

Modular Force10 Operating System (FTOS) software delivers inherent stability

In-service diagnostics and traffic visibility tools increase control of network

Line-rate, non-blocking GbE and 10 GbE performance

C-Series Resilient Switches

The Force10 Networks C-Series are resilient chassis-based switches that deliver reliability, network control and scalability. The C-Series is designed to support mission critical applications with very low latency across converged networks. Comprehensive management capabilities make the C-Series a cost-effective and flexible deployment option.

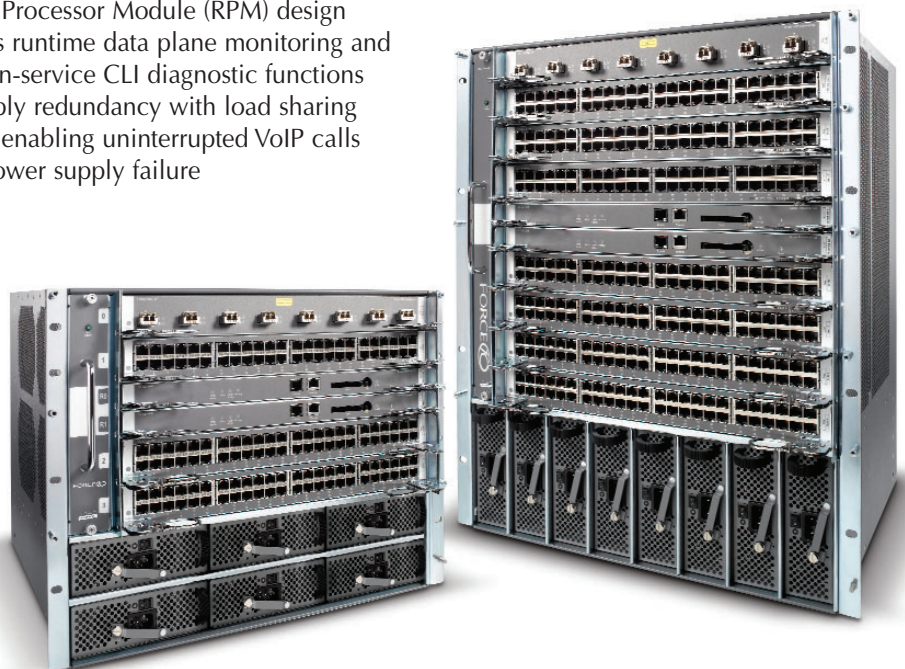
Key Applications

- Low cost 100/1000 Mbps server aggregation for small- to medium-sized data centers (100s to 1,000s of servers)
- Cost-effective LAN core switch for small- and medium-campuses (100s to 1,000s of PCs)
- High density GbE aggregation for distribution into a multiple Gbps or 10 GbE backbone
- Cost-effective PoE-enabled 10/100/1000Base-T wiring closet aggregation of VoIP phones, wireless access points, video cameras or other IEEE 802.3af-compliant devices

Key Features

The Force10 C-Series is designed to provide inherent reliability, network control, and scalability for high performance Ethernet environments.

- Up to 384 line-rate 10/100/1000Base-T ports with full 15.4 W Class 3 PoE support in a 13-RU chassis
- Up to 64 line-rate 10 GbE ports with pluggable XFP modules
- Intelligent power management with full 15.4 W PoE (IEEE 802.3af) support across all ports
- 5 microsecond switching latency under full load for 64 byte frames
- Switch fabric capacity of up to 1.536 Tbps and up to 952 Mpps L2/L3 packet forwarding capacity
- High availability architecture
 - 1+1 Route Processor Module (RPM) design
 - Continuous runtime data plane monitoring and advanced in-service CLI diagnostic functions
 - Power supply redundancy with load sharing power bus enabling uninterrupted VoIP calls during a power supply failure



Specifications: C-Series Resilient Switches

Ordering Information

ORDER NUMBER	DESCRIPTION
CH-C150	C150 4-slot chassis with backplane
CH-C300	C300 8-slot chassis with backplane
CC-C150-FAN	C150 fan subsystem
CC-C300-FAN	C300 fan subsystem
LC-CB-RPM	Switch Fabric and Route Processor Module (series CB)
LC-CB-10GE-4P	4-port 10 Gigabit Ethernet line card, XFP modules required (series CB)
LC-CB-10GE-8P	8-port 10 Gigabit Ethernet line card, XFP modules required (series CB)
LC-CB-1GE-48P	48-port Gigabit Ethernet line card, SFP modules required (series CB)
LC-CB-GE-48T	48-port 10/100/1000Base-T line card with RJ45 interfaces (series CB)
LC-CB-GE-48V	48-port 10/100/1000Base-T line card with RJ45 interfaces and PoE (series CB)
LC-CB-10G-1G-36T	FlexMedia line card with 36 10/100/1000Base-T RJ45 interfaces, eight GbE interfaces – SFP modules required, and two 10 GbE interfaces – SFP+ modules required (series CB)
LC-CB-10G-1G-36V	FlexMedia line card with 36 10/100/1000Base-T RJ45 interfaces with PoE, eight GbE interfaces – SFP modules required, and two 10 GbE interfaces – SFP+ modules required (series CB)
CC-C-1200W-AC	1200 W AC Power Supply Module
CC-C-PWR-DC	1400 W DC Power Entry Module
SW-CB-LATEST	FTOS software

