100-GIGABIT ETHERNET PIC

Product Description

The industry's first 100-Gigabit Ethernet interface provides data rates of 100 Gbps, down to the smallest 64 byte packets, and is supported on the industry's leading Juniper Networks® T1600 Core Router. This PIC supports CFP pluggable modules which allow for a diverse set of optical ranges and ensures compliance with the IEEE 802.3ba standard.

The 100-Gigabit Ethernet PIC is a Type 4 PIC offering the ultimate investment protection. No hardware upgrade is needed, as this PIC is supported by the existing T1600-FPC4-ES and existing fabric planes. The power and cooling budget of the PIC is within the limits of the Type 4 FPC, allowing for a seamless upgrade in existing T1600 deployments.

A single T1600 can support up to eight PICs, and up to 16 ports per rack can be realized by using the T1600 footprint. Furthermore, by using Juniper Networks TX Matrix Plus, up to (128) 100-Gigabit Ethernet PICs can be supported on a single multichassis routing node. Type 4 PICs can also be flexibly mixed with other FPC types to match your high capacity platform needs with existing configurations.

Features and Benefits

The 100-Gigabit Ethernet PIC offers several unique features and benefits for both large scale data centers and points of presence (POPs). The industry-leading port densities resulting from a combination of ports per T1600, and the number of chassis per rack, make this PIC a cost-effective solution for device and network consolidation, intra- and inter-site connectivity, and core uplinks.

Investment Protection

The modular architecture of the 100-Gigabit Ethernet PIC provides significant investment protection for T1600 routers and Type 4 PICs. This PIC works seamlessly in existing T1600 deployments, needing no modification to existing hardware or power/cooling budgets. The Type 4 FPCs purchased for the T1600 can thus be re-tasked with new 100-Gigabit Ethernet interfaces based on the FPC-PIC concept.

The use of pluggable CFP optics also ensure investment protection; as new modules are developed to provide additional connectivity options or enhanced cabling distances, service providers can simply insert a new optical module into the PIC without replacing the entire unit.

High Density Configurations

Each 100-Gigabit Ethernet PIC supports up to 100 Gbps of data transmission, and as the following table demonstrates, Juniper can support up to (128) 100-Gigabit Ethernet PICs in a single system (TX Matrix Plus).

Platform	Per Node	Per Rack
T1600	8	16
TX Matrix Plus	128	N/A

Product Overview

Feature	Description
Ports	1 line rate 100-Gigabit Ethernet port
Framing	Ethernet circuit cross-connect (CCC), Ethernet translational cross-connect (TCC), Ethernet virtual private LAN service (VPLS), VLAN CCC, Extended VLAN TCC, VLAN VPLS
Data rate	100 Gbps full line rate down to minimum 64 bytes
Optics	CFP
Supported platforms	T1600, TX Matrix Plus

The continued rise of Ethernet traffic in metro and access networks means that more Ethernet traffic is running through the core of service provider networks. Currently, the fastest Ethernet interface is 10-Gigabit Ethernet, and faster speeds can only be achieved by aggregating multiple 10-Gigabit Ethernet links. The Juniper Networks 100-Gigabit Ethernet interface is the ideal long-term solution to meet the needs of service provider networks. This PIC will be the highest speed interface in the market and is designed to cost-effectively meet the exponential growth of Internet traffic worldwide.

Software Features

The ingress flow can be filtered based on VLAN source address, and VLAN destination address. Ingress frames can also be classified according to VLAN, stacked VLAN, source address, VLAN Source Address and stacked VLAN source address. VLAN manipulation on egress frames are supported on both outer and inner VLAN tags.

The following features are supported on Juniper Networks JUNOS® Software:

- Protocol Support
  - L2 protocols
    - Ethernet CCC, Ethernet TCC, Ethernet VPLS
    - VLAN CCC
    - Extended VLAN TCC
    - VLAN VPLS
    - Flexible-Ethernet-service
  - L3 protocols
    - IPv4
    - Ipv6
    - MPLS
- Support for CFP Multi-Source Agreement (MSA)-compliant Management Data Input/Output (MDIO) control features
- Graceful Routing Engine switchover (GRES)

Specifications

LEDs

Status LEDs, one bicolor:
- Off: PIC is not enabled
- Green: PIC is operating normally
- Red: PIC has an error or failure

Compliance

Safety Approvals

- CAN/CSA-C22.2 No. 60950-1 (2007) Information Technology Equipment - Safety
- UL 60950-1 (2nd Ed.) Information Technology Equipment - Safety
- EN 60950-1 (2005) Information Technology Equipment - Safety
- IEC 60950-1 (2005) Information Technology Equipment - Safety (All country deviations)
- EN 60825-1 +A1+A2 (1994) Safety of Laser Products - Part 1: Equipment Classification

EMC

- EN 300 386 V1.3.3 (2005) Telecom Network Equipment - EMC requirements

Immunity

- EN 55024 +A1+A2 (1998) Information Technology Equipment Immunity Characteristics
- EN-61000-3-2 (2006) Power Line Harmonics
- EN-61000-3-3 +A1 +A2 +A3 (1995) Power Line Voltage Fluctuations
- EN-61000-4-2 +A1 +A2 (1995) Electrostatic Discharge
- EN-61000-4-3 +A1+A2 (2002) Radiated Immunity
- EN-61000-4-4 (2004) Electrical Fast Transients
- EN-61000-4-5 (2006) Surge
- EN-61000-4-6 (2007) Immunity to Conducted Disturbances
- EN-61000-4-11 (2004) Voltage Dips and Sags

NEBS

- SR-3580 NEBS Criteria Levels (Level 3 Compliance)
- GR-63-CORE: NEBS, Physical Protection
- GR-1089-CORE: EMC and Electrical Safety for Network Telecommunications Equipment

ETSI

- ETSI EN 300 019: Environmental Conditions & Environmental Tests for Telecommunications Equipment
- ETSI EN 300 019-2-1 (2000) - Storage
- ETSI EN 300 019-2-2 (1999) - Transportation
- ETSI EN 300 019-2-3 (2003) - Stationary Use at Weather-protected Locations
- ETSI EN 300 019-2-4 (2003) - Stationary Use at Non-Weather-protected Locations
- ETS 300753 (1997) - Acoustic noise emitted by telecommunications equipment

Ordering Information

Model Number	Description	Platforms
PD-1x100GE-CFP	1-port 100-Gigabit Ethernet PIC, CFP Optics	T1600, TX Matrix Plus

About Juniper Networks

Juniper Networks, Inc. is the leader in high-performance networking. Juniper offers a high-performance network infrastructure that creates a responsive and trusted environment for accelerating the deployment of services and applications over a single network. This fuels high-performance businesses. Additional information can be found at **www.juniper.net**.

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