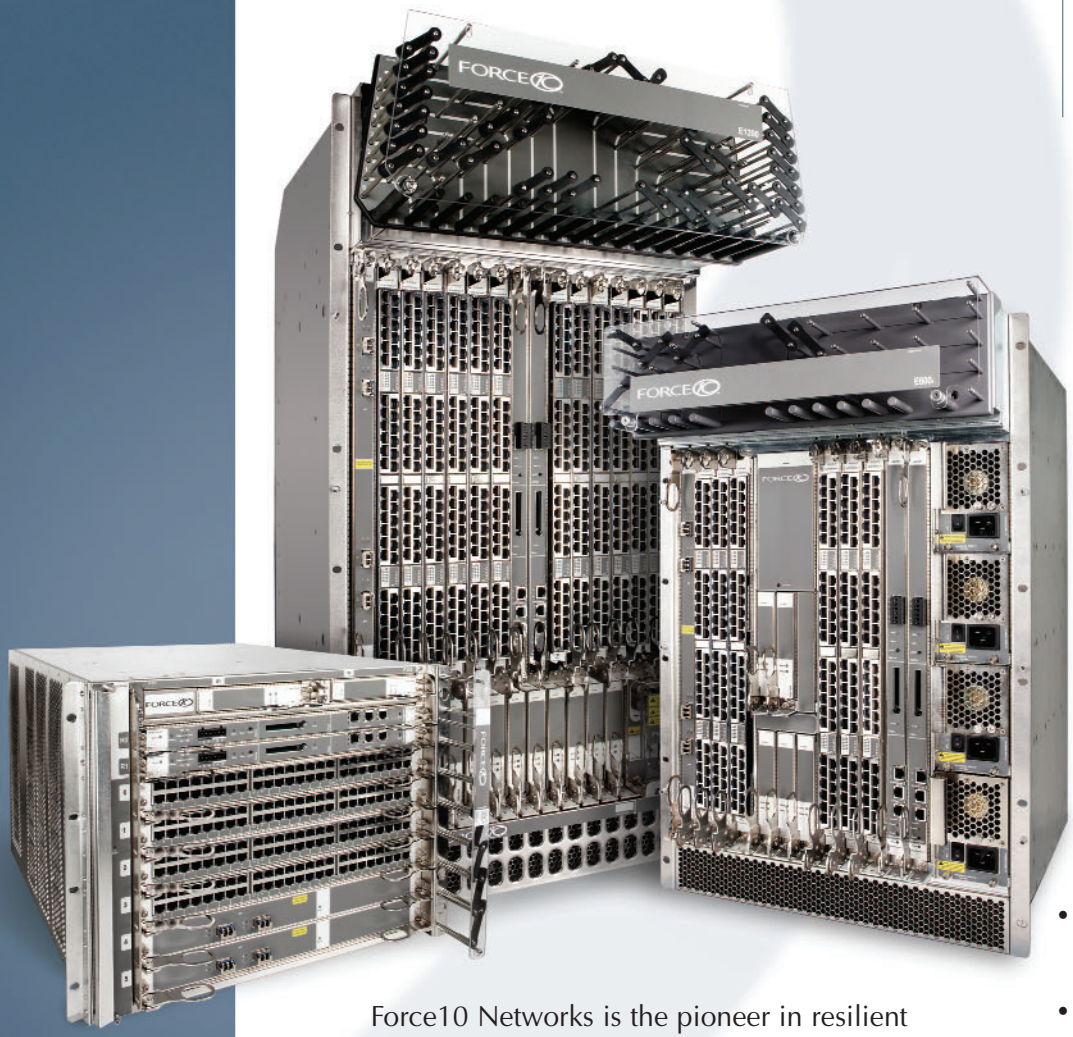
# E300 • E600 • E1200

**Best-in-Class Resiliency**

**Massive Scalability**

**1,260 Gigabit Ethernet or 224 Ten Gigabit Ethernet Ports per Chassis**

**Full L2 Switching and IPv4/IPv6 Routing**




Force10 Networks is the pioneer in resilient Gigabit and 10 Gigabit Ethernet switching and routing. The Force10 E-Series switch/routers provide best-in-class resiliency, unmatched scalability, line-rate performance and full L2 switching and IPv4/IPv6 routing. Based on revolutionary system architecture that combines fully distributed hardware and modular software, the E-Series switch/routers ensure predictable application performance, increase network availability and reduce operating costs.

