Summit® 400-24p

The Summit 400-24p—designed to meet the evolving needs of the access layer.

Designed for Converged Services

- Resiliency to support convergence
- Performance to support converged services
- Security to support converged LAN

Unified Access for Wired and Wireless

- Support for evolving desktop
- Integrated wireless support
- Power over Gigabit Ethernet

Simplified Management

- UniStack™ stacking reduces complexity
- Common management user interface and commands
- Unified management of wired and wireless

The Summit 400-24p stackable switch delivers non-blocking full 10/100/1000BASE-T Gigabit Ethernet connectivity to the desktop with Layer 3 intelligence to provide secure access to the LAN with maximum resiliency and throughput. With the implementation of Unified Access Architecture™ (UAA), the innovative edge architecture from Extreme Networks®, the Summit 400-24p is an industry-leading solution that offers tri-speed Ethernet connectivity to the desktop, PoE, wireless, 4 ports of fiber per switch and high-performance UniStack stacking.

All the switches in the Summit 400 series can be stacked together using Extreme Networks' high-bandwidth UniStack stacking technology—thereby bringing many of the advantages of a chassis-based solution to a stack of fixed switches. The Summit 400-24p delivers full 802.3af Class 3 PoE on every port and provides inexpensive wireless connectivity by directly supporting Extreme Networks' Altitude wireless Access Points (APs). The Summit 400-24p helps in redefining the enterprise network architecture—replacing the traditional three-tier structure with a stream-lined two-tier network that reduces management overhead, operational complexity and costs.

Target Applications

- High-performance desktop connectivity with integrated wired, wireless and IP Telephony

- Upgrade from 10/100 Ethernet to 10/100/1000 Ethernet to the desktop

- New deployments designed to support higher bandwidth converged applications that require PoE

The Summit 400-24p is an industry-leading solution that offers tri-speed Ethernet connectivity to the desktop, Power over Ethernet (PoE), wireless, 4 ports of fiber per switch, and high-performance UniStack stacking.

Designed for Converged Services

The convergence of traditionally non-LAN services on top of growing enterprise applications brings greater demands, responsibilities, and threats to the network infrastructure. The Summit 400-24p, designed for convergence, provides the mandatory resiliency to keep applications available, delivers the features and performance to support converged services and provides unique protection from security threats.

Resiliency to Support Convergence

Link Redundancy
Proper support for converged services requires link resiliency, which the Summit 400-24p provides through an extensive set of Layer 1 through Layer 3 link redundancy options, for example:

- Layer 1: Software redundant port, so simple and easy to deploy that it requires no supporting protocols or timers to configure.
- Layer 2: Standard Spanning Tree and Rapid Spanning Tree, plus the extremely fast convergence of Ethernet Automatic Protection Switching (EAPS), which is capable of preserving sessions of latency sensitive applications such as Voice-over-IP (VoIP) through link failure.
- Layer 3: OSPF Equal Cost Multi-Path (ECMP) which doubles the throughput of redundant links, VRRP for Layer 3 dual homing, and ESRP which supports dual homing at both Layer 2 and Layer 3.

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Rapid Convergence Resiliency
The Summit 400-24p provides EAPS, the RFC 3619 link layer resiliency protocol pioneered by Extreme Networks. Since EAPS fails over in less than 50 milliseconds in most deployments, the Summit 400-24p recovers from faults without disrupting latency-sensitive sessions such as VoIP calls. This helps to ensure toll-quality voice and picture-perfect video.

Redundant Power Supplies
The Summit 400-24p backs up its PoE with fully redundant EPS-LD power supplies that sustain full Class 3 PoE, undisturbed by outages from a single power source. This helps ensure that

business goes on, data is not disrupted and critical converged services are constantly present.

Performance to Support Converged Services

Quality of Service (QoS)
Extreme Networks pioneered QoS over local area networks, with every switch from Extreme Networks having been built from the ground up to deliver superior QoS. The Summit 400-24p is no exception, with its eight hardware QoS queues for finest granularity of prioritized traffic forwarding. Utilizing the power of eight QoS queues is the packet intelligence of ExtremeWare®. With a powerful classification engine and fine queue granularity, Summit 400-24p provides consistent and timely packet delivery required to support converged services.

