4 x Ethernet over T1 (IP over TDM)

Data Sheet & Product Brochure

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Product Overview

Valiant offers its 4 x Ethernet over T1 (IP over TDM) package in a 1U High, 19-inch rack-mountable chassis. It provides four 10/100BaseT (4 RJ-45) data interfaces on the user side which may be used to transport Ethernet traffic over a T1 link. The converter provides a simple and cost effective method to convert and transport Ethernet data over a T1 link.

Ethernet over T1 is an Ethernet extension device utilizing TDM telecom infrastructure (of T1, DS3, SDH or microwave links carrying T1s). It converts the Ethernet data into T1 frame format for transmission over the existing TDM (T1) links and then re-converts the T1 back into Ethernet data the far-end terminal, to BRIDGE two Ethernet LANs over the existing T1-based telecom network. The device can effectively utilize the existing TDM network to transport Ethernet data with low investment.

The equipment must be always installed and used in pairs, with one terminal being installed at either end of the T1 link.

Features and Highlights

- Supports fractional T1, T1 time-slots can be selected in increments of 64 Kbps
- Bandwidth can be selected upto 1544 Kbps in steps of N*64 Kbps
- Minimum transmission rate of Ethernet data over T1 is 64 Kbps
- Maximum transmission rate of Ethernet data over T1 is 1.544 Mbps
- 4x10/100BaseT Ethernet interface in accordance with IEEE802.3
- AMI and B8ZS line code (user selectable) options available
- SF and ESF framing (user selectable) options available
- Robbed Bit Signaling option available
- Ethernet frame size 1916 bytes (max)
- Supports Jumbo Frames
- Accommodates up to 8192 frames with a maximum frame size of 1916 bytes
- Prevents any data overflows, or loss of packets in the event of a data burst
- Supports X.86, LAPS and HDLC transmission protocols
- Committed information rate controller
- Available with MAC address list filtration, learning, and updating functions
- A large external SDRAM buffering for handling data bursts
- Equipment supports two clock synchronization modes, Internal clock and Network clock (Loop-Timed clock)
- Local and Remote access and monitoring with either serial RS232, USB or 10/100BaseT
- Supports SNMP V2
- Power Supply: - 48 V DC or 110 V AC power supply options available
- Supports 1+1 redundant power supply inputs.

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Indications and Alarm Monitoring

- T1 Loss of signal
- Presence of incoming signal at 10/100 BaseT Ethernet
- Loss of Ethernet packets, errored Ethernet packets, over-sized Ethernet packets and under-sized Ethernet packets log
- Configuration error alarm
- Clock status
- - 48V DC or 110V AC present
- 3.3V DC present.

Status Monitoring

- Status of alarms on T1 Interface
- Status of the Ethernet Interfaces
- Monitoring data through put speed of the Ethernet Interfaces.

Programmable Features

- Telnet interface for remote programming and monitoring by using CLI text commands.

Applications

- 10/100 BaseT Ethernet to T1 Conversion (100BaseT over a T1 Interface).

