RIC-155GE

Gigabit Ethernet over STM-1/OC-3c NTU

- Gigabit Ethernet to STM-1/OC-3c bridge
- User-configurable traffic separation between management and user traffic, and prioritization over the STM-1/OC-3c link
- Physical layer fault propagation
- SDH/SONET loop detection with auto-recovery mechanism
- Inband or out-of-band management using ASCII terminal, Web browser, Telnet, or RADview management application

The RIC-155GE network termination unit (NTU) bridges between Gigabit Ethernet and STM-1/OC-3c networks, providing simple, efficient, and cost-effective Gigabit Ethernet connectivity over SDH/SONET networks. The device offers a migration path for connecting future-ready IP devices to existing SDH/SONET networks at up to 155 Mbps access rates.

MARKET SEGMENTS AND APPLICATIONS

Typical applications include:

- High-bandwidth private LAN services (Figure 1)
- Enterprise connectivity
- IP DSLAM backhauling.

RIC-155GE is equipped with a single STM-1/OC-3c optical port. The unit has a Gigabit Ethernet port that can be ordered with an optical interface or electrical 1000BaseT interface.

To increase service uptime, RIC-155GE can be ordered in a 19-inch NEBS-compliant enclosure with dual AC/DC power supply. It is also available in an 8.5-inch enclosure.

BRIDGE

The RIC-155GE bridge operates in two forwarding modes:

- VLAN-unaware with MAC address learning
- VLAN-aware with user-configurable double tagging that ensures

transparency of user VLAN, and optional traffic separation between Gigabit Ethernet user traffic and Fast Ethernet management traffic.

ETHERNET

Ethernet traffic encapsulation over STM-1/OC-3c is performed by mapping Ethernet frames directly over HDLC framing, resulting in higher throughput.

QUALITY OF SERVICE (QoS)

Based on VLAN priority tagging (802.1p), four priority queues can be defined to prioritize between users or user applications (VLAN-aware mode only).

RESILIENCY

Fault propagation

The unit features a user-configurable bidirectional fault propagation mechanism that notifies local and remote equipment of faulty conditions. This enables routers and switches on both ends of the link to reroute traffic.

SDH/SONET alarms can optionally propagate and cause the Gigabit Ethernet link to shut down. The Gigabit Ethernet alarms can also be propagated over the SDH/SONET link.

Loop Detection

RIC-155GE detects SDH/SONET loops and avoids the resulting Ethernet loops and storming. RIC-155GE automatically recovers when the SDH/SONET loop clears.

MANAGEMENT AND SECURITY

Setup, control, and monitoring are 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
- RADview, an SNMP-based management service package.

MONITORING AND DIAGNOSTICS

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 an optional dry contact port.
- Ethernet and SDH/SONET link monitoring.

RAD
Your Network's Edge

RIC-155GE
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Specifications

STM-1/OC-3C INTERFACE

Number of Ports
1

Data Rate
155 Mbps

Operation Mode
SDH/SONET

Compliance
ANSI T1 646-1995
G.957 (S1.1 or L1.1)

Connectors
SC, ST

GIGABIT ETHERNET INTERFACE

Number of Ports
1

Interface Type
1000BaseSx, 850 nm
1000BaseLx, 1310 nm or 1510 nm
1000BaseT

Compliance
Relevant sections of IEEE 802.3

Data Rate
1000 Mbps

Maximum Frame Size
1664 bytes

Duplex Mode
Full duplex

Connectors
LC (optical)
RJ-45 (electrical)

FAST ETHERNET INTERFACE

Number of Ports
1

Interface Type
100BaseT

Compliance
Relevant sections of IEEE 802.3

Data Rate
100 Mbps

Maximum Frame Size
1664 bytes

Connector
RJ-45

INTERNAL BRIDGE

Number of Ports
4 (host, SDH/SONET, GbE, FE)

LAN Table
16,384 MAC addresses with automatic
learning and aging

Maximum Frame Size
1664 bytes

MANAGEMENT

Out-of-band via dedicated terminal port:
Interface: V.24/RS-232 DCE
Format: asynchronous
Data rate: 9.6 to 115.2 kbps

Connector: DB-9, female

Out-of-band via dedicated 10/100BaseT
management port

Inband via Gigabit Ethernet port

TIMING

STM-1/OC-3c
Internal, from internal oscillator
LBT, from received signal

GENERAL

Indicators
PWR (green) – Power status

ALM (red) – Alarm status

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/OC-3c port
synchronization status

Alarm Relay
Type: Dry relay contacts for major and
minor alarms

Connector: DB-9, female

Alarm Output Contact Ratings
Maximum 30 VDC across open contacts
Maximum 2 ADC through closed contacts