Minimized Latency
Latency and jitter can be lethal to real-time applications such as voice and video. The Summit 400-24p was designed around a low latency and low jitter architecture in spite of the wealth of services it delivers. In particular, the UniStack stacking architecture was designed so that forwarding is always performed locally when the destination port is known, and when packets have to pass through the stack, they always take the shortest path.

Non-Blocking Forwarding
High-performance starts with a non-blocking architecture as delivered by the Summit 400-24p. Since any access switch that properly supports converged services must also examine every packet for QoS and security, the ability to apply these features without degrading switch performance is even more important. The

Summit 400-24p supports all security, QoS and management features at full line-rate without a negative effect on applications.

Security to Protect Converged LAN

Line-Rate Access Control Lists
Access Control Lists (ACLs) are one of the most powerful tools to control network resource utilization and to secure and protect the network. Summit 400-24p supports up to 1,512 ACLs based on Layer 2, 3 or 4 header information such as the Media Access Control (MAC) address, IP source/destination address or protocol.

Intelligent Network Access
Summit 400-24p supports a comprehensive range of Network Login options by providing an 802.1x agent-based approach, a web-based (agentless) login capability for guests, and a MAC-based authentication model for devices. With these modes of Network Login, only authorized users and devices can connect to the network and be assigned to the appropriate VLAN.

Multiple Supplicant Support
Multiple supplicant support secures IP Telephony and wireless access. Converged network designs often involve the use of shared ports that represent a potential vulnerability in a network. Multiple supplicant capability on the Summit 400-24p switch allows it to uniquely recognize and apply the appropriate policies for each user or device on a shared port.

Media Access Control (MAC)
The MAC address security/lockdown feature enables Summit 400-24p to block access to any Ethernet port when the MAC address of a station attempting to access the port is different from the configured MAC address.

Host Integrity Checking
Host integrity checking helps keep infected or non-compliant machines off the network. Summit 400-24p supports a host integrity or end point integrity solution that is based on the Trusted Computing Group model.

Cost-Effective Network Design Using the Summit 400 Series
The Summit 400 series of switches allows the traditional edge layer and aggregation layer of the network to be collapsed into a single access layer. A two-tier network that consists of an access layer and a core layer can reduce the number of switches required and hence reduce the network acquisition costs and network management costs. Depending on the size and geographic reach of the network, a two-tier network can be the most cost-effective design for a corporate network.

Unified Access for Wired and Wireless

Networks are undergoing a transition from simple Fast Ethernet data connectivity to converged services and new applications over LAN, which demand new infrastructure services: PoE, wireless access support, Gigabit Ethernet to the desktop or all of these. The Summit 400-24p provides all of these services in one multi-dimensional platform.

Support for Evolving Desktop

Legacy Support

With Plug and Play auto-sense on every port, attaching legacy devices is easy. With the Summit 400-24p, existing 10 Mbps or 100 Mbps devices are transparently supported and new security and management benefits become immediately available.
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Gigabit Evolution

Gigabit Ethernet is a mature technology that provides the highest available bandwidth to the desktop. The combination of low-cost Gigabit Ethernet NICs and embedded gigabit interfaces and ever more bandwidth-hungry Enterprise applications is driving the demand for gigabit to the desktop. Summit 400-24p is the perfect switch, with its line-rate Layer 2 and Layer 3 forwarding and QoS and resiliency, to support demanding applications.

Future Applications

The Summit 400-24p already provides low latency and jitter plus the ability to prioritize based on an extended set of packet header information that the most challenging of future applications is likely to present. This combination of performance plus packet intelligence, coupled with line-rate forwarding and support for powered devices, makes the Summit 400-24p an easy choice to future-proof the LAN access layer for future converged applications such as IP Telephony.

Integrated Wireless Support

Security

Excellent wireless support starts with excellent security, and the Summit 400-24p provides industry-standard security capabilities including flexible authentication options like:

- Hardware accelerated RC4 and AES encryption
- Reliable authentication with multiple supplicant Network Login, both 802.1x and browser-based, that won't allow unauthenticated LAN access
- MAC security to link and lock a device to its port
- Perimeter defense through rogue Access Point (AP) detection that foils attempts to bypass security
- Thin wireless APs to prevent thefts of critical security parameters

Mobility

Mobile applications such as hospital patient care equipment, retail POS or inventory devices, Voice over Wireless LAN (VoWLAN) phones, or handheld PDAs require quality of service and the ability to roam between APs. The Summit 400-24p provides seamless transfer between APs. This enables users to gain productivity while flexibly moving throughout the facility.

