AVAYA

Engage The Power of We™

Virtual Services Platform 4000

Simplify your network end to end with the Avaya fabric-enabled multiservice edge device

VSP Operating System Software 4.2 delivers the following major enhancements:

- Introduces the VSP 8404 4-Slot Ethernet Switch
- Introduces the first four VSP 8400 Ethernet Switch Modules, supporting high-density 10 & 40 Gigabit Ethernet
- Introduces Enhanced Security Mode options

Simplify your network with the Avaya Virtual Services Platform (VSP) 4000. Designed to extend the reach of Avaya VENA Fabric Connect technology to the network edge, the VSP 4000 delivers fully featured network virtualization capabilities in a low cost 1 Gig/10 Gig 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, Avaya VSP 4000 delivers rich multiservice and multi-tenant functionality in a cost-effective platform for small locations.

A new way of building networks

Reflecting the complexity of most networks, a recent Avaya survey of IT managers found that 41% of all respondents need one month or more to implement a simple network change. This is not surprising when even moves, adds and changes, for example, often require cumbersome network-wide configuration that makes them difficult to implement. Fixing one thing can mean breaking something else when rigid design rules and a myriad of protocols are involved. What's needed is more speed, agility, and flexibility in configuring networks – especially when incorporating megatrends such as video, mobility, Cloud Computing, Big Data and the rapid advancement of applications and end devices.

A completely new way to build networks, Avaya Fabric Connect delivers a simplified, agile and resilient infrastructure that makes network configuration and deployment of new services faster and easier. A standards-based fabric technology based on enhanced IEEE 802.1aq Shortest Path Bridging and IETF 6329, Avaya Fabric Connect combines decades of experience with Ethernet and Intermediate System-to-Intermediate System (IS-IS) to deliver a next generation technology that combines the best of Ethernet with the best of IP. Avaya Fabric Connect creates a multipath Ethernet network that leverages IS-IS routing to build a topology between nodes dynamically. Traffic always takes the shortest path from source to destination, increasing performance and efficiency.

Avaya Fabric Connect takes the complexity out networking. Delivering a comprehensive array of network services, including Layer 2 and Layer 3 virtualization with optimized routing and IP multicast support, it allows customers to phase out multiple complex legacy technologies gradually and to enable all services through a single, next-generation technology.

Accelerating time to service and reducing errors, simple end point provisioning can extend any service anywhere in the infrastructure. Physical topology becomes irrelevant and complex design rules are eliminated, enabling network operators to build any logical topology wherever and whenever it's required.

VOSS Unification

Avaya is undertaking a unification program for the operating system software used on Virtual Service Platform products. Moving to a single, common VSP Operating System Software (VOSS) accelerates time-to-market for new features, and ensures higher levels of feature consistency across the product portfolio.

Compared to a traditional network, Avaya Fabric Connect offers a dynamic, agile network that is much easier to plan, build and run.

VSP 4000: Extending Avaya Fabric Connect to the network edge

VSP 4000 is an industry leading fabric-enabled multiservice edge device that extends Avaya Fabric Connect to the Campus, MAN or WAN edge by providing a services-rich yet low cost platform for small sites. It plays a critical role in delivering enterprise-wide fabric architecture that spans from Data Center to desktop.

Leveraging the robust, field-proven, carrier-grade Linux operating system of the Avaya Data Center core switch, the VSP 9000, the VSP 4000 provides a consistent feature set and CLI. Its operating system contains many of the same features that contribute to the robustness of the VSP 9000 core platform including:

- Flight recorder-style logging to help with continuous real-time monitoring of internal control message flows
- Key Health Indicators that provide a view of system health at all levels (OS, system applications /protocols I/O modules, ports and the forwarding path)

VSP 4000 Models:

The VSP 4000 comes in four model variants:

VSP 4450GSX-PWR+ - 36 x 100/1000 Mbps SFP ports, 12-ports of 10/100/1000Base-T with PoE+, and 2-ports of 1/10 Gig SFP+ which have been enabled with MACSec encryption.

