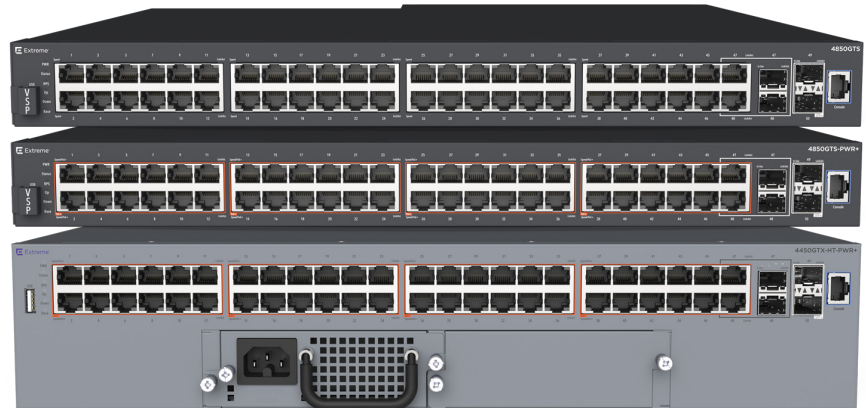


Highlights

- Designed for small sites, delivering full-featured network virtualization capabilities in a range of low-cost 1/10 Gigabit Ethernet platforms
- Deliver multiple services without managing multiple complex protocols, with the compact Edge device in your network
- Leverage network virtualization technology easily for small offices – and separate traffic to help meet regulatory or security requirements
- Provide rich multi-service functionality in multi-tenant environments – and help separate and protect each tenant's traffic
- Supports both conventional Routed IP and/or Fabric- based networking deployments



Virtual Services Platform 4000

Simplify Your Network End-to-End With the Fabric-Enabled Multiservice Edge Device

Simplify your network with the Extreme Virtual Services Platform (VSP) 4000. Designed to extend the reach of Extreme Fabric Connect technology to the branch and network edge, the VSP 4000 delivers fully featured network virtualization capabilities in a low-cost 1/10 Gigabit platform optimized for small locations. Offering full multiservice capabilities without deployment of multiple protocols, the VSP 4000 offers a simplified, streamlined way to build and manage networks.

For deployments in small offices where it is desirable to extend fabric technology across the wide area, the metro, or the campus edge or where you need separation of traffic for regulatory/security reasons or to support multiple entities, the VSP 4000 delivers rich multiservice and multi-tenant functionality in a cost-effective platform for small locations.

Product Overview

The VSP 4000 is available in six model variants to address a range of campus edge, small site or multiservice needs. Models include:

- **VSP 4450GSX-PWR+** – 36 x 100/1000 Mbps SFP ports, 12-ports of 10/100/1000BASE-T with PoE+, and two SFP+ MACsec capable uplink ports with optional AC redundant power.
- **VSP 4450GSX-DC** – 36 ports of 100/1000 Mbps SFP, 12 ports of 10/100/1000BASE-T, and two SFP+ MACsec capable uplink ports with optional DC redundant power.
- **VSP 4850GTS** – 48 ports of 10/100/1000 including two Combo SFP and two SFP+ uplink ports with optional AC redundant power.

- **VSP 4850GTS-PWR+** – 48 ports of 10/100/1000 with PoE+ including two Combo SFP and two SFP+ uplink ports with optional AC redundant power.
- **VSP 4850GTS-DC** – 48 ports of 10/100/1000 including two Combo SFP and two SFP+ uplink ports with optional DC redundant power.
- **VSP 4450GTX-HT-PWR+** – A high temperature variant of the VSP 4000 series that can be deployed in extreme temperature range of 0-70 degrees centigrade. 48 ports of 10/100/1000 with PoE+ and two SFP+ MACsec capable uplink ports with optional AC redundant power.

VSP 4000 Services Overview

The VSP 4000 offers a wide range of network services that can be deployed simply and easily. The product family supports:

- Layer 2 Virtualized Services that extend VLANs across the Fabric (including across subnets and long distances).
- Layer 3 Virtualized Services that interconnect and extend VRFs across the Fabric.
- Native routing between Layer 2 and Layer 3 Virtualized Services for access to shared services.
- IP Shortcut Routing that enables direct Layer 3 connectivity between individual end-points without requiring deployment of additional IGP.
- IP Multicast Shortcuts for scalable, efficient and resilient multicast distribution without the deployment of PIM-based protocols.
- IP Multicast Virtualization for the support of PIM-free multicast within a Layer 2 or Layer 3 Virtual Services Network. Support for IP Routing techniques including Static, RIP, OSPF, eBGP, BGP+, ECMP, VRRP, PIM-SM/SSM, and VRF. Additionally, supports Static, RIPng, OSPFv3, ECMP, and VRRP for IPv6 deployments.