Availability

To assure constant availability of wireless access, the Summit 400-24p provides a plethora of redundancy features including common spanning tree and rapid spanning tree that are commonly provided, and much more. For example, Software Redundant Port makes one link redundant to another very simply, with no protocol overhead. For latency sensitive applications, EAPS is capable of failing over in 50 milliseconds—fast enough to sustain a VoIP session. At Layer 3 there are three more options: OSPF ECMP, VRRP and ESRP for incredibly scalable deployment of link resiliency.

Power Over Gigabit Ethernet

Telecommunications Over LAN

Deployments of IP Telephony depend on reliable consistent power from the Ethernet jack. The Summit 400-24p is the basis for a reliable LAN telephony infrastructure with fully redundant 15.4 watts per port, and QoS and resiliency to match the failover requirements for latency-sensitive services like VoIP phones.

Voice Grade Connections

Granular QoS, low latency, and low jitter enable voice quality connections. Summit 400-24p supports a range of QoS technologies that can prioritize and predictably handle high priority traffic–policing or rate limiting on ingress, 802.1q tagging and DiffServ marking, and shaping on egress with eight queues per port. The Extreme Networks tradition of building products with low latency and jitter continues with the Summit 400-24p—allowing network managers to build networks with low end-to-end latency and jitter.

Deployment Simplicity

With the Summit 400-24p, deployment of powered LAN devices is quick and easy with its support of the IEEE 802.3af standard and full Class 3 power availability on all ports, backed up 100% by the EPS-LD redundant power supply.

Unified Access Architecture

UAA features are supported by Summit 400-24p so that enterprises can implement a single, secure and seamless network for wired and wireless network access, rather than having to operate two separate or parallel networks.

Universal Access Port

The Summit 400-24p offers the universal access port—high-performance gigabit to the desktop, PoE and wireless support from every RJ45 port. Installing universal services ports everywhere for data and device power greatly simplifies installations and moves, and helps to future-proof your edge network. The Summit 400-24p provides universal attachment at any desktop Ethernet speed, any power level from none to full 15.4 watts, with support for wired or wireless access.

Unified Access Architecture—Enabling the Universal Port

Unified Access Architecture, the innovative edge architecture from Extreme Networks, is designed for enterprises that need a single, secure and seamless network for both wired and wireless network access, rather than having to operate two separate or parallel networks. Through this unified approach, you have the freedom to extend your network edge for wireless access, LAN telephony, PDAs and other devices without compromising security, scalability, availability, mobility or management.

Simplified Management

Network management and maintenance can be challenging, especially for IT departments managing complex converged networks while under the pressure to reduce staff and expenses. For all organizations, any repetitive management operation taxes skilled resources, draining valuable productivity. The Summit 400-24p offers relief through the management simplification provided by UniStack stacking. By making a stack of switches appear to be a virtual modular switch, the ExtremeWare UniStack architecture allows all ports in the stack of switches to be configured in one management session.

UniStack Stacking Reduces Complexity

Single Point of Management

With UniStack stacking, up to eight Extreme Networks' Summit 400 series switches appear as a single network element managed through a single IP address, with the stack representing a single managed object inside an enterprise management tool such as EPICenter® management suite from Extreme Networks. Having a single IP address for configuration, changes and upgrades yields dividends in saved time.

Easy Adds/Drops

UniStack stacking also simplifies network expansions or changes. Adding new access ports to the LAN is as simple as turning on stacking in a new Summit 400-24p and adding it to an existing stack, similar to adding a new module to a modular switch, except that no space-consuming chassis is required. Similarly, moving the Summit 400-24p to a new location is convenient, since the transferred switch can stand alone or become part of another stack.

Simple Redundancy Enhancement

Because a stack of Summit 400-24p switches represents an n-times replication of traffic processors, management processors, memory and power supplies, the net resiliency of a UniStack stack is greater than the sum of its parts. Add to this the ability to distribute redundant uplinks on different switches and availability goes up even more, compared to a standalone switch.

Highly Reliable Architecture

UniStack stacking on Summit 400 series switches is a highly resilient, bidirectional full-duplex ring architecture with n-1 stack master redundancy designed to survive the failure of a stacking link or switch in the stack. With a nominal transfer rate of 20 Gbps and instantaneous transfers of 40 Gbps per switch, a stack of eight switches can transfer up to 160 Gbps through the stack with highly reliable, completely distributed, shortest path forwarding.

