RICi-E1, RICi-T1

Fast Ethernet over E1/T1 Intelligent Converters

Connect Fast Ethernet LANs over E1 or T1 circuits

EtherAccess

- Wire-speed packet forwarding
- 4 levels of QoS, based on four VLAN priority queues in accordance with 802.1p and IP Precedence
- Inband and out-of-band management access via ASCII terminal, Web browser, Telnet, or SNMP
- Plug-and-play using DHCP client
- VLAN stacking and tagging, keeping Ethernet user traffic completely separate from management data, while maintaining user VLAN settings intact

RICi-E1 and RICi-T1 are intelligent converters connecting Fast Ethernet LANs over full or fractional E1 or T1 circuits. They enable service providers and ISPs to supply transparent Ethernet services, without interfering with user traffic.

RICi-E1 and RICi-T1 comply with RAD's unique set of EtherAccess™ features. This feature set provides services and carrier backhaul applications over low and high-speed SDH/SONET and PDH circuits, from fractional and full E1/T1 or E3/T3 over STM-1/STM-4 to Gigabit Ethernet.

RICi-E1 and RICi-T1 are equipped with one E1/T1 port and one 10/100BaseTx port. Packets are forwarded from the Ethernet network to the TDM network at wire-speed, fully utilizing the expensive TDM circuit bandwidth.

The VLAN Priority bits (802.1p) and IP Precedence priority schemes enable users to define four different QoS levels, according to the application requirements.

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RICi-E1, RICi-T1
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The Fast Ethernet bridge handles 1800-byte frames, supporting VLAN applications and other protocols requiring large frame sizes. In filter mode, the bridge learns MAC addresses and filters local traffic, and in transparent mode it forwards any received packet.

VLAN stacking is used to tag direct user and management traffic to different VLANs, thus preserving the user LAN settings, fully separating user traffic from management data.

The DHCP client automatically obtains the IP address, the IP mask and the default gateway, minimizing installation time.

The units feature fault propagation. When a TDM link failure is detected, RICi-E1 and RICi-T1 closes the user port.

MANAGEMENT

The device is managed inband via the Fast Ethernet user ports or remotely via the TDM port. The device may be accessed via Telnet, a Web browser, or SNMP (for RADview-Lite). Management traffic and user Ethernet traffic transmit in the same Ethernet flow, separated by different VLANs. Local out-of band management is provided via an ASCII terminal.

DIAGNOSTICS

Remote loopbacks are used for troubleshooting on the physical layer.

A built-in ping utility checks IP connectivity by pinging remote IP hosts.

A trace-route application quickly traces a route from RICi-E1 or RICi-T1 to any other network device.

ENVIRONMENT

Temperature-hardened enclosures resistant to extreme temperatures (-22°C to 70°C/7.6° to 158°F) are available.

SPECIFICATIONS

E1 INTERFACE

**Number of Ports**
1

Compliance
G.703
G.704

Data Rate
2.048 Mbps

Line Code
HDB3, AMI

Framing
Unframed
Framed: G.732N

Max Frame Size
1800 bytes

Line Impedance
120Ω, balanced
75Ω, unbalanced

Providing Transparent LAN Services over Leased Lines
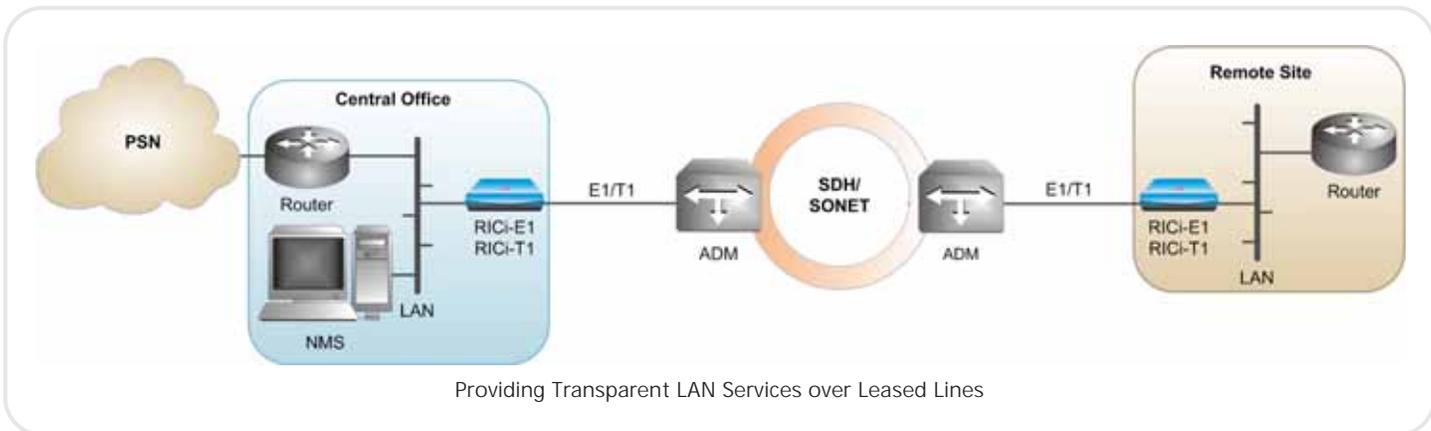
System Clock
Internal or loopback