VSP 4000 Deployment Scenarios:

Offering a multiplicity of services, VSP 4000 is well suited to a wide array of deployment scenarios including:

- Virtualized small/mid-sized enterprise
- Distributed enterprise

A deployment may require either or both of the following (which are discussed in detail further down in this document):

- End-to-end traffic separation for multi-tenancy or for security/regulatory compliance (i.e. PCI DSS).
- Integrated video surveillance, video distribution and

digital signage support.

The VSP 4850 series is optimized for copper-based deployments while the VSP 4450 is optimized for heavy fiber-based deployments. An example is a riser of a building, where Gigabit connectivity is delivered to each of the floors.

Virtualized Small/Midsized Enterprise

The Extreme Fabric Connect strategy includes delivering the value of fabric based technology to any size company. Providing a small-to-midsize enterprise solution that is both feature-rich and cost-effective, the VSP 4000 can be deployed with VSP 8200 in the core to enable a simplified, agile, resilient network. Deployed together, this powerful combination of Fabric-enabled edge and small compact core options enables the main stream adoption of Fabric technology by making it cost-effective for the smaller enterprise.

Distributed Enterprise

For Extreme Fabric Connect technology to truly transform the network end-to-end, it must extend to remote locations. Enabling a single technology that can be used throughout the network, the VSP 4000 provides connectivity to remote sites across Service Provider Layer 2 Services (E-Line and E-Tree). VSP 4000s can also be deployed over a physical ring based infrastructure extending the reach of the Fabric Connect network across the metro.

End-to-End Traffic Separation to Support Multi-Tenancy

Within any type of enterprise environment, end-to-end traffic separation may be required to support multi-tenancy. Airports, universities, governments, healthcare and enterprises engaged in acquiring other entities, for example, sometimes want to segregate traffic while offering some shared services.

With its integrated VRF capabilities, Extreme Fabric Connect allows Layer 3 networks to be deployed easily across the fabric with simple end point provisioning. Acting as a low-cost multi-tenant demarcation service that supports and isolates traffic from multiple entities, the VSP 4000 makes a critical contribution to the environment.

End-to-End Traffic Separation for Security or Regulatory Reasons

For security or regulatory reasons enterprises may need to separate traffic end to end. Examples include protecting credit card transactions, medical equipment or surveillance cameras from other network traffic or, in any vertical, separating VoIP and managing it independently.

With its integrated VRF capabilities, Extreme Fabric Connect allows Layer 3 networks to be deployed easily across the fabric and kept isolated end to end.

This, in addition to Mac-in-Mac encapsulation at the edge, can deliver the multiple networks required and offer additional security by helping to prevent breaches like VLAN jumping.

Integrated Video Surveillance, Video Distribution and Digital Signage

Verticals such as transportation, government and hospitality often rely on video surveillance technology to protect people and products and, while it is evolving toward multicast, video surveillance still relies largely on unicast traffic. VSP 4000 supports both types of surveillance networks - without requiring additional IGPs or PIM protocols. In addition, VSP 4850GTS-PWR+ and VSP 4450GSX-PWR+ devices, which also support IEEE 802.3at PoE+, can power new point tilt and zoom cameras.

Extreme Fabric Connect technology is built from the ground up to handle Multicast trees efficiently since Broadcast and Multicast forwarding are inherent functions within Ethernet. Enabling the network to instantiate point-to-point, point-to-multi-point and any-to-any connectivity services on demand, Extreme Fabric Connect offers a highly efficient, scalable, more resilient way to distribute multicast to support IPTV, digital signage or multicast enabled video surveillance networks.

Additionally, VOSS supports the Extreme Fabric Connect-PIM Gateway. This feature enables seamless bi-directional interoperability between Fabric Connect and a standards-based PIM Multicast Routing environment. While traditional PIM - Protocol Independent Multicast - is notoriously restrictive, complex, and unstable, it was, unfortunately, the only option if an organization needed to route IP Multicast traffic. Fabric Connect completely changes the Multicast paradigm, making this flexible to plan, simple to deploy, stable to operate. Now, organizations operating a legacy IP Multicast environment—either the PIM-SM or PIM-SSM—can implement Fabric Connect and enjoy seamlessly co-existence pending an eventual transition away from PIM.

This feature is flexible, supports high-availability options, and enables organizations to deploy and retire technology at their own pace. The VSP 4000 Series supports the Interface functionality component of the Fabric Connect-PIM Gateway feature.

System Compatibility

From a software perspective, the VSP 4000 Series was introduced with the VOSS 4.1 unified software release; this is, therefore, the minimum level of software available to operate the Switch. The recent VOSS 7.1 release delivers Application Telemetry.

Application Telemetry

Application Telemetry is a unique feature of ExtremeAnalytics that enables the ExtremeSwitching infrastructure to participate in the forwarding and analysis of network application flows. By combining packet flow information from the VSP switch along with deep packet inspection abilities of ExtremeAnalytics, it provides actionable insights into network and application performance. This all without the need for expensive sensors or collectors. With this release, an Application Telemetry agent on the VSP can now work in tandem with ExtremeAnalytics to deliver granular visibility into application performance, users, locations and devices.