Common Management Interface

Common Command Line Interface (CLI) Edge to Core

The Summit 400-24p operates with the award-winning ExtremeWare software from Extreme Networks. ExtremeWare gives the Summit 400-24p the same administrative interface as any ExtremeWare switch running in the network. This common interface reduces training time, time to configure or update and management overhead.

Common Feature Set

The common feature set that the Summit 400-24p shares with other switches from Extreme Networks that are controlled by license level simplifies and reduces the cost of managing an Extreme Networks–powered LAN. The Summit 400-24p delivers a rich suite of features spanning the range of protocols to intelligently overseeing traffic, consistent and simple to deploy, resulting in efficient, productive LAN management.

Common Management

Extreme Networks' EPICenter enterprise LAN manager supports the Summit 400-24p, either individually or in UniStack stacks, providing a global view to enhance IT staff productivity. Whether the LAN is managed via serial port, web, telnet or a network manager like EPICenter, ExtremeWare included with the Summit 400-24p provides a uniform interface for common management, thus reducing the cost of management.

Unified Management

Link Layer Discovery Protocol

By incorporating Link Layer Discovery Protocol (LLDP), the Summit 400-24p reduces networking expenses by enabling Plug and Play installation of network devices, simplifying maintenance and reducing troubleshooting time. With its support of IEEE 802.1ab, LLDP simplifies the deployment of VoIP phones, wireless APs, cameras, and any device that supports this vendor-independent protocol.

Integrated Wireless Management

The Summit 400-24p Advanced Edge feature set includes integrated wireless management to configure, control, and secure the wireless portion of the LAN. When used with Extreme Networks Altitude APs, it provides a high level of assurance that the LAN is secure from intrusion and security breaches. For example, rogue APs can be detected, located, and deactivated using the CLI and/or EPICenter.

Desktop Access Management

Using ACLs to examine Layer 2, 3, and 4 packet header information for security and traffic classification, establishes the Summit 400-24p as a premier access switch. Its ability authenticate users essential at the LAN edge, separates the Summit 400-24p from the pack. These features and more, available in the ExtremeWare operating system shipped with the Summit 400-24p, provide the full and robust access management that sets the Summit 400-24p apart from others.

Power Management

The Summit 400-24p provides a concise feature set to manage PoE. Before providing power it can automatically discover PoE devices and their class level, and provide the right amount of power.

UniStack Stacking Architecture
- High Throughput
- High Resiliency
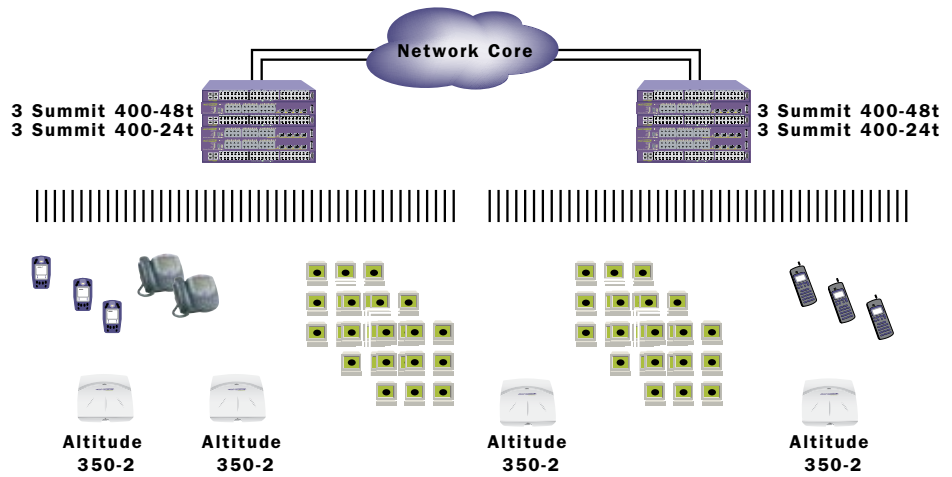- Single Management Point

Figure 1: Summit 400-24p UniStack Stack Cabling Illustration

Target Applications

Upgrade to Unified Access Edge

The Summit 400 family delivers high-performance and cost-effective connectivity driven by networking trends such as the increasing number of IP telephones, wireless APs and other devices at the edge of the network, Gigabit Ethernet connections to the desktop, and the use of gigabit and 10 Gigabit Ethernet as an interconnect technology. The stackable Summit 400 series of switches allow the traditional edge layer and aggregation layer of the network to be collapsed into a single Unified Access layer.