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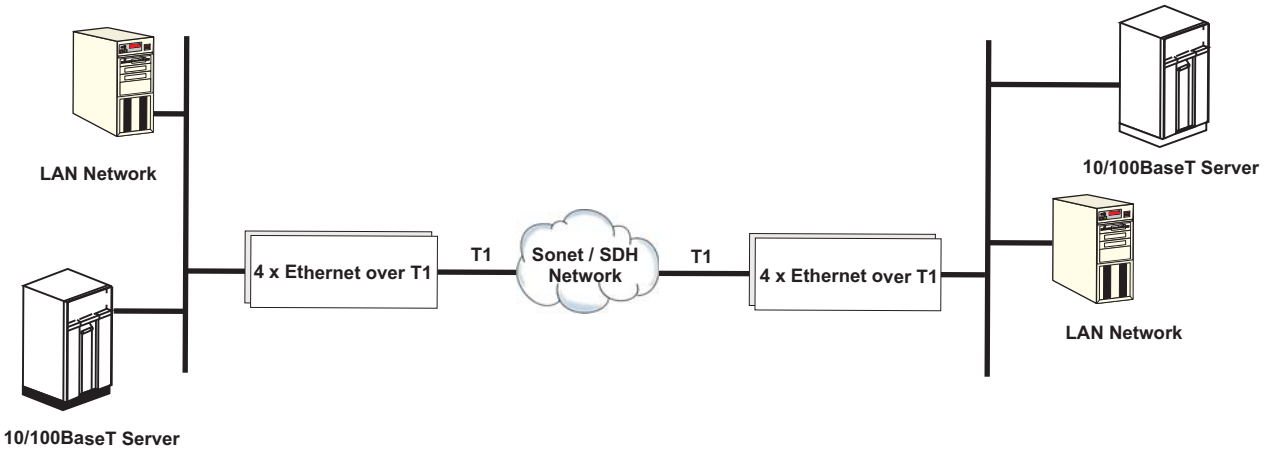
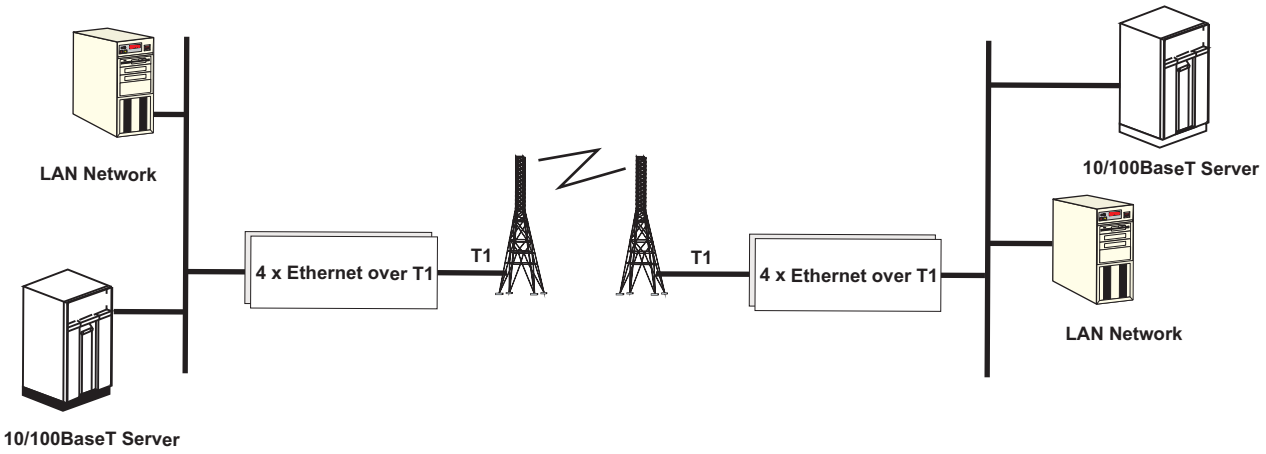
Application Diagrams

Remote LAN Connections over Optical Sonet/SDH Network



Remote LAN Connections over Wireless Network



Technical Specifications

T1 Interface

Number of T1 Interfaces	One
Bit rate	T1 (1.544 Mbps ± 50 bps)
Electrical	ITU-T G.703
Available time slots	1-24 user selectable
Framing structure	As per ITU G.704
Frame alignment and CRC-6	As per ITU-T G.706
Framing options	SF, ESF user selectable
Line code	AMI, B8ZS user selectable
Jitter	As per ITU-T G.823, ITU-T 1.431
Connectors	RJ-45F
Impedance	100 Ohms

10/100BaseT Interface

Number of interfaces	Four
Interface types	10/100BaseT (4 Electrical)
Standards compliance	IEEE 802.3-2002 RFC1662 RFC2615 X.86 RMII
Interface rate	100BaseT limited to 1 (one) T1 transmission rate
Protocol	HDLC/X.86 (LAPS) Encapsulation
Connectors	RJ-45 (100 BaseT electrical)
Max. Frame size	1916 Bytes