Extreme Management Center

The network is the lifeblood of your business: it powers transformational applications and energizes your most vital asset, your people; integrating wired and wireless infrastructures, it delivers continuity and mobility; its dependability is intrinsically coupled with organizational success. Extreme Management Center gives you actionable insights, granular visibility, and automated control over users, devices, and applications.

Leveraging the dexterity that only a genuine single-pane-of-glass platform can enable, Extreme Management Center empowers you to deliver a superior quality of experience to all of your stakeholders. It works across your entire infrastructure, wired and wireless, from the access edge to the private cloud, giving you a true 360-degree view of your network, devices, applications, and users. Extreme Management Center is the integrated toolset that enables your business to go to the next level.

Lifetime Warranty

Extreme includes comprehensive warranty services for its portfolio of stackable switches, including Fabric Connect edge devices. Complimentary next-business-day shipment of failed units is provided for the full life of the product in addition to next-business-day shipping to replace failed hardware worldwide. Extreme also offers complimentary basic technical support:

Level 1 for the supported lifecycle of the product and up to Level 3 for the first 90 days after purchase including support for the shipped software version with an optional Software Release Service.

Based on the industry norm for hardware, 'Lifetime' is defined as the production lifecycle phase plus 5 years post-discontinuation. And, for customers desiring protection over and above warranty provisions, Extreme offers a full suite of support services.

Summary

Deployed in conjunction with other Extreme Fabric Connect solutions, the VSP 4000 can increase profitability and productivity, streamline business operations, lower costs and help your business gain a competitive edge. Offering a simple, more elegant approach to deployment of all L2/3 services, Extreme is a leader in Fabric-enabled networking.

Product Specifications

VSP 4450GSX-PWR+	
Switch Details	<ul style="list-style-type: none">• 12-ports of 10/100/1000 Gigabit Ethernet RJ45 with PoE+ ports• 36 ports of 100/1000 Mbps SFP ports• 2 ports of 1/10 Gigabit SFP+ ports• System CPU operates at 1.2GHz• Switch configured with 2GB of 800 DDR3 DRAM• RJ-45 Console port and a USB 2.0 port• Ships with 1 set of 44mm/19" rack mount brackets
Dimensions	1U 4.4cm (H), 44cm [19" rack mount compatible] (W), 43.6cm (D)
Weight	17.2lbs (7.80 kg) with 1 PSU installed. A PSU weighs 3.1 lbs (1.40 kg)
Power and Thermal	<ul style="list-style-type: none">• Supplied with 1 x 1000W AC field replaceable power supply unit• Supports addition of second field replaceable AC power supply for redundancy• Power consumption without PoE is 95W typical and 140W max so thermal is 324 BTU/hr typical and 477.70 BTU/hr max

VSP 4450GSX-DC	
Switch Details	<ul style="list-style-type: none">• 12 ports of 10/100/1000 Gigabit Ethernet RJ45 ports• 36 ports of 100/1000 Mbps SFP ports• 2 ports of 1/10 Gigabit SFP+ ports• System CPU operates at 1.2GHz• Switch configured with 2GB of DRAM• RJ-45 Console port and a USB 2.0 port• Ships with 1 set of 44mm/19" rack mount brackets
Dimensions	1U 4.4cm (H), 44cm [19" rack mount compatible] (W), 43.6cm (D)
Weight	17.2lbs (7.80 kg) with 1 PSU installed. A PSU weighs 3.1 lbs (1.40 kg)
Power and Thermal	<ul style="list-style-type: none">• Supplied with 1 x 300 watt Field Replaceable DC power supply• Supports addition of second Field Replaceable DC power supply for redundancy• Thermal Rating 323 BTU/hr

Product Specifications (cont.)

VSP 4850GTS	
Switch Details	<ul style="list-style-type: none"> • 48 10/100/1000 Gigabit Ethernet RJ45 ports • 2 Combo SFP ports • Plus 2 x 1/10 Gigabit SFP+ ports • System CPU operates at 533 MHz • Switch is configured with 1GB RAM • RJ-45 Console port provides industry standard serial port connectivity • Ships with 1 set of 44mm/19" rack mount brackets
Dimensions	4.4cm - 1RU (H), 44.0cm (W), 43.68cm (D)
Weight	11.48 Kg
Power and Thermal	<ul style="list-style-type: none"> • Supplied with 1 x 300 watt Field Replaceable AC power supply • Supports addition of second Field Replaceable AC power supply for redundancy • Thermal Rating 323 BTU/hr