Network Core

3 Summit 400-48t
3 Summit 400-24t

3 Summit 400-48t
3 Summit 400-24t

Altitude 350-2   Altitude 350-2   Altitude 350-2   Altitude 350-2

Technology Refresh

Summit 400-24p offers a great opportunity to upgrade existing infrastructure to introduce higher performance and support for evolving LAN services. With its rich feature set and competitive price, the Summit 400-24p helps covers the emerging technology bases for future-proofing.

3 Summit 400-48t
3 Summit 400-24t

Altitude 350-2   Altitude 350-2
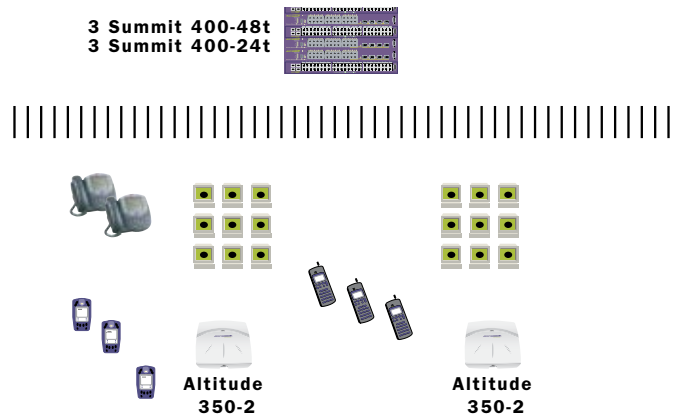
Technical Specifications

ExtremeWare v7.6 Supported Protocols

General Routing and Switching
- RFC 1812 Requirements for IP Version 4 Routers
- RFC 1519 CIDR
- RFC 1256 IPv4 ICMP Router Discovery (IRDP)
- RFC 1122 Host Requirements
- RFC 768 UDP
- RFC 791 IP
- RFC 792 ICMP
- RFC 793 TCP
- RFC 826 ARP
- RFC 894 IP over Ethernet
- RFC 1027 Proxy ARP
- RFC 2338 VRRP
- RFC 3619 Ethernet Automatic Protection Switching (EAPS) and EAPSv2
- IEEE 802.1D – 1998 Spanning Tree Protocol (STP)
- IEEE 802.1w – 2001 Rapid Reconfiguration for STP, RSTP
- IEEE 802.1s – 2004 Multiple Instances of STP, MSTP
- Extreme Multiple Instances of Spanning Tree Protocol (EMISTP)
- PVST+, per VLAN STP (802.1Q interoperable)
- Extreme Standby Router Protocol (ESRP)
- IEEE 802.1Q – 2003 Virtual Bridged Local Area Networks
- Extreme Discovery Protocol (EDP)
- Static Unicast Routes
- Extreme Loop Recovery Protocol (ELRP)
- Software Redundant Ports

VLANs
- IEEE 802.1Q VLAN Tagging
- IEEE 802.3ad Static configuration and dynamic (LACP) for server attached
- IEEE 802.1v: VLAN classification by Protocol and Port
- Port-based VLANs
- MAC-based VLANs
- Protocol-based VLANs
- Multiple STP domains per VLAN

Quality of Service and Policies
- IEEE 802.1D – 1998 (802.1p) Packet Priority
- RFC 2474 DiffServ Precedence, including 8 queues/port
- RFC 2598 DiffServ Expedited Forwarding (EF)
- RFC 2597 DiffServ Assured Forwarding (AF)
- RFC 2475 DiffServ Core and Edge Router Functions
- Ingress Rate Limiting
- Layer 1-4, Layer 7 (user name) Policy-Based Mapping
- Policy-Based Mapping/Overwriting of DiffServ code points, .1p priority
- Network Login/802.1x and DLCS (Dynamic Link Context System, WINS snooping) based integration with EPICenter Policy Manager for dynamic user/device based policies

