# FlowDirector-6400-F

### 64x 40Gb/100Gb (256x 10/25Gb) QSFP+/QSFP28  Fabric Visibility Appliance

## FlowDirector Product Family Overview

InfiniCORE Networks FlowDirector-6400-F fabric visibility appliance is designed to provide network administrators essential capabilities to build next generation visibility infrastructure. Powered by Intel's P4 programmable Tofino™ switch ASIC and InfiniCORE Visibility Operating System, the FlowDirector-6400-F bring the capabilities together to tap, aggregate, replicate, tag, strip, filter and load balance network traffic, with or without the expensive SPAN port on the switch or router.
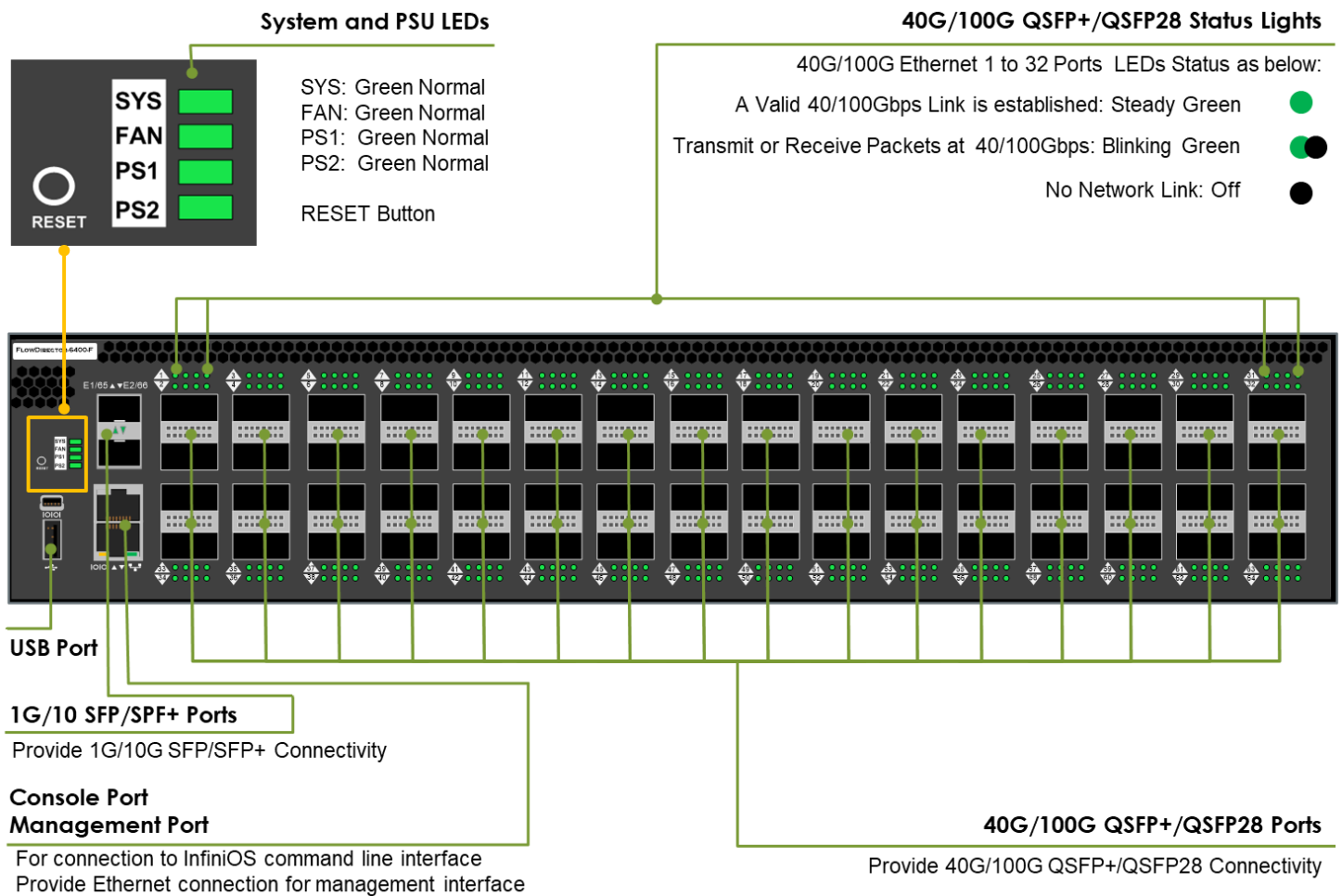
The FlowDirector-6400-F has 64 40Gbps/100Gbps QSFP+/QSFP28 ports. Each 40Gb/100Gb QSFP+/QSFP28 port can operate as 4x 10Gb/25Gb ports.