VSP 4850GTS-PWR+	
Switch Details	<ul style="list-style-type: none"> • 48 10/100/1000 Gigabit Ethernet RJ45 ports • 48 ports support IEEE 802.3at PoE+ ports • 2 Combo SFP ports • Plus 2 x 1/10 Gigabit SFP+ ports • System CPU operates at 533 MHz • Switch is configured with 1GB RAM • RJ-45 Console port provides industry standard serial port connectivity • Ships with 1 set of 44mm/19" rack mount brackets
Dimensions	4.4cm - 1RU (H), 44.0cm (W), 43.68cm (D)
Weight	11.98 Kg
Power and Thermal	<p>Supplied with 1 x 1000 watt Field Replaceable AC power supply</p> <p>Supports addition of second Field Replaceable AC power supply for redundancy or additional PoE</p> <p>Thermal Rating 383 BTU/hr</p>
Maximum PoE Budget	<ul style="list-style-type: none"> • 855 watts when operating on one 1000w power supply • 1855 watts when operating on two 1000w power supply

VSP 4450GTX-HT-PWR+	
Switch Details	<ul style="list-style-type: none"> • 48 ports of 10/100/1000 Gigabit Ethernet with PoE+ RJ45 ports • 2 Combo ports of 1G SFP ports • 2 ports of 1/10 Gigabit SFP+ ports • System CPU operates at 1.2 GHz • Switch is configured with 2GB SDRAM • RJ-45 Console port provides industry standard serial port connectivity • Ships with 1 set of 44mm/19" rack mount brackets. • Operating temperature range 0-70C
Dimensions	8.8cm - 2RU (H), 44.0cm (W), 36.8cm (D)
Weight	With 1 PSU; total 23.1 lbs = 10.48 kg, PSU - 3.1 lbs = 1.4 kg
Power and Thermal	<ul style="list-style-type: none"> • Supplied with 1 x 1000 watt Field Replaceable AC power supply • Supports addition of second Field Replaceable AC power supply for redundancy • Thermal Rating: Power consumption without PoE is 100W typical and 145W max. Thermal is 341.2 BTU/hr typical and 494.8 BTU/hr max.

Product Specifications (cont.)

VSP 4850GTS-DC	
Switch Details	<ul style="list-style-type: none">• 48 10/100/1000 Gigabit Ethernet RJ45 ports• 2 Combo SFP ports• Plus 2 x 1/10 Gigabit SFP+ ports• System CPU operates at 533 MHz• Switch is configured with 1GB RAM• RJ-45 Console port provides industry standard serial port connectivity• Ships with 1 set of 44mm/19" rack mount brackets
Dimensions	4.4cm – 1RU (H), 44.0cm (W), 43.68cm (D)
Weight	11.48 Kg
Power and Thermal	<ul style="list-style-type: none">• Supplied with 1 x 300 watt Field Replaceable DC power supply• Supports addition of second Field Replaceable DC power supply for redundancy• Thermal Rating 323 BTU/hr

Specifications

General

- Frame length: 64 to 1518 Bytes (802.1Q Untagged), 64 to 1522 bytes (802.1Q Tagged)
- Jumbo Frame support: up to 9.6 KBytes
- Switching Fabric Capacity: 184 Gbps
- Packet Forwarding Throughput (64-byte packets): 102 Mpps
- RSTP, MSTP
- VRRP Backup Master
- IPv4 and IPv6 Routing
- Policy Based Routing
- Ingress and Egress Port ACLs
- Ingress VLAN ACLs
- Enterprise Device Manager GUI, on-box and off-box
- Configuration and Orchestration Manager
- Virtualization Performance and Fault Manager
- Virtualization Provisioning Service
- System Logging
- Mirroring: 1:1 / 1:M / M:1 / M:M
- Key Health Indicators
- Flight Recorder
- Auto MDIX
- MACsec (VSP 4450 Models Only)
- TACACS+
- SLAMon agent

Layer 2

- MAC Address: 32,000
- Port-based VLANs: 4,059
- Private VLANs/E-Tree: 200
- MSTP Instances: 12
- MLT/LACP Groups: 50
- MLT Links per Group: 8
- LACP Links per Group: 8 Active
- Extreme VLACP Interfaces: 50
- Extreme SLPP VLANs: 128

Layer 3 IPv4 Routing Services

- ARP Entries: 6,000
- Static ARP Entries: 200 per VRF, 1,000 per switch
- IP Interfaces: 256
- CLIP Interfaces: 64
- IP Routes: up to 15,744
- IP Static Routes: 1,000 per VRF, 1,000 per Switch
- RIP Interfaces: 24
- RIP Routes: up to 15,744
- OSPF Interfaces: 100
- OSPF Routes: up to 15,744
- OSPF Areas: 12 per VRF, 64 per Switch
- BGP Peers: 12
- BGP Routes: up to 15,744
- ECMP Groups: 500
- ECMP Paths per Group: 4
- VRRP Interfaces: Up to 64
- RSMLT Interfaces: 252

- IPv4 UDP Forwarding Entries: 128
- IPv4 DHCP Relay Forwarding Entries: 128
- IP Route Policies: 500 per VRF, 5,000 System-wide
- VRF Instances: up to 128