RIP
- RFC 1058 RIP v1
- RFC 2453 RIP v2

OSPF
- RFC 2328 OSPF v2 (including MD5 authentication)
- RFC 1587 OSPF NSSA Option
- RFC 1765 OSPF Database Overflow
- RFC 2370 OSPF Opaque LSA Option
Note: OSPF Edge License includes 2 active interfaces, router priority 0

IP Multicast
- RFC 2362 PIM-SM
- RFC 1112 IGMP v1
- RFC 2236 IGMP v2
- IGMP Snooping with Configurable Router Registration Forwarding
- IGMP Filters
- Static IGMP Membership
- Static Multicast Routes
- Mtrace, draft-ietf-idmr-traceroute-ipm-07
- Mrinfo

Management and Traffic Analysis
- RFC 2030 SNTP, Simple Network Time Protocol v4
- RFC 1866 HTML – web-based device management and Network Login
- RFC 2068 HTTP server
- RFC 854 Telnet client and server
- RFC 783 TFTP Protocol (revision 2)
- RFC 951, 1542 BootP
- RFC 2131 BOOTP/DHCP relay agent and DHCP server
- RFC 1591 DNS (client operation)
- RFC 1155 Structure of Mgmt Information (SMIv1)
- RFC 1157 SNMPv1
- RFC 1212, RFC 1213, RFC 1215 MIB-II, Ethernet-Like MIB & TRAPs
- RFC 1573 Evolution of Interface
- RFC 1901 – 1908 SNMP Version 2c, SMIv2 and Revised MIB-II
- RFC 2570 – 2575 SNMPv3, user based security, encryption and authentication
- RFC 2576 Coexistence between SNMP Version 1, Version 2 and Version 3
- RFC 2665 Ethernet-Like-MIB
- RFC 1757 RMON 4 groups: Stats, History, Alarms and Events
- RFC 2021 RMON2 (probe configuration)
- RFC 2668 802.3 MAU MIB
- RFC 1643 Ethernet MIB
- RFC 1493 Bridge MIB
- RFC 2737 Entity MIB, Version 2
- RFC 2674 802.1p/802.1Q MIBs
- RFC 1354 IPv4 Forwarding Table MIB
- RFC 2233 Interface MIB
- RFC 2096 IP Forwarding Table MIB
- RFC 1724 RIPv2 MIB
- RFC 1850 OSPFv2 MIB
- RFC 2787 VRRP MIB
- RFC 2925 Ping/Traceroute/NSLOOKUP MIB
- Draft-ietf-bridge-rstpmib-03.txt – Definitions of Managed Objects for Bridges with Rapid Spanning Tree Protocol
- draft-ietf-bridge-8021x-01.txt (IEEE8021-PAE-MIB)
- IEEE 802.1x – 2001 MIB
- Extreme extensions to 802.1x-MIB
- Secure Shell (SSHv2) clients and servers
- Secure Copy (SCPv2) client and server
- Secure FTP (SFTP) server
- Configuration logging
- Multiple Images, Multiple Configs
- BSD System Logging Protocol (SYSLOG), with Multiple Syslog Servers
- Local Messages (criticals stored across reboots)
- IEEE 802.1ab LLDP

ExtremeWare vendor MIBs: includes ACL, MAC FDB, IP FDB, MAC Address Security, Software Redundant Port, NetFlow, DoS-Protect MIB, QoS policy, Cable Diagnostics, VLAN config, vMAN, VLAN Translation and VLAN Aggregation MIBs

Security
- Routing protocol MD5 authentication (see above)
- Secure Shell (SSHv2), Secure Copy (SCPv2) and SFTP with encryption/authentication
- SNMPv3 user based security, with encryption/authentication (see above)
- RFC 1492 TACACS+
- RFC 2865 RADIUS Authentication
- RFC 2866 RADIUS Accounting
- RFC 3579 RADIUS Support for Extensible Authentication Protocol (EAP)
- RFC 3580 802.1X RADIUS
- RADIUS Per-command Authentication
- MAC based Network Login using RADIUS
- Access Profiles on All Routing Protocols
- Access Profiles on All Management Methods
- Network Login (web-based DHCP/HTTP/RADIUS mechanism)
- RFC 2246 TLS 1.0 + SSL v2/v3 encryption for web-based Network Login
- IEEE 802.1x – 2001 Port-Based Network Access Control for Network Login
- Multiple supplicants for Network Login (web-based and 802.1x modes)
- Guest VLAN for 802.1x
- MAC Address Security – Lockdown, limit and aging
- IP Address Security with DHCP Option 82, DHCP Enforce/Duplicate IP Protection via ARP Learning Disable
- Network Address Translation (NAT)
- Layer 2/3/4/7 ACLs
- Source IP Lockdown – Dynamic filtering against invalidly sourced traffic