- Patented multi-processor design delivers best-in-class resiliency and security
- Up to 1,260 Gigabit Ethernet ports or 224 Ten Gigabit Ethernet ports per chassis, enabling unprecedented network scalability
- Innovative Force10 ASICs and E-Series architecture deliver non-blocking, line-rate forwarding with access control lists (ACLs) across all line cards
- Fault-tolerance simplifies maintenance and maximizes system availability
- Robust Force10 FTOS™ software delivers full functionality Layer 2 (L2) switching and Layer 3 (L3) routing for applications spanning the LAN, MAN and WAN

FORCE10™

# Scalable Performance

**To simplify network operation and maintenance, the E300, E600 and E1200 allow hot-swap of all key components and share the same switch fabric modules (SFMs) and FTOS software. In addition, the E1200 and E600 share common line cards and route processor modules (RPMs).**

The Force10 E-Series sets a new standard for high performance switch/routers with unmatched scalability to 1,260 Gigabit Ethernet or 224 Ten Gigabit Ethernet ports per chassis, consistent performance with ACLs on all ports, and full L2 switching and L3 routing. These groundbreaking products simplify network applications from server/cluster consolidation, grid computing, campus backbones, next-generation Internet Exchanges, and Metro Ethernet services.

The Force10 E-Series E1200/E600 provides 56.25 Gigabits per second per slot and the E300 delivers 25 Gigabits per second per slot. All deliver predictable line-rate performance with any combination of features enabled, deterministic low latency and jitter, robust L2/L3 functionality, and the resiliency to thwart denial of service (DoS) attacks. Built upon the powerful and cost-effective Force10 architecture, the E-Series sets the industry standard both for resiliency and performance.

### E1200

- 1.6875 Tbps non-blocking switch fabric
- 1/2 rack chassis (19" rack width)
- 1 billion packets per second
- 14 line card slots
- 1+1 redundant RPMs
- 8:1 redundant SFMs
- 1+1 redundant DC power entry modules (E1200/E1200i-DC)
- 2+1 and 2+2 redundant AC power supplies (E1200i-AC)

### E600

- 900 Gbps non-blocking switch fabric
- 1/3 rack chassis (19" rack width)
- 500 million packets per second
- 7 line card slots
- 1+1 redundant RPMs
- 4:1 redundant SFMs
- 3+1 and 2+2 redundant AC power supplies
- 1+1 redundant DC power entry modules

### E300

- 400 Gbps non-blocking switch fabric
- 1/6 rack chassis (19" rack width)
- 196 million packets per second
- 6 line card slots
- 1+1 redundant RPMs
- 1:1 redundant SFMs
- 3+1 and 2+2 redundant AC power supplies
- 1+1 redundant DC power entry modules

## Highest Ethernet Density

The Force10 E-Series delivers unparalleled Gigabit Ethernet and 10 Gigabit Ethernet port densities. The E600/E1200 support 90 Gigabit Ethernet ports or 16 10 Gigabit Ethernet ports per line card slot and up to 7 and 14 line card slots per chassis respectively. The E300 supports 48 Gigabit Ethernet ports or eight 10 Gigabit Ethernet port per line card slot and up to six line card slots per chassis.

## Line-Rate Performance

With three custom Force10 ASICs and advanced ternary content addressable memory (TCAM) on every line card, the Force10 E-Series provides line-rate, non-blocking forwarding performance across all ports, even with all features enabled simultaneously. These features include:

- Extended ACLs for packet filtering and policy routing
- Multi-field packet lookup and classification for QoS
- Packet metering and marking for rate limiting and policing
- Congestion control using WRED and WFQ

## Full L2 Switching and L3 Routing

Force10 ASICs, E-Series architecture and FTOS software work in unison to give robust L2 switching and L3 routing functionality to the E-Series with the scalability and security required for applications spanning the LAN, MAN and Internet-connected WAN. The Force10 E-Series L2 and L3 features include:

- RIP, OSPF, IS-IS and BGP IPv4 unicast routing protocols
- PIM-SM, PIM-DM, SSM and MSDP IPv4 multicast routing protocols
- OSPF, IS-IS and BGP IPv6 unicast routing protocols
- Prefix-based distributed forwarding table on every line card
- Forwarding table support for up to 512K IPv4 and 32K IPv6 routes
- VLAN redundancy, Rapid Spanning Tree and VLAN stacking