Chassis

C300 – 8 line card slots
 2 Switch fabric and route processor module slots
 8 Power supply module slots
 1 Fan tray slot
 Size: 13 RU, 22.7 h x 17.4 w x 14.4" d (57.66 h x 44.2 w x 37.58 cm d)
 Weight with factory-installed components: 55 lbs (24.95 kg)
 Weight fully loaded: 152.27 lbs (69.07 kg)

AC Power

Nominal input voltage: 100–240 VAC 50/60 Hz
 Maximum thermal output: 5,029 BTU/h (1,474 W) at 100/120 VAC
 4,907 BTU/h (1,438 W) at 200/220 VAC
 Maximum input current per module:
 14 A at 100 VAC, 12 A at 120 VAC, 7 A at 200 VAC, 6 A at 240 VAC
 Maximum system power input:
 8.3 KVA at 100/120 VAC, 8.1 KVA at 200/240 VAC
 Maximum power consumption:
 8,234 W at 100/120 VAC, 8,044 W at 200/240 VAC

DC Power

Nominal input voltage: –44 to –55 VDC
 Maximum thermal output: 4,231 BTU/h (1,240 W)
 Maximum current draw per DC PEM: 32 A
 Maximum power consumption: 1,325 W

C150 – 4 line card slots
 2 Switch fabric and route processor module slots
 6 Power supply module slots
 1 Fan tray slot
 Size: 9 RU, 15.7 h x 17.5 w x 15.3" d (39.88 h x 44.45 w x 38.86 cm d)
 Weight with factory-installed components: 38 lbs (17.24 kg)
 Weight fully loaded: 86.63 lbs (39.29 kg)

AC Power

Nominal input voltage: 100–240 VAC 50/60 Hz
 Maximum thermal output: 2,921 BTU/h (4,334 W) at 100/120 VAC
 2,850 BTU/h (4,234 W) at 200/220 VAC
 Maximum input current per module:
 14 A at 100 VAC, 12 A at 120 VAC, 7 A at 200 VAC, 6 A at 240 VAC
 Maximum system power input:
 4.4 KVA at 100/120 VAC, 4.3 KVA at 200/240 VAC
 Maximum power consumption:
 4,384 W at 100/120 VAC, 4,284 W at 200/240 VAC

DC Power

Nominal input voltage: –44 to –55 VDC
 Maximum thermal output: 2,457 BTU/h (720 W)
 Maximum current draw per DC PEM: 32 A
 Maximum power consumption: 770 W

Common

19" front rack mountable
 Maximum operating specifications:
 Temperature: 32° to 104°F (0° to 40°C)
 Altitude: no performance degradation to 10,000 feet (3,048 meters)
 Relative humidity: 5 to 85% (RH), non-condensing
 Maximum non-operating specifications:
 Temperature: –40° to 158°F (–40° to 70°C)
 Maximum altitude: 15,000 feet (4,572 meters)
 Relative humidity: 5 to 95% (RH), non-condensing

Redundancy/Availability

1+1 redundant Switch Fabric & Route Processor Modules (RPM)
 C300: 2+1 redundant system AC Power Supply Modules
 1+1 redundant system DC Power Entry Modules
 4+1 redundant PoE Power Supply Modules supporting up to 384 PoE ports at 15.4 W with deterministic failure mode
 C150: 1+1 redundant system AC Power Supply Modules
 1+1 redundant system DC Power Entry Modules
 2+2 redundant PoE Power Supply Modules supporting up to 192 PoE ports at 15.4 W with deterministic failure mode
 Online insertion and removal of all components
 Environmental self-monitoring

Performance

Layer 2 MAC addresses: 16K
 Layer 3 forwarding entries: 12K
 Switching fabric capacity:
 C150: 768 Gbps (476 Mpps) C300: 1,536 Tbps (952 Mpps)
 Link aggregation: 8 links per group, 128 groups per chassis
 Queues per port: 4 queues
 VLANs: 1024 VLANs with 4096 tag value support
 Line-rate Layer 2 switching: all protocols, including IPv4 and IPv6
 Line-rate Layer 3 routing: IPv4
 LAG load balancing: based on Layer 2, IPv4 or IPv6 headers
 Switching latency: <5 µs for 64 byte frames

IEEE Compliance

802.1AB Link Layer Discovery Protocol
 802.1D Bridging, STP
 802.1p L2 Prioritization
 802.1Q VLAN Tagging, Double VLAN Tagging, GVRP
 802.1s Multiple Spanning Tree Protocol
 802.1w Rapid Spanning Tree Protocol
 802.1X Network Access Control
 802.3ab Gigabit Ethernet (1000BASE-T)
 802.3ac Frame Extensions for VLAN Tagging
 802.3ad Link Aggregation with LACP
 802.3ae 10 Gigabit Ethernet
 802.3af Power over Ethernet
 802.3ak 10 Gigabit Ethernet (10GBASE-CX4)
 802.3i Ethernet (10BASE-T)
 802.3u Fast Ethernet (100BASE-TX, 100BASE-FX)
 802.3z Gigabit Ethernet (1000BASE-X)
 Cisco Per-VLAN Spanning Tree+
 MTU 9,252 bytes