Denial of Service Protection
- RFC 2267 Network Ingress Filtering
- RPF (Unicast Reverse Path Forwarding) Control via ACLs
- Wire-speed ACLs
- Rate Limiting ACLs
- IP Broadcast Forwarding Control
- ICMP and IP-Option Response Control
- SYN attack protection
- FDB table resource protection via IPDA Subnet Lookup
- CPU DOS protection with ACL integration: Identifies packet floods to CPU and sets an ACL automatically, configurable enhanced DoS Protect
- Unidirectional Session Control

Robust Against Common Network Attacks
- CERT (http://www.cert.org)
  - CA-2003-04: "SQL Slammer"
  - CA-2002-36: "SSHredder"
  - CA-2002-03: SNMP vulnerabilities
  - CA-98-13: tcp-denial-of-service
  - CA-98.01: smurf
  - CA-97.28: Teardrop_Land -Teardrop and "LAND" attack
  - CA-96.26: ping
  - CA-96.21: tcp_syn_flooding
  - CA-96.01: UDP_service_denial
  - CA-95.01: IP_Spoofing_Attacks_and_Hijacked_Terminal_Connections
  - IP Options Attack

Host Attacks
- Teardrop, boink, opentear, jolt2, newtear, nestea, syndrop, smurf, fraggle, papasmurf, synk4, raped, winfreeze, ping –f, ping of death, pepsi5, Latierra, Winnuke, Simping, Spring, Ascend, Stream, Land, Octopus

Technical Specifications

General Specifications

Ports
- 24 ports 10/100/1000BASE-T with auto-config and auto-polarity
- 4 ports SFP (mini-GBIC, shared PHY with 4 10/100/1000BASE-T ports)
- 1 port Serial (control port)
- 2 UniStack stacking ports, 10 Gbps full duplex each

Forwarding Tables
- Layer 2/MAC Addresses: 16K
- Layer 3 Addresses: 2K
- Layer 3 Static Routes: 1K
- Layer 3 Interfaces: 128
- Layer 3 routing table size: No limit to number of routes

Indicators
- Per port status LED including power status Stacking 7-segment display
- System Status LEDs: management, fan and power

Performance
- 80 Gbps switch fabric bandwidth
- 35.7 Mpps frame forwarding rate
- 9216 Byte maximum packet size (Jumbo Frame)
- 25 load sharing trunks, up to 8 members per trunk
- 8 QoS queues/port
- 4096 VLANs (Port, IEEE 802.1Q, MAC-based)
- 1512 total number of ACL Rules/lines
- 63 rules per port
- ACL rules can be applied to ingress

Rate Limiting
- Central flow based bandwidth policing/rate limiting: packets are classified after ingress into flows using ACLs and a rate limiter is assigned to a given flow
- Rate Limiting Granularity: 1Mb/s
- Available Rate Limiters: 63 per port

Physical Specifications

Dimensions
Height 1.73 Inches/4.4 Cm
Width 17.4 Inches/44 Cm
Depth 15.25 Inches/38.8 Cm
Weight Lbs/Kg: 11.5 lbs/5.2 Kg

EPS Dimensions

EPS-T
Height 1.75 Inches/4.4 Cm
Width 17.4 Inches/44 Cm
Depth 7.6 Inches/19.3 Cm

EPS-160
Height 1.7 Inches/4.3 Cm
Width 7.4 Inches/18.8 Cm
Depth 7.9 Inches/20 Cm
Power Cable Length: 1 Meter

Operating Specifications

Temperature
- Operating Temperature Range, Degrees Celsius/Fahrenheit: 0 to 40 °C (32 to 104 °F)
- Operating Humidity Range (worst case, not for extended duration): 10-95% (RH) non-condensing
- Storage and Transportation Temperature Range (worst case), Celsius/Fahrenheit: -40 to +70 °C (-40 to 158 °F)

Shock
- Operational Shock in Rack (worst case, not for extended duration): 3G, 11 ms, 18 shocks