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 shared SFP and two SFP+ uplink ports with optional redundant power.

VSP 4850GTS-PWR+ - 48 ports of 10/100/1000 with PoE+ including two shared SFP and two SFP+ uplink ports with optional redundant power.

VSP 4850GTS-DC - 48 ports of 10/100/1000 including two shared 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 degrees C to 70 degrees C. 48 ports of 10/100/1000 with PoE+ including two shared SFP and two SFP+ uplink ports with optional redundant power.

For the VSP 4850 series products, because the hardware is based on the ERS 4800 product line, customers can purchase a conversion kit that enables ERS 4850 models, rev 10 and higher, to be converted (by adding a software module and cover) to a VSP 4850 system. This option does not exist for the VSP 4450GSX-PWR+

Traditional Networks	Avaya Fabric Connect
Complex: • Multiple protocols (STP, RIP, OSPF, BGP, PIM) • Network design rules • Cumbersome adds moves and changes • Network wide configuration (STP groups, VLANs, hop by hop)	Simple: • Single protocol (IS-IS) • Design flexibility (Independent from physical topology, services can be added wherever needed) • Quick adds, moves and changes • Single-command end point provisioning for new services and changes to services
Inefficient use of resources (blocked ports)	Efficient use of resources (no blocked ports, optimized shortest latent path from source to destination)
Slow recovery (generally seconds)	Sub second recovery

VSP 4000 Services Overview:

The VSP 4000 offers a wide range of network services that can be deployed simply and easily. The first release 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 IGPs.
- 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

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 Avaya 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.

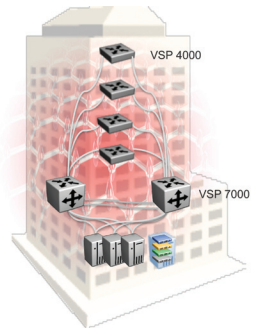

Figure 1: Virtualized Small / Midsized Enterprise

Traffic Separation: Traditional Networks	Traffic Separation: Avaya Fabric Connect
MPLS-based separation • Complex: – Multiple protocols (IGPs, BGP, MPLS) – Complex to configure (VRFs, IGP, iBGP, MPBGP, route targets, route distinguishers) – Complex to move, add and change tenants • Slow recovery (generally in seconds) **VLAN-based separation** • No true traffic isolation • Vulnerable to security breaches (VLAN jumping)	**Avaya Fabric Connect** • Simple: – Single protocol (IS-IS) – Easy to configure (VRF to ISID) – Easy to move, add and change tenants • Fast recovery (sub second) • True traffic isolation; meet regulatory requirements • More Secure (MAC in MAC encapsulation helps prevents VLAN jumping)

Distributed Enterprise

For Avaya 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.

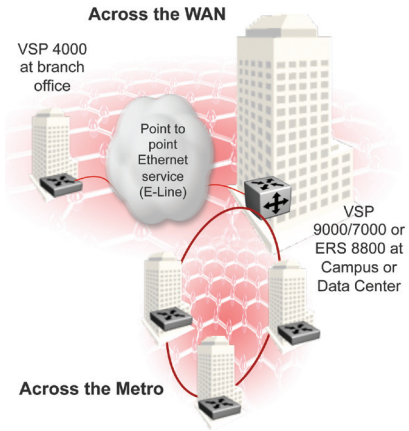

Figure 2: Distributed Enterprise

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, Avaya 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.

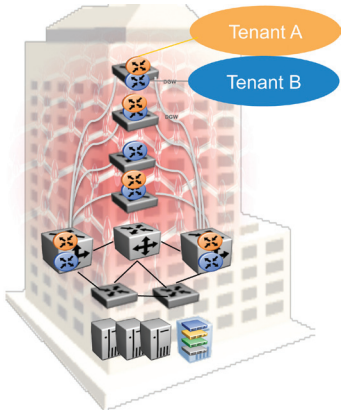

Figure 3: End to End Traffic Separation to support Multi-tenancy

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.

