

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.

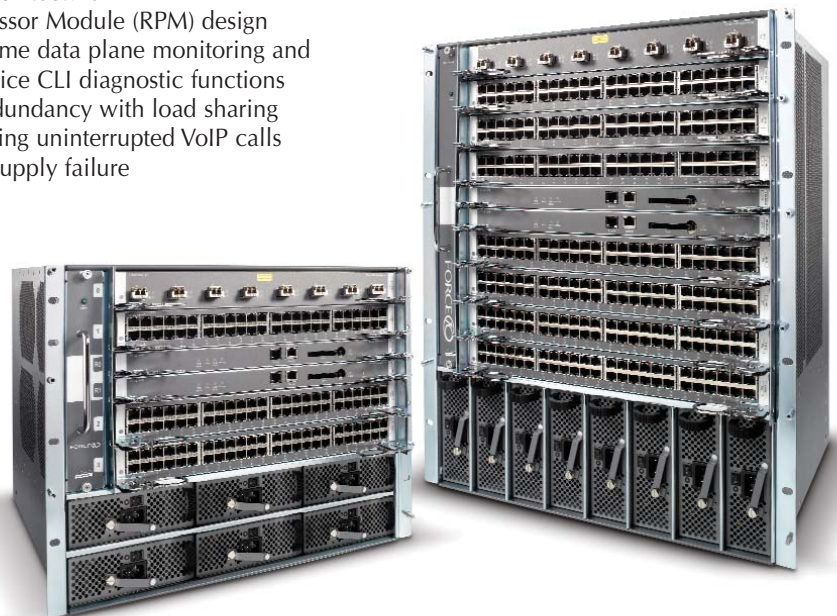
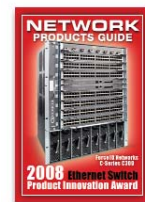
Key Applications

- 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
- Suite of security, access control and wiring closet edge features for enterprise networks
- VirtualView real-time network and application traffic monitoring for virtualized data centers
- PowerSmart intelligent power management features provide automatic sensing, provisioning and management of PoE power
- Full complement of standards-based Layer 2, IPv4 and IPv6 features for unicast and multicast applications
- 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-FAN2	C150 enhanced fan subsystem
CC-C300-FAN2	C300 enhanced 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 Route processor module with integrated switch fabric slots
8 Power supply module slots and 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)
ISO 7779 A-weighted sound pressure level: 73.8 dBA at 73.4°F (23°C)

AC power
Nominal input voltage: 100–240 VAC 50/60 Hz
Maximum thermal output: 4,978 BTU/h (1,498 W) at 100/120 VAC
4,864 BTU/h (1,459 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:
8.7 KVA at 100/120 VAC, 8.5 KVA at 200/240 VAC
Maximum power consumption:
8,675 W at 100/120 VAC, 8,476 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: 1,460 W

C150 – 4 line card slots
2 Route processor module with integrated switch fabric slots
6 Power supply module slots and 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)
ISO 7779 A-weighted sound pressure level: 69.3 dBA at 73.4°F (23°C)

AC power
Nominal input voltage: 100–240 VAC 50/60 Hz
Maximum thermal output: 2,891 BTU/h (862 W) at 100/120 VAC
2,824 BTU/h (840 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:
4.5 KVA at 100/120 VAC, 4.4 KVA at 200/240 VAC
Maximum power consumption:
4,420 W at 100/120 VAC, 4,319 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: 800 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

MAC addresses: C150: 256K, C300: 512K
IPv4 routes: 12K
IPv6 routes: 6K
Switching fabric capacity:
C150: 768 Gbps (476 Mpps)
C300: 1,536 Tbps (952 Mpps)
Link aggregation:
Queues per port: 4 queues
8 links per group, 128 groups per chassis
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 and IPv6
LAG load balancing: based on Layer 2, IPv4 or IPv6 headers
Switching latency: <5 µs for 64 byte frames

IEEE Compliance

802.1AB LLDP
802.1D Bridging, STP
802.1p L2 Prioritization
802.1Q VLAN Tagging, Double VLAN Tagging, GVRP
802.1s MSTP
802.1w RSTP
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 (10GBASE-X)
802.3af Power over Ethernet
802.3ak 10 Gigabit Ethernet (10GBASE-CX4)
802.3i Ethernet (10BASE-T)
802.3u Fast Ethernet (100BASE-FX, 100BASE-TX)
802.3x Flow Control
802.3z Gigabit Ethernet (1000BASE-X)
ANSI/TIA-1057 LLDP-MED
Force10 FRRP (Force10 Redundant Ring Protocol)
Force10 PVST+
MTU 9,252 bytes