The FlowDirector-6400-F can be deployed as a capture front end to the InfiniCORE FlowMagic traffic and content visibility appliance to provide unprecedent flexibility, performance and port densities in network monitoring applications.
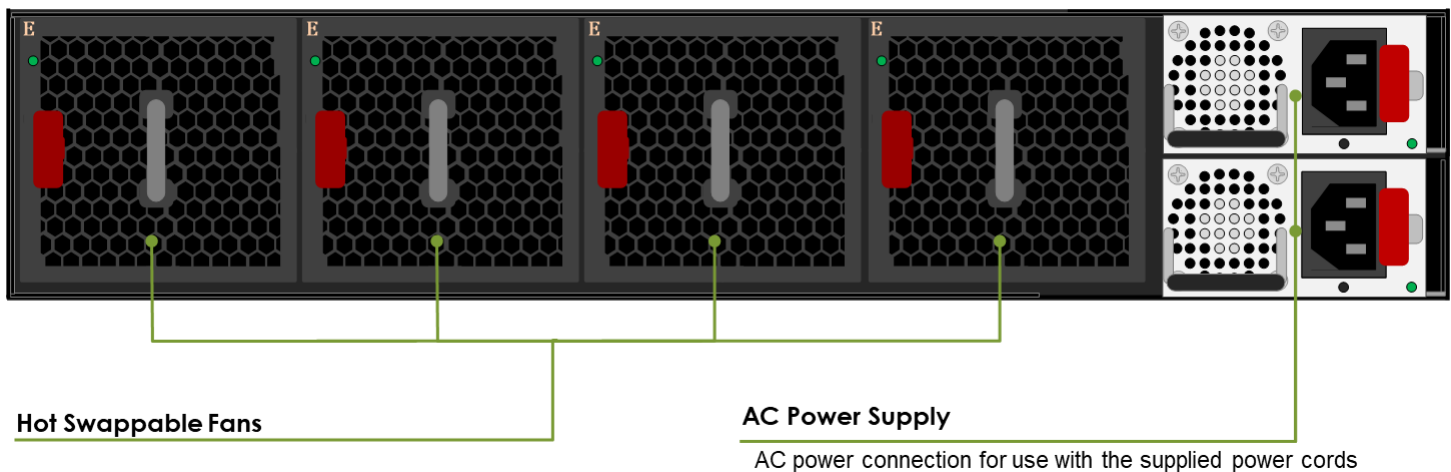
## Main Features and Benefits

|  | Features | Benefits |
|---|---|---|
| **Unprecedented Line Rate Packet Processing capability Over 64 Ultra High Speed Traffic Ports** | Up to 12.8Tbps of hardware ensured line rate packet operation  over 64x 40Gbps/100Gbps QSFP+/QSFP28 ports. | Provides the best connectivity to wide variety of networks; Abundant network interfaces for future expansion; Worry free line rate operation. |
| **High Performance Software Defined Flow Manipulation Domains** | Innovative Flow Domains provides the best flow manipulation with functional isolation for inline and/or offline tap, traffic aggregation, traffic replication,  filter, tag and load balance applications. | Ideal for enterprises and service providers to create application specific data paths suited for their network visibility applications. |
| **Integrated Lossless Connection Matrix over 10Gb, 25Gb, 40Gb and 100Gb Interfaces** | FlowDirector provides an innovative Virtual Wire technology that can be used to cross connect from any port to any port with complete isolation and lossless traffic forwarding. | Virtual Wire Technology is ideal to be used in lab automation applications to cross connect ports with different speeds and media types without rewiring the cables. |
| **Innovative, State of the Art, Web Based Management Framework** | FlowDirector family has native state-of-the-art HTML 5 Web based user interface that can be accessed from any standard based web browser. | Access the management interface from anywhere any device that is equipped with a modern browsers such as Chrome, Firefox, Safari and Internet Explorer. |
| **High Reliability and Availability; Cost Effective and Green Operation** | Leveraging latest generation processor and switch technologies, FlowDirector is power efficient and equipped with redundant power supplies and hot serviceable fans. | • Reduce CAPEX and OPEX<br>• High Availability by Design |