We designed a L3 network over our Avaya fabric for credit card transactions and keep it totally isolated from the other student and staff traffic. This allows us to meet PCI DSS compliance for the banks very easily. Plus to implement, we didn't need to make changes all the way through the core in order to segment the traffic.

- Phil Taylor, Communications Consultant from Leeds Metropolitan University

With its integrated VRF capabilities, Avaya VENA 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 offer additional security by helping to prevent breaches like VLAN jumping.

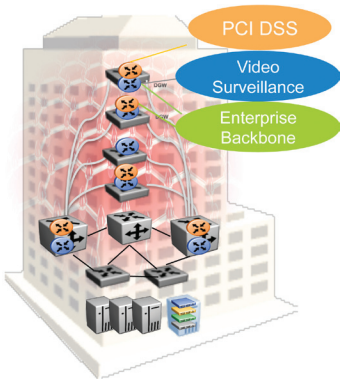

Figure 4: End to end traffic separation for security or regulatory reasons

IP multicast: Traditional Networks	IP multicast: Avaya Fabric Connect
Complex: • Multiple protocols (PIM over OSPF) • Complex to operate and troubleshoot (proprietary tools) • Network wide configuration (boot strap routers, rendezvous points)	Simple: • Single protocol (IS-IS) • Easy to operate and troubleshoot (IEEE 802.1 ag extensions) • Single command end point configuration
Recovery from failures seconds even minutes	Fast recovery (sub second)
Limited scale (100's of streams)	Massive scaling (10's of thousands of streams)

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.

Avaya 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, Avaya Fabric Connect offers a highly efficient, scalable, more resilient way to distribute multicast to support IPTV, digital signage or multicast enabled video surveillance networks.

Compared to traditional IP multicast implementations, Avaya Fabric Connect offers the following benefits. (see table above)

Management

The Avaya Virtual Services Platform 4000 can be managed by a variety of management tools, creating a flexible operational environment based on business requirements. These include: standardized Command Line Interface (CLI), Web-based Enterprise Device Manager (EDM), SNMP-based management (SNMP v1, v2 & v3), and the evolving Unified Management framework for comprehensive, centralized, and multi-facetted network management. Based on common services – authentication and access control, audit, etc. – plus a number of integrated AJAX-based plug-in applets that deliver seamless task-specific capabilities, all have a consistent look and feel: Configuration & Orchestration Management; Visualization, Performance and Fault Management; and IP Flow Manager.

Enabling a more streamlined, accurate, intelligent approach to delivering device-centric and network-wide management services, the entire Avaya Fabric Connect management framework is context based. Provision wizards, along with other labor-saving tools, provide faster service activation with a more consistent approach to configuration and, because wizard templates are pre-populated with best-practice recommendations and/or mandatory values, human-error is minimized.

Lifetime warranty

Avaya 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. Avaya 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, Avaya offers a full suite of support services.

Summary

Deployed in conjunction with other Avaya 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, Avaya is a leader in fabric-enabled networking.

Learn more

To learn more about the Virtual Services Switch 4000 series, please contact your Avaya Account Manager or Avaya Authorized Partner. Or, visit us online at **avaya.com**.