Layer 3 IPv6 Routing Services

- Neighbors: 4,000
- Static Neighbors: 128
- IP Interfaces: 256
- CLIP Interfaces: 64
- IP Configured Tunnels: 254
- IP Routes: up to 7,887
- IP Static Routes: 1,000
- RIPng Interfaces: 24
- RIPng Routes: up to 7,887
- OSPFv3 Interfaces: up to 100
- OSPFv3 Routes: up to 7,887
- OSPFv3 Areas: 64 per switch
- BGPv6 Peers: 12
- ECMP Groups: 500
- ECMP Paths per Group: 4
- VRRP Interfaces: Up to 64
- RSMLT Interfaces: 252
- DHCP Relay Forwarding Entries: 128
- VRF Instances: up to 128

Multicast

- IGMP Interfaces: 4,059
- PIM Active Interfaces: 128
- MLD Interfaces: 4059
- Static Multicast Routes: 512
- BCB IP Multicast S,G Streams: 1,000
- PIM-SSM Static Channels: 512
- IP Multicast Streams: 1,000
- IP Multicast Streams Fabric Connect-PIM Gateway nodes): 1,000
- Fabric Connect-PIM Gateway Controllers per Region: 5
- Fabric Connect-PIM Gateway Nodes per Region: 64
- Fabric Connect-PIM Gateway Interfaces per BEB Node: 64
- Fabric Connect-PIM Gateway Source Announcements: 6,000

Fabric Connect

- 802.1aq/RFC 6329 Shortest Path Bridging with Extreme extensions
- MAC Address: 16,000
- NNI Interfaces/Adjacencies: up to 255
- BCB/BEB Nodes per Region: 550
- Transparent UNI Ports/Switch: 48
- BEB Nodes per VSN: 500
- L2 Virtual Service Networks: 1,000
- L3 Virtual Service Networks: up to 128
- IP Shortcut Routes: IPv4 up to 15,744, and IPv6 up to 7,887
- L2 Multicast Virtual Service Networks: Up to 1,000
- L3 Multicast Virtual Service Networks: 128
- DvR Domains per Region: 16
- DvR-enabled L2 VSNs: Up to 502
- DvR Leafs per Domain: 250
- DvR Interfaces: up to 502
- DvR Routes: up to 6,000

QoS and Filtering

- IPv4 ACE: 1020 Ingress and 255 Egress
- IPv6 ACE: 255 Ingress
- QoS priority queues: 8

Operations and Management

- Mirrored Ports: 49
- sFlow: up to 100 samples per second
- Fabric RSPAN: 1,000 VLAN IDs

Environmental Specifications

- Operating temperature: 0°C to 50°C (32°F to 122°F)
- Storage temperature: -40°C to 85°C (-13°F to 158°F)
- Operating humidity: 0 to 95% maximum relative humidity, non-condensing
- Storage humidity: 10 to 90% maximum relative humidity, non-condensing Operating altitude: 0 to 3,048m (0 to 10,000ft) maximum
- Storage altitude: 0 to 12,192m (0 to 40,000ft) maximum
- Acoustic Noise:
 - Less than 50dba at 35°C
 - Less than 57dba at 50°C
- VSP 4000 Safety Agency Approvals
-

- Global basis for certification: IEC 60950 current edition with all CB member deviations
- CB Scheme Certification with Member Deviations
- EN60950 Europe Safety (CE)
- UL60950 United States of America Safety
- CSA22.2, #60950 Canada Safety
- NOM Mexico Safety
- S-mark Argentine Safety
- Anatel Brazilian Safety
- Electromagnetic Emissions and Immunity
- CISPR22 International EMC Emissions
- CIRPR24 International EMC Immunity
- EN55022:2006 European EMC Emissions (CE)
- EN55024 European EMC Immunity (CE)
- EN61000
- Additional European EMC Specifications (CE)
- FCC Part 15 US EMC Emissions
- ICES-003 Canadian EMC Emissions
- VCCI Japan EMC Emissions
- AN/NZS 3548 Australia/New Zealand EMC Emissions
- CNS13438 Taiwan EMC Emissions
- MIC Korean EMC Certification
- Anatel Brazilian EMC Certification

MTBF Values

- 214,542 to 311,104 hours (24.49 to 35.31 years)

Warranty

- Lifetime Next Business Day advanced hardware replacement
- Lifetime Basic Technical Support
- 90-Day Advanced Technical Support
- Optional Software Release Service also available: GW5300ASG / GW6300ASG

Country of Origin

- Peoples Republic of China
- Taiwan (for GSA Models)