AC Power Supply Specifications (AC Option)

Input AC voltage of AC adapter	100 - 240 Volt AC
Range of input AC voltage	100 V to 240 V AC, 50Hz / 60Hz.
System Input voltage	7.5 V DC to 9.0 V DC, DC input polarity protection.
Maximum full load output current	2.5 A at 7.5 V DC
Input voltage reversal protection	Provided in the card

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DC Power Supply Specifications (DC Option)

Power supply	- 48V DC (- 36V DC to - 72V DC)
Input DC voltage	- 48V DC (nominal)
Range of input	- 36V to - 72V DC
Output voltage	5V
Input voltage reversal protection	Provided in the Card
Under voltage protection	< 4.85V
Over voltage protection	> 5.15V
Efficiency at full load	> 91%@5V/10A (when input voltage - 48V)
Efficiency at full load	> 90%@5V/8A (when input voltage - 24V)
Ripple at full load	< 5mVrms
Spike at full load	< 50mV

Power Supply options

Power supply (DC)	-48V DC (-36V DC to -72V DC) (optional)*
Power supply (AC)	AC input (optional)*, 100V AC to 240V AC, 50Hz / 60Hz

* Please specify the Power Supply Option (AC or DC) which is required before placing the order. Please see ordering information for details.

Power Consumption

Power consumption	< 9 Watts

Chassis

1U High (42 mm)
19-inch rack-mounting shelf.

Mechanical Specification

Height	44 mm
Depth	260 mm
Width	480 mm
Weight	4 Kgs.

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Clock (User Selectable Options)

Internal	System internal clock
Loop-Timed	Recovered from T1 Interface
External	2MHz TTL Clock from any external source

Management and Control Interfaces

Serial Management Port (RS232) - COM Port
USB Serial Port
10/100BaseT for Remote Management over a LAN
10/100BaseT Telnet over a TCP/IP Network
SNMP V2

Command Language

Command Line Interface (english text commands)
Windows based GUI (Graphical User Interface)

NMS (with Telnet) OAM port Specifications

Network interface	RJ-45 Ethernet 10BaseT or 100BaseT-TX (auto sensing)
Compatibility	Ethernet Version 2.0 IEEE802.3
Protocols supported	ARP, UDP/IP, TCP/IP, Telnet, ICMP, SNMP
LEDs	10Base-T and 100Base-TX Activity, Full/half duplex.
Management	SNMP , Serial login, Telnet login
EMI Compliance	Radiated and conducted emissions – complies with Class B limits of EN55022:1998
	Direct and Indirect ESD – complies with EN55024:1998
	RF Electromagnetic Field Immunity – complies with EN55024:1998
	Electrical Fast Transient/Burst Immunity – complies with EN55024:1998
	Power Frequency Magnetic Field Immunity – complies with EN55024:1998
	RF Common Mode Conducted Susceptibility – complies with EN55024:1998

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Ordering Information

S. No.	Part #	Product Description
1	VCL-1482_1458 -4ETH-T1-DC	4 x Ethernet over T1 with dual - 48V DC Input Includes: › 19 inch shelf 1U high rack mount Version › Dual DC Power Input › 2 Power Connectors (2 Pin) › 1 Ethernet Crossover Cable › 1 USB Cable
2	VCL-1482_1458 -4ETH-T1-AC	4 x Ethernet over T1 with 1xAC Power Input Includes: › 19 inch shelf 1U high rack mount Version › 1 Universal AC Power Adapter with Power Cord › 1 Ethernet Crossover Cable › 1 USB Cable
3	VCL-1482_1458 -4ETH-T1-2AC	4 x Ethernet over T1 with 2xAC Power Input Includes: › 19 inch shelf 1U high rack mount Version › 2 Universal AC Power Adapters with 2 Power Cords › 1 Ethernet Crossover Cable › 1 USB Cable

Technical specifications are subject to changes without notice.
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