RFC and I-D Compliance

General Internet Protocols
768 UDP 1350 TFTP
793 TCP 2474 Differentiated Services
854 Telnet 3164 Syslog
959 FTP draft-ietf-brd-base-03 BFD
1321 MDS

General IPv4 Protocols
791 IPv4 1812 Routers
792 ICMP 1858 IP Fragment Filtering
826 ARP 2131 DHCP (server and relay)
1027 Proxy ARP 2338 VRRP
1035 DNS (client) 3021 31-bit Prefixes
1042 Ethernet Transmission 3046 DHCP Option 82
1191 Path MTU Discovery 3069 Private VLAN
1305 NTPv3 3128 Tiny Fragment Attack Protection
1519 CIDR
1542 BOOTP (relay)

General IPv6 Protocols
1981 Path MTU Discovery (partial) 2464 Ethernet Transmission
2460 IPv6 2675 Jumbograms
2461 Neighbor Discovery (partial) 3587 Global Unicast Address
2462 Stateless Address Format Addressing
Autoconfiguration (partial) 4291
2463 ICMPv6

RIP
1058 RIPv1 2453 RIPv2

OSPF
1587 NSSA 2740 OSPFv3
2154 MD5 3623 Graceful Restart
2328 OSPFv2 4222 Prioritization and Congestion Avoidance
2370 Opaque LSA

BGP
1997 Communities 2858 Multiprotocol Extensions
2385 MD5 2918 Route Refresh
2439 Route Flap Damping 3065 Confederations
2545 Multiprotocol Extensions for IPv6 4360 Extended Communities
4893 4-byte ASN
2796 Route Reflection 5396 4-byte ASN Representation
2842 Capabilities
draft-ietf-idr-bgp4-20 BGPv4
draft-ietf-idr-restart-06 Graceful Restart

Multicast
1112 IGMPv1 4541 IGMPv1/v2 Snooping
2236 IGMPv2 draft-ietf-pim-sm-v2-new-05
3376 IGMPv3 PIM-SM for IPv4
3569 SSM for IPv4

Network Management

1155 Smlv1 2865 RADIUS
1156 Internet MIB 3273 RMON High Capacity MIB
1157 SNMPv1 3376 IGMPv3
1212 Concise MIB Definitions 3416 SNMPv2
1215 SNMP Traps 3418 SNMP MIB
1493 Bridges MIB 3434 RMON High Capacity Alarm MIB
1850 OSPFv2 MIB 3580 802.1X with RADIUS
1901 Community-based SNMPv2 5060 PIM MIB
2011 IP MIB ANS/TIA-1057
2012 TCP MIB LLDP-MED MIB
2013 UDP MIB draft-grant-tacacs-02
2024 DLsw MIB TACACS+
2096 IP Forwarding Table MIB draft-ietf-idr-bgp4-mib-06
2570 SNMPv3 BGP MIBv1
2571 Management Frameworks IEEE 802.1AB
2572 Message Processing and Dispatching LLDP MIB, LLDP DOT1 MIB, LLDP DOT3 MIB
2574 SNMPv3 USM ruzin-mstp-mib-02
2575 SNMPv3 VACM MSTP MIB (traps)
2576 Coexistence Between SNMPv1/v2/v3 sFlow.org sFlowv5
sFlow.org sFlowv5 MIB (version 1.3)
2578 Smlv2 FORCE10-BGP4-V2-MIB
2579 Textual Conventions for Smlv2 FORCE10-CS-CHASSIS-MIB
2580 Conformance Statements for Smlv2 FORCE10-IF-EXTENSION-MIB
FORCE10-LINKAGG-MIB
2618 RADIUS Authentication MIB FORCE10-COPY-CONFIG-MIB
2665 Ethernet-like Interfaces MIB FORCE10-LOAN-MIB
2674 Extended Bridge MIB FORCE10-PRODUCTS-MIB
2787 VRRP MIB FORCE10-SMI
2819 RMON MIB FORCE10-SYSTEM-COMPONENT-MIB
(groups 1, 2, 3, 9) FORCE10-TC-MIB
Interfaces MIB FORCE10-TRAP-ALARM-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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