The FN I/O Module (FN IOM) is designed specifically for the PowerEdge FX2 converged-infrastructure platform, part of the PowerEdge FX architecture. Its simplified network management and configuration enable instant plug-and-play connectivity to the FX2. The FX2 converged infrastructure supports up to two FN IOMs. The FN IOMs include eight internal ports with the ability to reduce and simplify cabling to a single external port. The FN IOM also has a number of zero-touch and pre-configured features enabling easy network deployment. Through the Dell Blade IO Manager, users can utilize an intuitive GUI interface to configure and manage FN IOM switch functions without the complexity of a CLI.

**Simplify I/O connectivity**

The FN IOM simplifies FX2 connectivity by as much as 8-to-1, greatly reducing cabling complexity. It provides simplified connectivity with your choice of external port configurations including four ports of SFP+, 10GBase-T, or a combination FN IOM with two ports of native Fiber Channel and two ports of SFP+. The combination Fiber Channel/SFP+ FN IOM allows for convergence directly in the FX2 platform, enabling native Fiber Channel connection directly to a Fiber Channel switch or direct connection F_port to a Fiber Channel storage array. The FN IOM includes eight 10GbE internal ports and supports uplink-port link aggregation group (LAG) and virtual link trunking (VLT).

**Enable converged I/O and Fiber Channel connectivity**

Full data center bridging (DCB) support with zero-touch FCoE activation enables an automated LAN/SAN converged system that connects server nodes to upstream switches. The solution can reduce adapters up to 50%, reduce cabling up to 75%, and decrease the number of switches needed for LAN and SAN by up to 75%. In addition, the FN IOM easily connects to the Dell Networking S5000 10/40GbE unified storage switch. The S5000 switch features up to 64 SFP+ 10GbE ports and up to 12 Fiber Channel ports, providing Fiber Channel Forwarding (FCF). The FN IOM is also able to directly connect to a Fiber Channel storage array.

**Optimize FX2 performance**

The FN IOM enhances east-west traffic flows within the FX2 enclosure for superior network performance and increased server-to-server communication, important for today’s virtualized environments. The FN IOM takes full advantage of high-performance 10GbE throughput, and next-generation PowerEdge servers and converged solutions for easy connection to high-density network architectures.
The Dell PowerEdge FN2210S I/O Module has 2 FC ports and 2 Ethernet ports. The Ethernet ports allow connectivity to LAN and the FC ports support NPG (NPIV Proxy Gateway) mode to connect to SAN switch.

**The FN2210S supports F-port capability that enables direct connection to Fiber Channel storage arrays without the need to connect through a Fiber Channel switch.**

### Specifications: Dell PowerEdge FN I/O Module

<table>
<thead>
<tr>
<th>Dell SKU descriptions</th>
<th>FN2210S</th>
<th>FN410S</th>
<th>FN410T</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dell FN I/O Module</td>
<td>2/4/8Gb and 1/10GbE</td>
<td>1/10GbE</td>
<td>100Mb/1/10GbE (supports auto negotiation)</td>
</tr>
<tr>
<td>Module Differentiator</td>
<td>Two native Fiber Channel ports and two SFP+ ports</td>
<td>Four SFP+ ports</td>
<td>Four SFP+ ports</td>
</tr>
<tr>
<td></td>
<td>Fiber Channel NPIV Proxy Gateway* (NPG) with gateway capabilities to existing SAN fabrics</td>
<td>Supports optical and DAC cable media</td>
<td>Supports copper media up to 100m</td>
</tr>
</tbody>
</table>

| Port speed | 2/4/8Gb and 1/10GbE | 1/10GbE | 100Mb/1/10GbE (supports auto negotiation) |
| Protocol support | Native Fiber Channel and Ethernet | Ethernet | Ethernet |
| Media types | 2/4/8GbE FC SFP+ optics | Optical Transceivers SFP+ 10Gb: • SR, LR • SFP 1 GbE: SX, LX • SFP to RJ45 converter 10000Base-T (only capable of 1Gbps) • SFP+ Direct Attach Cable (Twinax) |

*The Dell PowerEdge FN2210S I/O Module has 2 FC ports and 2 Ethernet ports. The Ethernet ports allow connectivity to LAN and the FC ports support NPG (NPIV Proxy Gateway) mode to connect to SAN switch.

**The FN2210S supports F-port capability that enables direct connection to Fiber Channel storage arrays without the need to connect through a Fiber Channel switch.**

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### Environmental

- **Max. thermal output:** 214.9 BTU/h
- **Max. current draw per IOM:**
  - FN410S: 5.6A @ 12V DC
  - FN410T: 5.6A @ 12V DC
  - FN2210S: 5.6A @ 12V DC
- **Max. power consumption per IOM:**
  - FN410S: 66W
  - FN410T: 77W
  - FN2210S: 77W
- **ISO 7779 A-weighted sound pressure level:** 59.6dBA at 73.4°F (23°C)
- **Operating temperature:** 32° to 140°F (0° to 60°C)
- **Operating humidity:** 10 to 85% (RH), non-condensing
- **Max. non-operating specifications:**
  - Storage temperature: –40° to 158°F (–40° to 70°C)
  - Storage humidity: 5 to 95% (RH), non-condensing

### Performance

- **MAC addresses:** 64K
- **Switch fabric capacity:** 240Gbps (Full-Duplex)
- **Forwarding capacity:** 179Mpps
- **Link aggregation:** Max 4 members per group and 1 uplink LAG group
- **In stack mode:** Max. of 12 lag groups can be created.