## High Density Interfaces

| Ports Per Chassis | E300 | E600 | E1200 |
|---|---|---|---|
| High Density Gigabit Ethernet | 288 | 630 | 1,260 |
| Line-Rate Gigabit Ethernet | 132 | 336 | 672 |
| High Density 10 Gigabit Ethernet | 48 | 112 | 224 |
| Line-Rate 10 Gigabit Ethernet | 12 | 28 | 56 |

# Resiliency: The Force10 E-Series Architecture

**With the power of the E-Series architecture, the Force10 E-Series delivers breakthrough resiliency at performance levels never before realized. The Force10 E-Series architecture is the result of patented technological innovation in switch fabric, backplane, ASIC and system control plane design.**

### Separate System Control Plane

The E-Series architecture includes distinct data and control planes. The system control plane is augmented with three processors on each route processor module (RPM). The first processor handles Layer 2 control protocols, the second, Layer 3, and the third, management functions. This patented architecture allows faults to be contained while protecting other parts of the system. For example, it protects against spanning tree loops and DoS attacks providing unparalleled resiliency.

Designed to meet the needs of Internet-scale networks, the E-Series system control plane supports millions of routing table entries, up to 512K IPv4 forwarding table entries, and thousands of ACLs on every line card. The RPM's innovative control traffic rate limiting and filtering functionality empowers network administrators to suppress harmful DoS attacks and prevent flooding of unwanted traffic onto the network. And dedicated 100 Mbps switched paths from the RPMs to every line card eliminate sluggish forwarding table updates that could otherwise jeopardize network stability.

### Distributed ASIC-based Forwarding

The Force10 ASICs, along with advanced TCAMs on every line card, give absolutely predictable line-rate forwarding for every packet regardless of the number, type or complexity of features enabled across the chassis. Unlike low-performance, processor-based forwarding architectures, there is no "slow-path" or software-based forwarding in the E-Series. The Force10 ASICs look up and act upon all information related to forwarding and applying policy to a packet before the entire packet is received, independent of table lengths, IP address prefix lengths or packet size. This hardware forwarding enables the E-Series to provide the deterministic low latency and jitter required by VoIP and streaming media applications.

### Non-blocking 1.6875 Tbps Switch Fabric

The E-Series switch fabric provides non-blocking connectivity along with advanced queuing, multicast and jumbo frame support. The E600/E1200's cost-effective N:1 redundant switch fabric design reduces SFM sparing costs while providing 56.25 Gigabits per second of non-blocking bandwidth to each line card slot.

### Passive Copper Backplane

The E-Series architecture's reliable and cost-efficient backplane is the industry's first high speed, non-optical backplane to scale to 5 Tbps data rates in a single 1/2 rack E1200 switch/router chassis. Unlike optical backplane interconnect systems or active copper backplanes, the E-Series backplane has no single point of failure and eliminates costly electrical-optical-electrical conversions. The resulting system simplicity afforded by the backplane means bulletproof reliability and minimum cost — available on all three platforms. The massive backplane capacity of E-Series chassis bought today also translates to enough bandwidth per slot (E600 and E1200) to support 40 and 100 GbE standards when they become available.