Power
- Auto-ranging 90-240VAC, 50-60 Hz
- Line Frequency: 50-60 Hz Min Voltage/ Associated Current: 100VAC/1.1A
- Max Voltage/Associated Current: 240VAC/ 0.46A
- Heat Dissipation, Watts/BTU: 80W/273BTU/hr
- External Power System connector
- External Power System EPS-160 module:
  – Heat Dissipation, Watts/BTU: 80W/ 273BTU/hr
  – Current 100-240VAC: 1.1A-0.46A

Acoustic
- Compliant with NEBS GR-63-Core spec
- The max measured value is 58dbA

Regulatory/Safety

- North American Safety of ITE
- UL 60950-1, Listed Device (U.S. Safety)
  – CSA 22.2#60950-00 (Canada Safety)
  – Complies with FCC 21CFR1040.10 & 1040.11, LN#50 7/2001 (U.S. Laser Safety)
  – CDRH Letter of Approval (U.S. FDA Approval)
  – NOM/NYCE (Mexico)
- European Safety of ITE
  – EN60950-1:2000
  – EN 60825-1+A2:2001 (Lasers Safety)
  – 73/23/EEC Low Voltage Directive
- International Safety of ITE
  – CB Scheme IEC 60950-1:2000+All
  – Country Deviations
  – AS/NZX 3260 (Australia /New Zealand)
  – GOST (Russia)

EMI/EMC
- North America EMC for ITE
  – FCC CFR 47 part 15 Class A (U.S.A.)
  – ICES-003 Class A (Canada)
- European EMC standards
  – EN 55022:1998 Class A
  – EN 55024:1998 Class A includes IEC 61000-4-2, 3, 4, 5, 6, 8, 11
  – EN 61000-3-2,3 (Harmonics & Flicker)
  – ETSI EN 300 386:2001 (EMC Telecommunications)
  – 89/336/EEC EMC Directive
- International EMC Certifications
  – CISPR 22:1997 Class A (International Emissions)
  – CISPR 24:1997 Class A (International Immunity)
  – IEC/EN 61000-4-2 Electrostatic Discharge
  – IEC/EN 61000-4-3 Radiated Immunity
  – IEC/EN 61000-4-4 Transient Burst
  – IEC/EN 61000-4-5 Surge
  – IEC/EN 61000-4-6 Conducted Immunity
  – IEC/EN 61000-4-11 Power Dips & Interruptions
- Country Specific
  – VCCI Class A (Japan Emissions)
  – AS/NZS 3548 ACA (Australia Emissions)
  – NOM/NYCE (Mexico)
  – CNS 13438:1997 Class A (BSMI-Taiwan)
  – MIC Mark, EMC Approval (Korea)
  – GOST (Russian Federation)

Environmental
- EN/ETSI 300 019-2-1 v2.1.2 – Class 1.2 Storage
- EN/ETSI 300 019-2-2 v2.1.2 – Class 2.3 Transportation
- EN/ETSI 300 019-2-3 v2.1.2 – Class 3.1e Operational
- EN/ETSI 300 753 (1997-10) – Acoustic Noise
- ASTM D3580 Random Vibration Packaged

Note: OSPF Edge includes 2 active interfaces, router priority 0

Warranty

- Limited Lifetime Hardware Warranty
- 90-day Warranty on Software

Ordering Information

Part Number	Name	Description
16137	Summit 400-24p	24 10/100/1000BASE-T, 4 unpopulated mini-GBIC ports, 2 UniStack stacking ports, 1 AC PSU, Edge ExtremeWare license, connector for EPS-LD external redundant PSU
16138	Summit 400-24p Advanced Edge License	ExtremeWare Advanced Edge License for Summit 400-24p
16106	Stacking Cable, 0.5M	Summit UniStack Stacking cable, 0.5M
16107	Stacking Cable, 1.5M	Summit UniStack Stacking cable, 1.5M
16108	Stacking Cable, 3.0M	Summit UniStack Stacking cable, 3.0M
10051	SX mini-GBIC	Mini-GBIC, SFP, 1000BASE-SX, LC connector
10052	LX mini-GBIC	Mini-GBIC, SFP, 1000BASE-LX, LC connector
10053	ZX mini-GBIC	Mini-GBIC, SFP, 1000BASE-ZX, LC connector
45019	EPS-LD External AC PSU	External PoE Power System (Summit 300-24 and Summit 400-24p cable included)