

RIC-155GE



Gigabit Ethernet to STM-1/OC-3c Network Termination Unit



FEATURES

- Connects Gigabit Ethernet LANs over STM-1/OC-3c lines
- Gigabit Ethernet user port and Fast Ethernet management port
- VLAN support according to IEEE 802.1Q and 802.1p, allowing traffic separation and prioritization
- Bridge supports the MAC-based forwarding (VLAN-unaware) and VLAN-aware forwarding modes of operation
- Double tagging operation for user VLAN transparency, and full separation of user Gigabit Ethernet traffic and Ethernet management
- Collects Ethernet and STM-1/OC-3c statistics
- Optional alarm relay
- Physical layer fault propagation
- Inband or out-of-band management via:
 - ASCII terminal
 - Web browser
 - Telnet
 - RADview-Lite, fault management application
- Remote upload and download of application software and device configuration files
- Compact and easy to install

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DESCRIPTION

- RIC-155GE Network Terminal unit (NTU) bridges between Gigabit Ethernet and STM-1/OC-3c SDH/SONET networks.
- Typical applications are:
 - Transparent LAN services (see Figure 1)
 - Enterprise connection
 - Low-cost alternative to STM-1/OC-3c router interface.
- The RIC-155GE bridge operates in two forwarding modes:
 - VLAN-unaware MAC address learning
 - VLAN-aware mode; Double tagging ensures transparency of user VLAN and traffic separation between Gigabit Ethernet user traffic and Fast Ethernet management traffic.
- Based on VLAN priority tagging, four priority queues can be defined to prioritize between users or user applications. (VLAN-aware mode only).
- Ethernet encapsulation over STM-1/OC-3c is performed by mapping Ethernet frames directly over HDLC framing, resulting in high throughput.
- Fault propagation of SDH/SONET alarms can optionally propagate and bring down the Gigabit Ethernet link. GbE link alarms can optionally propagate and trigger alarms over the SDH/SONET.
- Setup, control, and monitoring performed either inband, within the Ethernet flow, or out-of-band using a dedicated Ethernet port or the terminal control port.
- Management options include:
 - ASCII terminal
 - Telnet server
 - ConfiguRAD via a Web browser
 - RADview-Lite SNMP based fault management service package, with ConfiguRAD element manager.
- Comprehensive diagnostic capabilities include:
 - Real-time alarms to alert user on fault conditions. Alarms are reported to the management station, recorded in the log file, and simultaneously relayed via a dry contact port
 - Ethernet and SDH/SONET link monitoring

SPECIFICATIONS

SDH/SONET INTERFACE

- **Interface Characteristics**
See Table 1.
- **Standards**
ANSI T1 646-1995
G.957 (S1.1 or L 1.1)
- **Framing**
STS3C/STM-1
- **Data Rate**
155 Mbps

APPLICATION

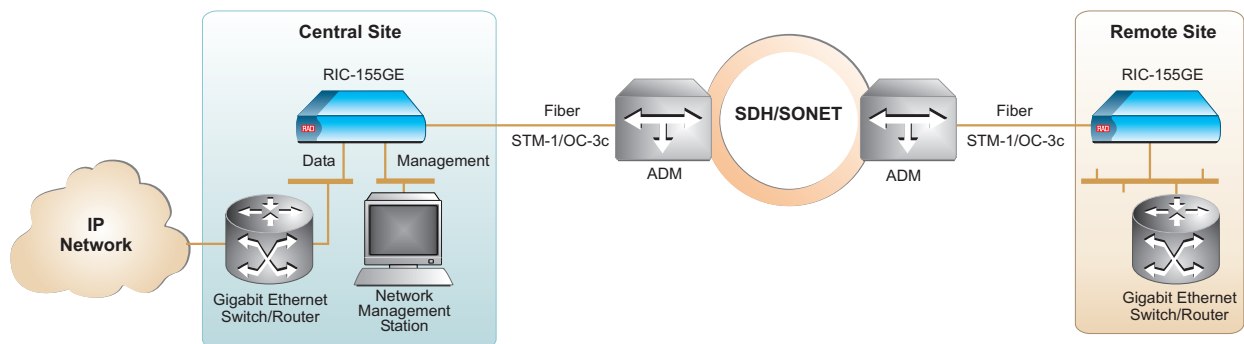


Figure 1. Connecting Gigabit Ethernet LANs over STM-1/OC-3c Lines

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GIGABIT ETHERNET INTERAFCE

- **Standards**
IEEE 802.3, 802.1Q, and 802.1p
- **Interface**
1000BaseSx (MM85)
1000BaseLx (13L)
1000BaseT
- **Data Rate**
1000 Mbps
- **Interface Type, Connector**
LC (optical)
RJ-45 (electrical)
- **Duplex Mode**
Full duplex