VSP 4450GSX-PWR+

Switch details	12-ports of 10/100/1000Base-T with PoE+ support 36 ports of 100/1000 Mbps SFP ports 2 ports of 1/10 Gig SFP+ 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	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	12 ports of 10/100/1000Base-T 36 ports of 100/1000 Mbps SFP ports 2 ports of 1/10 Gig SFP+ 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	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

VSP 4850GTS

Switch details	48 10/100/1000 Gigabit Ethernet ports 2 shared 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	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	48 10/100/1000 Gigabit Ethernet ports 48 ports support IEEE 802.3at PoE+ 2 shared SFP ports Plus 2 x 1/10Gigabit 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	Supplied with 1 x 1000 watt Field Replaceable AC power supply Supports addition of second Field Replaceable AC power supply for redundancy or additional PoE Thermal Rating 383 BTU/hr
Maximum PoE budget	855 watts when operating on one 1000w power supply 1855 watts when operating on two 1000w power supply

VSP 4450GTX-HT-PWR+

Switch details	48 ports of 10/100/1000Base-T with PoE+ support 2 ports of 1G SFP (Shared) 2 ports of 1/10 Gig SFP+ 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	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.

VSP 4850GTS-DC

Switch details	48 10/100/1000 Gigabit Ethernet ports 2 shared 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	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

"Avaya is fundamentally changing the way multicast is delivered. When testing their IP multicast over Fabric Connect functionality, all the resources I had in my lab couldn't stress their solution. Also, during failover testing, I was amazed that the network and the multicast service re-converged faster than I could record it. We look forward to working with Avaya to deliver scalable, and efficient video surveillance solutions for our customers."

- Darren Giacomini,
Lead Architect, Pelco

Technical 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
- Latency (64-byte packets): 9 microseconds
- RSTP, MSTP
- VRRP Backup Master
- IPv4 and IPv6 Routing
- Policy Based Routing
- Ingress & Egress Port ACLs
- Ingress VLAN ACLs
- Enterprise Device Manager GUI, on-box & off-box
- Configuration & Orchestration Manager
- Virtualization Performance & 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 4450GSX-PWR+ only)
- TACACS+
- SLAMon agent

Layer 2

- MAC Address: 32,000
- Port-based VLANs: 4,059
- Private VLANs/E-Tree: 1,000
- MSTP Instances: 12
- MLT/LACP Groups: 24
- MLT Links per Group: 8
- LACP Links per Group: 8 Active & 8 Standby
- Avaya VLACP Instances: 50
- Avaya SLPP Instances: 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: 16,000
- IP Static Routes: 1,000 per VRF, 1,000 per switch
- RIP Interfaces: 24
- RIP Routes: 2,000
- OSPF Interfaces: 48 (24 of these can be passive)
- OSPF Routes: 16,000
- OSPF Areas: 12 per VRF, 64 per switch
- BGP Peers: 12
- BGP Routes: 16,000
- ECMP Groups: 500
- ECMP Paths per Group: 4
- ECMP Routes: 16,000
- VRRP Interfaces: 64 or 24 with fast timers
- RSMLT Interfaces: 252
- IP Route Policies: 500 per VRF, 5,000 System-wide
- VRF Instances: 24

Layer 3 IPv6 Routing Services

- Neighbors: 4,000
- Static Neighbors: 128
- IP Interfaces: 256
- CLIP Interfaces: 1
- IP Configured Tunnels: 254
- IP Routes: up to 8,000
- IP Static Routes: 1,000
- OSPFv3 Interfaces: 48 (24 of these can be passive)
- OSPFv3 Routes: up to 8,000 (GRT only)
- OSPFv3 Areas: 64 per switch
- ECMP Groups: 500
- ECMP Paths per Group: 4
- ECMP Routes: 16,000
- VRRP Interfaces: 64 or 24 with fast timers
- RSMLT Interfaces: 252

Multicast

- IGMP Interfaces: 4,059
- PIM Active Interfaces: 128
- PIM Passive Interface: 256
- PIM-SSM Static Channels: 512
- IP Multicast Streams: 4,000

Fabric Connect

- 802.1aq/RFC 6329 Shortest Path Bridging with Avaya extensions
- MAC Address: 16,000
- IS-IS Adjacencies: 50
- BCB/BEB Nodes per Region: 2,000
- BEB Nodes per VSN: 2,000
- L2 Virtual Service Networks: 1,000
- L3 Virtual Service Networks: 24
- IP Shortcut Routes: IPv4 16,000, and IPv6 8,000
- L2 Multicast Virtual Service Networks: 1,000
- L3 Multicast Virtual Service Networks: 24