Diagnostics
Remote loopback

Connector
RJ-45

T1 INTERFACE

Number of Ports
1

Compliance
ANSI T1.403

Data Rate
1.544 Mbps

Line Code
B8ZS, AMI

Framing
Unframed
Framed: D4 or ESF

Max Frame Size
1800 bytes

Line Impedance
100Ω, balanced

System Clock
Internal or loopback

Diagnostics
Remote and FDL loopbacks

Connector
RJ-45

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WAN PROTOCOL

Type
GFP (G.8040, G.7041/Y.1303)

RAD proprietary HDLC compatible with
RAD products
Industry-standard HDLC

ETHERNET INTERFACE

Number of Learned MAC Addresses
Up to 512

Type
10/100 Mbps autonegotiation, full/half
duplex

Compliance
Conforms to the relevant sections of
IEEE 802.3 and 802.3u

Connector
RJ-45

GENERAL

Indicators
PWR (green) – Power status
TST (yellow) – Test status
ALM (red) – Alarm status
LOS (red) – Loss of signal
ETH LINK (green) – Ethernet link status

Power
Wide-range power supply:
AC/DC: 100 to 240 VAC
or 48/60 VDC (40 to 72 VDC)

DC: 24 VDC (available only with
temperature-hardened metal enclosure)

Power Consumption
5W

Physical
Plastic enclosure:
Height: 43.7 mm (1.7 in)
Width: 220 mm (8.6 in)
Depth: 170 mm (6.7 in)
Weight: 0.5 kg (1.1 lb)

Metal enclosure:
Height: 43.7 mm (1.7 in)
Width: 215.5 mm (8.5 in)
Depth: 152.5 mm (6.0 in)
Weight: 0.58 kg (1.28 lb)

Environment
Temperature:
Regular unit:
0° to 50°C (32° to 122°F)
Temperature-hardened version:
-22° to 70°C (-7.6° to 158°F)

Humidity: Up to 90%, non–condensing

RICi Family Product Comparison Table

Feature	RICi-E1, RICi-T1 (Ver. 2.1)	RICi-E3, RICi-T3 (Ver. 1.1)	RICi-4E1, RICi-4T1 RICi-8E1, RICi-8T1 (Ver. 2.0B)	RICi-16 (Ver 2.1)
Protocol Type	RAD HDLC HDLC IS GFP (G.8040, G.7041/Y.1303)	RAD HDLC X.86 (LAPS)	MLPPP (BCP)	GFP (G.7041), GFPoPDH (G.8040) VCAT (G.7043) LCAS (G.7042)
Fault Propagation	Yes	Yes	Yes	Yes
MAC Address Table	512	512	2048	1024
QoS	VLAN Priority (802.1p) IP Precedence	VLAN Priority (802.1p)	VLAN Priority (802.1p) DSCP Per port	VLAN Priority (802.1p) DSCP Per port
QoS Mechanism	Strict	Strict	Strict	Strict
Host VLAN	Yes	Yes	Yes	Yes
VLAN Stacking Support	Yes	Yes	Yes	Yes
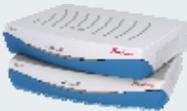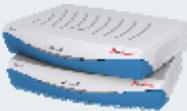
Ordering

STANDARD CONFIGURATIONS

RICI-E1
RICI-E1/U

SPECIAL CONFIGURATIONS

RICi-E1/!/$/?

RICi-T1/!/?

Legend

! Power supply/enclosure:
  24 24 VDC with temperature-hardened metal enclosure
? Temperature range:
  H Wide-range power supply (100 to 240 VAC or 48/60 VDC) with temperature-hardened plastic enclosure

Note: *Only one of the above options can be selected, or neither. If neither of the above options is selected, RICi-E1/T1 is supplied with a wide-range power supply (100 to 240 VAC or 48/60 VDC), with normal temperature range.*

$ E1 interface type:
  U Unbalanced E1 interface

Note: *The unbalanced E1 option is supported via an adapter cable (CBL-RJ45/2BNC/E1, refer to 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

Note: *The CBL-RJ45/2BNC/E1 cable is supplied with the unbalanced E1 option.*

OPTIONAL ACCESSORIES

CBL-DB9F-DB9M-STR
Control port cable

RM-33-2
Hardware kit for mounting one or two units in a 19-inch rack, for units with plastic enclosures

RM-35/@
Hardware kit for mounting one or two units in a 19-inch rack, for units with metal enclosures

@ Rack mounting kit type:
  P1 Kit for mounting one unit
  P2 Kit for mounting two units

WM-35
Hardware kit for mounting one unit on a wall, for units with metal enclosures

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