Standard Compliance

802.1 Bridging (Networking) and Network Management

- 802.1D MAC Bridges (a.k.a. Spanning Tree Protocol)
- 802.1p Traffic Class Expediting and Dynamic Multicast Filtering
- 802.1t 802.1D Maintenance
- 802.1w Rapid Reconfiguration of Spanning Tree (RSTP)
- 802.1Q Virtual Local Area Networking (VLAN)
- 802.1Qbp Equal-Cost Multi-Path (Shortest Path Bridging)
- 802.1Qcj Automatic Attachment to Provider Backbone Bridging (PBB) Services (Partial Support)
- 802.1s Multiple Spanning Trees (MSTP)
- 802.1v VLAN Classification by Protocol and Port
- 802.1ag Connectivity Fault Management
- 802.1ah Provider Backbone Bridges
- 802.1aq Shortest Path Bridging (SPB) MAC-in-MAC
- 802.1X Port-based Network Access Control
- 802.1AB-2005 Station and Media Access Control Connectivity Discovery; aka LLDP (partial support)
- 802.1AE Media Access Control Security
- 802.1AX Link Aggregation

802.3 Ethernet

- 802.3-1983 CSMA/CD Ethernet (ISO/IEC 8802-3)
- 802.3i-1990 10Mb/s Operation, 10BASE-T Copper
- 802.3u-1995 100Mb/s Operation, 100BASE-T Copper, with Auto-Negotiation
- 802.3x-1997 Full Duplex Operation, including Flow Control
- 802.3z-1998 1000Mb/s Operation, implemented as 1000BASE-X
- 802.3ab-1999 1000Mb/s Operation, 1000BASE-T Copper
- 802.3ae-2002 10Gb/s Operation, implemented as 10GBASE-SFP+
- 802.3an-2006 10Gb/s Operation, 10GBASE-T Copper
- 802.3ba-2010 40Gb/s and 100Gb/s Operation
- 802.3bm-2015 40Gb/s and 100Gb/s Operation, implemented as 40GBASE-QSFP+ and 100GBASE-QSFP28

IETF

- 768 UDP
- 783 TFTP
- 791 IP
- 792 ICMP
- 793 TCP
- 826 ARP
- 854 Telnet
- 894 Transmission of IP Datagrams over Ethernet Networks
- 896 Congestion Control in IP/TCP internetworks
- 906 Bootstrap Loading using TFTP
- 950 Internet Standard Subnetting Procedure
- 951 BOOTP: Relay Agent-only
- 959 FTP
- 1027 Using ARP to Implement Transparent Subnet Gateways
- 1058 RIP
- 1112 Host Extensions for IP Multicasting
- 1122 Requirements for Internet Hosts - Communication Layers
- 1155 Structure and Identification of Management Information for TCP/IP-based Internets
- 1156 MIB for Network Management of TCP/IP
- 1157 SNMP
- 1212 Concise MIB Definitions
- 1213 MIB for Network Management of TCP/ IP-based Internets: MIB-II
- 1215 Convention for Defining Traps for use with the SNMP
- 1256 ICMP Router Discovery
- 1258 BSD Rlogin
- 1271 Remote Network Monitoring MIB
- 1305 NTPv3
- 1321 MD5 Message-Digest Algorithm
- 1340 Assigned Numbers
- 1350 TFTPv2
- 1398 Ethernet MIB
- 1442 SMIv2 of SNMPv2
- 1450 SNMPv2 MIB
- 1519 CIDR
- 1541 DHCP
- 1542 Clarifications and Extensions for BOOTP
- 1573 Evolution of the Interfaces Group of MIB-II
- 1587 OSPF NSSA Option
- 1591 DNS Client
- 1650 Definitions of Managed Objects for the Ethernet-like Interface Types
- 1657 Definitions of Managed Objects for BGP-4 using SMIv2
- 1723 RIPv2 Carrying Additional Information
- 1812 Router Requirements
- 1850 OSPFv2 MIB
- 1866 HTMLv2
- 1907 SNMPv2 MIB
- 1930 Guidelines for creation, selection, and registration of an AS
- 1981 Path MTU Discovery for IPv6
- 2021 Remote Network Monitoring MIBv2 using SMIv2
- 2068 HTTP
- 2080 RIPv2 for IPv6
- 2131 DHCP
- 2138 RADIUS Authentication
- 2139 RADIUS Accounting
- 2236 IGMPv2 Snooping
- 2284 PPP Extensible Authentication Protocol
- 2328 OSPFv2
- 2362 PIM-SM
- 2404 HMAC-SHA-1-96 within ESP and AH1
- 2407 Internet IP Security Domain of Interpretation for ISAKMP1
- 2408 Internet Security Association and Key Management Protocol
- 2428 FTP Extensions for IPv6 and NAT
- 2452 TCP IPv6 MIB
- 2453 RIPv2
- 2454 UDP IPv6 MIB
- 2460 IPv6 Basic Specification
- 2463 ICMPv6
- 2464 Transmission of IPv6 Packets over Ethernet Networks
- 2466 MIB for IPv6: ICMPv6 Group
- 2474 Differentiated Services Field Definitions in IPv4 and IPv6 Headers
- 2475 Architecture for Differentiated Service
- 2541 DNS Security Operational Considerations