QoS & Filtering

- IPv4 ACE: 1530 Ingress and 254 Egress
- IPv6 ACE: 256 Ingress
- QoS priority queues: 8

Operations & Management

- Mirrored Ports: 4

Technical Specifications

VSP 4000 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 & 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

End to End Traffic Separation Before and After

Compared to traditional networks, which generally rely on complex MPLS based technologies for traffic separation, Avaya Fabric Connect offers a simplified network environment where adding, moving and changing tenants can be accomplished simply and easily with end point provisioning.

VSP 4000 Series Standards Compliance

The VSP 4.2 Software release provides compliance with the following IEEE and IETF standards:

IEEE

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)
- 802.1s 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
- 802.1Qbp Equal-Cost Multi-Path (Shortest Path Bridging)
- 802.1X Port-Based Network Access Control
- 802.1AE Media Access Control Security
- 802.1AX Link Aggregation

802.3 Ethernet

- 802.3 CSMA/CD Ethernet (ISO/IEC 8802-3)
- 802.3u 100BASE-TX Fast Ethernet 100Mbit/s with Auto-Negotiation
- 802.3x Full Duplex and Flow Control
- 802.3z 1000BASE-X Gigabit Ethernet over Fiber
- 802.3ab 1000BASE-T Gigabit Ethernet over Twisted Pair
- 802.3ae 10 Gigabit Ethernet over Fiber: 10GBASE-SR, 10GBASE-LR, 10GBASE-ER, 10GBASE-SW, 10GBASE-LW, 10GBASE-EW
- 802.3an 10GBASE-T 10 Gigabit Ethernet over Twisted Pair

IEFT

Generic RFCs

- 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
- 950 Internet Standard Subnetting Procedure
- 951 BOOTP: Relay Agent-only
- 1027 Using ARP to Implement Transparent Subnet Gateways
- 1058 RIP
- 1112 Host Extensions for IP Multicasting
- 1122 Requirements for Internet Hosts - Communication Layers
- 1256 CMP Router Discovery
- 1305 NTPv3
- 1340 Assigned Numbers
- 1519 CIDR
- 1541 DHCP
- 1542 Clarifications & Extensions for BOOTP
- 1587 OSPF NSSA Option
- 1591 DNS Client
- 1723 RIPv2 Carrying Additional Information
- 1812 Router Requirements
- 1981 Path MTU Discovery for IPv6
- 2131 DHCP
- 2138 RADIUS Authentication
- 2139 RADIUS Accounting
- 2236 IGMPv2 Snooping
- 2328 OSPFv2
- 2362 PIM-SM
- 2404 HMAC-SHA-1-96 within ESP and AH[1]
- 2407 Internet IP Security Domain of Interpretation for ISAKMP[1]
- 2408 Internet Security Association and Key Management Protocol[1]
- 2453 RIPv2
- 2460 IPv6 Basic Specification
- 2463 ICMPv6
- 2464 Transmission of IPv6 Packets over Ethernet Networks
- 2740 OSPF for IPv6
- 2874 DNS Extensions for IPv6
- 2992 ECMP Algorithm
- 3046 DHCP Relay Agent Information Option 82
- 3162 RADIUS and IPv6
- 3315 DHCPv6
- 3376 IGMPv3
- 3484 Default Address Selection for IPv6
- 3513 IPv6 Addressing Architecture
- 3569 Overview of SSM
- 3587 IPv6 Global Unicast Address Format
- 3768 VRRP: plus draft VRRP for IPv6
- 3810 Multicast Listener Discovery Version 2 for IPv6: Host Mode-only
- 4007 IPv6 Scoped Address Architecture
- 4213 Basic Transition Mechanisms for IPv6 Hosts and Routers
- 4291 IPv6 Addressing Architecture
- 4301 Security Architecture for IP[1]
- 4302 IP Authentication Header[1]
- 4303 IP Encapsulating Security Payload[1]
- 4552 Authentication/Confidentiality for OSPFv3[1]
- 4835 Cryptographic Algorithm Implementation Requirements for ESP & AH[1]
- 4861 Neighbor Discovery for IPv6
- 4862 Pv6 Stateless Address Auto-Configuration
- 5095 Deprecation of Type 0 Routing Headers in IPv6
- 5308 Routing IPv6 with IS-IS
- 5340 OSPF for IPv6[2]
- 5798 VRRPv3 for IPv4 & IPv6[2]
- 6329 IS-IS Extensions supporting Shortest Path Bridging