# FlowDirector-6400-F Front Panel Features

**System and PSU LEDs**

SYS: Green Normal
FAN: Green Normal
PS1: Green Normal
PS2: Green Normal

RESET Button

**40G/100G QSFP+/QSFP28 Status Lights**

40G/100G Ethernet 1 to 32 Ports  LEDs Status as below:

A Valid 40/100Gbps Link is established: Steady Green ●

Transmit or Receive Packets at  40/100Gbps: Blinking  Green ●●

No Network Link: Off ●

**USB Port**

**1G/10 SFP/SPF+ Ports**

Provide 1G/10G SFP/SFP+ Connectivity

**Console Port**
**Management Port**

For connection to InfiniOS command line interface
Provide Ethernet connection for management  interface

**40G/100G QSFP+/QSFP28 Ports**

Provide 40G/100G QSFP+/QSFP28 Connectivity

# FlowDirector-6400-F Rear Panel Features

**Hot Swappable Fans**

**AC Power Supply**

AC power connection for use with the supplied  power cords

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# FlowDirector-6400-F External Interfaces Specification

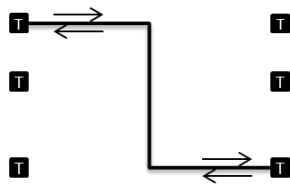| Functions | Compliance | Type | Quantity |
|---|---|---|---|
| **Advanced Network Packet Broker functionalities**<br><br>Fully programmable purposefully developed P4 data path optimized for Visibility Applications | • Packet replication up to 1:32;<br>• Packet aggregation across all ports;<br>• Rich filter functions for fields found in VLAN, Ethernet/IP/TCP/UDP, VxLAN, GTP, ERSPAN and Inner IP/UDP/TCP;<br>• Load balancer on L3 and L4 fields found in outer header, VxLAN/GTP header or inner header;<br>• Strip VLAN/MPLS/VNTag/CiscoFabricPathHeader/VxLAN/GTP/ERSPAN;<br>• VLAN Tag insertion, port tagging function;<br>• Packet slice and timestamping;<br>• Virtualwire for lossless cross connect and media conversion | | All traffic ports |
| **40Gb/100Gb Traffic Ports** | SFF-8436, SFF-8635 QSFP+ 40Gb Ports; SFF-8665 QSFP28 100Gb Ports | QSFP+/QSFP28 Fiber Optics; QSFP+/QSFP28 DAC Cable | 64 |
| **40Gb/100Gb Traffic Ports Breakout Capabilities**<br><br>QSFP+ QSFP28 → 4x SFP+/ SFP28 10Gb/25Gb | Each 40Gb/100Gb Traffic Port Can be Split into 4 Ports to Support 10Gb/25Gb Operation.<br>IEEE 802.3ae 10 Gigabit Ethernet<br>IEEE 802.3aq 10GBASE-LRM<br>IEEE 802.3by 25 Gigabit Ethernet<br>SFP+ MSA, Revision 4.1<br>Direct-Attach Copper Support up to 3 Meters | QSFP28 to 4xSFP28 Splitter Cable<br><br>QSFP+ to 4xSFP+ Splitter Cable | 64 QSFP+ to 256 SFP+<br><br>64 QSFP28 to 256 SFP28 |
| **LED For the System** | Power Module 1 Status LED<br>Power Module 2 Status LED<br>FAN Status LED<br>STAT Status LED | Green/Amber<br>Green/Amber<br>Green/Amber<br>Green/Amber | 1<br>1<br>1<br>1 |
| **LED For QSFP+/QSFP28 Traffic Ports** | Combo LED for Link and Activity | Green for QSFP+/ QSFP28 | 1 Per Link; 4 Per Port |
| **10/100/1000Mbps Management Port** | 10/100/1000BASE-T<br>Category 5, Category 5e, Category 6 UTP | Copper RJ-45 | 1 |
| **Visible LED for RJ-45 Management Port** | LED for Link<br>LED for Activity | Green/Orange LED<br>Green LED | 2 |
| **Console Port** | 115200 Baud 8 Bit Data No Parity 1 Stop Bit | Serial | 1 |
| **USB Port** | USB 2.0 High Speed 480Mpbs Port | USB Type A | 1 |
| **Air Flow and Fans** | PWM Controlled Long Endurance Fan | Front to Back Air Flow | 4 |
| **Redundant Power Supply** | Dual 1200W High Efficiency 100-240V AC 50-60Hz Class I | 1+1 Redundant Power Supply | 2 |
| **Rack Mount Kit** | 19 Inch Rack Mountable | 19 Inch Rack Mountable | 1 |
| **Chassis Dimension** | Height X Width X Depth (inches) | 3.5 x 17.3 x 23.6 | NA |