BRIDGE

- **Bridge Table**
16,384 MAC addresses with automatic learning and aging
- **Filtering and Forwarding**
Up to 287,000 pps (VLAN unaware)
Up to 270,000 pps (VLAN aware)
- **Buffer**
3150 frame buffers
- **Maximum Frame Size**
1664 bytes

MANAGEMENT PORTS

- **Terminal Port**
 - Interface: RS-232 DCE
 - Connector: DB-9, female
 - Format: asynchronous
 - Baud rate: 9.6 to 115.2 kbps
- **Ethernet Port**
 - Interface: 10/100BaseT
 - Standard: IEEE 802.3
 - Data rate: 10/100 Mbps
 - Connector: RJ-45 shielded
 - Half/full duplex
 - Autonegotiation

GENERAL

- **Monitoring**
STM-1/OC-3c interface:
 - Optical input signal
 - Input signal monitoring based on received B2 error counting
 - Frame alignment
 - Alarm indication signal (AIS)
 - Remote detect indication (RDI)
 LAN interfaces:
 - Received valid frames
 - Transmitted valid frames
 - Receive FCS errored frames
- **Timing (STM-1/OC-3c interface)**
 - Internal, from internal oscillator
 - LBT, from received signal
- **Alarm relay (option)**
 - Connector: DB-9 female
 - Indicators: Major and Minor Alarm
 - Dry contact electrical characteristics: 30V/2A

- **Indicators**
PWR (green) – Power
ALM (red) – Alarm
MNG LINK (green) – 10/100BaseT Ethernet link integrity
MNG ACT (yellow) – 10/100BaseT Ethernet link activity
DATA LINK (green) – Gigabit Ethernet link integrity
DATA ACT (yellow) – Gigabit Ethernet activity
SYNC (green) – STM-1 port synchronization status
- **Power**
AC: 100 to 240 VAC (±10%), 50 to 60 Hz
DC: -48 VDC (±10%)
- **Power Consumption**
20W
- **Physical**
Height: 43.7 mm (1.7 in) 1U
Width: 215 mm (8.5 in)
Depth: 300 mm (11.8 in)
Weight 2.2 kg (4.7 lb)
- **Environment**
Temperature:
Operating: 0 to 50°C (32 to 122°F)
Storage: -20 to 70°C (-4 to 158°F)
Humidity: Up to 90%, non-condensing

Table 1. Interface Characteristics

Option	Wavelength	Fiber Type	Standard	Transmitter Type	Input Range [dBm]		Output Power [dBm]		Connector	Typical Range	
	[nm]				[μm]	(min)(max)	(min)(max)	[km]		[miles]	
STM-1/OC-3c Fiber Optic											
13	1310	62.5/125 multimode	ANSI T1 646-1995	LED	-31	-14	-19	-14	SC	2.3	1.4
13L	1310	9/125 single mode	G.957 S1.1	Laser (short haul)	-28	-8	-15	-8	SC	15	9.4
13LH	1310	9/125 single mode	G.957 L1.1	Laser (long haul)	-34	-10	-5	0	SC	40	25
Gigabit Ethernet Fiber Optic											
85	850	62.5/125 multimode	IEEE 802.3 SX	Laser	-17	0	-9.5	0	LC	270m	1000 ft
13L	1310	9/125 single mode	IEEE 802.3 LX	Laser	-19	-3	-11	-3	LC	5	3.1
15L	1550	9/125 single mode		Laser (long haul)	-22	-3	-5	3	LC (SFF)	40	25
Gigabit Ethernet Copper											
1000BaseT (UTP)	—	Cat. 5	IEEE 802.3	—					RJ-45	100m	330 ft

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data communications

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