QoS RFCs

- 2474 Differentiated Services Field Definitions in IPv4 & IPv6 Headers
- 2475 Architecture for Differentiated Service
- 2597 Assured Forwarding PHB Group
- 2598 Expedited Forwarding PHB

OA&M RFCs

- 906 Bootstrap Loading using TFTP
- 959 FTP
- 1157 SNMP
- 1215 Convention for Defining Traps for use with the SNMP
- 1258 BSD Rlogin
- 1305 NTP: Client / Unicast mode only
- 1350 TFTPv2
- 1866 HTMLv2
- 2068 HTTP
- 2428 FTP Extensions for IPv6 and NAT
- 2541 DNS Security Operational Considerations
- 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
- 2616 HTTPv1.1
- 3411 Architecture for Describing SNMP Management Frameworks
- 3596 DNS Extensions to support IPv6
- 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
- 4443 ICMP for IPv6

MIB RFCs

- 1155 Structure and Identification of Management Information for TCP/IP-based Internets
- 1156 MIB for Network Management of TCP/IP
- 1212 Concise MIB Definitions
- 1213 MIB for Network Management of TCP/IP-based Internets: MIB-II
- 1398 Ethernet MIB
- 1442 SMIv2 of SNMPv2
- 1450 SNMPv2 MIB
- 1573 Evolution of the Interfaces Group of MIB-II
- 1650 Definitions of Managed Objects for the Ethernet-like Interface Types
- 1657 Definitions of Managed Objects for BGP-4 using SMIv2
- 1850 OSPFv2 MIB
- 1907 SNMPv2 MIB
- 2021 Remote Network Monitoring MIBv2 using SMIv2
- 2452 TCP IPv6 MIB
- 2454 UDP IPv6 MIB
- 2466 MIB for IPv6: ICMPv6 Group
- 2578 SMIv2
- 2787 Definitions of Managed Objects for VRRP
- 2819 Remote Network Monitoring MIB
- 2863 Interfaces Group MIB
- 2925 Definitions of Managed Objects for Remote Ping, Traceroute, & Lookup Operations
- 2933 IGMP MIB
- 2934 PIM MIB for IPv4
- 3416 Protocol Operations Version 2 for SNMP
- 4022 TCP MIB
- 4087 IP Tunnel MIB
- 4113 UDP MIB
- 4292 IP Forwarding Table MIB
- 4293 IP MIB
- 4363 Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering and Virtual LAN Extensions

[1] Implemented to deliver IPsec capability for Control Plane traffic only.
[2] Planned future support.

For a complete listing of all specifications and compliance please refer to the product documentation.