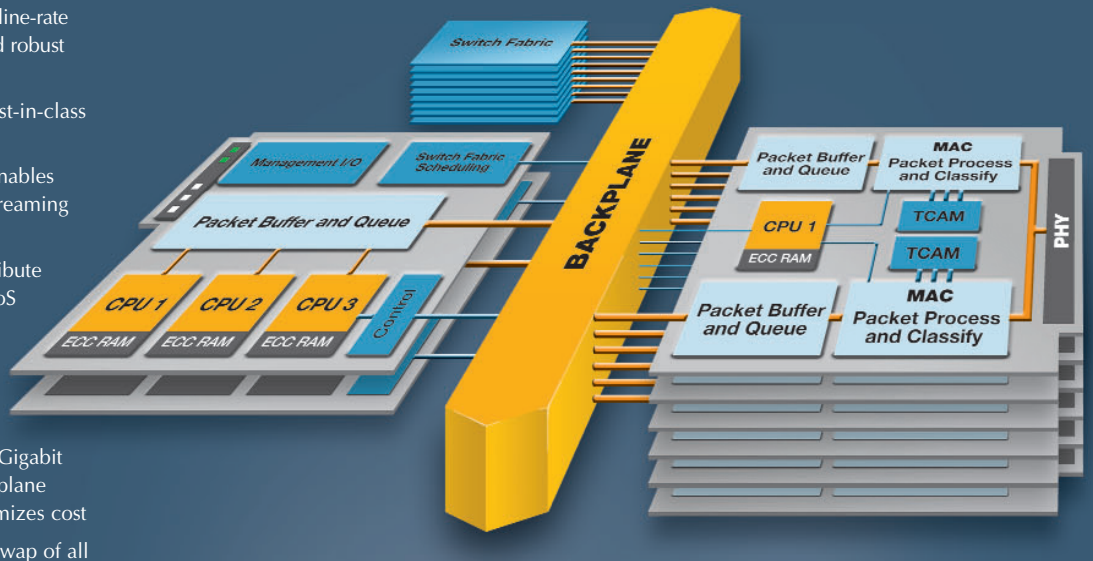
### Fault Tolerance and High Availability

The E-Series architecture supports redundancy, availability and serviceability features to maximize network uptime. All key systems in the E-Series are redundant, including the RPMs, SFMs and power. All memory systems are ECC/parity protected. System-wide environmental monitoring and persistent configuration synchronization enable FTOS to detect, report and correct faults with a minimum of system interruption. In addition, serviceability features include hot-swap of all key components, cable management, and front-side access to all cabling and cards minimize mean time to repair.

## The Force10 E-Series Architecture

The Force10 E-Series architecture delivers line-rate performance, cost-effective scalability, and robust L2 switching and L3 routing:

- Three CPU route processor delivers best-in-class resiliency and security
- Scalable, non-blocking switch fabric enables the low latency and jitter critical for streaming media applications
- High performance Force10 ASICs distribute packet forwarding, ACL processing, QoS and buffering to every line card
- Robust L2/L3 multiprocessor control plane with innovative control traffic filtering and rate limiting capabilities
- Cost-effective, reliable — 40 and 100 Gigabit Ethernet ready — passive copper backplane maximizes system reliability and minimizes cost
- High availability features include hot-swap of all key components and system-wide environmental monitoring, maximizing system uptime and serviceability



# Force10 FTOS™ Software

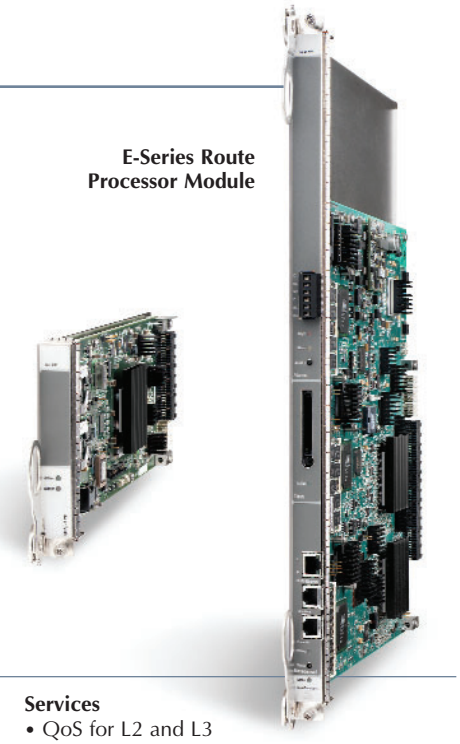
FTOS, the Force10 Operating System, is the operating system that runs on Force10 switch/router product lines. FTOS is based on NetBSD, with application code developed and maintained by Force10 software engineers. A hardware abstraction layer (HAL) is used to make FTOS applications portable across product lines, without having to rewrite the application software for each platform.

- Separate OS and application functions limit application scope and provide inherent platform stability
- Memory protection prevents processes from corrupting each other
- Preemptive process scheduling prevents processes from monopolizing the CPU
- Application processes for each Layer 2 and 3 protocol, as well as management functions, security services and other FTOS features

FTOS is a distributed, multi-processor operating system customized for high-availability and fault tolerance. FTOS delivers an extensive range of high performance L2 switching and L3 routing features including robust IP routing control plane, hardware and software fault tolerance, highly granular traffic management and accounting, industry standard command line interface (CLI), and system diagnostics.

