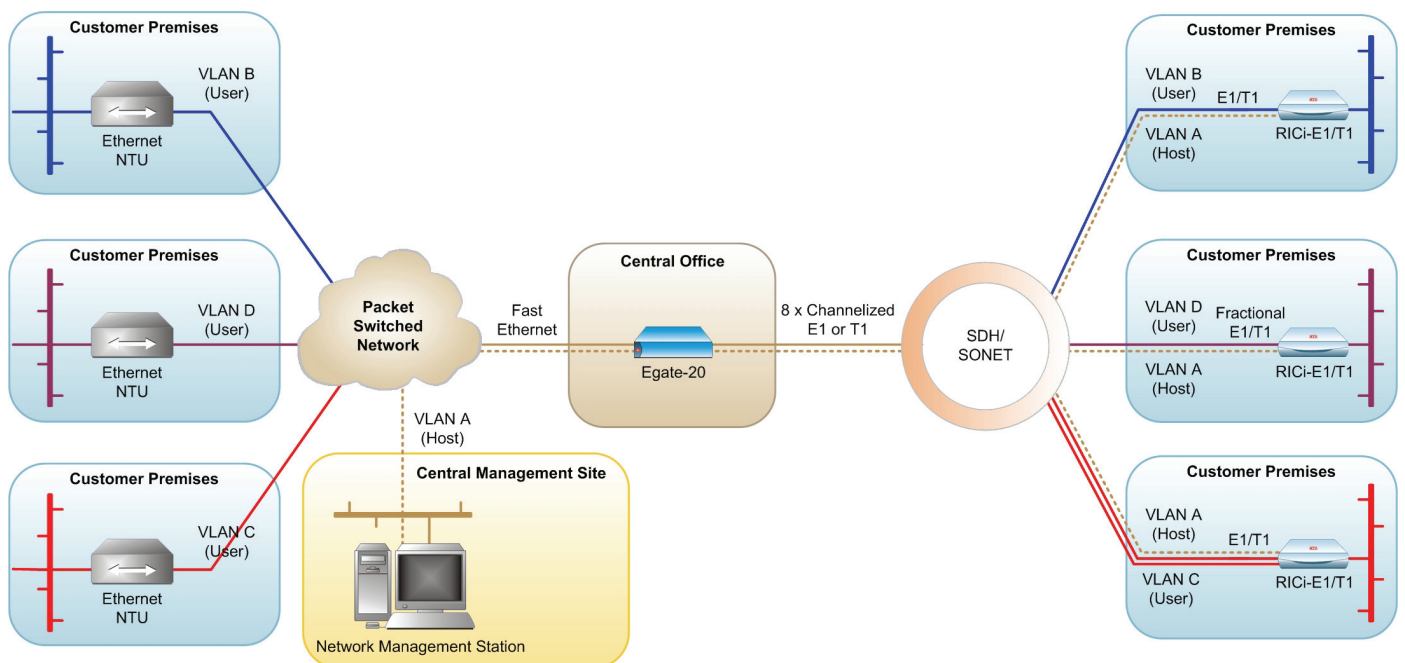


Figure 2. VLAN-Based Service Provisioning over Packet and TDM Networks

Egate-20

Channelized Ethernet Gateway

INTERNAL BRIDGE

LAN Table

Up to 2,048 MAC addresses (learned)

Operation Modes

VLAN-aware, VLAN-unaware

Filtering and Forwarding

Transparent or filter at wire-speed

CONTROL PORT

Interface

RS-232/V.24 (DCE asynchronous)

Data Rate

9.6, 19.2, 115.2 kbps

Connector

9-pin, D-type, female

GENERAL

Indicators

PWR (green) -Power status
RDY (green) -Ready indicator
ALM (red) -Alarm status

Diagnostics

E1: Remote loopback
T1: Remote and FDL loopbacks

Power

AC: 100 to 240 VAC ($\pm 10\%$), 50 to 60 Hz
DC: -48 VDC nominal

Power Consumption

9W max

Environment

Temperature: 0°–50°C (32°–122°F)
Humidity: Up to 90%, non-condensing

Physical

Height: 43.7 mm (1.7 in / 1U)
Width: 215.9 mm (8.5 in)
Depth: 300.0 mm (11.8 in)
Weight: 2.2 kg (4.7 lb)

Ordering

Egate-20/C/\$

Channelized Ethernet gateway

Legend

- C Interface type:
CH Channelized
\$ Port type:
E1 Balanced E1 port
E1U Unbalanced E1 port
T1 T1 port

Note: Unbalanced E1 interface is provided via an adapter cable (CBL-RJ45/2BNC/E1, see Supplied Accessories).

SUPPLIED ACCESSORIES

AC power cord
DC adapter plug

CBL-RJ45/2BNC/E1

Interface adapter for converting a balanced E1 RJ-45 connector to a pair of BNC unbalanced coaxial connectors (if an unbalanced E1 interface is ordered)

OPTIONAL ACCESSORIES

RM-35/@

Hardware kit for mounting one or two Egate-20 units into a 19" rack

@ Mounting kit type:

- P1 Kit for mounting one unit
P2 Kit for mounting two units

WM-35

A hardware kit for mounting one Egate-20 unit on a wall

CBL-DB9F-DB9M-STR

DB-9 to DB-9 control port cable

Product Comparison Table

Feature	Egate-100	Egate-20	RICI-E1, RICI-T1
Protocol Type	HDLC GFP (ITU-T G.8040) PPP/BCP (RFC 1661, RFC 3518) MLPPP (BCP) as per RFC 1661, RFC 1990, RFC 3518	HDLC	HDLC HDLC IS GFP (G.8040, G.7041/Y.1303)
MAC Address Table	64000	2048	1024
QoS	802.1p DSCP IP precedence	802.1p DSCP IP precedence	802.1p IP precedence
QoS Mechanism	Strict	Strict	Strict
Number of Queues	4	4	4
Hot-Swappable Power Supplies	Yes	No	No
Host VLAN	Yes	Yes	Yes
VLAN Tagging and Stacking	Yes	Yes	Yes

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