RFC and I-D Compliance

General Internet Protocols

768 UDP 1321 MD5
 793 TCP 1350 TFTP
 854 Telnet 2474 Differentiated Services
 959 FTP draft-ietf-bfd-base-03 BFD

General IPv4 Protocols

791 IPv4 1305 NTPv3
 792 ICMP 1519 CIDR
 826 ARP 1542 BOOTP (relay)
 1027 Proxy ARP 1812 Routers
 1035 DNS (client) 2131 DHCP (relay)
 1042 Ethernet Transmission 2338 VRRP
 1191 Path MTU Discovery 3021 31-bit Prefixes

RIP

1058 RIPv1 2453 RIPv2

OSPF

2154 MD5 2370 Opaque LSA
 1587 NSSA 3623 Graceful Restart
 2328 OSPFv2 4222 Prioritization and Congestion Avoidance

BGP

1997 Communities 2858 Multiprotocol Extensions
 2385 MD5 2918 Route Refresh
 2439 Route Flap Damping 3065 Confederations
 2796 Route Reflection 4360 Extended Communities
 2842 Capabilities 4893 4-byte ASN
 draft-ietf-idr-bgp4-20 BGPv4
 draft-ietf-idr-restart-06 Graceful Restart
 draft-michaelson-4byte-as-representation-05 4-byte ASN Representation (partial)

Multicast

1112 IGMPv1 3569 SSM
 2236 IGMPv2 4541 IGMPv1/v2 Snooping
 3376 IGMPv3 draft-ietf-pim-sm-v2-new-05 PIM-SM

Network Management

1155 SMLv1 2787 VRRP MIB
 1156 Internet MIB 2819 RMON MIB (groups 1, 2, 3, 9)
 1157 SNMPv1 2863 Interfaces MIB
 1212 Concise MIB Definitions 2865 RADIUS
 1215 SNMP Traps 3176 sFlow
 1493 Bridges MIB 3273 RMON High Capacity MIB
 1724 RIPv2 MIB 3376 IGMPv3
 1850 OSPFv2 MIB 3416 SNMPv2
 1901 Community-based 3418 SNMP MIB
 SNMPv2 3434 RMON High Capacity Alarm MIB
 2011 IP MIB 3569 SSM
 2012 TCP MIB 3580 802.1X with RADIUS
 2013 UDP MIB ANS/TIA-1057 LLDP MIB
 2024 DLW MIB draft-grant-tacacs-02 TACACS+
 2096 IP Forwarding Table MIB draft-ietf-idr-bgp4-mib-06
 2570 SNMPv3 BGP MIBv1
 2571 Management Frameworks IEEE 802.1AB LLDP MIB, LLDP
 2572 Message Processing and Dispatching DOT1 MIB, LLDP DOT3 MIB
 2574 SNMPv3 USM ruzin-mstp-mib-02 MSTP MIB (traps)
 2575 SNMPv3 VACM FORCE10-BGP4-V2-MIB
 2576 Coexistence Between FORCE10-CS-CHASSIS-MIB
 SNMPv1/v2/v3 FORCE10-IF-EXTENSION-MIB
 2578 SMLv2 FORCE10-LINKAGG-MIB
 2579 Textual Conventions FORCE10-COPY-CONFIG-MIB
 for SMLv2 FORCE10-MON-MIB
 2580 Conformance Statements for SMLv2 FORCE10-PRODUCTS-MIB
 FORCE10-SMI
 2618 RADIUS Authentication MIB FORCE10-SYSTEM-COMPONENT-MIB
 2665 Ethernet-like Interfaces FORCE10-TC-MIB
 MIB FORCE10-TRAP-ALARM-MIB
 2674 Extended Bridge MIB

Regulatory Compliance

Safety

UL/CSA 60950-1, 1st Edition
 EN 60950-1, 1st Edition
 IEC 60950-1, 1st Edition Including all National Deviations and Group Differences
 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 Communication Systems
 FDA Regulation 21 CFR 1040.10 and 1040.11

Emissions

Australia/New Zealand: AS/NZS CISPR 22: 2006, Class A
 Canada: ICES-003, Issue-4, Class A
 Europe: EN 55022: 2006 (CISPR 22: 2006), Class A
 Japan: VCCI V3/2007.04 Class A
 USA: FCC CFR 47 Part 15, Subpart B, Class A

Immunity

EN 300 386 V1.3.3: 2005 EMC for Network Equipment
 EN 55024: 1998 + A1: 2001 + A2: 2003
 EN 61000-3-2: Harmonic Current Emissions
 EN 61000-3-3: Voltage Fluctuations and Flicker
 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

RoHS

All C-Series components are EU RoHS compliant.



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