## FTOS Provides:

- Stable, scalable L2 switching and L3 routing in a protected environment
- Fault tolerance with modular processes allocated to multiple system processors
- Simplified management with SNMP and an industry-standard CLI
- Full suite of debug and Syslog capabilities



**E-Series Route Processor Module**

**E-Series Switch Fabric Module**

## FTOS Key Features

**L2 Switching**
- 4,096 VLANs
- 16M VLANs with VLAN stacking
- Up to 896K MAC addresses per system
- Link aggregation
- 802.1p prioritization
- Resilient ring protocal (FRRP)
- STP (802.1D), MSTP (802.1s), RSTP (802.1w) and PVST+

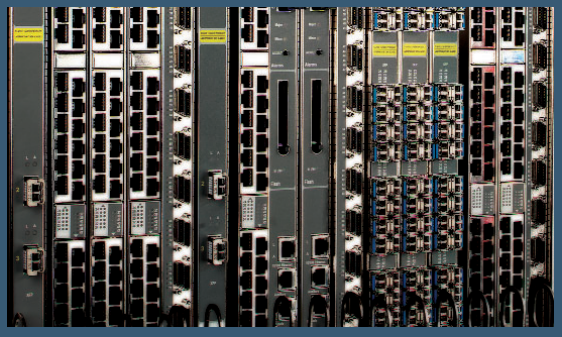
**L3 Routing**
- Robust protocols: RIP, OSPF, IS-IS and BGP
- Multicast with IGMP, PIM-SM, PIM-DM, SSM, MBGP and MSDP
- Full Internet route table support
- VRRP
- Dual stack IPv4 and IPv6 forwarding
- Graceful restart of OSPF, BGP and PIM

**Services**
- QoS for L2 and L3
- Congestion control with WRED and WFQ
- Egress rate shaping, ingress rate policing
- Committed access rate support — two-rate, three-color model
- Port mirroring

**Management**
- Ping, traceroute, Telnet, SSH
- RADIUS, TACACS+
- FTP, TFTP client, SCP
- DNS client, BootP/DHCP relay
- Accounting and statistics
- SNMPv1/v2/v3
- HP OpenView support
- RMON
- Out-of-band console/AUX and FE management ports
- GUI-based EMS

## The New Standard of Scalability and Performance

From server/cluster consolidation and grid computing to campus backbones, next-generation Internet Exchanges and Metro Ethernet services, the breakthrough Force10 E-Series ensures predictable application performance, increases network availability and reduces operating costs. The Force10 E-Series provides an unprecedented combination of resiliency, scalable performance and full-featured routing and switching.