- 2545 BGP-4 Multiprotocol Extensions for IPv6 Inter-Domain Routing
- 2548 Microsoft Vendor-specific RADIUS Attributes
- 2572 Message Processing and Dispatching for SNMP
- 2573 SNMP Applications
- 2574 User-based Security Model for SNMPv3
- 2575 View-based Access Control Model for SNMP
- 2576 Coexistence between v1/v2/v3 of the Internet-standard Network Management Framework
- 2578 SMIv2
- 2579 Textual Conventions for SMIv2
- 2580 Conformance Statements for SMIv2
- 2597 Assured Forwarding PHB Group
- 2598 Expedited Forwarding PHB OAandM RFCs
- 2616 HTTPv1.1
- 2710 MLD for IPv6
- 2716 PPP EAP TLS Authentication Protocol
- 2787 Definitions of Managed Objects for VRRP
- 2818 HTTP over TLS
- 2819 Remote Network Monitoring MIB
- 2863 Interfaces Group MIB
- 2865 RADIUS
- 2869 RADIUS Extensions (partial support)
- 2874 DNS Extensions for IPv6
- 2925 Definitions of Managed Objects for Remote Ping, Traceroute, and Lookup Operations
- 2933 GMP MIB
- 2934 PIM MIB for IPv4
- 2992 ECMP Algorithm
- 3046 DHCP Relay Agent Information
- Option 82
- 3162 RADIUS and IPv6
- 3246 Expedited Forwarding PHB
- 3315 DHCPv6
- 3339 Date and Time on The Internet: Timestamps
- 3376 IGMPv3
- 3411 Architecture for Describing SNMP Management Frameworks
- 3412 Message Processing and Dispatching for SNMP
- 3413 SNMP Applications
- 3414 USM for SNMPv3
- 3415 VACM for SNMP

IETF Cont.

- 3416 Protocol Operations v2 for SNMP
- 3417 Transport Mappings for SNMP
- 3418 MIB for SNMP
- 3484 Default Address Selection for IPv6
- 3513 IPv6 Addressing Architecture
- 3569 Overview of SSM
- 3579 RADIUS Support for EAP
- 3587 IPv6 Global Unicast Address Format
- 3596 DNS Extensions to support IPv6
- 3748 Extensible Authentication Protocol
- 3768 VRRP; plus draft-ietf-vrrp-ipv6-spec-08
- 3810 MLDv2 for IPv6: Host Mode-only
- 3879 Deprecating Site Local Addresses
- 4007 IPv6 Scoped Address Architecture
- 4022 TCP MIB
- 4087 IP Tunnel MIB
- 4113 UDP MIB
- 4133 Entity MIB Version 3 (partial support)
- 4193 Unique Local IPv6 Unicast Addresses
- 4213 Basic Transition Mechanisms for IPv6 Hosts and Routers
- 4250 SSH Assigned Numbers
- 4251 SSH Protocol Architecture
- 4252 SSH Authentication Protocol
- 4253 SSH Transport Layer Protocol
- 4254 SSH Connection Protocol
- 4255 DNS to Securely Publish SSH Key Fingerprints
- 4256 Generic Message Exchange Authentication for SSH
- 4291 IPv6 Addressing Architecture
- 4292 IP Forwarding Table MIB
- 4293 IP MIB
- 4301 Security Architecture for IP¹
- 4302 IP Authentication Header¹
- 4303 IP Encapsulating Security Payload¹
- 4308 Cryptographic Suites for IPsec
- 4363 Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering and Virtual LAN Extensions (partial support)
- 4443 ICMP for IPv6
- 4429 Optimistic DAD for IPv6 (partial support)
- 4541 Considerations for IGMP and MLD Snooping Switches
- 4552 Authentication/Confidentiality for OSPFv3

- 4601 PIM-SM: Revised Protocol Specification
- 4607 Source-Specific Multicast for IP
- 4675 RADIUS Attributes for Virtual LAN and Priority Support (partial support)
- 4835 Cryptographic Algorithm Implementation Requirements for ESP and AH¹
- 4861 Neighbor Discovery for IPv6
- 4862 IPv6 Stateless Address Auto- Configuration
- 5095 Deprecation of Type 0 Routing Headers in IPv6
- 5176 Dynamic Authorization Extensions to RADIUS
- 5187 OSPFv3 Graceful Restart (Helper-mode)
- 5308 Routing IPv6 with IS-IS
- 5340 OSPF for IPv6
- 5424 The Syslog Protocol
- 5798 VRRPv3 for IPv4 and IPv6
- 5905 NTPv4: Protocol and Algorithms Specification
- 5997 Use of Status-Server Packets in RADIUS
- 6105 IPv6 Router Advertisement Guard
- 6329 IS-IS Extensions supporting Shortest Path Bridging
- 6933 Entity MIBv4 (partial support)
- 7358 VXLAN: A Framework for Overlaying Virtualized L2 Networks over L3 Networks (partial support)
- 7610 DHCPv6 Shield: Protecting against Rogue DHCPv6 Servers
- Internet-Draft IP/IPVPN services with IEEE 802.1aq SPB networks (draft-unbehagen-spb-ip-ipvpn-00)
- Internet-Draft SPB Deployment Considerations (draft-lapuh-spb-deployment-03)