# FlowDirector-6400-F Flow Operation Domain

The data path of FlowDirector can be configured through the concept of Virtual Flow Domain. The FlowDirector-6400-F supports up to 10,240 Virtual Flow Domains which are isolated from each other, each can have its own data path, filter configuration, and load balancing rules, etc. Once activated, the configuration will be mapped and pushed into hardware.

The FlowDirector-6400-F offers a variety of domains to support traffic tapping, inline processing, aggregation, replication, split & merge, tagging and load balancing.
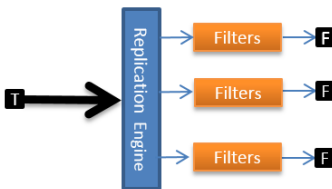
## Typical Flow Domains Supported by FlowDirector Flow Domain Designer
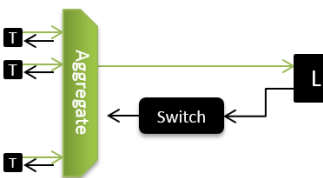
### Dynamic Virtual Wire



- Zero loss cross connect from any port to any port
- Drag-and-drop
- Ideal for lab automation and remote operation

### Inline Traffic Split and Merge



- Selectively redirect/ drop traffic at line rate
- Merge traffic at line rate
- Ideal for DDoS defense or on demand traffic processing

### Traffic Replication with Filters



- Replicate traffic with filter support
- Lossless 1-to-N hardware based data path

### Traffic Aggregation with Filters



- Aggregate traffic to save downstream device ports
- Line rate filtering

### Traffic Aggregation with Reverse Switching



- Ideal for aggregating multiple switch links to go through a security or visibility point
- The reverse traffic will be switched based on MAC address learning
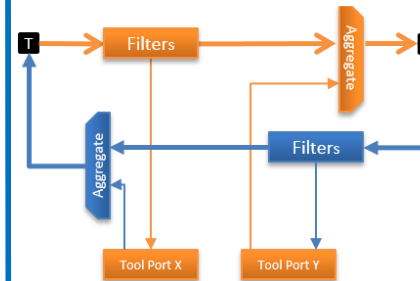
### Traffic Aggregation And Load Balancing



- Aggregate traffic and load balance to downstream devices
- Line rate filtering
- Option to slice packets

### Traffic Aggregation with Replication



- Aggregate and replicate traffic
- Filter and slice traffic

### L2/L3 Switch Mode



- Select sub set of ports and use as regular L2/L3 switch
- Line rate forwarding across all ports
- Jumbo frame support