Ordering information

Part Number	Description
EC4400?05-E6	Virtual Services Platform 4450GSX-PWR+ with 36 port 100/1000 Mbps SFP, 12 port 10/100/1000 802.3at PoE+ plus 2 1/10G SFP+ ports. Inc. Base Software License, 1 Field replaceable 1000W PSU.
EC4800?78-E6*	VSP 4850GTS with 48 10/100/1000 & 2 SFP ports plus 2 SFP+ ports. Inc. Base Software License, 1 Field replaceable 300W AC PSU. NO PC
EC4800?88-E6*	VSP 4850GTS-PWR+ with 48 10/100/1000 802.3at PoE+ & 2 SFP ports plus 2 SFP+ ports. Inc. Base Software License, 1 Field replaceable 1000W AC PSU. NO PC
EC4800078-E6	VSP 4850GTS with 48 10/100/1000 & 2 SFP ports plus 2 SFP+ ports. Inc. Base Software License, 1 Field replaceable 300W DC PSU. NO PC.
EC4810003-3.0	ERS4800 to VSP4000 Conversion kit. Includes VSP USB software module and cover. Licensed for a single system covers Base License features. SPB L2 support.
EC4400A03-E6	4450GTX-HT-PWR+ No Power Cord
EC4400E03-E6	4450GTX-HT-PWR+ North America Power Cord

Redundant power supplies

Part Number	Description
EC4005A02-E6	VSP 4000 1000W AC Redundant Power Supply (Medium-Gray). For use in the VSP4450GSX
EC4011001-E6	VSP 4000 Chassis Power Supply Filler Panel (Medium-Gray)
AL1905?08-E5*	300W AC redundant power supply. For use in the ERS 4626GTS, 4850GTS, VSP 4850GTS and WL8180, WL8180-16L wireless controllers. [EUED RoHS 5/6 compliant].
AL1905?21-E6*	STACKABLE 1000W AC POE+ POWER SUPPLY. FOR USE IN 4X00 PWR+,
AL1905005-E5	Redundant 300W DC power supply. For use in the VSP 4850GTS-DC, ERS5698TFD, 5650TD, and 5632FD. (EUED RoHS 5/6 compliant). DC connector included
EC4005A03-E6HT	VSP 4000 High-Temp field replaceable 1000W AC power supply unit (Color: Medium-grey). For use in the 4450GTX-HT-PWR+ (No power cord)

*Note: The seventh character (?) of the switch order number must be replaced with the proper letter to indicate desired product nationalization. See table for details:

"A" No power cord included

"B" Includes European "Schuko" power cord common in Austria, Belgium, Finland, France, Germany, The Netherlands, Norway, and Sweden

"C" Includes power cord commonly used in the United Kingdom and Ireland

"D" Includes power cord commonly used in Japan

"E" Includes North American power cord

"F" Includes Australian power cord, also commonly

Licenses

Software Licensing

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

Premier Software License, an optional accessory, enables the following features: Layer 3 Virtual Service Networks and - where local regulations permit - MACsec.

Part Number	Description
EC4810010	Advanced License for any VSP4000 - "Routing" (Qty 1) GRT IP Routing including IP-Shortcuts, Inter-ISID-Routing, VRRP, DHCP-Relay, RIP, OSPF, BGP, IPv6**, SMLT**, IP-Shortcuts with Multicast support
EC4810011	Advanced License for any VSP4000 - "Routing" (Qty 10) GRT IP Routing including IP-Shortcuts, Inter-ISID-Routing, VRRP, DHCP-Relay, RIP, OSPF, BGP, IPv6**, SMLT**, IP-Shortcuts with Multicast support
EC4810012	Advanced License for any VSP4000 - "Routing" (Qty 25) GRT IP Routing including IP-Shortcuts, Inter-ISID-Routing, VRRP, DHCP-Relay, RIP, OSPF, BGP, IPv6**, SMLT**, IP-Shortcuts with Multicast support
EC4810015	Premier License for any VSP 4000 - "L3 Virtualization" (Qty 1) IP VRFs, L3 VSNs incl. RIP, OSPF, BGP, Virtualized SPB Multicast
EC4810016	Premier License for any VSP 4000 - "L3 Virtualization" (Qty 10) IP VRFs, L3 VSNs incl. RIP, OSPF, BGP, Virtualized SPB Multicast

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