# E-Series Specifications

## Ordering Information

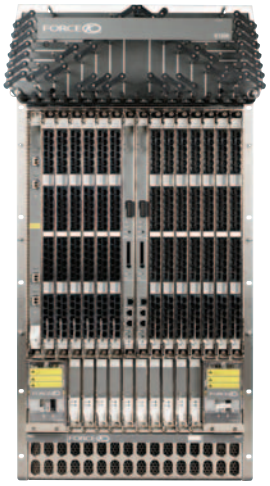
| Order Number | Description |
|---|---|
| CH-E300 | E300 6-slot chassis with backplane |
| CH-E600I | E600i 7-slot chassis with backplane |
| CH-E1200 | E1200 14-slot DC power chassis with backplane |
| CH-E1200I-DC | E1200i-DC 14-slot DC power chassis with backplane |
| CH-E1200I-AC | E1200i-AC 14-slot AC power chassis with backplane |
| CC-E300-FAN | E300 fan subsystem |
| CC-E600-FAN | E600i fan subsystem |
| CC-E1200-FAN | E1200 fan subsystem |
| CC-E1200I-FAN | E1200i-AC fan subsystem |
| CC-E-SFM3 | E-Series Switch Fabric Module (SFM) |
| CC-E300-PWR-DC | E300 DC Power Entry Module (PEM) |
| CC-E300-1200W-AC* | E300 1200 W/800 W AC Power Supply Module (PSM) |
| CC-E600-PWR-DC | E600 DC PEM |
| CC-E600-2500W-AC* | E600 2500 W/1500 W AC PSM |
| CC-E1200-PWR-DC | E1200 DC PEM |
| CC-E1200I-2800W-AC* | E1200i-AC 2800 W AC PSM |
| LC-EF-10GE-4P | E600/E1200 4-port 10 GbE line card – XFP modules required (series EF) |
| LC-EG-10GE-4P | E600/E1200 4-port 10 GbE high capacity line card – XFP modules required (series EG) |
| LC-EF-10GE-16P | E600/E1200 16-port 10 Gigabit Ethernet line card – XFP modules required (series EF) |
| LC-EG-10GE-16P | E600/E1200 16-port 10 GbE high capacity line card – XFP modules required (series EG) |
| LC-EF-1GE-48P | E600/E1200 48-port GbE line card – SFP modules required (series EF) |
| LC-EG-1GE-48P | E600/E1200 48-port GbE high capacity line card – SFP modules required (series EG) |
| LC-EF-GE-48T | E600/E1200 48-port 10/100/1000Base-T line card with RJ45 interfaces (series EF) |
| LC-EG-GE-48T | E600/E1200 48-port 10/100/1000Base-T high capacity line card with RJ45 interfaces (series EG) |
| LC-EF-GE-48T1 | E600/E1200 48-port high density 10/100/1000Base-T line card with RJ45 interfaces (series EF) |
| LC-EF-GE-90M | E600/E1200 90-port high density 10/100/1000Base-T line card with MRJ21 interfaces (series EF) |
| LC-EG-OC-48C-4P | E600/E1200 4-port OC-3c/ OC-12c/OC-48c POS line card – SFP modules required (series EG) |
| LC-EF3-10GE-2P | E300 2-port 10 GbE line card – XFP modules required (series EF3) |
| LC-EG3-10GE-2P | E300 2-port 10 GbE high capacity line card – XFP modules required (series EG3) |
| LC-EF3-10GE-8P | E300 8-port 10 GbE line card – XFP modules required (series EF3) |
| LC-EG3-10GE-8P | E300 8-port 10 GbE high capacity line card – XFP modules required (series EG3) |
| LC-EF3-1GE-24P | E300 24-port GbE line card – SFP modules required (series EF3) |
| LC-EG3-1GE-24P | E300 24-port GbE high capacity line card – SFP modules required (series EG3) |
| LC-EF3-GE-48T | E300 48-port high density 10/100/1000Base-T line card with RJ45 interfaces (series EF3) |
| SW-EF-LATEST | FTOS software |

* Country-specific power cables are additional
* Only Force10 power cables are supported

## Chassis

### E1200/E1200i-DC

14 line card slots
Size: 21 RU, 36.75 h x 17.4 w x 21" d
(93.3 h x 44.2 w x 53.3 cm d)
Weight (factory-installed components):
99 lbs (44.9 kg)
Weight fully loaded: 321 lbs (145.6 kg)
DC Power
Nominal input voltage: –44 to –60 VDC
Maximum thermal output: 17,402 BTU/h (5,100 W)
Maximum current draw per DC PEM: 150 A
Maximum power consumption: 5,400 W



### E1200i-AC

14 line card slots
Size: 24 RU, 42 h x 17.4 w x 22.25" d
(106.68 h x 44.20 w x 56.51 cm d)
Weight (factory-installed components):
139 lbs (63.05 kg)
Weight fully loaded: 394 lbs (178.7 kg)
AC Power
Nominal input voltage:
200-240 VAC 50/60 Hz
Maximum thermal output:
19,449 BTU/h (5,700 W)
Maximum input current per module:
15.0 A at 200 VAC 12.5 A at 240 VAC
Maximum system power input:
6.0 KVA at 200/240 VAC
Maximum power consumption:
6,000 W at 200/240 VAC