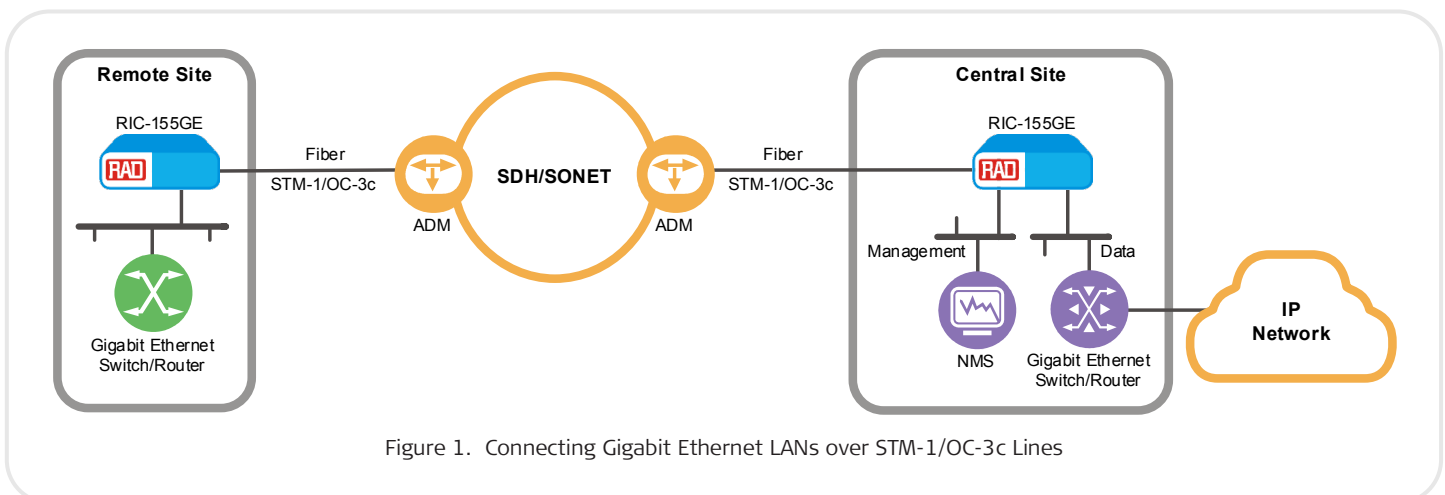*Note:* *The alarm relay is available only with the*
8.5-inch unit.

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

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Physical
Regular unit:
Height: 43.7 mm (1.7 in) 1U
Width: 215 mm (8.5 in)
Depth: 300 mm (11.8 in)
Weight: 2.1 kg (4.7 lb)

NEBS-compliant unit:
Height: 43.7 mm (1.7 in) 1U
Width: 430 mm   (17.0 in)
Depth: 240 mm (9.4 in)
Weight: 3.7 kg   (8.2 lb)

Power
AC: 100 to 240 VAC (±10%), 50/60 Hz
DC: -48/-60 VDC (nominal)

Power Consumption
Regular unit: 20W
NEBS-compliant unit: 29W

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

Ordering

RECOMMENDED CONFIGURATIONS

RIC-155GE/ACR/SC13L/13L

Dual AC power supply, 1310 nm single mode S1.1, SC connector for SDH/SONET fiber optic port, 1310 nm single mode, LC connector for Gigabit Ethernet port

RIC-155GE/ACR/SC13L/UTP

Dual AC power supply, 1310 nm single mode S1.1, SC connector for SDH/SONET fiber optic port, 1000BaseT, RJ-45 connector for Gigabit Ethernet port

RIC-155GE/AC/SC13L/13L/ALM

AC power supply, 1310 nm single mode S1.1, SC connector for SDH/SONET fiber optic port, 1310 nm single mode, LC connector for Gigabit Ethernet port, alarm relay port

RIC-155GE/AC/SC13/UTP

AC power supply, 1310 nm single mode S1.1, SC connector for SDH/SONET fiber optic port, 1000BaseT, RJ-45 connector for Gigabit Ethernet port

SPECIAL CONFIGURATIONS

Please contact your local RAD partner for additional configuration options

SUPPLIED ACCESSORIES

AC power cord (if AC option is ordered)

DC connection kit (if DC option is ordered)

RM-34
Hardware kit for mounting one 19-inch unit (if NEBS-compliant unit is ordered)

CBL-DB9F-DB9M-STR
DB9-to-DB9 control port cable
(if NEBS-compliant unit is ordered)

OPTIONAL ACCESSORIES

RM-35/@
Hardware kit for mounting one or two metal RIC-155GE units in a 19-inch rack

Legend
@   Rack mounting kit type
    (Default = both kits):
    P1   For mounting one unit
    P2   For mounting two units

WM-34
Hardware kit for mounting one NEBS-compliant unit on wall

WM-35-TYPE1
Hardware kit for mounting one 8.5-inch unit on wall

CBL-DB9F-DB9M-STR
DB9-to-DB9 control port cable

PulseSupply
pulsesupply.com

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