PRODUCT BRIEF
Intel® True Scale Fabric 12800 Switch

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18–864 Port, 40Gbps Modular Switch

Overview

For over 10 years, InfiniBand* networks have been deployed to address the needs of the most demanding High Performance Computing (HPC) applications. The Intel® 12800 switch is a data center interconnect that links HPC resources using a scalable, 40Gbps, low-latency fabric. Customers can tailor the 12800 modular design to meet meet present and future needs. The Intel® 12800 switch series delivers exceptional high-speed networking features and functions.

Highlights

Benefits

- QDR line rate performance
- Predictable low latency under heavy loads
- Flexible quality of service (QoS) maximizes bandwidth utilization
- Modular configuration flexibility
- Highly reliable and available
- Easy to manage
- Lowest per-port power and cooling requirements

Features

- 18–864 ports of InfiniBand* QDR (40Gbps) performance with support for DDR and SDR
- Intel® True Scale Fabric Architecture with scalable, predictable low latency
- Scales to 51.8Tbps aggregate bandwidth
- Multiple Virtual Lanes (VLs) per physical port
- Supports virtual fabric partitioning
- Fully redundant system design
- Option to use ultra high density (UHD) leafs for maximum connectivity or utra high performance (UHP) leafs for maximum performance
- Integrated chassis management capabilities for installation, configuration, and ongoing monitoring
- Optional Intel® Fabric Suite (IFS) management solution that provides expanded fabric views and fabric tools
- Minimal power and cooling requirements
- Complies with InfiniBand Trade Association* (IBTA*) version 1.2 specification
- RoHS 6 compliant

Low Latency

Intel's 12800 switch provides scalable, predictable low latency. Predictable latency means HPC applications can be scaled easily without diminished cluster performance or costly system tuning efforts.

Flexible Partitioning

Intel's advanced 12800 switch design is based on an architecture that provides comprehensive virtual fabric partitioning that enables the InfiniBand fabric to support today's evolving requirements. The Intel® True Scale Architecture, together with IFS, allows the fabric to be shared by mission-critical applications while delivering maximum bandwidth utilization.

Modular Design

InfiniBand* port, power, cooling, and management modules are common among the series, giving customers the flexibility to deploy and grow HPC environments in a cost-effective fashion.

Investment Protection

The Intel® 12800 Series switches adhere to the IBTA v1.2 specification, ensuring the ability to interoperate with all other IBTA compliant devices.

Highly Reliable

This system is designed for high availability with features that include port-to-port and module-to-module failover, non-disruptive firmware upgrades, component-level diagnostics and alarming, and both in-band and out-of-band management.

Easy to Manage

The Intel® 12800 switch uses Intel's advanced IFS software for faster installation and configuration. IFS includes advanced tools to verify fabric configuration, topology, and performance. Faults are automatically isolated to the component level and reported.

Simple Installation and Configuration

The installation and configuration wizards contained in the IFS package cuts the fabric installation and configuration time down to days instead of weeks.

Power Optimized

Delivers maximum performance with minimal power and cooling requirements as part of Intel's commitment to developing green solutions for the data center.

Chassis Options Chassis

12800-360
- 18–864 ports
- 51.8Tbps capacity
- Supports up to 36 leaf modules

12800-180
- 18–432 ports
- 25.9Tbps switching capacity
- Supports up to 18 leaf modules

12800-120
- 18–288 ports
- 17.2Tbps switching capacity
- Supports up to 12 leaf modules

12800-40
- 18–96 ports
- 5.76Tbps switching capacity
- Supports up to 4 leaf modules

Leaf Module

UHP Module
- Eighteen 4x QDR ports

UHD Module
- Twenty-four 4x QDR InfiniBand ports

Switch Specifications

- 40/20/10Gbps auto-negotiation links
- Virtual lanes: Eight plus one management
- Maximum MTU size: 4096 bytes
- Maximum multicast table size: 1024 entries
- Switching latency: 140–420ns
- Supports QSFP optical and copper cable specifications

Interoperability

- Compliant with IBTA* versions 1.0a, 1.1, and 1.2

Fabric Management

Management Methods
- Command line interface
- Optional external server-based IBTA* compliant subnet manager
- Optional embedded fabric management
- IBTA*-compliant - SMA, PMA, and BMA
- Chassis management GUI
- SNMP support

Access Methods
- 10 and 100 Ethernet Base-T (RJ45)
- Serial port (RS-232 with DB9)

LEDs
- Two per leaf module plus one per InfiniBand port
- Two per single-spine module
- Four per dual-spine module
- Three per power supply module
- Eight per management module
- Three per serial port per Ethernet module

Physical Specifications

12800-360
- H x W x D: 1288.4 x 439.6 x 650 mm (50.7 x 17.3 x 26 in)
- 81.9kg (180lbs)

12800-180
- H x W x D: 622.6 x 439.6 x 650 mm (24.5 x 17.3 x 26 in)
- 50.1kg (110lbs)

12800-120
- H x W x D: 444.7 x 439.6 x 650 mm (17.5 x 17.3 x 26 in)
- 41kg (90lbs)

12800-040
- H x W x D: 221.1 x 439.6 x 650 mm (8.7 x 17.3 x 26 in)
- 18.2kg (40lbs)

Environmental Specifications

Operating
- Temperature: 0°–40°C
- Humidity: 5–85% non-condensing
- Altitude: 0–10,000 feet
- Vibration: 5–500Hz, 0.27g, 5 sweeps
- Shock: 3.5g, 3ms, half sine, 20 repetitions

Electrical
- Voltage: 100–240VAC; 50–60Hz
- Receptacle: IEC320-C19
- Power consumption: 85–6749W

Non-operating
- Temperature: -40°–65°C
- Humidity: 5–90% non-condensing
- Altitude: 0–40,000 feet
- Vibration: 2–200Hz, 0.5g, 5 sweeps
- Shock: 50g, 4216mmps, 13 msec, 3 axis

Airflow
- Front-to-back

Agency Approvals

Safety
UL/CSA/IEC/EN 60950-1

EMI
FCC/VCCI/EN/IEC Class A

Marking
FCC/ICES-003/TUV-CUE/CE/VCCI/C-Tick/GOST/KCC

RoHS 6

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