### E600

7 line card slots
Size: 16 RU, 28 h x 17.4 w x 21.45" d
(71.1 h x 44.2 w x 54.4 cm d)
Weight (factory-installed components):
81 lbs (36.7 kg)
Weight fully loaded: 242 lbs (109.8 kg)
AC Power
Nominal input voltage:
120-240 VAC 50/60 Hz
Maximum thermal output:
10,946 BTU/h (3,208 W) at 100/120 VAC
10,028 BTU/h (2,939 W) at 200/240 VAC
Maximum input current per module:
11.6 A at 100 VAC 9.7 A at 120 VAC
8.0 A at 200 VAC 6.7 A at 240 VAC
Maximum system power input:
3.5 KVA at 100/120 VAC
3.2 KVA at 200/240 VAC
Maximum power consumption:
3,458 W at 100/120 VAC
3,189 W at 200/240 VAC
DC Power
Nominal input voltage: –44 to –60 VDC
Maximum thermal output: 8,940 BTU/h (2,620 W)
Maximum current draw per DC PEM: 100 A
Maximum power consumption: 2,870 W

### E300

6 line card slots
Size: 8 RU, 14 h x 17.4 w x 22.78" d
(35.6 h x 44.2 w x 57.8 cm d)
Weight (factory-installed components):
90 lbs (40.8 kg)
Weight fully loaded: 170 lbs (77.1 kg)
AC Power
Nominal input voltage:
100-240 VAC 50/60 Hz
Maximum thermal output:
7,220 BTU/h (2,116 W) at 100/120 VAC
6,699 BTU/h (1,963 W) at 200/240 VAC
Maximum input current per module:
7.4 A at 100 VAC 6.2 A at 120 VAC
5.2 A at 200 VAC 4.3 A at 240 VAC
Maximum system power input:
2.2 KVA at 100/120 VAC
2.0 KVA at 200/240 VAC
Maximum power consumption:
2,216 W at 100/120 VAC
2,063 W at 200/240 VAC
DC Power
Nominal input voltage: –44 to – VDC
Maximum thermal output: 5,784 BTU/h (1,695 W)
Maximum current draw per DC PEM: 60 A
Maximum power consumption: 1,795 W

# E-Series Specifications

### Common
19" front, 19" middle (optional) and 23" middle (E600/E1200 only) rack mountable
Maximum Operating Specifications:
- Temperature: 32° to 104°F (0° to 40°C)
- Altitude: no degradation to 10,000 feet (3,048 m)
- Relative humidity: 5 to 85 percent, noncondensing

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 percent, noncondensing

## Redundancy/Availability

### E1200/E1200i-DC
1+1 redundant Route Processor Modules (RPMs)
8:1 redundant Switch Fabric Modules (SFMs)
1+1 redundant DC Power Entry Modules (PEMs)

### E1200i-AC
1+1 redundant RPMs
8:1 redundant SFMs
2+2 redundant AC Power Supply Modules (PSMs) – high line operation
2+1 redundant AC PSMs – high line operation

### E600
1+1 redundant RPMs
4:1 redundant SFMs
1+1 redundant DC PEMs
2+2 redundant AC PSMs – high line operation
3+1 redundant AC PSMs – low line and high line operation

### E300
1+1 redundant RPMs
1:1 redundant SFMs
1+1 redundant DC PEMs
2+2 redundant AC PSMs – high line operation
3+1 redundant AC PSMs – low line and high line operation

Online insertion and removal of all components
Built-in cable management
Environmental self-monitoring

## IEEE Compliance

| | |
|---|---|
| 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 |
| 802.3ak | 10 Gigabit Ethernet (10GBASE-CX4) |
| 802.3i | Ethernet (10BASE-T) |
| 802.3u | Fast Ethernet (100BASE-TX) |
| 802.3x | Flow Control |
| 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 |
| 793 | TCP |
| 854 | Telnet |
| 959 | FTP |
| 1321 | MD5 |
| 1350 | TFTP |
| 1661 | PPP |
| 1989 | PPP Link Quality Monitoring |
| 1990 | PPP Multilink Protocol |
| 1994 | PPP CHAP |
| 2474 | Differentiated Services |
| 2615 | PPP over SONET/SDH |
| 2698 | Two Rate Three Color Marker |
| draft-ietf-bfd-base-03 | BFD |

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

### General IPv6 Protocols
| | |
|---|---|
| 1881 | DNS (client) |
| 1981 | Path MTU Discovery (partial) |
| 2460 | IPv6 |
| 2461 | Neighbor Discovery (partial) |
| 2462 | Stateless Address Autoconfiguration (partial) |
| 2463 | ICMPv6 |
| 2464 | Ethernet Transmission |
| 2675 | Jumbograms |
| 3587 | Global Unicast Address Format |
| 4291 | Addressing |