MTBF

(Base Unit with Single Power Supply)

- VSP 4450GSX-PWR+ - up to 293,000 hours (33.44 years)
- VSP 4450GSX-DC - up to 308,000 hours (35.15 years)
- VSP 4450GTX-HT-PWR+ - up to 224,500 hours (25.62 years)
- VSP 4850GTS - up to 311,104 hours (35.51 years)
- VSP 4850GTS-PWR+ - up to 214,542 hours (24.49 years)
- VSP 4850GTS-DC - up to 311,104 hours (35.51 years)

Ordering Information

Part Number*	Description
EC4400A05-E6	VSP 4450GSX-PWR+ 50-port Ethernet Switch, supporting 36 x 1000BASE-SFP ports, 12 x 10/100/1000BASE-T ports with PoE+, and 2 x 10GBASE-SFP+ Uplink ports. Includes single 1000W AC Power Supply, and Base Software License.
EC4400004-E6	VSP 4450GSX-DC 50-port Ethernet Switch, supporting 36 x 1000BASE-SFP ports, 12 x 10/100/1000BASE-T ports, and 2 x 10GBASE-SFP+ Uplink ports. Includes single 300W DC Power Supply, DC Connector, and Base Software License.
EC4400A03-E6	VSP 4450GTX-HT-PWR+ 50-port High-Temperature Ethernet Switch, supporting 48 x 10/100/1000BASE-T ports with PoE+, including 2 x 1000BASE-SFP Combo ports, and 2 x 10GBASE-SFP+ Uplink ports. Includes single 1000W AC Power Supply, and Base Software License.
EC4800A78-E6	VSP 4850GTS 50-port Ethernet Switch, supporting 48 x 10/100/1000BASE-T ports, including 2 x 1000BASE-SFP Combo ports, and 2 x 10GBASE-SFP+ Uplink ports. Includes single 300W AC Power Supply, and Base Software License.
EC4800A88-E6	VSP 4850GTS-PWR+ 50-port Ethernet Switch, supporting 48 x 10/100/1000BASE-T ports with PoE+, including 2 x 1000BASE-SFP Combo ports, and 2 x 10GBASE-SFP+ Uplink ports. Includes single 1000W AC Power Supply, and Base Software License.
EC4800078-E6	VSP 4850GTS-DC 50-port Ethernet Switch, supporting 48 x 10/100/1000BASE-T ports, including 2 x 1000BASE-SFP Combo ports, and 2 x 10GBASE-SFP+ Uplink ports. Includes single 300W DC Power Supply, DC Connector, and Base Software License.

GSA Version Numbers

Part Number*	Description
EC4400A05-E6GS	VSP 4450GSX, GSA Version. Includes single 1000W AC Power Supply and Base Software License
EC4800A78-E6GS	VSP 4850GTS, GSA Version. Includes 300W AC Power Supply and Base Software License
EC4800A88-E6GS	VSP 4850GTS-PWR+, GSA Version. Includes 300W AC Power Supply and Base Software License
EC4800078-E6GS	VSP 4850GTS-DC, GSA Version. Includes single 300W DC Power Supply, DC Connector and Base Software License

Note: # All GSA part codes have Taiwan as their Country of Origin.

Redundant Power Supplies

Part Number*	Description
AL1905A08-E5	300W AC Power Supply for VSP 4850GTS. Power Cord ordered separately.
AL1905A21-E6	1,000W AC Power Supply for VSP 4450GSX-PWR+ and VSP 4850GTS-PWR+. Power Cord ordered separately.
EC4005A03-E6HT	1,000W High-Temperature AC Power Supply for VSP 4450GTX-HT-PWR+, Medium Grey in color. Power Cord ordered separately.
AL1905005-E5	300W DC Power Supply for VSP 4450GSX-DC and VSP 4850GTS-DC ² . Includes DC Connector.

Note: Power cord is not included and must be ordered separately for switches and power supplies. For a list of available power cords, please refer to "Lifecycle Notification on VSP Power Cord Models" at: <http://bit.ly/2q1YBgo>

² This PSU does not support PoE and is designed for the non-PWR+ VSP 4000 models

Licenses

Part Number	Description
338835	VSP 4000 Series Premier Software License: enables L3 VSNs, DvR Leaf, >24 VRFs, and MACsec.
338836	VSP 4000 Series Premier Software License: enables L3 VSNs, DvR Leaf, and >24 VRFs.

Base Software License, included with hardware purchase, enables most features with the exception of those specifically noted as enabled by the Premier Software License.

Premier Software License, an optional accessory, enables the following functionality: Layer 3 Virtual Service Networks, Distributed Virtual Routing, greater than 24 Virtual Routing and Forwarding instances, and—where local regulations permit—MACsec.



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