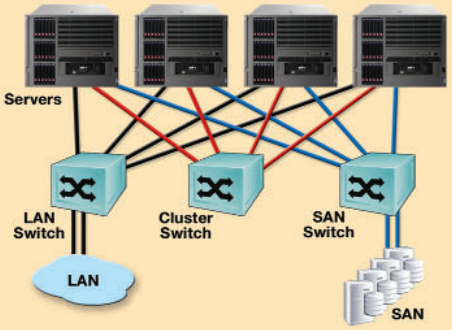
S2410 Ultra Low Latency HPCC Switch

Delivers Peak Application Performance and Availability with 10 Gigabit Ethernet

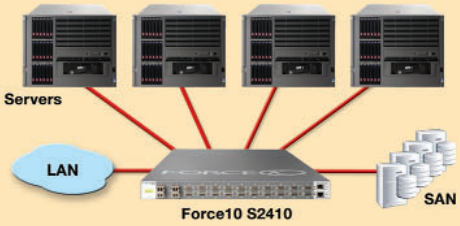
- **10 GbE low latency, non-blocking HPCC solution**
- **Unified data center fabric delivers maximum performance for I/O and MPI while reducing costs**
- **For demanding application environments where performance is limited by network bottlenecks**

Unified Data Center Fabric Simplifies and Reduces Costs



Traditional Network

- Each I/O has dedicated network
- Bandwidth cannot be shared
- Many connections to server
- Can be expensive



Multifunction Network

- LAN, SAN & cluster over one wire
- Fewer connections to server
- Reduces hardware and support
- More effective use of bandwidth
- Cost savings can be significant

Standards-based Ethernet Delivers Lowest TCO

Ease of Installation & Management

Unified Network Leveraging One Low Latency & Non-Blocking Fabric

High Performance, Low Latency Ethernet Solutions for HPCC

The transition to 10 GbE is underway in the data center, and the ubiquity and reliability of Ethernet make it a desirable solution for delivering a high performance interconnect fabric. Modern 10 GbE adapters are capable of supporting a variety of hardware-based offload mechanisms delivering high bandwidth, high throughput and low latency Ethernet solutions for the rigorous demands of low latency clustering applications.

The combined best-of-breed 10 GbE technology of Force10 Networks low latency switches and high performance NICs delivers a new breakthrough in high throughput and low latency, facilitating mainstream HPCC adoption of 10 GbE. The standards-based design of Ethernet and TCP/IP enable IT staff to leverage existing skills and tools to reduce the total cost of ownership and complexity of cluster operations with common spares, common software, and common training for networking, storage, and clustering. Cluster managers can now fully realize 10 Gbps data throughput with extremely low overhead while remaining completely compatible with existing Ethernet infrastructures.

Key Applications

Ultra low latency switch for high performance cluster computing

- Low cost 10 GbE interface to network attached storage systems
- Connects directly to 10 GbE servers
- Low latency MPI interconnect switch

Key Features

Resilient and scalable high density, low latency 10 GbE switch for high performance Ethernet environments

- 24 line-rate 10 GbE ports in a 1-RU form factor
  - S2410CP: 20 CX4 ports plus four 10 GbE pluggable XFP interfaces
  - S2410P: 24 XFP interfaces
- 300 nanosecond switching latency under full load
- 64 bytes to 10,240 byte frames
- Switching fabric capacity of 480 Gbps and forwarding capacity of 360 Mpps

FORCE10

S2410 Ultra Low Latency HPCC Switch

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Ordering Information

Order Number	Description
S2410-01-10GE-24CP	S2410CP – 24-port 10 GbE switch with 20 10GBase-CX4, four 10 GbE XFP ports with Layer 2 software – XFP optics required
S2410-01-10GE-24P	S2410P – 24-port 10 GbE switch with 24 XFP ports and Layer 2 software – XFP optics required
CBL-CX4-1M	Qualified 1m 10GBase-CX4 cable*
CBL-CX4-3M	Qualified 3m 10GBase-CX4 cable*
CBL-CX4-5M	Qualified 5m 10GBase-CX4 cable*
CBL-CX4-10M	Qualified 10m 10GBase-CX4 cable*
CBL-CX4-15M	Qualified active 15m 10GBase-CX4 cable*
SA-01-RMB-2	Rear (universal) mounting bracket

* Only qualified cables can be used with the S2410

S2410CP

S2410P

Physical

S2410CP: 20 line rate 10GBase-CX4 ports plus four 10 GbE pluggable XFP interfaces