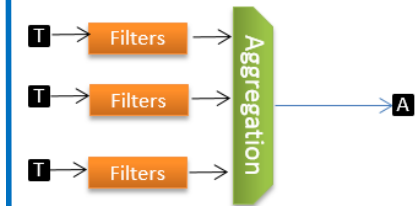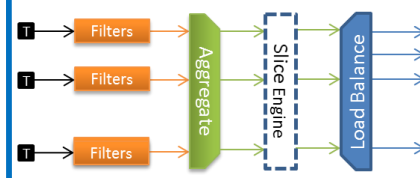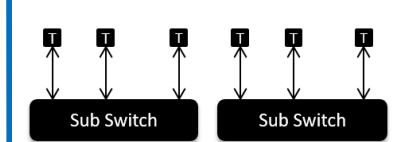## Wide Variety of Protocols Support

The FlowDirector-6400-F supports wide variety of protocols including the following:
MPLS, Q-in-Q, IPv4, IPv6, VxLAN, GTP, GRE and flexible VLAN operations.

## FlowDirector-6400-F Standard Peripherals

| Part Name | Quantity |
|---|---|
| **DB-9 to RJ-45 Serial Console Cable** | 1 |
| **UTP Cat 6. Ethernet Cable** | 1 |
| **Rail Mounting Kit** | 1 |
| **CD (User Manual, software package)** | 0 or 1 |
| **USB System Recovery Thumb Drive** | 1 or Download |

## FlowDirector-6400-F Physical and Environmental Specification

| Item | Description |
|---|---|
| **Dimension** (Width x Depth x Height) | 19 x 23.6x 3.5 (inches)<br>483 x 600 x 88 (millimeters) |
| **Net Weight** | 40 (pounds) / 18 (kilograms) |
| **Environment** | Operating Temperature:  0º ~ 40º C (32º ~ 104º F)<br>Non Operating Temperature: -40º ~ 70º C (-40º ~ 158º F)<br>Humidity:  20 ~ 90% (Non-condensing) |

## FlowDirector-6400-F Order Information

Please contact InfiniCORE regional distributors/resellers or InfiniCORE sales for further information.

| Part Number | Traffic Ports | Port Specification | Software Package |
|---|---|---|---|
| **FDS-6400-F-R2** | 64 QSFP+/QSFP28 | 64x 40G/100G QSFP+/QSFP28 Ports | Standard InfiniOS Software Package |

**Product Member In the FlowDirector Product Family**

| Part Number | Traffic Ports | Port Specification | Software Package |
|---|---|---|---|
| **FDS-8B-R1**<br><br>**FDS-8B+-R1** | 6 10M/100M/1G RJ-45<br><br>6 10M/100M/1G RJ-45 +<br>2 1G/10G SFP/SFP+ | 6 10M/100M/1G copper ports;<br><br>6 10M/100M/1G copper ports; 2x 1G/10G SFP/SFP+ Ports with DAC Support | Standard InfiniOS Software Package |
| **FDS-640Plus-R2** | 48 SFP/SFP+/SFP28 +<br>6 QSFP+/QSFP28 | 48x 1G/10G/25G SFP/SFP+/SFP28 Ports with DAC Support;<br>6x 40G/100G QSFP+/QSFP28 | Standard InfiniOS Software Package |
| **FDS-680-F-R2** | 48 SFP+/SFP28 +<br>8 QSFP+/QSFP28 | 48x 10G/25G SFP+/SFP28 Ports with DAC Support;<br>8x 40G/100G QSFP+/QSFP28 Ports | Standard InfiniOS Software Package |
| **FDS-3200-R2** | 32 QSFP+/QSFP28 | 32x 40G/100G QSFP+/QSFP28 Ports | Standard InfiniOS Software Package |
| **FDS-3200--F-R2** | 32 QSFP+/QSFP28 | 32x 40G/100G QSFP+/QSFP28 Ports | Standard InfiniOS Software Package |