### Stacking

- **Stacked units:** Up to 6 units in ring or daisy chain
- **Stacked units:** Up to 24 LAG groups and multiple uplink LAG groups
- **Port speed:** 2/4/8Gb and 1/10GbE
- **Media types:** 2/4/8GbE FC SFP+ optics
- **Protocol support:** Native Fiber Channel and Ethernet
- **Optics:**
  - Transceivers, SFP+, 10GbE: SR 850nm Wavelength, 300m Reach
  - Transceivers, SFP+, 10GbE: LR, 1310nm Wavelength, 10km Reach
  - Transceivers, SFP+, 10GbE, DWDM ITU Channel 17–61, 40km Reach
  - Transceivers, SFP, 1000Base-LX, 1310nm Wavelength, 550m Reach
  - Transceivers, SFP, 1000Base-LX, 10km Reach
  - Transceivers, SFP, 1000Base-T
- **Cables:**
  - Cable, 40GbE QSFP+ to 4xSFP+, Direct Attach Breakout
  - Cable, 0.5m, 1m, 3m, 5m, 7m, 10m
  - Cable (optics not included)
  - Cable, SFP+, CUI, 10GbE, Direct Attach Cable, 0.5m, 1m, 3m, 5m, 7m, 10m
- **Software:**
  - Software, Networking, Full-switch mode, FNIOM*
  - Additional port attributes:
    - Up to 8 line-rate 10GbE KR ports
    - 1 USB (Type A) port for storage
    - 1 USB (Type A) port for console/management
- **FN I/O Module Modes supported:**
  - Standalone mode: I/O aggregation, default automated mode
  - Stacking mode: I/O aggregation while stacked
  - VLT mode: I/O aggregation while VLT'd
  - PMUX mode: I/O aggregation with limited CLI
  - Full-switch mode: L2/L3 switch mode with CLI
Specifications: Dell PowerEdge FN I/O Module

IEEE compliance
802.1AB LLDP
802.1p L2 Prioritization
802.2 LLC
802.3ab Gigabit Ethernet (1000Base-T)
802.5a Link Aggregation with LACP
802.3ae 10GbE (10Base-X)
802.3u Fast Ethernet (100Base-TX)
802.3x Flow Control
802.5z Gigabit Ethernet (100Base-X)
ANSI/TIA-1057 LLDP-MED
MTU 12kB

VLAN and Spanning Tree
802.1Q VLAN Tagging
802.1Qc Frame extensions for VLAN Tagging
Native VLAN
802.1D Bridging, STP*
802.1S MSTP*
802.1w RSTP*
Force10 PVST+*
2338 VRRP*

Layer 3 Routing – full switch mode
1058 RIPv1
2453 RIPv2
2154 MDS (OSPF)
1587 NSSA (OSPF)
2328 OSPFv2
2740 OSPFv3
4222 Prioritization and congestion avoidance
4552 OSPFv3 IPsec authentication

BGP
1997 BGP Communities
2385 BGP MD5
2439 BGP Route Flap Damping
2796 BGP Route Reflection
2918 BGP Route Refresh
3065 BGP Confederations
4360 BGP Extended Communities
4893 BGP 4-byte ASN
5396 BGP 4-byte ASN representations
draft-ietf-idr-lir-redirect-06 BGP Graceful Restart
1195 Routing IPv4 with IS-IS
1321 MD5
1350 TFTP
1997 BGP Communities
1997 BGP Communities

FCoE
INCITS FC-BB-5 Ver 2.0 (FSB, NPV & F-Port only; FN2210S only)
Fibre Channel Generic Services (FC-GS, FC-GS2, GC-GS3; FN2210S only)
FC-IP (IP, PORT only; FN2210S only or FN2120S)
FC-VI (FN2120S only)
FCOE Initialization Protocol (FIP) v1
FCOE Transit (FIP Snooping Bridge) supported with FN410S, FN410T
Native FCoE forwarding
NPV Proxy Gateway (NPV) supported with FN2210S
FCOE-FC forwarding / FPOE – Supported only with FN2210S
Dynamic FCoE to FC Load balancing

Data Center Bridging
IEEE 802.1Qbb Priority-Based Flow Control (PFC)
IEEE 802.1Qaz Enhanced Transmission Selection (ETS)
Data Center Bridging eXchange (DCBx)
DCBx Application TLV (gSCT, FCoE)

Security options
954 Telnet
959 FTP
1321 MD5
1550 TFTP
2474 Differentiated Services
2856 RADIUS
3164 Syslog

AVAILBLE with full-switch mode.

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2856 RADIUS
2474 Differentiated Services
1350 TFTP
1321 MD5
959 FTP
854 Telnet

Security options
954 Telnet
959 FTP
1321 MD5
1550 TFTP
2474 Differentiated Services
2856 RADIUS
3164 Syslog

Available with full-switch mode.

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