S2410P: 24 line rate 10 GbE XFP ports

1 RJ-45 console/management port with RS-232 signaling
1 RJ-45 Ethernet management port

Size: 17 w x 16.73 d x 1.73" h (432 x 425 x 44 mm)
Weight: 14.3 lbs (6.5 Kg)
Power Supply: 100-240V AC, 50-60Hz, autosensing
Maximum Power Consumption:
S2410CP: 125W
S2410P: 225W
Maximum Thermal Output:
S2410CP: 426 BTU/hour
S2410P: 768 BTU/hour
Maximum Current Draw:
S2410CP: 1.15A 100/120 VAC, 0.575A 200/240 VAC
S2410P: 2.05A 100/120 VAC, 1.025A 200/240 VAC
19" rack mountable
Standard 1U chassis height
Maximum Operating Specifications:
Temperature: 32° to 104°F (0° to 40°C)
Operating humidity: 10 to 90 percent (RH), non-condensing
Maximum Non-operating Specifications:
Storage Temperature: –4° to 158°F (–20 to 70°C)
Storage humidity: 10 to 95 percent (RH), non-condensing

Redundancy

Load-balancing and Redundant AC Power

Performance

Layer 2/MAC Addresses:	16K
Switching Fabric Capacity:	480 Gbps (360 Mpps)
Jumbo Frame Support:	10,240 byte packet support
Link Aggregation:	12 members per link aggregation group and 12 groups per system
Queues per port:	4
VLANs:	1024 VLANs with 4096 tag value support

IEEE Compliance

802.3ae	10 Gigabit Ethernet
802.3ak	10 Gigabit Ethernet CX4
802.1p	L2 Prioritization
802.1Q	VLAN Tagging
802.1ac	Frame Extension for VLAN Tagging
802.1s	Multiple Spanning Tree Protocol
802.1w	Rapid Spanning Tree Protocol
802.3ad	Link Aggregation with LACP
802.1D	Bridging
802.3x	Flow Control

RFC Compliance

Security:

1492	TACACS+
2865	RADIUS
3128	Protection Against a Variant of the Tiny Fragment Attack
3580	IEEE 802.1x RADIUS Usage
Ietf-draft	SSH v2, SSL, Layer 2 ACLs

MAC Address Security
Port Access Control

Quality of Service:

4 queues per port
IEEE 802.1p

Management and SNMP:

Industry familiar CLI with
- Scripting
- Command completion
- Context sensitive help

Web Based Management

768	UDP
783	TFTP
791	IP
792	ICMP
826	ARP
951	BootP

1157	SNMP v1
1212	Concise MIB Definition
1213	SNMP v2 (MIB-II)
1493	Bridge MIB
1643	Ethernet-like MIB
1901	Community based SNMPv2
1905	Protocol Operations for SNMPv2
1906	Transport Mappings for SNMPv2
1907	Management Information Base for SNMPv2
1908	Coexistence between SNMPv1 & SNMPv2
2096	IP forwarding table MIB
2131	DHCP Server
2233	The Interfaces Group MIB using SMI v2
2570	SNMP v3
2665	Ethernet-like interfaces

Compliances

Safety

CUS 60950, 3rd edition (US NRTL through CSA)
CSA 60950, 3rd edition
CE Mark (EN 60950)
CB Report, all country deviations
EN 60825-1 Safety of Laser Products-Part 1: Equipment Classification Requirements and User's Guide
EN 60825-2 Safety of Laser Products-Part 2: Safety of Optical Fibre Communications Systems
21 CFR 1040.10 and 1040.11 FDA laser device requirements

EMC

USA: FCC CFR47 Part 15, Subpart J, Class A
Canada: ICES-003, Issue-2, Class A
Europe: EN55022 1998 (CISPR 22: 1997), Class A
Japan: VCCI V3/01.4 Class A

EN 61000-4-2 ESD
EN 61000-4-3 Radiated Immunity
EN 61000-4-4 EFT
EN 61000-4-5 Surge
EN 61000-4-6 Low Frequency Conducted Immunity
EN 300 386 V1.3.1 (2001-09) EMC for Network Equipment
EN 55024 1998

Telecoms

JATE (for Japan)

RoHS Compliance

All S2410 components are EU RoHS compliant with the exception of lead, which is exempt from the directive for network equipment

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HS33 707 v1.2