### RIP
| | |
|---|---|
| 1058 | RIPv1 |
| 2453 | RIPv2 |

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

### IS-IS
| | |
|---|---|
| 1142 | IS-IS |
| 1195 | IPv4 Routing |
| 2763 | Dynamic Hostname |
| 2966 | Domain-Wide Prefixes |
| 3373 | Three-way Handshake |
| 3567 | MD5 |
| 3784 | Wide Metrics |
| draft-ietf-isis-igp-p2p-over-lan-06 | Point-to-Point Operation |
| draft-ietf-isis-ipv6-06 | IPv6 Routing |
| draft-kaplan-isis-ext-eth-02 | Extended Frame Size |

### BGP
| | |
|---|---|
| 1997 | Communities |
| 2385 | MD5 |
| 2439 | Route Flap Damping |
| 2545 | Multiprotocol Extensions for IPv6 |
| 2796 | Route Reflection |
| 2842 | Capabilities |
| 2858 | Multiprotocol Extensions |
| 2918 | Route Refresh |
| 3065 | Confederations |
| 4360 | Extended Communities |
| 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 |
| 2236 | IGMPv2 |
| 2710 | MLDv1 |
| 3376 | IGMPv3 |
| 3569 | SSM for IPv4/IPv6 |
| 3618 | MSDP |
| 3810 | MLDv2 |
| 3973 | PIM-DM |
| 4541 | IGMPv1/v2/v3, MLDv1 Snooping |
| draft-ietf-pim-sm-v2-new-05 | PIM-SM for IPv4/IPv6 |

### Network Management
| | |
|---|---|
| 1155 | SMIv1 |
| 1156 | Internet MIB |
| 1157 | SNMPv1 |
| 1212 | Concise MIB Definitions |
| 1215 | SNMP Traps |
| 1493 | Bridges MIB |
| 1724 | RIPv2 MIB |
| 1850 | OSPFv2 MIB |
| 1901 | Community-based SNMPv2 |
| 2011 | IP MIB |
| 2012 | TCP MIB |
| 2013 | UDP MIB |
| 2024 | DLSw MIB |
| 2096 | IP Forwarding Table MIB |
| 2558 | SONET/SDH MIB |
| 2570 | SNMPv3 |
| 2571 | Mangement Frameworks |
| 2572 | Message Processing and Dispatching |
| 2574 | SNMPv3 USM |
| 2575 | SNMPv3 VACM |
| 2576 | Coexistence Between SNMPv1/v2/v3 |
| 2578 | SMIv2 |
| 2579 | Textual Conventions for SMIv2 |
| 2580 | Conformance Statements for SMIv2 |
| 2618 | RADIUS Authentication MIB |
| 2665 | Ethernet-like Interfaces MIB |
| 2674 | Extended Bridge MIB |
| 2787 | VRRP MIB |
| 2819 | RMON MIB (groups 1, 2, 3, 9) |
| 2863 | Interfaces MIB |
| 2865 | RADIUS |
| 3176 | sFlow |
| 3273 | RMON High Capacity MIB |
| 3416 | SNMPv2 |
| 3418 | SNMP MIB |
| 3434 | RMON High Capacity Alarm MIB |
| 3580 | 802.1X with RADIUS |
| 5060 | PIM MIB |
| ANSI/TIA-1057 | LLDP MED MIB |
| draft-grant-tacacs-02 | TACACS+ |
| draft-ietf-idr-bgp4-mib-06 | BGP MIBv1 |
| draft-ietf-isis-wg-mib-16 | IS-IS MIB |
| IEEE 802.1AB | LLDP MIB |
| IEEE 802.1AB | LLDP DOT1 MIB |
| IEEE 802.1AB | LLDP DOT3 MIB |
| ruzin-mstp-mib-02 | MSTP MIB (traps) |

FORCE10-BGP4-V2-MIB
FORCE10-FIB-MIB
FORCE10-IF-EXTENSION-MIB
FORCE10-LINKAGG-MIB
FORCE10-CHASSIS-MIB
FORCE10-COPY-CONFIG-MIB
FORCE10-MON-MIB
FORCE10-PRODUCTS-MIB
FORCE10-SMI
FORCE10-SYSTEM-COMPONENT-MIB
FORCE10-TC-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 E-Series components are EU RoHS compliant.

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